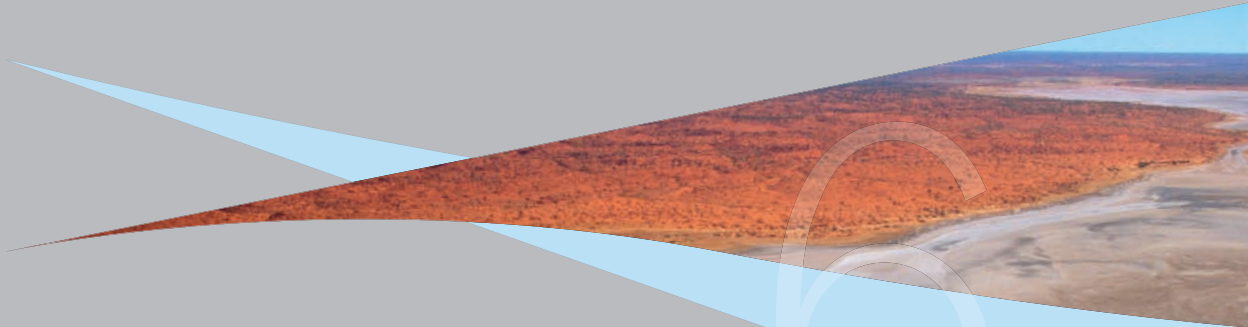


# 2006 Year Book Australia



A comprehensive source of information about Australia.



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**2006**

**YEAR BOOK  
AUSTRALIA**





**2006**

**YEAR BOOK**  
**AUSTRALIA**

Dennis Trewin  
Australian Statistician

NUMBER 88

AUSTRALIAN BUREAU OF STATISTICS  
CANBERRA

ABS Catalogue No. 1301.0

ISSN 0312-4746  
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Cover The General Assembly of the United Nations has declared 2006 the International Year of Deserts and Desertification. Like most of Australia's desert lakes, Lake Amadeus, north of Uluru (Northern Territory), is a vast salt pan. Photograph by Mike Smith.

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# Preface

Year Book Australia is the principal reference work produced by the Australian Bureau of Statistics. It provides a comprehensive and detailed statistical overview of various aspects of the economy and social conditions in Australia. In addition, it contains descriptive matter dealing with Australia's geography and climate, government, international relations, defence, education, and the health and welfare support systems.

The Australian Bureau of Statistics (ABS) and its predecessor, the Commonwealth Bureau of Census and Statistics, have been providing a statistical service to the Australian, state and territory governments and to the Australian community for more than 100 years.

The first Official Year Book of the Commonwealth was published in 1908, although individual Australian states and colonies had been producing year books for several decades previously.

This 88th edition of Year Book Australia has a major theme of Australia's deserts, marking the declaration by the General Assembly of the United Nations of 2006 as the International Year of Deserts and Desertification. The ABS invited four authors who are experts in their area of interest to contribute to the feature article, *Australia's deserts*, in this edition. The article addresses three related aspects of Australia's deserts - climate; archaeology and environmental history; and flora and fauna. The Australian Centre for International Agricultural Research has also contributed an article, outlining the role the Australian Government is playing in assisting countries combat desertification. I am very grateful to these authors for their contributions.

The statistics contained in this edition are the most recent available at the time of its preparation. In many cases, the ABS web site <<http://www.abs.gov.au>> and the web sites of other organisations provide access to more recent statistics. The ABS *Catalogue of Publications and Products*(1101.0) lists all current publications of the ABS. The enclosed CD-ROM provides an electronic version of the 2006 Year Book and the publications catalogue.

Further information on the operations of government and non-government organisations referred to in this edition of the Year Book, including their administrative and legislative background, may be obtained from their individual web sites, the addresses of which are provided throughout and at the end of chapters of the Year Book.

ABS publications draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated.

Particular thanks and appreciation are extended to those Australian Government and other organisations which have kindly supplied material for inclusion in this edition of the Year Book.

I also take the opportunity to extend my thanks to the many ABS staff who contributed to the preparation and production of *Year Book Australia 2006*.

Australian Bureau of Statistics  
Canberra  
January 2006

Dennis Trewin  
Australian Statistician



# Introduction

Year Book Australia provides a comprehensive overview of the economic and social conditions of contemporary Australia. It is a statistically-oriented publication with sufficient background information to establish a context for the statistics and to assist in understanding and interpreting them. It also contains descriptive matter dealing with Australia's geography and climate, government, international relations, defence, education, and the health and welfare systems.

The source of many of the statistics are censuses and surveys conducted by the Australian Bureau of Statistics (ABS), the national statistical agency which produces the Year Book. However, a great deal of the information is also contributed by other, predominantly Australian Government, organisations. The official nature of the contributors to the Year Book ensures a high degree of objectivity and reliability in the picture presented of contemporary Australia.

This current (88th) edition is the latest in a long series of Year Books extending back to the first edition in 1908. This series provides a valuable source of information on the state of Australia at any point in this period. This edition of Year Book Australia has a major theme of Australia's deserts, marking the declaration by the General Assembly of the United Nations of 2006 as the International Year of Deserts and Desertification. The ABS invited four authors who are experts in their area of interest to contribute to the feature article, *Australia's deserts*, in this edition. The article addresses three related aspects of Australia's deserts – climate; archaeology and environmental history; and flora and fauna. The Australian Centre for International Agricultural Research has also contributed an article, outlining the role the Australian Government is playing in assisting countries combat desertification.

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## Finding information

The contents pages at the beginning of the Year Book provide a guide to the broad subjects contained in each chapter. The index assists in locating information on more specific subjects. A list of articles which have appeared in the previous ten editions of Year Book Australia is contained at the end of this edition. A collection of articles is included on the ABS web site.

The tables and graphs in a chapter are numbered and the text is cross-referenced, as necessary, to the table or graph to which it relates.

## Further information

While the statistics and descriptive information contained in the Year Book provide a comprehensive overview of Australia, they represent only a relatively small part of the statistics and other information available. The Year Book is aimed primarily at providing a ready and convenient source of reference, both to those familiar and unfamiliar with a particular subject. In other words, because of the range of subjects, and limitations on the size of the Year Book, it aims at breadth rather than depth of information.



For those requiring information in greater depth, the Year Book also serves as a directory to more detailed sources, with the source shown for each statistical table, graph and map. Where the ABS is the source, the title and catalogue number of the relevant publication are quoted. For other sources, the name of the organisation is shown, and the publication title where appropriate. Relevant ABS and other publications are also listed at the end of each chapter, together with a selection of relevant web sites.

As well as the information included in this Year Book, the ABS may have other relevant data available on request. Charges are generally made for such information. Inquiries should be made to the National Information and Referral Service on 1300 135 070.

The annual reports of government departments and agencies also provide a valuable source of more detailed information on subjects covered in the Year Book. Information may be obtained from the relevant web sites, the addresses of which are provided throughout and at the end of chapters of the Year Book.

For a variety of reasons, it is not possible for all statistics in the Year Book to relate to the latest or the same year. Readers wishing to obtain or clarify the latest available statistics should contact the relevant source or access the relevant web site.

## Reference to the national government

Australia has a federal system of government comprising a national government, and the governments of the six states and two territories. In *Year Book Australia 2006* the national government is referred to as either 'the Australian Government' or 'the Commonwealth Government'. On occasions the shortened term 'the Commonwealth' or 'the Government' is used when referring to the national government.

## Symbols and abbreviations

The following symbols and abbreviations are shown in tables, graphs and diagrams:

'000	thousand
\$	dollar
\$'000	thousand dollars
\$m	million dollars
\$b	billion dollars
%	percentage
—	nil or rounded to zero (including null cells)
..	not applicable
^	estimate has a relative standard error of between 10% and 25% and should be used with caution
*	estimate has a relative standard error of between 25% and 50% and should be used with caution
**	estimate has a relative standard error greater than 50% and is considered too unreliable for general use
°C	degrees Celsius
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACE	adult and community education
ANZSIC	Australian and New Zealand Standard Industrial Classification
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
ASCO	Australian Standard Classification of Occupations
ASOC	Australian Standard Offence Classification
b	billion
c.f.	compared with
COCF	consumption of fixed capital

Cwth	Commonwealth
EDR	economic demonstrated resources
e.g.	for example
etc.	etcetera
EU	European Union
excl.	excludes/excluding
f.o.b.	free-on-board
FTE	full-time equivalent
GDP	gross domestic product
GJ	gigajoule
GL	gigalitre
GMI	gross mixed income
GOS	gross operating surplus
GST	Goods and Services Tax
Gt	gigatonne
GVA	gross value added
GWh	gigawatt hours
ha	hectare
HECS	Higher Education Contribution Scheme
ICD-10	International Classification of Diseases, 10th revision
i.e.	that is
incl.	includes/including
IPD	implicit price deflators
IVA	industry value added
kg	kilogram
km	kilometre
kt	kilotonne
kWh	kilowatt hour
L	litre
LNG	liquified natural gas
LPG	liquified petroleum gas
m	million
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
MAR	mean annual run-off
MB	megabyte
Mc	million carots
mg	milligram
mill.	million
ML	megalitre
Mm <sup>3</sup>	million cubic metres
mm	millimetre
Mt	megatonne
NDP	net domestic product
NOS	net operating surplus
no.	number
n.a.	not available
n.e.c.	not elsewhere classified
n.e.i.	not elsewhere included
n.e.s.	not elsewhere specified
n.f.d.	not further defined
n.p.	not for publication/not separately published
n.y.a.	not yet available
OECD	Organisation for Economic Co-operation and Development
OPBT	operating profit before tax
PJ	petajoule

PSI	principal source of income
R&D	research and development
SAR	special administrative region
SITC	Standard International Trade Classification
sq km	square kilometre
TAFE	technical and further education
TJ	terajoules
UN	United Nations
VET	vocational education and training

Abbreviations are used for the following countries, and Australian states and territories:

China	China (excl. SARs and Taiwan Prov.)
Hong Kong	Hong Kong (SAR of China)
NSW	New South Wales
Vic.	Victoria
Qld	Queensland
SA	South Australia
WA	Western Australia
Tas.	Tasmania
NT	Northern Territory
ACT	Australian Capital Territory
Aust.	Australia

Yearly periods shown, for example, as 2004, refer to the year ended 31 December 2004; those shown, for example, as 2004–05, refer to the year ended 30 June 2005. Other yearly periods are specifically indicated. The range of years shown in the table headings, for example, 1901 to 2004, indicates the period covered, but does not necessarily imply that each intervening year is included or that the yearly period has remained the same throughout the series.

Values are shown in Australian dollars (\$) or cents (c) unless another currency is specified.

Where figures have been rounded, discrepancies may occur between sums of the component items and totals.

### **Comments from readers**

The ABS endeavours to keep the balance of the contents of the Year Book in line with the ever-changing nature of the nation. For this reason comments on the adequacy and balance of the contents of the Year Book are welcomed and should be directed to the attention of the Editor of the Year Book, Australian Bureau of Statistics, PO Box 10, Belconnen ACT 2616.

# Australia's deserts

In 2003 the General Assembly of the United Nations declared 2006 the International Year of Deserts and Desertification.

The objective is to help prevent the exacerbation of desertification worldwide by raising public awareness and supporting activities combating desertification and land degradation. Desertification is a major economic, social and environmental problem that affects one third of the world's land surface and about one billion people in more than one hundred countries. The article *Helping countries to combat desertification – Australia's role* in the *International Relations* chapter provides two examples of Australian Government assistance for research projects aimed at tackling land and water degradation, and efficient water allocation and management of the Yellow River Basin in China.

Apart from Antarctica, Australia is the driest continent in the world and has the largest desert region in the southern hemisphere. More than a third of the continent is effectively desert; over two thirds of the continent is classified as arid or semi-arid. Inclusion of semi-arid lands leads to a much wider conceptualisation of the Australian desert region, extending as far north as Wyndham in the Kimberley region of Western Australia and the Roper Valley in the Northern Territory, as far east as the slopes of the Great Dividing Range in Queensland and New South Wales, as far south as the Murray and Mallee in Victoria, and south west to the edge of the wheat belt in Western Australia.

Specialist authors from the Australian Bureau of Meteorology, the National Museum of Australia, and the Northern Territory Parks and Wildlife Service were invited by the Australian Bureau of Statistics to contribute to this feature article. Their responses address three related aspects of Australia's deserts – climatic aspects and characteristics; the archaeology and environmental history; and desert flora and fauna. The *Geography and climate* chapter which follows this article also contains some information relating to Australia's deserts and, more generally, the evolution of Australia's landforms.

# Climatic aspects of Australia's deserts

*Dr Blair Trewin, National Climate Centre,  
Australian Bureau of Meteorology, Melbourne.*

Australia's position makes it a prime location for the occurrence of deserts. Around the world, a belt of high pressure exists in the subtropics based on about latitude 30° (north and south), leading to dry conditions in the region near this latitude. Dry conditions also occur in the general easterly flow to the north of this high-pressure belt, except near the east coast of mainland Australia where this flow contains moisture from the Pacific Ocean. The continental interior is also a long way, in any direction, from potential sources of moisture. All of these factors combine to make rainfall a rare occurrence over much of central and western Australia.

## The climatic classification of the Australian deserts

The first question to consider in describing the climate of the Australian deserts is – where are they? In most of Australia, no sharp boundary exists between arid regions and those with ample moisture (at least in part because of the lack of large mountain barriers which act as a sharp divide), and therefore any attempt to define a boundary line on a map is somewhat arbitrary.

The most simplistic definition used for a desert is an area where mean (average) annual rainfall is less than 250 millimetres (mm) or, alternatively, 10 inches. This takes no account of the differences in evaporation (and hence the effectiveness of rainfall) between hot and cold regions and is, therefore, inadequate.

A number of more sophisticated classification schemes have been developed. The best-known is that devised in 1918 by Dr Wladimir Köppen (University of Graz, Austria). A modified version of this is used by the Australian Bureau of Meteorology (BoM)<sup>1</sup>.

Most of the southern part of the Australian arid zone has rainfall fairly evenly distributed through the year, with summer rainfall becoming increasingly dominant as one moves north. As a general rule, using the BoM classification scheme this would equate to a

boundary of about 250 mm mean annual rainfall on the southern boundary of the Australian deserts, and 350–400 mm on the northern boundary.

The Australian desert region using the BoM classification scheme is shown in map S1. This shows that desert climates (or arid areas) occupy most of the western and central interior of the continent. It also shows that some areas traditionally thought of as deserts are, in fact, semi-arid under this classification, notably the area around Alice Springs (Northern Territory) and the coastal fringe of the Nullarbor Plain (Western and South Australia). Both these areas are cooler than surrounding regions (Alice Springs because of its high elevation, the Nullarbor because of its proximity to the moderating influence of the coast), and around Alice Springs the mountains also play a role in increasing rainfall relative to the surrounding plains.

## The rainfall regime of the Australian deserts

Australian deserts are dry places, with average annual rainfall below 250 mm over large areas (see map S1). Depending on the averaging period used, the driest parts of Australia, around the Lake Eyre basin (South Australia), have somewhere between 100 mm and 140 mm per year.

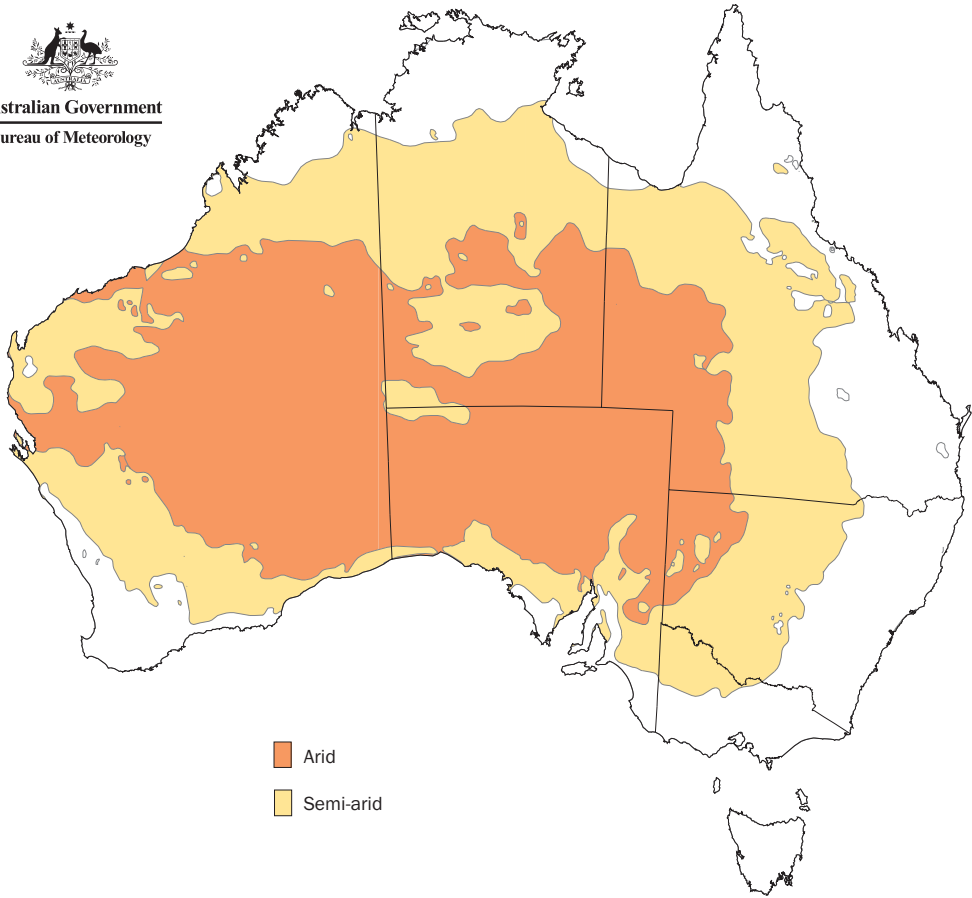
While these rainfalls are low, they are not as low as those found in many other deserts. The world's driest desert, the Atacama in coastal Chile and southern Peru, has locations where rain has not fallen for hundreds of years, while much of the eastern Sahara has an average annual rainfall below 10 mm, and parts of central Asia have as little as 25 mm.

In common with most deserts, rainfall in the Australian deserts is highly erratic from year to year. There is only one recorded instance, at Mulyie (about 100 kilometres (km) east of Port Hedland in Western Australia) in 1924, of an

## S1 THE AUSTRALIAN DESERT REGION



Australian Government  
Bureau of Meteorology



Note: Based on a modified Köppen classification system (see Endnote 2).

Source: Australian Bureau of Meteorology.

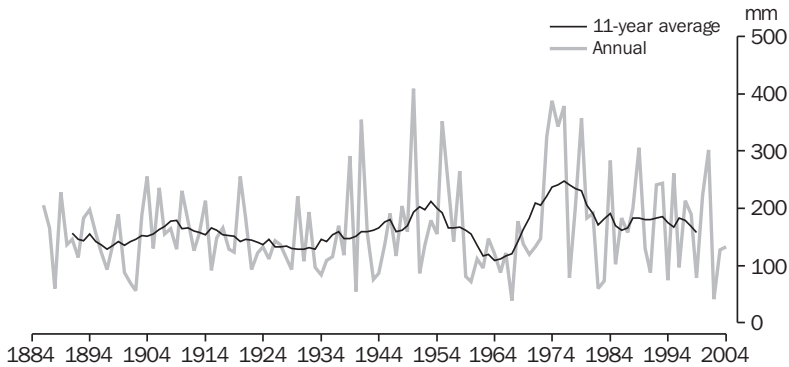
Australian station being rainless for a complete calendar year, but years with less than half the long-term average are relatively common everywhere. In contrast, occasionally the annual average will fall in a single month; on rare occasions, it can fall in a single day.

Graph S2 shows the actual annual and 11-year averaged annual rainfall for Marree, near Lake Eyre in the north of South Australia, over the past 120 years.

There are three major sources for the occasional rains that affect the Australian deserts. These are:

- *Southward extension of the monsoon trough*  
The northern fringe of the desert zone receives occasional summer rain as a result of the monsoon, which brings heavy summer rains to northern Australia. The position of the monsoon trough varies from year to year. In some years, such as 1974, it is unusually far south, allowing moist north-westerly flow originating over the waters north of Australia to penetrate deep into the continent. This type of erratic rainfall on the equatorward fringes of a desert is common to other arid regions, notably the Sahel on the southern side of the Sahara in West Africa.

## S2 ANNUAL AND 11-YEAR AVERAGED ANNUAL RAINFALL , Marree (South Australia)



Source: Australian Bureau of Meteorology.

- *Tropical cyclones*

Tropical cyclones occur several times in a normal year off the north-western coast of Australia. Some of these cross the coast and penetrate well inland. While their winds rapidly lose strength over land, the circulation, with associated rain, often penetrates deep inland. This is a particularly important rain-producing mechanism over Western Australian segments of the desert, with some parts of the Pilbara receiving 30–40% of their annual rainfall from cyclones. In the western Pilbara, cyclone-related rainfall is common enough for the area to be classified in the semi-arid category.

- *Northwest cloudbands*

These are bands of moisture that originate over the warm waters of the Indian Ocean north west of Australia and move south east across the continent at middle levels of the atmosphere (several kilometres above the surface). They are most visibly apparent on satellite images as bands of cloud stretching across the continent from north west to south east (hence the name). They most commonly occur in late autumn and early winter, and can be associated with widespread rain along their length.

While all of these moisture-producing mechanisms in the Australian deserts are relatively rare, it is Australia's relatively flat terrain that allows them to occur at all, as there are no high mountains to block moisture from the north or north west on the occasions when

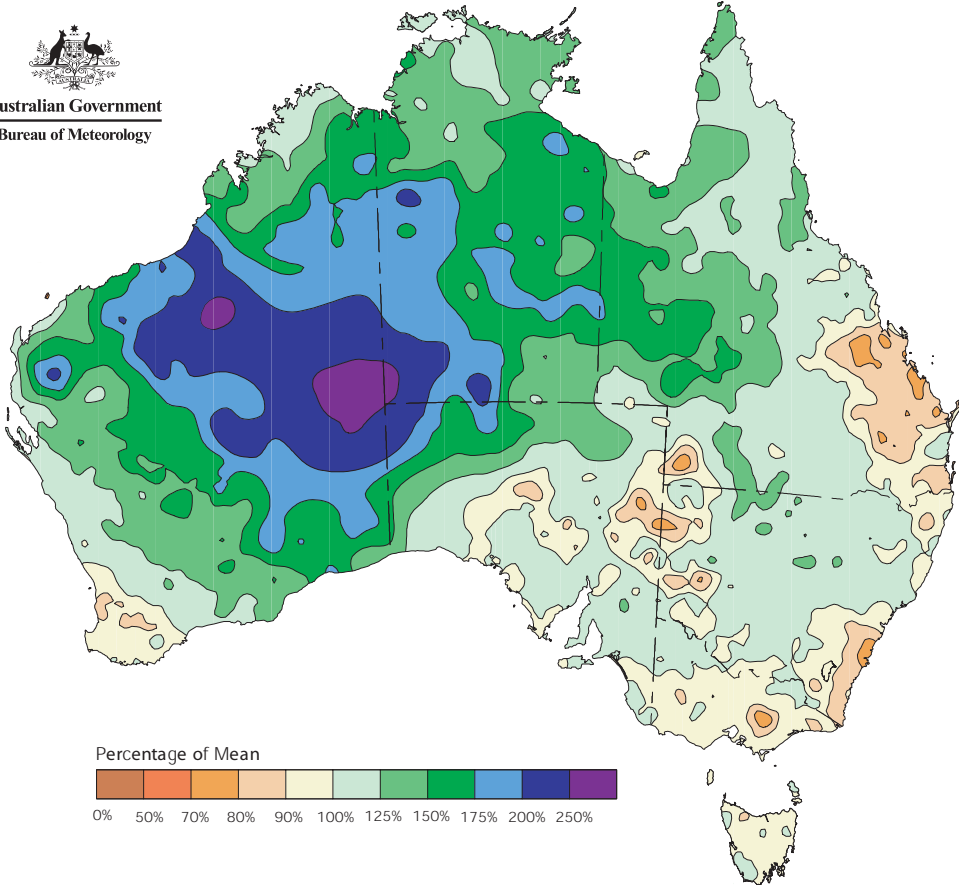
the atmosphere's circulation is favourable to bringing it in from that direction. In addition, the waters of the Indian Ocean north west of Australia are warm, allowing it to be a source of moisture, whereas the eastern Pacific, bordering the Atacama Desert (north Chile) and Atlantic, bordering the Sahara (north Africa), are relatively cool and serve to stabilise air passing over them, as well as preventing tropical cyclone formation.

## Variability in Australian desert rainfall

The rainfall in Australia's deserts is highly variable from year to year, but it is also highly variable from decade to decade. This is evident from graph S2, which shows that the 11-year average rainfall at Marree has fluctuated from around 100 mm in the 1960's to 250 mm in the 1970s.

This wide range of variability has had many consequences. Perhaps the most famous occurred on the southern fringe of the South Australian desert, in the Flinders Ranges region, in the 1870's. In 1865, a boundary ('Goyder's Line'), based on surveys of native vegetation, had been defined by the Surveyor-General, G.W. Goyder, as the northern limit of the region where cropping was feasible. The years immediately following were particularly wet and many farms were established north of Goyder's Line. They prospered for a few years, but when rainfall returned to more normal levels, the farms became unviable and were largely abandoned. Many of the ruined homesteads are still visible today.

S3 RAINFALL — 1 January 1999 to 31 December 2001



Note: All means are based on a standard 30-year climatology (1961–1990).

Source: Australian Bureau of Meteorology.

The most severe sustained dry period since European settlement in much of Australia's interior (and in most of eastern and central Australia generally) occurred between 1895 and 1903 – the so-called 'Federation Drought'. Another particularly dry period occurred between about 1958 and 1968. In each of these protracted dry spells, periods of near-normal rainfall were punctuated by periods with little or no rain, but there were very few episodes of sustained above-normal rainfall.

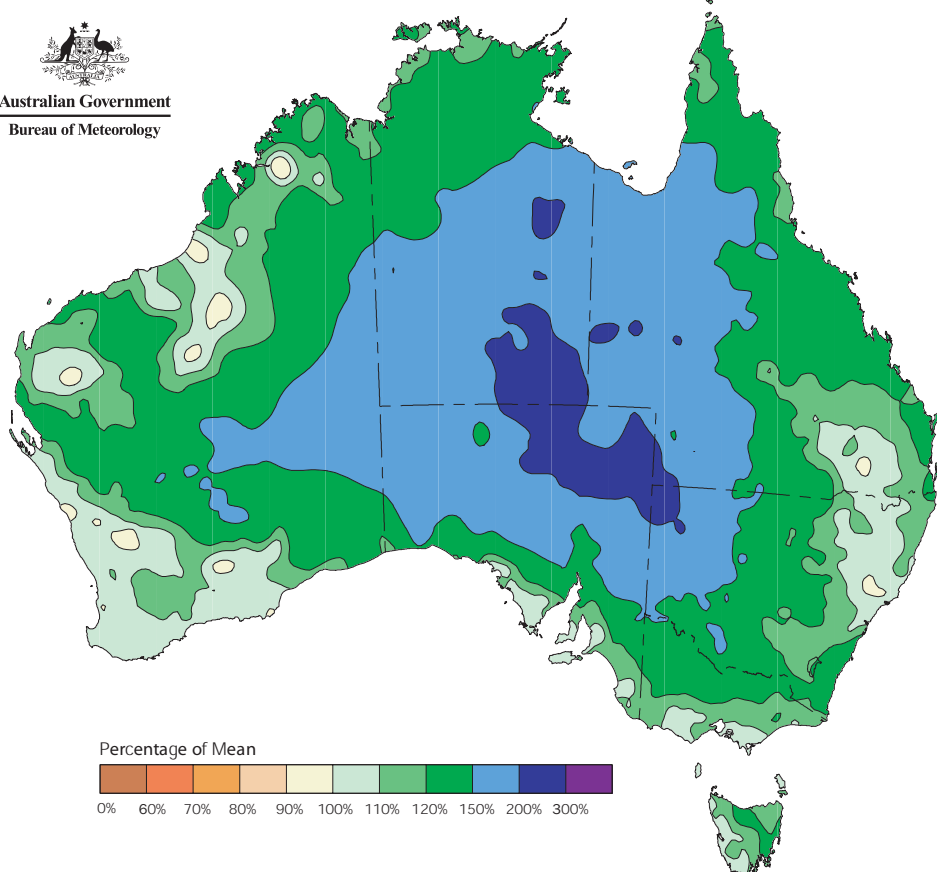
In marked contrast, there have been a number of episodes of sustained above-normal rainfall across Australia's desert region. The period from 1995 to 2003 was especially wet over the western half of the Australian arid zone. At its peak, between 1999 and 2001, some locations received nearly three times their normal rainfall

(map S3), a remarkable anomaly over such a long period. Giles, near the point where Western Australia, South Australia and the Northern Territory meet, received more rain in the period between 1997 and 2003 than some locations in the western suburbs of Melbourne!

The 1973–76 period was also extremely wet, with parts of central Australia receiving more than double their total normal rainfall for the four years (map S4). Lake Eyre filled during this period, a rare event, and there was widespread flooding across many parts of the interior, particularly during the summers of 1973–74 and 1975–76. January 1974 was, by a substantial margin, Australia's wettest month on record, due largely to an exceptional southward penetration of the monsoon trough.



## S4 RAINFALL — January 1973 to December 1976



Note: All means are based on a standard 30-year climatology (1961–1990).

Source: Australian Bureau of Meteorology.

### Temperatures in Australia's deserts – myths and reality

Heat is a central part of the popular image of Australia's deserts. The summers are hot everywhere in the region. Most areas, except for the southern fringe and the highest parts of the central Australian ranges, have average January maximum temperature exceeding 35 degrees celsius (°C), and parts of the Pilbara region of Western Australia have averages exceeding 40°C (see *Australia's climate* in the *Geography and climate* chapter). The hot conditions are also prolonged over much of the region, particularly its northern part, with Marble Bar (Western Australia) having average maximum temperatures above 35°C in every month from October to April.

Winter daytime temperatures vary more across the region than summer ones do, increasing fairly evenly from south to north, with averages ranging from below 15°C in the Flinders Ranges (South Australia) to 25–27°C along the arid zone's northern boundary.

Extreme high temperatures are also not unusual in the desert region, although possibly not as high as many people believe. The highest extreme temperatures occur in the Pilbara region in Western Australia (most of which is in the semi-arid zone), and in a belt stretching from south-western Queensland through the north of South Australia to the Nullarbor Plain of Western Australia. Many stations in these two regions have exceeded 48°C, and the three instances of 50°C being

reached with standard instruments in Australia all occurred here, at Mardie (Western Australia), Oodnadatta (South Australia) and Wilcannia (New South Wales). Elsewhere, particularly in the Northern Territory and the interior of Western Australia, maxima over 45°C are rare or unknown, due in part to the moderating effect of elevation on the most extreme temperatures.

Hot conditions can be extremely prolonged in much of the desert region, most of which has experienced spells of ten or more consecutive days over 40°C. The most famous long hot spell in Australian history was that at Marble Bar in the summer of 1923–24, when there were 160 consecutive days above 37.8°C (100 degrees Fahrenheit). Even in those areas where the most extreme heat is rare, there are many hot days; for example, at Giles, where the all-time record high is a relatively modest 44.8°C, there are an average of 100 days per year of 35°C or above, including 69 in succession during the summer of 1964–65.

In most of the desert region in summer, cool days are rare and normally associated with major rain events – a particularly exceptional example occurred in February 1949, when many stations failed to reach 20°C on one or more days, and the maximum at Boulia (western Queensland) was a remarkable 14.4°C, or 23°C below normal.

The Nullarbor coast is one region where cool days in summer, influenced by sea breezes from the cool Southern Ocean, are relatively common. Fluctuations of more than 20°C in maximum temperature from one day to the next can occur there, as northerly winds bring very hot and dry continental air from central Australia in place of the cool marine layer (or vice versa) – a more extreme version of the fluctuations for which Melbourne's summers are well known.<sup>3</sup>

As in most deserts, the dry air and clear skies lead to large ranges in temperature between day and night, with ranges of 15°C being typical and 20°C not unusual. Light overnight frosts in winter are not unusual over much of the southern half of the arid zone, where mean July minimum temperatures are mostly in the 3–6°C range. They become increasingly rare as one moves north, with mean July minima around 10°C on the northern boundary. The lowest

extreme minima occur at high elevations, especially around Alice Springs, where the temperature has fallen as low as –7.5°C.

The coldest nights are normally associated with near- or below-normal daytime temperatures – while frosty nights and days well in excess of 40°C may occur at the same place, they do not occur on the same day. Overnight temperatures in summer, while normally well below daytime levels, are still quite warm – January averages range from around 17°C in the south to 25°C in the north – and extremely warm nights can occur during heatwaves, especially if there is enough wind to prevent cool air pooling near the surface overnight. Arkaroola (South Australia) and Wittenoom (Western Australia) have both recorded overnight minima as high as 35.5°C, and Oodnadatta (north east South Australia) had nine successive nights above 30°C in February 2004.

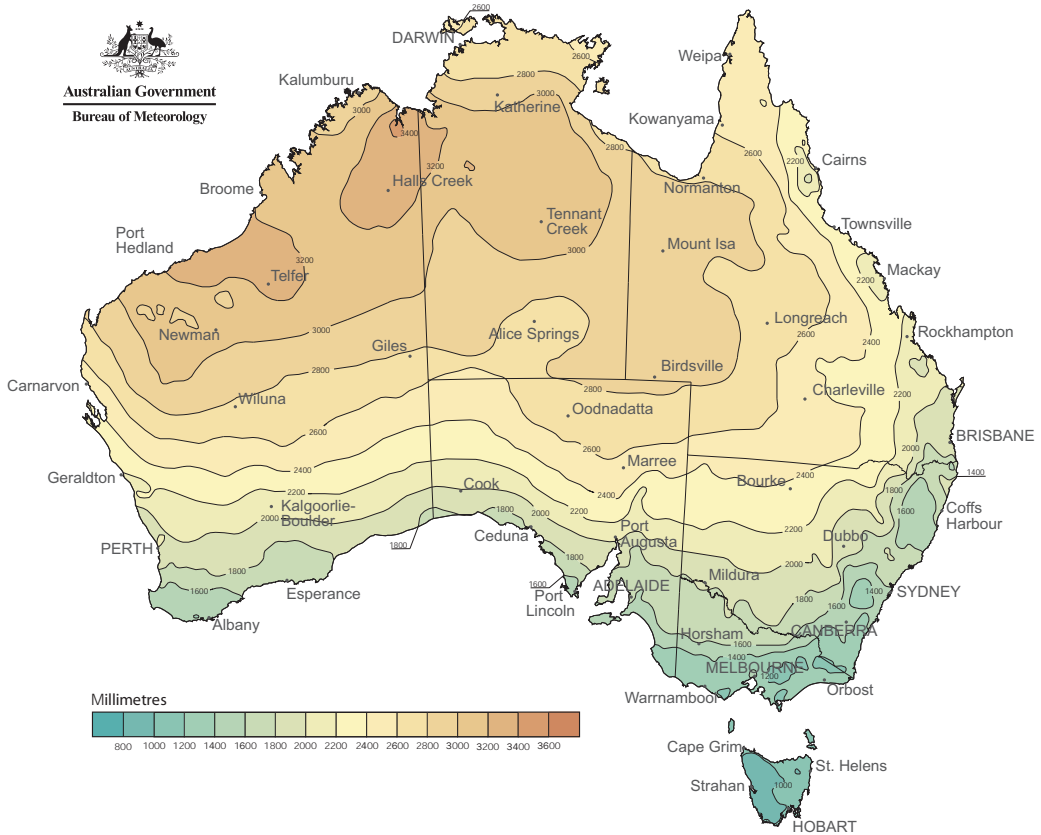
## Evaporation, humidity and other climate variables

Not surprisingly, Australia's deserts are regions where point potential evapotranspiration (which can be considered as the evaporation that would be measured from a pan) is very high, being more than ten times the average annual rainfall in most of the region (map S5). Average annual totals range from over 3,000 mm in the north to around 1,800 mm in the south. In summer, the region of peak evaporation moves south to be centred on about latitude 25°S, as cloud associated with the tropical wet season reduces evaporation further north.

Actual evaporation is much lower than this, as there is very little water to evaporate. It matches, or very closely matches, rainfall throughout the region. In other words, virtually all the rain that does fall evaporates, with almost no runoff.

The air over the desert region is usually very dry. Annual average relative humidity in the mid-afternoon (3 pm) is below 30% over most of the area, and falls as low as 20% in parts of inland Western Australia. Days with humidity falling below 10% are not unusual, especially in late winter and spring. The main exception occurs along the Pilbara coast of Western Australia, where sea breezes can bring shallow, very humid layers of marine air from the ocean. Dew point temperatures in summer (the

## S5 ANNUAL AVERAGE POINT POTENTIAL EVAPOTRANSPIRATION



Note: Based on a standard 30-year climatology (1961–1990).

Source: Australian Bureau of Meteorology.

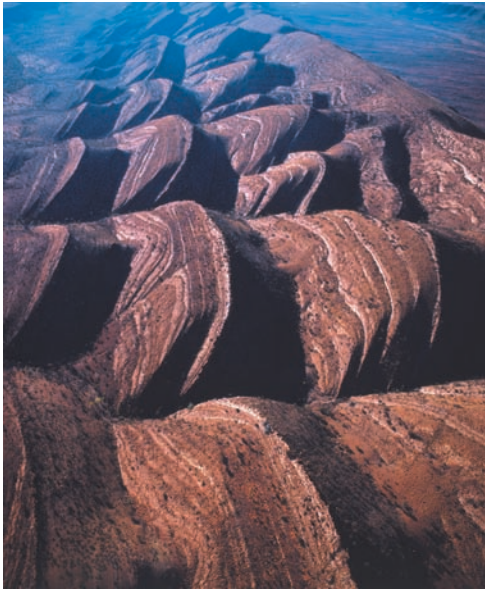
temperature at which dew will start to form if the air mass is cooled) regularly exceed 25°C at Port Hedland and can reach as high as 30°C, among the highest values observed anywhere in Australia.

Thunderstorms are more common over Australia's deserts than one might expect. Except in South Australia, most of the area has more than 15 days of thunder per year, and some parts of the Western Australian interior have more than 40. These storms are often 'dry' storms with most or all rain evaporating before reaching the ground – indeed, in a few locations there are more days of thunder per year than there are days of rain. While reports are limited because of the extremely sparse population, evidence from observing sites indicate that these storms can be accompanied by very strong winds (Alice Springs has

recorded a gust of 174 km/h, one of the strongest non-cyclone gusts ever measured in Australia), and it is likely that other severe thunderstorm phenomena such as large hail and tornadoes also occur from time to time, particularly in southern areas.

Occasional dust storms are a feature of the desert climate. They are most common in the south and east of the region, as widespread strong winds (usually associated with frontal systems) are more frequent there and there is less ground vegetation than there is in much of the west. The area around Birdsville (near the border of Queensland and South Australia) has an average of 6.5 dust storms per year, although the number can be much higher in severe drought years. On the northern fringe the number falls to less than one per year.

While the coldest air masses to affect the desert are usually far too dry for any precipitation by the time they get there, very occasionally, snow flurries may fall in a few parts of the region. Snow was observed falling at Uluru (Ayers Rock), in the Northern Territory, in July 1997 and east of Norseman (Western Australia) in June 2005, and probably occurs more frequently (possibly a couple of times per decade) on the highest peaks of the MacDonnell (Northern Territory) and Musgrave Ranges (northern South Australia) (image S6). On the southernmost fringe of the desert, the higher parts of the Flinders Ranges get snow heavy enough to settle once or twice per decade, with a particularly significant fall occurring, somewhat out of season, in October 1995.



S6 The MacDonnell Ranges in central Australia are one of several major ranges systems in the Australian arid zone. Photograph by Mike Gillam.

## Climate change and Australia's deserts

Global temperatures are expected to warm over the next century as a result of increased levels of greenhouse gases in the atmosphere, and Australia's deserts are no exception. Projections made by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) indicate that the warming rate in the arid zone is likely to be on a par with global average levels, which are expected to be between 1.4°C and 5.8°C higher than today by 2100. A warming of this magnitude will substantially increase heat discomfort in the arid zones.

Projections of future rainfall changes are more uncertain. While rainfall averaged over the globe is likely to increase slightly, the regional distribution of changes is highly uncertain. CSIRO projections suggest no clear tendency towards either significantly drier or wetter conditions in the northern half of the arid zone, although it is worth noting that much of this region has had a substantial rainfall increase since 1960. On the other hand, rainfall is more likely to decrease than increase in the southern part of the arid zone, particularly in the Western Australian sector where a decrease in rainfall is highly probable.

Considering only the climatic definition of a desert (and not considering issues of land degradation, which are often part of what is meant by the term 'desertification'), mid-range CSIRO projections suggest that by 2070 the southern boundary of the Australian desert would be expected to move south by 100–200 km, with the northern boundary moving less than 50 km.

## Endnotes

1. Under this scheme, the desert boundary is defined by the formula:

If rainfall evenly distributed through year –  $\text{Rain} < 10 (T + 7)$

If rainfall has a definite summer maximum –  $\text{Rain} < 10 (T + 14)$

If rainfall has a definite winter maximum –  $\text{Rain} < 10 (T)$

where T is the mean annual temperature (in °C). Semi-arid areas are defined as other areas where rainfall is less than double the above limits.

2. Arid and semi-arid areas derived from 0.025 x 0.025 degree resolution mean rainfall, mean maximum temperature and mean minimum temperature gridded data. All means are based on a standard 30-year climatology (1961–1990).
3. The south coast of Australia is one of the few parts of the world where daily temperatures are more variable in summer than in winter, as it is one of the few places in mid-latitudes with a poleward-facing coast and a hot land/cold ocean boundary in summer.

## References

The *Bibliography* in the *Geography and climate* chapter lists a number of references relevant to the description of the climatic aspects and characteristics of Australia's deserts.



# Deserts past – the archaeology and environmental history of the Australian deserts<sup>1</sup>

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National Museum of Australia, Canberra.*

'Deserts', said Isaiah Bowman (Director, American Geographical Society), 'are no more alike than mountains or plains' (Bowman). In art, film and literature Australian deserts have often been depicted as timeless lands, as 'a featureless tract of eternity in which nothing had changed or would change' (Haynes). However, over the last 30 years, research into the archaeology and Quaternary environmental history of Australian deserts has revealed not only their distinctiveness but also their rich

history (Veth et al.). A comparative perspective shows the Australian deserts are unlike any other in combining a unique evolutionary history with a comparatively high biomass, high climatic variability and an arid region on a continental-scale. They also have an extraordinary human history. Central Australia has been occupied for 35,000 years, at least as long in fact as modern humans have occupied western Europe (images S7 and S8).



S7 Rock art in the Levi Range, central Australia. Photograph by Mike Smith.



S8 Millstone for grinding grass and acacia seeds. Seed foods were an important staple in the Australian deserts. Photograph by Mike Smith.

## The southern hemisphere deserts

Deserts are one of the world's major habitats, forming large bands of drylands along the tropics in both the northern and southern hemispheres, and covering approximately 20% of global land area (Middleton et al.). Collectively the major desert regions in the southern hemisphere make up less than a quarter of this area – only about 500 million square kilometres (sq km) – but they are much more diverse in character than those in the northern hemisphere. They range from the hyperarid Namib (Southern Africa) and Atacama (Chile) deserts, to the arid grasslands or savannas of the Kalahari, the continental dune fields of Australia, and the high-altitude dry Puna (Argentina).

## The Australian deserts

The first thing that strikes you about the Australian deserts is their continental scale reaching from east to west, more than 2,000 km across (map S1). Collectively, they

form the largest arid region in the southern hemisphere, covering 3.5 million sq km of desert uplands, salt lakes, stony desert, sand plain, and dune fields (image S9). If the semi-arid zone is included, the area of Australia's desert region exceeds 5 million sq km, or 70% of the total Australian land mass (Taylor). Like the Kalahari, the Australian deserts are well vegetated and only moderately arid. The arid core of the continent centres on Lake Eyre (in the far north of South Australia). It is a vast salt lake of almost 9,500 sq km, where annual rainfall averages about 100 mm. Out from this core, average annual rainfall increases from 250 mm in the south to 500 mm in the north. However, one of the distinctive features of Australian deserts is extreme variability in rainfall (20–40% more variable than regions of comparable rainfall elsewhere). For instance, Alice Springs (Northern Territory), with a median annual rainfall of 259 mm, received only 54 mm of rain in 1985, but a staggering 903 mm in 1974. (More information is provided in 'Variability in Australian desert rainfall' in *Climatic aspects of Australia's deserts*.)

Two geographical features merit special mention. The first is that the heart of the Australian continent is ringed by extensive dune fields, where the sand ridges align with the dominant wind patterns of 20,000 years ago (images S10 and S11). In 1845, explorer Charles Sturt was the first European to encounter these: 'Ascending one of the sand ridges I saw a numberless succession ... rising above each other to the east and west ... A kind of dread came over me ... It looked like the entrance into Hell' (Sturt). More than 1.6 million sq km of the Australian arid zone is covered by aeolian sand, either sand plain or dune fields. This sandy mantle is from one to ten metres thick, compared to the great depth of sand (100–200 metres) in much of the Kalahari or eastern Sahara. One of the implications for people is that Australian deserts have a network of small wells, rock holes and soakages.

Although these yield only small amounts of water, it is often enough to provide people with a base for exploiting the resources of the surrounding desert.

The second feature to mention is Lake Eyre. This playa lake, which is the terminus of a vast internal drainage system, dominates the eastern half of the arid zone, and has been the focus of the largest sustained program of research into the Quaternary environmental history of the desert. The seasonal rivers, ephemeral lakes, pans and neighbouring sand dunes that make up the Lake Eyre Basin, form 200,000 sq km of riverine desert, and give the landscapes in this part of the arid zone quite a different character to the sand dune and range country in the Western Desert<sup>2</sup> and central Australia<sup>3</sup>. These river systems can carry large volumes of floodwater into the desert from elsewhere.



S9 Like most desert lakes, Lake Amadeus in central Australia is a vast salt pan. Photograph by Mike Smith.





S10 The heart of the Australian continent is ringed by vast dune fields, such as the Simpson Desert. These sand ridges are aligned with the dominant wind patterns of 20,000 years ago. Photograph by Mike Gillam.



S11 Spinifex and dunes, near Lake Amadeus, central Australia. Photograph by Mike Gillam.

## Environmental histories

Although all of the southern hemisphere deserts are long-standing features of the environment, and took shape during the Miocene (24 million to 5 million years ago), they have responded to global and regional climate change during the Quaternary (the last 1.8 million years). The late Quaternary histories of the southern deserts show that all have seen periods of enhanced rainfall, fluvial activity, groundwater discharges and greater biological activity in the past (Smith et al.). In broad terms, these deserts show three sorts of changes. These are:

- *Changes in intensity of aridity*

Within the deserts, the degree of aridity has waxed and waned in response to shifts in global climate and weather systems. Generally, this has involved variations about an arid mean rather than transformation of the desert environment into sub-humid savanna. For instance, the climate of central Australia today probably represents the most favourable period in this desert since the end of the last interglacial (about 120,000 years ago) whereas the peak aridity of the last glacial maximum (about 20,000 years ago) marks the harshest conditions yet identified, with parts of the interior subjected to hyperarid conditions for a protracted period.

- *Changes in extent of the deserts*

The boundaries of these drylands have not been stable. The southern deserts have increased in size or contracted depending on shifts in global climate. In fact, the clearest evidence for environmental change is often from the margins of these deserts. For instance, fossil linear dunes occur well beyond the margins of the Australian arid zone, extending in southern mainland Australia into north-eastern Tasmania, and beneath King Sound in the north of Western Australia. In Australia, the last glacial maximum was not just a time of more intense aridity, but also a period when deserts were more extensive.

- *Changes in favourable patches within deserts*

Even within an arid or hyperarid landscape, external factors may selectively affect parts of the landscape. For instance, the reactivation

of dry lakes in the Willandra region (south west New South Wales) or of the rivers feeding Lake Eyre (e.g. Coopers Creek), reflects changes in winter or summer rainfall systems outside the arid zone, and the transport of floodwaters into these regions. For instance, Lake Mungo (one of the lakes in the Willandra system) held water at various times between 15,000–55,000 BP<sup>4</sup>, at a time when the surrounding landscape was more arid than today, because colder drier conditions produced more effective runoff in the southern highlands.

## The human histories of the deserts

Around 313 million people (or about 13% of the world's population) currently live in the world's arid zones – about four million in southern hemisphere deserts (Middleton et al.). In 2001 about 180,000 people lived in the centrally located arid zone of Australia. The Australian semi-arid zone supported a further 394,000 people. Overall the desert region of Australia is occupied by less than 600,000 people (or fewer than 3% of the total population) (Taylor).

All of the southern hemisphere deserts have remarkably long records of human settlement: more than 60,000 years in southern Africa, at least 35,000 years in Australia and about 13,000 years in South America. Current archaeological evidence suggests that the southern deserts were explored and colonised as part of the dispersal of modern humans across the globe. In southern Africa, the first sustained use of the Kalahari took place about 100,000 years ago at about the same time that evidence for anatomically-modern and behaviourally-modern humans appears in the archaeological record. In Australia and South America, initial human movement into the deserts took place as part of dispersal across new continents, by people who had already demonstrated the capacity to undertake successful sea crossings (Australia) or cross extreme high latitude cold environments (North America).

## Human ecology in deserts

Deserts are difficult environments for people because of their low biomass and scarcity of critical resources such as water, fuel, plant foods and game (though these factors vary

considerably across the southern deserts). They are also environments where resources are patchy and highly variable in both time and space:

- In Australian and southern African deserts, where there are significant plant and animal resources thinly distributed throughout the desert, it is the distribution of watering points that determines which parts of the desert landscape people can reach and where and when they can harvest available resources, whether these be stone, ochre, plant foods or game.
- Both the spatial distribution of these waters and the productivity of the surrounding country vary with rainfall. Rainfall events create unpredictable pulses of biological productivity, separated by long dormant periods. In deserts, much of the ecosystem is geared towards this pattern of 'boom and bust' or 'pulse and reserve' (Noy-Meir).

All of the southern hemisphere deserts were successfully settled by hunter-gatherers. For historic groups, the key adaptations for living in deserts were behavioural and social, rather than technological. They included high residential mobility, broad-spectrum foraging, a high degree of organisational and technological flexibility and intimate knowledge of the dynamics of the landscape. One other factor is also important here. Human dispersal is likely to be constrained by the difficulty of maintaining viable social networks when population levels are very low (as in most deserts). Historically, the Australian desert had some of the lowest population densities on record for human populations (as low as one person per 100–200 sq km). Under such conditions, effective social networks are important.

## The archaeology of southern deserts

The Namib and Kalahari preserve the earliest traces of people living in the southern deserts. Early Stone Age Acheulian hunters followed game and water into these areas about 300,000–400,000 years ago, wherever pans, springs or floodwaters provided accessible routes into the deserts. By 60,000–90,000 years ago (during the Middle Stone Age), there is good evidence for establishment of a resident hunter-gatherer population in the southern

Namib and in the northern part of the Kalahari Desert (the 'Middle Kalahari' basin). The first human movements into the Australian deserts took place sometime before 35,000 years ago, probably as part of initial peopling of the continent. By 45,000 years ago people were present on both the northern and south eastern margins of the Australian arid zone. By 30,000 BP, small groups of highly mobile hunter-gatherers were using pockets of country across the interior of the continent, from central Australia to the Pilbara (in the north of Western Australia), and from Lake Mungo to the southern Kimberley (Western Australia). Settlement of American deserts also took place in the context of initial human colonisation of a continent. Hunting groups moved into the Andes mountains as soon as the glaciers retreated. They followed the puna steppe grasslands south into the Atacama region, and had moved down into the deserts on either side of the Andes by 10,500–11,000 BP (13,000 years ago) – about the same time that Clovis hunters were moving into North American deserts such as the Mojave.

This picture is complicated by the dynamic environmental history of these regions – were they deserts when people first arrived? – as well as uncertainty about the nature of the earliest occupation in these extreme environments – are we looking at successful colonisation of these deserts, or simply intermittent visits by people? Successful settlement of a new region ('colonisation') may well have been preceded by an exploratory or pioneer phase ('dispersal').

## Colonisation of the Australian deserts

What sort of environment did people find when they entered the Australian deserts? Between about 100,000 and 13,000 years ago, the interior of the Australian land mass was more arid than present. The exception is the south-eastern section of the arid zone, where rivers and lakes in the Darling Basin and Willandra region (New South Wales) were more active during between 55,000 and 15,000 years ago. Elsewhere in the Australian desert region, most dates for enhanced fluvial activity (such as along channels feeding Lake Eyre) or high lake levels (e.g. Lake Eyre, Lake Gregory (far north Western Australia), and Lake Woods (Northern Territory)) centre on 100,000 years ago, or

earlier in the last interglacial. At this time, there were significant water bodies in playa lakes in the northern and eastern parts of the arid zone, but no evidence for palaeolakes in the western half of the desert. The last deep-water phase of Lake Eyre in central Australia ended 60,000 years ago, several millennia before humans arrived on the scene. The period between 60,000 and 24,000 years ago saw some reactivation of rivers and lakes outside the desert, and on its margins, but seems to have had only limited impact in central Australia, except perhaps at Lake Frome (South Australia).

There are several implications for the human ecology of the arid zone:

- the large palaeolakes, and major fluvial activity along arid zone rivers, both ended well before the first human movements into the desert (except in the Darling and Willandra regions, and at Lake Frome)
- apart from the Darling and Willandra lakes, the palaeolakes are unlikely to have ever held significant resources for people. Lake Frome, Lake Eyre, Lake Amadeus and Lake Lewis (Northern Territory) were saline or brackish bodies of water, notably without significant accumulations of fish bone or freshwater mussel shell along their shores
- current (limited) vegetation data are consistent with an arid vegetation over the last 100,000 years, indicating that terrestrial dryland resources would have been the mainstay of early settlement in the desert
- potable water may have been more widespread before 30,000 years ago, giving more flexibility to annual and seasonal subsistence movements in the desert.

By 30,000 years ago, people were using a range of habitats across this huge region including:

- montane and piedmont areas, such as the central Australian ranges (Puritjarra 32,000 BP; Kulpi Mara 29,500 BP) and the Pilbara (Newman rock-shelter >26,000 BP)
- sandy deserts (Serpents Glen >23,600 BP)
- karst landscapes, such as the Nullarbor Plain (Allens Cave 39,800 years ago)

- arid littoral regions such as the west coast of the continent at North West Cape (Mandu Mandu 34,000 BP; Pilgonaman Creek 32,000 BP)
- riverine or lake habitats in the south-eastern sector of the arid zone (Lake Mungo, 45,000–50,000 years ago).

There are also several early sites on the margins of the desert, in the southern Kimberley (Carpenter's Gap and Riwi, both dated 45,000 years ago), in an area incorporated into an expanded arid zone during the drier climates of the last glacial.

Most of these sites show repeated use over several millennia. Where there are data on economic orientation, they indicate these early groups were generalised foragers exploiting reptiles, small macropods, and emu eggs (supplemented with marine or lacustrine resources where available). In the Willandra, local exploitation of fish and shellfish probably reflects small-scale seasonal use of lacustrine resources, supplemented with terrestrial foods. At Puritjarra, in the west of central Australia (one of the few desert sites to have been investigated in detail) the evidence indicates sustained occupation of the central desert from about 35,000 years ago, with exploitation of regional ochre mines and local stone sources beginning around this time.

There are few indications, in these data, that archaeologists have yet uncovered the 'pioneer' phase associated with initial movements into the Australian deserts. Given that human dispersal across the continent took place before 45,000 years ago and that the northern margins of the arid zone were settled soon after, we could expect that the first movements into these deserts took place 35,000–45,000 years ago.

## **Regional abandonment: 20,000 BP**

The histories of the southern hemisphere deserts indicate that colonisation was not a discrete event but rather an ongoing process – involving expansion of settlement from core to peripheral areas within deserts, more intensive use of desert resources (especially plant foods),



and the gradual elaboration of social and economic landscapes. Human settlement also remained vulnerable to changes in environment, especially changes driven by major shifts in climatic parameters.

Intense aridity during the peak of the last glacial, centred on 20,000 BP, may have created difficult conditions for people in many parts of the arid zone. Palaeoenvironmental reconstructions for the period from about 30,000–19,000 years ago suggest increased seasonal and diurnal contrasts, saline groundwater, strong winds, an intensification of aridity and significantly lower mean annual air temperatures. This is likely to have led to a contraction of settlement in the arid zone, and abandonment of some regions, but researchers differ on the extent, scale and duration of any impact. Parts of the Western Desert and Lake Eyre basin may have been abandoned at this time – or in the period of rising global temperatures immediately after the glacial maximum. The clearest evidence for site abandonment is from Serpents Glen, in the Carnarvon Range (Western Australia), where there is a sterile layer, dating between 24,000 BP and 5,000 BP. In other regions, settlement appears to have continued. The Pilbara and central Australia both saw a reorganisation of land use at this time, with more focussed use of sites near water or in desert uplands. In western central Australia, people appear to have continued to visit Puritjarra rock shelter intermittently throughout the glacial maximum, suggesting that human occupation of the central ranges and the sandy desert immediately west of the ranges continued throughout this period.

## Post-glacial developments

The population of the Australian deserts increased again and re-occupation of abandoned regions took place as arid conditions ameliorated from about 13,000 BP. Nevertheless, all of the southern hemisphere deserts contain areas that were not effectively colonised until the last few millennia (such as the nitrate pampa in the Atacama, the gravel plains and mountains of the central Namib, the sand plain of the central Kalahari and some parts of the sandy deserts or continental dune fields in Australia).

In the Australian deserts, the last thousand years appears to have been a period of major change in the Western Desert and in central Australia. There are indications of more sedentary occupation or increased levels of site use at about 1,000 BP, possibly as part of a demographic transition towards higher regional populations in the Australian deserts. Recent work is beginning to refine this picture, showing that changes in settlement pattern may have begun as early as 3,000 BP. Even within the last millennium there is evidence for cultural change at a range of geographic and time scales, particularly within the last 500–200 years. Archaeological evidence also shows that many aspects of the technology, economy and subsistence behaviour of historic desert groups are relatively recent, rather than representing features of early desert occupation. Australian desert societies have long histories of development, adaptation and response to life in these extreme environments.

## Endnotes

- 1 This article is adapted from material previously published in Smith, M A & Hesse, P (eds.) *23°S: Archaeology & environmental history of the Southern Deserts*, Canberra, National Museum of Australia Press, 2005.
- 2 Includes the Great Sandy, Little Sandy, Gibson and Great Victoria deserts.
- 3 Includes the Tanami, Simpson and Strzelecki deserts.
- 4 Before 1950, being the accepted radiocarbon dating reference year.

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# Desert wildlife of Australia

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Australia contains the largest desert region in the southern hemisphere and a high proportion (around 70%) of the continent is arid or semi-arid (map S1). Australia's deserts support a rich and diverse array of plants and animals many of which do not occur elsewhere in the world. Although Australia's deserts are not among the world's driest (see *Climatic aspects of Australia's deserts*), the timing of rainfall in Australian deserts is highly unpredictable on a world-scale. The overlying pattern of long dry periods followed by pulses of flooding rain and associated primary productivity (i.e. plant growth) is a feature of desert life to which plants and animals have adapted. Other aspects of the Australian deserts that influence the plants and animals include the low fertility and great age of the soils, presence of perennial vegetation, very limited natural erosion, and the major role of fire in desert environments.

## Vegetation of the Australian deserts

### Grasslands

Grasslands occur mostly in the northern portion of the arid zone (north of the Tropic of Capricorn), in predominately summer-rainfall areas. There are two principal grassland types.

#### **Hummock grasslands (spinifex)**

Spinifex habitats are dominated by hummock-forming, hard-leaved grasses mainly in the genus *Triodia*. This growth-form is largely confined to Australia and is regarded by some as a response to low nutrient soils and to aridity. Spinifex is more or less confined to the arid interior, in places where average annual rainfall varies from 125 mm to 500 mm – an area representing as much as one quarter of the Australian landscape. The range of habitats occupied by spinifex grasslands includes infertile sand plains and dune fields, rocky hills and mountain range slopes, as well as

normally-dry watercourses and salt lake systems (images S12 and S13). Spinifex grasslands are highly flammable and burn regularly. They remain the central focus of the burning practice of Indigenous Australians. This habitat is usually characterised by the presence of various fire-tolerant shrubs (mainly mallee eucalypts, hakeas and grevilleas). Aboriginal people target several of these species, especially honey grevillea (*Grevillea juncifolia*), for their honey-producing flowers.

#### **Heavy-soil tussock (tufted) grasslands**

Treeless tussock (tufted) grasslands characterise the relatively fertile, gilgai-forming cracking clay plains of inland Australia. Soils are alkaline in nature, primarily being derived from basalt or limestone. Large, soft-leaved, summer-growing perennial grasses, notably species of Mitchell grass, Queensland bluegrass and wire grass characterise this vegetation. In dry times the spaces between tussocks are normally bare which contrasts markedly with the carpet of short grasses and broad-leaved herbs (mainly daisies, legumes and copper burrs) that results from the onset of good rains (image S14). The pastoral value of these grasslands has long been recognised, and intensive stocking in some areas has had dramatic effects on species composition.

#### **Low woodlands/shrublands**

Low woodland/shrubland formations occur largely in the southern half of the arid zone, in areas receiving both summer and winter rainfall. These habitats are variously dominated by a range of *Acacia* species.

#### **Mulga**

Mulga habitats (characterised by *Acacia aneura*) are estimated to occupy as much as 20% of the Australian continent, with their range extending from inland Western Australia, across the arid Australian interior, to western New South Wales and south-west Queensland. The continental distribution of mulga is reportedly



S12 *Spinifex* hummock grassland on rocky range habitat in central Australia. Photograph by Catherine Nano.



S13 *Spinifex* hummock grassland on sand plain habitat in central Australia. Photograph by Catherine Nano.





S14 Flowering of annual and ephemeral daisies and other herbs in central Australia. Photograph by Catherine Nano.



S15 Mulga shrubland in central Australia. Photograph by Catherine Nano.

foremost related to climate, with its occurrence coinciding with areas receiving between 200 mm and 500 mm of rainfall per year. This species can occur as the sole shrub dominant, or with a mixture of other shrubs or trees (image S15). On a local scale, the occurrence of mulga (both on hills and plains) relates to the combined influence of soil (being largely confined to neutral-acidic substrates with a relatively high moisture status) and fire effects (being absent from frequently-burnt areas). Mulga varies greatly in terms of its spatial patterning on plains – in some areas forming continuous stands, while in others (especially gently sloping areas) occurring as discrete bands ('groves') interspersed with other vegetation types. Compared with spinifex, mulga rarely burns and is intolerant of repeated firing. Evidence suggests that Indigenous Australians have never focussed burning in mulga. Identified common threats throughout mulga lands include clearing, grazing, excessive levels of firing, and firewood extraction.

### **Other low woodlands**

Other low woodlands characterise the eastern edges of the arid zone. Prominent examples include gidyea (*Acacia georginae* and *A. cambagei*); brigalow (*Acacia harpophylla*); ironwood (*A. excelsa*); and *Casuarina cristata*. In all cases, the understorey is highly variable, ranging from a dominance of short-lived grasses in some areas to a greater abundance of chenopod herbs and shrubs in others. Witchetty bush (*Acacia kempeana*) is another prominent central Australian shrubland species, known especially for the grubs it houses that are a prized food-source for Indigenous peoples. It is widespread throughout central Australia, occurring on calcareous- and skeletal-soils on igneous rocks and on well-drained red earth soils.

### **Woodlands**

River Red Gum (*Eucalyptus camaldulensis*) occurs along usually-dry arid-land channels. In the major channels, this species occurs as the single dominant tree, while in the smaller channels it forms mixed stands with a range of species including ironwood (*A. estrophiolata*), mulga and coolibah (*E. coolibah*). Characteristic associated native grass species include curly windmill grass, cane grass, silky browntop and kerosene grass. These habitats are of critical importance for hollow-dependent animals (e.g. parrots, bats). They are, however,

badly infested with the highly invasive couch and buffel grasses, both of which are known to significantly alter habitat quality and fire frequency.

### **Chenopod shrublands**

Chenopod shrublands are virtually absent from the northern half of the arid zone. In the south, they are mainly restricted to areas characterised by alkaline, salty clay soils and are a highly characteristic feature of gibber plains of the south-east portion. These shrublands are dominated by drought- and salt-tolerant low shrubs, these being mainly saltbush (*Atriplex*), copper burr (*Scleroleana*); bluebush and cottonbush (*Maireana*) and samphire (*Halosarcia*). All communities also characteristically support a grass-dominated ground flora. Most chenopod species are palatable to stock and many shrublands have been subjected to heavy grazing over the last 100 years and are now highly degraded. Many of the species belonging to this habitat are now listed as threatened.

### **Wetlands**

#### **Permanent and semi-permanent freshwater habitats**

Permanent and semi-permanent freshwater habitats are extremely rare throughout the arid zone. Prominent examples include spring-fed rock pools in sandstone gorges; temporary lagoons and waterholes along watercourses and persistent deep rock pools. These wetlands act as refuges for drought-intolerant plants such as ferns and sedges and they support a disproportionately high number of rare and threatened species.

#### **Saline lakes**

Desert claypans form shallow temporary lakes after rainfall. These lakes are highly variable, both spatially and temporally in terms of their salt concentration – this in turn has a pronounced influence over the type and amount of vegetation present at any one site. Although some individual lakes are themselves extensive (e.g. Lake Eyre in South Australia), inland salt lakes together comprise only a very small proportion of the Australian desert landscape. The ability to tolerate both high salt concentrations and desiccation are critical requirements for any plant to survive salt lake habitats.

## Mound springs

Natural springs form when highly mineralised artesian water reaches the surface through fault lines in overlying rock. Mounds occur when the minerals concentrate at the ground surface through evaporation. These habitats are themselves extremely rare and support a unique plant community comprised of reeds, grasses, green algae and various salt-tolerant shrubs. They also support various rare plant species (e.g. button grass) and a great number of aquatic invertebrates and fishes that occur nowhere else. Many springs have completely disappeared over the last 100 years, due to excessive levels of underground water extraction for farming purposes.

## Richness of plant and animal groups

### Plants

The Australian desert flora consists of a relatively small number of species compared with the flora of more temperate regions of the continent.

Ferns are poorly represented among Australian desert plants. Where present, desert ferns mainly occur in refuge areas that are fire protected and where moisture levels are relatively high. Examples of such sites include rock pools in the MacDonnell Ranges of central Australia.

Gymnosperms (seed plants that lack ovaries) are likewise extremely limited in Australian deserts. Cypress pines (genus *Callitris*) and the Macdonnell Ranges cycad are among the few gymnosperms in Australian desert landscapes.

Angiosperm (flowering plant) families with the highest representation in arid Australia are Myrtaceae (e.g. the eucalypts); Asteraceae (daisies); Mimosaceae (mainly wattles); Poaceae (grasses); Fabaceae (peas); and Chenopodiaceae (e.g. saltbush, bluebush and cottonbush). Families that are notably poorly represented (c.f. more temperate areas of the continent) are Orchidaceae (orchids); Epacridaceae (heath family) and Rutaceae.

The genus *Acacia* dominates the desert flora in terms of species richness. Other prominent groups include *Eremophila* (native fushias) – most species of which occur only in the arid zone; *Eucalyptus* and *Goodenia*.

About 50 Australian desert genera also occur in the other hot desert regions of the world. Prominent examples of highly ubiquitous desert-dwelling families include: Amaranthaceae (includes the showy mulla mulla wild flowers); Boraginaceae (the borage family); Caesalpiniaceae (the *Senna* family); Chenopodiaceae (the salt bushes); Euphorbiaceae (spurge family) and Brassicaceae (the *Brassica* family).

### Animals

Richness of most animal groups is lower in the Australian desert region than in coastal areas (table S16). However, most families of Australian animals are found in the deserts.

**S16 ANIMAL SPECIES THAT OCCUR IN AUSTRALIA'S DESERTS**

	Australian species	Species in arid Australia
Vertebrates		
Frogs	210	42
Reptiles	800	210
Birds	760	230
Mammals	360	95
Invertebrates		
Cicadas	202	32
Butterflies	397	92

Source: Stafford Smith & Morton (1990), Menkhorst & Knight (2001), Moulds (1990), Cogger (2000), Slater, Slater & Slater (2000), Braby (2000).

Knowledge of richness and diversity of the invertebrate fauna is poor across Australia, but this is especially the case in Australian deserts. However, insects are clearly the largest group of desert animals in Australia in terms of number of species and biomass. Some groups, such as termites and ants, are abundant and play an important role in ecosystem functioning. Groups of invertebrates that rely on freshwater do occur in the arid zone but generally there are significantly less species than in coastal regions. Aquatic molluscs and crustaceans are present where there is permanent or semi-permanent water. The aquatic insect fauna includes species that rely on water for the entire life cycle (such as water scorpions and water striders) and others that have aquatic larvae (e.g. dragonflies).

Freshwater fish occur in streams, waterholes, and free-standing water associated with artesian springs and bores in the Australian

deserts. The number of species present is often surprisingly high. For instance, 34 native species occur in the Lake Eyre catchment and some species have a very restricted distribution (e.g. the Dalhousie hardyhead occurs in seven streams in the vicinity of Dalhousie Springs, in the far north of South Australia).

Frogs are not commonly encountered in Australia's deserts except after significant rainfall. However, over 40 species have been recorded. Some species occur in vegetation surrounding permanent or semi-permanent freshwater. Others occupy claypans and sand plain environments and are active only for brief periods following rain.

The reptile fauna of the Australian deserts is very rich and contains some unique species such as the thorny devil. Goannas, skinks, dragons and geckoes are prominent groups in the desert fauna. The desert lizard fauna of Australia is the richest of any desert area in the world. Some sites in central Australia have over 40 lizard species at a density of over 400 individuals per hectare.

Over 200 bird species are recorded from Australia's deserts. Many of these species are widespread across the continent being found in moister areas closer to the coast. About 40 species can be considered to be largely restricted to desert habitat.

About 95 mammal species occurred in the Australian deserts at the time of European settlement. However, the desert mammal fauna has suffered a very high extinction rate (table S17). Among the surviving species, rodents, insect-eating bats, carnivorous marsupials, and macropods (kangaroos and wallabies) are prominent.

## Adaptations of desert wildlife

Among the extreme environmental conditions experienced by plants and animals in Australia's deserts are aridity, heat and salinity. Plants and animals have evolved a range of morphological, behavioural and physiological adaptations to enable persistence and reproduction in desert environments.

### S.17 MAMMAL SPECIES THAT HAVE BECOME EXTINCT IN AUSTRALIA'S DESERTS(a)

Status	Common name	Scientific name	
Extinct throughout Australia	Desert bandicoot	<i>Perameles eremiana</i>	
	Lesser bilby	<i>Macrotis leucura</i>	
	Pig-footed bandicoot	<i>Chaeropus ecaudatus</i>	
	Desert rat-kangaroo	<i>Caloprymnus campestris</i>	
	Eastern hare wallaby	<i>Lagorchestes leporides</i>	
	Central hare wallaby	<i>Lagorchestes asomatus</i>	
	Crescent nailtail wallaby	<i>Onychogalea lunata</i>	
	Lesser stick-nest rat	<i>Leporillus apicalis</i>	
	Short-tailed hopping-mouse	<i>Notomys amplus</i>	
	Long-tailed hopping-mouse	<i>Notomys longicaudatus</i>	
	Gould's mouse	<i>Pseudomys gouldi</i>	
	Extinct in arid and semi-arid Australia(b)	Lesser stick-nest rat	<i>Leporillus apicalis</i>
		Western quoll	<i>Dasyurus geoffroii</i>
		Red-tailed phascogale	<i>Phascogale calura</i>
Numbat		<i>Myrmecobius fasciatus</i>	
Golden bandicoot		<i>Isoodon auratus</i>	
Western barred bandicoot		<i>Perameles bougainville</i>	
Burrowing bettong		<i>Bettongia lesueur</i>	
Brush-tailed bettong		<i>Bettongia penicillata</i>	
Mala		<i>Lagorchestes hirsutus</i>	
Alice Springs mouse		<i>Pseudomys fieldi</i>	
Greater stick-nest rat	<i>Leporillus conditor</i>		

(a) Since European settlement in 1788. (b) Present elsewhere in Australia.

Source: Menkhorst and Knight (2001).



## Plant adaptations

### Water stress

The response of plants to the unpredictability of rainfall in Australian deserts can be broadly classed as drought tolerance or drought avoidance.

Drought tolerance is achieved by several means. Certain perennial plants (known as xerophytes) have a physical structure that promotes water storage and conservative water use, enabling them to thrive in areas where water is usually scarce. Classic features of xerophytic plants include: sclerophyllous (hard) leaves with a waxy or hairy surface and few and sunken stomata or greatly-reduced leaves (cladodes, e.g. in desert oak) to minimise water loss; succulent leaves and stems or fleshy underground tubers for water storage (e.g. parakeelya); and a deep root system for access to subterranean water supply or a shallow root system to enable rapid uptake of moisture when it suddenly becomes available after rainfall. In desert Acacias, the leaflets are suppressed and phyllodes (modified leaf-stems) perform the task of leaves. These structures are vertically flattened and oriented towards the ground, reducing the amount of light interception and hence water loss. All spinifex species are likewise classified as xerophytic, given their tough, pungent-pointed, sclerophyllous and narrow leaves.

Other species achieve drought tolerance by carrying out photosynthesis using a metabolic pathway that involves production of a four-carbon molecule. This metabolic pathway is known as  $C_4$  photosynthesis and the plants that use it are referred to as  $C_4$  plants. In contrast, the great majority of plants (approximately 99% of all plant species) are  $C_3$  plants that produce a three-carbon molecule during photosynthesis.  $C_4$  photosynthesis offers a competitive advantage over  $C_3$  photosynthesis under conditions of drought, high temperatures and nitrogen limitation. In simple terms, the  $C_4$  cycle leads to an increased concentration of  $CO_2$  within the plant leaves which in turn increases the amount of photosynthesis and decreases the chances of organic material and energy loss from the plant.

Desert perennials can avoid death through moisture stress by remaining dormant during dry periods then 'springing to life' when water is suddenly available. This 'strategy' is

prominent in many perennial tussock grass species that have a very short growing season (e.g. woollybutt, neverfail, Michell grass and kerosene grass). Certain arid zone tree species (e.g. kurrajong and bats wing coral tree) likewise exhibit this 'deciduous' drought response.

For the short-lived (ephemerals, annuals and biennials) species, drought avoidance is achieved by remaining in seed-form throughout dry periods and undergoing rapid vegetative growth and reproduction only under relatively non-arid conditions following major rainfall events. For these drought evaders, population persistence is dependent on the successful transition between the most resistant life stage (the dormant seed) and the most sensitive stage (the seedling). For this reason, 'bet-hedging strategies' can be of critical importance. Such strategies may include long-term seed bank establishment, staggered seed bank release, and a delayed response to moisture availability, meaning that germination is restricted to large rainfall events only.

### High salinity

Mechanisms for coping with saline environments likewise take the form of tolerance (halophytes) or avoidance (facultative halophytes) strategies. Certain species are able to excrete excess salts through their leaves by way of maintaining a normal internal salt concentration. For other species such as bladder saltbush, it has been shown that growth is actually stimulated by the presence of sodium chloride salts. Avoidance of the negative effects of high salt environments is achieved by short-lived plants that quickly complete their life cycle during periods immediately following major rainfall events when the salt concentration is low.

## Animal adaptations

### Nocturnal activity

Most of Australia's desert fauna is active at night. Among vertebrates, only birds do not contain a significant portion of nocturnal species. Almost all mammals are nocturnal and almost 50% of reptile species. Nocturnal activity enables species to avoid daytime extremes in temperature.

## **Burrowing**

Many desert animals in Australia shelter in burrows during the day. Although the soil surface is the hottest place in desert environments, areas below the surface are significantly cooler, have higher humidity, experience no sunlight, and also experience lower levels of infrared radiation. Although heat does penetrate the soil surface it does so slowly such that soil below the surface is at its warmest at night and at its coolest during the day.

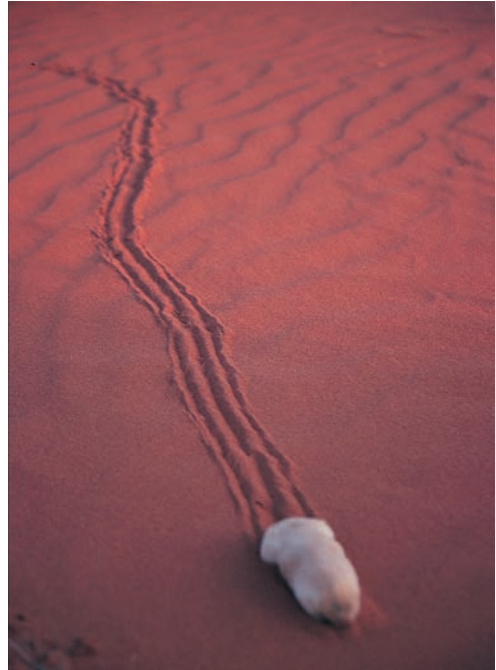
Burrow size and structure is highly variable ranging from the single entrance burrows of sand goannas to elaborate communal structures built by species such as the great desert skink. This lizard builds large communal burrow systems that consist of a network of connected burrows to a depth of over 1 metre (m) and 10 m in diameter with five to ten entrances. The slit spider from the Simpson Desert builds a horizontal slit (3 mm high by 39 mm wide) in consolidated sand especially on dune crests. This species is the only spider known to construct its own crevices without the use of silk.

## **Subterranean life**

Although many desert animals burrow underground, most forage above the surface. Among mammals, the marsupial-mole is an extreme and unique animal which spends its life entirely underground literally 'swimming' through the sand (image S18). This small marsupial (14 centimetres (cm) body length) is tubular in appearance and has a host of adaptations for coping with a life spent in sand including being blind, possessing tiny ears, spade-like front claws, a backward opening pouch and short fur. Very little is known about it because those individuals that appear periodically above the ground are likely to be sick and not displaying typical behaviour. Nonetheless, it may well be a common desert animal given that Australian deserts contain almost 2 million sq km of sand habitat.

## **Behavioural control of temperature**

Each animal group has a narrow range of temperatures within which individuals can survive. For example, birds maintain body temperatures at between 40–42°C and are likely to perish once the temperature rises above 46°C. Animals must maintain energy budgets so that heat gain and loss (through metabolism, conduction, convection, infrared radiation,



*S18 Like many desert animals, the marsupial mole (Notoryctestyplops) survives extremes of temperature by living underground. Photograph by Mike Gillam.*

evaporation and sunlight) is balanced and body temperatures are maintained at near optimum levels. Behavioural selection of suitable microclimates is used by many day-active lizards to avoid heat stress. Dragon lizards change body position relative to the sun during the course of the day, decreasing the body area receiving sunlight when air temperatures are high. Climbing species of dragon lizards increase perch height when air temperatures increase whereas non-climbing species move to the shade of vegetation.

## **Water from food, concentrated urine and salt tolerance**

The majority of desert animals are able to obtain sufficient water from food and metabolic water (i.e. water produced as a by-product of digestion of food). Species that feed on foliage, nectar, or other animals can generally readily obtain enough water for survival and reproduction. However, some animals such as the spinifex hopping-mouse and the sandy inland mouse are able to subsist and obtain

sufficient moisture on a diet entirely of seeds. Animals lose moisture when metabolic waste is released from the body as faeces or urine. The ability to concentrate urine reduces the amount of water that is lost from the animal when metabolic waste is released. Among vertebrates, mammals are the most efficient at producing concentrated urine and desert mammals in particular are highly effective at doing so. The spinifex hopping-mouse and the sandy inland mouse produce the most concentrated urine known for any mammals and also very dry faeces.

### ***Aestivation, torpor and hibernation***

Aestivation, torpor, and hibernation are physiological adaptations that enable animals to survive extreme climatic conditions by reducing their body temperature, energy expenditure and water loss. Hibernation and aestivation are broadly similar processes that involve long-term (weeks or months) inactivity and reduced metabolic rate. Aestivation usually occurs in aquatic or semi-aquatic species such as snails, frogs or lungfish, and is a response to drying of the environment. Torpor is a response to reduced food availability but typically lasts only a few hours. All three of these processes are a common feature of desert life.

Aestivation is a response to aridity exhibited by some Australian desert frogs. These species undergo aestivation in burrows dug into the soil of sandy watercourses or claypans to a depth ranging from 30 cm to 170 cm (depending on the species). At the onset of aestivation a frog assumes a water-conserving posture and becomes inactive. Within a week, a thin, transparent cocoon begins to form over it which covers the entire body surface and consists of multiple layers of sheets of cells. The cocoon reduces water loss. The frogs remain in these cocoons for months or years and do not become active again until sufficient rain falls. Then the frogs break through the cocoon and make their way to the surface to feed and mate in temporary pools of water.

### ***Rapid reproduction***

The unpredictable nature of rainfall in the Australian deserts means that many desert animals possess life histories that enable them to exploit the peaks in primary productivity (plant growth, flowering and seeding) that

occur soon after heavy rain. Population densities of some Australian desert rodents increase markedly after heavy rainfall. Following increases in primary productivity many rodents increase in abundance following a time-lag and move into areas of plentiful food. At these times rodents are a prominent feature of the desert landscape. Once conditions begin to dry and primary productivity declines, these rodents then show a sharp drop in numbers, again after a lag in time. Within 12–24 months, numbers may return to the original low levels. These cycles are referred to as 'boom-bust' cycles and they are a feature of species such as the long-haired rat and spinifex hopping-mouse.

The temporary waterbodies that form after rain, such as when salt pans and clay pans become filled with water, attract a wide variety of animals. Crustacea, such as tadpole and shield shrimps, appear in pools within a few days of rain. Desert crustaceans have a rapid life cycle and when conditions dry out, eggs become desiccated and remain dehydrated and inactive on the desert floor for years until the next rains arrive. The increase in numbers of aquatic invertebrates can in turn attract large numbers of waterbirds that quickly establish at temporary wetlands and begin breeding. Some lake systems can support massive numbers of waterbirds at these times (e.g. Lake Eyre may have 325,000 waterbirds of 44 species at such a time).

## **Threats to Australia's deserts**

The impact of European settlement on Australia's deserts has been profound. The establishment of significant human settlement and extensive sheep and cattle grazing, the removal of Indigenous peoples and their alienation from their ancestral lands, and the introduction of plants and animals have all had a profound influence on desert wildlife. In Australia, unlike other arid regions, there has not been a process of desertification (i.e. spread of the desert) and much of the desert landscape remains intact. The most obvious signs of recent human impacts on Australian deserts have been the extinction of native plants and animals, the invasion of introduced species, and changes in the timing and extent of natural processes such as fire.

## Case studies

### Desert rock and desert sand

Australia is the world's lowest and flattest continent, therefore, people are often surprised to learn that mountain ranges are a prominent feature of some of Australia's deserts. Extensive mountain ranges include the MacDonnell Ranges (surrounding Alice Springs), Hammersley Ranges (part of the Western Plateau), and Musgrave Ranges. Mountain ranges are significant not only from a geographical perspective but also because of the influence they exert on climatic conditions. Compared with surrounding areas, desert mountain ranges may experience increased rainfall, more stable temperatures, and often support permanent or semi-permanent waterholes.

From the perspective of a plant or animal, desert rock habitat offers different opportunities and increased stability compared to other desert environments, particularly the sand environments that dominate much of Australia. Rock surfaces do not warm during the day to the same extent as sand surfaces and food resource availability is also not as patchy. Rock habitat has an abundance of shelter sites such as caves, crevices and rock overhangs that provide stable microclimates. For example, temperature within a cave in the MacDonnell Ranges measured every four hours for a 12-month period varied only from 16–30.5°C whereas outside temperature ranged from –6–40.8°C.

Mammal and bird species that occupy desert range habitats tend to have smaller and more stable home ranges and turnover of individuals is lower than those in sand environments. Range environments also function as refuge sites for some plant species that evolved during wetter periods.

### Mulga-spinifex mosaics in arid central Australia

Mulga and spinifex habitats together characterise a large part of central Australia. Abrupt boundaries often form between these two vegetation types, giving rise to a mosaic pattern of contrasting shrub-grass alterations across the landscape (image S19). Concerns for the long-term stability of these mosaics result from ongoing claims that fire-intolerant mulga shrubland is being converted into fire-encouraged spinifex grassland. It is thought that the shift relates directly to a modern-day increase in the frequency of wildfire incursion into mulga habitat due to the near cessation of the 'patch-burning' practice of Indigenous Australians. Actual evidence for such a change is, however, scant and somewhat contradictory, reflecting the ongoing difficulties associated with the separation of cause and effect in the absence of long-term data sets. Recent work on mulga-spinifex mosaics on central Australian mountain ranges and dune fields examined the relative importance of physical habitat characteristics (e.g. soil, slope, aspect) from fire effects for shrub-grass boundary positioning. This work showed that mulga contraction in these areas has in fact been minimal over the last half-century, meaning that boundaries are highly stable. It demonstrated further, that patterning in these mosaics results from the combined influence of gradients in site physical characteristics (especially soil type), firing, as well as a range of biological factors such as competition, animal-mediated dispersal and facilitation (shrub 'island' effects). Overall, the study emphasised that although mulga is more resistant to fire-mediated contraction than previously recognised, the quality and integrity of mulga habitat can be undermined by too-frequent firing.





S19 Mulga-spinifex mosaic in central Australia. Photograph by Catherine Nano.

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# 1

## GEOGRAPHY AND CLIMATE

*This chapter was contributed by the Australian Bureau of Meteorology (September 2005).*

Australia is the largest, flattest and, apart from Antarctica, the driest of the continents. The first part of this chapter describes Australia's landforms and their history in terms of how they were formed. The second part discusses Australia's wide range of climate conditions.

The island continent of Australia features a wide range of climatic zones, from the tropical regions of the north, through the arid expanses of the interior, to the temperate regions of the south. Australia experiences many of nature's more extreme phenomena; including droughts, floods, tropical cyclones, severe storms, bushfires, and the occasional tornado. Each of these phenomena is discussed in this chapter.

Temperatures in Australia were relatively stable from 1910 to 1950. Since then both minimum and maximum temperatures have shown an increasing trend, with an overall increase from 1910 to 2004 of approximately 0.7°C. The acceleration in the warming trend that has occurred in the late-20th century has been largely attributed to the enhanced greenhouse effect.

# Geography of Australia

## Position and area

Australia comprises a land area of almost 7.7 million square kilometres (sq km) (table 1.1). The bulk of the Australian land mass lies between latitudes 10 degrees 41 minutes (10°41') south (Cape York, Queensland) and 43°38' south (South East Cape, Tasmania), and between longitudes 113°09' east (Steep Point, Western Australia) and 153°38' east (Cape Byron, New South Wales). The most southerly point on the mainland is South Point (Wilsons Promontory, Victoria) at 39°08' south. The latitudinal distance from Cape York to South Point is about 3,180 kilometres (km), and to South East Cape 3,680 km, while the longitudinal distance between Steep Point and Cape Byron is about 4,000 km.

In a jurisdictional and economic sense, Australia extends well beyond the mainland continent and Tasmania, including about 12,000 islands. There are many near-coastal islands which are parts of states or the Northern Territory, the largest being Melville Island (Northern Territory) at 5,786 sq km. Other major near-coastal islands include Kangaroo Island (South Australia), King and Flinders Islands (Tasmania), Bathurst Island and Groote Eylandt (Northern Territory) and the Torres Strait Islands (Queensland).

Australia also has jurisdiction over a large number of islands remote from the coast. Some of these, such as Macquarie Island (Tasmania) and Lord

Howe Island (New South Wales) are legally parts of states, but many are included in separate territories such as the Cocos Islands, Heard and McDonald Islands, Norfolk Island, Christmas Island, the Coral Sea Islands and Ashmore and Cartier Islands. Australia also administers a portion of Antarctica, the Australian Antarctic Territory. While most of these islands are small, the United Nations Convention on the Law of the Sea allows Australia jurisdiction over large tracts of the ocean and seafloor that surround them (see the *Forestry and Fishing* chapter).

Australia has an Exclusive Economic Zone (EEZ) that is 200 nautical miles (370.4 km) wide, and also incorporates areas of the continental shelf outside the 200-mile boundary. This is measured from the lowest astronomical tide, defined as the lowest level that sea level can be predicted to fall to under normal meteorological conditions. Where the boundary overlaps with potential boundaries of other countries (such as Papua New Guinea, Indonesia, East Timor and some French island territories), a boundary has to be negotiated. The EEZ gives Australia jurisdiction over a marine area of some ten million sq km.

The land area of Australia is almost as great as that of the continental United States of America (excluding Alaska and Hawaii), about twice the size of the European Union, and 32 times greater than that of the United Kingdom. Tables 1.2 and 1.3 show the area of Australia relative to that of other continents and selected countries.

### 1.1 AREA, COASTLINE, TROPICAL AND TEMPERATE ZONES

	Estimated area			Proportion of total area		
	Total	Total area	Length of coastline(a)	Tropical zone	Temperate zone	
	sq km	%		%	%	
New South Wales	800 642	10.4	2 137	..	100	
Victoria	227 416	3.0	2 512	..	100	
Queensland	1 730 648	22.5	13 347	54	46	
South Australia	983 482	12.7	5 067	..	100	
Western Australia	2 529 875	33.0	20 781	37	63	
Tasmania	68 401	0.9	4 882	..	100	
Northern Territory	1 349 129	17.5	10 953	81	19	
Australian Capital Territory	2 358	(b)	..	..	100	
Jervis Bay Territory	73	(b)	57	..	100	
<b>Australia</b>	<b>7 692 024</b>	<b>100.0</b>	<b>59 736</b>	<b>39</b>	<b>61</b>	

(a) Includes islands. (b) Less than 0.1%.

Source: Australian Bureau of Meteorology; Geoscience Australia 2002, Geoscience Australia, Canberra, last viewed 14 October 2005, <<http://www.ga.gov.au>>.

## 1.2 AREAS OF CONTINENTS

	'000 sq km
Continents	
Asia	44 900
Africa	30 300
North America	24 700
South America	17 800
Antarctica	14 000
Europe	9 900
Australia and Oceania	8 500
Total landmass	150 100

Source: *Encyclopedia Britannica*.

## 1.3 AREAS OF SELECTED COUNTRIES

	'000 sq km
COUNTRIES (SEVEN LARGEST)	
Russia	17 075
Canada	9 971
United States of America	9 809
China	9 556
Brazil	8 512
Australia	7 692
India	3 204
SELECTED OTHER COUNTRIES	
East Timor	14
France	547
Germany	357
Indonesia	1 904
Japan	377
Malaysia	330
Papua New Guinea	462
New Zealand	268
Philippines	299
United Kingdom	242

Source: *Encyclopedia Britannica*.

## Australia's topography

Australia is the lowest, flattest and, apart from Antarctica, the driest of the continents. Unlike Europe and North America, where some landscapes date back to only around 10–20,000 years ago, when great ice sheets retreated, the age of landforms in Australia is generally measured in many millions of years. This gives Australia a very distinctive physical geography.

Map 1.4 shows the elevation of the Australian continent. Most of the continent is at a relatively low elevation, with less than 1% of the country above 1,000 metres elevation. Elevations exceeding 2,000 metres are found only in the Snowy Mountains of New South Wales, with the highest peak being Mt. Kosciuszko (2,228 metres). Higher peaks are found in some external

territories, with Mawson Peak on Heard Island reaching 2,745 metres, and much of the Antarctic plateau is above 3,000 metres.

The mainland continent can be divided into three large areas:

- the Western Plateau
- the Central Lowlands
- the Eastern Highlands.

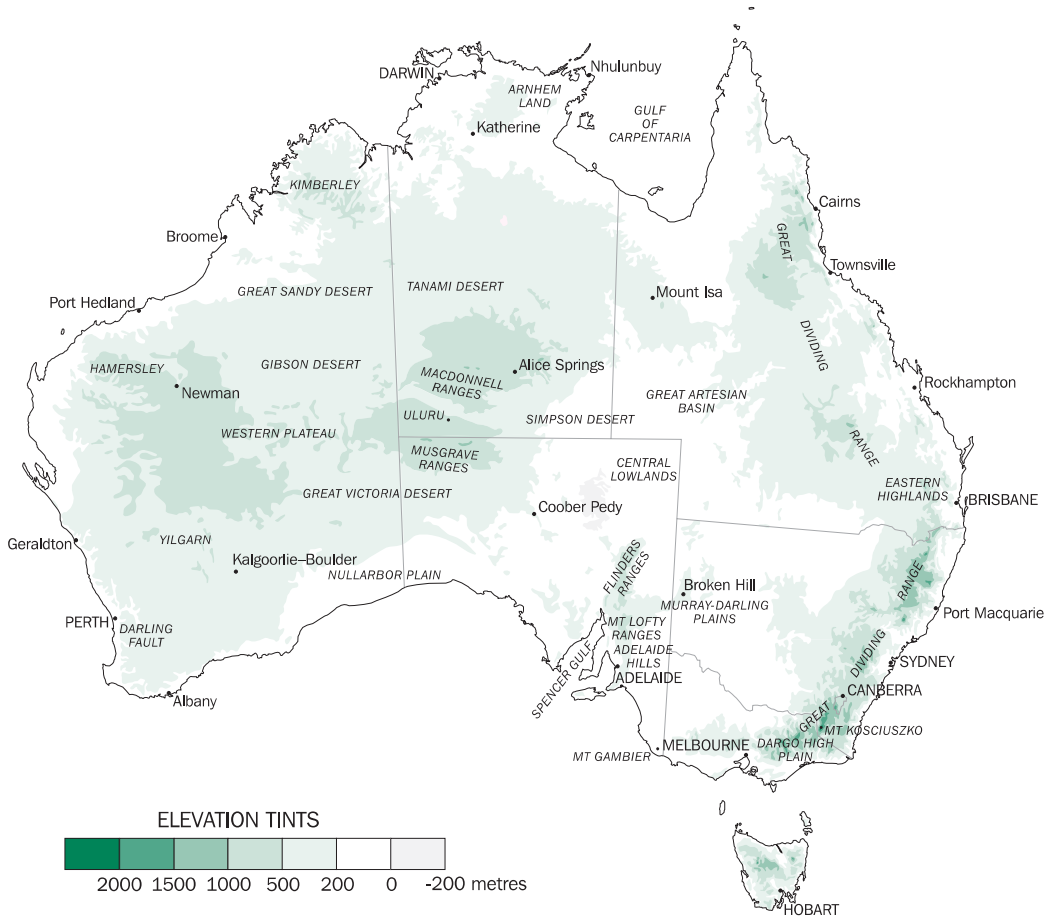
The areas have no defined boundaries, however, an indication of the location and size of each of the regions can be obtained from the following description of each of the areas with reference to map 1.4.

Much of the Western Plateau is relatively flat. There are, however, numerous more rugged areas near the coastal boundaries of the Plateau, including the Kimberley region and Hamersley Ranges in Western Australia, as well as a number of relatively isolated ranges in central Australia (such as the Macdonnell and Musgrave Ranges) and individual mountains, of which Uluru (Ayers Rock) is probably the best known.

The Central Lowlands stretch from the Gulf of Carpentaria through the Great Artesian Basin to the Murray-Darling Plains. Most of this area is flat and low-lying. The main exception occurs in South Australia, where relatively recent faulting has occurred, and the area takes the form of a number of blocks which have been moved up to form a series of ranges (e.g. the Flinders Ranges and Adelaide Hills), with the down-faulted blocks in between forming plains, some of them submerged (e.g. Spencer Gulf). Much of the Central Lowlands is occupied by the Great Artesian Basin, which consists of sedimentary rocks which hold water that enters in the wetter Eastern Highlands.

The Eastern Highlands, stretching along most of the length of the east coast, are characterised over much of their length by a steep escarpment on the coastal side, a series of high plateaus, and then more gentle sloping towards the inland. While the highest elevations (over 1,800 metres) are found in the Snowy Mountains and Victorian Alps, many of the plateaus further north in New South Wales exceed 1,000 metres elevation. In Queensland, however, 1,000 metres is only reached in a few locations and the highlands are generally less pronounced.

## 1.4 ELEVATION



Source: Australian Surveying and Land Information Group, 1996.

The coastal escarpment is particularly marked along much of the New South Wales and southern Queensland coast, as well as more isolated ranges further north, such as those around Cairns. Australia's highest waterfalls (Wollombi on the Macleay, Wallaman Falls on a tributary of the Herbert, Barron Falls near Cairns, and Wentworth Falls in the Blue Mountains) occur where rivers flow over this escarpment. In the Victorian part of the highlands, the old plateau has been eroded into separate ranges and high plains, and is relatively steep on both the coastal and inland sides. Between the escarpment and the coast lies a coastal strip, sometimes flat but quite hilly in many places, and rarely more than 100 km wide.

As a result of the plateau-like nature of much of the Eastern Highlands, the Great Dividing Range, which separates rivers flowing to central Australia or the Murray-Darling Basin from those flowing to the Pacific Ocean or Bass Strait, is not very pronounced in most locations. In some places, such as the northern Snowy Mountains and Brindabella Ranges, the highest ranges do not coincide with the Great Dividing Range (which in that area is east of Canberra).

The article 'Landforms and their history' in *Year Book Australia 1988* provides a more detailed description of Australia's landforms.



## The history of Australia's landforms

As noted earlier, much of the Australian landscape is many millions of years old. The Western Plateau is especially old, and includes some of the oldest rocks on earth, more than 3,500 million years old. Most of this region has existed as a landmass for over 500 million years.

The present topography results from a long landscape history which can be considered as starting about 290 million years ago, the last time Australia was subjected to large-scale glaciation. Once the ice melted, parts of the continent subsided and were covered with sediment to form sedimentary basins such as the Great Artesian Basin. By early-Cretaceous times, about 140 million years ago, Australia was already so flat and low that a major rise in sea level divided it into three landmasses as the shallow Cretaceous sea spread over the land. The main separation of Australia from Antarctica took place between 100 and 80 million years ago.

In the following Tertiary times, Australia can be regarded as a landscape of broad swells varied by a number of sedimentary basins (Murray, Gippsland, Eucla, Carpentaria, Lake Eyre and others). These slowly filled up and some are now sources of coal or oil. Most of the Eastern Highlands were uplifted at about this time, although a few parts were still experiencing uplift as recently as one million years ago. The central Australian region was also uplifted, and then eroded, leaving remnant mountains and individual peaks such as Uluru (Ayers Rock), which was exposed about 65 million years ago. Another feature of this era is the Nullarbor Plain, an uplifted limestone sea floor dating to about 25 million years ago.

Throughout the Tertiary, volcanoes erupted in eastern Australia. Some individual volcanoes were the size of modern Vesuvius, and huge lava plains covered large areas. Volcanic activity continued up until a few thousand years ago in Victoria, south-east South Australia and Queensland, and a resumption at some time in the next few thousand years cannot be ruled out. Australia's youngest volcano is Mt. Gambier in South Australia, about 4,600 years old.

Between 55 and 10 million years ago, Australia drifted across the surface of the Earth as a plate, moving north from a position once adjacent to Antarctica. During much of this period the Earth was much warmer and wetter than it is today, with little or no ice cover even at the poles, and hence Australia retained a warm, relatively moist climate

through most of this period despite its latitudinal shift. It was probably under this climate that the deep weathered, iron-rich profiles that characterise much of Australia were formed. Aridity only seems to have set in after Australia reached near its present latitude range about five million years ago, with no known landforms (such as dunes or salt lakes) associated with aridity that are more than one million years old, and the northern part was probably never arid.

Today a large part of Australia is arid or semi-arid (see the article *Australia's deserts*). Large parts of the arid zone are covered with sand dunes, which are typically aligned longitudinally according to prevailing wind directions (south-east to east in the north, north-west to west in the south). These dunes were formerly mobile but are now mostly fixed. Plains covered with small stones (stony deserts or gibber plains) are found in areas without a sand cover. Salt lakes are found in many low positions, in places following lines of ancient drainage. They are often associated with lunettes (dunes formed on the downwind side of lakes), which have been the location of many important finds of Aboriginal prehistory. In addition to the present arid zone, some of these landforms are found in areas which were formerly arid but have become wetter, such as parts of western Victoria and south-eastern South Australia.

On a global scale, the last few million years were notable for the Quarternary ice age. There were many glacial and interglacial periods (over 20) during this time, with the last ending about 12,000 years ago. As in the rest of the world, Australia's climate during this time was much cooler (and probably generally drier) than it is today, but only small parts of the continent were glaciated – the Central Plateau of Tasmania and an area of about 25 sq km around the summit of Mount Kosciuszko, above 1,800 metres elevation. These ice sheets disappeared about 20,000 years ago. A more significant impact of glacial periods on Australian landforms was through its impact on sea level; during peak glacial periods the sea level was more than 100 metres lower than it is now, Tasmania and New Guinea were joined to the Australian continent, and in some areas, such as the east coast of Queensland, the coastline was several hundred kilometres away from its present location.

River erosion has been important in carving the detail of much of the Australian landscape. Those rivers which flow directly to the sea have dissected a broad near-coast region into plateaus, hills and valleys. Other rivers drain inland, and while they



may be eroding the valleys near their highland sources, their lower courses are filling up with alluvium. Most rivers of the Murray-Darling Basin reach the sea, but many elsewhere either end in salt lakes which are dry for most of the time (such as Lake Eyre), or terminate on the plains of the Central Lowlands (such as the Paroo). Many of the features of the drainage patterns of Australia have a very long history, and some individual valleys have maintained their position for hundreds of millions of years. The salt lakes of the Yilgarn Plateau in Western Australia are the remnants of a drainage pattern that was active before continental drift separated Australia from Antarctica.

During glacial periods of low sea level, coastal rivers tended to cut down to that level, especially towards the sea. When sea levels rose again, some of these valleys were drowned (such as Sydney Harbour), while others filled with alluvium as the sea rose, creating flat lowland valleys.

Coastal geomorphology is also largely the result of the accumulation of sediment in drowned coasts. In some areas, such as Ninety Mile Beach (Victoria) or the Coorong (South Australia), there are long beaches made simply from this accumulation. Further north along the east coast, many parts of the coastline consist of alternating long beaches and rocky headlands, with the beaches backed by plains filled with river and marine sediments.

The offshore shape of Australia, revealed in isobath contours, results mainly from the pattern of break-up of the super-continent of which Australia was once a part. The continental shelf around Australia varies greatly in width; in some areas it is several hundred kilometres wide, while in other areas, such as off far south-eastern New South Wales and much of Tasmania, it is less than 40 km in width. In South Australia, the continental shelf is cut by submarine canyons up to 4,600 metres deep offshore from the mouth of the Murray River. The Queensland coast is bounded by a broad plateau which has been exposed during the various glacial periods. Coral reefs have grown on this plateau at various times during the last 700,000 years when it has been submerged, although the present Great Barrier Reef, which did not start to form until after the last glaciation, is only a few thousand years old.

The Australian landforms of today are thus seen to result from long continued processes in a unique setting, giving rise to typical Australian landscapes,

which in turn provide the physical basis for the distribution and nature of biological and human activity in Australia.

## Rivers and lakes

As described earlier, the rivers of Australia may be divided into two major classes; those of the coastal margins with moderate rates of fall, and those of the central plains with very slight fall. Australia's longest river system, the Murray-Darling, drains part of Queensland, most of New South Wales and northern Victoria, and a section of South Australia, finally flowing into the arm of the sea known as Lake Alexandrina, on the South Australian coast. The length of the Murray is about 2,520 km, while the longest branch of the combined Murray-Darling system, with its headwaters in the Culgoa catchment, is about 3,370 km long.

Most of the east coastal rivers are short, the exceptions being those rivers which penetrate the coastal escarpment, such as the Burdekin and Fitzroy in Queensland, and the Hunter in New South Wales. The south-west of Western Australia also has a number of short coastal rivers.

In addition to those rivers which form part of the Murray-Darling Basin, western Queensland has a number of inland-flowing rivers, such as the Paroo, Bulloo, Diamantina and Cooper Creek. These rivers do not reach the sea, but drain into Lake Eyre or dissipate without reaching any other river system.

A number of long river systems reach the tropical or sub-tropical coast. Many of these are of considerable length, such as the Mitchell, Gregory and Leichhardt in northern Queensland, the Daly and Victoria in the Northern Territory, and the Ord, Fitzroy, Ashburton, Fortescue and Gascoyne in Western Australia. All of these rivers have extremely large variations in flow between wet and dry seasons, arising from the great seasonal rainfall variations typical of this region, and some only flow intermittently. The Mitchell, whose annual discharge of about 12 cubic kilometres rivals the Murray-Darling as Australia's largest river system in terms of volume, has discharges in February and March about 100 times those of July.

Australian river discharges are very small compared with those of many rivers elsewhere, reflecting the very low runoff from the Australian continent. By way of comparison, the annual discharge from the Amazon basin in South America is approximately 7,000 cubic kilometres.

There are many lake types in Australia. The largest are salt lakes which are, or were, drainage sumps from internal rivers. For most of the time these lakes are beds of salt and dry mud. Lake Eyre, which has only filled three times in the last century, is the largest of these (9,500 sq km), while other large salt lakes include Lake Torrens (5,745 sq km) and Lake Gairdner (4,351 sq km).

Other natural lake types include coastal lakes formed by damming of valleys by marine sediments, fault angle lakes (such as Lake George near Canberra), volcanic lakes (mostly in Victoria, south-eastern South Australia and Queensland), and glacial lakes (most common in Tasmania, but also found in the Snowy Mountains). Many of these lakes are permanent, but some, such as Lake George, dry out during drought periods, and all are small compared with the inland salt lakes – Australia has no natural, unmodified, permanent freshwater lake larger than 100 sq km. Many artificial lakes, or lakes expanded by artificial means, also exist in all states and territories. The combined Lakes Gordon and Pedder in south-western Tasmania are the largest of these, both in surface area (513 sq km) and volume (11,320 megalitres (ML)), while other very large artificial lakes include Lake Argyle on the Ord in northern Western Australia (5,720 ML) and Lake Eucumbene in the Snowy Mountains Scheme (4,870 ML).

## Australia's climate

The island continent of Australia features a wide range of climatic zones, from the tropical regions of the north, through the arid expanses of the interior, to the temperate regions of the south. Australia is the world's second-driest continent (after Antarctica), with average (mean) annual rainfall below 600 millimetres (mm) per year over 80% of the continent, and below 300mm over 50%. Summers are hot through most of the country, with average January maximum temperatures exceeding 30 degrees Celsius (°C) over most of the mainland except for the southern coastal fringe between Perth and Brisbane, and areas at high elevations. Winters are warm in the north and cooler in the south, with overnight frosts common in inland areas south of the Tropic of Capricorn; only at higher elevations do wintertime temperatures approach those found in much of northern Europe or North America.

Seasonal fluctuations in both rainfall and temperature can be large in parts of the country. In northern Australia, temperatures are warm

throughout the year, with a 'wet' season from approximately November through April, when almost all the rainfall occurs, and a 'dry' season from May through October. Further south, temperature becomes more important in defining seasonal differences and rainfall is more evenly distributed through the year, reaching a marked winter peak in the south-west and along parts of the southern fringe.

Australia experiences many of nature's more extreme phenomena; including droughts, floods, tropical cyclones, severe storms, bushfires, and the occasional tornado.

## Climatic controls

Australia's climate is largely determined by its latitude, with the mainland lying between 10 degrees south (°S) and 39°S and Tasmania extending south to 44°S. This places much of Australia under the influence of the sub-tropical high pressure belt (or ridge), which is a major influence on climate near, and poleward of, the tropics in both hemispheres. The aridity of much of Australia is largely a consequence of the subsiding air associated with this ridge of high pressure.

The sub-tropical ridge consists of areas of high pressure (anticyclones) which pass from west to east across the continent. Individual anticyclones, which can be up to 4,000 km across, can remain near-stationary for several days, bringing clear skies and fine conditions to large parts of the continent, before moving on. The latitude of the sub-tropical ridge varies seasonally. During winter, the ridge is normally centred between latitudes 30° and 35°S, whereas in summer it moves south to between latitudes 35° and 40°S (although individual systems can form significantly further north or south than these characteristic latitudes).

Winds circulate counter-clockwise around anticyclones in the Southern Hemisphere, and hence the flow on the southern side of the sub-tropical ridge tends to be westerly. This zone of westerly flow is generally strongest south of Australia (the so-called 'Roaring Forties'), but the northern part of the zone can affect southern Australia, particularly in winter and spring. Extensive depressions (lows) over the Southern Ocean have associated frontal systems embedded in the westerlies, which bring periods of rain and showers to southern parts of the country. Tasmania is under the influence of westerly flow for much of the year.

North of the sub-tropical ridge the flow is generally easterly. In winter this easterly- to south-easterly flow is especially persistent over the northern half of the continent, bringing dry conditions to most locations, except along the east coast. In summer, hot air rising over northern Australia causes an area of low pressure, drawing moist oceanic air from north and west of the continent. Where this air collides with the air coming from the south and east it generates what is known as the intertropical convergence zone, otherwise known as the monsoon trough. This zone progressively moves southwards over northern Australia (the exact timing and location vary from year to year), allowing warm, moist monsoonal air from the north-west to penetrate into the northern reaches of the continent. Elsewhere, moist easterly flow from the Pacific Ocean and Tasman Sea brings summer rain to most of the east coast.

Australia's generally low relief (map 1.4) means that topography has less impact on atmospheric systems that control the climate than is the case in other more mountainous continents. This lack of topographic obstruction, and the absence of cool ocean currents off the west coast (as are found at similar latitudes off Africa and the Americas) as a stabilising influence, allows the occasional penetration of tropical moisture deep into the continent. As a result, the Australian desert, while relatively dry, does not match the extreme aridity of deserts such as the Sahara where vast areas have average annual rainfalls below 25mm (see the article *Australia's deserts*). There are also no barriers to occasional bands of moisture and cloud extending from the warm waters of the Indian Ocean off north-western Australia right across the continent to the southern states. These 'north-west cloud bands', which are most common in late autumn and early winter, can produce good rainfall in their own right, sometimes in significant amounts, but their major influence is to provide an additional in-feed of moisture into frontal systems traversing southern Australia, enhancing the rainfall produced by those systems.

One area where topography does have a major influence on rainfall is in Tasmania. Westerly winds are intercepted by the island's mountains, causing heavy rainfall on the western (windward) side, and leaving eastern and central Tasmania in a much drier so-called 'rain-shadow'. The interaction of topography with westerly winds in winter also plays a role in locally enhancing rainfall

in regions such as the Australian Alps and the Adelaide Hills. The Great Dividing Range and associated ranges in eastern Australia enhance rainfall over the east coast hinterland during periods of easterly flow, and partially block moisture from penetrating further inland.

## Episodic weather events

Tropical cyclones are the most dramatic episodic weather events to affect Australia. Tropical cyclones are strong, well-organised low pressure systems that form poleward of about 5° of the Equator, over water that is warmer than approximately 26°C. (The weak Coriolis force near the Equator, which is important in inducing the rotation required for the development of a tropical cyclone, accounts for the lack of cyclones in that region.) Tropical cyclones can vary significantly in size, and once formed are classified as category 1 (weakest) to 5 (strongest) according to their intensity at any given time. Category 4 and 5 cyclones have wind gusts exceeding 225 kilometres/hour (km/h) and can be exceptionally damaging, as in the near-total destruction of Darwin by Tropical Cyclone Tracy on 25 December 1974. The strongest wind gust instrumentally measured in a tropical cyclone on the Australian mainland is 267 km/h, at Learmonth (Western Australia) during Tropical Cyclone Vance on 22 March 1999, but it is believed that gusts in excess of 320 km/h have occurred away from instruments. The zone of most destructive winds associated with tropical cyclones is normally quite narrow, only about 50km wide in the case of Tracy, and rarely more than 300km.

Tropical cyclones bring heavy rain as well as strong winds, and are the cause of most of Australia's highest-recorded daily rainfalls (table 1.7). Warm water acts as the cyclone's energy source, and hence is required to maintain the strength of the winds. As a result, tropical cyclones rapidly lose their intensity on moving over land, although the rainfall with former cyclones often persists well after the destructive winds have eased, occasionally bringing heavy rains deep into the inland and causing widespread flooding. (Such flooding can also occur from tropical depressions that never reach sufficient intensity to be classified as cyclones.) Parts of inland Western Australia receive 30–40% of their average annual rainfall from these systems, and it is not unheard of for places to receive their average annual rainfall within a one or two-day period as a tropical cyclone (or ex-cyclone) passes by.

On average, about three tropical cyclones directly approach the Queensland coast during the season between November and May, and three affect the north and north-west coasts, but the number and location of cyclones vary greatly from year to year. The most susceptible areas are north of Carnarvon on the west coast and north of Rockhampton on the east, but on occasions tropical cyclones have reached as far south as Perth and northern New South Wales.

Away from the tropics, 'heatwaves' can occur over many parts of Australia. In southern Australia, they are normally associated with slow-moving anticyclones. A large anti-cyclone remaining stationary ('blocking') over the Tasman Sea will result in northerly or north-westerly flow on its western flank, bringing hot air from the centre of the continent over the south-east coastal regions (and sometimes to Tasmania). In south-western Australia, summer heatwaves are more commonly associated with the characteristic north-south trough of low pressure along the west coast moving offshore, suppressing sea breezes and causing hot north-easterly winds to blow from the interior to the coast.

'Cold outbreaks' can occur over southern Australia when intense south to south-west flow associated with strong cold fronts or large depressions directs cold air from the Southern Ocean over the continent. These outbreaks are most common in the south-east of the country and can result in low temperatures and snow falling to low elevations. While principally a winter and early spring phenomenon, cold outbreaks can occur at other times of year, and the fact that the air originates over the Southern Ocean (where there is only about a 4°C change in temperature from winter to summer) means that they can also bring cold air and 'unseasonable' snowfalls at high elevations at any other time of year.

Intense low pressure systems can also form outside the tropics, most commonly off the east coast where they are known as 'east coast lows'. These systems can bring very strong winds and heavy rain, particularly where they direct moist easterly winds on their southern flank onto the coastal ranges of southern Queensland, New South Wales, eastern Victoria and north-eastern Tasmania. Examples of systems of this type include two, a fortnight apart, in June 1967 off southern Queensland which caused major flooding and severe beach erosion in the Gold Coast region, and an intense low in Bass Strait that sank or damaged many yachts in the 1998 Sydney-Hobart race.

## Interannual variability

The major driver of interannual climate variability in Australia, particularly eastern Australia, is the El Niño-Southern Oscillation phenomenon. El Niño is an anomalous large warming of the central and eastern tropical Pacific Ocean, while La Niña, the reverse phase of the system, is an anomalous cooling. The Southern Oscillation refers to a see-sawing of atmospheric pressure between the northern Australian-Indonesian region and the central Pacific Ocean. El Niño events are strongly associated with abnormally high pressures in the northern Australian-Indonesian region and abnormally low pressures over the central Pacific, while the reverse is true during La Niña events.

The Southern Oscillation Index (SOI) is an index of the pressure differences between Darwin and Tahiti and has traditionally been used as an indicator of El Niño events (which are very often, but not always, associated with a strongly negative SOI). However, with modern satellite and floating buoy observations developed over the last 30 years, ocean temperature anomalies, both at and below the surface, can be monitored directly and hence proxy measurements, such as the SOI, are less important than they once were.

El Niño events characteristically develop during the southern autumn, and continue for about 9–12 months until the following autumn. The most recent El Niño followed this pattern, developing in May–June 2002 and dissipating in February–March 2003. On occasions El Niño events are followed immediately by La Niña events (or vice versa), but it is more common for them to be followed by near-normal (neutral) ocean conditions. Events lasting for more than one year are rare, but not unknown. There are typically two to three El Niño events per decade, but there is large variation from decade to decade in their frequency and the balance of El Niño and La Niña events; since 1980, El Niño events have been predominant, whereas La Niña events were frequent in the 1950's and 1970's.

El Niño events are generally associated with a reduction in winter and spring rainfall across much of eastern, northern and southern Australia. This can lead to widespread and severe drought, particularly in eastern Australia, as well as increased daytime temperatures and bushfire risk. Conversely, La Niña events are generally associated with wetter-than-normal conditions and have contributed to many of Australia's most notable floods. There is considerable variation, however, in the way each El Niño and La Niña

event affects rainfall patterns from the time of onset through its developmental stages to eventual decay.

Temperatures in the tropical Indian Ocean also have an influence on Australia's climate, particularly in the south-west of Western Australia, where the influences of El Niño and La Niña events are more limited. Indian Ocean conditions also have a bearing on winter rainfall in south-eastern Australia through their effects on the frequency of northwest cloud bands (see earlier section).

The article 'Climate variability and El Niño' in the *Geography and climate* chapter of *Year Book Australia 1998* provides further details.

## Climate change

Temperatures in Australia were relatively stable from 1910 until 1950, and since then have followed an increasing trend, with an overall increase during 1910 to 2004 of approximately 0.7°C. Overnight minimum temperatures have warmed more quickly than daytime maximum temperatures, but both have increased over almost the entire continent, with the largest increases occurring in north-eastern Australia. In conjunction with this trend, the frequencies of frosts and other extreme low temperatures have decreased, while the frequency of extreme high temperatures has increased, although at a slower rate. Over Australia the observed warming has accelerated in recent years, and the late-20th century warming has been largely attributed to the enhanced greenhouse effect.

Over the continent as a whole, rainfall has increased over the 1900–2004 period, with the largest increases occurring over northern and north-western Australia. Since 1960, however, there have been substantial decreases in rainfall over three relatively small, but economically and agriculturally important, regions: south-western Western Australia; Victoria (particularly southern Victoria), and the eastern coastal fringe (particularly south-eastern Queensland).

Table 1.5 shows temperatures and rainfall averaged over Australia since the commencement of comprehensive national records. The article 'A hundred years of science and service – Australian meteorology through the twentieth century' in *Year Book Australia 2001* provides further details, including maps of temperature and rainfall trends to 1999.

While some temperature and rainfall data exist prior to the starting dates used in table 1.5, they have not been used in analyses of climate change. This is because large parts of the Australian continent had no observations before that time. In the case of temperatures, most pre-1910 data is also not comparable with post-1910 data, because the louvred, white-painted screen (the 'Stevenson screen') which is used for sheltering thermometers from direct solar radiation was only introduced as a national standard around that time. Many pre-1910 temperatures were measured in locations such as underneath tin verandahs or even indoors, and cannot be validly compared with more recent data (see the article 'Temperature measurement and the Stevenson screen' in *Year Book Australia 2005* for further details).

### 1.5 MEAN TEMPERATURES(a) AND RAINFALL

Period(b)	Temperature deviation	Rainfall
	°C	mm
10-YEAR PERIODS — ANNUAL AVERAGE		
1900–09	n.a.	425
1910–19	–0.33	449
1920–29	–0.40	430
1930–39	–0.28	418
1940–49	–0.41	436
1950–59	–0.27	468
1960–69	–0.22	431
1970–79	–0.12	527
1980–89	0.23	463
1990–99	0.39	485
YEARS		
1990	0.50	418
1991	0.68	469
1992	0.15	452
1993	0.30	499
1994	0.25	341
1995	0.18	523
1996	0.60	470
1997	0.23	527
1998	0.84	565
1999	0.21	584
2000	–0.21	727
2001	–0.10	559
2002	0.63	341
2003	0.62	487
2004	0.45	512

(a) Temperatures are shown as anomalies (or deviations) from 1961–90 base period. (b) The full annual time series since 1900 (rainfall) and 1910 (temperature) are available via <<http://www.bom.gov.au/climate/change>>.

Source: Australian Bureau of Meteorology.



## Rainfall and other precipitation

### Annual

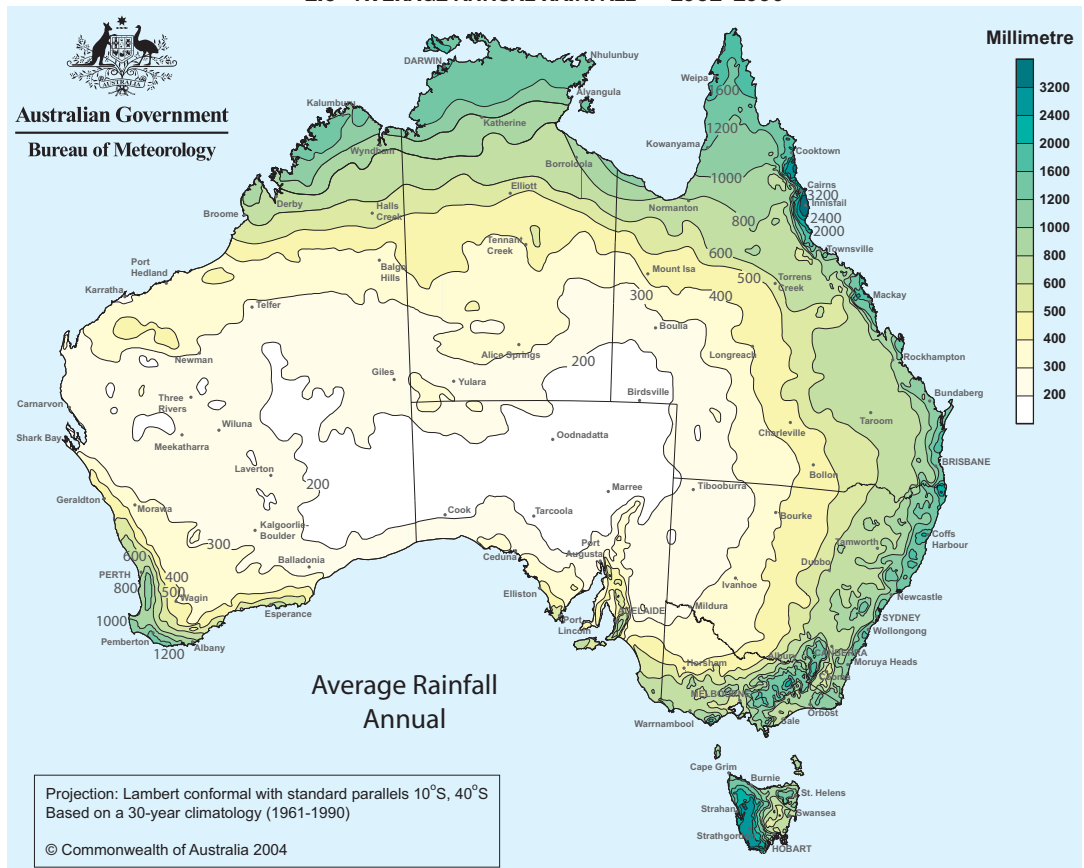
Map 1.6 shows average annual rainfall over the Australian continent.

The driest section of Australia, with an average of less than 200 mm per year, extends over a large area from the west coast near Shark Bay, across the interior of Western Australia and northern South Australia into south-western Queensland and north-western New South Wales. The driest part of this region is in the vicinity of Lake Eyre in South Australia, where average annual rainfall is below 150 mm. This region is not normally exposed to moist air masses and rainfall is irregular, averaging rain on only around 20 days per year. Very occasionally, favourable synoptic situations (usually, but not always, disturbances of tropical origin) can bring heavy rains to many parts of this normally arid

to semi-arid region, with falls of up to 400 mm over a few days being recorded in the most extreme cases. Such heavy rainfalls often lead to widespread flooding and a subsequent short-lived 'blooming' of the desert regions.

The region with the highest average annual rainfall is the east coast of Queensland between Cairns and Cardwell, where mountains are very close to the tropical coast. The summit of Bellenden Ker has an average of 7,996 mm over 32 years of records, while at lower elevations, Topaz has an average of 4,382 mm over 25 years, and Babinda 4,231 mm over 94 years. The mountainous region of western Tasmania also has a high annual rainfall, with Lake Margaret having an average of 2,956 mm over 59 years, and short-term records suggest that other parts of the region have an average near 3,500 mm.

1.6 AVERAGE ANNUAL RAINFALL — 1961–1990



Source: Australian Bureau of Meteorology.

The Snowy Mountains area in New South Wales also has a particularly high rainfall. While there are no official rain gauges in the wettest areas on the western slopes above 1,800 metres elevation, runoff data suggests that the average annual rainfall in parts of this region exceeds 3,000 mm. Small pockets with averages exceeding 2,500 mm also occur in the north-east Victorian highlands and some parts of the east coastal slopes.

**Seasonal**

Australia’s rainfall pattern is strongly seasonal in character, with a winter rainfall regime in parts of the south, a summer regime in the north and generally more uniform or erratic throughout the year elsewhere. Major rainfall zones include:

- the marked wet summer and dry winter of northern and north-western Australia. In this region winters are almost completely dry, except near exposed eastern coastlines (e.g. Darwin in table 1.7).

- the wet summer and relatively (but not completely) dry winter of south-eastern Queensland and north-eastern New South Wales (e.g. Brisbane in table 1.7).
- fairly uniform rainfall in south-eastern Australia, including most of New South Wales, parts of Victoria and eastern Tasmania. The exact seasonal distribution can be influenced by local topography; for example, winter is the wettest season at Albury on the windward side of the Snowy Mountains, but the driest season at Cooma on the leeward side (e.g. Sydney, Melbourne, Canberra and Hobart in table 1.7).
- a marked wet winter and dry summer (sometimes called a ‘Mediterranean’ climate). This climate is most prominent in south-western Western Australia and southern South Australia, but there is also a winter rainfall maximum in some other parts of the south-east, particularly those areas exposed to westerly or south-westerly winds, such as western Tasmania and south-western Victoria (e.g. Adelaide, Perth in table 1.7).

**1.7 AVERAGE MONTHLY RAINFALL AND TEMPERATURES(a), Capital cities and Alice Springs**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
<b>AVERAGE DAILY MAXIMUM TEMPERATURE (°C)</b>													
Sydney	26.1	26.4	25.2	23.1	20.4	17.7	17.2	18.5	20.7	22.4	23.6	25.6	22.3
Melbourne	25.8	26.5	24.0	20.5	17.3	14.4	13.9	15.3	17.3	19.7	21.8	24.2	20.1
Brisbane	29.2	28.8	28.0	26.1	23.5	21.1	20.6	21.6	23.9	25.5	27.1	28.6	25.3
Adelaide	28.7	29.3	26.1	22.2	18.8	16.0	15.2	16.5	18.7	21.7	24.7	26.8	22.1
Perth	31.9	32.2	29.8	25.9	21.8	18.9	17.9	18.4	20.2	22.5	25.8	29.2	24.5
Hobart	21.8	22.0	20.2	17.9	15.1	12.3	12.2	13.4	15.3	17.2	18.6	20.3	17.2
Darwin	31.8	31.4	31.8	32.8	32.2	30.7	30.7	31.5	32.7	33.3	33.3	32.6	32.1
Canberra	27.7	27.3	24.5	20.0	15.9	12.3	11.5	13.2	16.2	19.4	22.6	26.3	19.7
Alice Springs	36.4	35.1	32.8	27.8	23.2	19.7	20.0	23.0	27.5	30.9	33.9	35.8	28.8
<b>AVERAGE DAILY MINIMUM TEMPERATURE (°C)</b>													
Sydney	19.4	19.6	18.1	15.2	12.5	9.6	8.6	9.5	11.7	14.2	16.0	18.3	14.4
Melbourne	15.4	15.8	14.3	11.7	9.8	7.6	6.8	7.6	9.0	10.5	12.2	13.9	11.2
Brisbane	21.2	20.9	19.5	16.8	14.2	10.8	9.5	9.9	12.4	15.5	18.0	19.9	15.7
Adelaide	16.8	17.1	15.2	12.1	10.2	8.1	7.4	8.2	9.6	11.5	13.8	15.5	12.1
Perth	17.2	17.8	16.3	13.4	10.8	9.1	8.4	8.5	9.3	10.5	13.0	15.2	12.5
Hobart	12.5	12.7	11.4	9.6	7.6	5.2	4.7	5.5	6.9	8.3	9.8	11.3	8.8
Darwin	24.8	24.9	24.6	24.2	22.4	20.1	19.4	20.9	23.4	25.1	25.6	25.5	23.4
Canberra	13.3	13.3	10.9	6.7	3.7	0.8	-0.1	1.0	3.6	6.3	8.9	11.6	6.7
Alice Springs	21.3	20.7	17.4	12.3	8.2	4.8	3.8	6.2	10.4	14.6	17.9	20.2	13.2
<b>AVERAGE RAINFALL (mm)</b>													
Sydney	136.3	130.9	151.2	127.7	110.0	126.8	69.6	92.0	68.8	88.1	101.7	73.4	1 276.5
Melbourne	52.4	49.0	40.0	52.1	58.8	48.6	45.1	54.6	59.2	69.5	64.2	61.1	654.4
Brisbane	158.6	174.3	125.3	108.7	115.7	53.1	60.1	37.2	34.8	96.8	106.0	119.6	1 194.0
Adelaide	19.4	12.7	26.6	42.0	61.2	79.7	79.9	68.0	62.2	347.5	29.7	27.8	563.0
Perth	12.7	18.2	15.9	36.5	92.8	145.5	154.1	117.3	76.7	44.2	26.5	7.2	745.3
Hobart	47.3	40.0	41.9	44.2	38.6	37.5	53.7	59.2	48.7	48.3	50.6	56.5	576.4
Darwin	499.8	336.2	376.3	104.4	23.2	1.6	0.5	8.0	15.5	76.6	134.0	270.9	1 847.1
Canberra	66.3	52.7	50.3	49.3	44.6	38.4	46.4	49.2	56.7	60.9	67.4	47.8	630.0
Alice Springs	41.3	48.5	47.9	24.1	20.6	15.2	14.3	9.2	11.3	23.2	29.8	40.1	325.6

(a) Averages are for the period (1971–2000) except for Adelaide (1977–2000). Brisbane, Perth, Darwin, Canberra and Alice Springs averages are for observations taken at airports, others are at locations in or near the central city.

Source: Australian Bureau of Meteorology 2003.

- low and erratic rainfall through much of the western and central inland. Rainfall events are irregular and can occur in most seasons, but are most common in summer (e.g. Alice Springs in table 1.7).

### Rain days and extreme rainfalls

The frequency of rain days (defined as days when 0.2 mm or more of rainfall is recorded in a 24-hour period) is greatest near the southern Australian coast, exceeding 150 per year in much of Tasmania, southern Victoria and the far south-west of Western Australia, peaking at over 250 per year in western Tasmania. Values exceeding 150 per year also occur along parts of the north Queensland coast. At the other extreme, a large part of inland western and central Australia has fewer than 25 rain days per year, and most of the continent away from the coasts has fewer than 50 per year. In the high rainfall areas of northern Australia away from the east coast the number of rain days is typically about 80 to 120 per year, but rainfall events are typically heavier in this region than in southern Australia.

The highest daily rainfalls have occurred in the northern half of Australia and along the east coast, most of them arising from tropical cyclones, or further south east coast lows, near the coast in mountainous areas. Daily falls in excess of 500 mm have occurred at scattered locations near the east coast as far south as the Illawarra, south of Sydney, and falls exceeding 300 mm have occurred in north-eastern Tasmania and the Otway Ranges of southern Victoria. Most locations in temperate Australia away from the east coast have highest recorded daily rainfalls in the 75–150 mm range, although some locations have exceeded 200 mm. In these regions, extreme daily rainfalls are often associated with thunderstorms, for which rainfall recordings can vary dramatically over short distances.

The highest daily and annual rainfalls for each state and territory are listed in tables 1.8 and 1.9.

### Floods

Heavy rainfall conducive to widespread flooding can occur anywhere in Australia, but is most common in the north and in the eastern coastal areas. There are three main flood types:

- flash floods, which are generally localised and often emanate from severe thunderstorms (see *Thunderstorms, hail and tornadoes*).

### 1.8 HIGHEST DAILY RAINFALLS(a)

	mm	Date
New South Wales		
Dorrigo (Myrtle Street)	809	21.2.1954
Cordeaux River	573	14.2.1898
Victoria		
Tanybryn	375	22.3.1983
Rotamah Island	300	27.11.1988
Queensland(b)		
Beerwah (Crohamburst)	907	3.2.1893
Finch Hatton PO	878	18.2.1958
South Australia		
Motpena	273	14.3.1989
Nilpena	247	14.3.1989
Western Australia		
Roebourne (Whim Creek)	747	3.4.1898
Fortescue	593	3.5.1890
Tasmania		
Cullenswood	352	22.3.1974
Mathinna	337	5.4.1929
Northern Territory		
Roper Valley Station	545	15.4.1963
Angurugu (Groote Eylandt)	513	28.3.1953
Australian Capital Territory		
Lambrigg	182	27.5.1925

(a) The standard daily rainfall period is 9 am to 9 am.

(b) Bellenden Ker (Top Station) has recorded a 48-hour total of 1,947 mm on 4–5 January 1979, including 960 mm from 3 pm on the 3rd to 3 pm on the 4th. No observation was made at 9 am on the 4th.

Source: Australian Bureau of Meteorology.

### 1.9 HIGHEST ANNUAL RAINFALLS

	Station	Year	mm
NSW	Tallowood Point	1950	4 540
Vic.	Falls Creek SEC(a)	1956	3 739
Qld	Bellenden Ker (Top Station)	2000	12 461
SA	Aldgate State School	1917	1 853
WA	Kimberley Coastal Camp	2000	2 334
Tas.	Lake Margaret	1948	4 504
NT	Darwin Botanic Gardens	1998	2 906
ACT	Bendora Dam	1974	1 831

(a) State Electricity Commission.

Source: Australian Bureau of Meteorology.

- short-lived floods lasting a few days that occur in shorter coastal streams, and inundate the natural or modified flood plain. These are the most economically damaging floods, affecting the relatively densely-populated coastal river valleys of New South Wales and Queensland (e.g. the Burdekin, Brisbane, Tweed, Richmond, Clarence, Macleay, Hunter and Nepean-Hawkesbury valleys), and the major river valleys of the tropics. While these floods are chiefly caused by summer rains, they can occur in any season. Floods of similar duration also occur in Tasmania, Victoria (particularly



rivers draining the north-east ranges) and the Adelaide Hills, although in these latter regions they are more common in winter and spring.

- long-lived floods of the major inland basins. These floods usually arise from heavy summer rains in inland Queensland and New South Wales, and move slowly downstream, some ultimately draining into the lower Murray-Darling system or towards Lake Eyre. Floods of this type can take several months to move from the upper catchments to the lower Darling or to Lake Eyre. They often cover an extensive area and gradually disappear through a combination of seepage into the sandy soils and evaporation; it is only occasionally that floodwaters of Queensland origin actually reach Lake Eyre. Floodwaters can also cover large areas in situ when heavy rains occur in a region of uncoordinated drainage such as much of western and central Australia. (There is no evidence that Lake Eyre flooding leads to increased rainfall in eastern Australia, with recent research indicating that any observed linkage is an artefact of the tendency of Lake Eyre floods to occur during La Niña years).

## Droughts

Drought, in general terms, refers to an acute deficit of water supply to meet a specified demand. The best single measure of water availability in Australia is rainfall, although factors such as evaporation and soil moisture are also significant and can be dominant in some situations. Demands for water are very diverse, and droughts therefore can be considered on a variety of timescales. Rainfall in a single year is important for unirrigated crop and pasture growth, while for large water storages and irrigation variations on a multi-year timescale are more important, and a succession of relatively dry years that are not exceptional individually can cause severe water storages when aggregated over an extended period.

While droughts can occur in all parts of Australia, they are most economically damaging in south-eastern Australia (southern Queensland, New South Wales, Victoria, Tasmania and the settled parts of South Australia), an area encompassing about 75% of Australia's population and much of its agriculture. In south-western Western Australia, another economically and agriculturally significant area, interannual variability of rainfall is smaller than it is in the south-east and severe widespread droughts in individual years are a less important issue,

although, in recent decades, this area has experienced a general decline in rainfall (see *Climate change*).

In terms of rainfall deficits over a 1–2 year period, the most severe droughts on record for eastern Australia have been those of 1901–02, 1982–83, 1994–95 and 2002–03, all of which were associated with El Niño. Occasionally, severe droughts are embedded within more extensive dry periods; the 1901–02 drought was contained within a persistently dry period from 1895–1903 (the so-called 'Federation Drought'). The 2002–03 drought, while not quite as dry over most of eastern Australia as those of 1901–02 or 1982–83, was particularly severe in its impacts for two reasons. First, it was accompanied by record high average maximum temperatures and, consequently, increased evaporation in many areas. Secondly, it affected virtually the entire continent. During earlier droughts the effects over Western Australia were more limited or non-existent. The direct effect of the 2002–03 drought on agricultural production is that it had a downward impact on gross domestic product growth of almost one percentage point between 2001–02 and 2002–03 (see the article in the *National Accounts* chapter in *Year Book Australia 2005*). Other notable droughts on the 1–2 year timescale include those of 1888, 1914, 1919–20, 1940–41, 1944, 1946, 1965, 1967 and 1972.

Longer-term periods of persistent below-average rainfall are also often loosely referred to as 'droughts', and apart from that of 1895–1903, have generally been more regional in nature. A typical example of such a long-term drought has occurred over large parts of eastern Australia since 2001, and in some areas, such as southern Victoria (including Melbourne), since 1997. The Sydney region and eastern Queensland have been affected since 1999–2000. The south-west of Western Australia has also experienced a marked downturn in rainfall since 1970. Other extended dry periods of this type affected much of inland Australia between 1958 and 1968, the south-east from 1937–45, and Queensland from 1991–95.

Typically, these multi-year dry episodes are not ones of continuous below-normal rainfall, but rather periods of near-normal rainfall over several months, alternating with drier periods, and few, if any, times of sustained above-normal rainfall to offset the dry periods. Large water storages are particularly susceptible to such events, as they typically rely on a relatively small number of wet years to offset losses during drier periods. The

Sydney water supply catchments provide an example of this, with about 40% of the total inflows into the Warragamba catchment since 1910 occurring in the wettest 10% of years.

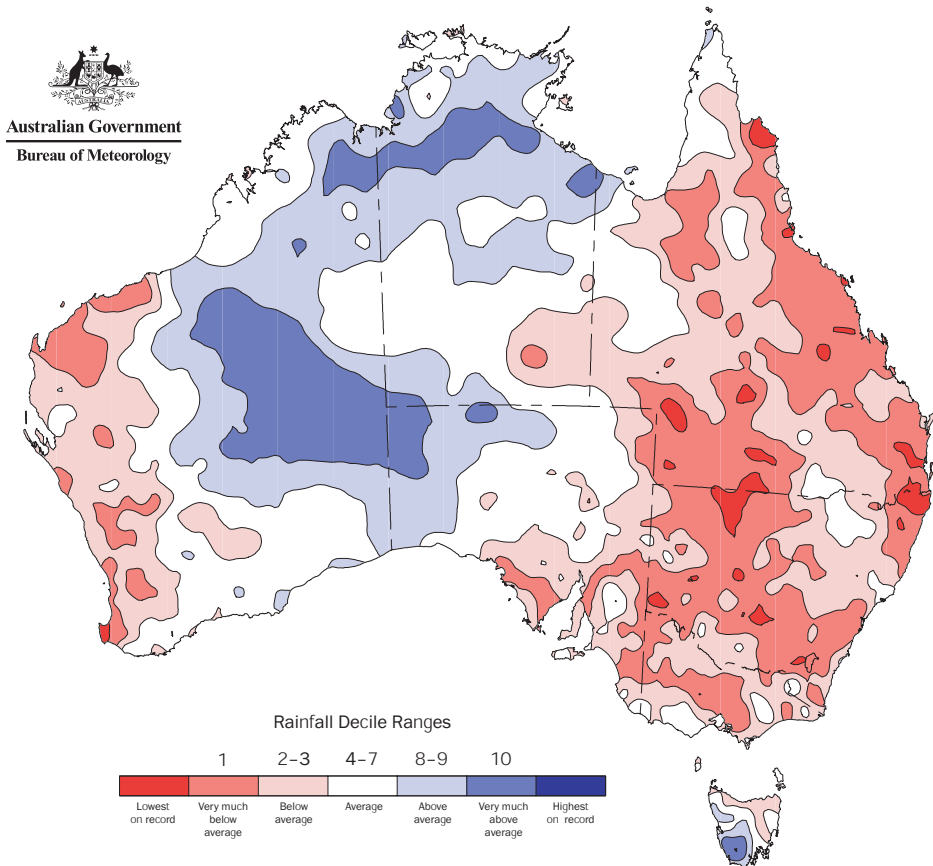
The period since 2001 has been the driest on record over parts of eastern Australia (see map 1.10), meaning that many large water storages have not recovered from the 2002–03 drought. While rainfall returned to near-normal levels in the second half of 2003 following the severe drought of 2002–03, there have been no periods of sustained above-average rainfall in most of the region since early 2001. For eastern Australia as a whole (defined as the combined areas of Queensland, New South Wales, Victoria and Tasmania), the four-year period from June 2001 to May 2005 was the driest June to May four-year period on record. For Australia’s cropping regions only the period 1911–15 was

drier. Conditions in the period 2001–05 are comparable to those of the lengthy drought of the 1940s, although (to date) they have not persisted for as long.

Adding to the impact of recent dry conditions has been the accompanying increase in temperature. The period from the start of the 2002–03 El Niño event (March 2002) to May 2005 was clearly the warmest such period on record for eastern Australia. Maximum temperatures averaged over Australia were 0.99°C above the 1961–90 normal. In contrast, temperatures averaged through the driest periods of the 1940s were near the 1961–90 normal.

Drought definitions, and the area of coverage and length of droughts to that time, together with related information, may be obtained from the article ‘Drought in Australia’ in *Year Book Australia 1988*.

**1.10 AUSTRALIAN RAINFALL DECILES — 1 June 2001 to 31 May 2005**



Source: Australian Bureau of Meteorology.

## Thunderstorms, hail and tornadoes

Thunderstorms are most frequent over northern Australia. Thunder is heard at least once on 80 days or more per year near Darwin, largely as a result of convectional processes during the summer wet season. High frequencies (30 to 50 per year) also occur over the eastern uplands of New South Wales as a result of orographic uplift of moist air streams. Some parts of southern Australia receive fewer than ten thunderstorms per year, with eastern Tasmania receiving fewer than five. Through most of Australia thunderstorms are more common during the warmer half of the year, but along the southern fringe they also occur in winter as a result of low-level instability in cold air masses of Southern Ocean origin.

Some thunderstorms can become severe, with flash flooding, large hail and damaging winds. These storms can be very destructive. The Sydney hailstorm of 14 April 1999, in which hailstones up to nine centimetres (cm) in diameter were observed, was Australia's most costly natural disaster, with losses estimated at \$1.7b. Flash flooding associated with severe thunderstorms has caused loss of life, notably when seven deaths occurred in Canberra on 26 January 1971, and thunderstorms have also been implicated in numerous air crashes, such as when a plane crashed into Botany Bay on 30 November 1961 with the loss of 15 lives.

While thunderstorms in general are most common in northern Australia, the most damaging thunderstorms, in terms of hail and wind gusts, occur in the eastern halves of New South Wales and southern Queensland. Smaller hail (less than 1 cm in diameter) commonly occurs in southern coastal Australia in cold unstable air in the wake of cold frontal passages.

Tornadoes are also associated with severe thunderstorms, although they do not occur with the same frequency or severity as can occur in the United States of America. As tornado paths are narrow it is rare, but not unknown, for them to strike major population centres, with notable examples occurring in Brighton (Melbourne) in February 1918, the southern suburbs of Brisbane in November 1973, and several Perth suburbs in May 2005.

## Snow

During most years, snow covers much of the Australian Alps above 1,500 metres for varying periods from late autumn to early spring. Similarly, in Tasmania, the mountains are covered fairly

frequently above 1,000 metres in those seasons. The area, depth and duration of snow cover are highly variable from year to year. These areas can experience light snowfalls at any time of year. Small patches of snow can occasionally persist through summer in sheltered areas near the highest peaks, but there are no permanent snowfields.

Snowfalls at lower elevations are more irregular, although areas above 600 metres in Victoria and Tasmania, and above 1,000 metres in the New South Wales highlands, receive snow at least once in most winters, as do the highest peaks of Western Australia's Stirling Ranges. In most cases snow cover is light and short-lived. In extreme cases, snow has fallen to sea level in Tasmania and parts of Victoria, and to 200 metres in other parts of southern Australia, but this is extremely rare. The only major Australian cities to have received a significant snow cover at any time in the last century are Canberra and Hobart, although Melbourne experienced a heavy snowfall in 1849, and there are anecdotal reports of snowflakes in Sydney in 1836.

The heaviest snowfall in Australian history outside the alpine areas was that of 4–5 July 1900, when 50–100 cm fell around Bathurst and in the Blue Mountains, and 25 cm as far west as Forbes (only 240 metres above sea level). Other major widespread low-elevation snow events occurred in July 1901, July 1949 and July 1984. In August 2005, the heaviest low-level snowfalls since 1951 occurred in parts of southern Victoria, with snow falling to sea level in parts of south Gippsland and accumulations of 5 to 20 cm at elevations above 150 metres in the Strzelecki Ranges and Latrobe Valley.

## Temperature

### Average temperatures

Average annual air temperatures range from 28°C along the Kimberley coast in the extreme north of Western Australia to 4°C in the alpine areas of south-eastern Australia. Although annual temperatures can be used for broad comparisons, monthly temperatures are required for detailed analyses.

July is the month with the lowest average temperature in all parts of the continent. In the south, the months with the highest average temperature are January or February. Due to the increase in cloudiness during the wet season, the month of highest average temperature in the north of the continent is December or, in the extreme north and north-west, November.

Temperature differences between winter and summer are least in tropical Australia. They are greatest in the southern inland, with seasonal differences along the coast being moderated by the ocean's proximity.

Maps 1.11 to 1.14 show average monthly maximum and minimum temperatures for January and July.

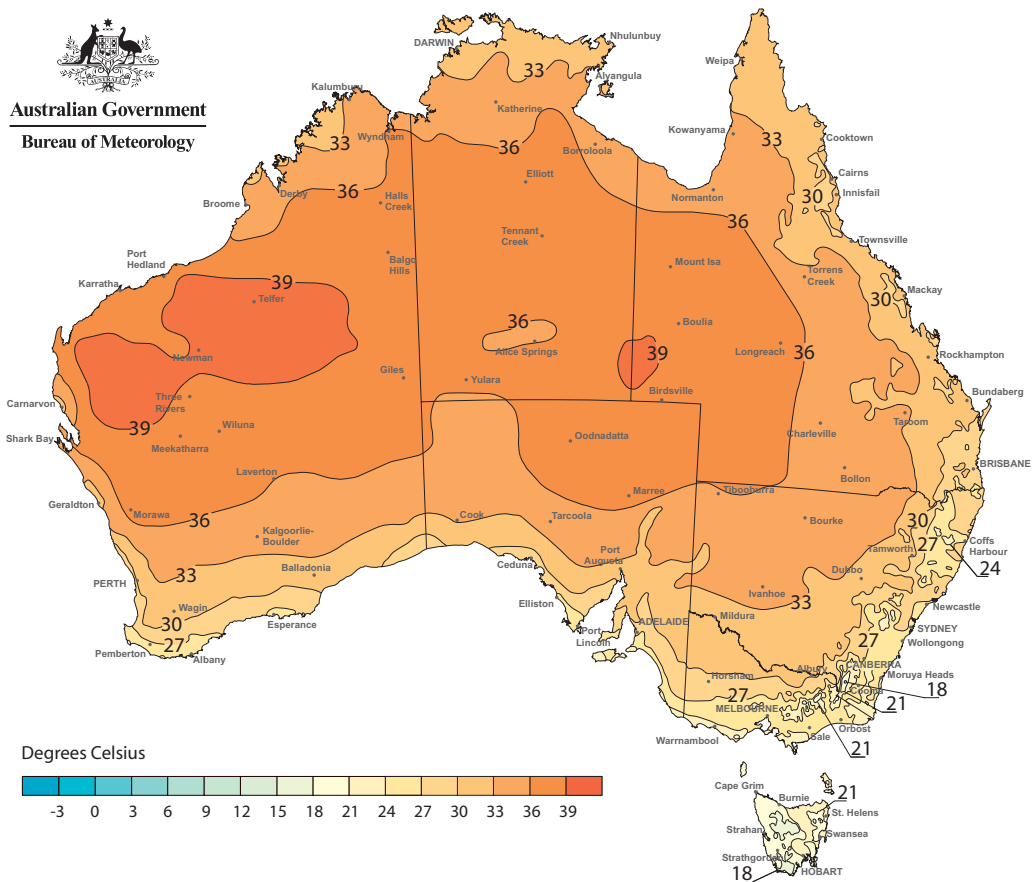
### Average monthly maxima

In January, average maximum temperatures exceed 35°C over a vast area of the interior and exceed 40°C over parts of the north-west. The highest summer maxima occur in the Pilbara and Gascoyne regions of north-western Western Australia, where

average January maxima are around 41°C; in some years daily maxima exceed 40°C for several weeks at a time. Marble Bar experienced 160 consecutive days above 37.8°C (100° Fahrenheit) in 1923–24, and Nyang had an average maximum of 44.8°C for the months of February 1998 and January 2005, an Australian record. At the other extreme, average January maxima are near 15°C on the highest peaks of the south-east ranges and near 20°C in much of Tasmania.

In July, a more regular latitudinal distribution of average maxima is evident, ranging from 30°C near the north coast to below 3°C in the alpine areas of the south-east.

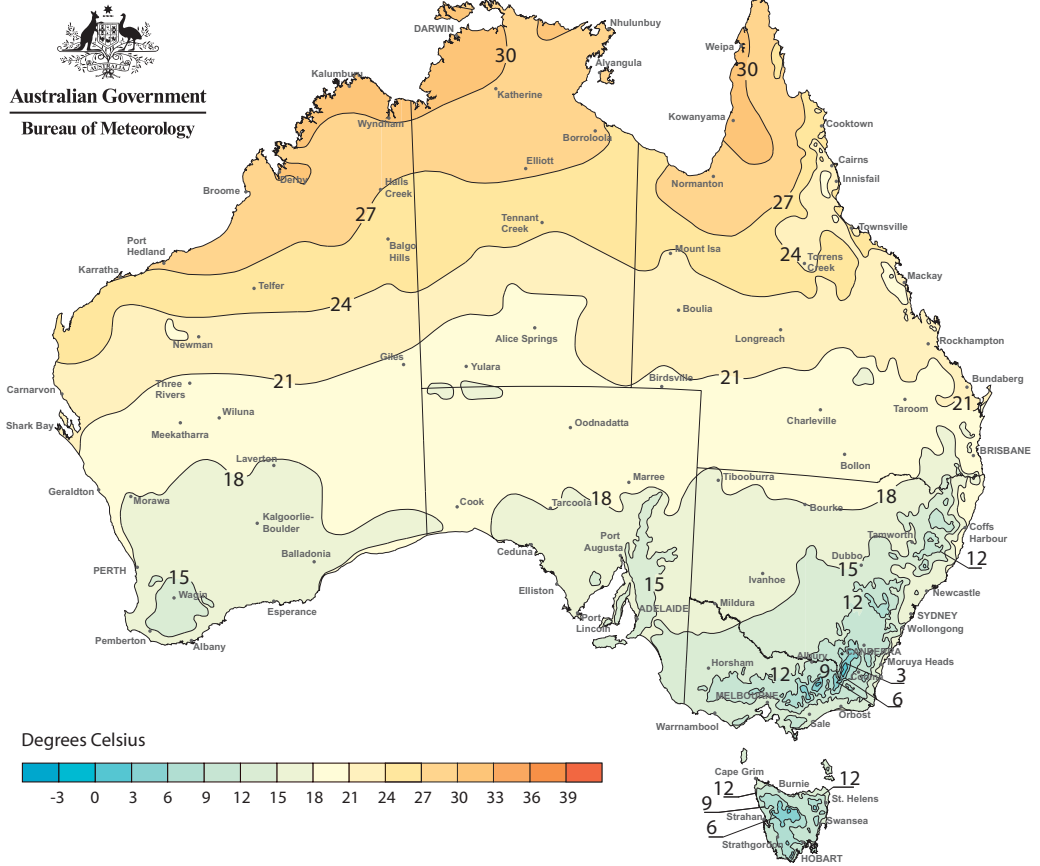
1.11 AVERAGE MAXIMUM TEMPERATURE(a) — January



(a) Based on the 30-year period 1961–1990.

Source: Australian Bureau of Meteorology.

## 1.12 AVERAGE MAXIMUM TEMPERATURE(a) — July



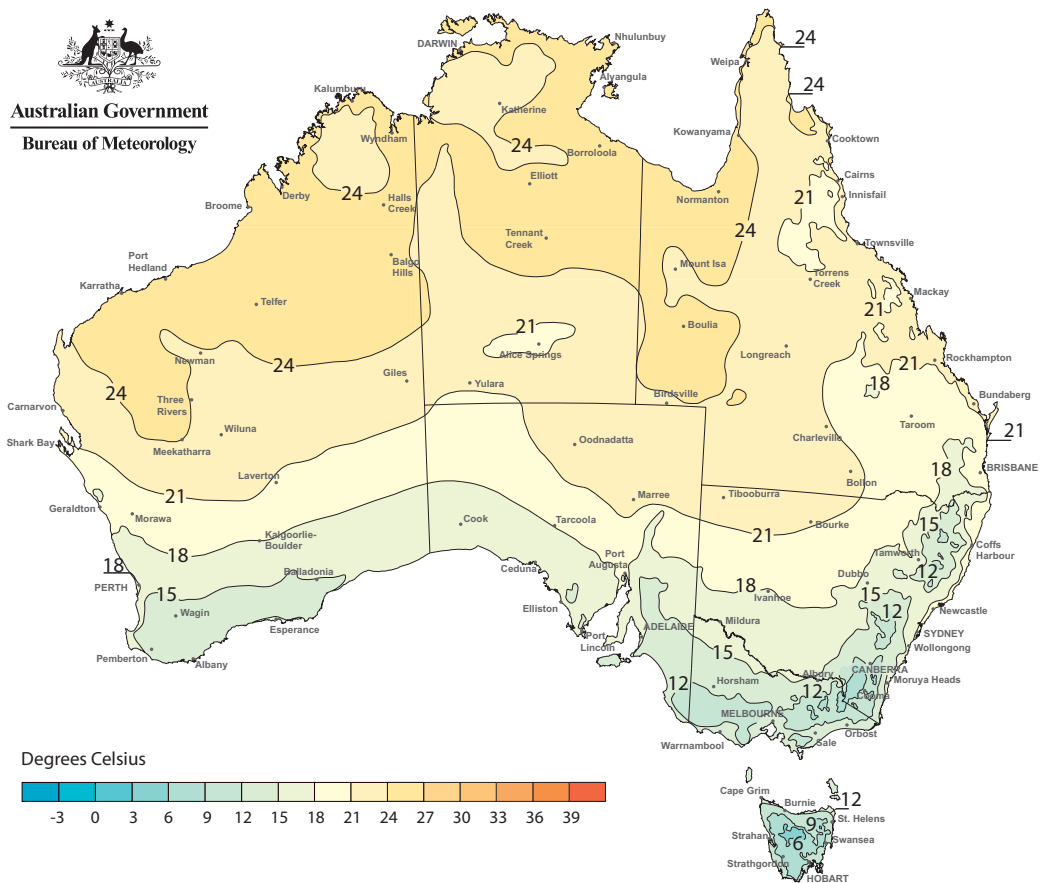
(a) Based on the 30-year period 1961–1990.  
Source: Australian Bureau of Meteorology.

## Average monthly minima

Average minimum temperatures in all seasons are highest in northern Australia and near the coasts, and are lowest in the mountainous areas of the south-east. The highest average January minimum temperatures (near 27°C) are found near the north-west coast, while in winter they exceed 20°C at some coastal locations in northern Australia and on the Torres Strait and Tiwi Islands.

Low minimum temperatures are highly sensitive to local topography, with the lowest minimum temperatures occurring in high-elevation valleys, as cold air drains from hills to valleys overnight, making hilltops and ridges warmer overnight, even in areas with local relief of only a few tens of metres. In the most favoured locations in the mountains of New South Wales average minimum temperatures are below 5°C in January and -5°C in July, while most inland areas south of the tropics have average July minima between 0° and 6°C.

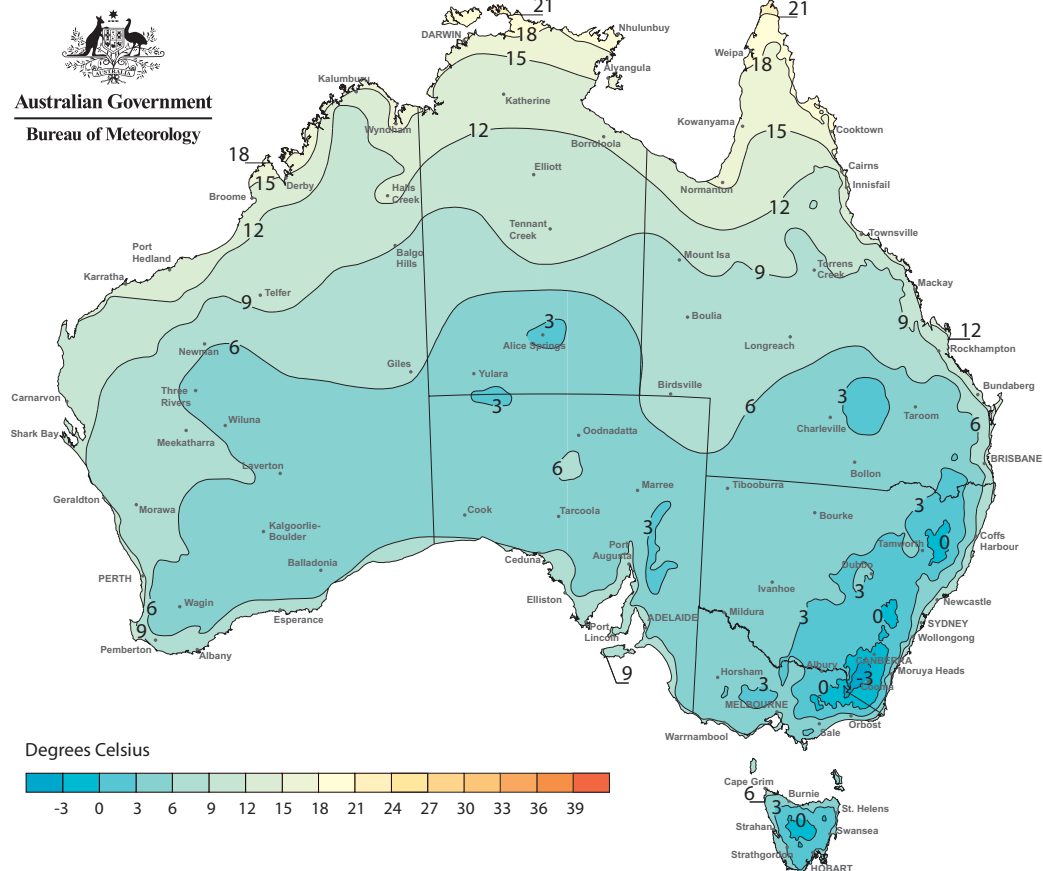
1.13 AVERAGE MINIMUM TEMPERATURE(a) — January



(a) Based on the 30-year period 1961–1990.

Source: Australian Bureau of Meteorology.

## 1.14 AVERAGE MINIMUM TEMPERATURE(a) — July



(a) Based on the 30-year period 1961–1990.  
Source: Australian Bureau of Meteorology.

### Extreme maxima

The highest extreme maxima in Australia are recorded in two regions; the Pilbara and Gascoyne regions of north-western Western Australia, and a broad belt extending from south-western Queensland across South Australia into south-eastern Western Australia. Many locations in this region have recorded temperatures exceeding 48°C. Extreme temperatures in this southern belt are higher than those further north, due to the long trajectory over land of hot north-west winds from northern Australia, the lower moisture levels in summer compared with northern Australia, and the generally lower elevation (when compared with

areas such as the southern Northern Territory and east-central Western Australia, both of which are largely more than 500 metres above sea level).

Most other locations in mainland Australia, except those near parts of the Queensland and Northern Territory coasts or above 500 metres elevation, have extreme maxima between 43° and 48°C. Most Tasmanian sites away from the north coast have extreme maxima between 35° and 40°C. The lowest extreme maxima are found along the north coast of Tasmania (e.g. 29.5°C at Low Head) and at high elevations (e.g. 27.0°C at Thredbo (Top Station)).



While extreme high temperatures are more common inland than they are near the coast, the highest temperatures recorded differ little between the two, except in Queensland, the Northern Territory and northern Tasmania. Notable extreme maxima observed near the coast include 50.5°C at Mardie and 49.1°C at Roebourne in Western Australia, and 49.4°C at Whyalla and 47.9°C at Ceduna in South Australia.

Extreme maximum temperatures recorded at selected locations, including the highest recorded in each state/territory, are shown in table 1.15.

Prolonged heat waves, with a number of successive days over 40°C, are relatively common in summer over much of inland Australia, as well as parts of the north-west coast. Many inland locations have recorded ten or more successive days of such conditions, increasing to 20 or more days in parts of western Queensland and northern South Australia, and 50 or more days in north-western Western Australia. These heat waves can be accompanied by oppressively warm nights, with Oodnadatta (South Australia) recording an Australian record nine successive nights above 30°C in February 2004.

Such prolonged heatwaves are rare in coastal regions, except in Western Australia. The record number of consecutive days in Melbourne over 40°C, for example, is five, with Brisbane and Sydney each registering two.

**1.15 EXTREME MAXIMUM TEMPERATURES**

Station	°C	Date
New South Wales		
Wilcannia	50.0	11.1.1939
Victoria		
Swan Hill(a)	49.4	18.1.1908
Boort	48.3	13.1.1939
Queensland		
Cloncurry(a)	53.1	16.1.1889
Birdsville	49.5	24.12.1972
South Australia		
Oodnadatta	50.7	2.1.1960
Western Australia		
Mardie	50.5	20.2.1998
Tasmania		
Bushy Park(a)	40.8	26.12.1945
Hobart	40.8	4.1.1976
Northern Territory		
Finke	48.3	1 & 2.1.1960
Australian Capital Territory		
Canberra (Acton)	42.8	11.1.1939

(a) Temperatures known not to have been measured in a Stevenson screen (see Temperature measurement and the Stevenson screen, Year Book 2005).

Source: Australian Bureau of Meteorology.

The coastal areas, though, can be affected by extreme heat over a period of one or two days. The most extreme heatwave in the recorded history of south-eastern Australia occurred in January 1939. Adelaide (46.1°C on the 12th), Melbourne (45.6°C on the 13th) and Sydney (45.3°C on the 14th) all set record high temperatures during this period, as did many other centres in New South Wales, Victoria and South Australia. This extreme heat contributed to the ‘Black Friday’ bushfires, in which almost two million hectares were burnt and 71 lives lost (see the ‘Bushfires’ section in the *Environment* chapter in *Year Book Australia 2004*).

**Extreme minima**

The lowest recorded temperatures in Australia have been in the Snowy Mountains of New South Wales, where Charlotte Pass recorded –23.0°C on 28 June 1994 (table 1.16), with a number of other locations recording temperatures below –15°C. It is likely that comparably low temperatures occur in similarly sheltered locations in the Victorian highlands, but no observing stations away from the exposed peaks exist in this area.

**1.16 EXTREME MINIMUM TEMPERATURES**

Station	°C	Date
New South Wales		
Charlotte Pass	–23.0	28.6.1994
Victoria		
Mount Hotham	–12.8	30.7.1931
Queensland		
Stanthorpe	–11.0	4.7.1895
South Australia		
Yongala	–8.2	20.7.1976
Western Australia		
Booylgoo Springs	–6.7	12.7.1969
Tasmania		
Shannon	–13.0	30.6.1983
Butlers Gorge	–13.0	30.6.1983
Tarraleah	–13.0	30.6.1983
Northern Territory		
Alice Springs	–7.5	12.7.1976
Australian Capital Territory		
Gudgenby	–14.6	11.7.1971

Source: Australian Bureau of Meteorology.

Away from the Snowy Mountains, the lowest extreme minima in Australia are found above 500 metres elevation on the tablelands and ranges of New South Wales, eastern Victoria and southern Queensland, as well as in central Tasmania. Many locations in this region have recorded –10°C or lower, including Gudgenby, Australian Capital Territory (–14.6°C) and Woolbrook, New South Wales (–14.5°C). At lower elevations, most inland



places south of the tropics have extreme minima between  $-3^{\circ}\text{C}$  and  $-7^{\circ}\text{C}$ , and such low temperatures have also occurred in favoured locations within a few kilometres of southern and eastern coasts, such as Sale, Victoria ( $-5.6^{\circ}\text{C}$ ), Bega, New South Wales ( $-8.1^{\circ}\text{C}$ ), Grove, Tasmania ( $-7.5^{\circ}\text{C}$ ) and Taree, New South Wales ( $-5.0^{\circ}\text{C}$ ).

In the tropics, extreme minima near or below  $0^{\circ}\text{C}$  have occurred at many places away from the coast, as far north as Herberton, Queensland ( $-5.0^{\circ}\text{C}$ ). Some locations near tropical coasts, such as Mackay ( $-0.8^{\circ}\text{C}$ ), Townsville ( $0.1^{\circ}\text{C}$ ) and Kalumburu, Western Australia ( $0.3^{\circ}\text{C}$ ) have also recorded temperatures near  $0^{\circ}\text{C}$ . In contrast, some exposed near-coastal locations, such as Darwin, have never fallen below  $10^{\circ}\text{C}$ , and Thursday Island, in the Torres Strait, has an extreme minimum of  $16.1^{\circ}\text{C}$ .

The parts of Australia with the lowest extreme minimum temperatures are also the most subject to frost. The eastern uplands from southern Queensland to eastern Victoria experience ten or more frosts per month in each month from May to September, as do Tasmania's Central Plateau and a few susceptible locations in south-western Western Australia and the Flinders Ranges region of South Australia. At lower elevations frost is less frequent and the season is shorter, although only the immediate coastal margins and the far north can be considered totally frost-free.

Frosts can occur at any time of year over most of Tasmania, much of inland Victoria and south-eastern South Australia, and the higher parts of the tablelands of New South Wales. In these regions the median frost period generally exceeds 200 days, extending out to 300 days in central Tasmania.

## Other aspects of climate

### Humidity

In terms of the average water vapour content or humidity of the air, Australia is a dry continent. The amount of moisture in the atmosphere can be expressed in several ways, the most common being relative humidity. This measure can be thought of as the relative evaporating power of the air. When humidity is low, moisture on an exposed wet surface, like our skin, can evaporate freely. When it is high, evaporation is retarded. If the temperature is also high, people will feel discomfort or even stress as the body's ability to cool through the evaporation of perspiration is diminished. The combination of high temperature and high humidity is potentially dangerous for people who are not adapted or acclimatised to such conditions.

The main features of the relative humidity pattern are:

- over the interior of the continent there is a marked dryness during most of the year, which extends towards the northern coast in the dry season (May–October)
- the coastal fringes are comparatively moist, although this is less so along the north-west coast of Western Australia where airflow is predominantly off the continent
- in northern Australia, the highest values of humidity occur during the summer wet season (December–February) and the lowest during the winter dry season (June–August)
- in most of southern Australia the highest values are experienced in the winter rainy season (June–August) and the lowest in summer (December–February).

By way of a historical note, it is interesting that, as late as 1927, Griffith Taylor, from the Department of Physical Geography, University of Sydney, was asserting that tropical Australia was an unhealthy place to live, at least for women, because of its climate. However in recent decades the introduction of air conditioning, more appropriate building design, and improved health measures such as proper sanitation, have greatly increased the comfort levels of those living in the tropics.

### Global radiation

Incoming global radiation includes radiant energy reaching the ground directly from the sun and radiation received indirectly from the sky that is reflected and scattered downwards by clouds, dust and other airborne particles.

While there is a high correlation between daily global radiation and daily hours of sunshine, the latter is more dependent on variations in cloud coverage. Daily global radiation is at its strongest, all other things being equal, when the sun is closest to overhead south of the tropics (21–22 December), or directly overhead in the tropics. On the north-west coast around Port Hedland, Western Australia, where average daily global radiation is the highest for Australia (22–24 megajoules per square metre), average daily sunshine is also highest, being approximately ten hours. By way of contrast, in Darwin the global radiation values for the dry month of July and cloudy month of January are comparable, yet the number of sunshine hours for July approaches twice that for January.

## Sunshine

Sunshine here refers to bright or direct sunshine. Australia receives relatively large amounts of sunshine although seasonal cloud formations affect spatial and temporal distribution. Cloud cover reduces both incoming solar radiation and outgoing radiation from the earth's surface, and thus affects sunshine, air temperature and other measures of climate.

Most of the continent receives more than 3,000 hours of sunshine a year, or nearly 70% of the total possible. In central Australia and the mid-west coast of Western Australia, totals slightly in excess of 3,500 hours occur. Totals of less than 1,750 hours occur on the west coast and highlands of Tasmania, which is the equivalent of only 40% of the total possible per year.

In southern Australia, the duration of sunshine is greatest about December when the sun is at its highest elevation, and lowest in June when the sun is lowest. In northern Australia, sunshine is generally greatest over the period August to October prior to the wet season, and least over the period January to March during the wet season.

## Evaporation

Average annual pan evaporation exceeds rainfall over most of Australia. It is highest in the north of Western Australia, reaching around 3,400mm around Wyndham, and exceeds 3,000mm over most of tropical Western Australia and the central Northern Territory. It is lower in tropical areas with higher rainfall and cloud cover, such as the Top End of the Northern Territory and eastern Queensland.

At the other end of the scale, Australia's lowest pan evaporation occurs in Tasmania, ranging from 800mm per year in the west to 1,200mm in the east. Over the mainland it is below 1,400mm over southern Victoria and adjacent parts of South Australia and New South Wales, and around 1,500mm in the far south of Western Australia.

Over most of Australia evaporation is greatest in summer and least in winter, due to higher temperatures and solar radiation. In the far north, in contrast, the seasonal cycle is dominated by the effect of increased cloud cover during the tropical wet season. In this region evaporation peaks in spring, with a secondary peak in autumn in some places, and is lowest in late summer.

## Cloud

Seasonal distribution of cloudiness varies predominantly in line with seasonal variations in rainfall. In the southern parts of the continent, particularly in the coastal and low-lying areas, the winter months are generally cloudier than the summer months. This is due to the formation of extensive areas of stratiform cloud and fog during the colder months, when the structure of the lower layers of the atmosphere and higher levels of humidity favour the formation of this type of cloud. Particularly strong seasonal variability of cloud cover exists in northern Australia where skies are clouded during the summer wet season and mainly cloudless during the winter dry season. Cloud cover is greater near coasts and on the windward slopes of the eastern uplands of Australia and less over the dry interior.

## Fog

The formation of radiation fogs, in which air near the ground is cooled by overnight radiation from the ground, is determined by the occurrence of a favourable blend of temperature, humidity, wind and overlying cloud cover. The nature of the local terrain can also be important for the development of fog, and there is a tendency for it to be particularly prevalent and persistent in valleys and hollows. The incidence of such fogs can vary significantly over short distances. Other types of fogs occur when low cloud covers high ground ('hill fog'), particularly where highlands are close to the coast, and more rarely, near some coastlines when warm moist air moves over relatively cool waters near the shore ('sea fog').

Fog in Australia tends to be more common in the south than the north, although parts of the east coastal areas are relatively fog-prone even in the tropics. Fog is more likely to occur in the colder months, particularly in the eastern uplands. Radiation fogs normally develop overnight and dissipate during the morning or early afternoon, although on rare occasions they persist through the day, particularly in inland Tasmania. The highest fog incidence at a capital city is at Canberra which has an average of 47 days per year on which fog occurs, 29 of which are between May and August. Brisbane averages 20 days of fog per year. Darwin averages only two days per year, mostly in July and August.

## Winds

The mid-latitude anticyclone belt is the chief determinant of Australia's two main prevailing wind streams. These streams tend to be easterly to the north of this belt and westerly to the south. The cycles of development, motion and decay of low-pressure systems that form to the north and south of the anticyclone belt and also intersperse between individual anticyclones result in a great diversity of wind flow patterns. Wind variations are greatest around the coasts where diurnal land and sea-breeze effects also come into play. Sea breezes play a prominent role in modifying coastal climates in many parts of Australia, particularly along the west coast of Western Australia where they are a major feature of the summer climate. In Perth the sea breeze is known as the 'Fremantle Doctor'.

Orography affects the prevailing wind pattern in various ways, such as the channelling of winds through valleys, deflection by mountains and cold air drainage from highland areas. The high frequency of north-west winds at Hobart, for example, is caused by the north-west to south-east orientation of the Derwent River valley, while wave effects on the lee side of the Adelaide Hills can lead to very strong local winds ('gully winds') in the eastern suburbs of Adelaide during periods of general easterly flow.

Perth is the windiest capital with an average wind speed of 15.6 km/h; Canberra is the least windy with an average wind speed of 5.4 km/h.

The highest wind speeds and wind gusts recorded in Australia have been associated with tropical cyclones. The highest recorded gust was 267 km/h at Learmonth (Western Australia) on 22 March 1999 (with Tropical Cyclone *Vance*), while gusts reaching 200 km/h have been recorded on several occasions in northern Australia with cyclone visitations. The highest gusts recorded at Australian capitals have been 217 km/h at Darwin (during Tropical Cyclone *Tracy*), 185 km/h at Brisbane Airport and 156 km/h at Perth.

## Dust storms

Dust storms are a regular occurrence on windy days in many of the arid zones of Australia. During drought years, they can extend to the more densely settled areas of the south-east, particularly when strong north- to north-westerly winds occur in advance of an approaching cold front. Well-known examples include those of February 1983, which plunged central Melbourne into darkness, and October 2002, which covered a vast area of eastern Queensland and New South Wales, including Brisbane and Sydney. These occurred in the later part of the severe El Niño-related droughts of 1982–83 and 2002–03 respectively.

## Fire weather

While bushfires are not strictly a climatic phenomenon, both weather and climate are strong determinants in their occurrence and intensity. Provided vegetation is sufficiently abundant and dry, the spread of bushfires is most rapid in windy conditions with low humidity. In southern Australia such conditions are also normally associated with high temperatures. A Fire Danger Index, which combines expected wind speed, humidity, temperature and a measure of pre-existing dryness, is frequently used to assess the risk of rapid fire spread on any given day.

The most favoured season for bushfires varies in different parts of Australia. In south-eastern Australia (including Tasmania) the most favoured season is summer and early autumn; in coastal New South Wales and southern Queensland it is spring and early summer; and in much of northern Australia it is winter and spring (or the later part of the 'dry' season). In the arid zones of Australia large fires most commonly occur in the months following an abnormally wet season, when there is enough vegetation to provide fuel.

The southeast Australian bushfires which occurred at the end of 2002 and the beginning of 2003 were among the most protracted and extensive of the last century. The 2002–03 bushfire season and its impact was discussed in the *Environment* chapter in *Year Book Australia 2004*.

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# 2

## GOVERNMENT

*This chapter was contributed by the Politics and Public Administration Section of Library of the Commonwealth Parliament (September 2005).*

Australia has a federal system of government within which there are four divisions – Commonwealth, state, territory and local.

This chapter outlines the basic features of the Australian system of government, including:

- the constitutional basis of government
- the Sovereign
- the Governor-General
- the Commonwealth Parliament
- the Australian Government
- the Australian Public Service
- Commonwealth elections
- state government
- territory government – self-governing
- territory government – non-self governing
- local government
- the party system.

It also provides details of the Commonwealth ministry, and of the state and territory government leaders.

## The constitutional basis of government

Australia is a constitutional democracy based on a federal division of powers. The constitutional basis of government consists of:

- the Commonwealth Constitution, including amendments
- state and territory constitutions, including amendments
- legislation passed by the Commonwealth Parliament and the state and territory parliaments
- High Court judgments
- significant conventions of responsible government adopted from the British (Westminster) system of government that are in use at the Commonwealth, state and territory levels of government.

### Commonwealth Constitution

The national Constitution is found in the *Commonwealth of Australia Constitution Act 1900*, a British Act that became law in July 1900 and came into force on 1 January 1901.

Any proposed law for the alteration of the Commonwealth Constitution must be passed by an absolute majority of each House of Parliament (except in circumstances specified in section 128 of the Constitution which permits a referendum to proceed if passed by only one chamber). It must also be submitted to a referendum of the electors in each state and territory. An amendment must be approved by a majority of the voters in a majority of the states and by a majority of all voters.

Since 1901, 44 proposed amendments have been submitted to referenda. The consent of the electors has been given in regard to eight matters:

- 1906 – election of senators
- 1910 – state debts
- 1928 – state debts
- 1946 – social services
- 1967 – Aboriginal people
- 1977 – Senate casual vacancies
- 1977 – retirement age for federal judges
- 1977 – the right of territory electors to vote in constitutional referenda.

Each state and territory has its own constitution found in legislation. Where a law of a state is inconsistent with a law of the Commonwealth, the latter law prevails and the former law is, to the extent of the inconsistency, invalid.

## The Sovereign

Since 7 February 1952, the Australian Sovereign has been Queen Elizabeth the Second.

On 6 November 1999 a vote to establish Australia as a republic was put to a national referendum. The proposal was defeated, with 54.9% of electors voting against it.

## The Governor-General

The Governor-General is the representative of the Sovereign, appointed by the Sovereign on the advice of the Australian Prime Minister.

His Excellency Major General Michael Jeffery AC CVO MC (Retd) has been Governor-General since 11 August 2003.

### Powers and functions

The Governor-General exercises the executive power of the Commonwealth of Australia on the advice of the Prime Minister. Certain other powers and functions conferred by the Constitution include the powers to:

- appoint times for holding the sessions of the Parliament
- prorogue Parliament
- dissolve the House of Representatives
- dissolve the House of Representatives and the Senate in the event of a double dissolution
- cause writs to be issued for general elections of members of the House of Representatives
- assent in the Queen's name to a proposed law passed by both Houses of the Parliament
- appoint and summon executive councillors, who hold office during the Governor-General's pleasure
- appoint ministers of state for the Commonwealth of Australia.

In addition, the Governor-General, as the Queen's representative, is Commander-in-Chief of the Defence Forces.

Many Acts of the Commonwealth Parliament provide that the Governor-General may make Regulations to give effect to such Acts. The Governor-General may also be authorised by statute to issue proclamations, for example, to declare an Act in force. The Governor-General has been given power by statute to legislate for certain of the Australian territories.



In all such matters the Governor-General acts on the advice of the Prime Minister.

The Governor-General also possesses what are referred to as 'reserve powers'. These may be used without the advice of the Prime Minister, but are used only in times of political uncertainty.

The Queen may appoint an Administrator of the Commonwealth when the Governor-General is out of the country, ill or when the position of Governor-General is vacant. By convention, the longest-serving state governor is appointed as Administrator.

### Previous Governors-General

Those persons who have held the office of Governor-General from the inception of the Commonwealth of Australia until 1988 are pictured in *Year Book Australia 1988*. Pictures of all holders of the office can be found in the *Government* section of *Australia Now* on the ABS web site <<http://www.abs.gov.au>>.

## The Commonwealth Parliament

Commonwealth legislative power is vested in the Commonwealth Parliament, comprising the House of Representatives (currently 150 members) and the Senate (76 members).

### The powers of Parliament

Apart from the constitutional requirement that all financial legislation must originate in the House of Representatives, and that the Senate cannot amend such legislation, the two houses have similar powers. The fact that the Senate can reject financial legislation makes it potentially one of the most powerful upper houses in the world.

As Australia has a federal system of government, the powers of the Commonwealth Parliament are limited to areas of national importance such as trade and commerce, taxation, postal services, foreign relations, defence, immigration, naturalisation, quarantine, currency and coinage, weights and measures, copyright, patents and trade marks. High Court decisions, Commonwealth–state agreements and use by the Commonwealth of the constitutional power to make grants to the states and territories have seen the Commonwealth gain influence in regard to various other matters including industrial relations, financial regulation, companies and securities, health and welfare, and education.

## The functions of Parliament

Parliament has five primary functions:

- to provide for the formation of a government
- to make the law
- to provide a forum for popular representation
- to scrutinise the actions of government
- to provide a forum for the alternative government.

The *formation of a government* is the most important outcome of a general election. Either the government is returned, by virtue of retaining a majority of seats in the House of Representatives, or the opposition party or a coalition of parties wins a majority of seats, resulting in the formation of a new government. A new government could also be formed on any occasion between elections if the majority party changes its leader, or loses its majority (e.g. as a result of a by-election), or is defeated in an important vote in the House of Representatives. The last occurrence of government changing hands between elections was in October 1941.

The Hon. JW Howard, MP (Liberal Party of Australia) has been Prime Minister since 11 March 1996.

More than half of Parliament's time is taken up with the *consideration of proposed legislation*. Between 150 and 250 Bills are passed each year. Most Bills are not contentious, either being 'machinery' legislation necessary for the orderly processes of government, or Bills that propose alterations to existing legislation. Most of the Bills are government Bills; legislation sponsored by private members is rare.

The *representation of the people* is an important role of members of the House of Representatives and senators. Working for their constituents occupies a great deal of their time. The relative importance of this role may be judged by the high proportion of time spent by MPs in their electorates and away from Parliament. Since the beginning of 2000, Parliament has averaged 64 sitting days per year.

The *scrutiny* function is seen most obviously in the formal periods of Question Time, in both houses, that are a part of each day's sitting. Question Time is the best-known part of parliamentary proceedings, and is attended by many of the visiting public. Less well-known is the activity of a range of parliamentary committees which are established in order that Parliament's legislative,



representation and scrutiny functions can be carried out more thoroughly and with the benefit of expert advice. These committees undertake the scrutiny of government operations as well as frequent inquiries into a range of current issues.

In Westminster-derived governments, such as Australia's, the Opposition has a recognised and formal status, being recognised in the Standing Orders of the Parliament and in legislation. The Opposition is seen as the *alternative government* and typically forms a 'shadow Cabinet' of MPs who prepare themselves to take on the reins of government. The Opposition also has the role of acting as the main critic of the government and of offering to the community an alternative set of policies.

The Hon. KC Beazley, MP (Australian Labor Party) has been Leader of the Opposition since 28 January 2005.

## The Australian Government

### Prime Minister

The office of Prime Minister is not recognised by the Constitution, being a conventional part of the governmental arrangements. It is a matter of convention that the Prime Minister is always a member of the House of Representatives.

After an election, the Governor-General sends for the leader of the party, or coalition, which has secured a majority in the House of Representatives, and commissions that person to assume the office of Prime Minister and to form a government.

The Prime Minister has the following powers:

- advising the Sovereign on the appointment of the Governor-General
- acting as the sole source of formal advice for the Governor-General
- advising the Governor-General as to when Parliament should be dissolved
- setting the date for House of Representatives elections

- allocating positions in the Cabinet
- chairing Cabinet meetings.

### Ministers

The Prime Minister nominates members of his or her parliamentary party or coalition to serve as ministers, responsible for administering government departments such as the Treasury, the Department of Foreign Affairs and Trade or the Department of Defence. The Constitution requires that all ministers be either a member of the House of Representatives or a Senator. If a new minister is not an MP, it is obligatory for that minister to become an MP within three months of his/her appointment. Ministers may be appointed or replaced at any time between elections.

From time to time certain members of the Commonwealth Parliament have been appointed by governments to assist ministers in their work. Such persons have been known by a variety of designations, including parliamentary under-secretary and assistant minister; the current term is parliamentary secretary.

The ministries since Federation are listed in table 2.1.

### Cabinet

Senior ministers are members of the Cabinet, the meetings of which are chaired by the Prime Minister. Cabinet is not a body that is recognised by the Constitution, being a conventional part of the governmental arrangements. Despite this, Cabinet effectively controls not only a government's legislative program, but also government departments of state. In effect, therefore, Cabinet is the dominant political and administrative element in Australia's national government. The Governor-General does not attend Cabinet meetings.

Particulars of the Fourth Howard Ministry, comprising Cabinet ministers, other ministers and parliamentary secretaries are shown in table 2.2.

## 2.1 MINISTRIES SINCE 1901

Number of ministry	Ministry	Period of office	Party
1	Barton	1 January 1901 to 24 September 1903	Protectionist
2	Deakin	24 September 1903 to 27 April 1904	Protectionist
3	Watson	27 April 1904 to 17 August 1904	Australian Labor Party
4	Reid–McLean	18 August 1904 to 5 July 1905	Free Trade–Protectionist
5	Deakin	5 July 1905 to 13 November 1908	Protectionist
6	Fisher	13 November 1908 to 2 June 1909	Australian Labor Party
7	Deakin	2 June 1909 to 29 April 1910	Protectionist–Free Trade–Tariff Reform
8	Fisher	29 April 1910 to 24 June 1913	Australian Labor Party
9	Cook	24 June 1913 to 17 September 1914	Liberal
10	Fisher	17 September 1914 to 27 October 1915	Australian Labor Party
11	Hughes	27 October 1915 to 14 November 1916	Australian Labor Party
12	Hughes	14 November 1916 to 17 February 1917	Nationalist Labour
13–14	Hughes	17 February 1917 to 9 February 1923	Nationalist
15	Bruce–Page	9 February 1923 to 22 October 1929	Nationalist–Country Party
16	Scullin	22 October 1929 to 6 January 1932	Australian Labor Party
17–18	Lyons	6 January 1932 to 7 April 1939	United Australia Party
19	Page	7 April 1939 to 26 April 1939	Country Party–United Australia Party
20	Menzies	26 April 1939 to 14 March 1940	United Australia Party
21–22	Menzies	14 March 1940 to 29 August 1941	United Australia Party–Country Party
23	Fadden	29 August 1941 to 7 October 1941	Country Party–United Australia Party
24–25	Curtin	7 October 1941 to 6 July 1945	Australian Labor Party
26	Forde	6 July 1945 to 13 July 1945	Australian Labor Party
27–28	Chifley	13 July 1945 to 19 December 1949	Australian Labor Party
29–33	Menzies	19 December 1949 to 26 January 1966	Liberal–Country Party
34–35	Holt	26 January 1966 to 19 December 1967	Liberal–Country Party
36	McEwen	19 December 1967 to 10 January 1968	Liberal–Country Party
37–39	Gorton	10 January 1968 to 10 March 1971	Liberal–Country Party
40	McMahon	10 March 1971 to 5 December 1972	Liberal–Country Party
41–43	Whitlam	5 December 1972 to 11 November 1975	Australian Labor Party
44–48	Fraser	11 November 1975 to 11 March 1983	Liberal–Country Party
49–52	Hawke	11 March 1983 to 20 December 1991	Australian Labor Party
53–55	Keating	20 December 1991 to 11 March 1996	Australian Labor Party
56–59	Howard	11 March 1996	Liberal–Nationals

Source: *Library of the Commonwealth Parliament.*

## The Australian Public Service

The Australian Public Service (APS) provides policy advice to the Australian Government and facilitates the delivery of programs to the Australian community. It is part of the broader public sector, which includes parliamentary departments and employees, Australian-owned companies, statutory authorities, a separate public service for each of the states and territories, and local government employees. There are currently 18 government departments and around 60 statutory agencies in the APS. An updated list of these bodies is available at <http://www.apsc.gov.au/apsprofile/agencies.htm>.

Each government department is managed by a Chief Executive Officer, or Departmental Secretary, who is responsible to the relevant minister for the efficient, effective and ethical use of resources. The minister, in turn, takes political responsibility for the actions of the department. As

well as answering to the relevant minister, the APS is accountable to the Australian community through a variety of mechanisms including parliamentary committees, administrative law, the Ombudsman and the Auditor-General. Statutory agencies are responsible for a specific function prescribed within departments' portfolio responsibilities. For example, the Australian National Audit Office falls within the Department of Prime Minister and Cabinet and provides a range of audit services to the Parliament and Australian Government public sector agencies.

Departments and statutory agencies are governed by legislation specific to their functions, and by the *Financial Management and Accountability Act 1997*. This Act details specific requirements for the management of human and financial resources. The 18 departments and a majority of statutory agencies are also subject to the *Public Service Act 1999* (PSA).

## 2.2 FOURTH HOWARD MINISTRY — October 2004

### CABINET MINISTERS

Prime Minister	The Hon. John Howard, MP
Minister for Trade (Deputy Prime Minister)	The Hon. Mark Vaile, MP
Treasurer	The Hon. Peter Costello, MP
Minister for Foreign Affairs	The Hon. Alexander Downer, MP
Minister for Defence	Senator the Hon. Robert Hill
Minister for Finance and Administration	Senator the Hon. Nick Minchin, MP
Minister for Health and Ageing	The Hon. Tony Abbott, MP
Attorney-General	The Hon. Philip Ruddock, MP
Minister for the Environment and Heritage	Senator the Hon. Ian Campbell
Minister for Communications, Information Technology and the Arts	Senator the Hon. Helen Coonan
Minister for Transport and Regional Services	The Hon. Warren Truss, MP
Minister for Immigration and Multicultural and Indigenous Affairs and Minister Assisting the Prime Minister for Indigenous Affairs	Senator the Hon. Amanda Vanstone
Minister for Education, Science and Training	The Hon. Dr Brendan Nelson, MP
Minister for Family and Community Services and Minister Assisting the Prime Minister for Women's Issues	Senator the Hon. Kay Patterson
Minister for Industry, Tourism and Resources	The Hon. Ian Macfarlane, MP
Minister for Employment and Workplace Relations and Minister Assisting the Prime Minister for the Public Service	The Hon. Kevin Andrews, MP
Minister for Agriculture, Fisheries and Forestry	The Hon. Peter McGauran, MP

### OTHER MINISTERS

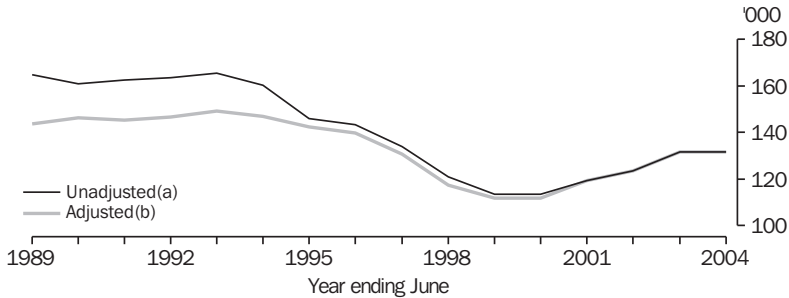
Minister for Vocational and Technical Education and Minister Assisting the Prime Minister	The Hon. Gary Hardgrave, MP
Minister for Local Government, Territories and Roads	The Hon. Jim Lloyd, MP
Minister for Revenue and Assistant Treasurer	The Hon. Mal Brough, MP
Minister for Veterans' Affairs and Minister Assisting the Minister for Defence	The Hon. De-Anne Kelly MP
Minister for Human Services	The Hon. Joe Hockey, MP
Special Minister of State	Senator the Hon. Eric Abetz
Minister for Ageing	The Hon. Julie Bishop, MP
Minister for Justice and Customs	Senator the Hon. Chris Ellison
Minister for the Arts and Sport	Senator the Hon. Rod Kemp
Minister for Fisheries, Forestry and Conservation	Senator the Hon. Ian Macdonald
Minister for Citizenship and Multicultural Affairs	The Hon. John Cobb, MP
Minister for Small Business and Tourism	The Hon. Fran Bailey, MP
Minister for Workforce Participation	The Hon. Peter Dutton, MP

### PARLIAMENTARY SECRETARIES

Parliamentary Secretary to the Prime Minister	The Hon. Gary Nairn, MP
Parliamentary Secretary (Trade)	Senator the Hon Sandy Macdonald
Parliamentary Secretary to the Treasurer	The Hon. Chris Pearce, MP
Parliamentary Secretary (Foreign Affairs) and Parliamentary Secretary to the Minister for Immigration and Multicultural Affairs	The Hon. Bruce Billson, MP
Parliamentary Secretary to the Minister for Defence	The Hon. Teresa Gambaro, MP
Parliamentary Secretary to the Minister for Finance and Administration	The Hon. Dr Sharman Stone, MP
Parliamentary Secretary to the Minister for Health and Ageing	The Hon. Christopher Pyne, MP
Parliamentary Secretary to the Minister for the Environment and Heritage	The Hon. Greg Hunt, MP
Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry	Senator The Hon. Richard Colbeck
Parliamentary Secretary to the Minister for Education, Science and Training	The Hon. Pat Farmer, MP
Parliamentary Secretary (Children and Youth Affairs)	The Hon. Sussan Ley, MP
Parliamentary Secretary to the Minister for Industry, Tourism and Resources	The Hon. Warren Entsch, MP

Source: *Library of the Commonwealth Parliament.*

## 2.3 AUSTRALIAN PUBLIC SERVICE



(a) Actual number of APS employees. (b) Employee numbers adjusted for changes in APS coverage during the period.

Source: Australian Public Service Commission, APS Employment Database, <<http://www.apsc.gov.au>>.

As at June 2004, there were 131,522 APS employees working under the PSA (graph 2.3). Of this number, there were 122,102 ongoing employees and 9,420 were non-ongoing. All APS employees have a responsibility to comply with all applicable Australian laws and are held accountable for their work practices under various Acts relevant to their employer, such as: the *Commonwealth Authorities and Companies Act 1997*, the *Workplace Relations Act 1996*, the *Criminal Code Act 1995* and the *Crimes Act 1914*.

In addition, APS employees are subject to the APS Values and Codes of Conduct. These guidelines require public servants to act responsively, accountably, impartially and with integrity when working with the Government and Parliament, other APS employees and the public. The guidelines are available at <<http://www.apsc.gov.au/values/conductguidelines.htm>>.

In the new millennium, the public sector has undergone a regeneration to harness public resources which will give practical effect to government policies. This process used to be known as 'public administration' but is increasingly referred to as 'public management'; reflecting the APS expectation that public sector managers take responsibility for achieving results in an efficient, timely and ethical manner.

Some recent examples of APS management changes include more flexible employment practices, and development of performance pay systems to encourage the achievement of set outcomes in what are referred to as Key Result Areas. Also introduced have been strengthened accountability measures through financial statement and performance auditing, and the

implementation of recommendations from the *Review of the corporate governance of statutory authorities and office holders* (The Uhrig Report, 2003), the *Inquiry into Australian Intelligence Agencies* (The Flood Report, 2004) and the *Inquiry into Cornelia Rau Matter* (The Palmer Report, 2005).

Some examples of service delivery changes include: providing government information and other services on the Internet, and the establishment in October 2004 of the Department of Human Services (DHS), under the Finance portfolio. DHS brought together six agencies to administer human services in a 'joined-up' approach to public sector management: Centrelink, Health Insurance Commission, Child Support Agency, Health Services Australia, Commonwealth Rehabilitation Services and Australian Hearing.

## Commonwealth elections

### Voting methods

Members of the House of Representatives are elected by voters using the voting method known as the alternative vote (known in Australia as 'preferential voting'); Senators are elected by voters using the voting method known as proportional representation (single transferable vote).

### Franchise

Any Australian citizen aged 18 years and over, or British subject who was on the Commonwealth Roll as at 25 January 1984, is qualified to enrol and vote at Commonwealth elections. Residence in a

particular electorate for at least a period of one month is also a requirement. Enrolment and attendance at a polling place on polling day (except under certain lawful exceptions) are compulsory for all eligible persons.

## Parliamentary terms

Members of the House of Representatives are elected for a maximum term of three years, though elections may be called earlier. Senators have fixed terms of six years. Normally half the Senate retires every three years, and half-Senate elections are usually held at the same time as elections for the House of Representatives, though they need not be. The most recent separate elections for each house occurred in 1970 (Senate) and 1972 (House of Representatives).

At times of disagreement between the House of Representatives and the Senate, the two houses may be dissolved and an election called for both. Of the 41 Commonwealth elections, six have been 'double dissolution' elections, the most recent of which occurred in 1987.

There have been 41 parliaments since Federation. The longest parliament was the third, which ran from 20 February 1907 to 19 February 1910, and the shortest was the 11th, which ran from 6 February to 16 September 1929. The 41st Parliament first met on 16 November 2004.

## Electorates

For the purpose of House of Representatives elections each state or territory is divided into single-member electorates according to the number of members of the House of Representatives to which the state or territory is entitled (table 2.4). The article 'Drawing House of Representatives electorate boundaries', *Year Book 2005*, discusses electoral redistributions. In Senate elections the whole state or territory constitutes a single electorate.

## 2004 election

The House of Representatives was dissolved on 31 August 2004. Elections for the House of Representatives and half of the Senate were held on 9 October 2004. The number of electors enrolled at the time of the election is shown in table 2.4.

The Liberal–Nationals coalition retained control of the House of Representatives and gained control of the Senate. The coalition therefore formed Australia's 59th Commonwealth government. The state of the parties in the Commonwealth Parliament following the election is shown in table 2.5. For details of the 2004 election, see: <<http://www.aec.gov.au>>.

### 2.4 ENROLMENT AND ELECTORATES, October 2004 election

	Electors enrolled	Electorates
New South Wales	4 329 115	50
Victoria	3 309 800	37
Queensland	2 475 611	28
Western Australia	1 051 923	15
South Australia	1 248 732	11
Tasmania	342 809	5
Northern Territory	112 930	2
Australian Capital Territory	227 541	2
<b>Total</b>	<b>13 098 461</b>	<b>150</b>

Source: *Library of the Commonwealth Parliament*.

### 2.5 STATE OF THE PARTIES, Commonwealth Parliament — September 2005

House of Representatives	
Liberal Party	74
Nationals	12
Country Liberal Party	1
<i>Government parties</i>	87
Australian Labor Party	60
Independent	3
<i>Total</i>	150
Senate	
Liberal Party	32
Nationals	6
Country Liberal Party	1
<i>Government parties</i>	39
Australian Labor Party	28
Australian Democrats	4
The Greens	4
Family First Party	1
<i>Total</i>	76

Source: *Library of the Commonwealth Parliament*.

## State government

The Australian nation was created by the federation of six British self-governing colonies which became the ‘Original States’ in the Commonwealth of Australia. Under the constitutional arrangements that came into existence in 1901 significant powers were retained by these states. The extent of state legislative power is defined by the Commonwealth and state Constitutions, and includes education, police, public health, public transport, agriculture, roads and the oversight of local government.

## State governors

A state governor is the representative of the Sovereign, appointed by the Sovereign on the advice of the state’s premier. The governor exercises the executive power of his or her state on the advice of the premier. Other powers and functions are similar to the powers exercised at the Commonwealth level by the Governor-General.

In addition, governors have been invested with various statutory functions by state Constitutions and the *Commonwealth Australia Act 1986*, as well as under the Acts of the parliaments of the states. For example, governors may administer the prerogative of mercy by the reprieve or pardon of criminal offenders, and may remit fines and penalties due to the Crown in right of their state.

The governors also possess what are referred to as ‘reserve powers’. These may be used without the advice of the Premier, but are used only in times of political uncertainty.

The governors of the states at September 2005 are shown in table 2.6.

## State governments

Each state is governed by a ministry headed by a premier. The state cabinet, chaired by the premier, is the centre of political and administrative power in each state.

Each state has a formal opposition, with the same role as at the Commonwealth level, headed by an opposition leader.

Table 2.7 lists the premiers at September 2005.

## State parliaments

Five of the six Australian states have a bicameral parliament. In Queensland there is a single house. The lower houses in New South Wales, Victoria,

Queensland and Western Australia are entitled Legislative Assembly; in South Australia and Tasmania the term is House of Assembly. The title of the five upper houses is Legislative Council.

## State elections

The members of the parliaments of each state are elected by the residents of that state using either the alternative vote (‘preferential voting’) or proportional representation (single transferable vote).

### 2.6 GOVERNORS OF THE STATES — September 2005

New South Wales	Her Excellency Professor Marie Bashir, AC
Victoria	John Landy, AC, MBE
Queensland	Her Excellency Ms Quentin Bryce, AC
Western Australia	His Excellency Lieutenant General John Murray Sanderson, AC, AM
South Australia	Her Excellency Mrs Marjorie Jackson Nelson, AC, MBE
Tasmania	His Excellency the Hon. William Cox, AC, RFD, ED

Source: *Library of the Commonwealth Parliament*.

### 2.7 PREMIERS, States — September 2005

New South Wales	The Hon. M Iemma, MP (ALP)
Victoria	The Hon. SP Bracks, MP (ALP)
Queensland	The Hon. P Beattie, MP (ALP)
Western Australia	The Hon. GI Gallop, MP (ALP)
South Australia	The Hon. M Rann, MP (ALP)
Tasmania	The Hon. PA Lennon, MP (ALP)

Source: *Library of the Commonwealth Parliament*.

## Territory government

### Self-governing

The Commonwealth Government assumed control of both the Northern Territory and the Australian Capital Territory during 1911. The Northern Territory (since 1978) and the Australian Capital Territory (since 1989) are now self-governing territories with powers almost matching those of the original states. The Northern Territory has been working towards full statehood, though a referendum on the question was rejected by Northern Territory voters in 1998. Norfolk Island was accepted into the Commonwealth as an Australian territory in 1914. The *Norfolk Island Act 1979* grants a considerable degree of self-government.



The Northern Territory and Norfolk Island both have an administrator of the territory, appointed by the Governor-General (table 2.8). The Australian Capital Territory has neither administrator nor governor. Each territory has an elected Legislative Assembly, with a wide range of powers.

Each territory has a government headed by a chief minister (table 2.9). The Northern Territory and the Australian Capital Territory have a formally recognised opposition headed by an opposition leader. Norfolk Island's Legislative Assembly does not possess a formal opposition.

**2.8 ADMINISTRATORS — September 2005**

Northern Territory	The Hon. EJ Egan, AM
Norfolk Island	The Hon. GEJ Tambling

*Source: Library of the Commonwealth Parliament.*

**2.9 CHIEF MINISTERS — September 2005**

Northern Territory	The Hon. CM Martin, MLA (ALP)
Australian Capital Territory	The Hon. J Stanhope, MLA (ALP)
Norfolk Island	The Hon. GR Gardner

*Source: Library of the Commonwealth Parliament.*

**Non-self governing**

Jervis Bay Territory, and the external territories of the Cocos (Keeling) Islands, Christmas Island, Coral Sea Islands, and Ashmore and Cartier Islands, make up the non-self governing territories of Australia.

The resident communities in each of Jervis Bay Territory, the Cocos (Keeling) Islands and Christmas Island are provided with an extensive range of government services. Each of the Cocos (Keeling) Islands and Christmas Island has an elected local government, and residents may vote in Commonwealth parliamentary elections in the electorate of Lingiari (Northern Territory). Residents of Jervis Bay Territory are enrolled in the electorate of Fraser (Australian Capital Territory).

**Local government**

Local government has a limited constitutional position in Australia, being organised under state or territory legislation upon broadly similar lines across Australia. The main variation is the existence of various councils in the Northern Territory that are based on rural indigenous communities. There are no local councils in the Australian Capital Territory, where the Territory government has direct responsibility for local services. Local government in Australia is unlike that in many other nations, for it provides a relatively narrow range of services.

Each state and the Northern Territory has a number of local government areas, known variously as cities, towns, municipalities, boroughs, shires or districts. The generic local body is the council. In September 2005 there were 673 local councils. Councillors and aldermen are elected by local residents, though councils may be dismissed by state governments – and occasionally are.

Within each local government area various services are provided, though there are many variations between states as well as between urban and rural councils. The Brisbane City Council is responsible for the provision of a wide range of services across most of Brisbane; by contrast, many small rural councils provide a relatively small number of services. Local government responsibilities include the management of health, sanitary and garbage services, road, street and bridge construction, water supply and sewerage, museums, fire brigades, harbour services and local libraries. The scope of local government duties differs a great deal around the nation, for in all states many of the responsibilities of a local nature are performed either directly by the state government or through semi-government authorities, known in Australia as statutory authorities. The provision of household water, for instance, is typically undertaken by a statutory authority operating under state legislation.



## Political parties

### The party system

An Australian party system had begun to develop during the last years of the colonial period in the 1890s, to the extent that most seats in the first Commonwealth parliament were won by candidates from just three major groups, one of which was the Australian Labor Party. The outline of the modern system could be seen by 1910 following the fusion of two non-Labor parties in opposition to Labor. In 1919 the Country Party won a significant number of seats, and by 1923 it had joined the major non-Labor party in the first of many conservative coalition governments. Today the party battle at the Commonwealth level and in New South Wales, Queensland and Victoria is dominated by the contest between Labor and the Liberal and National (formerly Country) parties. Elsewhere the major contest is between the Liberal and Labor parties.

Many minor parties have contested House of Representatives and Assembly elections, but only in Tasmanian House of Assembly and Australian Capital Territory Legislative Assembly elections has the dominance of the major parties been threatened on occasion by minor parties and independents. The use of proportional representation for many upper house elections has given minor parties and independents a realistic chance of winning Senate and Legislative Council seats. Since 1980 the major parties have controlled the Senate and Legislative Councils only intermittently.

### Parties and Parliament

Australian parliaments have thus been dominated by tightly controlled parties since the early-20th century. This has been the key factor in a decline in the significance of parliament relative to that of the executive.

The impact of parties can especially be seen in the operations of each house of Parliament,

particularly in the legislative process. Many questions and a great deal of criticism are raised in the House of Representatives and the state assemblies, and amendments are often moved. However, because governments usually enjoy a majority in these lower houses, questions may be avoided, amendments cannot be forced, and whether or not opposition views are accepted depends on the wishes of the government of the day.

It has been a different story whenever the Senate and the Legislative Councils have not been controlled by government, for the upper houses are powerful and all can alter or reject government legislation. When a government controls an upper house, however, then that body's influence upon legislation tends to decline. With the coalition Commonwealth Government controlling both national houses from July 2005, the Senate's impact on legislation seems certain to lessen significantly.

## Reference notes

The Australian Constitution is reproduced in *Year Book Australia* from time to time, the latest being the 1998 edition. Details of constitutional referendums are found in *Year Book Australia 1974*, *Year Book Australia 1977–78* and *Year Book Australia 1986*.

In *Year Book Australia 1924* the names are given of each ministry from Federation until February 1923. *Year Book Australia 1953* contains a list of ministries which covers the period between February 1923 and July 1951. The names of members of subsequent ministries are listed in issues of *Year Book Australia 1953* to 1975–76 inclusive, and in successive issues from 1980.

Full details of Commonwealth elections are issued by the Australian Electoral Commission following each election. State and territory election details are issued by the relevant electoral offices or commissions.

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## INTERNATIONAL RELATIONS

*This chapter was contributed by the Australian Government Department of Foreign Affairs and Trade, AusAID, and the Australian Centre for International Agricultural Research (September 2005).*

Australia's foreign and trade policies aim to advance the national interest by protecting and promoting the security and prosperity of Australians.

Australia engages with other countries bilaterally, regionally and globally. It has close bilateral relationships with the countries in the region and beyond, characterised by strong political, strategic, economic and people-to-people ties. Australia is an active member of regional organisations – such as the Pacific Islands Forum, ASEAN Regional Forum and Asia-Pacific Economic Cooperation forum – and multilateral organisations including the United Nations and the World Trade Organization, through which it pursues Australia's national interests and, with other members, promotes good governance, security and stability, human rights, sustainable development and economic prosperity, among other important goals.

The international environment is increasingly diverse and unpredictable. The terrorist threat continues to alter international security and to pose dangers to Australian travellers, expatriates and missions overseas. Counter-terrorism is a major focus of Australia's foreign policy. The Australian Government is active in developing bilateral and regional partnerships and encouraging multilateral action, including through the United Nations, to strengthen practical efforts against terrorism.

Globalisation has made the world more interdependent and had a profound economic effect, including by promoting trade liberalisation and raising living standards in Australia. By encouraging competition, it has made the promotion of multilateral trade rules and disciplines even more important to fair trade and economic development. Faster and freer movement of people, goods and information have created opportunities but also challenges, including increased vulnerability to transnational crime.

The Indian Ocean tsunami that struck on 26 December 2004 had a major impact on Australians and others in neighbouring countries. The Australian Government responded with a large-scale consular and humanitarian response to assist Australian victims and help rehabilitate affected countries. Dealing with the impact of the tsunami will be an important element of Australia's relations with regional partners, in particular Indonesia, for many years.

The General Assembly of the United Nations has declared 2006 as the International Year of Deserts and Desertification. The article at the conclusion of this chapter *Assisting countries to combat desertification – Australia's role* includes an outline of two Australian Government-funded research projects that are tackling land and water resource degradation in the Yellow River Basin in north-west China.

## Australia's credentials and place in the international system

Australia's international interests are shaped in part by its geography and history, which have underpinned its active engagement in Asia and the Pacific and its close ties with North America and Europe.

Australia has a liberal, competitive economy marked in recent times by consistent growth, low inflation and low unemployment. Between 1998 and 2004, Australia's gross domestic product (GDP) grew by an average of 3.6% each year – well above the global annual average of 2.6%. Australia is the 13th largest economy in the world. A modern and open economy, strong skills base and modern physical infrastructure support Australia's efforts to advance its economic interests overseas.

Australia's cultural diversity, record of constructive international engagement, strong political institutions and liberal democratic values – including commitment to the rule of law, freedom of the press and accountability of government – inform its involvement in world affairs.

The Australian Government published a second foreign and trade policy White Paper – *Advancing the National Interest* – in 2003. It is a comprehensive assessment of Australia's place in the world and outlines how Australia can best use its political, strategic and economic assets to advance its national interests on the international stage.

## Australia's bilateral relationships

As a medium-sized power with diverse political, trade and investment goals, Australia continues to foster significant relationships with a range of countries on the basis of shared interests. Australia engages most substantially with countries that have the greatest influence on its strategic and economic situation.

### United States of America

The United States of America (USA) is among Australia's most important economic partners, and is its closest security ally. Australia's ties with the USA reflect the latter's position as the world's largest economy and leading military power. The

relationship complements Australia's commitment to the Asia-Pacific region, where US engagement contributes to security and prosperity.

Australia's strategic alliance with the USA is formalised in the ANZUS Treaty, concluded in 1951. Australia-United States Ministerial Consultations involve the foreign and defence ministers of each country.

The two countries cooperate closely to promote their own security and to contribute to broader regional and global security. In 2004 and 2005, Australia worked closely with the USA in support of Iraq's transition to self-government. The Australian Government cooperates extensively to counter terrorism, combat the spread of weapons of mass destruction and enhance military interoperability.

The Australia-US Free Trade Agreement entered into force on 1 January 2005, providing significant new opportunities for Australian business in the USA. In 2004, the USA was Australia's second largest trading partner overall. Australia exported goods and services to the USA worth \$9.5 billion (b) and \$4b respectively, and imported goods and services from the USA worth \$20.5b and \$6b. Major Australian merchandise exports to the USA are meat, alcohol, crude petroleum and vehicles.

People-to-people ties, including educational and cultural links, are extensive.

### Japan

Australia's close relations with Japan are built on long-established common interests. Both countries are industrialised democracies, both share a commitment to prosperity and stability in the Asia-Pacific region and both are key allies of the USA. Mutual interests in regional security underpin close cooperation on counter-terrorism and combating the proliferation of weapons of mass destruction.

Australia's trade and investment relationship with Japan – the world's second largest economy – is fundamentally important. Japan has long been Australia's largest export destination, and in 2004 Australia exported goods and services worth \$22b and \$3b respectively to Japan. Leading merchandise exports are coal, beef, iron ore and aluminium. Australia imported goods and services from Japan worth \$17b and \$2b respectively.

The Australia-Japan Trade and Economic Framework, signed by the Prime Ministers of both countries in 2003, includes a joint undertaking to work towards comprehensive and balanced trade

and investment liberalisation, and reflects a joint commitment to develop further the economic relationship. In 2005 the Prime Ministers agreed that the two countries should undertake a two-year joint feasibility study into a possible bilateral Free Trade Agreement.

Australia's involvement at the 2005 World Exposition in Aichi promoted Australia as a leading business, tourism and education destination and highlighted the importance of the Australia-Japan relationship. The 30th anniversary of the signing of the Basic Treaty of Friendship and Cooperation between the two countries will be celebrated, in 2006, by an Australia-Japan Year of Exchange. The Australia-Japan Foundation, established in 1976 to foster relations between the people of Australia and Japan, supports a wide range of bilateral educational and cultural promotion activities.

## China

Australia's relationship with China seeks to maximise shared economic and strategic interests, while at the same time managing differences. China's increasing importance to Australia reflects China's growing involvement with the rest of the Asia-Pacific region and the global economy. Australia engages with China on a range of issues of mutual interest including regional security, cross-Strait relations, security on the Korean Peninsula and development assistance in the South Pacific. Australia and China have a regular bilateral human rights dialogue.

The Australian Prime Minister visited China in April 2005 (his fifth visit to China since 1996) and announced, with his Chinese counterpart, the decision to begin negotiations for a possible Australia-China Free Trade Agreement. The announcement followed the signing of the Australia-China Trade and Economic Framework in 2003, which provides a foundation for closer bilateral commercial relations.

Two-way trade has increased significantly over the past decade – in 2004 China was Australia's third largest trading partner overall. Australia exported goods and services to China worth \$11b and \$1b respectively, and imported goods and services from China worth \$18b and \$1b. Major Australian merchandise exports to China are iron ore, wool, crude petroleum and coal.

The Australia-China Council, established by the Australian Government in 1978, plays a significant role in enhancing Australia's cultural relations and people-to-people ties with China.

Within the parameters of its one-China policy, Australia promotes important economic and trade, cultural and people-to-people links with Taiwan.

## Indonesia

Australia continues to advance its close ties with Indonesia, which include political relations, trade and investment, people-to-people links, education, tourism, development cooperation and cultural exchanges. There is extensive bilateral cooperation on counter-terrorism, people smuggling and other transnational crimes. The Australian Prime Minister visited Indonesia three times in 2004–05. The Indonesian President visited Australia in April 2005 and signed, with the Australian Prime Minister, a Joint declaration on a Comprehensive Partnership to advance bilateral cooperation.

Australia is committed to providing ongoing assistance towards Indonesia's economic and social development. In January 2005, shortly after the December 2004 Indian Ocean tsunami, the Australian Prime Minister and Indonesian President announced a five-year \$1b Australia-Indonesia Partnership for Reconstruction and Development – the single largest aid package in Australian history. Under the Partnership, Australia will provide extensive assistance for reconstruction and development in Aceh and throughout Indonesia.

The Australia-Indonesia Ministerial Forum, which involved eight Australian and five Indonesian ministers, was held in March 2005. The Forum, together with the Australia-Indonesia Trade Ministers' Meeting, provides a key platform for enhanced cooperation between the two countries. In these and other forums Australia encourages further liberalisation of Indonesia's business environment and import regime. The two countries have also agreed to develop a trade and investment framework. In 2004, Australia exported goods and services to Indonesia valued at \$3b and \$1b respectively, and imported goods and services from Indonesia valued at \$4b and \$0.5b. Australia's major merchandise exports to Indonesia are cotton, crude petroleum, live animals and aluminium.

Australia promotes understanding and exchanges between the two countries through the Australia-Indonesia Institute, established by the Australian Government in 1989.



## ASEAN

Australia attaches priority to its relationship with the Association of South-East Asian Nations (ASEAN), which is a key regional institution comprising Brunei Darussalam, Burma, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam. As a dialogue partner, the Australian Government participates in important ASEAN meetings, notably the ASEAN Regional Forum on promoting regional security and confidence building, and the ASEAN Post Ministerial Conference.

Relations between Australia and ASEAN were strengthened further in November 2004 when the Australian Prime Minister attended an ASEAN-Australia New Zealand Summit in Vientiane, Laos, to celebrate 30 years since Australia's inclusion as an ASEAN dialogue partner. At the conclusion of the Summit, leaders announced the start of negotiations for a possible ASEAN-Australia New Zealand Free Trade Agreement. Agreement was also reached in 2004 on an ASEAN-Australia Joint Declaration for Cooperation to Combat International Terrorism, which will underpin regional cooperation on counter-terrorism and other regional security issues.

In July 2005, ASEAN foreign ministers announced that Australia will be a participant in the inaugural East Asia Summit, to be held in Kuala Lumpur, Malaysia, in December 2005. The invitation to participate in the Summit followed the Australian Government's decision to accede to the ASEAN Treaty of Amity and Cooperation.

Australia also has substantial relationships with many of the individual members of ASEAN, spanning strategic, economic, development and educational ties. In recent years Australia has achieved significant progress towards greater integration with some of the dynamic economies of ASEAN.

The Singapore Australia Free Trade Agreement entered into force in 2003 and is subject to regular review to maximise the benefits for businesses in both countries. In 2004 Australia exported goods and services to Singapore valued at \$3.5b and \$2.5b respectively, and imported goods and services from Singapore valued at \$6b and \$2.5b. Australia's largest export to Singapore is crude petroleum. The Australian Prime Minister visited Singapore in February 2005. This was followed by an official visit to Australia by Singapore's President in March 2005 – the first visit to Australia by a Singaporean Head of State.

The Thailand-Australia Free Trade Agreement (TAFTA) and an Agreement on Bilateral Cooperation between Australia and Thailand were signed during an official visit to Australia by Thailand's Prime Minister in July 2004. TAFTA entered into force on 1 January 2005. In 2004, Australia exported goods and services to Thailand valued at \$3b and \$0.5b respectively, and imported goods and services from Thailand valued at \$3.8b and \$0.9b. In addition to trade and investment, Australia pursues a broad agenda of cooperation with Thailand in law enforcement, counter-terrorism, defence, education and tourism. In 2005 Australia established an Australia-Thailand Institute to promote people-to-people, cultural and educational ties.

Since elections in Malaysia in March 2004, Australia and Malaysia have sought to build on long-standing bilateral cooperation with stronger political ties. In 2005, Malaysia's Prime Minister paid an official visit to Australia – the first such visit by a Malaysian Prime Minister in 21 years. During the visit, the two countries launched negotiations towards a possible bilateral Free Trade Agreement and agreed to establish an Australia-Malaysia Institute to enhance institutional and people-to-people ties. In 2004, Australia exported goods and services to Malaysia valued at \$2.4b and \$1b respectively, and imported goods and services from Malaysia valued at \$5.5b and \$0.5b.

Australia takes appropriate opportunities to press for democratic reform and national reconciliation in Burma (Myanmar), including in the United Nations (UN) General Assembly.

## Korean Peninsula

Australia's relationship with the Republic of (South) Korea (ROK) focuses on trade and investment, as well as cooperation in support of a nuclear-free Korean Peninsula.

For many years, Australia's commodity exports underpinned the ROK's rapid industrial growth. There continue to be significant opportunities for Australia to supply the ROK with goods and services, including energy and resources. In 2004, Australia exported goods and services to the ROK valued at \$9b and \$1b respectively and imported goods and services from the ROK valued at \$5b and \$0.3b. Major Australian merchandise exports to the ROK are coal, crude petroleum, iron ore, non-monetary gold and beef.

Australia established the Australia-Korea Foundation in 1992 to develop and deepen relations between Australia and the ROK.

Australia is active in support of efforts to resolve tensions on the Korean Peninsula. Australia resumed diplomatic relations with the Democratic Peoples Republic of Korea (DPRK) in 2000, but development of that relationship has been suspended pending progress by the DPRK on dismantling its nuclear weapons program. Australia has urged the DPRK to renounce nuclear weapons programs, and has worked closely with regional partners to ensure the DPRK understands the extent of international concern over the issue. In 2005 Australia co-sponsored a resolution carried by the UN Commission on Human Rights regarding the human rights situation in the DPRK.

## **New Zealand**

Australia and New Zealand share a close relationship based on common values and proximity, and this is reflected in extensive contact at senior levels of government. Strategic and defence relations are set out in the 1944 Canberra Pact, the 1951 ANZUS Treaty and the 1991 Australia-New Zealand Closer Defence Relations Agreement. The Australia-New Zealand Leadership Forum, involving ministers, business representatives and senior government officials from both countries, met in 2004 and 2005 to explore ways to broaden and deepen trans-Tasman relations.

Two way trade and investment takes place under the Australia New Zealand Closer Economic Relations (CER) Trade Agreement, which created a free trade area between the two countries in 1983. An annual CER ministerial meeting addresses ways of further facilitating the free flow of trade between the two countries. Exports of Australian goods and services to New Zealand were valued at \$8.7b and \$2.6b respectively in 2004. Australia imported goods and services from New Zealand valued at \$5.2b and \$1.7b over the same period. Australia's major merchandise exports to New Zealand are office machines and equipment, vehicles and petroleum. Australia is New Zealand's largest trading partner.

There are extensive people-to-people linkages between the two countries. The trans-Tasman Travel Arrangements of 1973 allow Australians and New Zealanders to visit, live and work in each others' countries without restriction.

## **East Timor**

Australia worked closely with the East Timorese people and the UN in support of East Timor's stable transition to independence in 2002. Australia continues to play a leading role assisting East Timor's development, including through contributing to the UN peace-building mission and through a substantial program of bilateral assistance. Australia and East Timor are negotiating shared revenues from Timor Sea resources. The Australian Governor-General paid the first bilateral visit to East Timor by a foreign Head of State in 2004 and the East Timorese President made his first state visit to Australia in 2005.

## **The South Pacific**

Australia values its close historical, political, economic and community links with the island countries and territories of the Pacific, and has a strong interest in promoting their stability and economic viability. Australia is the largest provider of development assistance to the South Pacific and is playing an active role across the region in support of improved security and good governance.

Australia is a founding member and major donor to a number of key regional organisations in the South Pacific. These include the Pacific Islands Forum, which is the region's principal political institution. The Pacific Islands Forum holds an annual Summit for leaders at which a wide range of security, economic, governance and other issues relevant to the region are discussed. For the first time, an Australian is serving as Secretary-General of the Pacific Islands Forum Secretariat.

Australia is coordinating the Regional Assistance Mission to Solomon Islands (RAMSI), which has succeeded in stabilising law and order and government finance, and is now assisting the Solomon Islands Government to focus on a second phase of longer-term nation building.

The Australian and Papua New Guinea (PNG) Governments established the Enhanced Cooperation Program (ECP) in 2004 to remove key impediments to PNG's development. Under the ECP, Australia provided police and public servants to work in PNG Government agencies to promote legal reform, economic and financial management and border and transport security. The ECP received a set back following a PNG court ruling that elements of the PNG legislation underpinning the ECP were unconstitutional.

However, in-principle agreement has been reached by Australia and PNG ministers on a revised ECP which is consistent with the court ruling. Australia has also deployed officials to Nauru to help promote economic reform and rebuild the Nauru police force.

## Canada

The Australia-Canada relationship is mature, productive and broadly based. Trade relations go back over 100 years, and formal diplomatic links are 60 years old. Historical parallels in social and cultural development have produced similar rules of law, government institutions and societies. In addition to an active trade and investment relationship, Australia and Canada cooperate on international security, trade and environmental issues, including in the United Nations. In 2004 Australia exported goods and services to Canada valued at \$2b and \$0.5b respectively. Australia imported goods and services from Canada of approximately the same value.

## Europe

Australia continues to deepen its relations with the European Union (EU). Following its expansion in 2004 from 15 to 25 member states, the EU's population grew to 455 million and its economy to a size comparable to that of the USA. Australia's relations with the EU are underpinned by the Joint Declaration on Relations between Australia and the European Union of 1997, and the 2003 action plan Australian-European Union: an agenda for cooperation. Ministerial consultations between Australia and the European Commission are held annually. Australia also regularly holds broad-ranging policy dialogues at ministerial level with the EU Presidency, which rotates among members every six months.

Australia engages with the EU on strategic stability (especially concerning the Asia-Pacific region) and agricultural reform, among other issues. Australia is negotiating with the European Police Office (Europol) to enhance cooperation against transnational crime, including terrorism, drug trafficking and people smuggling.

Australia has close ties with many countries in Europe. The Australian Government promotes strategic and economic objectives through high-level dialogue, trade negotiations and promotion, and development of bilateral agreements. These objectives were advanced during a number of high-level visits between Australia and European countries in 2004–05. The Australian Governor-General and Prime Minister

both visited the United Kingdom, reflecting the long-standing and vibrant relationship between the two countries based on shared values, security cooperation, strong trade and investment flows, and people-to-people linkages. The Governor General visited Russia in conjunction with an Australian promotion and to attend a ceremony to mark the 60th anniversary of World War II. The Australian Prime Minister visited Turkey to attend the 90th anniversary of the Gallipoli landings and to advance a range of initiatives to develop bilateral relations. The Prime Ministers of Sweden and Norway both visited Australia in 2004–05, reflecting interest in closer trade links and enhanced dialogue on global and regional strategic issues.

Australians of European descent contribute to strong people-to-people relationships with a range of European countries.

## South Asia

India is a significant power in world affairs. It has become an increasingly important economic, political and strategic partner for Australia. The Australian and Indian Governments participate in a regular Foreign Ministers' Framework Dialogue, a Joint Ministerial Commission (on trade) and a senior officials' Strategic Dialogue. At the Joint Ministerial Commission in 2005, the two countries agreed to begin negotiations for a Trade and Economic Framework to lift the profile of and set the direction for the bilateral trade and investment relationship.

In 2004 Australian merchandise exports to India grew by more than 60% compared with the previous year. Australian exports of goods and services to India were valued at \$5.5b and \$0.5b respectively. Australian imports of goods and services from India were valued at \$1b and \$0.3b. Australia's major exports to India are non-monetary gold, coal, copper and wool. Australia established the Australia-India Council in 1992 to broaden and deepen bilateral contacts and understanding.

Australia maintains productive bilateral relationships with other countries of South Asia. Australia contributed to international diplomatic efforts which paved the way for an easing of tensions between India and Pakistan over recent years. The visit to Australia by the Pakistani President in 2005 represented an important milestone in Australia's relations with that country. Agreements on cooperation on counter-terrorism and agriculture were signed during the visit.

Following participation in the international military intervention in Afghanistan to oust the Taliban regime and disrupt the Al Qaida terrorist network,

Australia continues to contribute to Afghanistan's stability and reconstruction. Australia also contributes to peace-building in Sri Lanka.

## Latin America

Australia engages with Latin American countries on a range of issues, including trade liberalisation, environmental protection and fisheries management. With New Zealand, Australia participates in a formal dialogue with the members of Mercosur – South America's most significant regional trade agreement (Brazil, Uruguay, Paraguay and Argentina) – to discuss trade policy cooperation. The Council on Australia Latin America Relations, established by the Australian Government in 2001, supports Australia's broad diplomatic and economic objectives in the Latin American region.

## The Middle East

The Middle East is an area of global strategic and commercial importance. The Australian Government has long supported and encouraged the establishment of a viable Palestinian state standing side-by-side with a secure Israeli state.

Australia participated in the international coalition to liberate the people of Iraq, and continues to attach priority to supporting Iraq's political transition, internal security and rehabilitation. Australia's policy on Iraq is set out in the publication *Iraq – the Path Ahead*.

Australia's commercial interests in the Middle East, particularly the Gulf States, are expanding, including in agriculture and services. Australia and the United Arab Emirates are undertaking negotiations towards a possible free trade agreement, and Australia is negotiating memorandums of understanding with a number of countries in the region in support of Australia's significant live animal export trade. A Council for Australian-Arab Relations was established by the Australian Government in 2002 to strengthen ties between Australia and Arab countries.

## Africa

Australia's most significant relationship in Africa is with South Africa where there is a substantial bilateral trade relationship and strong people-to-people links exist. Australian mining companies are increasingly active throughout Africa and this is becoming an important focus of bilateral engagement. Australia applies 'smart sanctions' to exert pressure on the Zimbabwean Government to improve its governance and

economic management and to restore respect for human rights, while continuing to provide emergency food and other humanitarian aid. Australia is working with the international community to address political instability and the humanitarian situation in Darfur, Sudan.

## Australia's security interests

Countering terrorism is a key priority for Australia, requiring a well-coordinated international response. In 2004 the Australian Government published a White Paper *Transnational Terrorism: The Threat to Australia*, describing the nature of the terrorist threat to Australia and Australia's international response. Australia has concluded eleven bilateral arrangements promoting closer cooperation on counter-terrorism in the Asia-Pacific region, and has undertaken a number of practical counter-terrorism exercises with regional partners. In 2005, Australia announced a new package of counter-terrorism assistance for regional countries worth \$40.3 million (m) over four years. This will enable Australia to continue to provide practical assistance to strengthen the region's counter-terrorism capacity in key sectors such as law enforcement, border control, intelligence, defence and transport security. In 2004 Australia established with Indonesia the Jakarta Centre for Law Enforcement Cooperation to boost the capacity of law enforcement agencies to fight terrorism and other transnational crime. Australia works with the UN and in other fora in support of international counter-terrorism efforts.

Australia attaches high priority to supporting multilateral arms control and non-proliferation regimes. This includes efforts to strengthen compliance and verification mechanisms of international treaties, particularly the Nuclear Non-Proliferation Treaty. Through active participation in the International Atomic Energy Agency, the Australian Government seeks to hold to account Iran and the DPRK over their nuclear activities. Australia is the permanent chair of the Australia Group, which is dedicated to preventing the proliferation of chemical and biological weapons. The Group – comprising 39 countries plus the European Commission – marked its 20th anniversary in 2005. The Proliferation Security Initiative – a global initiative established in 2003 to develop practical measures to disrupt illicit trade in weapons of mass destruction – is a core element of Australia's counter-proliferation strategy. Australia undertakes an active counter-proliferation outreach program, providing

practical, technical assistance to key regional countries on export control measures to assist them to meet relevant international obligations.

Australia's alliance relationship with the USA is crucial to Australia's security and to strategic stability in the Asia-Pacific region. A Trilateral Security Dialogue involving Australia, Japan and the USA addresses shared interests in international security and cooperation. Australia is developing and deepening bilateral defence and security relationships with countries throughout the Asia-Pacific region, and with regional security organisations such as the ASEAN Regional Forum and the North Atlantic Treaty Organisation.

Australia works bilaterally and in regional forums to combat transnational crime. For example, Australia co-chairs, with Indonesia, the Bali process on people smuggling, trafficking in persons and related transnational crime.

## **Australia's economic interests**

Australia's economic well-being and growth depend on trade and investment. Over 1.7 million Australian jobs are directly or indirectly connected to exports. Australia is currently pursuing an ambitious and broad-ranging trade policy agenda which combines mutually reinforcing multilateral, regional and bilateral strategies to open new markets, reduce barriers to trade and promote Australian goods and services internationally.

Australia's trade policies and strategies are described in more detail in the Trade Minister's annual Trade Statement and are discussed at National Trade Consultations and meetings of the Trade Policy Advisory Council.

## **World Trade Organization**

Australia is a strong supporter of the World Trade Organization (WTO) as the chief forum for global trade liberalisation. Australia's current multilateral trade objective is the successful conclusion of the Doha round of trade negotiations, launched in 2001. The round could potentially deliver substantial improvements to Australia's access to global markets – particularly in agriculture, services and industrial products – and reduce other distortions, particularly in the agriculture sector. Australia actively encourages WTO members to engage constructively in the negotiations. The issues are complex and progress has tended to be slow, due to the diverse interests

of the WTO's membership. Nevertheless, in August 2004 WTO members reached agreement on a 'Framework Package' that helped increase the momentum of negotiations across all sectors and launched negotiations on a new trade facilitation agreement.

Australia co-founded and chairs the Cairns Group of 17 agricultural fair traders, which seeks to redress global distortions in agriculture trade. Achieving a favourable outcome on agriculture in the Doha round is a major priority – and challenge – for Australia and other Group members. Some progress has been made, for example in obtaining the commitment of WTO members under the Framework Package to eliminate the most trade distorting form of agricultural support – export subsidies – which are already illegal under WTO rules for non-agricultural products. Australia is also encouraging a high level of ambition in WTO negotiations on further liberalisation of industrial products and services, given industrials account for 76% of Australia's merchandise exports and Australia's services exports continue to grow rapidly.

Australia pursues a number of other trade objectives through the WTO. For example, Australia recently successfully challenged the EU's sugar regime, with significant potential benefits for the Australian sugar industry.

Australia participates in negotiations with countries seeking to join the WTO, and works with regional developing and least developed countries to assist them in their efforts to accede. Australia provided such assistance to Cambodia, which acceded to the WTO in 2004, bringing the total WTO membership to 148.

## **Asia-Pacific Economic Cooperation**

Australia strongly supports the Asia-Pacific Economic Cooperation (APEC) forum, which makes an important contribution to regional cooperation, economic growth and stability. APEC's core mission is encompassed in the 'Bogor Goals' to achieve free and open trade and investment in the Asia-Pacific region through trade liberalisation, trade facilitation and economic and technical assistance for developing member economies. In recent years, APEC Leaders have recognised that economic prosperity is not possible without security and, at their annual meeting in 2003, adopted the complementary goal of protecting the security of their peoples.



Australia is working to promote and implement key elements of APEC's agenda, including trade and investment liberalisation and facilitation, counter-terrorism and secure trade, and disaster response and emergency preparedness.

Responsibility for hosting APEC meetings rotates among members annually. Australia will host APEC in 2007.

## Free Trade Agreements

Australia negotiates Free Trade Agreements (FTAs) with important trading partners to deliver improved access for Australian exporters in target markets. FTAs are consistent with WTO principles, help to open up all trade in goods, provide improved conditions for services trade and investment, and are generally faster to negotiate and implement than other trade deals.

The Australia New Zealand Closer Economic Relations (CER) Trade Agreement is Australia's longest-standing free trade agreement, having begun in 1983. The Agreement covers all trans-Tasman trade in goods and most services and is supported by a network of bilateral arrangements. It is widely regarded as a model trade agreement and has been very successful in boosting trans-Tasman trade and investment links and strengthening the international competitiveness of both economies.

Australia's second free trade agreement – the Singapore-Australia Free Trade Agreement (SAFTA) – entered into force in 2003. In addition to tariff elimination, the agreement guarantees increased market access for Australian exporters of services and provides a more open and predictable business environment.

The Thailand-Australia Free Trade Agreement (TAFTA) – which entered into force on 1 January 2005 – is a major market opening agreement that will lead to the complete elimination of Thailand's significant tariffs across all sectors. On entry into force, more than half of Thailand's 5,000 tariffs – accounting for nearly 80% of Australia's exports to Thailand – were eliminated. Tariffs not immediately eliminated will be phased down. TAFTA improves the environment for bilateral services trade, investment and business mobility.

The Australia-United States Free Trade Agreement (AUSFTA) – which also entered into force on 1 January 2005 – is a landmark agreement with the world's largest economy. It led to significantly

improved access for Australian industrial and agricultural goods in the USA and provides important guarantees to underpin substantial bilateral services trade. The successful negotiation of AUSFTA demonstrates the increasing importance of Australia as a trade and investment partner for the USA.

Australia is negotiating a number of possible new FTAs. Together with New Zealand, Australia is undertaking negotiations with the ten members of ASEAN. Australia has also commenced negotiations towards possible new agreements with the United Arab Emirates, Malaysia and China.

## Australia's environment interests

Australia attaches importance to the protection, conservation and ecologically sustainable use of the environment. Australia participates actively in international negotiations in a range of environmental forums to secure outcomes that advance environmental and trade interests in a mutually reinforcing framework.

### Whales

Australia is a driving force behind global whale conservation and is an active member of the International Whaling Commission (IWC). Australia supports whale sanctuaries and non-lethal research on whale populations to protect them as they recover from centuries of hunting. Jointly with New Zealand since 2000, Australia has argued in the IWC for the creation of a South Pacific whale sanctuary. A whale sanctuary in the South Pacific would complement the existing Southern Ocean sanctuary by protecting whales in their breeding grounds, in addition to their feeding grounds in the Southern Ocean.

### Biosafety Protocol

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity has the potential to have an impact on Australia as a developer and user of genetically modified organisms in agricultural applications. Although not a party to the protocol, the Australian Government engages actively at international meetings and consults closely with key domestic industries and like-minded agricultural exporting countries to protect Australia's environmental and trade interests.

## Climate Change

Australia plays a leading role in practical international approaches to address climate change. In July 2005 Australia, China, India, Japan, ROK and USA founded a new partnership to address climate change, energy security and air pollution issues in ways that encourage economic development and reduce poverty. Australia maintains constructive engagement with the UN Framework Convention on Climate Change, has a series of dynamic bilateral climate change partnerships, plays a key role in international climate related technology initiatives, and funds climate related aid projects, particularly in the South Pacific.

## Tsunami

Following the December 2004 tsunami Australia played a leading role in establishing an Indian Ocean tsunami warning system (IOTWS) and has developed a comprehensive national warning system. Australia will host the IOTWS Secretariat in Perth, which will coordinate tsunami warning for the Indian Ocean. As part of the Indian Ocean system, Australia's increased monitoring capacity off the west and north coasts will provide vital regional coverage. Australia is committed to sharing relevant information with countries in the region.

## Australia's engagement with the United Nations

Australia was a founding member of the UN in 1945 and has been actively engaged in the organisation since then, including in peacekeeping operations. Australia's core interests in the UN's agenda are international security and non-proliferation, environment, human rights, and development assistance. The Australian Government engages closely with UN technical agencies dealing with issues such as agriculture, refugees and international nuclear safeguards. Australia's participation in the UN system is focused on achieving practical, constructive outcomes that support the security and prosperity of Australia and Australians.

Australia supports efforts to reform the UN system to make it more efficient and responsive to contemporary challenges. Australia, along with other countries, provided constructive proposals to a high-level panel on Threats, Challenges and Change, established by the UN Secretary-General.

Australia is represented on a number of international bodies in the UN system. These include the Governing Body of the International Labour Organisation; the Commission on Human Rights; the Commission on Narcotic Drugs; the Commission on Sustainable Development; the Program Coordination Board of the Joint UN Program on HIV/AIDS; the panel of the International Criminal Tribunal for the Former Yugoslavia; and the Governing Councils of the International Civil Aviation Organisation and the Universal Postal Union.

## Australia and the Commonwealth

Australia is an active member and supporter of the Commonwealth – an association of 53 countries. Australia particularly values the role of the Commonwealth in promoting the principles of democracy, good governance and human rights among its members. Australia hosted the Commonwealth Heads of Government Meeting in 2002 and the Australian Prime Minister filled the position of Commonwealth Chair-in-Office in 2002–03.

## Australia's human rights policy

Australia takes an active and constructive approach to improving human rights standards and systems internationally, including through: targeted development assistance programs; supporting good governance and the establishment of national human rights institutions; encouraging multilateral, regional and bilateral discussion of human rights issues; and working to develop and strengthen the effectiveness of regional and international human rights institutions and instruments. Australia addresses human rights issues through action in multilateral fora such as the UN Commission on Human Rights (CHR) and by raising particular concerns with individual countries. Australia holds dedicated bilateral human rights dialogues with China and Vietnam. Australia is a party to numerous international human rights treaties and instruments.

At CHR in 2005, Australian resolutions on good governance and national human rights institutions were adopted by consensus. Australia also contributed to positive outcomes on resolutions dealing with the human rights situations in Sudan, the DPRK, Cuba and Burma.



Australia has served on the CHR since 2003, and was elected President of the CHR for the first time in 2004. Australia is working with others to promote practical proposals to strengthen the capacity of the United Nations to hold serious abusers of human rights more accountable.

## The role of DFAT in Australia's international relations

The Department of Foreign Affairs and Trade (DFAT) is the principal source of advice to the Australian Government on foreign and trade policy issues, and is responsible for implementing the Government's foreign and trade policies. The aim of the Department is to advance the interests of Australia and Australians internationally. To this end, the Department works to achieve four primary outcomes:

- Australia's national interests protected and advanced through contributions to international security, national economic and trade performance, and global cooperation
- Australians informed about and provided access to consular and passport services in Australia and overseas
- public understanding in Australia and overseas of Australia's foreign and trade policy and a positive image of Australia internationally
- efficient management of the Australian Government overseas owned estate.

## Services to the Australian community

### Consular services

DFAT provides consular services to Australians travelling overseas, and their families in Australia, through its network of overseas missions and honorary consulates (consisting of over 170 points of consular service worldwide), the 24-hour Consular Emergency Centre in Canberra and consular cooperation arrangements with other countries.

Consular services include: assisting Australians who are hospitalised, imprisoned or require welfare assistance overseas; helping family members when Australian travellers go missing or die overseas; and coordinating responses to overseas emergencies affecting Australian nationals. Of the 4.1 million Australians who travelled overseas in 2004–05, the Department

provided significant consular assistance to over 25,000 of them. In addition, the Department's *Smarttraveller* campaign promotes safe overseas travel by Australians, including by providing comprehensive travel advice on 152 countries to help Australians avoid dangers and difficulties.

### Passport services

DFAT provides secure travel documents to eligible Australians in accordance with the *Australian Passports Act 2005 (Cwlth)*, which entered into force on 1 July 2005. The Department issued 1,260,831 travel documents in 2004–05 – an increase of more than 15% over the previous year. For international security reasons, emphasis is increasingly placed on identity verification and fraud prevention in passport issuing processes. A new and more secure passport was introduced in December 2003 and work is continuing to make the passport even more secure through new technology applications.

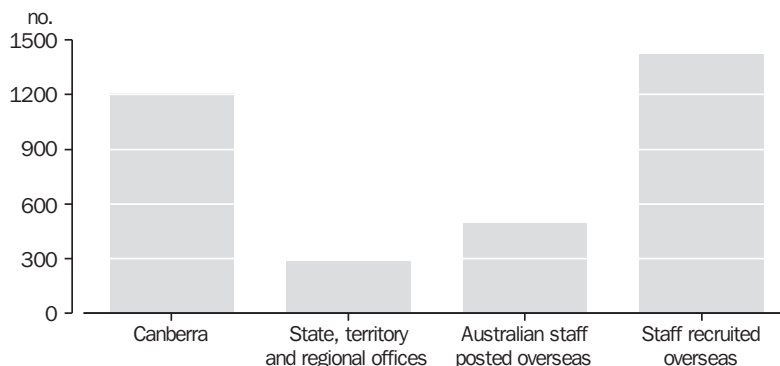
### Public information services

DFAT provides a range of information services on foreign and trade policy to the Australian public and media, including through briefings and public presentations and the production of public affairs material such as brochures, reports and publications. The Department promotes an accurate and contemporary image of Australia internationally, and also provides regular briefings to the media on current international issues. Detailed information about Australia's foreign and trade policy can be obtained from the Department's web site at <[www.dfat.gov.au](http://www.dfat.gov.au)>. Further information and links are listed in the bibliography.

## The network of Australian diplomatic and consular missions overseas

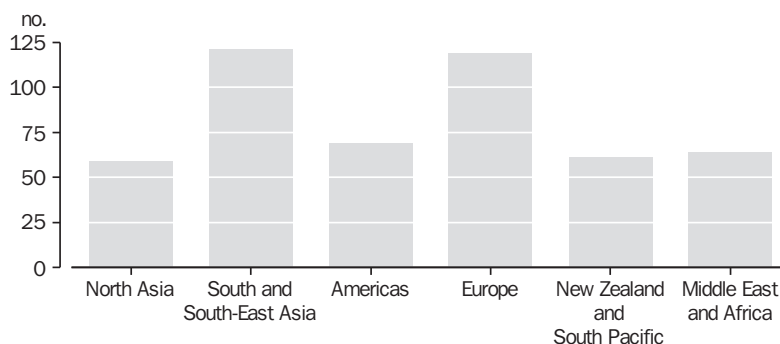
DFAT manages an extensive network of Australian diplomatic and consular missions abroad, supporting Australia's international interests and providing consular and passport services. The Department's central office is in Canberra. It maintains offices in all other state and territory capitals, as well as Newcastle and Thursday Island. Information on the location of overseas embassies, high commissions, consulates and multilateral missions managed by DFAT can be found in the online version of the Department's annual report at <[http://www.dfat.gov.au/dept/annual\\_reports/](http://www.dfat.gov.au/dept/annual_reports/)>.

### 3.1 AUSTRALIAN AND LOCALLY ENGAGED DFAT STAFF — 30 June 2005



Source: Department of Foreign Affairs and Trade.

### 3.2 LOCATION OF AUSTRALIA-BASED DFAT STAFF POSTED OVERSEAS — 30 June 2005



Source: Department of Foreign Affairs and Trade.

The Department currently employs just under 2,000 Australia-based staff, of whom around 25% are posted overseas. In addition, just over 1,400 locally engaged staff are employed by the Department's overseas missions (graphs 3.1 and 3.2).

## The Australian overseas aid program

The Australian Government's overseas aid program advances the national interest by assisting developing countries to reduce poverty and achieve sustainable development. Australian aid helps build a stable, prosperous and democratic Asia-Pacific region, responds to emergencies and humanitarian crises, and targets urgent needs in Africa and the Middle East. The aid program was a central component of Australia's response to the December 2004 Indian Ocean tsunami disaster, and is helping

neighbouring countries address longer-term challenges such as broad-based economic growth, weak governance, instability and HIV/AIDS.

Development issues have become increasingly interlinked with broader Australian regional and international policy priorities, including regional security, trade, economic integration, and the transboundary threats posed by communicable diseases. The aid program plays a role in the integrated, whole-of-government approach to engaging with the region. It draws upon the skills and expertise of a wide range of Australian Government agencies to tackle issues in a direct, practical way. The aid program also builds long-term partnerships with other donors, regional and multilateral organisations, and most importantly with partner governments, to harmonise and align inputs and priorities.

Over the past 20 years, the Asia-Pacific region has experienced rapid development. More than 500 million people have been lifted out of poverty. China has become a global economic player and aid to Thailand is declining in response to its strong economic achievement and desire to become a regional aid donor. Yet significant challenges remain. Countries such as Cambodia, the Philippines, Papua New Guinea and the Solomon Islands are struggling to maintain levels of economic growth sufficient to make inroads into poverty, and rural poor and areas of concentrated urban poverty remain.

### 3.3 AUSTRALIAN OFFICIAL DEVELOPMENT ASSISTANCE(a) — 2005–06

	\$m
Papua New Guinea and Pacific	
Papua New Guinea	492.3
Solomon Islands	246.8
Vanuatu	34.1
Fiji	30.5
Samoa	21.5
Tonga	14.2
Kiribati	12.5
Regional Pacific	91.4
Total	943.2
Nauru Additional(b)	12.0
East Asia	
Indonesia (ongoing program)	169.6
Indonesia (AIPRD)(c)	132.1
Vietnam	77.3
Philippines	63.7
China	46.2
Cambodia	42.7
East Timor	42.0
Laos	19.6
Thailand	7.0
Regional East Asia	45.8
Total	646.1
South Asia, Africa and Other	
Bangladesh	32.3
India	29.1
Sri Lanka	13.7
Regional South Asia	22.5
Africa	77.0
Middle East and Central Asia	66.6
Total	241.3
Other Government Departments (OGD)(d)	173.2
Core contributions to multilateral organisations, other ODA(e)	486.2
Reconciliation of expenses to cash(f)	-11.1
<b>Total ODA (cash)</b>	<b>2 490.8</b>

(a) Budget estimates for 2005–06. (b) Represents additional funding appropriated through new budget measures agreed by the Australian Government. (c) Australia-Indonesia Partnership for Reconstruction and Development. (d) Includes ODA eligible expenditure by government departments which has not been allocated to a particular country or region. (e) Includes core contributions and cash payments to multilaterals that cannot be attributed to a particular country. (f) Includes accrual adjustments for non-ODA eligible (administered and departmental) expenditure.

Source: AusAID.

In 2005–06 the Australian Government is providing an estimated \$2.5b in Official Development Assistance (ODA), an increase of \$238m over the 2004–05 expected ODA of \$2.3b. Details of ODA to partner countries in 2005–06 are provided in table 3.3. The ratio of Australia's ODA to gross national income for 2005–06 is estimated at 0.28%, placing Australia above the donor average which, in the latest year available (2004), was 0.25%.

Further information and publications on the aid program can be obtained from the web site of the Australian Agency for International Development, <<http://www.usaid.gov.au>>.

### The Australian Agency for International Development (AusAID)

AusAID administers Australia's overseas aid program on behalf of the Australian Government. The aid program's objective is to advance Australia's national interest by assisting developing countries to reduce poverty and achieve sustainable development.

### Key themes of the aid program

Five guiding themes link individual aid activities with the aid program's poverty reduction framework and focus on broad-based economic growth. These themes also relate Australia's aid responses to core national interest issues:

- *Governance* – promoting improved governance across all areas of partner governments and strengthening democratic processes
- *Globalisation* – assisting developing countries to access and maximise the benefits from trade and new information technologies
- *Human capital* – supporting stability and legitimacy through improved delivery of basic services
- *Security* – strengthening regional security by enhancing partner governments' capacity to prevent conflict, enhance stability and manage transboundary challenges
- *Sustainable resource management* – promoting sustainable approaches to managing the environment and using scarce resources.

Australia's aid is guided by the needs and priorities of partner countries. Country and regional development cooperation strategies are developed in consultation with partner governments and are the primary means through which the guiding themes are translated into activities on the ground.

Over the next three years, Australia is pursuing a number of priorities that will further enhance the focus, effectiveness and relevance of the aid program. These centre on: a closer partnership with Indonesia; long-term and innovative approaches to engaging with fragile states; initiatives to stimulate broad-based economic growth; strengthening political governance and tackling corruption; addressing transnational threats, particularly HIV/AIDS; and contributing to stability and security.

## Country and regional programs

### Papua New Guinea (PNG)

The development of a stable and prosperous PNG remains a high priority for the Australian Government. With weak medium-term revenue prospects, PNG needs to consolidate and build on current economic and fiscal progress, and provide a level of basic services that will support broad-based growth. Improved accountability and governance mechanisms, including public expenditure management and administration, are needed to facilitate and safeguard improved public sector performance.

Australia is working closely with PNG to overcome the major constraints to its stability and development – weak governance, poor service delivery and low rates of growth. To achieve these goals, the aid program works through PNG government agencies and systems wherever possible to ensure better use of its own resources. Australian aid is supporting health and education services, an effective and robust law and justice system and serviceable transport infrastructure. It is also creating an environment conducive to private sector growth and democratic change by promoting debate on PNG's development choices, building the capacity of non-government agencies and regulatory frameworks, and supporting a free and fair electoral system.

In response to PNG's changing environment, coupled with lessons learned from the aid program's interventions in a range of sectors, Australia is working with other major donors to develop a new medium-term strategy for engagement with PNG. The new approach is consistent with Australia's engagement with fragile states and underlines the importance of strengthening political governance and targeting corruption, building sustainable government institutions, exploiting opportunities to stimulate economic growth, and maintaining delivery of

services to minimise the impact of system failures on the poor. It places substantially more emphasis on working through PNG's own budgeting and planning mechanisms, both in terms of identifying priority inputs and in monitoring and reviewing performance. The new approach also focuses on improved donor harmonisation to reduce the administrative burden of aid delivery and improve aid effectiveness.

### The Pacific region

Australia has bilateral aid programs with a number of Pacific island nations including the Solomon Islands, Vanuatu, Fiji, Samoa, Tonga and Kiribati. The countries of the Pacific are diverse but many face similar constraints to development including their small size, lack of economic diversity, remoteness from major trade and commercial sectors, growing populations, vulnerability to natural disasters and fragile governance frameworks. Economic gains have been weak, volatile, and unequally distributed and social instability has hampered growth.

A new *Pacific Regional Aid Strategy 2004–2009* provides the framework for Australia's long-term development goals in the Pacific. The framework focuses on four themes: stronger broad-based economic growth; more effective, accountable and democratic government; improved law and justice and security; and enhanced service delivery, including effective fiscal management. Australia takes a lead role in building cooperative frameworks with other donors and regional organisations and applies a 'hands-on' approach to its aid program in the Pacific. Links are being strengthened between core Australian Government agencies and their Pacific counterparts, including through placing senior Australian Government personnel in priority areas of Pacific bureaucracies.

The Australian-led RAMSI has contributed to significant improvements in law and order, economic governance and basic government functions since its arrival in July 2003. Now that the security situation has stabilised, RAMSI is working with the Solomon Islands government on longer-term social and economic challenges. These include supporting the transition to self reliance by the Royal Solomon Islands Police, continuing improvements in law and justice, supporting affordable and accountable government, and reinvigorating the economy.

The aid program is implementing a new Fragile States Initiative, which will bring together development, security, economic and political perspectives from across government into a single, dedicated unit. The initiative will boost Australia's capacity to engage with fragile states in the region and further afield, at both strategic and operational levels. It will also provide Australia with an opportunity to play a leading role in shaping international thinking on approaches to fragile states.

A new 'Pacific Plan' is being developed by the Pacific Islands Forum to create stronger and deeper links between Pacific island countries, and identify sectors where the region can gain most from sharing governance resources. As well as supporting this process, AusAID is undertaking a new study, *Pacific 2020*, which will focus on long-term growth options for the developing economies of the Pacific.

### East Asia

Australia has bilateral aid programs with a number of countries including Indonesia, Vietnam, the Philippines, China, Cambodia, East Timor and Laos. Through its bilateral and regional partnerships, Australia is focusing on improving governance and service delivery, advancing economic integration, trade liberalisation and opportunities for broad-based growth, addressing transboundary threats such as organised crime and the spread of communicable diseases, and reducing vulnerability to natural disasters.

Australia's aid to Indonesia is delivered within a new framework of international coordination and harmonisation. The five-year \$1b Australia-Indonesia Partnership for Reconstruction and Development (AIPRD) aid package builds on Australia's response to the December 2004 Indian Ocean tsunami and demonstrates its long-term commitment to reconstruction and development in Indonesia. The AIPRD complements the existing development cooperation program which continues to focus on improving economic management, supporting Indonesia's democratic transition, enhancing security and stability and improving quality and access to basic services. Australia is developing partnerships with other organisations and donors. In maternal and child health, HIV/AIDS and education, Australia is strategically investing in local and international initiatives, and facilitating other donors' investment in Australian-supported programs.

Australia's aid program with Vietnam supports international economic integration and private sector development, and helps to improve living standards for the rural poor in the Mekong Delta and Central Coast region. Improving rural water supply and sanitation is a priority of the program, as well as natural disaster mitigation.

A new Australia-Philippines development cooperation strategy has three objectives: reduce impediments to broad-based economic growth; strengthen security and stability through counter-terrorism capacity building and support for Mindanao peace processes; and raise the living standards of the rural poor in the south of the country, particularly through improving educational opportunities.

Australia has a major stake in ensuring that East Timor, one of the poorest countries in the region, is equipped to meet the challenges to becoming a stable and democratic nation. A new country strategy will focus on building the capacity of the East Timorese Government in areas including law and governance, public expenditure management, transparency, and accountability. Australian aid also supports service delivery in rural areas, particularly in water supply and sanitation.

A new aid strategy with China focuses on governance, health, particularly in communicable diseases, and the environment and water management. In Cambodia, the aid program is strengthening the rule of law, increasing the productivity and incomes of the rural poor, particularly in the agriculture sector, and reducing the vulnerability of the poor to natural disasters. Cooperation with Laos is targeted at improving access to education, supporting the growth of a market economy, and reducing the vulnerability of poorer communities to disasters and the impact of unexploded ordnance.

### South Asia

Australia works with a number of donors, multilateral partners and non-government organisations (NGOs) in South Asia to respond flexibly to major regional issues such as HIV/AIDS, governance reform and people trafficking. Australian assistance is provided in Bangladesh, Sri Lanka, India, Nepal, Pakistan, the Maldives and Bhutan.

Through a joint regional program with the United Nations Children's Fund (UNICEF), Australia is helping to improve basic service delivery,

especially primary education and health. Australia also works with the Joint United Nations Program on HIV/AIDS to deliver prevention and care activities. Australia supports Sri Lanka's post-conflict peacebuilding and economic recovery efforts and also provides significant humanitarian assistance to South Asia, a region vulnerable to crises and natural disasters.

### **Africa and the Middle East**

Africa remains a major development priority for the international community. Australia plays its part in international efforts to assist Africa's development through a strategically targeted aid program focused on southern and eastern Africa. To maximise impact, Australia's assistance is focused on promoting good governance by strengthening basic service delivery, responding to humanitarian needs, especially where linked to food security and conflict, and fighting the spread of HIV/AIDS. Australia is also implementing a new multilateral and donor cooperation framework and partnering NGOs to deliver assistance.

Together with international partners, Australia is helping to build stability and democracy in Iraq and support the transition to an open market-based economy. Australian assistance focuses on the agriculture sector, with niche contributions in related areas such as planning and development cooperation, trade reform, electrical power generation and policing. Through short-term training programs and technical assistance, Australia helps enhance Iraq's human resources capacity and strengthen key institutions.

Australia continues to support Afghanistan's transition from conflict to peace and democracy. Priorities include supporting delivery of essential services through the Reconstruction Trust Fund, and democracy and capacity building of Afghan institutions. Australia also assists the return and reintegration of displaced Afghans, and improves food security and rural livelihoods.

Australia works with multilateral agencies and NGOs to support the Palestinian Authority's efforts to undertake reform and further the peace process. The aid program helps reduce the vulnerability of Palestinians to poverty and conflict through support for activities that deliver essential services and develop the capacities of local organisations.

## **Global programs**

### **Emergency, humanitarian and refugee programs**

Conflicts, crises and disasters significantly undermine the potential for long-term poverty reduction, sustainable development and security. Australia's humanitarian, emergency and refugee programs help address the impacts of conflicts, crises and disasters on vulnerable populations. They also complement and support the objectives of country and regional programs, and integrate with longer-term conflict prevention, peacebuilding, and post-conflict recovery initiatives.

Australia's new Humanitarian Action Policy provides the donorship principles and cutting-edge practice needed to guide Australia's response to new circumstances and emerging needs. The aid program's continued support for and participation in humanitarian research further develops its strategic vision and improves the effectiveness of humanitarian response.

Australia provides core support to key humanitarian agencies. These include the United Nations Office for the Coordination of Humanitarian Affairs, the United Nations High Commissioner for Refugees and the International Committee of the Red Cross. Australia also works with the World Food Program and UNICEF in partner countries. In addition, the International Refugee Fund helps address the needs of people displaced by conflict.

Australia focuses its humanitarian and emergency efforts on the Asia-Pacific region, but retains the ability to respond flexibly, when required, to emergencies further afield. In 2004–05, this flexibility was demonstrated through Australia's response to the crisis in Sudan, the Bam earthquake in Iran, floods in Bangladesh, the Indian Ocean disaster, and through Australia's response to the Sumatra earthquake.

### **Multilateral organisations**

Australia works closely with multilateral organisations that have demonstrated effectiveness, and whose activities complement our own bilateral programs and are consistent with our wider national interests. The World Bank and Asian Development Bank (ADB) are key multilateral partners who are able to leverage



significant financial resources and expertise for sustainable development and poverty reduction. The ADB's focus makes it an important partner in promoting growth and stability in the Asia-Pacific region. The World Bank is an unparalleled source of development expertise and makes a unique contribution through economic and policy research and the implementation of specialist programs.

Support for UN organisations extends the reach of Australia's aid program. These organisations can mobilise and coordinate resources on a scale beyond the capacities of individual donors, and play a significant role in consensus building on key development issues. Australia contributes funding to a number of UN organisations including the World Food Program, United Nations Development Program and UNICEF.

Australia's support for Commonwealth organisations is a reflection of our shared commitment to the core values of democracy and the rule of law, human rights, equity, access to education, the promotion of sustainable development and poverty alleviation. The Commonwealth Fund for Technical Cooperation is the principal means by which the Commonwealth delivers development assistance to developing country members.

Australia supports developing countries through the Global Environment Facility to help them meet environmental concerns and international agreements. The facility funds projects in the six focal areas of biodiversity, climate change, international waters, ozone, land degradation and persistent organic pollutants. Funding is also provided to the Montreal Protocol Multilateral Fund to phase out ozone depleting substances.

### **Non-government organisations and volunteer programs**

NGOs play an important complementary role in delivering a high quality aid program. Besides mobilising Australian public support for development, NGOs are well placed to strengthen civil society in partner countries through their strong community links and partnerships with local organisations. They also provide specialist skills for community development and enhance sustainability.

The Australian Government works with NGOs on program delivery and enhancing administration and accountability, as well as supporting improvements in project design, management,

implementation and evaluation. The AusAID-NGO Cooperation Program supports accredited Australian NGOs to undertake cost-effective, practical and direct poverty reduction activities. In addition, a number of NGO cooperation agreements are providing a framework within which selected NGOs can implement multi-year activities aligned with country program objectives.

The volunteer program aims to improve the quality and development impact of overseas volunteers supported by the Australian Government. AusAID's new overseas volunteer policy provides a framework for building capacity at the individual, organisational and community levels, and promotes community participation and enhanced partnerships. The policy also aligns volunteer and aid program priorities. The successful Australian Youth Ambassadors for Development Program continues to expand and fund talented and highly skilled young Australians to undertake short-term development assignments in partner countries.

## **Australian Centre for International Agricultural Research (ACIAR)**

ACIAR is a statutory authority within the Foreign Affairs and Trade portfolio. As part of Australia's aid program it assists Australian and developing country researchers, institutions and international research centres to develop solutions to agricultural problems in order to improve livelihoods through sustainable increases in agricultural productivity and enhanced natural resources management to the benefit of developing countries and Australia. Government appropriation for ACIAR in 2004–05 was \$47.5m. The Centre focuses its research funding on the Asia-Pacific region and also supports international agricultural research centres.

In 2004–05 ACIAR funded 227 research projects. The Centre also supported 52 Fellowships allowing students from developing countries to study for postgraduate qualifications in Australia. Thirteen training courses were held for scientists involved in ACIAR-supported research.

Further information can be obtained from the ACIAR web site, <<http://www.aciar.gov.au>>. The site allows visitors to search for project information by country, or by research discipline and to find out about ACIAR activities.



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## Other references

The Department also produces hard copy publications on many foreign and trade policy issues which can be purchased online <<http://www.dfat.gov.au/publications/>> or by contacting the Department on (02) 6261 1111 or (02) 6261 3114.

## Web sites

The DFAT website <<http://www.dfat.gov.au>> provides a range of comprehensive and up-to-date material on Australia's foreign and trade policy. The web site contains a browsable list of topic categories, as well as a continually updated current issues list. Documents and publications available on the website include:

Advancing the National Interest: Australia's Foreign and Trade Policy White Paper, last viewed 7 October <<http://www.dfat.gov.au/ani/>>

AusAID, last viewed 7 October <<http://www.usaid.gov.au>>

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# Assisting countries combat desertification – Australia's role

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*This article was contributed by the Australian Centre for International Agricultural Research (ACAIR), September 2005.*

The General Assembly of the United Nations (UN) declared 2006 as the International Year of Deserts and Desertification. The objective is to help prevent the exacerbation of desertification worldwide by raising public awareness and supporting activities combating desertification and land degradation. Desertification is a major economic, social and environmental problem that affects one third of the world's land surface and about one billion people in more than 100 countries.

*The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa* provides a framework to assist affected developing countries to deal responsibly with land degradation and desertification. Australia signed the Convention in 1994 and ratified it in September 2000.

Australia's support for the work of the Convention is channeled mostly through the UN's Global Environment Facility, which was established in 1991 to help developing countries fund projects and programs that protect the global environment. The Australian Government separately, through AusAID and ACIAR supports a range of bilateral programs to combat desertification in developing countries, with the aim also of reducing poverty and achieving sustainable development.

Australia's capacity to contribute to international efforts to prevent land degradation stems from the knowledge of its Indigenous peoples, who have coped for millennia in the driest inhabited continent on earth, the experiences of generations of

immigrants who have sought to make a living, notably in arid and semi-arid parts of Australia, and quality scientific and social research.

Fire and grazing are integral elements of Australia's arid landscape, and their management is critical for the prevention of land degradation and desertification. For example, changes to the magnitude, frequency, intensity and type of fire regime can have significant undesirable impacts on biodiversity, and soil and water stability.

Through lessons learnt domestically and by application of Australian experience overseas, Australia is highly regarded as a partner in countries affected by land degradation and desertification and in multilateral bodies working in the field.

Two ACIAR-funded research projects under way in the Yellow River Basin in north-west China are tackling land and water resource degradation that is threatening the social, economic and ecological sustainability of the region.

In the first project, Australian National University Professor Jeff Bennett is working in partnership with the China National Forestry Economics and Development Research Centre to evaluate the effectiveness of the Grain for Green (GFG) program, which encourages farmers to convert steep cropland into forest and perennial grasslands.

The practice of planting annual crops and grazing livestock on deforested lands with a slope of more than 25 degrees has led to accelerated rates of soil erosion in China, particularly in the Yellow River Basin.

The Chinese Government established the GFG program in 1999 on a pilot basis in Shaanxi, Sichuan and Gansu provinces, to help bring soil erosion and consequent problems – such as sandstorms and frequent flooding – under control. When the program was formally launched in 2002, its scope was extended to include 25 provinces and autonomous regions. It has involved more than 100,000 villages, more than 15 million farmer households and more than 60 million people. It is the biggest participatory forestry development program in China.

Under the program, farmers who volunteer to convert existing cropland into grassland or forests are paid in grain and cash. The duration of the payments depends on the type of conversion made: farmers who plant trees for ecological protection purposes (and at a higher density than commercial plantings) receive payments for longer than farmers who convert cropland to grassland, or who turn cropland into forest using commercial species of trees. Farmers are also encouraged to reforest areas that are not currently agriculturally productive but suitable for growing trees.

Professor Bennett says that in the first stage of the research – an investigation of the financial impacts of the program on farmers in the Ansai, Binxian, Gonghe and Minhe counties – preliminary data obtained in a household survey of participating farmers showed they were ‘financially much better off’ through the program, both through the subsidies gained for conversion activity and because the new forest crops and grasslands represented long-term, more profitable income streams. In addition, previously barren lands are being brought into productive use, increasing crop yields and farmers’ incomes, and tree crops are protecting existing crops, effectively forming buffer zones around them, he says.

Researchers will next undertake a social cost-benefit analysis of the program to investigate its impact on greater social wellbeing. This will involve estimating the ‘off-site’ environmental and social benefits (such as better air and water quality in ‘converted’ areas, as well as in distant cities such as Xi’an and Beijing) in an effort to determine the natural resource management outcomes preferred by the broader community and the price it would be willing to pay for them.

Using information obtained in the first two stages of the project, researchers will assess the policy mix and suggest alternative policy strategies, using a technique called Institutional Economics Analysis. For example, Professor Bennett says that at this stage it seems the Chinese Government could have adopted a more strategic approach, with some parts of northern China needing more funding than others.

Professor Bennett says the collaboration with the China National Forestry Economics and Development Research Centre is important on many levels, including providing a good avenue into government decision-making with the aim of making the research a policy reality.

The second ACIAR-funded research project aims to increase the productivity and sustainability of water use in Yellow River Basin irrigation systems by establishing equitable institutional arrangements, including water trading, that promote more efficient water allocation and management, as well as maintaining social cohesion.

Northern China is an important agricultural region and the site for much of the country’s industrial production, but has a much lower per capita water endowment than in the south. There is rapidly increasing demand for water but an increasingly precarious supply, due in part to serious and growing water pollution, water misallocation and deteriorating irrigation systems.

In signing up to the World Trade Organization, China has relinquished trade barriers, putting pressure on farmers to lift productivity.

The success of this endeavour demands that water be used most efficiently, on the right crops, in the right amounts and at the right time. With China’s move to a more market-oriented economy, farmers now have more freedom and significant opportunities to cultivate less intensive, horticultural crops that generate higher returns, such as sunflowers and vegetables.

Establishing an integrated water allocation system that is more flexible and responsive to these new developments, as well as being ecologically sustainable, has therefore become a priority.

Dr Stephen Beare, chief economist at the Australian Bureau of Agricultural and Resource Economics in Canberra, is working with the Centre for Chinese Agricultural Policy and the International Water Management Institute to develop a simulation model to evaluate the economic impact of alternative water trading and other allocation policies in the basin. This will enable the research team to provide recommendations on more effective water trading arrangements between villages and sectors, as well as policy tools to aid the sustainable management of water resources.

Dr Beare says the project is progressing well, with two additional resources – the Economic Research Service of the United States Department of Agriculture and Professor Scott Rozelle from the University of California – agreeing to collaborate on the project. With their assistance, the first stage of the project has been completed.

Researchers have put together the most comprehensive data ever collected on the hydrological, physical, agronomic and socioeconomic conditions existing in the Yellow River Basin. The international research partners have signed two memorandums of understanding with the Chinese Ministry for Water Resources, giving the project important backing at a political level.

Researchers will estimate the economic productivity of water uses by sector for different regions of the basin and a preliminary simulation model is to be completed by May 2006. Policy recommendations are to follow in June 2006.

Dr Beare says the project will provide the tools to evaluate policy options, and identify practical targets and opportunities to reallocate water with the aim of promoting economic, environmental and social sustainability in the region.



# 4

## DEFENCE

*This chapter was contributed by the Australian Government Department of Defence (September 2005).*

This chapter provides an overview of the roles and activities of the Defence organisation – the Australian Defence Force (ADF) and the Department of Defence. In particular, it focuses on the strategic environment, current ADF operations and capability. The chapter also shows trends in Defence spending, and looks at the composition of the workforce.



## Strategic environment

In 2000, the Australian Government released the Defence White Paper, *Defence 2000: Our Future Defence Force*. As well as addressing the challenges posed by the rapid growth of conventional military capabilities in the Asia-Pacific region and relationships between the region's major powers, it also highlighted the emerging threats posed by terrorism, challenges to border security and the potential proliferation of weapons of mass destruction. In 2003, the Government again reviewed Australia's strategic circumstances in *Australia's National Security: A Defence Update*, which reinforced the challenges to Australian security posed by new forms of terrorism and the proliferation of weapons of mass destruction, as well as highlighting the serious problems created by failing states. A new strategic update will be released towards the end of 2005.

Australia is facing a range of security challenges and the ADF needs to be ready to undertake operations other than conventional war both in our own region and beyond. In recent times, the ADF has been operating at a very high tempo with deployments in Afghanistan, Iraq, the Solomon Islands and, most recently, to provide relief following the devastating December 2004 tsunami in Indonesia. In responding to these challenges, the ADF has shown its ability to respond to the complex security environment with flexibility and agility – in roles as diverse as traditional warfighting, border protection, peacekeeping and humanitarian support. The ADF has consistently demonstrated that it is among the most capable forces in the world.

## Operations

During 2004–05 the ADF was involved in military operations, the provision of humanitarian support to other nations, and various joint and combined exercises involving the three Services and allied or regional military forces.

Operation Catalyst is the ADF's contribution to the rehabilitation and reconstruction of Iraq. The ADF is part of a multinational force that is working to assist national recovery in order to develop a secure and stable environment.

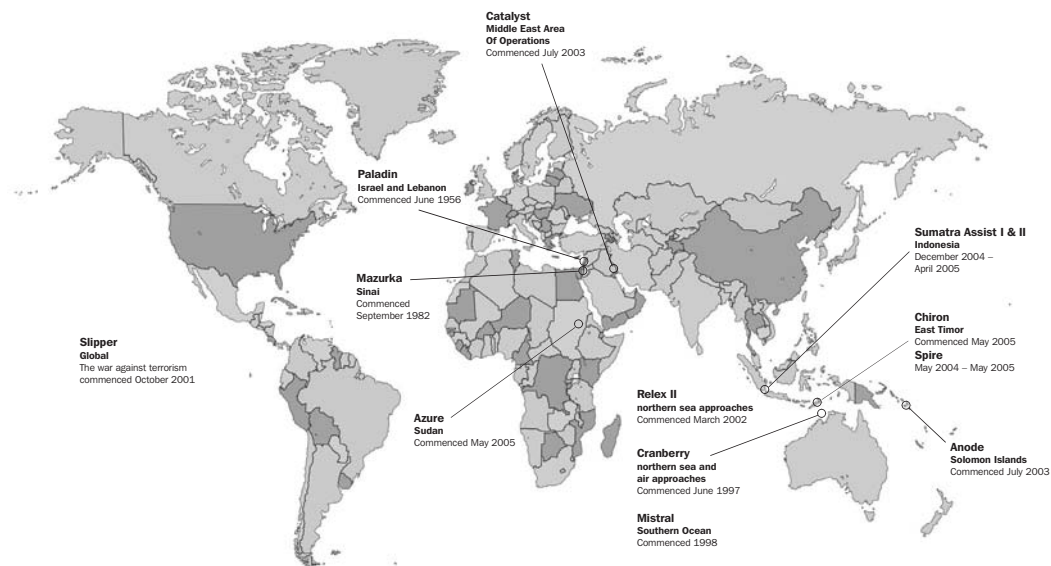
Operation Slipper is the ADF's contribution to the international coalition against terrorism and is an important component of the Australian Government's commitment to working with the international community to help prevent acts of terrorism around the world.

The ADF continued to lead the military component of the Regional Assistance Mission to Solomon Islands (RAMSI), a multinational regional force which provides support to the Australian Federal Police and the regional police forces (known as the Participating Police Force) in maintaining the rule of law and stability in the country.

The ADF continues to undertake operations against illegal fishing and unauthorised boat arrivals in Australia's northern approaches.

Currently, Australia has approximately 2,000 personnel deployed on operations with more than 1,300 of them deployed overseas. Map 4.1 shows areas of ADF involvement overseas and details of ADF involvement in major operations during 2004–05 are given in table 4.2.

## 4.1 AUSTRALIAN DEFENCE FORCE, Overseas operations — 2004–05



Source: Department of Defence.

## 4.2 AUSTRALIAN DEFENCE FORCE, Major operations(a) — 2004–05

### MIDDLE EAST

Operation Catalyst	<p>Operation Catalyst is Australia's contribution to the rehabilitation of Iraq. The ADF is participating in coalition efforts to develop a secure environment in Iraq, assist national recovery programs and facilitate the transition to Iraqi self-government. Operation Catalyst has comprised, on average, approximately 1,300 personnel. Forces have included:</p> <ul style="list-style-type: none"> <li>• an Australian National Headquarters element</li> <li>• a maritime element of one major naval vessel</li> <li>• an aviation element including two C-130 Hercules aircraft, two P-3 Orion maritime patrol aircraft and an air traffic control detachment</li> <li>• a security detachment to provide force protection and escort to the Australian mission in Iraq</li> <li>• a contingent of ADF and civilian personnel working as embedded staff in various coalition headquarters</li> <li>• a medical team of specialists providing intensive care at an Iraqi Military hospital</li> <li>• the Al Muthanna Task Group comprising approximately 450 personnel and 40 light armoured vehicles. The task group is providing support to the Japanese-Iraq Reconstruction and Support Group and providing training to the Al Muthanna provincial Iraqi Security Forces</li> <li>• two ADF training teams supporting training of the Iraqi Army and the Iraqi Coastal Defence Force.</li> </ul>
Operation Slipper	<p>Operation Slipper is Australia's contribution to the war against terrorism and the multinational maritime interception force in the Persian Gulf. Deployed forces have included:</p> <ul style="list-style-type: none"> <li>• an Australian National Headquarters element</li> <li>• a maritime element of one frigate</li> <li>• an aviation element of two P-3 Orion maritime patrol aircraft</li> <li>• one Army officer working in a coalition headquarters in Afghanistan</li> <li>• a Special Forces Task Group, comprising approximately 190 personnel.</li> </ul>

For footnote see end of table.

... continued

## 4.2 AUSTRALIAN DEFENCE FORCE, Major operations(a) — 2004–05 — continued

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### EAST TIMOR

Operation Chiron	Operation Chiron is Australia's contribution to the United Nations (UN) Office in Timor-Leste and continues the work of Operation Spire, Australia's contribution to the UN Mission in support of East Timor which concluded in May 2005. Australia's contribution to Operation Chiron consists of four Military Advisers who provide a liaison and monitoring function in support of the Mission.
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### AFRICA

Operation Azure	Operation Azure is the deployment of the ADF personnel to a UN peacekeeping operation in Sudan. The UN Security Council authorised the establishment of the UN Mission in Sudan on 24 March 2005 under resolution 1590. As at 1 August 2005, the military component numbered approximately nine personnel.
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### SOLOMON ISLANDS

Operation Anode	Operation Anode is the ADF contribution to RAMSI. The military contingent of RAMSI is supporting the Participating Police Force effort in maintaining law and order. As at 1 August 2005, the military component numbered approximately 80 personnel, half of whom were ADF.
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### NORTHERN APPROACHES TO AUSTRALIA

Operation Relex II	Continuing ADF contribution to the whole-of-government effort to deter unauthorised arrivals by sea in Australia's north west approaches. ADF support included one frigate, one amphibious ship, a P-3 maritime patrol aircraft, up to six Fremantle-class patrol boats and up to three Army transit security elements.
Operation Cranberry	Continuing intelligence coordination and provision of surveillance information to the civil authorities operating in northern Australia. Surveillance support was provided using a range of ADF assets including Fremantle-class patrol boats, P-3 maritime patrol aircraft and Regional Force Surveillance Units.

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### PEACETIME NATIONAL TASKS

Operation Sumatra Assist I and II	Provision of humanitarian relief to the Government of Indonesia in the aftermath of the December 2004 tsunami off the coast of Northern Sumatra and the Nias Island earthquake. Over the period December 2004 to April 2005, the ADF provided over 1,000 personnel. Major capabilities included: <ul style="list-style-type: none"><li>• HMAS <i>Kanimbla</i>, with an engineering support group</li><li>• HMAS <i>Anzac</i> field hospital</li><li>• SK50 and UH-1H helicopters</li><li>• six C-130 aircraft.</li></ul>
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(a) Correct as at 11 August 2005.

Source: Department of Defence.

## Resources

In the decade preceding 2001–02, Defence funding remained relatively stable in 'real' terms. Increases over this period, evident in graph 4.3, reflect maintenance of the Defence funding base after taking account of inflationary and foreign exchange influences.

Defence funding was increased in the 2001–02 budget and forward estimates to address a number of specific priorities detailed in the *Defence White Paper 2000*. The White Paper provided a funding commitment for Defence of around \$28.9 billion (b), in 2005–06 dollars,

over the decade from 2001–02. This funding injection equates to an increase of some 3% of average real growth per year over the period.

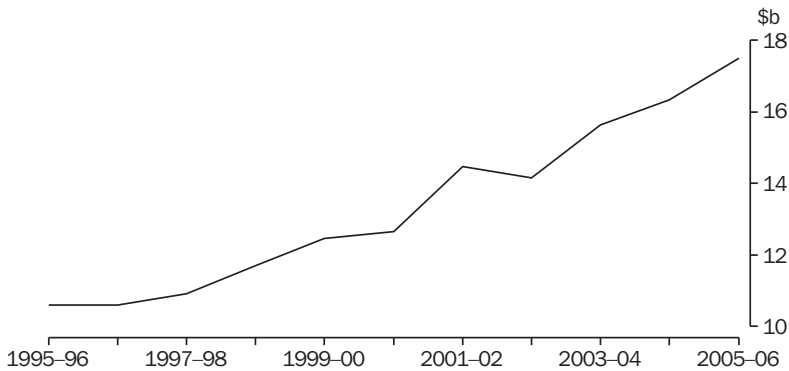
In addition to the implementation of the White Paper, the Australian Government has given Defence a number of specific directions to meet emerging strategic priorities. Key 2005–06 budget measures include:

- supplementation of \$448 million (m) for the conduct of ADF operations including:
  - the continued ADF contribution to stabilisation and reconstruction activities in Iraq (an additional \$205.3m over two years)

- the ADF deployments to the Al Muthanna Province (\$215.2m over three years)
  - continued border protection operations (\$16.4m)
  - the ADF contribution to the Australian Government effort to provide assistance to people affected by the December 2004 tsunami disaster (\$11.1m)
- funding for enhancements to Australia's security including for enhanced protective security and North-West Shelf surveillance (\$192m over four years)
  - supplementation for Defence's contribution to Australia's hosting of the Asia Pacific Economic Cooperation (APEC) forum in 2007 (\$19.7m).

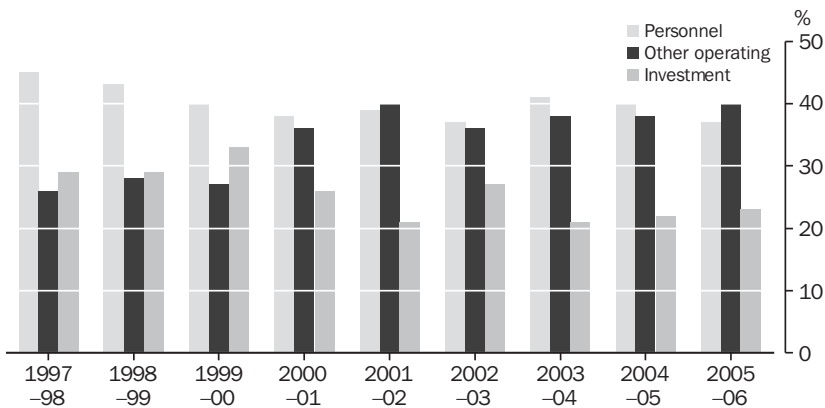
Graph 4.4 reflects the significance of both employee costs and the investment in specialist military equipment and infrastructure in delivering Defence capability. The increased share for investment is consistent with progress towards acquiring the equipment capabilities outlined in the Defence White Paper. Longer-term projections indicate increases in personnel costs due to growth towards a larger ADF as specified in the White Paper.

### 4.3 DEFENCE RESOURCING



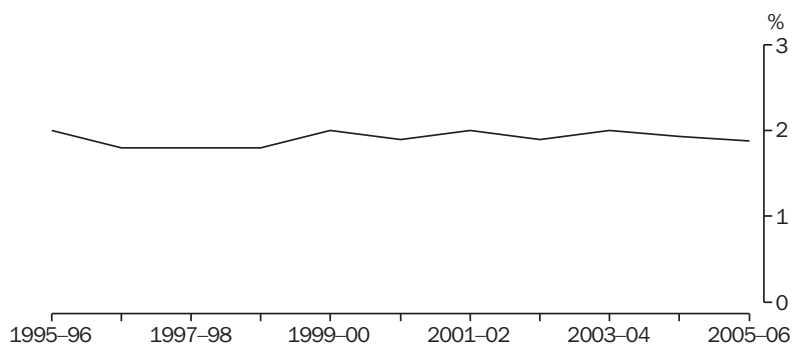
Source: Department of Defence.

### 4.4 DEFENCE RESOURCING, By category



Source: Department of Defence.

#### 4.5 DEFENCE RESOURCING, Share of GDP(a)



(a) 2005-06 projected.

Source: Department of Defence.

### Capabilities

The changing strategic environment highlights the need for the ADF to be a flexible and adaptable defence force, which is ready to be deployed at short notice and can be sustained on operations for as long as required. Capability is the power to achieve a desired effect in a nominated environment in a specified period of time, and to sustain it for a designated period.

Defence maintains a force structure with the following elements:

#### Navy

- a surface combatant force of six Adelaide-class guided missile frigates and six Anzac-class frigates, together with onboard helicopters
- a naval aviation force comprising 16 Seahawk helicopters, six Sea King helicopters and 13 Squirrel helicopters (with the introduction of 11 Super Seasprites to be deployed in 2005-06)
- a surface patrol capability comprising 14 Fremantle-class patrol boats in the process of being replaced by a fleet of 14 Armidale-class patrol boats between 2004-05 and 2007-08
- six Collins-class submarines
- an afloat support capability consisting of an oil tanker and a replenishment ship
- a mine warfare force comprising six Huon-class coastal mine hunters, two auxiliary minesweepers and two clearance diving teams
- an amphibious lift force comprising two amphibious landing ships, one heavy landing ship and six heavy landing craft

- a hydrographic force consisting of two Leeuwin-class hydrographic ships and their embarked survey motor boats, four Paluma-class survey motor launches, a laser airborne depth sounder aircraft and a deployable survey unit

#### Army

- a special forces capability comprising a Special Air Service regiment, a Regular Army commando battalion; an Army Reserve commando regiment and an Incident Response Regiment
- a medium combined arms operations capability based on 1st Brigade, consisting of a tank regiment, a cavalry regiment, a medium artillery regiment; a combat engineer regiment, a combat support regiment, a mechanised infantry battalion and a combat service support battalion
- a light combined arms operations capability based on 3rd Brigade, consisting of an armoured personnel carrier squadron, a field artillery regiment, a combat engineer regiment, a command support regiment, three infantry battalions and a combat service support battalion
- an aviation force based on 16th Brigade consisting of two aviation regiments of both rotary-wing and fixed-wing aircraft (including 35 Black Hawk, 41 Kiowa, 25 Iroquois, 5 Armed Reconnaissance and 6 Chinook helicopters, and the lease of 3 King fixed-wing aircraft)
- a ground-based air defence capability which maintains a ground-based air defence system consisting of RBS-70 shoulder-launched missile systems and Rapier missile systems

- a combat support force, consisting of a surveillance and target acquisition battery, an engineer support regiment headquarters, two Army Reserve engineer construction regiments, two Regular Army engineer construction squadrons, a construction engineer works section, a topographical survey squadron, a signals regiment, an intelligence battalion, a military police battalion and a combat training centre
- a regional surveillance capability based on three regional force surveillance units
- a logistic support force consisting of two headquarters, two signals squadrons, a petroleum company, a recovery company, three force support battalions, a deployed force support unit, three health support battalions and a psychology unit
- a motorised combined arms capability, based on the 7th Brigade, comprising a cavalry regiment, a field artillery regiment, a combat engineer regiment, a combat support regiment, three Regular Army and Army Reserve infantry battalions and a combat service support battalion
- a protective operations capability drawn from the Army Reserve, with six brigades each comprising two or three infantry battalions; a cavalry unit and combat and logistic support units

### **Air Force**

- an air combat force using F-111 and F/A-18 aircraft crews, weapon systems and support infrastructure; Hawk Lead-In fighter aircraft and PC-9 Forward Air Control aircraft also contributing to this force
- an air combat support force comprising two combat support wings, one expeditionary combat support wing; one combat reserve wing; an airfield defence wing and a health services wing
- a surveillance and response force, consisting of air traffic control radar, tactical air defence radars, the Jindalee Operational Radar Network – a wide-area surveillance system monitoring Australia’s northern approaches, and P-3 Orion aircraft, crews and weapons systems
- an airlift force consisting of 24 C-130 Hercules, 14 DHC-4 Caribou, 4 Boeing 707, 8 B300 Beechcraft King aircraft introduced into service in September 2003 and 5 VIP aircraft – 2 Boeing 737 BBJ and 3 CL604 Challenger aircraft.

### **People**

As one of the largest employers in Australia, Defence has a diverse workforce of approximately 90,000 people made up of:

- 51,000 permanent ADF personnel comprising the Navy, Army and Air Force
- 21,000 active Reservists, with the Army employing around 70% of all Reservists
- 18,000 Australian Public Service civilian staff consisting of permanent, temporary and part-time employees.

Contractors and Australian industry also contribute to the Defence workforce by providing support in a variety of areas and are an important element of the total Defence effort.

Detailed information on the Defence workforce can be found at  
<<http://www.defence.gov.au/annualreports/>>.

## **Bibliography**

### **Publications**

Department of Defence publications, including:

*Defence White Paper 2000 – Our Future Defence Force*

*Australia's National Security: A Defence Update*

*Defence Annual Report 2003–04*

*Defence Portfolio Budget Statements 2005–06*

can be found at <<http://www.defence.gov.au/publications.cfm>>.

### **Web sites**

Department of Defence, last viewed October 2005 <<http://www.defence.gov.au>>

Minister for Defence, last viewed October 2005 <<http://www.minister.defence.gov.au>>



# 5

## POPULATION

Population statistics are measures of the size, growth, composition and geographic distribution of the population as well as the components that shape population change – notably births, deaths and migration. Population statistics underpin discussion on a wide range of issues of concern to the community, including immigration, cultural diversity, ageing and population sustainability. Statistics on population trends assist governments in developing social and economic policy. Changes in Australia's population affect policy areas such as health, education, housing, the labour market and the environment.

There are also important legislative requirements for the Australian Bureau of Statistics (ABS) to produce population estimates. The legislation which determines the distribution of state, territory and local government grants uses ABS population estimates as one of the bases for calculation. Similarly, population estimates are used to determine the number of seats each state and territory is entitled to in the House of Representatives.

The Census of Population and Housing is the principal source of information about Australia's population. It has been held every five years since 1961 with the most recent census conducted in August 2001. The next census is due to be held in August 2006.

The census provides a base from which Australia's estimated resident population is calculated. The census count of the population is adjusted for visitors from overseas, Australian residents temporarily overseas on census night and an estimate of the number of people missed in the census and those counted more than once. To obtain estimated resident population figures for dates between censuses, births and net overseas migration are added and deaths are subtracted. For estimates at the state and territory level, interstate migration estimates are also applied.

The population chapter contains four articles: *Ageing Australians*; *Urban and non-urban population*; *Recent fertility trends*; and *Future living arrangements*.

## Population size and growth

Australia's estimated resident population at June 2004 was just over 20.1 million, an increase of 1.2% over the previous year (table 5.1). This figure has increased by 12% over the past decade. Australia's growth rate of 1.2% for the 12 months to June 2004 was the same as the overall world growth rate (table 5.2).

When compared with other countries, Australia's population growth rate was similar to New Zealand (1.1%); higher than Canada (0.9%), the

United States of America (0.9%), and Hong Kong (0.7%); considerably higher than the United Kingdom (0.3%), Japan (0.1%) and Germany (0.0%); and well below the growth rates for Papua New Guinea (2.4%) and Malaysia (1.9%). China (0.6%), ranked as the largest population, had a growth rate half that of Australia.

Figures provided by the US Census Bureau's *International Data Base* for 227 countries rank Australia's population 52nd in size for the year 2004 and project a fall to 64th position by 2050.

### 5.1 COMPONENTS OF POPULATION CHANGE AND ESTIMATED RESIDENT POPULATION(a)

Year ended 30 June	Components of population change				Population		
	Births(b)	Deaths(b)	Natural increase(b)	Net overseas migration(c)	At end of period	Increase(d)	Increase
	'000	'000	'000	'000	'000	'000	%
1999	250.0	128.3	121.7	96.5	18 925.9	214.6	1.15
2000	249.3	128.4	120.9	107.3	19 153.4	227.5	1.20
2001	247.5	128.9	118.6	135.7	19 413.2	259.9	1.36
2002	247.4	130.3	117.2	110.6	19 641.0	227.7	1.17
2003	247.4	132.2	115.2	116.5	19 872.6	231.7	1.18
2004	254.6	133.6	121.0	117.6	20 111.3	238.7	1.20

(a) Includes Other Territories. (b) Numbers of births and deaths are on year of occurrence basis and differ from those shown in the births and deaths section of this chapter. (c) Includes migration adjustments from June 2001. (d) The difference between total growth and the sum of natural increase and net overseas migration during 1999–2001 is due to intercensal discrepancy.

Source: *Australian Demographic Statistics* (3101.0).

### 5.2 POPULATION, GROWTH RATE AND RANK, Selected countries

Country	Estimated population			Projected population		Rank	
	2003	2004	Growth rate	2050	2004	2050	
	million	million	%	million	no.	no.	
<b>Australia</b>	<b>19.9</b>	<b>20.1</b>	<b>1.2</b>	<b>26.4</b>	<b>52</b>	<b>64</b>	
Canada	32.2	32.5	0.9	41.4	35	43	
China	1 291.5	1 298.8	0.6	1 424.2	1	2	
Germany	82.4	82.4	0.0	73.6	14	22	
Hong Kong (SAR of China)	6.8	6.9	0.7	6.2	98	116	
India	1 049.7	1 065.1	1.5	1 601.0	2	1	
Indonesia	234.9	238.5	1.5	336.2	4	5	
Japan	127.2	127.3	0.1	99.9	9	17	
Malaysia	23.1	23.5	1.9	43.1	46	42	
New Zealand	4.0	4.0	1.1	4.8	122	125	
Papua New Guinea	5.3	5.4	2.4	10.7	107	92	
Singapore	4.3	4.4	1.8	4.6	119	130	
Thailand	63.3	63.7	0.7	69.3	19	25	
United Kingdom	60.1	60.3	0.3	64.0	21	29	
United States of America	290.3	293.0	0.9	420.1	3	3	

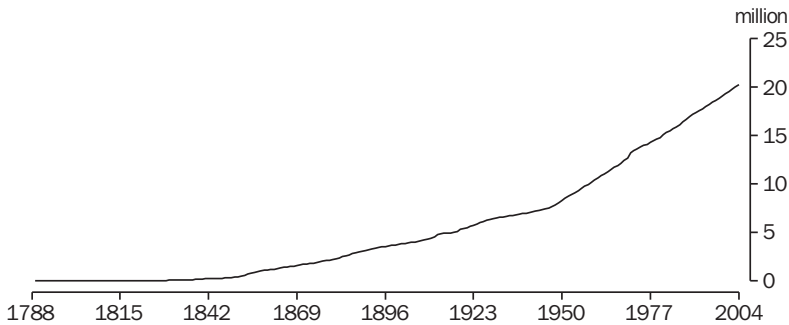
Source: *Australian Demographic Statistics* (3101.0); US Census Bureau, 'International Data Base', viewed 21/07/05, <<http://www.census.gov>>.

Australia's estimated resident population of 20.1 million at 30 June 2004 has grown by nearly 2.2 million persons during the past decade. The growth of Australia's population has two components: natural increase (the number of births minus the number of deaths) and net overseas migration (net permanent and long-term migration). For state and territory estimates, a third component – net interstate migration – is also included. Since Federation in 1901, Australia's population has increased by 16.4 million persons. Graph 5.3 shows the growth in Australia's population since European settlement in 1788.

Table 5.4 shows that population growth has not occurred evenly across the states and territories. The proportion of Australia's population resident

in each state and territory has changed over time. From 1954 to 2004 the proportion of the Australian population living within New South Wales, the most populous state, decreased (from 38% to 33%), as did Victoria (from 27% to 25%), South Australia (9% to 8%) and Tasmania (3% to 2%). All other states and territories show an increase over this same time. The proportion of Australia's population living in Queensland increased from 15% in 1954 to 19% in 2004. Likewise, during the same period Western Australia experienced an increase from 7% to 10%, the Australian Capital Territory from less than 1% to 2% and the Northern Territory from less than 1% in 1954 to 1% in 2004. Western Australia became the fourth most populous state in 1983, overtaking South Australia.

### 5.3 POPULATION OF AUSTRALIA



Source: Australian Historical Population Statistics (3105.0.65.001); Australian Demographic Statistics (3101.0).

### 5.4 POPULATION, By states and territories

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.(a)
30 June	'000	'000	'000	'000	'000	'000	'000	'000	'000
1954	3 423.5	2 452.3	1 318.3	797.1	639.8	308.8	16.5	30.3	8 986.5
1964	4 107.9	3 105.5	1 610.7	1 038.0	808.4	364.3	51.5	80.3	11 166.7
1974	4 894.1	3 755.7	2 008.3	1 241.5	1 127.6	406.2	102.9	186.2	13 722.6
1984	5 402.7	4 076.5	2 523.9	1 360.0	1 391.2	437.8	142.2	245.1	15 579.4
1994	6 060.2	4 487.6	3 187.1	1 466.1	1 703.0	472.9	173.4	301.5	17 854.7
2001	6 575.2	4 804.7	3 628.9	1 511.7	1 901.2	471.8	197.8	319.3	19 413.2
2002	6 634.1	4 857.2	3 711.0	1 518.7	1 924.6	472.6	198.7	321.5	19 641.0
2003	6 682.1	4 911.4	3 801.0	1 526.3	1 949.9	477.3	198.5	323.4	19 872.6
2004	6 731.3	4 972.8	3 882.0	1 534.3	1 982.2	482.1	199.9	324.0	20 111.3

(a) Includes Other Territories from 1997. Prior to 1997 Jervis Bay territory was included with the ACT, and Christmas and Cocos (Keeling) Islands were excluded from population estimates for Australia.

Source: Australian Demographic Statistics (3101.0); Australian Historical Population Statistics (3105.0.65.001).

## Components of population growth

Over the last 50 years the population has more than doubled from a resident population of 9 million in 1954 to over 20 million in 2004. Natural increase has been the main component of population growth in Australia over the past 50 years, contributing around two-thirds of the total increase. Net overseas migration, while a significant source of growth, is more volatile, fluctuating under the influence of government policy as well as political, economic and social conditions in Australia and the rest of the world.

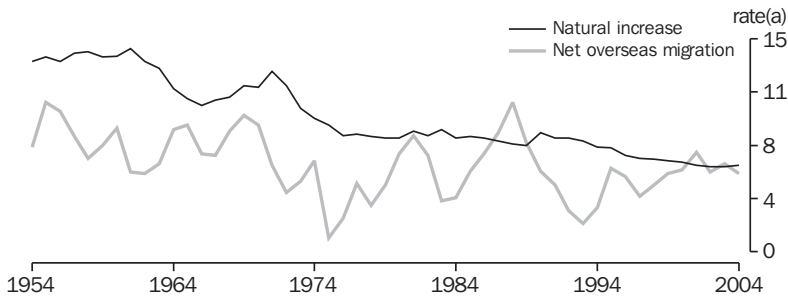
The yearly growth rates due to natural increase and net overseas migration from 1954 to 2004 are shown in graph 5.5.

Fifty years ago, Australia was in the midst of a baby boom. In 1954 the rate of natural increase was 13.4 persons per 1,000 population, peaking at 14.3 in 1961. After 1962, declining fertility led to a fall in

the rate of natural increase. The rate of natural increase rose in the late-1960s, reaching a peak of 13.1 persons per 1,000 population in 1971; a decade later it had fallen to 8.6. In 1996 the rate of natural increase fell below 7.0 for the first time in Australia's history. This downward trend continued, reaching 6.1 persons per 1,000 population in 2004. ABS population projections suggest that continued low fertility, combined with an increase in deaths due to an ageing population, would result in natural increase falling below zero sometime in the mid-2030s.

In 2004 the crude death rate was 6.6 deaths per 1,000 population, falling from 9.1 in 1954. The crude birth rate has declined from 22.5 births per 1,000 population recorded in 1954 to 12.7 in 2004. The lowest ever birth rate, just over 12.6 births per 1,000 population, was recorded in 2003. Crude birth and death rates from 1954 to 2004 are shown in graph 5.6.

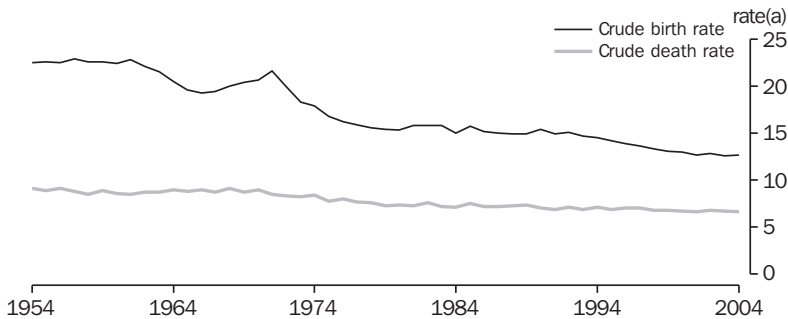
### 5.5 COMPONENTS OF POPULATION GROWTH



(a) Per 1,000 population.

Source: *Australian Demographic Statistics (3101.0)*; *Australian Historical Population Statistics (3105.0.65.001)*.

### 5.6 COMPONENTS OF NATURAL INCREASE



(a) Per 1,000 population.

Source: *Australian Demographic Statistics (3101.0)*; *Australian Historical Population Statistics (3105.0.65.001)*.

## Population age and sex structure

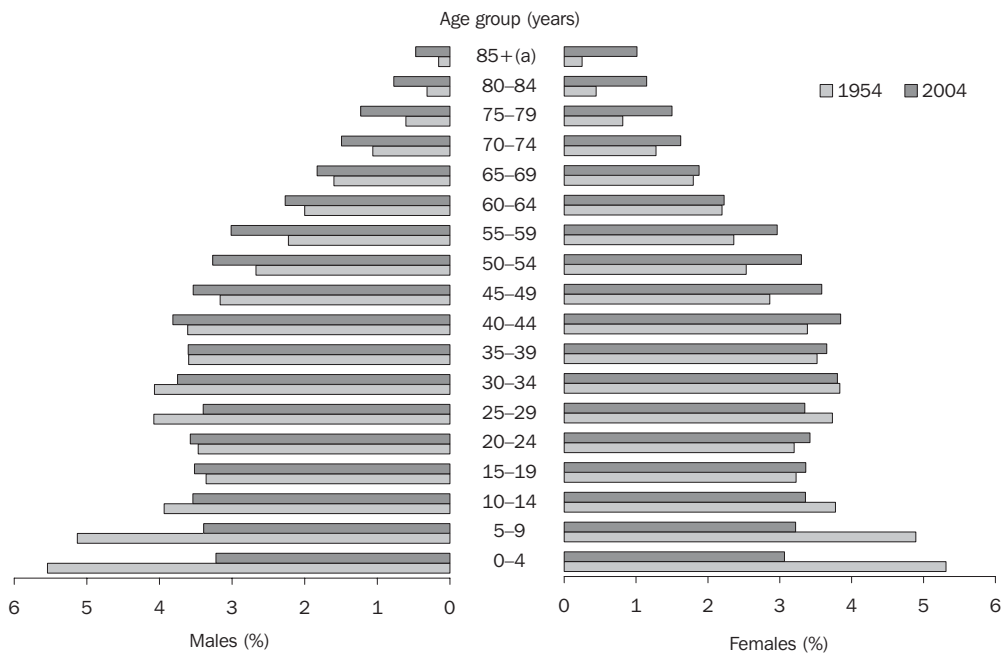
Over the last 50 years the absolute number of persons has increased in all age groups. However, the proportion of the total population in older age groups has increased while the proportion in younger age groups has declined. Graph 5.7 shows the proportions of the population by age group and sex in 1954 and 2004, illustrating the ageing of Australia's population. Australia's population is ageing because of sustained low fertility – which has resulted in proportionally fewer children in the population – and increased life expectancy.

In 1954 there were 105,700 more males than females in Australia's population, while in 2004 there were 122,200 more females than males. Since 1979 Australia has been home to more females than males.

In 1954, people under 15 years of age represented 28.6% of Australia's population. Those aged 15–64 years represented 63% and those aged 65 years and over represented 8%. Although Australia's population has continued to grow since 1954, the proportion of people aged 15–64 years increased to 67% in 2004. During this period the proportion of children 0–14 years decreased to 20%, although their absolute numbers increased, while the proportion of the population aged 65 years or more increased to 13% (graph 5.8).

The median age of the Australian population (the age at which half the population is older and half is younger) has increased by 5.9 years in the last 20 years from 30.5 years in 1984 to 36.4 years in 2004. Graph 5.9 shows the median ages of the population for the states and territories in 1984 and 2004.

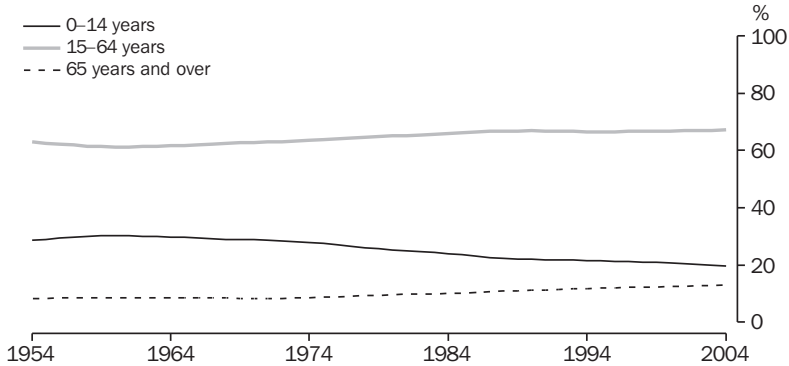
**5.7 AGE DISTRIBUTION OF POPULATION — 1954 and 2004**



(a) The 85+ age group includes all ages 85 years and over and is not directly comparable with the other 5-year age groups.

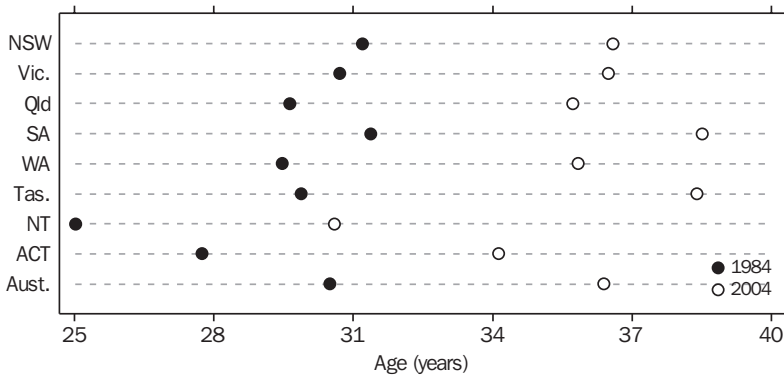
Source: Australian Historical Population Statistics (3105.0.65.001); Population by Age and Sex, Australian States and Territories (3201.0).

## 5.8 POPULATION, By age group



Source: Population by Age and Sex, Australian States and Territories (3201.0).

## 5.9 MEDIAN AGE OF POPULATION



Source: Population by Age and Sex, Australian States and Territories (3201.0).

In 2004 the population of South Australia had the highest median age of all states and territories (38.5 years) followed by Tasmania (38.4 years) and New South Wales (36.6 years). The Northern Territory (30.6 years) had the lowest median age.

Tasmania experienced the largest increase in median age over the 20 years to 2004, increasing by 8.5 years from 29.9 years in 1984 to 38.4 years in 2004. The next largest increase was South Australia at 7.1 years, increasing from 31.4 years in 1984 to 38.5 years in 2004.

There were just over 2.6 million people (13% of the total population) in Australia aged 65 years or more in June 2004, an increase of 58,500 people (2%) from June 2003 with all states and territories experiencing growth in this age group. The Northern Territory (6%), the Australian Capital Territory (3%) and Western Australia (3%) experienced the greatest increase in persons aged 65 years or more.

## 5.10 POPULATION AGED 65 YEARS AND OVER, Proportion and growth

	Proportion of population in 2004	Growth of population between 2003 and 2004
	%	%
New South Wales	13.5	1.8
Victoria	13.3	2.1
Queensland	12.0	3.2
South Australia	15.0	1.6
Western Australia	11.6	3.3
Tasmania	14.3	2.1
Northern Territory	4.4	6.3
Australian Capital Territory	9.3	3.5
<b>Australia(a)</b>	<b>13.0</b>	<b>2.3</b>

(a) Includes Other Territories.

Source: Population by Age and Sex, Australian States and Territories (3201.0).

## Ageing Australians

Population ageing is a phenomenon common to many developed countries. While Australia's total population may continue to grow, the changing distribution results in smaller proportions at younger ages and larger proportions at older ages. The long term drivers of population ageing are sustained low fertility rates and declining mortality rates (leading to increasing life expectancy).

Over the past 20 years, Australia's total fertility rate fell from 1.9 children per woman in 1983 to 1.8 children per woman in 2003. Over this period life expectancy at birth improved by 6 years for males, to 78 years, and 4 years for females, to 83 years. Longer term trends indicate that fertility has declined from a peak of 3.6 babies per woman in 1961, and has been below replacement level (2.1 babies per woman) since 1976. Life expectancy has shown continued improvement throughout Australia's history.

Sustained low fertility levels and increasing life expectancy have resulted in an increase in the proportion of all age groups above 40 years between 1954 and 2004 (graph 5.7). In 2004, these age groups also included the majority of the 'baby boomers' (persons born in the period 1946 to 1965). Conversely, there has been a decrease in the proportion of most age groups under 40 years. A result of these changes is that the median age (the age at which half the population is older and half is younger) has increased. Over the last two decades, median age increased by 5.9 years from 30.5 years in 1984 to 36.4 years in 2004.

In the future, population ageing is expected to have impacts on the size of the Australian labour force, and to increase the financial commitment of the Australian economy to support the aged. As Australia's population continues to age, the community faces the challenge of providing policy, programs and services to meet the changing values, behaviours and attitudes of an older population.

### Children

The population aged under 15 years is decreasing in relation to the total population (graph 5.11). In 2004 this group made up 20% of Australia's population, a four percentage point decrease on the proportion in 1984. The decrease in the

proportion of children is apparent in both males and females, and reflects low fertility levels in Australia. The decrease is more apparent when the under 15 age group is further split into 0–9 and 10–14 year age groups. In the 12 months to June 2004, an increase in the number of children aged 10–14 years (up 7,700) was offset by a decrease in the number of children aged 0–9 years (down 8,300).

### Adults

In the 20 years to June 2004, the proportion of the adult population aged 15–64 years remained relatively stable, increasing from 66% to 67%, while the proportion of elderly – those aged 65 years and over – grew from 10% to 13% (graph 5.11). Historically, women experience a higher life expectancy than men, directly affecting the sex ratio at the older age groups. In 1984 the sex ratio of those aged 65 and over was 72 males to every 100 females. By 2004, this had increased to 81 males to every 100 females, indicating that life expectancy of males and females has been converging over the last two decades.

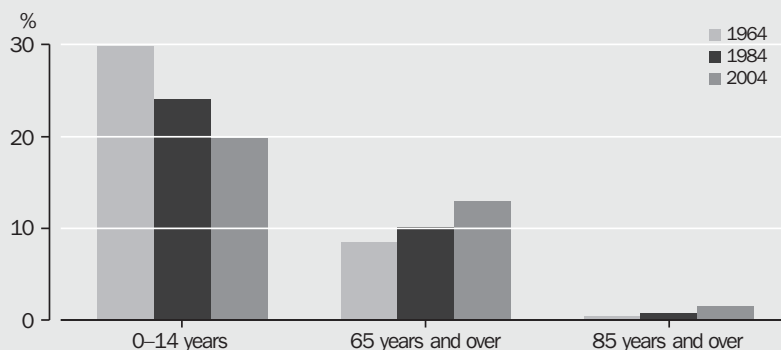
Population ageing is marked in the 85 years and over age group, and the difference in life expectancy for males and females is more apparent. Over the past two decades the number of people in this group increased by 114%, from under 1% in 1984 to 1.5% in 2004. By comparison, the total population increased by 29% over the same period. In 2004 there were more than twice as many females (203,500) as males (94,800) in this age group, a sex ratio of 47 males for every 100 females.

### International comparison

According to data from the United Nations (table 5.12), population ageing is most acute in developed countries – such as Italy, Japan and Greece – and less acute in developing countries – such as Papua New Guinea, Indonesia and the Philippines. In projections for 2005, the proportions in Australia's age structure are similar to those for Canada, New Zealand, the United States of America and, to a lesser extent, the United Kingdom. Like most developed countries, Australia experienced a higher median age, higher life expectancy and lower fertility in comparison to developing countries.



### 5.11 PROPORTION OF POPULATION, Selected age groups



Source: Australian Historical Population Statistics (3105.0.65.001); Population by Age and Sex, Australian States and Territories (3201.0).

### 5.12 SUMMARY MEASURES OF POPULATION AGEING, Selected countries

	2005(a)				2000-2005(a)	
	Aged 0-14 years	Aged 15-59 years	Aged 60 years and over	Median age	Total fertility rate(b)	Life expectancy(c)
	%	%	%	years		
<b>Australia</b>	<b>19.6</b>	<b>63.0</b>	<b>17.3</b>	<b>36.6</b>	<b>1.75</b>	<b>80.2</b>
Canada	17.6	64.5	17.9	38.6	1.51	79.9
Greece	14.3	62.7	23.0	39.7	1.25	78.2
Indonesia	28.3	63.3	8.4	26.5	2.37	66.5
Italy	14.0	60.4	25.6	42.3	1.28	80.0
Japan	14.0	59.7	26.3	42.9	1.33	81.9
New Zealand	21.3	61.9	16.7	35.8	1.96	79.0
Papua New Guinea	40.3	55.8	3.9	19.7	4.10	55.1
Philippines	35.1	58.8	6.1	22.2	3.22	70.2
United Kingdom	17.9	60.9	21.2	39.0	1.66	78.3
United States of America	20.8	62.5	16.7	36.1	2.04	77.3

(a) United Nations medium variant projections. (b) Births per woman. (c) Life expectancy at birth for males and females combined.

Source: United Nations Population Division, 'World population prospects: The 2004 revision', viewed 22/07/05, <<http://www.un.org>>.

## Population projections

The ABS has published projections of the Australian population to the year 2101, based on assumptions about future levels of births, deaths and migration. Three main projections (Series A, B and C) have been published, based on different levels of these variables.

Assumptions for the three series of population projections were:

### Series A

- total fertility rate of 1.8 babies per woman from 2010–11 onwards
- high life expectancy at birth, increasing to 92.2 years for males and 95.0 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 125,000 people per year from 2005–06 onwards
- high levels of interstate migration.

### Series B

- total fertility rate of 1.6 from 2010–11 onwards
- medium life expectancy at birth, increasing to 84.2 years for males and 87.7 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 100,000 per year from 2005–06 onwards
- medium flows of interstate migration.

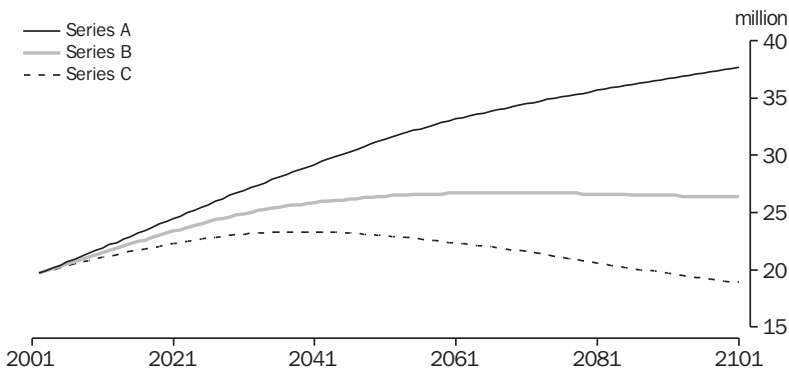
### Series C

- total fertility rate of 1.4 from 2010–11 onwards
- medium life expectancy at birth, increasing to 84.2 years for males and 87.7 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 70,000 per year from 2005–06 onwards
- small flows of interstate migration.

Unless otherwise stated, the following analysis uses both Series A and C to illustrate a range, although not the full range, of projected populations. At times only the medium series, Series B, has been used, to simplify the analysis.

Australia's population at 30 June 2002 of 19.7 million people is projected to grow to between 23.0 and 31.4 million people by 2050–51, and to reach between 18.9 and 37.7 million by 2100–01. In Series A (high series) the population is projected to grow throughout the entire projection period, but at declining rates, reaching 31.4 million in 2050–51 and 37.7 million in 2100–01. In Series B (medium series) the population is projected to reach 26.4 million in 2100–01, after peaking at 26.7 million in 2068–69 and then declining gradually. Series C (low series) projects the lowest population for 2100–01, of 18.9 million people. In this scenario the population is projected to peak in 2038–39 at 23.3 million people, and then decline at a slightly faster rate than Series B (graph 5.13).

5.13 PROJECTED POPULATION — 30 June



Source: Population Projections, Australia, 2002 to 2101 (3222.0).

The growth rate of the population reflects the interaction of the components of population change – natural increase (the excess of births over deaths) and net overseas migration. Throughout the 1990s and early-2000s Australia's annual population growth consistently exceeded 1%. While growth rates of this magnitude are projected to continue for the next 4–15 years (except in Series C), growth will slow for the remainder of the projection period. Series A maintains positive growth throughout the entire projection period, although the rate is projected to decline over time from 1.29% in the first projected year to 0.26% each year in the last 5 years. This growth is sustained by a relatively high level of fertility combined with high net overseas migration. In Series B and C, in contrast, the population of Australia is projected to experience more rapid declines in growth. Series B projects negative population growth from 2069–70 while Series C projects negative growth from 2039–40. Series B projects an almost constant population size over the middle years of the projection period. The larger negative growth rates projected in Series C reflect the fact that net overseas migration is not sufficient to offset the effect of declining numbers of births combined with an increasing number of deaths.

In Series B, population is projected to increase over the next 50 years in all states and territories except Tasmania and South Australia. Between 2002 and 2051 the population of Queensland is projected to increase by 73%, the Northern Territory by 55% and Western Australia by 49%, well above the projected growth for Australia of 34%.

New South Wales is projected to remain the most populous state in Australia, although its share of Australia's population is projected to fall slightly, from 34% in 2002 to 32% in 2051 under Series B. Victoria is projected to be replaced by Queensland as the second most populous state in 2044, with Victoria's share of Australia's population decreasing from 25% to 23% over the next 50 years and Queensland's share increasing from

19% to 24%. Western Australia's share of Australia's population is projected to increase slightly (from 10% in 2002 to 11% in 2051), South Australia's share is projected to fall from 8% to 6%, and Tasmania's share is projected to decrease, from 2% in 2002 to 1% in 2051. Only marginal changes are projected for the Northern Territory (an increase from 1.0% in 2002 to 1.2% in 2051) and the Australian Capital Territory (a decrease from 1.6% in 2002 to 1.5% in 2051).

These projections are summarised in table 5.14.

Graph 5.15 illustrates the ageing of Australia's population projected to occur over the next 100 years. This is the result of fertility remaining at low levels over a long period of time coupled with increasing life expectancy. The median age of Australia's population is projected to increase from 35.9 years in 2001–02 to between 40.4 and 42.3 years in 2020–21 and to between 46.0 and 49.9 years in 2050–51. In 2100–01 the median age of the population is projected to be between 47.5 and 50.5 years.

Ageing of the population affects the relative sizes of different age groups within the population. The proportion of the population aged under 15 years is projected to decrease from 20% (4.0 million people) of Australia's population in 2002 to between 12% and 15% (2.8 million and 4.8 million) in 2051, and to remain at similar levels thereafter (between 12% and 15% in 2101, or 3.6 million to 5.5 million people). In contrast, the proportion of the population aged 50 years and over is projected to increase, from 29% (5.7 million people) in 2002 to between 46% and 50% (11.5 million and 14.3 million) in 2051 and 47% and 51% (9.6 million and 18.0 million) in 2101. Consequently the age structure of the population will be noticeably different by 2051, as shown in graph 5.15.

Table 5.16 presents a range of indicators, such as population size and structure, to illustrate changes in Australia's population from 1901 to 2101.

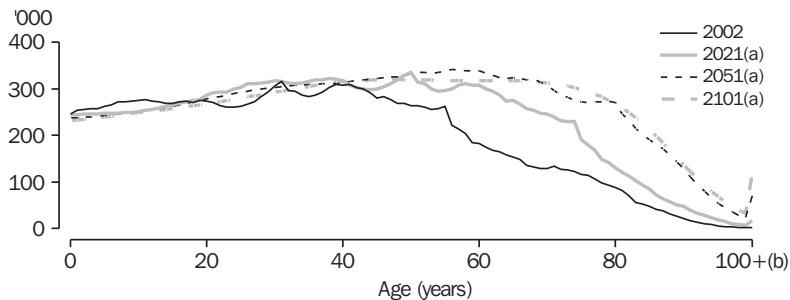
### 5.14 ACTUAL AND PROJECTED POPULATION — 30 JUNE

	2002(a)	2021			2051		
	Actual '000	Series A '000	Series B '000	Series C '000	Series A '000	Series B '000	Series C '000
<b>Capital city/balance of state</b>							
Sydney	4 170.9	5 108.2	4 910.8	4 678.0	6 587.6	5 652.5	4 913.9
Balance of New South Wales	2 469.4	2 760.5	2 727.0	2 695.0	3 005.6	2 703.1	2 570.0
<i>New South Wales</i>	6 640.4	7 868.7	7 637.8	7 373.0	9 593.2	8 355.6	7 484.0
Melbourne	3 524.1	4 348.1	4 188.9	4 061.1	5 561.7	4 792.8	4 369.1
Balance of Victoria	1 348.4	1 434.4	1 465.9	1 498.8	1 410.0	1 407.1	1 475.7
<i>Victoria</i>	4 872.5	5 782.5	5 654.8	5 560.0	6 971.7	6 199.9	5 844.8
Brisbane	1 689.1	2 481.1	2 288.0	2 113.0	3 776.9	3 018.5	2 483.1
Balance of Queensland	2 018.1	2 935.0	2 705.1	2 461.2	4 317.0	3 411.2	2 689.6
<i>Queensland</i>	3 707.2	5 416.1	4 993.0	4 574.2	8 093.9	6 429.7	5 172.6
Adelaide	1 114.3	1 190.7	1 181.2	1 173.3	1 241.7	1 134.6	1 098.3
Balance of South Australia	406.0	412.1	410.9	410.4	373.8	341.0	333.9
<i>South Australia</i>	1 520.2	1 602.8	1 592.0	1 583.7	1 615.5	1 475.6	1 432.2
Perth	1 413.7	1 931.7	1 804.9	1 663.6	2 752.2	2 235.2	1 808.5
Balance of Western Australia	513.7	648.3	603.0	537.8	821.7	639.3	450.7
<i>Western Australia</i>	1 927.3	2 580.0	2 407.9	2 201.5	3 573.9	2 874.5	2 259.3
Hobart	198.0	220.6	203.2	189.8	240.1	175.7	148.1
Balance of Tasmania	274.7	299.8	271.4	248.2	312.1	210.8	159.5
<i>Tasmania</i>	472.7	520.3	474.6	438.0	552.2	386.5	307.6
Darwin	107.4	157.3	141.3	116.4	257.1	199.3	121.5
Balance of Northern Territory	90.6	123.4	99.1	84.8	197.2	107.8	62.7
<i>Northern Territory</i>	198.0	280.7	240.4	201.2	454.3	307.1	184.1
<i>Australian Capital Territory(b)</i>	321.8	407.1	364.9	332.7	538.0	389.6	296.8
<i>Total capital cities(c)</i>	12 539.3	15 844.7	15 083.1	14 327.9	20 955.4	17 598.2	15 239.3
<i>Total balances of states and territories(d)(e)</i>	7 123.5	8 616.4	8 285.3	7 939.2	10 440.7	8 823.3	7 744.9
<b>Australia(e)</b>	<b>19 662.8</b>	<b>24 461.1</b>	<b>23 368.4</b>	<b>22 267.1</b>	<b>31 396.1</b>	<b>26 421.5</b>	<b>22 984.2</b>

(a) Projections were based on preliminary 2002 estimated resident population. (b) Canberra and Balance of ACT not projected separately. (c) Includes ACT. (d) Excludes Balance of ACT. (e) Includes Other Territories.

Source: *Population Projections, Australia, 2002 to 2101 (3222.0)*.

### 5.15 AGE STRUCTURE OF THE PROJECTED POPULATION



(a) Series B population projections. (b) Includes all ages 100 years and over and, therefore, is not strictly comparable with single year ages in the rest of the graph.

Source: *Population by Age and Sex, Australian States and Territories (3201.0)*; *Population Projections, Australia, 2002 to 2101 (3222.0)*.

### 5.16 POPULATION, Summary indicators

	Units	1901	1947	1971	2002	2021(a)	2051(a)	2101(a)
Total population	'000	3 773.8	7 579.4	13 067.3	19 662.8	23 368.4	26 421.5	26 355.7
Proportion of population								
0–14 years	%	35.1	25.1	28.7	20.3	16.1	14.0	13.8
15–64 years	%	60.8	66.8	63.0	67.1	64.9	58.9	57.2
65–84 years	%	3.9	7.7	7.8	11.2	16.5	21.1	22.0
85 years and over	%	0.1	0.4	0.5	1.4	2.5	6.0	6.9
Males per 100 females	no.	110.1	100.4	101.1	98.4	98.7	98.7	99.4
Median age	years	22.5	30.7	27.5	35.9	41.2	46.8	47.5
Proportion living in capital cities	%	36.8	51.2	63.2	63.9	64.5	66.6	n.a.

(a) Series B population projections.

Source: Australian Demographic Statistics (3101.0); Population Projections, Australia, 2002 to 2101 (3222.0).

## Geographic distribution of the population

Most of Australia's population is concentrated in two widely separated coastal regions. By far the larger of these, in terms of area and population, lies in the south-east and east. The smaller of the two regions is in the south-west of the continent. In both coastal regions the population is concentrated in urban centres, particularly the state and territory capital cities.

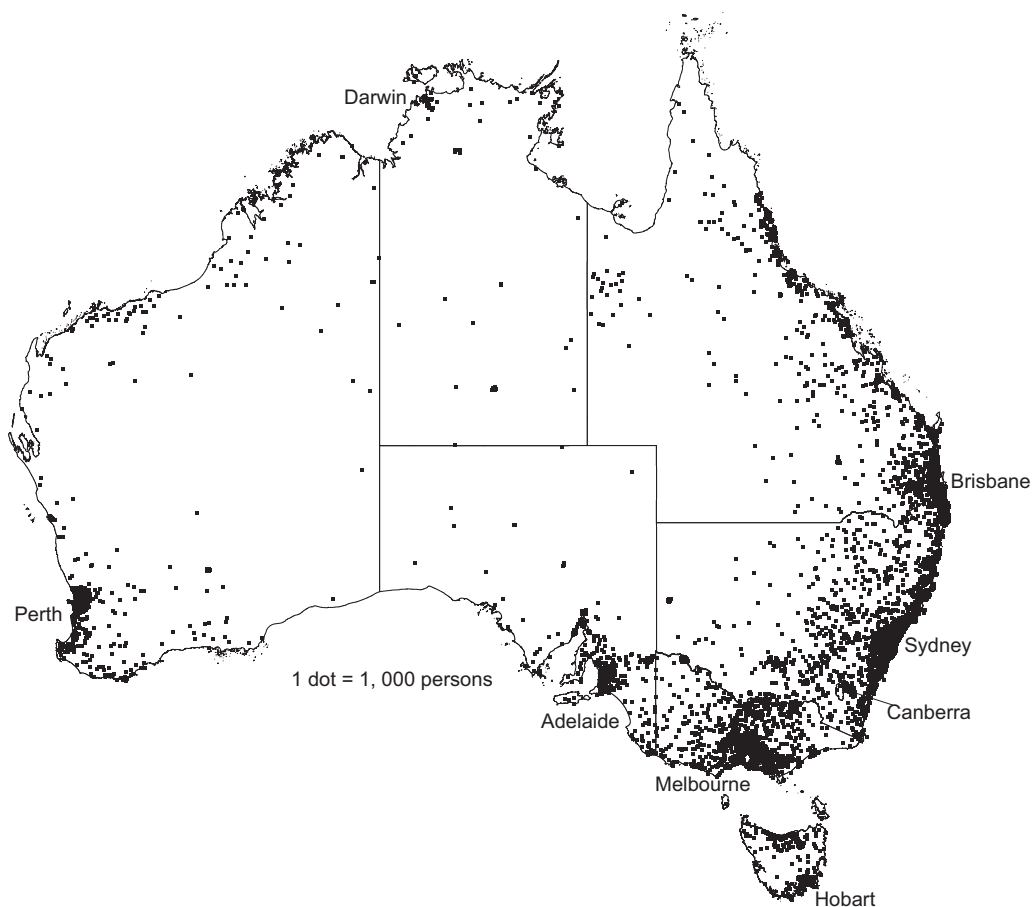
Australia's population density at 30 June 2004 was 2.6 people per square kilometre (sq km), compared with 2.5 people per sq km in 1999. The Australian Capital Territory had the highest population density of the states and territories at June 2004 with 137 people per sq km (reflecting the fact that the city of Canberra constitutes a large proportion of the Australian Capital Territory's area), followed by Victoria with 22 people per sq km. The Northern Territory had a population density of only 0.1 people per sq km, the lowest of all the states and territories (reflecting more recent settlement, distance from areas settled earlier, large arid areas and, perhaps, climate).

Population density at June 2004 was highest in the city centres, particularly in the Sydney Statistical Division, where the three most densely populated Statistical Local Areas (SLAs) in Australia were located. These were Sydney (C) – Central (8,300 people per sq km), Waverley (A) (6,700 people per sq km) and North Sydney (5,800 people per sq km). Fourth on the list, and the most densely populated SLA in Victoria, was Port Phillip (C) – St. Kilda, with 5,600 people per sq km. The distribution of Australia's population at 30 June 2004 is shown in map 5.17.

## Regional population change

Table 5.18 sets out the estimated resident population in major population regions at 30 June 1999 and 30 June 2004. At June 2004, capital city statistical divisions (SDs) were home to 12.8 million people, or around two-thirds (64%) of Australia's population. The largest average annual growth among the capital city SDs between 1999 and 2004 occurred in Melbourne SD, followed by Sydney and Brisbane SDs. Of the capital city SDs, Brisbane was the fastest growing capital city in Australia between 1999 and 2004, increasing by an average 2.2% per year, followed by Perth (1.5%) and Melbourne (1.3%).

## 5.17 POPULATION DISTRIBUTION(a) — 30 June 2004



(a) Estimated resident population.

Source: *Regional Population Growth, Australia and New Zealand (3218.0)*.

Generally, the largest growth outside capital city SDs occurred in coastal Australia. Table 5.18 shows the largest average annual growth recorded between 1999 and 2004 was in the Gold Coast-Tweed Statistical District (15,100). The Gold Coast-Tweed Statistical District together with the Sunshine Coast and Hervey Bay, recorded the second fastest growth, increasing by 3.6% on average per year between 1999 and 2004. Western Australia had the Statistical District with the fastest growing population – Mandurah (4.9%) – and the Statistical District with the largest rate of population decrease – Kalgoorlie/Boulder (–0.6%).

In 1904, 63% of Australians lived outside capital cities. This proportion fell steadily and by 1962 only 40% lived outside capital cities. Since the mid-1970s, this proportion appears to have steadied at around 36%.

### Interstate migration

The main factor changing the distribution of Australia's population has been internal migration. During 2003–04, 386,400 people moved from one state or territory to another, a decline of 12,100 people compared with the previous year.

## 5.18 ESTIMATED RESIDENT POPULATION IN MAJOR REGIONS(a)

			Average annual change	
	30 June 1999	30 June 2004	1999–2004	1999–2004
	'000	'000	no.	%
<b>Capital city statistical division</b>				
Sydney	4 020.0	4 232.1	42 425	1.03
Melbourne	3 379.7	3 600.1	44 073	1.27
Brisbane	1 592.3	1 774.9	36 522	2.20
Adelaide	1 096.9	1 124.3	5 476	0.49
Perth	1 355.4	1 457.6	20 453	1.47
Greater Hobart	196.0	202.1	1 225	0.62
Darwin	103.1	109.5	1 283	1.21
Canberra	312.0	323.6	2 336	0.74
<b>Statistical District</b>				
Newcastle (NSW)	479.7	505.4	5 128	1.05
Wollongong (NSW)	263.1	274.1	2 196	0.82
Nowra-Bomaderry (NSW)	29.6	32.1	486	1.59
Bathurst-Orange (NSW)	74.0	77.5	705	0.93
Lismore (NSW)	31.0	31.0	-6	-0.02
Coffs Harbour (NSW)	44.4	49.0	932	2.02
Port Macquarie (NSW)	36.0	40.7	942	2.49
Tamworth (NSW)	41.9	43.1	240	0.57
Dubbo (NSW)	34.1	35.6	284	0.82
Wagga Wagga (NSW)	52.2	53.0	170	0.32
Albury-Wodonga (NSW/Vic.)	95.2	101.8	1 312	1.34
Geelong (Vic.)	155.6	164.5	1 776	1.12
Warrnambool (Vic.)	28.7	30.7	411	1.40
Ballarat (Vic.)	81.4	87.1	1 151	1.38
Bendigo (Vic.)	77.1	83.2	1 222	1.54
Shepparton (Vic.)	42.8	46.8	792	1.79
La Trobe Valley (Vic.)	75.4	74.7	-143	-0.19
Mildura (Vic.)	43.6	47.1	703	1.56
Sunshine Coast (Qld)	173.8	207.2	6 695	3.59
Bundaberg (Qld)	55.6	59.5	792	1.39
Hervey Bay (Qld)	38.2	45.5	1 469	3.58
Rockhampton (Qld)	67.6	68.5	177	0.26
Gladstone (Qld)	38.3	41.9	723	1.82
Mackay (Qld)	62.9	68.4	1 088	1.67
Townsville (Qld)	127.9	144.2	3 264	2.43
Cairns (Qld)	111.2	120.3	1 810	1.58
Toowoomba (Qld)	105.7	116.1	2 081	1.90
Gold Coast-Tweed (Qld/NSW)	394.4	469.8	15 090	3.56
Mandurah (WA)	55.4	70.4	3 008	4.92
Bunbury (WA)	46.5	53.6	1 414	2.87
Kalgoorlie/Boulder (WA)	30.1	29.2	-176	-0.59
Geraldton (WA)	30.6	30.8	48	0.16
Launceston (Tas.)	98.3	102.0	744	0.75
Burnie-Devonport (Tas.)	77.9	79.1	222	0.28
Canberra-Queanbeyan (ACT/NSW)	351.5	369.4	3 563	0.99

(a) Data are based on the 2001 Census and 2004 Australian Standard Geographical Classification boundaries.

Source: *Australian Demographic Statistics (3101.0)*.

In 2003–04 Queensland, Tasmania and Western Australia recorded net interstate migration gains. Queensland continued a 20-year trend of positive net interstate migration, whereas 2003–04 was the second year since 1991 that Tasmania's net

interstate migration was positive. All other states and territories experienced net losses due to interstate migration, although this was offset in most cases by growth due to natural increase and net overseas migration (table 5.19).



### 5.19 POPULATION GROWTH RATES — 2003–04

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.(a)
	%	%	%	%	%	%	%	%	%
Natural increase rate	0.60	0.59	0.65	0.37	0.71	0.36	1.45	0.88	0.61
Net overseas migration rate	0.59	0.70	0.52	0.36	0.88	0.13	0.31	0.07	0.59
Net interstate migration rate	-0.46	-0.05	0.97	-0.21	0.07	0.52	-1.06	-0.74	..
Total population growth rate	0.74	1.25	2.13	0.52	1.65	1.01	0.69	0.20	1.20

(a) Includes other territories.

Source: Australian Demographic Statistics (3101.0).

## Urban and non-urban population

For the purposes of this article, ‘urban’ Australia comprises capital city Statistical Divisions, and Statistical Districts with a population greater than 100,000 people. ‘Non-urban’ Australia refers to the remainder.

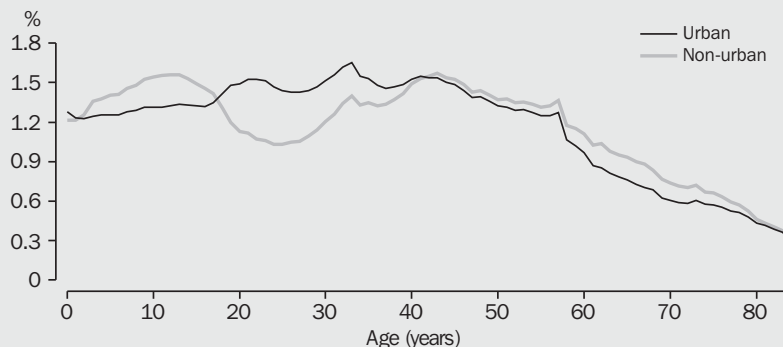
At 30 June 2004 three quarters of the Australian population (15.1 million people) lived in urban areas. Some 12.8 million urban residents lived in Australia’s eight capital cities. The urban population increased by 192,100 people in 2003–04 while non-urban Australia increased by 46,500 people.

The age distributions of urban and non-urban Australia in 2004 show variations in three distinct age groups. The urban population has proportionally fewer people in two age groups – those aged 2–17 years of age and those aged 42 years and over. Conversely, non-urban Australia has proportionally fewer people aged 18–41 years (graph 5.20). The largest differences

between urban and non-urban populations exist for young adults aged 21–25 years, as a result of the movement of many young people from non-urban to urban Australia. Much of this movement can be attributed to the lifecycle stage where young adults move out of their parental home to continue their education, for employment opportunities, independence or a change of lifestyle.

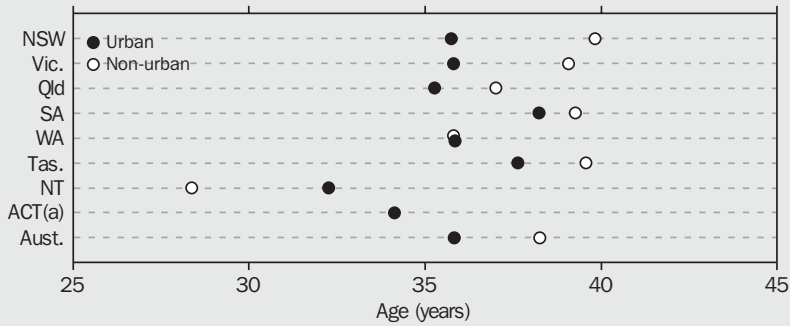
In all states and territories other than the Northern Territory, urban populations were younger than non-urban populations in 2004. The median age of urban populations ranged from a low of 32.3 years in the Northern Territory to a high of 38.2 years in South Australia – a difference of nearly 6 years. The population of non-urban Australia had a larger range. New South Wales recorded the highest non-urban median age (39.8 years) and the Northern Territory recorded the lowest (28.4 years), a difference of over 11 years (graph 5.21).

5.20 AGE DISTRIBUTION, Urban and non-urban Australia — 2004



Source: ABS data available on request, Population Estimates by Age and Sex, Australia and States, 2004 (3235.0.55.001).

**5.21 MEDIAN AGE, Urban and non-urban, States and territories — 2004**



(a) ACT non-urban not included due to small population.

Source: ABS data available on request, *Population Estimates by Age and Sex, Australia and States, 2004* (3235.0.55.001).

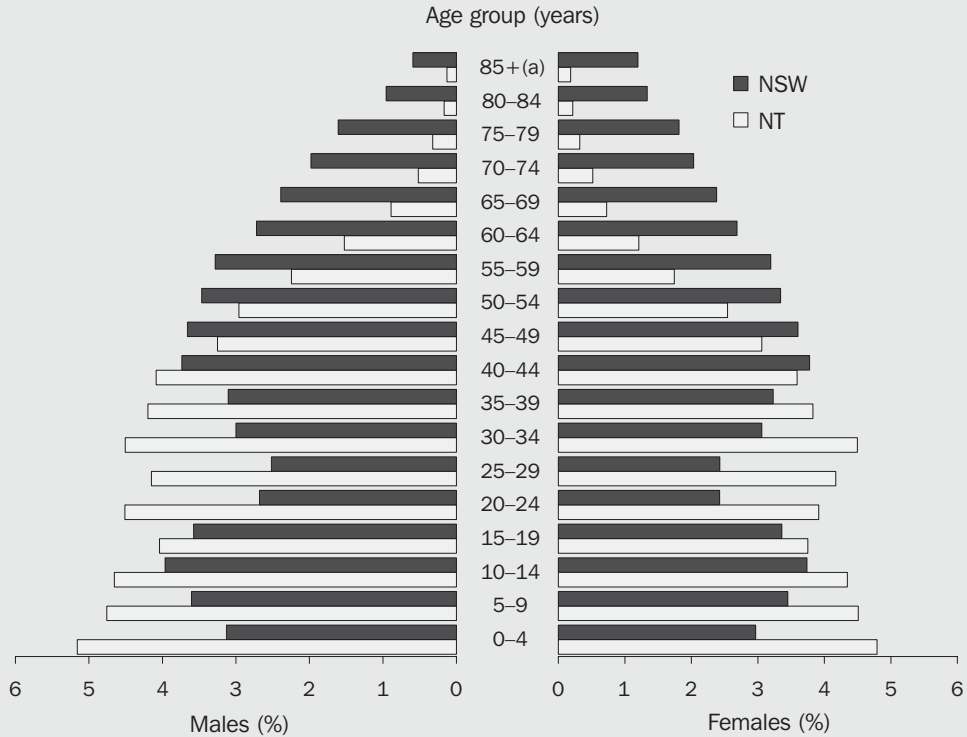
Graph 5.22 shows the age-structure pyramid of males and females in 2004 for non-urban New South Wales (with the highest median age) and non-urban Northern Territory (with the lowest median age). Although non-urban New South Wales has an older population than non-urban Northern Territory, the pyramid also shows there are proportionally fewer people aged 20–39 years in non-urban New South Wales. The smaller proportions of children (those under 15 years of age) in non-urban New South Wales is largely a result of low fertility, while the higher proportion of children in non-urban Northern Territory is largely a result of higher fertility over time. Much of the age structure for non-urban Northern Territory can be attributed to the high proportion of Indigenous population, which has a younger age structure than the non-Indigenous population (see graph 5.27).

In 1989 the median ages of Australia’s urban and non-urban populations were similar, at 32.0 years and 31.5 years respectively. By 2004, non-urban Australia had a higher median age (38.3 years) than urban Australia (35.8 years). Although Australia’s population as a whole is ageing, non-urban populations are ageing faster than urban populations.

The age structure of non-urban Australia has changed over the past 15 years. Between 1989 and 2004, the proportions of all age groups 40 years and over increased. These age groups include the majority of ‘baby boomers’ (persons born in the period 1946–65). Conversely, the proportions of all age groups under 40 years have decreased, reflecting Australia’s sustained low fertility rates. Although both urban and non-urban Australia have low fertility rates, there has been a larger decrease in the proportion of children aged 0–4 years for non-urban than for urban Australia. In 1989 the proportion of the non-urban population aged 0–4 years was 8%, while by 2004 it was 6%. Over the past 15 years the largest decrease in the non-urban population was in the proportion of persons aged 25–29 years, which decreased from 8% in 1989 to 5% in 2004 (graph 5.23).

The sex ratio (the number of males per 100 females) has declined in both non-urban and urban Australia over the past 15 years. In 1989 the sex ratio for the non-urban population was 103, indicating a larger male than female population. This declined to 102 in 2004, with males still outnumbering females. In contrast, urban Australia had more females than males with a sex ratio of 98 in 1989 and 2004.

## 5.22 AGE STRUCTURE, Non-urban, New South Wales and Northern Territory — 2004



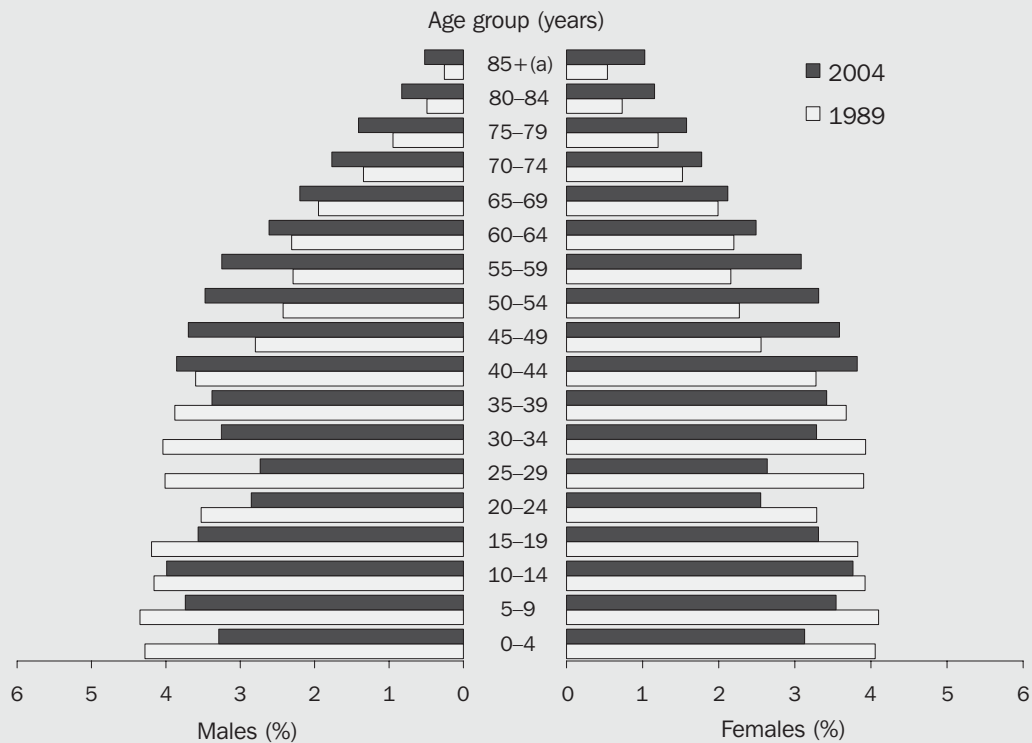
(a) The 85+ age group includes all ages 85 years and over and is not directly comparable with the other 5-year age groups.

Source: ABS data available on request, *Population Estimates by Age and Sex, Australia and States, 2004* (3235.0.55.001).

Although the sex ratio shows more males than females in the non-urban population, there are variations between the states and territories (graph 5.24). The urban population of the Northern Territory is unlike urban populations in the other states and territories, with a sex ratio of 112 males per 100 females in 2004. All other states and territories have fewer males than females in

their urban population. The Northern Territory also had the highest sex ratio for non-urban Australia at 109. The lowest sex ratios were in urban Tasmania (95) and urban South Australia (96). Non-urban New South Wales had closest to an equal number of males and females, with a sex ratio just under 100 males per 100 females.

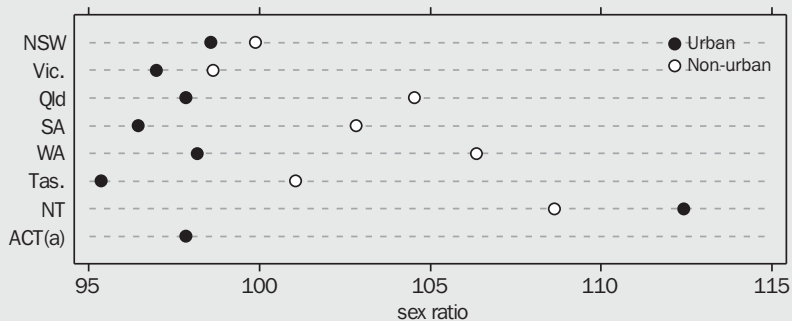
### 5.23 AGE STRUCTURE, Non-urban Australia — 1989 and 2004



(a) The 85+ age group includes all ages 85 years and over and is not directly comparable with the other 5-year age groups.

Source: ABS data available on request, *Population Estimates by Age and Sex, Australia and States, 2004* (3235.0.55.001).

### 5.24 SEX RATIO, Urban and non-urban — 2004



(a) ACT non-urban not included due to small population.

Source: ABS data available on request, *Population Estimates by Age and Sex, Australia and States, 2004* (3235.0.55.001).

## Aboriginal and Torres Strait Islander population

There are no accurate estimates of the population of Australia before European settlement. Many estimates were based on post-1788 observations of a population already reduced by introduced diseases and other factors. Smith (1980) estimated the absolute minimum pre-1788 population at 315,000. Other estimates have put the figure at over one million, while recent archaeological finds suggest that a population of 750,000 could have been sustained.

Whatever the size of the Indigenous population before European settlement, it declined dramatically under the impact of new diseases, repressive and often brutal treatment, dispossession, and social and cultural disruption and disintegration. The decline of the Indigenous population continued well into the 20th century.

More recently, changing social attitudes, political developments, improved statistical coverage and a broader definition of Indigenous origin have all contributed to the increased likelihood of people identifying as being of Aboriginal or Torres Strait Islander origin. This is reflected in the large increases in the number of people who are identified as Indigenous in each census, increases in excess of those which can be attributed to natural increase in the Indigenous population.

Table 5.25 shows the distribution of the Indigenous population by state and territory between 1991 and 2001. The average annual growth rate of the Indigenous population in Australia for the 5-year period 1996–2001 was 2.0%, approximately twice that of the total population.

The Indigenous population at 30 June 2001 was 458,500 of which 134,900 (29%) lived in New South Wales, 125,900 (27%) in Queensland, 65,900 (14%) in Western Australia and 56,900 (12%) in the Northern Territory. The Northern Territory had the largest proportion of its population who were Indigenous – 29% compared with 4% or less for all other states and the Australian Capital Territory.

While most of the Australian population is concentrated along the eastern and south-west coasts (map 5.17), map 5.26 shows the Indigenous population is more widely spread. This partly reflects the higher level of urbanisation among the non-Indigenous population than the Indigenous population. Indigenous people are much more likely to live in very remote areas than the non-Indigenous population. The SLAs with the highest number of Indigenous people per square kilometre were located in Darwin, whereas the SLAs with the highest densities for the population as a whole were located in Sydney.

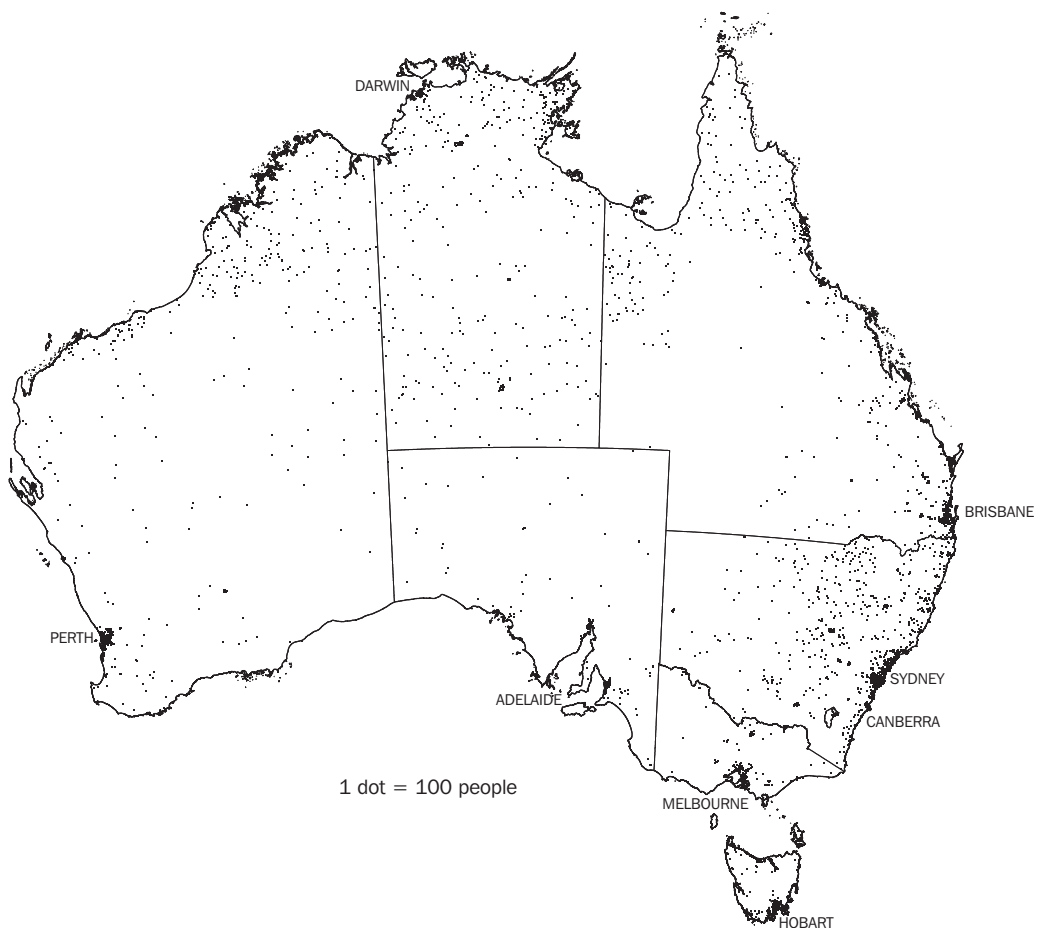
**5.25 ESTIMATES OF THE INDIGENOUS POPULATION(a)**

	1991(b)		1996(c)		2001(d)	
	'000	%	'000	%	'000	%
New South Wales	75.0	26.5	109.9	28.5	134.9	29.4
Victoria	17.9	6.3	22.6	5.9	27.8	6.0
Queensland	74.2	26.2	104.8	27.2	125.9	27.5
South Australia	17.2	6.1	22.1	5.7	25.5	5.6
Western Australia	44.1	15.6	56.2	14.6	65.9	14.4
Tasmania	9.5	3.3	15.3	4.0	17.4	3.8
Northern Territory	43.3	15.3	51.9	13.4	56.9	12.4
Australian Capital Territory	1.7	0.6	3.1	0.8	3.9	0.9
<b>Australia</b>	<b>283.0</b>	<b>100.0</b>	<b>386.0</b>	<b>100.0</b>	<b>458.5</b>	<b>100.0</b>

(a) Australian estimates for 1996 and 2001 include Other Territories. ACT estimates for 1991 include Jervis Bay. (b) Estimate based on the 1991 Census of Population and Housing. (c) Estimate based on the 1996 Census of Population and Housing. (d) Estimate based on the 2001 Census of Population and Housing.

Source: *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2009* (3238.0).

## 5.26 INDIGENOUS POPULATION DISTRIBUTION(a) — 30 June 2001



(a) Estimated resident population.

Source: *Census of Population and Housing: Population Growth and Distribution, Australia, 2001 (2035.0)*.

The Indigenous population has a much younger age structure than that of the non-Indigenous population (graph 5.27), with 39% of the population aged under 15 years (compared with 20% of non-Indigenous people), and only 3% aged 65 years and over (compared with 13% of the non-Indigenous population). In 2001, the median age of the Indigenous population was 20.5 years, compared with 36.1 years for the non-Indigenous population.

This age structure is largely a product of relatively high fertility and mortality among the Indigenous population. Although the total fertility rate among Indigenous women has fallen in recent decades, from around six babies per woman in the 1960s to

2.1 babies per woman in 2001, it remains higher than the total fertility rate among the total female population (1.7 babies per woman in 2001). The high mortality experienced by the Indigenous population is reflected in life expectancy at birth, which for Indigenous males and females born in the period 1996–2001 was 59.4 years and 64.8 years respectively – approximately 17 years less for both males and females than the life expectancy of all Australian males and all females born in the period 1997–99.

In 2001, 30% of Indigenous people lived in Major Cities compared with 67% of the non-Indigenous population. Proportions of Indigenous and non-Indigenous populations who lived in Inner

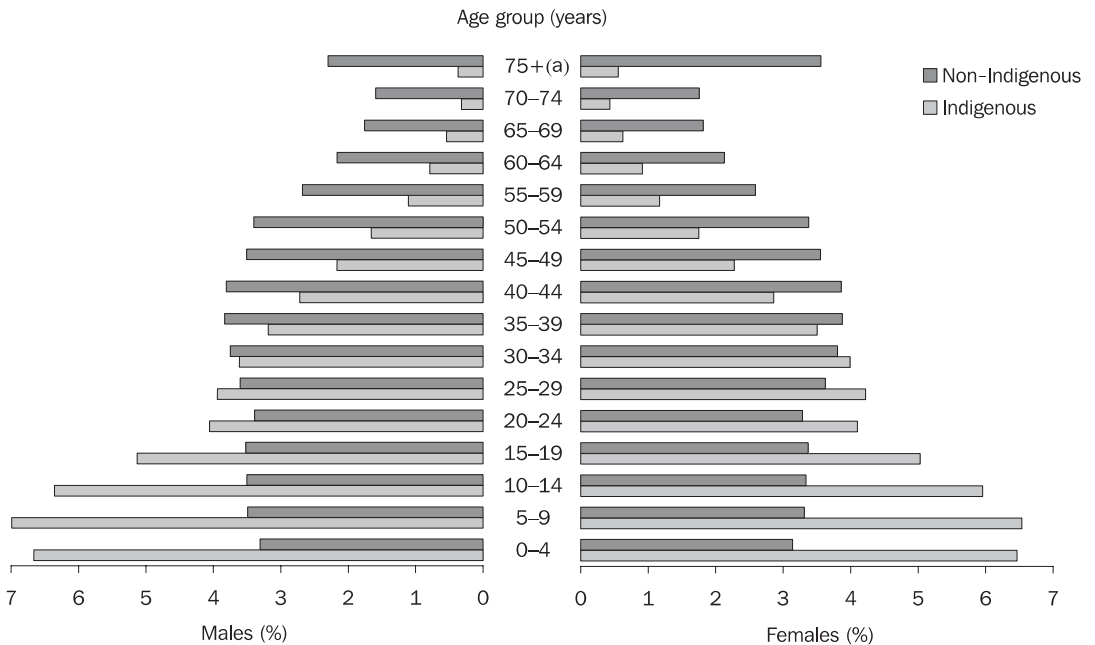
Regional areas were similar (20% and 21% respectively). Residence in Outer Regional areas was higher for Indigenous people (23%) than for the non-Indigenous population (10%). The proportion of Indigenous people living in Remote or Very Remote areas (26%) was 13 times that of the non-Indigenous population living in those areas (2%).

The ABS produced projections of the Indigenous population for the period 2002–09 using the results of the 2001 Census of Population and Housing. If the unexplained growth (growth which cannot be attributed to natural increase) observed between the 1996 and 2001 censuses is assumed to continue at the same rate (high series), the Indigenous population is projected to grow from 458,500 people in 2001 to 600,200 people in 2009. Assuming no further unexplained growth in census counts of the Indigenous population (low series), Australia’s Indigenous

population would rise to 528,600 people in 2009. The projected average annual growth rate of the Indigenous population for the high series is 3.4% while for the low series it is 1.8%. These projected growth rates are both higher than the observed increase in the total Australian population for the 2001–02 financial year (1.2%).

Indigenous populations of all states and territories are projected to continue growing between 2001 and 2009. The rates of growth in New South Wales are projected to remain constant in both series over the projection period, while the rates of growth are projected to decline in both series in Queensland, South Australia, Western Australia, the Northern Territory and the Australian Capital Territory. For Victoria, the growth rates decline slightly in the high series but remain constant after 2002 in the low series. However, in Tasmania the growth rates remain constant in the high series but increase slightly in the low series.

**5.27 AGE DISTRIBUTION OF THE INDIGENOUS AND NON-INDIGENOUS POPULATION — 30 June 2001**



(a) The 75+ age group includes all ages 75 years and over and therefore is not strictly comparable with the other 5-year age groups.

Source: *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2009 (3238.0)*.



## Births

In 2003 there were 251,200 births registered in Australia, resulting in a total fertility rate of 1.8 babies per woman. Australia is experiencing the second of two long periods of fertility decline since 1901 – from 1907 to 1934 and from 1962 to the present (excluding a plateau from 1966 to 1972) – although in recent years the total fertility rate has remained relatively stable.

Fertility increased through the 1950s, and peaked in 1961 when the total fertility rate reached 3.5 babies per woman (graph 5.28). After the 1961 peak the total fertility rate fell rapidly to 2.9 babies per woman in 1966. This fall can be attributed to changing social attitudes, in particular a change in people's perception of desired family size, facilitated by the oral contraceptive pill becoming available. During the 1970s the total fertility rate dropped further, falling to replacement level (2.1 babies per woman) in 1976, below which it has since remained. This fall was more marked than the fall in the early-1960s and has been linked to the increasing participation of women in education and the labour force, changing attitudes to family size, lifestyle choices and greater access to contraceptive measures and abortion.

In the late-1970s the total fertility rate began to decline at a slower rate, continuing through the 1980s and 1990s. Since 1998 the total fertility rate has been relatively stable, varying between 1.7 and 1.8 babies per woman.

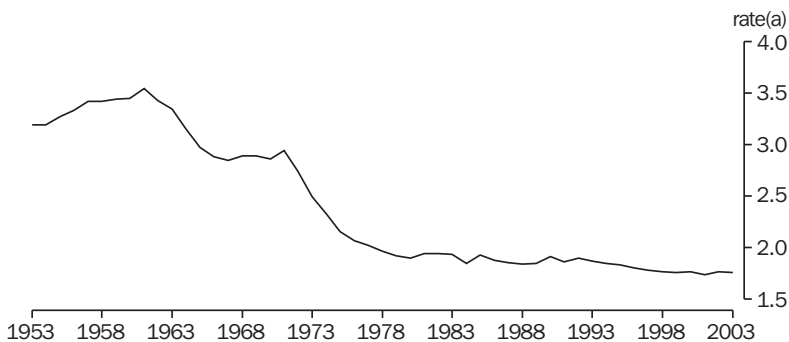
According to United Nations projections, the world average total fertility rate for 2000–05 is estimated at 2.7 babies per woman, declining from

the relatively constant five babies per woman that existed until the late-1960s and early-1970s. However, total fertility rates for individual countries vary considerably. Many factors can influence a country's fertility rate, such as differences in social and economic development and the prevalence of contraceptive use. In general, developing countries have higher fertility rates than developed countries.

Over the past 50 years, fertility has declined in most countries. Of the countries shown in graph 5.29, the total fertility rates of the Asian countries have shown the largest declines. Singapore and China experienced large declines in the total fertility rate – from 6.4 and 6.2 babies per woman respectively in 1950–55, to 1.4 and 1.7 in 2000–05.

Australia's total fertility rate for 2003 of 1.8 babies per woman was well below the world's average of 2.7 but was comparable to that of other developed countries, most of which have also experienced sustained fertility decline. According to the United Nations estimated average total fertility rates for the period 2000–05, Macao (SAR of China) has the lowest fertility rate (0.8), followed by Hong Kong (SAR of China) (0.9) and Ukraine (1.1). Several European countries also have very low fertility, including Spain, Italy and the Russian Federation (all 1.3). By contrast, many African countries have high fertility rates, with Niger (7.9) being the highest (graph 5.30). Other countries with high fertility include the Democratic Republic of Timor-Leste (7.8) and Afghanistan (7.5).

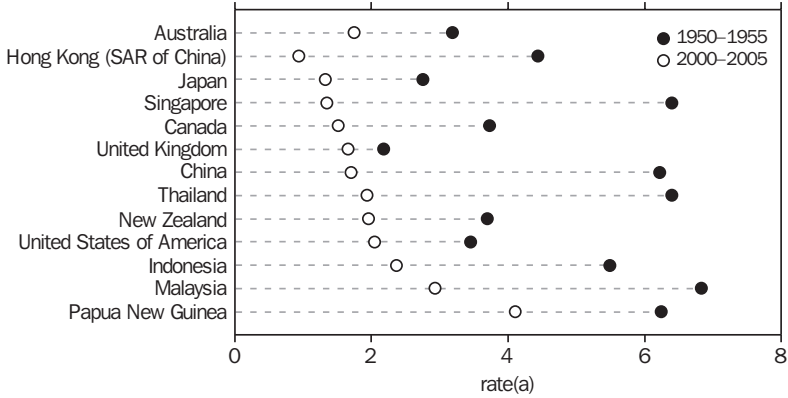
5.28 TOTAL FERTILITY RATE



(a) Births per woman.

Source: *Births, Australia* (3301.0).

### 5.29 TOTAL FERTILITY RATES, Selected countries



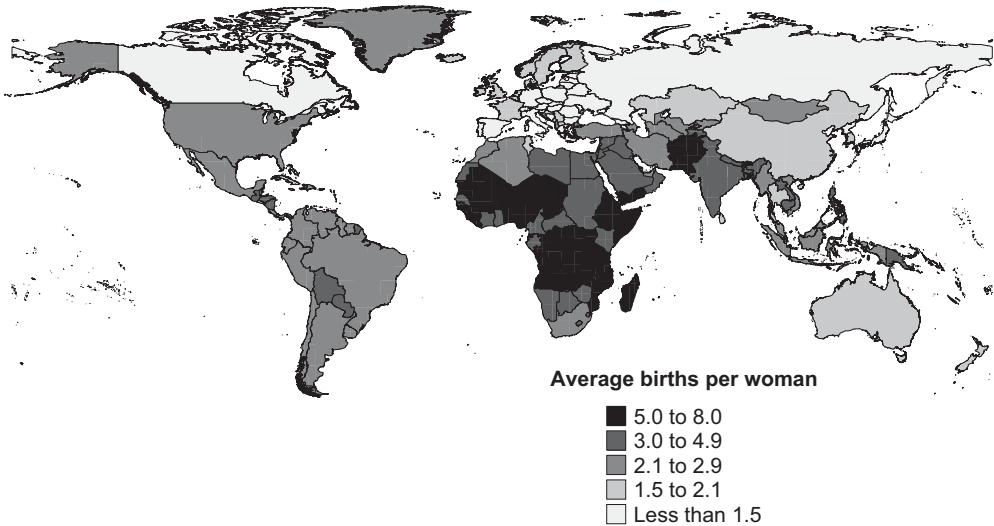
(a) Births per woman.

Source: United Nations Population Division, 'World Population Prospects: The 2004 Revision', viewed 22/07/05, <<http://www.un.org>>.

Australian women continue to delay child-bearing. The median age at child-bearing increased from 26.9 years in 1983 to 28.9 years in 1993, then to 30.5 years in 2003. Over the past 20 years there has been a fall in the fertility rate of teenagers, from 26.6 babies per 1,000 teenage females in 1983 to 16.3 in 2003. Conversely, the fertility rate

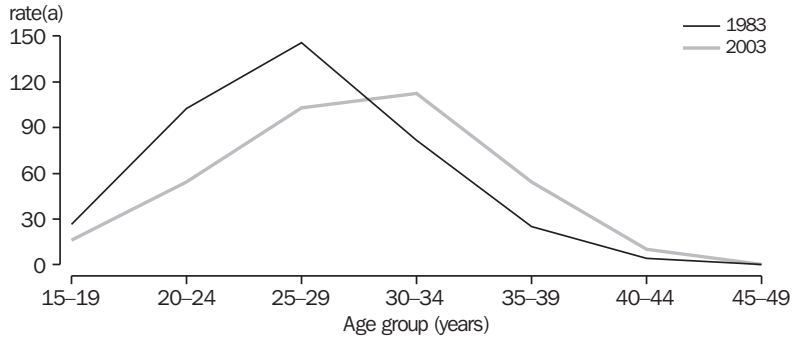
of women aged 40–44 years has more than doubled, from 4.3 babies per 1,000 women in 1983 to 10.0 in 2003. However, births to older mothers have failed to compensate for the decline in births to younger women, resulting in a decline in total fertility (graph 5.31).

### 5.30 TOTAL FERTILITY RATES, By country — 2000–05



Source: United Nations Population Division, 'World population prospects: The 2004 revision', viewed 22/07/05, <<http://www.un.org>>.

### 5.31 AGE-SPECIFIC FERTILITY RATES



(a) Births per 1,000 women.

Source: *Births, Australia (3301.0)*.

An alternative to the 'snapshot' measure provided by the total fertility rate for a specific period is total issue data, that is, the total number of children ever born alive per woman. Total issue data reveal a decline over time in the average number of children by age of women. While at earlier ages the decline in average issue may be related to the postponement of child-bearing, average issue among women aged 40–44 years has also declined. Completed fertility (the average

number of babies a cohort of females have borne) for the cohort born in 1953 show an average issue of 2.3 births per woman. Projections into the future show that the cohort of females born in 2003 would have an average issue of 1.6 births per woman if current trends continue.

Table 5.32 provides summary measures of fertility for years between 1993 and 2003.

### 5.32 SELECTED SUMMARY MEASURES OF FERTILITY

	Registered births '000	Crude birth rate rate(b)	Total fertility rate rate(c)	Ex-nuptial births(a) %
1993	260.2	14.7	1.86	24.9
1994	258.1	14.5	1.85	25.6
1995	256.2	14.2	1.83	26.6
1996	253.8	13.9	1.80	27.4
1997	251.8	13.6	1.78	28.1
1998	249.6	13.3	1.76	28.7
1999	248.9	13.1	1.76	29.2
2000	249.6	13.0	1.76	29.2
2001	246.4	12.7	1.73	30.7
2002	251.0	12.8	1.76	31.3
2003	251.2	12.6	1.75	31.6

(a) Births to unmarried mothers. (b) Births per 1,000 population. (c) Births per woman.

Source: *Australian Historical Population Statistics (3105.0.55.001)*; *Births, Australia (3301.0)*.

## Recent fertility trends

Fertility refers to the actual number of live births in a given period relative to the size of the population (as distinct from the physical ability to reproduce). The total fertility rate (TFR) is a measure of current fertility. Australia's TFR dropped below replacement level (2.1 babies per woman) in 1976. It has remained below replacement level and declined further since then. This means that under current age-specific fertility rates the average number of babies born to a woman throughout her reproductive life would not be sufficient to replace herself and her partner.

During the 1970s, Australia's TFR declined rapidly from 2.9 babies per woman in 1971 to 1.9 in 1981. In more recent years this decline has slowed, with the TFR reaching 1.8 by 1996. Since then, the TFR has been relatively stable, varying between 1.7 and 1.8 (graph 5.33). In 2003 there were almost five million women of child-bearing age in Australia. About 5% of these women gave birth in 2003, a decline of half a percentage point since 1993.

This article discusses three of the main drivers of low fertility in Australia – the changing age of mothers, declining family size and childlessness.

### Delaying childbirth

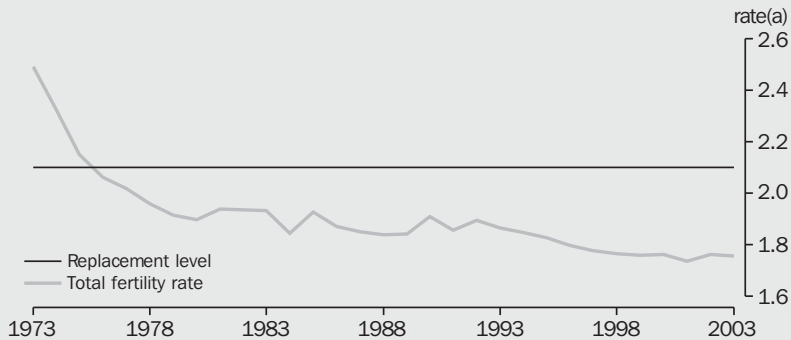
The current low level of fertility in Australia is related to the fact that partnering, and consequently childbirth, is occurring at later ages than in the past. The age at which women begin

bearing children is a significant determinant of lifetime family size. With fewer reproductive years available, women who start having children later in life tend to have fewer children than those who start having children at younger ages (Barnes, 2001). Delaying child-bearing also increases the risk of lifetime childlessness (Weston, 2004).

The trend towards delaying child-bearing in Australia is evident in the median age of parents. For both mothers and fathers, median age has risen consistently over the past two decades. In 1983, the median age of all mothers who gave birth in that year was 26.9 years, while the median age of fathers was 29.7 years. By 1993, these had increased to 28.9 years for mothers and 31.4 years for fathers. Ten years later, in 2003, the median ages were 30.5 years and 32.6 years for mothers and fathers respectively.

Over this period, declines in fertility rates in younger age groups (15–29 years) have not been fully offset by increases in fertility in older age groups (30–49 years) (DeVaus, 2002; Kippen, 2003; McDonald, 2000). This has resulted in a gradual decline in total fertility levels, and an increased median age of mothers (graph 5.34). In 2000, this shift towards older ages of mothers resulted in the age group with the highest fertility rates shifting from 25–29 year olds to 30–34 year olds.

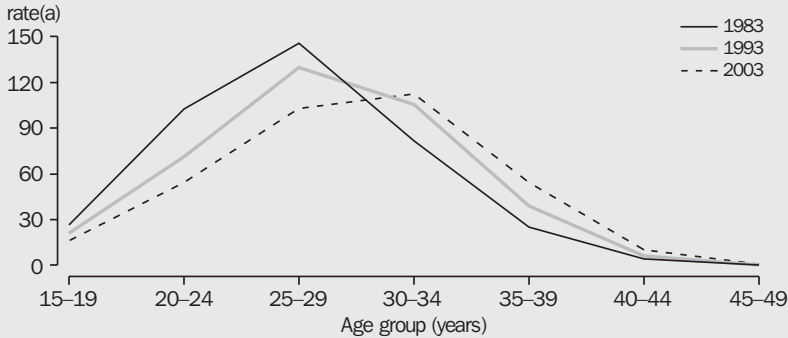
5.33 TOTAL FERTILITY RATE



(a) Births per woman.

Source: *Births, Australia (3301.0)*.

### 5.34 AGE-SPECIFIC FERTILITY RATES



(a) Births per 1,000 women.

Source: *Births, Australia (3301.0)*.

Fertility of the 25–29 year age group decreased by 21% between 1993 and 2003. In 1993, women in this age group had 129.8 births per 1,000 women, declining to 102.9 in 2003. The 25–29 year age group accounted for 35% of the TFR in 1993, but contributed only 29% in 2003.

Accompanying this decline has been an increase in the fertility of women aged 30–34 years and 35–39 years. Since 2000, women in the 30–34 year age group have experienced the highest fertility of all age groups, overtaking women aged 25–29 years. In 2003, there were 112.5 births per 1,000 women aged 30–34 years, a 7% increase from 105.4 in 1993. The contribution by women in this age group to the TFR increased from 28% in 1993 to nearly a third in 2003.

Between 1993 and 2003, the fertility rate for women aged 35–39 years increased by 40%, reaching a high of 54.3 births per 1,000 women. The contribution to the TFR of women in this age group increased from 10% in 1993 to 15% in 2003, nearly equal to the contribution by women aged 20–24 years in that year (16%).

### Family size

The declining number of women who have given birth to three or more children in their lifetime is another factor contributing to Australia's low fertility level (Barnes, 2001). In 2000, it was estimated that 25% of that year's TFR was contributed by women having a third or higher order birth (ABS, 2000). Without these women, the TFR in that year would have been 1.3 rather than 1.7 births per woman.

As most children are born to women aged under 40 years, the number of children already born to women aged in their 40s is a good indication of the number of children they will ever have. The proportion of women aged 40–49 years with three or more children declined from 54% in 1976 to 46% in 1986 and 37% in 1996. Over this period, the proportion of women having only two children increased from 24% in 1976 to 30% in 1986 and 37% in 1996. Similarly, the proportion with one child increased from 8% to 10% over the period.

### Childlessness

The number of women who, whether by choice or circumstance, had not given birth to a child also increased significantly between 1976 and 1996. The 1976 Census of Population and Housing recorded 4% of women aged 40–49 years had not given birth to a child. By 1986 the proportion had increased to 9% and in 1996, 11% of women in this age group had not given birth. A recent Australian survey on fertility decisions found that only 8% of surveyed women without children definitely did not want children (Weston et al, 2004).

The proportion of women aged under 30 years who have not given birth has also increased as women delay child-bearing. For instance, of women aged 25–29 years in 1976, 15% had not given birth compared with 40% of women the same age in 1986 and 54% in 1996.

The continued delaying of births may result in lifetime childlessness for some women, despite their fertility intentions. Childlessness among

women who have not yet completed their reproductive years can only be estimated. In 2000 it was estimated that 24% of women who had not

completed their fertility would remain childless for life if 2000 fertility rates remained constant into the future (ABS, 2000).

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## Deaths

In 2003, 132,300 deaths (68,300 males and 64,000 females) were registered in Australia, a decrease of 1,400 deaths (or 1%) compared with the number of deaths registered in 2002 (133,700). Since 1983 the number of deaths has increased by 1% on average annually. The steady increase in the number of deaths over time reflects the increasing size of the population and, in particular, the increasing number of older people. With continued ageing of the population the number of deaths will continue to rise, with deaths projected to outnumber births sometime in the 2030s.

Despite the ageing of the population over the last 20 years, death rates have continued to decline. The crude death rate (CDR) fell from 7.2 deaths per 1,000 population in 1983 to 6.7 deaths per 1,000 in 2003. The fall in CDR, against the background of an older population, indicates the considerable decline in age-specific death rates over the period. The standardised death rate (which eliminates the effect of the changing age structure of the population) was 6.4 deaths per 1,000 population in 2003, down by 4% from 2002 (6.7) and down by 33% from 1983 (9.6). Standardised death rates are calculated using the 2001 total population of Australia as the standard population.

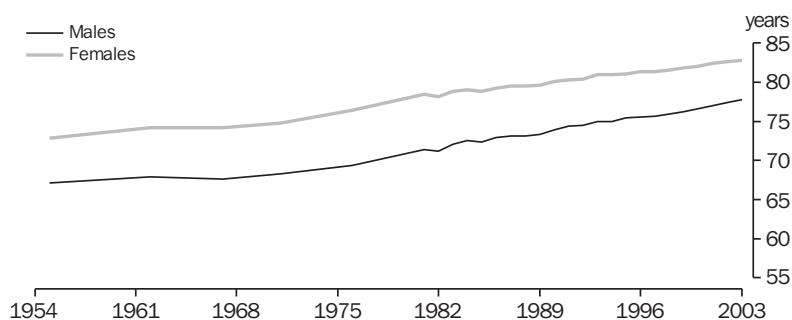
## Life expectancy

Life expectancy refers to the average number of additional years a person of a given age and sex might expect to live if the age-specific death rates of the given period continued throughout his or her remaining lifetime.

Over the past 50 years the average life expectancy of a new-born boy has increased from 67 years in the period 1952–54 to 78 years in 2001–03. Likewise, the average life expectancy of a new-born girl has increased from 73 to 83 years during the same period (graph 5.35). The increase in life expectancy at birth is due to declining death rates at all ages.

Reductions in mortality in the early part of the 20th century have been attributed to improvements in living conditions, such as better water supply, sewerage systems, food quality and health education. The continuing reduction in mortality in the latter half of last century has been attributed to improving social conditions, and to advances in medical technology such as mass immunisation and antibiotics. The past two decades in particular have seen further increases in life expectancy. These increases are due in part to lower infant mortality, fewer deaths among young adults from motor vehicle accidents and fewer deaths among older men from heart

### 5.35 LIFE EXPECTANCY AT BIRTH



Note: Years represent the last year of a 3-year period. For example, 2003 refers to the period 2001–03.

Source: Australian Historical Population Statistics, (3105.0.65.001).

disease. The reduction in the number of deaths from heart disease has been related to behavioural changes, such as dietary improvements and reduced smoking, as well as medical advances.

During the 20th century the life expectancy of new-born girls was consistently higher than that of new-born boys, with this difference peaking at about 7 years in the 1970s and early-1980s. The difference is largely due to significant declines in heart disease, stroke and respiratory disease mortality among women. In recent years, the gap in life expectancy between new-born males and females has narrowed to 5 years in 2001–03. This can be attributed to the large reductions in death rates of males aged 45 years and over, and particularly to the reduction in heart disease deaths among males.

The increase in life expectancy for older persons has implications for retirement planning and income policies. Life expectancy of 65 year olds has increased from 14 years for males and 18 years for females in 1983, to 18 years for males and 21 years for females in the period 2001–03.

Australians have a life expectancy at birth which compares well with that experienced in other developed nations. Life expectancy at birth of males in Australia (78 years) was exceeded only by Hong Kong (SAR of China) and Iceland (both at 79 years). Israel, Japan, Macao (SAR of China), Sweden and Switzerland all shared with Australia a male life expectancy at birth of 78 years. Life expectancy at birth of Australian females (83 years) was exceeded only by Hong Kong (SAR of China) and Japan (both at 85 years). France, Iceland, Italy, Spain and Switzerland all shared with Australia a female life expectancy at birth of 83 years. The life expectancy

of new-born babies in Australia was higher than in New Zealand, the United Kingdom, Canada and the United States of America. Map 5.37 shows the combined male and female life expectancy at birth for the global population.

A life table is a statistical model that is constructed from the death rates of a population at different ages. It is frequently used to express death in terms of the probability of dying. In its simplest form, a life table is generated from age-specific death rates and the resulting values are used to measure mortality, survivorship and life expectancy. Table 5.36 shows the expectations of life at specific ages for Australian males and females in the period 2001–03.

Table 5.38 provides summary measures of mortality for census years between 1954 and 1986, and individual years between 1993 and 2003.

**5.36 EXPECTATION OF LIFE(a)**

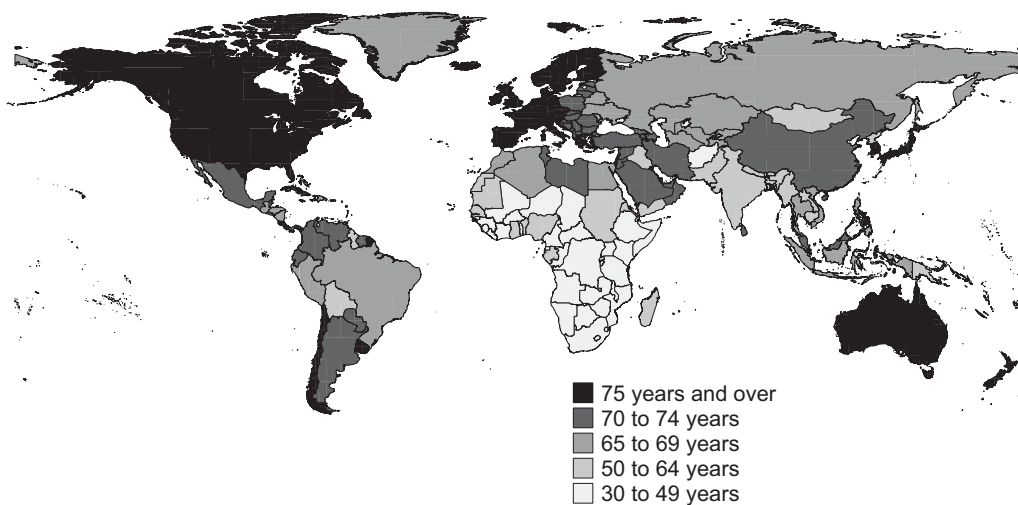
At exact age (years)	Males	Females
	years	years
0	77.8	82.8
10	68.3	73.3
20	58.6	63.4
30	49.1	53.6
40	39.6	43.9
50	30.4	34.4
60	21.6	25.3
70	13.9	16.9
80	7.9	9.7
90	4.1	4.9
100	2.5	2.9

(a) Expectation of life has been calculated using data for the three years 2001–03.

Source: Deaths, Australia (3302.0).



### 5.37 LIFE EXPECTANCY AT BIRTH, By country — 2000–05



Source: United Nations Population Division, 'World population prospects: The 2004 revision', viewed 22/07/05, <<http://www.un.org>>.

### 5.38 SELECTED SUMMARY MEASURES OF MORTALITY

	Registered deaths '000	Crude death rate(b)	Infant mortality rate(c)	Life expectancy at birth(a)	
				Males years	Females years
1993	121.6	6.9	6.1	75.0	80.9
1994	126.7	7.1	5.9	75.0	80.9
1995	125.1	6.9	5.7	75.4	81.1
1996	128.7	7.0	5.8	75.5	81.3
1997	129.4	7.0	5.3	75.6	81.3
1998	127.2	6.8	5.0	75.9	81.5
1999	128.1	6.8	5.7	76.2	81.8
2000	128.3	6.7	5.2	76.6	82.0
2001	128.5	6.6	5.3	77.0	82.4
2002	133.7	6.8	5.0	77.4	82.6
2003	132.3	6.7	4.8	77.8	82.8

(a) Data for 1993 and 1994 is based on individual years. Data for 1995 onwards are based on 3-year averages, with the year shown being the last year of the 3-year period. (b) Per 1,000 population. (c) Per 1,000 live births.

Source: Australian Historical Population Statistics (3105.0.65.001); Deaths, Australia (3302.0).

## International migration

Each year Australia's population increases as a result of net overseas migration (the excess of permanent and long-term arrivals over permanent and long-term departures) and natural increase (the excess of births over deaths).

Traditionally, Australia's population growth has come predominantly from natural increase. However, since 1998–99, net overseas migration has comprised 45% or more of population growth, ranging from 45% in that year to 51% in 2002–03. In 2003–04 the preliminary estimate of net overseas migration (117,600 persons) represented 49% of Australia's population growth for the year (table 5.1).

Overseas migration has played an important role in changing Australia's population. In the year ended 30 June 2004, 437,100 persons arriving in Australia from overseas were added to the population through net overseas migration (table 5.39). This included permanent (settler) arrivals, Australian residents returning from an overseas trip of 12 months or more, and overseas visitors intending to stay 12 months or more in Australia. In that year there were also 319,500 persons removed from the Australian population through net overseas migration, including Australian residents emigrating or going overseas for 12 months or more, and overseas visitors leaving Australia after staying for 12 months or more.

The ABS applies a number of adjustments to long-term and permanent movements in the estimation of net overseas migration. Previously, these movements were adjusted for change in traveller duration intention (this adjustment was known as 'category jumping').

A new method of adjustment developed by the ABS takes into account problems in the enumeration of long-term and permanent arrivals and departures as a result of short trips overseas made by long-term visitors to Australia and short trips to Australia made by residents who have departed Australia on a long-term basis. It also takes into account changes in traveller intention, as did the earlier method.

While many of the source countries of settler arrivals to Australia have remained the same over the past 20 years there have also been significant changes (table 5.40). When the countries are ranked in terms of settler arrivals to Australia, the United Kingdom and New Zealand have remained in the top four source countries over the period (table 5.40). While many of the source countries have made consistently large contributions there are a number of countries whose contribution has increased or decreased. For example, in 1983–84 Sudan was ranked 79 as a source of settlers to Australia, only to climb to 6 in 2003–04. Conversely, Vietnam which was ranked 2 in 1983–84 fell to 11 in 2003–04.

**5.39 NET OVERSEAS MIGRATION COMPONENTS — Selected years(a)**

	1983–84	1993–94	1998–99	2001–02	2002–03	2003–04
	'000	'000	'000	'000	'000	'000
<b>Arrivals</b>						
Permanent (settlers)	68.8	69.8	84.1	84.4	89.4	111.6
Long-term	76.5	137.6	187.8	318.9	303.5	325.5
<i>Total</i>	145.3	207.4	271.9	403.3	392.9	437.1
<b>Departures</b>						
Permanent	24.3	27.3	35.2	45.9	48.1	59.1
Long-term	74.4	112.7	140.3	246.9	228.3	260.4
<i>Total</i>	98.7	140.0	175.5	292.8	276.4	319.5
Category jumping(a)	2.6	-20.8	0	..	..	..
<b>Net overseas migration</b>	<b>49.1</b>	<b>46.5</b>	<b>96.5</b>	<b>110.6</b>	<b>116.5</b>	<b>117.6</b>

(a) Prior to 1998–99, a separate category jumping component was applied to adjust migration. For 1998–99 this was set to zero due to deficiencies in the estimation method. For 2001–02 and subsequent years, component figures have been adjusted for changes in traveller intention and multiple movement.

Source: *Australian Demographic Statistics (3101.0); Migration, Australia (3412.0)*.

#### 5.40 SETTLER ARRIVALS(a)

Country of birth(b)	1983–84			1993–94			2003–04		
	Rank no.	Number '000	Proportion %	Rank no.	Number '000	Proportion %	Rank no.	Number '000	Proportion %
United Kingdom	1	13.0	18.8	1	9.0	12.8	1	18.3	16.4
New Zealand	3	5.8	8.4	2	7.8	11.1	2	14.4	12.9
China (excl. SARs and Taiwan Province)	9	1.6	2.3	7	2.7	3.9	3	8.8	7.9
India	11	1.6	2.3	8	2.6	3.8	4	8.1	7.3
South Africa	8	1.6	2.4	9	1.7	2.4	5	5.8	5.2
Sudan	79	0.3	0.0	39	0.3	0.5	6	4.6	4.1
Philippines	4	2.9	4.2	4	4.2	6.0	7	4.1	3.7
Malaysia	7	1.7	2.4	13	1.3	1.8	8	3.7	3.3
Indonesia	16	1.0	1.4	25	0.6	0.9	9	2.6	2.3
Singapore	25	0.6	0.8	30	0.5	0.7	10	2.2	2.0
Vietnam	2	9.5	13.8	3	5.4	7.8	11	2.2	2.0
Iraq	39	0.3	0.4	14	1.1	1.6	12	1.9	1.7
Zimbabwe	34	0.4	0.6	57	0.1	0.2	13	1.6	1.5
Fiji	28	0.5	0.8	12	1.3	1.9	14	1.6	1.4
Sri Lanka	14	1.5	2.1	10	1.4	2.1	15	1.6	1.4
United States of America	13	1.5	2.2	11	1.4	2.0	16	1.4	1.2
Lebanon	15	1.4	2.0	15	1.1	1.5	17	1.3	1.2
Afghanistan	58	0.1	0.1	22	0.7	0.9	18	1.2	1.1
Hong Kong (SAR of China)	5	2.0	2.9	6	3.3	4.8	19	1.1	1.0
Pakistan	53	0.1	0.2	34	0.4	0.6	20	1.1	1.0
Other	..	21.8	31.7	..	22.8	32.7	..	23.9	21.4
<b>Total</b>	<b>..</b>	<b>68.8</b>	<b>100.0</b>	<b>..</b>	<b>69.8</b>	<b>100.0</b>	<b>..</b>	<b>111.6</b>	<b>100.0</b>

(a) Information in this table is based on stated traveller intention at arrival and has not been adjusted for change in traveller intention or multiple movement. (b) The countries selected are based on the 20 highest ranked source countries in 2003–04.

Source: *Migration, Australia* (3412.0).

### Migration Program

In 2003–04, 111,600 persons arrived in Australia intending to settle, the majority of whom (73%) arrived as part of the Migration Program. Of Migration Program arrivals, most arrived under the skilled migration category (46% of all permanent arrivals), while 26% of all permanent arrivals arrived under the family migration category. Another 9% of all permanent arrivals arrived as part of the Humanitarian Program, while 17% were eligible to settle in Australia because of their New Zealand citizenship.

The number of visas issued to prospective settlers varies significantly from year to year. So too does the balance between the types of visas issued. Table 5.41 shows that in the four years to 2003–04 the proportion of settlers arriving under the skilled migration category ranged from 33% in 2000–01 to 46% in 2003–04.

Of skilled migrants arriving in 2003–04 (51,500), 31% came from Europe (86% of whom were from the United Kingdom and Ireland), while South-East Asia contributed 18% and Southern

Asia contributed 16%. Sub-Saharan Africa and North-East Asia each contributed 14% of skilled immigrants to Australia during 2003–04.

In 2003–04, 26% of settlers (29,500) came as part of the family component of Australia's immigration program. The major country of birth regions were South-East Asia and Europe (each 24%), North-East Asia (17%), Southern Asia (10%) and North Africa and the Middle East (also 10%).

Of the 10,300 settlers arriving under the Humanitarian Program, the highest proportion were born in North Africa and the Middle East (67%), followed by Sub-Saharan Africa (15%) and Central Asia (10%).

During 2003–04, in addition to the 91,600 settler arrivals under the Migration and Humanitarian Programs, there were a further 20,000 non-program (i.e. non-visaed) arrivals. Traditionally, non-program migrants are predominantly New Zealand citizens and they accounted for 94% of non-program migrants in 2003–04. Under the Trans-Tasman Agreement, New Zealand citizens are free to enter Australia without applying for a visa.

#### 5.41 SETTLER ARRIVALS, Proportion by eligibility category(a)

	2000-01	2001-02	2002-03	2003-04
	%	%	%	%
Family	18.8	26.3	29.9	26.5
Skilled	33.3	40.5	41.0	46.2
Humanitarian	7.1	7.6	10.2	9.3
New Zealand	39.4	24.1	17.4	16.8
Other	1.5	1.5	1.5	1.3
Total	100.0	100.0	100.0	100.0
<b>Total arrivals ('000)</b>	<b>107.4</b>	<b>88.9</b>	<b>93.9</b>	<b>111.6</b>

(a) Data have not been adjusted for changes in traveller intention or multiple movement.

Source: Department of Immigration and Multicultural and Indigenous Affairs, 'Immigration Update', viewed 22/07/05, <<http://www.immi.gov.au>>.

### Country of birth

Australia's population has increased each year since the end of World War II, due to a combination of high post-war fertility and high levels of migration. In 1901, 23% of Australia's population was overseas-born. In 1947 the proportion of the population born overseas had declined to 10%. The creation of a national government immigration portfolio in 1945 accompanied a gradual increase in the proportion of overseas-born Australians, and by 1994 this proportion had increased to 23%. In 2004 the

number of overseas-born Australians had passed 4.5 million, representing almost one quarter (24%) of the total population (table 5.42).

The diversity of countries of birth has increased substantially over the years. Patterns of immigration have also changed. Over the past decade, the Italy, Greece and Netherlands-born populations in Australia have been declining. The major migration flows from these countries occurred immediately after World War II and there has been relatively little migration from these countries more recently.

#### 5.42 MAIN COUNTRIES OF BIRTH OF THE POPULATION

	1954(a)	1961(a)	1971(a)	1981(a)	1994(b)	2004(b)
	'000	'000	'000	'000	'000	'000
United Kingdom(c)	664.2	755.4	1 081.3	1 120.9	1 223.5	1 190.9
New Zealand	43.4	47.0	74.1	160.7	295.9	442.2
Italy	119.9	228.3	288.3	275.0	264.1	227.9
China (excl. SARs & Taiwan Prov.)	10.3	14.5	17.1	25.2	102.2	182.0
Vietnam	n.a.	n.a.	n.a.	40.7	150.4	176.6
Greece	25.9	77.3	159.0	145.8	143.4	128.7
India	12.0	14.2	28.7	41.0	75.6	128.6
Philippines	0.2	0.4	2.3	14.8	93.2	125.1
Germany	65.4	109.3	110.0	109.3	119.9	116.1
South Africa	6.0	7.9	12.2	26.5	57.0	109.2
Malaysia	2.3	5.8	14.4	30.5	81.6	97.8
Netherlands	52.0	102.1	98.6	95.1	97.0	88.7
Lebanon	3.9	7.3	23.9	49.4	77.2	84.3
Hong Kong (SAR of China)	1.6	3.5	5.4	15.3	74.7	76.5
Total overseas-born	1 286.5	1 778.8	2 546.4	3 128.1	4 093.6	4 750.9
Australia	7 700.1	8 729.4	10 173.1	11 388.8	13 761.1	15 360.4
<b>Total population(d)</b>	<b>8 986.5</b>	<b>10 508.2</b>	<b>12 719.5</b>	<b>14 516.9</b>	<b>17 856.7</b>	<b>20 111.3</b>

(a) Census counts. (b) Estimated resident population at 30 June. (c) Includes Ireland in 1954 and 1961. (d) Includes country of birth 'Not stated' and 'At sea'.

Source: ABS data available on request, *Estimated Resident Population; Migration, Australia (3412.0)*.

The 2001 census showed 26% of persons born in Australia had at least one overseas-born parent, that is, they were second generation Australians (table 5.43). Of Australian-born children with at least one overseas-born parent, 43% had both parents born overseas, 35% had their father born overseas and 22% their mother born overseas. The variety and size of second generation populations reflect past migration and intermarriage patterns.

**5.43 BIRTHPLACE OF PARENTS OF AUSTRALIAN-BORN PEOPLE(a) — 2001**

	'000	%
Both parents born in Australia	9 797.7	71.9
One or both parents born overseas	3 477.2	25.5
Not stated(b)	354.8	2.6
<b>Total</b>	<b>13 629.7</b>	<b>100.0</b>

(a) Includes persons born in Australian External Territories.  
 (b) Includes persons who stated one parent was Australian-born and did not state birthplace of the other parent.

Source: ABS data available on request, 2001 Census of Population and Housing.

## Marriages, divorces and de facto relationships

### Marriages

Marriage rates in Australia have fluctuated since 1901, broadly in response to the prevailing economic and social conditions. The crude marriage rate (the annual number of registered marriages per 1,000 population) has fallen in times

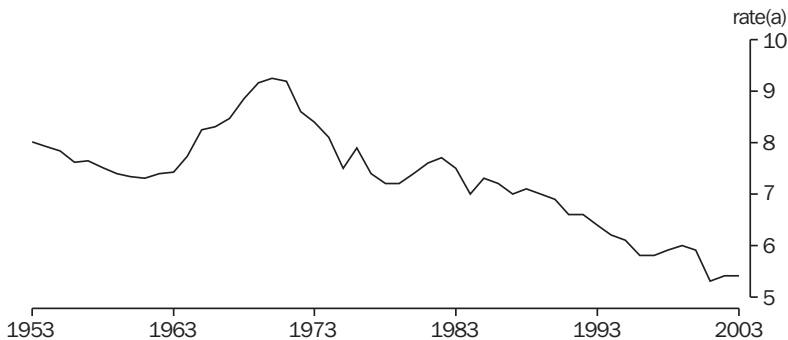
of depression or recession (e.g. in the 1930s), and increased in other times, such as during and immediately after the two world wars.

While the number of marriages increased in 2003, the crude marriage rate remained stable at 5 marriages per 1,000 population. The highest crude marriage rate ever recorded was 12 per 1,000 in 1942. The crude marriage rate has been declining since 1970. This decline in the marriage rate can be mainly attributed to changes in attitudes to marriage and living arrangements that have occurred since then. The fluctuations in the crude marriage rate between 1953 and 2003 are shown in graph 5.44.

Marriage rates for the unmarried population (per 1,000 not currently married men or women aged 15 years and over) have also fallen over time. In 1976, marriage rates for the unmarried population were 63 per 1,000 unmarried men and 61 per 1,000 unmarried women. By 2001, this had declined to 31 and 28 respectively.

The trend towards older age at marriage continued in 2003. The median age at marriage for men was 31 years, rising from 29 years in 1993. For women the median age at marriage rose to 29 years from 26 years in 1993. The median age at first marriage has increased for men from 27 years in 1993 to 29 years in 2003, and for women from 25 years to 27 years (graph 5.45). Part of this increase can be attributed to the increasing incidence of de facto relationships. Another factor is young people staying in education longer.

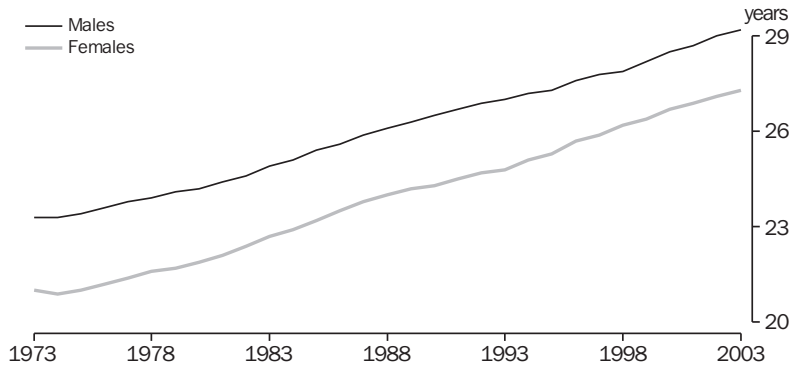
**5.44 CRUDE MARRIAGE RATE**



(a) Per 1,000 population.

Source: Australian Social Trends (4102.0); Marriages, Australia (3306.0.55.001).

### 5.45 MEDIAN AGE AT FIRST MARRIAGE



Source: *Marriages, Australia (3306.0.55.001)*.

Marriage data for 2003 reflects a continuation of the 30-year trend for more Australian couples to cohabit prior to entering a registered marriage. In 1975 only 16% of couples cohabited prior to marriage, increasing to 27% in 1983, while 75% of couples cohabited prior to marriage in 2003. Widowed males were the least likely to have cohabited before marriage, with divorced males and females the most likely. Only 56% of widowed males and 62% of widowed females cohabited before marrying their partner, while the proportion of divorced males and females who cohabited prior to remarriage was 81%.

Table 5.46 shows summary measures for marriages between 1993 and 2003.

### De facto relationships

Between 1996 and 2001, the census count of people aged 15 years and over in de facto marriages rose by 28% from 744,100 to 951,500. This was marginally higher than the increase between 1991 and 1996 (27%). In 2001, de facto partners represented 12% of all persons living as socially married (up from 10% in 1996 and 8% in 1991) and 6% of all persons aged 15 years and over (up from 5% in 1996 and 4% in 1991). These rises may be due to both increases in the number of de facto partners and in the willingness of people to identify themselves as living in de facto marriages. In 2001 the median age of males in a

### 5.46 SELECTED SUMMARY MEASURES OF MARRIAGES

Year ended 31 December	Registered marriages '000	Crude marriage rate(a)	Median age at marriage	
			Bridegroom years	Bride years
1993	113.3	6.4	28.8	26.4
1994	111.2	6.2	29.0	26.6
1995	109.4	6.1	29.2	26.8
1996	106.1	5.8	29.6	27.2
1997	106.7	5.8	29.7	27.5
1998	110.6	5.9	29.8	27.7
1999	114.3	6.0	30.1	27.9
2000	113.4	5.9	30.3	28.3
2001	103.1	5.3	30.6	28.6
2002	105.4	5.4	31.0	28.9
2003	106.4	5.4	31.2	29.1

(a) Per 1,000 population.

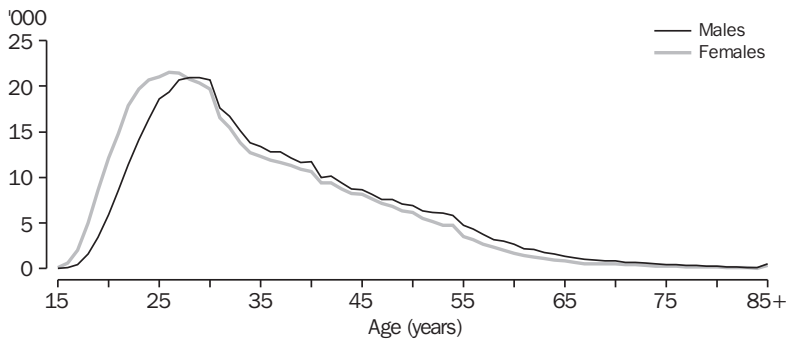
Source: *Australian Demographic Statistics (3101.0)*; *Marriages, Australia (3306.0.55.001)*; *Marriages and Divorces, Australia (3310.0)*.

de facto marriage was 34.2 years while the median age of females was 31.8 years. In 1991 the comparative medians were 32.3 years and 29.7 years respectively. Graph 5.47 shows the age distribution of male and female partners in de facto relationships in 2001.

De facto partnering has arisen as an alternative living arrangement prior to or instead of marriage, and following separation, divorce or widowhood. Some couple relationships, such as that between a

boyfriend and girlfriend who live together but do not consider their relationship to be marriage-like, are classified as de facto. Of all people in de facto relationships in 2001, 68% had never been in a registered marriage and 28% were either separated or divorced. The likelihood of being never married was higher among those aged under 35 years, counterbalanced by higher proportions of separated and divorced de facto partners aged 35 years and over (graph 5.48).

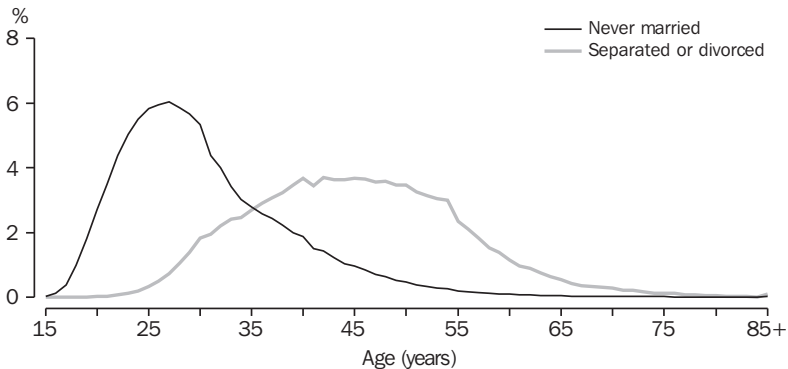
**5.47 DE FACTO PARTNERS — 2001**



Note: Opposite-sex couples only.

Source: ABS data available on request, Census of Population and Housing.

**5.48 PERSONS IN DE FACTO RELATIONSHIPS — 2001**



Source: ABS data available on request, 2001 Census of Population and Housing.



## Divorces

For most of the 20th century there was a slow but steady rise in the divorce rate, increasing from annual averages of 0.1 divorces per 1,000 population between 1901 and 1910 to 0.8 per 1,000 between 1961 and 1970. However, the most important factor involved in the higher divorce rates in the latter quarter of the century was the introduction of the *Family Law Act 1975* (Cwlth) which came into operation on 5 January 1976. This legislation allows only one ground for divorce: irremediable breakdown of the marriage, measured as the separation of the spouses for at least one year. Following the implementation of this law, there was a large increase in the divorce rate in 1976. The rate then declined until 1979 as the backlog of applications was cleared. Since then the crude divorce rate has fluctuated between 2.4 and 2.9 divorces per 1,000 population (graph 5.49).

The crude divorce rate (the number of divorces per 1,000 population) has changed little over recent years. This rate was 3 per 1,000 in 2002 and 2003, and also in 1983. As the estimated resident population of Australia by marital status for the years following 2001 is not yet available, the latest divorce rates based on the married population are

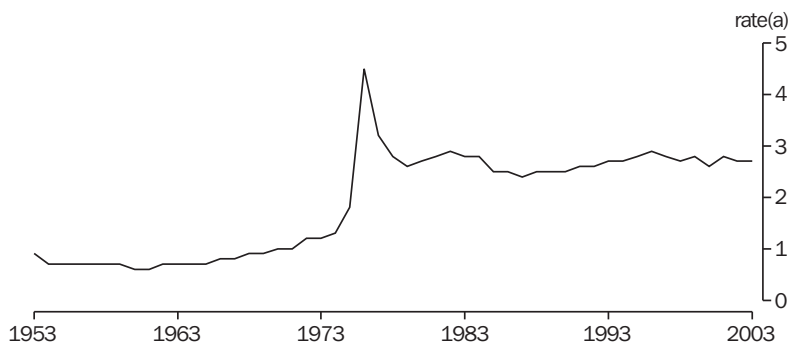
for 2001. The divorce rate of the married population in 2001 was 13 per 1,000 married men or women. This represents an increase from the rate of 12 per 1,000 married men or women in 2000 and in 1991.

The median duration of marriage to both separation and divorce is increasing over time, revealing that marriages are, on average, lasting longer (graph 5.50). The median duration of marriage to separation in 2003 was 8.7 years, compared with 8.6 years in 2002 and 7.6 years in 1993. The median duration of marriage to divorce in 2003 was 12.2 years, compared with 12.0 years in 2002 and 10.7 years in 1993.

In 2003, 6% of divorces involved separation within the first year of marriage, 33% within the first 5 years and a further 22% were separated within 5–9 years of marriage. Of the divorcing couples in 2003, 17% were married less than 5 years, 25% between 5 and 9 years and 59% were married for 10 years or more. Around 16% of divorces occurred to couples who had been married for 25 years or more.

Table 5.51 shows summary measures for divorces granted in the period 1993 to 2003.

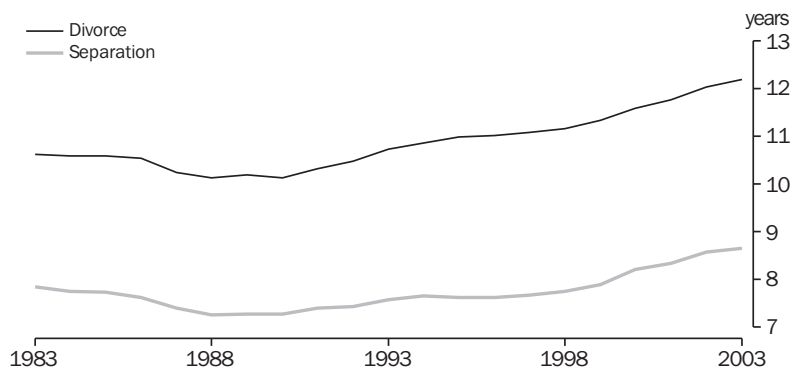
5.49 CRUDE DIVORCE RATE



(a) Rate per 1,000 population.

Source: *Divorces, Australia* (3307.0.55.001).

## 5.50 MEDIAN DURATION TO SEPARATION AND DIVORCE — 2003



Source: *Divorces, Australia (3307.0.55.001)*.

## 5.51 SELECTED SUMMARY MEASURES OF DIVORCES

	Divorces granted '000	Crude divorce rate(a)	Median age at date decree made absolute	
			Husband years	Wife years
1993	48.4	2.7	39.3	36.4
1994	48.3	2.7	39.7	36.8
1995	49.7	2.8	40.0	37.1
1996	52.5	2.9	40.2	37.4
1997	51.3	2.8	40.3	37.6
1998	51.4	2.7	40.5	37.8
1999	52.6	2.8	40.9	38.2
2000	49.9	2.6	41.4	38.6
2001	55.3	2.9	41.8	39.1
2002	54.0	2.7	42.2	39.5
2003	53.1	2.7	42.6	39.9

(a) Per 1,000 population.

Source: *Australian Demographic Statistics (3101.0)*; *Divorces, Australia (3307.0.55.001)*; *Marriages and Divorces, Australia (3310.0)*.

## Households and families

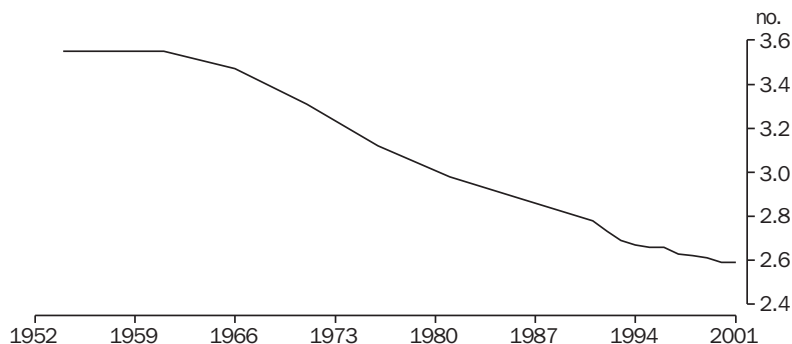
At 30 June 2001 there were an estimated 7.4 million households in Australia which were home to an estimated 19.1 million people, or 98% of the resident population. Over the past 90 years the number of households has increased by an average 2.4% per year, compared with an average yearly increase in population of 1.6%. This is reflected by the fall in average household size over the period – from 3.6 persons per household in 1954 to 2.6 persons per household in 2001 (graph 5.52). Much of this decline can be attributed to reductions in completed family size and the increase in numbers of one and two-person households. The number of one-person households has grown largely as a result of the ageing of the population, while a combination of ageing, increased childlessness

among couples and an increase in the number of one-parent families have contributed to the increase in the number of two-person households.

Over the past decade there have been changes in the types of families in Australia. In 1991 there were 4.3 million families counted in the census; by 2001 this number had increased to 4.9 million families. Couple families with children were the most common type of family at both points in time. However, as a proportion of all families they have decreased, from 54% (2.3 million families) in 1991 to 47% (also 2.3 million families) in 2001 (graph 5.53).

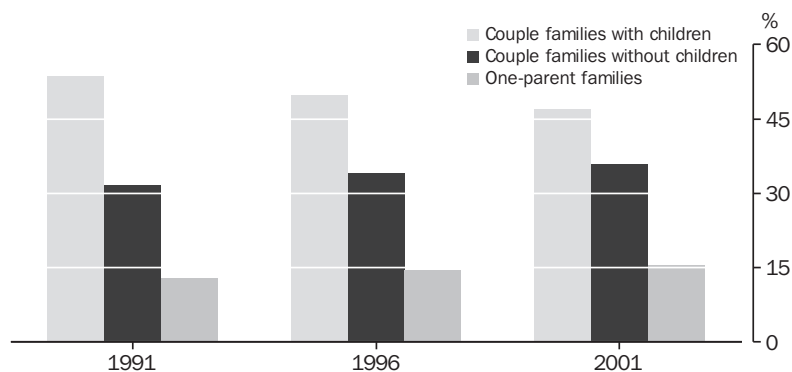
Other family types have significantly increased in number over the past 10 years. The number of couple families without children, comprising couples who have not yet had children and also

### 5.52 AVERAGE HOUSEHOLD SIZE, Persons per household



Source: ABS data available on request, Household Estimates; Australian Demographic Statistics (3101.0); Census of Population and Housing 1954–1981.

### 5.53 FAMILIES, Selected family types



Source: ABS data available on request, Census of Population and Housing.

those couples whose children have left home ('empty-nesters'), increased by 30%, from 1.4 million families in 1991 to 1.8 million families in 2001. One-parent families also increased, from 552,000 in 1991 to 763,000 in 2001, an increase of 38%.

### Household and family projections

Household and family projections are estimates of future numbers of households and families, based on assumptions about changing living arrangements of the population. The ABS has published three series of projections, for the years 2001 to 2026 – Series I, II and III. In Series I the pattern of living arrangements as determined from the 2001 census is used throughout the projection period. In Series II and III, recent trends in living arrangements are incorporated into the projections. In Series II the rates of change in living arrangements experienced over the past four censuses are applied at reducing levels (in full

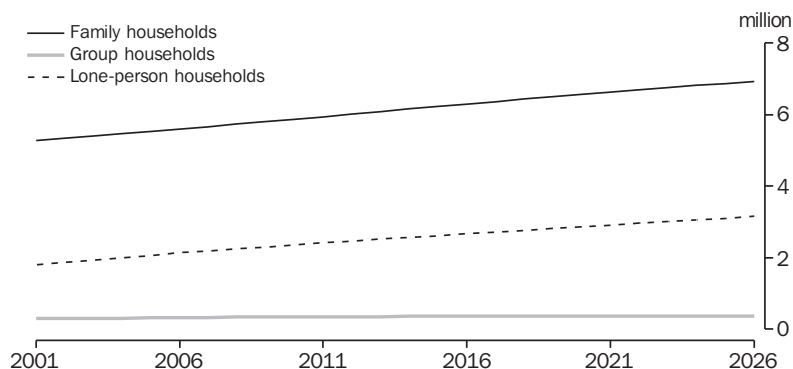
for 2001 to 2006, then reducing rates thereafter), while in Series III the rate of change between 1986 and 2001 is applied in full throughout the projection period.

It should be noted that estimates of the numbers of families in 2001 in the discussion below are derived from 2001 estimated resident population data in conjunction with 2001 census data, and therefore differ from the 2001 census counts of families mentioned above.

### Household types

The projections show continuing growth in the number of households in Australia over the period, from 7.4 million in 2001 to between 10.2 million and 10.8 million by 2026, representing an overall increase of between 39% and 47% compared with population growth of 25% over the

## 5.54 PROJECTED NUMBER OF HOUSEHOLDS, SERIES II, By type



Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

same period. As a result, average household size in Australia is projected to decrease from 2.6 persons per household in 2001 to between 2.2 and 2.3 persons per household in 2026.

The projected decrease in average household size reflects changes in the different types of households over the next 25 years. Lone-person households are projected to increase from 1.8 million in 2001 to between 2.8 million and 3.7 million in 2026, to comprise just over a quarter (28%) to a third (34%) of all households in 2026, compared with a quarter (25%) in 2001. The ageing of the population, increases in separation and divorce, and the delay of marriage are some of the factors contributing to the growth in lone-person households.

While lone-person households are projected to grow the fastest of all household types, family households are projected to remain the most common household type, increasing from 5.3 million in 2001 to between 6.7 million and 7.0 million in 2026 (between 62% and 69% of all households in 2026, compared with 72% in 2001) (graph 5.54).

### Family types

Between 2001 and 2026 the number of couple families with children is projected to increase only slowly in both Series I and II and to decrease in Series III, reflecting a gradual trend away from this type of family. This trend is related to increasing numbers of couple families without children (as a result of the ageing of the population, declining fertility and delayed childbirth) and increasing numbers of one-parent families (as a result of

increased family break-up). In 2001 there were 2.5 million couple families with children, accounting for just under half (47%) of all families in Australia. In Series I, which assumes current living arrangements of the population continue until 2026, this number is projected to increase to 3.0 million in 2026 (42% of all families), while in Series III, which assumes changes in living arrangements observed between 1986 and 2001 continue at the full rate until 2026, the number is projected to decrease to 2.0 million (30% of all families) (table 5.55).

Couple families without children are projected to experience the largest and fastest increases of all family types in Australia. As a result, in Series II and III, couple families without children are projected to outnumber couple families with children in either 2011 or 2010 respectively. From 1.9 million families in 2001 (36% of all families), couple families without children are projected to increase to between 2.9 million and 3.3 million families in 2026 (41% and 49% of all families respectively). This growth is primarily related to the ageing of the population, with 'baby boomers' becoming 'empty nesters', and to a lesser extent to delayed family formation and declining fertility of younger couples.

One-parent families are projected to increase from 838,000 families in 2001 to between 1.1 million and 1.4 million families in 2026. In 2001 the number of female one-parent families (698,000) was around five times the number of male one-parent families (140,000). This ratio is projected to continue throughout the projection period.

## 5.55 HOUSEHOLD AND FAMILY PROJECTIONS

	2001 '000	2026			Change from 2001 to 2026		
		Series I '000	Series II '000	Series III '000	Series I %	Series II %	Series III %
<b>Households</b>							
Family	5 269.0	7 030.1	6 920.0	6 714.9	33	31	27
Group	293.2	345.7	371.5	403.6	18	27	38
Lone-person	1 805.3	2 842.0	3 149.4	3 693.0	57	74	105
<i>Total</i>	7 367.5	10 217.9	10 440.9	10 811.5	39	42	47
<b>Families</b>							
Couple families with children	2 491.5	2 976.3	2 610.3	2 010.4	19	5	-19
Couple families without children	1 917.6	2 948.6	3 108.1	3 312.0	54	62	73
<b>One-parent</b>							
Male	139.8	188.2	202.7	223.2	35	45	60
Female	698.4	894.1	989.6	1 146.1	28	42	64
<i>Total</i>	838.2	1 082.3	1 192.3	1 369.3	29	42	63
Other families	98.7	126.3	111.2	122.2	28	13	24
<i>Total</i>	5 346.0	7 133.5	7 021.8	6 813.9	33	31	27
<b>Population</b>	19 413.2	24 201.8	24 201.8	24 201.8	25	25	25

Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

## Future living arrangements

Traditionally, Australians have experienced three main living arrangements over their lifetimes: living with parents, living with a partner (for some of this time with children) and living alone in old age if that partner died. Increasingly, living arrangements throughout a lifecycle may also include living alone or in a group household prior to partnering and living either alone or in a one-parent household after divorce or separation. Changing living arrangements are the result of various demographic and social trends, such as declining fertility and the delay of child-bearing, increased divorce rates and increasing life expectancy. Future changes in family and household composition will have implications in areas such as housing, income support, accommodation provision and aged care, as well as health and family services.

This article analyses projections of living arrangements over the period 2001 to 2026. The projections are not intended as predictions or forecasts, but illustrate changes in living arrangements which would occur if assumptions about future trends prevail over the projection period. In both 1986 and 2001, the majority of Australians lived in couple families with children (60% of Australians in 1986 compared with 52% in 2001). Over the same period, the proportion of people living in one-parent families increased from 9% to 12%. The proportion of people living in couple families without children increased

from 17% in 1986 to 20% in 2001. The proportion of people living alone also increased, from 7% of the population in 1986 to 9% in 2001. The ABS uses these observed trends to develop household and family projections (see *Household and family projections*). Table 5.56 shows the number of people by living arrangement for each of the Series I, II and III projections.

### Lone-person households

The number of people living alone is projected to increase from 1.8 million in 2001 to between 2.8 million (Series I) and 3.7 million (Series III) by 2026. This represents an increase of between 57% and 105%. One effect of ageing in Australia's population is that increases in the number of people in older age groups will affect those living arrangements that older people are more likely to live in. Many older Australians live alone, therefore the total number of people living alone is projected to increase. Other factors leading to an increase in people living alone are delayed partnering and increases in divorce and separation. In all three series, women account for more than half of those living alone. Graph 5.57 shows a peak for older women living alone, reflecting the higher life expectancy of women in Australia. Conversely, men are more likely to live alone at younger ages. The effects of separation

and divorce, where men are less likely to be the resident parent, contributes to the number of younger men living alone.

### Couple families

The number of people living in couple families with children is projected to increase slightly under Series I, from 10.1 million in 2001 to 11.0 million in 2026. Under Series II, this figure is projected to remain relatively steady, while Series III projects a decline to 8.5 million people.

Most children (81%) aged 0–14 years lived in two-parent families in 2001. In Series I, the number of children in two-parent families is projected to decline from 3.2 million in 2001 to 3.1 million in 2026, reflecting the projected decline in the total population of children aged 0–14 years.

In Series II and III the number is projected to decline further, to between 2.9 million (77% of children aged 0–14 years) and 2.5 million (67%).

The number of people living in couple families without children is projected to increase rapidly under all three series, from 3.9 million people in 2001 to between 6.0 million (Series I) and 6.7 million (Series III) in 2026. This change is due largely to increasing numbers of older couples resulting from population ageing. However, these projections are not only a reflection of population ageing, but also of couples having no children or smaller families, and consequently spending more time living in couple families before and after they have children (graph 5.58).

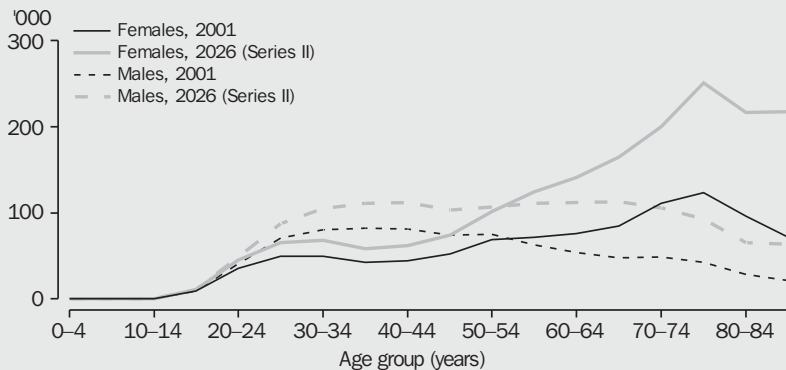
### 5.56 LIVING ARRANGEMENTS

Persons	2001 '000	2026		
		Series I '000	Series II '000	Series III '000
Usual residents of family households				
Couple family with children	10 087.8	11 023.0	10 114.9	8 506.5
Couple family without children	3 894.6	5 990.5	6 293.8	6 691.2
One-parent family	2 244.5	2 523.6	2 891.3	3 600.0
Total persons in family households(a)	16 611.4	20 006.4	19 754.8	19 302.7
Usual residents of lone-person households				
Males	819.4	1 164.1	1 348.7	1 693.7
Females	985.9	1 677.9	1 800.7	1 999.3
Usual residents of group households	665.6	785.1	843.2	915.3
Usual residents of non-private dwellings	331.0	568.3	454.4	290.8
<b>Total</b>	<b>19 413.2</b>	<b>24 201.8</b>	<b>24 201.8</b>	<b>24 201.8</b>

(a) Includes persons living in other family types.

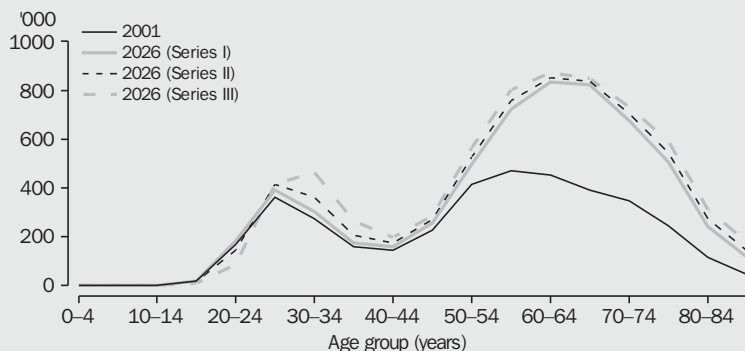
Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

### 5.57 LONE-PERSON HOUSEHOLDS



Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

### 5.58 PARTNERS IN COUPLE FAMILIES WITHOUT CHILDREN



Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

### One-parent families

In 2001 there were 2.2 million people in Australia living in one-parent families (table 5.59). This is projected to increase to between 2.5 million (Series I) and 3.6 million (Series III). The number of children aged 0–14 years living in one-parent families is projected to increase in Series II and III, from 745,000 in 2001 (19% of children aged 0–14 years) to between 875,000 (23%) and 1.3 million (33%), reflecting the effect of increasing separation and divorce of partners with children. In addition, the number of children aged 25 years and older living with a parent is also projected to increase under all three series, from 232,000 in 2001 to between 270,000 (Series I) and 344,000 (Series III) in 2026. Many in this group would be adult children living with an ageing parent.

### Other living arrangements

In all three series the number of people living in group households is projected to increase, from 666,000 people in 2001 to between 785,000 and

915,000 in 2026. Group household members are projected to remain a relatively small proportion of the total population, making up between 3% and 4% in 2026, similar to 2001 (3%). The most prevalent age group is projected to remain the 20–24 year age group.

In 2001 there were 331,000 people living in non-private dwellings in Australia e.g. in aged-care facilities. In Series I and III, this is projected to increase to between 568,000 and 454,000 in 2026. In Series III, the number is projected to decrease to 291,000 people. People in non-private dwellings are projected to remain a small proportion of Australia's population, making up 1% to 2% of the population in 2026 (similar to the 2001 figure of 2%).

In 2001, half (50%) of people living in non-private dwellings were aged over 65 years. This proportion is projected to increase in Series I and II to between 67% and 62%, and remain similar in Series III (51%).

### 5.59 PEOPLE LIVING IN ONE-PARENT FAMILIES

	2001 '000	2026		
		Series I '000	Series II '000	Series III '000
Female lone parent	698.4	894.1	989.6	1 146.1
Male lone parent	139.8	188.2	202.7	223.2
Child aged 0–14 years	744.5	707.1	875.1	1 252.3
Child aged 15–24 years	367.7	374.2	429.8	534.6
Child aged 25 years and over	232.2	270.3	300.5	343.5
<b>Total persons in one-parent families(a)</b>	<b>2 244.5</b>	<b>2 253.6</b>	<b>2 891.3</b>	<b>3 600.0</b>

(a) Includes other related individuals.

Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

### References

ABS (Australian Bureau of Statistics) 2005, *Australian Social Trends*, (4102.0), ABS, Canberra



## Citizenship

Citizenship is a relatively recent concept for Australia as a nation, having its origins in the *Australian Citizenship Act 1948* (Cwlth). Prior to this, Australians were British subjects. Since the inception of the Act in January 1949, more than three million people born overseas have acquired Australian citizenship. For these people, citizenship is voluntary, expressing a commitment to the laws and principles of Australia, and respect for its land and its people. It confers the opportunity to participate more fully in Australian society, giving the right to vote, to apply for public office, and to hold an Australian passport and, therefore, leave and re-enter Australia freely.

Australian citizenship law and policy have been amended many times since their inception to reflect a more inclusive approach to the acquisition of Australian citizenship, with recent changes in policy towards creating more opportunities for young adults to acquire citizenship (DIMIA, 2004). All migrants who meet set criteria are encouraged to become Australian citizens. Children born in Australia acquire Australian citizenship at birth if at least one parent is an Australian citizen or a permanent resident of Australia. Children born overseas may be registered as having Australian citizenship by descent if at least one of their parents is an Australian citizen.

The 2001 Census of Population and Housing indicated that almost three-quarters (74%) of people born overseas who had been resident in Australia for two years or more were Australian citizens. There were high proportions of Australian citizens among people born in Greece (97%). However, this citizenship rate is influenced by the age and period of residence of people from Greece. For Australian residents born in Greece, most (83%) arrived in Australia in 1970 or earlier and three-quarters are aged 50 years and over. The longer overseas-born people reside in Australia, and consequently the older they get, the more likely it is that they have acquired Australian citizenship.

Standardising gives the rates that would be expected if a given overseas-born population had the same profile of age and period of residence in Australia as the total overseas-born population (table 5.60). Based on standardised rates, people born in the Philippines, Vietnam and China were the most likely to become Australian citizens. Unstable or changing political and socio-economic conditions in these countries may result in a greater desire for Australian citizenship than for people born in other countries.

In contrast, people born in the United Kingdom and New Zealand were less likely to become Australian citizens. This may be because 'the shared language, and strongly similar legal, political, and industrial arrangements of Australia and the other Anglo-American countries lead these immigrants to feel less need to make a choice of national identity' (Evans 1988).

Despite their comparatively low rate of take-up of citizenship, Australian residents born in the United Kingdom and New Zealand were the two largest groups among the 87,000 people granted Australian citizenship in 2003–04 (table 5.61). This is in keeping with the large numbers of United Kingdom and New Zealand-born people resident in Australia. Former British, Irish and New Zealand citizens have been among the largest sources of Australian citizens since the early-1970s, when legislative changes and visa requirements prompted many Commonwealth citizens living in Australia to apply for Australian citizenship. Other residents who were granted Australian citizenship in 2003–04 were likely to have come from Asian countries, such as China, India, the Philippines, Vietnam and Malaysia (together comprising 24% of citizenship grants), and citizens of South Africa (6%), Fiji (2%), Bosnia and Herzegovina (2%) and the United States of America (2%). These figures reflect immigration from these countries in recent years, with China, South Africa, India and the Philippines in the top ten birthplace groups of overseas-born people who had arrived in Australia between 1996 and 2001.

## 5.60 CITIZENSHIP RATES, Overseas-born people resident in Australia for two years or more — 2001

Selected birthplace	Persons	Citizenship rate(a)	Standardised citizenship rate(b)
	'000	%	%
Philippines	90.4	90.4	92.1
Vietnam	141.8	95.3	91.5
China (excl. SARs & Taiwan Prov.)	114.2	80.3	90.1
Greece	108.3	97.1	89.2
Italy	204.6	79.5	65.2
United Kingdom	951.5	65.6	64.3
Germany	100.5	76.5	59.7
Netherlands	78.7	78.3	55.5
New Zealand	281.5	37.7	45.3
<b>All overseas born(c)</b>	<b>3 560.3</b>	<b>74.4</b>	<b>74.4</b>

(a) People for whom citizenship was not stated were excluded prior to the calculation of percentages. (b) The rates of citizenship that would be expected if a given overseas-born population had the same age and period of residence profile as the total overseas-born population. (c) Excludes people whose birthplace was not stated, inadequately described, not elsewhere classified or at sea.

Source: ABS data available on request, 2001 Census of Population and Housing.

## 5.61 FORMER NATIONALITY, People granted Australian citizenship — 2003–04

Country of former nationality or citizenship	no.	%
United Kingdom	17 201	19.8
New Zealand	13 052	15.0
China(a)	7 072	8.1
South Africa	4 908	5.6
India	3 638	4.2
Philippines	3 019	3.5
Vietnam	2 215	2.5
Malaysia	1 846	2.1
Fiji	1 582	1.8
Sri Lanka	1 582	1.8
Bosnia-Herzegovina	1 490	1.7
United States of America(b)	1 409	1.6
Iraq	1 271	1.5
Taiwan	1 259	1.4
Lebanon	1 085	1.2
Serbia and Montenegro	984	1.1
Korea, Republic of (South)	943	1.1
Ireland	905	1.0
Indonesia	897	1.0
Pakistan	874	1.0
Other/not stated	19 817	23.0
<b>Total</b>	<b>87 049</b>	<b>100.0</b>

(a) Includes citizens of Hong Kong and Macau SARs but excludes those of Taiwan. (b) Includes American Samoa.

Source: Department of Immigration and Multicultural and Indigenous Affairs, 'Annual Report, 2003–04', last viewed 22/07/05, <<http://www.immi.gov.au>>.

## Languages

Even though English is Australia's national language, due to cultural diversity in the population over 200 languages are spoken in the community. Languages other than English are not only spoken by migrants who have settled in Australia from all over the world – more than 60 different languages are spoken by Aboriginal and Torres Strait Islander Australians. The 2001 census

indicated 2.8 million people (16% of the population) spoke a language other than English at home (table 5.64), which represents an increase of 213,100 people or 8% since 1996.

Over 50,000 people spoke an Australian Indigenous language (including Australian Creoles), which equates to 12% of all Indigenous Australians and less than 1% of the total Australian population. Two-thirds of Indigenous people in the Northern Territory and 17% of Indigenous people in South Australia spoke an Indigenous language at home. The three most commonly spoken Indigenous languages were Kriol (an Australian Creole) and two Central Australian languages: Pitjantjatjara and Warlpiri.

In 2001 the five most commonly spoken languages other than English were Italian, Greek, Cantonese, Arabic (including Lebanese) and Vietnamese, with speakers of these languages together comprising 7% of the total population (table 5.62). The popularity of these languages is associated with immigration over the last 50 years from countries where these languages are spoken. While the number of settler arrivals from countries such as Italy and Greece was high at the end of World War II, large numbers of settler arrivals from Lebanon and Vietnam arrived during the 1970s and 1980s, and from China in the 1990s (DIMA 2004).

Greek, Arabic and Italian speakers had the largest proportions of Australian-born speakers, reflecting the fact that these languages were mainly brought to Australia 20 or more years ago and have been maintained among the children of those migrants. Languages spoken by migrants arriving in Australia more recently, such as Mandarin and Filipino, had a smaller proportion of Australian-born speakers.

## 5.62 PEOPLE WHO SPOKE A LANGUAGE OTHER THAN ENGLISH AT HOME — 2001

	Males	Females	Persons	Proportion born in Australia(a)	Persons as a proportion of population
	'000	'000	'000	%	%
Italian	175.4	178.2	353.6	42.7	2.0
Greek	131.8	132.0	263.7	50.9	1.5
Cantonese	108.2	117.1	225.3	20.0	1.3
Arabic (incl. Lebanese)	108.7	100.6	209.4	43.2	1.2
Vietnamese	86.1	88.1	174.2	25.5	1.0
Mandarin	67.0	72.2	139.3	12.2	0.8
Spanish	45.2	48.4	93.6	22.7	0.5
Tagalog (Filipino)	30.8	48.1	78.9	8.8	0.4
German	35.7	40.8	76.4	19.4	0.4
Macedonian	36.6	35.4	72.0	38.6	0.4
Croatian	35.2	34.6	69.9	34.0	0.4
Polish	27.1	31.9	59.1	20.0	0.3
Australian Indigenous languages	25.1	25.9	51.0	99.6	0.3
Turkish	25.7	25.0	50.7	39.7	0.3
Serbian	24.8	24.4	49.2	22.1	0.3
Hindi	24.4	23.4	47.8	13.5	0.3
Maltese	20.5	20.9	41.4	28.7	0.2
Netherlandic	18.3	21.9	40.2	14.6	0.2
All other languages(b)	352.4	368.5	720.9	19.0	4.0
<b>Total</b>	<b>1 378.9</b>	<b>1 437.6</b>	<b>2 816.5</b>	<b>29.5</b>	<b>15.8</b>

(a) Persons whose birthplace was not stated, inadequately described, n.e.c. or at sea were excluded prior to the calculation of percentages. (b) Excludes languages that were not stated, inadequately described, and non-verbal so described.

Source: ABS data available on request, 2001 Census of Population and Housing.

English proficiency among people who spoke a language other than English at home varied with the age of the speaker and according to whether he or she was born in Australia (table 5.63). Around 88% of all people aged under 25 years who spoke a language other than English at home spoke English well or very well, compared with 60% of those aged 65 years and over.

People born in Australia who spoke a language other than English at home were generally more likely to speak English well or very well than the total population speaking a language other than English at home. Overall, 91% of those born in Australia spoke English well or very well, compared with 82% of the total population speaking other than English at home.

## 5.63 PROFICIENCY IN ENGLISH, People who spoke a language other than English at home — 2001

	Units	Age group (years)				Total
		0–24	25–44	45–64	65 and over	
Total population speaking other than English at home						
Speaks English well or very well	%	88.1	87.2	77.1	59.9	81.6
Does not speak English well	%	8.4	11.5	20.1	29.5	14.9
Does not speak English at all	%	3.5	1.3	2.8	10.7	3.5
<i>Total</i>	%	100.0	100.0	100.0	100.0	100.0
Persons(a)	'000	860.4	930.5	671.5	354.0	2 816.5
Australian-born population speaking other than English at home						
Speaks English well or very well	%	86.7	97.4	92.9	81.3	90.5
Does not speak English well	%	8.6	2.3	6.1	14.2	6.5
Does not speak English at all	%	4.6	0.3	1.0	4.5	3.0
<i>Total</i>	%	100.0	100.0	100.0	100.0	100.0
Persons(b)	'000	493.4	259.2	46.5	9.87	809.0

(a) Includes 45,000 people who did not state how well they spoke English. (b) Includes 20,000 people who did not state how well they spoke English.

Source: ABS data available on request, 2001 Census of Population and Housing.

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# 6

## LABOUR

The information contained in this chapter presents a picture of the labour market in Australia. Unlike other statistics that have a particular economic or social focus, labour statistics cut across both dimensions, and in so doing they provide useful insights into economic and community life in Australia.

This chapter provides a broad overview of the Australian labour market. It briefly describes key labour statistics concepts and measures (e.g. employment, unemployment, job vacancies, earnings, industrial disputes); highlights the main features of the Australian labour market in 2004–05; examines developments in the Australian labour market over the medium and long-term; and presents more detailed analysis of a number of issues impacting on the Australian labour market.

The chapter contains three articles: *People who work few hours*; *Casual employees*; and *Labour force status of migrants*.

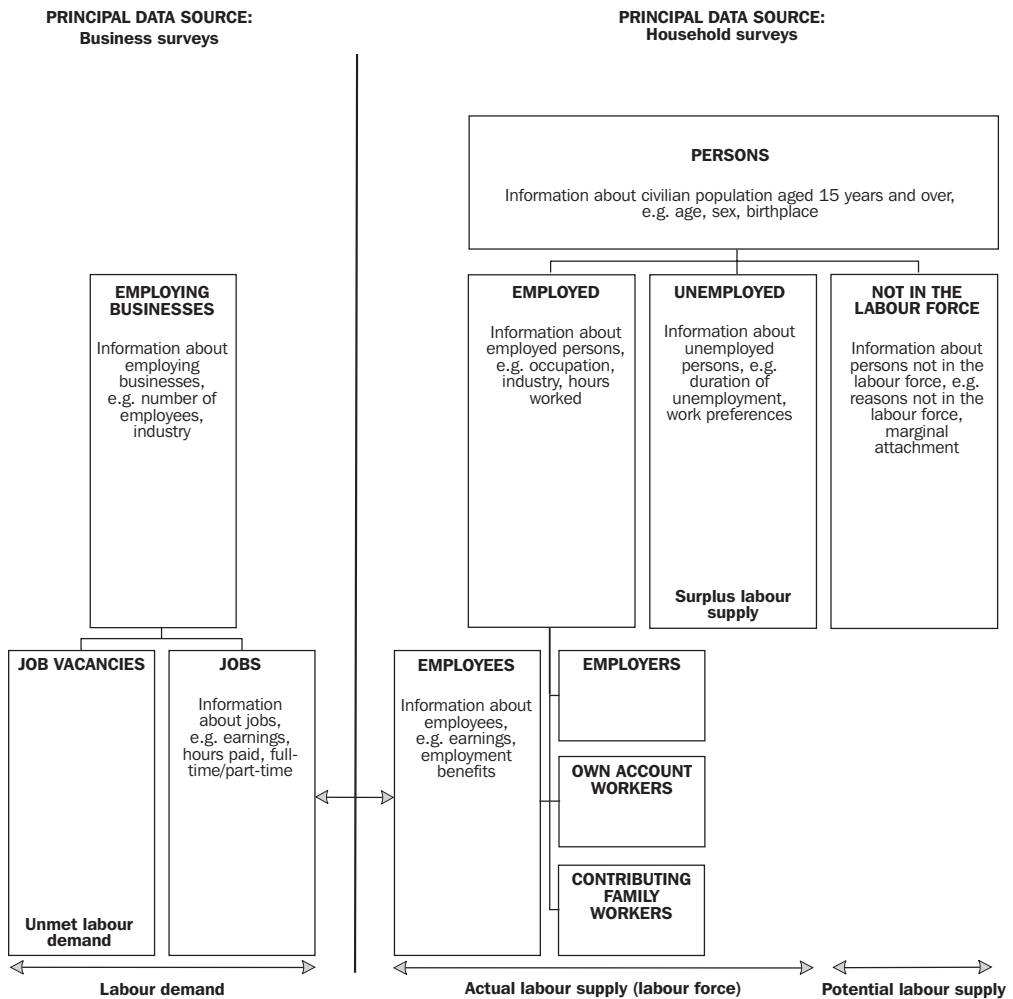
# Labour market statistics

Most labour market statistics focus on some aspect of labour demand or labour supply. In Australia, surveys of businesses conducted by the Australian Bureau of Statistics (ABS) are the primary source of data on labour demand. The types of data collected through business surveys include labour costs, earnings and job vacancies. The ABS population censuses and household surveys constitute the primary sources of information about the size and characteristics of labour supply. Information obtained through these types of collections includes data on current

and previous labour force experience, as well as demographic data such as age, sex, family type and country of birth. Diagram 6.1 illustrates how labour statistics, from ABS household and business surveys, relate to the labour market.

The concepts and definitions underlying Australian labour statistics are based on the conventions, recommendations and guidelines developed and maintained by the International Labour Organisation and the United Nations Statistical Office. Australian labour statistics comply in almost every respect with these international standards.

## 6.1 THE AUSTRALIAN LABOUR STATISTICS FRAMEWORK



Source: *Labour Statistics: Concepts, Sources and Methods* (6102.0.55.001).

## Labour force

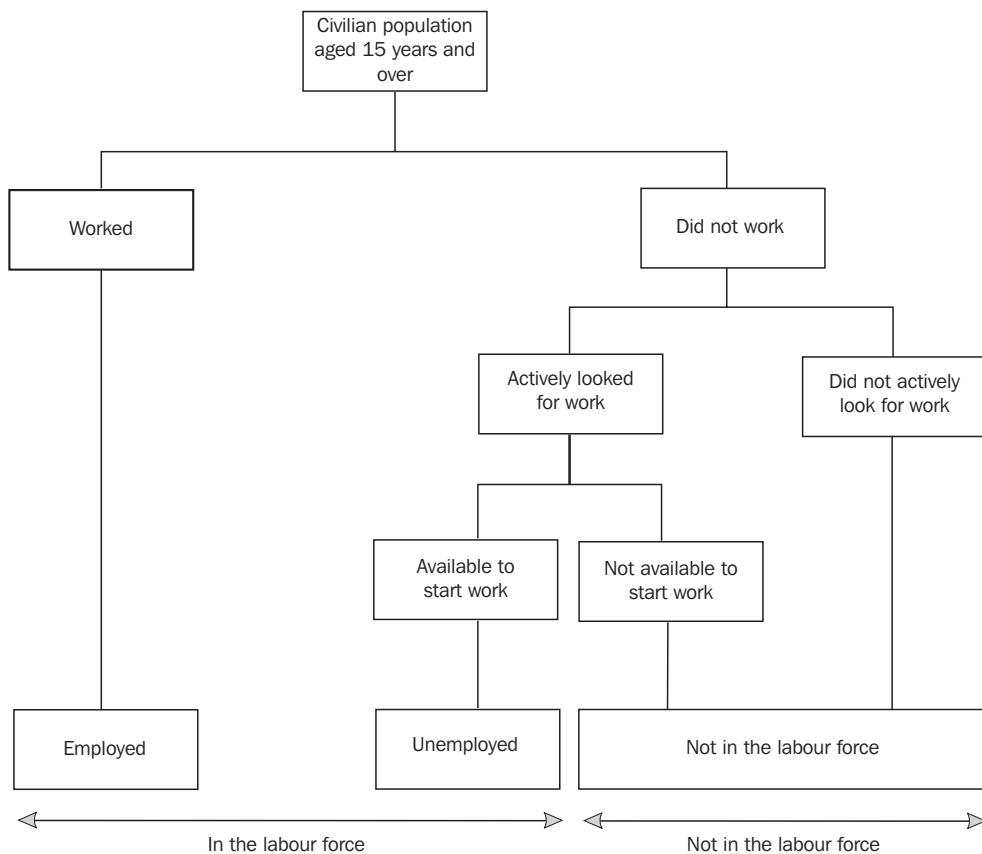
The labour force represents the key official measure of the total supply of labour available to the labour market during a given short reference period. It represents the labour available for the production of economic goods and services. Therefore, people in the labour force are also referred to as the ‘currently economically active population’.

The Australian labour force framework classifies people into three mutually exclusive categories: employed; unemployed; and not in the labour force. The employed and unemployed categories together make up the labour force, which gives a measure of the number of people contributing to,

or willing to contribute to, the supply of labour. The third category (not in the labour force) represents the currently inactive population. This framework is illustrated in diagram 6.2. Further details about the Australian labour force framework, and the specific criteria for classifying people to these three basic categories, are available in *Labour Statistics: Concepts, Sources and Methods* (6102.0.55.001).

For the purpose of compiling Australian labour force statistics, the population is restricted to people in the civilian population aged 15 years and over. This practice is consistent with international guidelines for the collection of labour statistics.

**6.2 THE AUSTRALIAN LABOUR FORCE FRAMEWORK(a)**



(a) The rules for determining whether a person is classified as employed, unemployed or not in the labour force are detailed in ‘Labour Statistics: Concepts, Sources and Methods’ (6102.0.55.001), paragraphs 2.13 to 2.24.

Source: *Labour Statistics: Concepts, Sources and Methods* (6102.0.55.001).



## Characteristics of the labour force

The size and composition of the labour force are constantly changing. Changes in the size of the labour force are caused by changes in labour force participation as well as changes in the size and composition of the adult population. Between June 2004 and June 2005 the labour force grew by 3.1%. During the same period the civilian population aged 15 years and over grew by 1.4%. The difference between these two rates reflects an increase in the labour force participation rate over this period.

The labour force participation rate is one of the most important indicators for analysing the overall level of labour market activity. The participation rate is calculated by dividing the total number of people in the labour force by the total number of people in the civilian population aged 15 years and over. Analysis of participation rates, particularly in terms of age, sex and family type, provides the basis for monitoring changes in the size and composition of the labour supply.

During the past two decades the overall labour force participation rate has increased slowly, rising from 60.5% in 1984–85 to 64.0% in 2004–05. This long-term rise in the labour force participation rate has been driven by an increase in the female participation rate. The female participation rate increased from 45.7% in 1984–85 to 56.5% in

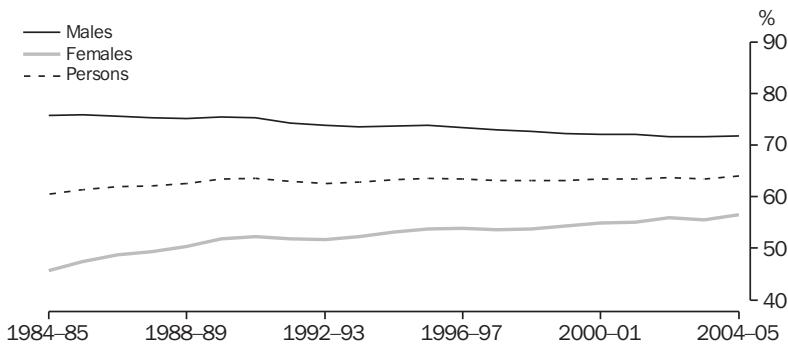
2004–05. In contrast, the male participation rate fell from 75.9% to 71.8% over the same period. Graph 6.3 shows male and female participation rates between 1984–85 and 2004–05, and illustrates the convergence of male and female participation rates over this period.

Underlying these contrasting trends in male and female participation rates are varying movements in the age-specific participation rates. As seen in table 6.4, male and female participation rates are similar in the 15–19 year age group. Participation rates for men and women then rise as young people move from education and training to employment. For men, participation rates peak in the 25–34 and 35–44 year age groups, while female participation rates peak in the 20–24 year age group.

A comparison of age-specific participation rates for women between 1984–85 and 2004–05 indicate more women are participating in the labour force during their peak child-bearing years (the 25–34 year age group). In 1984–85, the participation rate for women aged 25–34 years was 56.2%, however by 2004–05 this had increased to 71.8%.

Participation rates for men declined between 1984–85 and 2004–05 for almost all age groups. The exceptions were men aged 55–64 years (61.2% to 65.3%) and men aged 65 years and over (9.2% to 11.1%).

**6.3 LABOUR FORCE PARTICIPATION RATES(a)**



(a) Annual averages.

Source: *Labour Force, Australia, Detailed – Electronic Delivery* (6291.0.55.001).

Table 6.5 shows changes in labour force status (i.e. employed, unemployed, not in the labour force) between 1999–2000 and 2004–05. During this period the total number of people employed grew by 11% to 9.8 million. This comprised an increase of 8% in the level of full-time employment and an increase of 20% in the level of part-time employment. Part-time employed people now account for 28% of all employed people. Women dominate the part-time workforce, accounting for 71% of part-time workers.

The unemployment rate fell from 6.6% in 1999–2000 to 5.3% in 2004–05. In 2003–04, the unemployment rate for women was higher than for men (6.0% compared with 5.6%). This was the first time since 1989–90 that this had happened. The unemployment rate for women remained higher than for men in 2004–05 (5.4% compared with 5.1%).

#### 6.4 LABOUR FORCE PARTICIPATION RATES(a), By age

Age group (years)	Males			Females		
	1984–85 %	2004–05 %	Change %	1984–85 %	2004–05 %	Change %
15–19	60.9	59.6	-2.1	58.8	61.4	4.5
20–24	90.2	84.7	-6.1	73.1	77.4	5.8
25–34	94.8	91.2	-3.8	56.2	71.8	27.8
35–44	94.6	90.8	-4.1	60.1	72.4	20.3
45–54	90.1	88.0	-2.3	50.7	75.0	47.9
55–64	61.2	65.3	6.7	20.3	43.8	115.2
65 and over	9.2	11.1	20.5	2.2	4.0	85.3
<b>Total</b>	<b>75.9</b>	<b>71.8</b>	<b>-5.3</b>	<b>45.7</b>	<b>56.5</b>	<b>23.8</b>

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

#### 6.5 LABOUR FORCE STATUS(a)

	Employed			Unemployed			Labour force '000	Civilian population '000	Unemployment rate %	Participation rate %
	Full time '000	Part time '000	Total '000	Full time '000	Part time '000	Total '000				
<b>MALES</b>										
1999–2000	4 351.5	625.7	4 977.2	302.9	55.1	358.0	5 335.3	7 384.3	6.7	72.3
2000–01	4 368.2	674.9	5 043.1	303.5	56.9	360.4	5 403.5	7 490.6	6.7	72.1
2001–02	4 369.4	732.6	5 101.9	317.6	64.7	382.3	5 484.2	7 610.8	7.0	72.1
2002–03	4 425.6	768.3	5 193.9	285.6	63.6	349.2	5 543.1	7 731.4	6.3	71.7
2003–04	4 526.8	781.7	5 308.5	259.1	57.2	316.3	5 624.8	7 854.7	5.6	71.6
2004–05	4 630.1	808.1	5 438.2	231.5	60.6	292.1	5 730.3	7 980.5	5.1	71.8
<b>FEMALES</b>										
1999–2000	2 186.0	1 705.5	3 891.5	175.3	92.9	268.3	4 159.7	7 657.3	6.4	54.3
2000–01	2 261.7	1 751.7	4 013.4	162.5	96.6	259.1	4 272.5	7 775.9	6.1	54.9
2001–02	2 225.3	1 840.9	4 066.2	182.1	99.0	281.0	4 347.3	7 892.2	6.5	55.1
2002–03	2 276.5	1 924.2	4 200.7	176.7	98.5	275.2	4 475.9	8 007.3	6.1	55.9
2003–04	2 313.6	1 937.4	4 251.0	170.8	98.9	269.7	4 520.6	8 132.2	6.0	55.6
2004–05	2 411.7	1 994.8	4 406.5	156.9	96.6	253.5	4 660.0	8 246.8	5.4	56.5
<b>PERSONS</b>										
1999–2000	6 537.5	2 331.2	8 868.7	478.2	148.1	626.3	9 495.0	15 041.6	6.6	63.1
2000–01	6 629.9	2 426.7	9 056.5	466.0	153.5	619.5	9 676.0	15 266.5	6.4	63.4
2001–02	6 594.7	2 573.4	9 168.1	499.6	163.7	663.3	9 831.5	15 503.0	6.7	63.4
2002–03	6 702.1	2 692.5	9 394.5	462.3	162.1	624.4	10 018.9	15 738.7	6.2	63.7
2003–04	6 840.3	2 719.1	9 559.5	430.0	156.0	586.0	10 145.5	15 986.9	5.8	63.5
2004–05	7 041.8	2 802.9	9 844.7	388.4	157.2	545.6	10 390.3	16 227.3	5.3	64.0

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

Labour force participation, employment and unemployment vary across states and territories, and across capital cities and regional areas. Table 6.6 shows labour force status by state and part of state for 2004–05.

The Australian Capital Territory had a higher participation rate (72.0%) and a lower unemployment rate (3.6%) than any of the states and territories. Tasmania had the lowest

participation rate (59.3%), while the Northern Territory had the highest unemployment rate (6.3%).

In New South Wales, Victoria, Queensland and Tasmania, the balance of state had a higher unemployment rate and lower participation rate than the capital city. However, in both South Australia and Western Australia, the capital city had a higher unemployment rate than the balance of state.

### 6.6 LABOUR FORCE STATUS(a), By state and territory — 2004–05

	Employed		Unemployed '000	Labour force '000	Civilian population aged 15 and over '000	Unemploy- ment rate %	Participation rate %
	Full time '000	Total '000					
Capital city/balance of state							
Sydney	1 581.0	2 123.1	101.1	2 224.2	3 431.9	4.5	64.8
Balance of New South Wales	746.2	1 088.1	77.2	1 165.3	1 994.2	6.6	58.4
<i>New South Wales</i>	2 327.2	3 211.2	178.3	3 389.4	5 426.1	5.3	62.5
Melbourne	1 312.3	1 822.3	100.5	1 922.7	2 946.5	5.2	65.3
Balance of Victoria	424.4	629.7	46.3	676.0	1 098.5	6.9	61.5
<i>Victoria</i>	1 736.6	2 451.9	146.8	2 598.7	4 045.1	5.6	64.2
Brisbane	665.1	916.7	46.4	963.1	1 425.6	4.8	67.6
Balance of Queensland	739.2	1 031.2	54.5	1 085.7	1 687.5	5.0	64.3
<i>Queensland</i>	1 404.3	1 947.9	100.9	2 048.8	3 113.2	4.9	65.8
Adelaide	370.6	537.8	34.2	572.0	927.2	6.0	61.7
Balance of South Australia	133.9	193.2	8.1	201.3	325.6	4.0	61.8
<i>South Australia</i>	504.5	730.9	42.3	773.3	1 252.9	5.5	61.7
Perth	522.7	749.1	37.6	786.8	1 184.8	4.8	66.4
Balance of Western Australia	193.4	264.3	12.7	277.1	414.6	4.6	66.8
<i>Western Australia</i>	716.1	1 013.5	50.4	1 063.8	1 599.4	4.7	66.5
Hobart	64.3	92.5	5.4	97.9	164.2	5.5	59.6
Balance of Tasmania	83.4	123.7	8.6	132.3	223.8	6.5	59.1
<i>Tasmania</i>	147.7	216.2	13.9	230.2	388.0	6.1	59.3
<i>Northern Territory</i>	72.6	94.2	6.3	100.5	145.1	6.3	69.3
<i>Australian Capital Territory</i>	132.8	178.9	6.7	185.5	257.6	3.6	72.0
<b>Australia</b>	<b>7 041.8</b>	<b>9 844.7</b>	<b>545.6</b>	<b>10 390.3</b>	<b>16 227.3</b>	<b>5.3</b>	<b>64.0</b>

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

In 2004–05 there were 10.4 million people in the Australian labour force, of whom 25% were born overseas (table 6.7). The labour force participation rate for people born overseas was 58.6% compared with 67.8% for people born in Australia. People born in main-English speaking countries participated in the labour force at a higher rate than those born in other than main-English speaking countries (64.8% compared to 55.0%). The unemployment rate for people born in main-English speaking countries (4.0%) was lower than that for both people born in Australia (5.2%) and people born in other than main-English speaking countries (6.2%).

Table 6.8 provides an overview of the labour force status of people at June 2005, according to the family relationship within the household. For couple families with dependants present, 85% of husbands (or male partners) were employed full time compared with 28% of wives (or female partners). A further 38% of wives were employed part time. Just over half (55%) of male lone parents with dependants were employed full time compared with 23% of female lone parents with dependants. The unemployment rates for husbands and for wives were lower than for all other groups.

## Employed people

People are considered to be employed if they were in paid work, or helping in a family business, for one hour or more in the reference week of the ABS Labour Force Survey (LFS). Those people who were absent from work in the reference week are also considered to be employed, unless they had been on unpaid leave for more than four weeks. This section contains information about people who are employed, including whether they worked full time or part time, the industry and occupation they worked in, and the characteristics of their employment arrangements.

Relating employment levels to population levels enables evaluation of the strength of job growth compared with population growth. The measure relating these two levels is the employment/population ratio. Its usefulness lies in the fact that, while movements in the employment level reflect net changes in the levels of people holding jobs, movements in the ratio reflect net changes in the number of people employed relative to changes in the size of the population.

The overall employment/population ratio rose from 59.0% in 1999–2000 to 60.7% in 2004–05 (table 6.9). In 2004–05 the employment/population ratio for men was considerably higher than for women (68.1% compared with 53.4%), which reflects the higher participation of men in the labour force.

**6.7 LABOUR FORCE STATUS(a), By birthplace(b) — 2004–05**

	Employed		Unemployed '000	Labour force '000	Not in the labour force '000	Unemployment rate %	Participation rate %
	Full time '000	Total '000					
Born in Australia	5 229.9	7 391.1	407.8	7 798.9	3 708.9	5.2	67.8
Born overseas	1 812.0	2 453.6	137.8	2 591.4	1 832.6	5.3	58.6
Main-English speaking countries	749.7	1 006.5	42.4	1 048.9	569.8	4.0	64.8
Other than main-English speaking countries	1 062.3	1 447.1	95.4	1 542.5	1 262.8	6.2	55.0
<b>Total</b>	<b>7 041.8</b>	<b>9 844.7</b>	<b>545.6</b>	<b>10 390.3</b>	<b>5 541.5</b>	<b>5.3</b>	<b>65.2</b>

(a) Annual averages. (b) Excludes persons in institutions.

Source: *Labour Force, Australia, Detailed – Electronic Delivery* (6291.0.55.001).

## 6.8 LABOUR FORCE STATUS, Relationship in household — June 2005

	Employed		Unem- ploid '000	Labour force '000	Not in the labour force '000	Civilian population aged 15 and over '000	Unemploy- ment rate %	Participation rate %
	Full time	Total						
	'000	'000						
<b>MALES</b>								
Family member	3 850.2	4 507.0	200.2	4 707.2	1 611.1	6 318.4	4.3	74.5
Husband or partner	3 171.6	3 488.8	86.3	3 575.1	1 136.2	4 711.4	2.4	75.9
With dependants	1 803.2	1 932.5	49.6	1 982.1	135.9	2 118.0	2.5	93.6
Without dependants	1 368.4	1 556.3	36.8	1 593.1	1 000.4	2 593.4	2.3	61.4
Lone parent	67.7	83.2	8.8	92.0	42.6	134.6	9.6	68.4
With dependants	43.7	53.8	7.7	61.5	17.3	78.8	12.6	78.0
Without dependants	24.0	29.4	1.1	30.5	25.2	55.7	3.5	54.7
Dependent student	9.2	200.1	32.9	233.0	262.8	495.8	14.1	47.0
Non-dependent child(a)	524.1	635.7	63.0	698.7	114.5	813.2	9.0	85.9
Other family person	77.7	99.2	9.2	108.4	55.0	163.4	8.5	66.3
Non-family member	699.1	829.9	55.4	885.3	417.1	1 302.4	6.3	68.0
Lone person	439.5	505.5	35.7	541.2	322.5	863.8	6.6	62.7
Not living alone	259.7	324.4	19.7	344.1	94.6	438.7	5.7	78.4
Relationship in household not determined	142.8	184.5	15.5	200.0	207.9	407.9	7.8	49.0
<b>Total</b>	<b>4 692.1</b>	<b>5 521.4</b>	<b>271.2</b>	<b>5 792.5</b>	<b>2 236.2</b>	<b>8 028.7</b>	<b>4.7</b>	<b>72.1</b>
<b>FEMALES</b>								
Family member	1 921.5	3 765.8	202.5	3 968.3	2 572.1	6 540.4	5.1	60.7
Wife or partner	1 414.5	2 681.7	90.3	2 772.0	1 846.6	4 618.6	3.3	60.0
With dependants	571.8	1 350.7	54.2	1 404.9	659.1	2 064.0	3.9	68.1
Without dependants	842.7	1 331.0	36.2	1 367.2	1 187.5	2 554.7	2.6	53.5
Lone parent	160.9	333.1	48.2	381.3	320.4	701.7	12.6	54.3
With dependants	112.7	256.4	44.8	301.3	198.9	500.2	14.9	60.2
Without dependants	48.2	76.6	3.4	80.0	121.5	201.5	4.2	39.7
Dependent student	6.8	275.2	26.0	301.2	222.7	523.9	8.6	57.5
Non-dependent child(a)	285.8	389.8	29.7	419.5	61.3	480.8	7.1	87.2
Other family person	53.6	86.1	8.3	94.4	121.0	215.3	8.8	43.8
Non-family member	409.0	568.7	30.3	599.0	690.8	1 289.8	5.1	46.4
Lone person	264.9	361.4	18.5	379.9	609.6	989.5	4.9	38.4
Not living alone	144.1	207.3	11.8	219.1	81.2	300.3	5.4	73.0
Relationship in household not determined	90.7	162.6	10.2	172.9	284.8	457.6	5.9	37.8
<b>Total</b>	<b>2 421.2</b>	<b>4 497.2</b>	<b>243.0</b>	<b>4 740.1</b>	<b>3 547.7</b>	<b>8 287.8</b>	<b>5.1</b>	<b>57.2</b>
<b>PERSONS</b>								
Family member	5 771.7	8 272.8	402.7	8 675.5	4 183.2	12 858.7	4.6	67.5
Husband, wife or partner	4 586.1	6 170.5	176.7	6 347.2	2 982.9	9 330.0	2.8	68.0
With dependants	2 375.0	3 283.2	103.7	3 387.0	795.0	4 181.9	3.1	81.0
Without dependants	2 211.1	2 887.3	72.9	2 960.2	2 187.9	5 148.1	2.5	57.5
Lone parent	228.6	416.2	57.0	473.3	363.0	836.2	12.0	56.6
With dependants	156.4	310.2	52.6	362.8	216.2	579.0	14.5	62.7
Without dependants	72.1	106.0	4.5	110.5	146.8	257.2	4.0	42.9
Dependent student	15.9	475.3	58.9	534.2	485.5	1 019.7	11.0	52.4
Non-dependent child(a)	809.9	1 025.5	92.7	1 118.2	175.8	1 294.0	8.3	86.4
Other family person	131.2	185.3	17.5	202.7	176.0	378.7	8.6	53.5
Non-family member	1 108.1	1 398.6	85.6	1 484.3	1 108.0	2 592.3	5.8	57.3
Lone person	704.3	866.9	54.2	921.1	932.2	1 853.3	5.9	49.7
Not living alone	403.8	531.7	31.4	563.2	175.8	739.0	5.6	76.2
Relationship in household not determined	233.5	347.1	25.8	372.9	492.7	865.6	6.9	43.1
<b>Total</b>	<b>7 113.3</b>	<b>10 018.5</b>	<b>514.1</b>	<b>10 532.6</b>	<b>5 783.9</b>	<b>16 316.6</b>	<b>4.9</b>	<b>64.6</b>

(a) Aged 15 years and over.

Source: Labour Force, Australia, Detailed — Electronic Delivery (6291.0.55.001).

### 6.9 EMPLOYED PERSONS, Employment/population ratios(a)

	1999–2000	2000–01	2001–02	2002–03	2003–04	2004–05
	%	%	%	%	%	%
Males	67.4	67.3	67.0	67.2	67.6	68.1
Females	50.8	51.6	51.5	52.5	52.3	53.4
<b>Persons</b>	<b>59.0</b>	<b>59.3</b>	<b>59.1</b>	<b>59.7</b>	<b>59.8</b>	<b>60.7</b>

(a) The employment/population ratio for any group is the annual average number of employed persons expressed as a percentage of the annual average civilian population aged 15 years and over in the same group.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

### Full-time and part-time employment

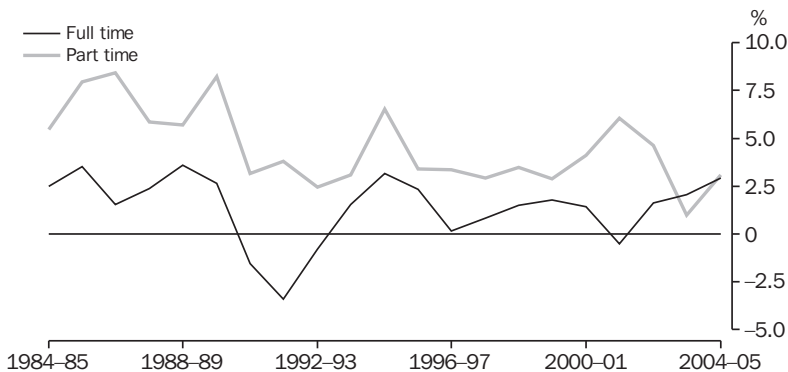
In the LFS, employed people are regarded as either full-time or part-time workers depending on the number of hours worked. Full-time workers are those who usually work 35 hours or more per week in all jobs, or, although usually working less than 35 hours a week, actually worked 35 hours or more during the reference week of the LFS. Part-time workers are those who usually work less than 35 hours a week and either did so during the reference week, or were not at work during the reference week.

Graph 6.10 shows annual percentage changes in part-time and full-time employment since 1984–85. For most of this period, part-time employment increased at a greater rate than full-time employment. As a result, the proportion of part-time employed people has risen over the period, from 18% in 1984–85 to 28% in 2004–05. However, between 2002–03 and 2003–04, full-time employment increased at a greater rate than

part-time employment – the first time this had happened since the commencement of the monthly LFS in 1978.

Following a period of strong economic growth in the late-1980s and early-1990s, and the subsequent recession of the early-1990s, employment growth fluctuated considerably. In 1988–89 growth in full-time employment peaked at 3.6%. Part-time employment grew strongly in 1986–87 (8.4%) and 1989–90 (8.2%). Subsequently the rate of growth of full-time and part-time employment began to slow. At the onset of the economic downturn in 1990–91, full-time employment fell by 1.6%. The impact of the downturn and its effects on the demand for labour intensified in 1991–92 when full-time employment fell more strongly (down 3.4%). At the same time, the rate of growth of part-time employment increased slightly from 3.2% in 1990–91 to 3.8% in 1991–92.

**6.10 EMPLOYED PERSONS, Percentage change in annual average employment**



Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

A similar pattern was evident in 2001–02, when a decrease in full-time employment was accompanied by growth in part-time employment.

In 2004–05 there were 9.8 million employed people, with 71% working full time (table 6.11). Men were far more likely than women to work full time (85% and 55% respectively). Part-time work was most prevalent among the younger (aged 15–19 years) and older (65 years and over) age groups (66% and 52% respectively). For women, at least a third of each age group worked part time, with the 20–24 years and 25–34 years age groups having the lowest proportion of part-time workers (39% and 35% respectively).

### Employment by industry and occupation

The distribution of employed people across industries and occupations, and the changes over time, provide an important insight into the structure of the labour market. Graph 6.12 shows the proportion of employed people, by industry, for the years 1989–90 and 2004–05.

Since 1989–90 the industry composition of the labour market has changed considerably. Historically, the manufacturing industry has been the largest employing industry, but its contribution to the number of employed people has been declining. As recently as 1990–91, the manufacturing industry was the largest employer. However, in 2004–05, it is third to the retail trade and the property and business services industries, which have 15% and 12% of employed people respectively. Manufacturing has fallen from 15% of all employed people in 1989–90 to 11% in 2004–05. Employment in other traditional commodity-based industries, such as the agriculture, forestry and fishing industry, and mining have also fallen over this period.

Over the period 1989–90 to 2004–05, service-based industries have increased their share of employed people and now include the two largest industries. The increase was greatest for the property and business services industry (from 8% to 12%) while health and community services has risen from 8% to 10%, accommodation, cafes and restaurants from 4% to 5%, and retail trade from 14% to 15%.

**6.11 EMPLOYED PERSONS(a), Full-time and part-time workers — 2004–05**

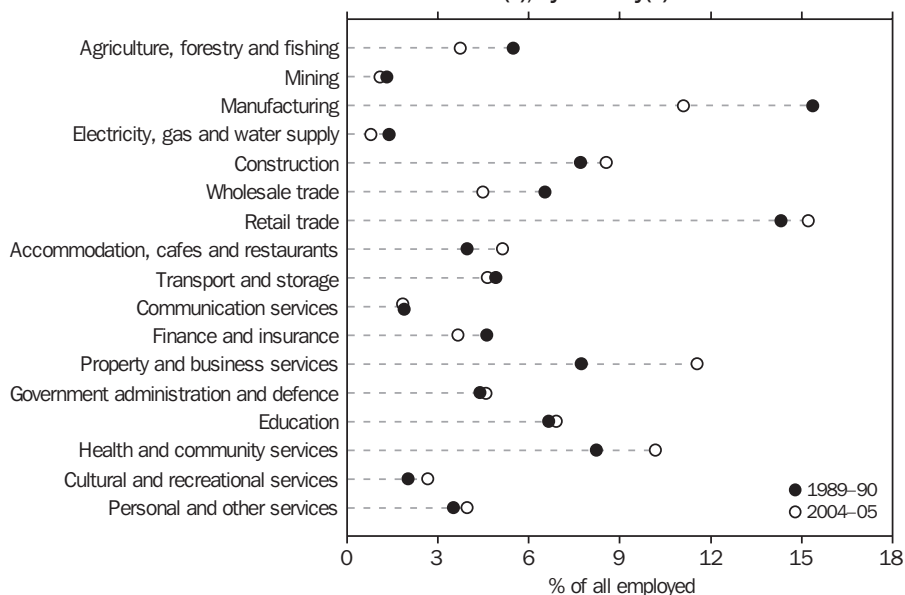
	Units	Age group (years)								Total
		15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	
<b>MALES</b>										
Full-time workers	'000	158.0	428.5	1 126.9	1 203.2	1 073.8	383.5	185.1	71.1	4 630.1
Part-time workers	'000	199.6	136.0	110.7	95.4	96.8	59.0	52.3	58.3	808.1
<b>Total</b>	'000	<b>357.6</b>	<b>564.5</b>	<b>1 237.6</b>	<b>1 298.6</b>	<b>1 170.6</b>	<b>442.5</b>	<b>237.5</b>	<b>129.4</b>	<b>5 438.2</b>
Proportion of part-time workers	%	55.8	24.1	8.9	7.3	8.3	13.3	22.0	45.0	14.9
<b>FEMALES</b>										
Full-time workers	'000	87.1	306.4	640.4	543.9	589.9	168.0	57.8	18.3	2 411.7
Part-time workers	'000	271.1	198.7	339.2	496.4	423.2	146.6	80.6	39.1	1 994.8
<b>Total</b>	'000	<b>358.2</b>	<b>505.0</b>	<b>979.5</b>	<b>1 040.3</b>	<b>1 013.1</b>	<b>314.5</b>	<b>138.4</b>	<b>57.4</b>	<b>4 406.5</b>
Proportion of part-time workers	%	75.7	39.3	34.6	47.7	41.8	46.6	58.2	68.1	45.3
<b>PERSONS</b>										
Full-time workers	'000	245.1	734.9	1 767.3	1 747.1	1 663.7	551.5	242.9	89.4	7 041.8
Part-time workers	'000	470.7	334.6	449.9	591.8	520.0	205.5	132.9	97.4	2 802.9
<b>Total</b>	'000	<b>715.8</b>	<b>1 069.5</b>	<b>2 217.2</b>	<b>2 338.9</b>	<b>2 183.7</b>	<b>757.0</b>	<b>375.8</b>	<b>186.8</b>	<b>9 844.7</b>
Proportion of part-time workers	%	65.8	31.3	20.3	25.3	23.8	27.2	35.4	52.1	28.5

a) Annual average.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).



### 6.12 EMPLOYED PERSONS(a), By industry(b)



(a) Annual average of quarterly data. (b) Classified according to the Australian and New Zealand Standard Industrial Classification.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

Table 6.13 shows the proportion of employed people in each broad occupation group by age, for 2004-05. The most common occupation group was professionals (19%), followed by intermediate

clerical, sales and service workers (17%). Advanced clerical and service workers was the least prevalent occupation group (4%).

### 6.13 EMPLOYED PERSONS(a), By occupation(b) — 2004-05

	Units	Age group (years)								Total
		15-19	20-24	25-34	35-44	45-54	55-59	60-64	65 and over	
Managers and administrators	%	0.4	1.8	6.6	9.9	10.4	12.1	13.5	26.8	8.3
Professionals	%	1.7	12.4	22.7	20.0	21.5	19.0	19.7	19.1	18.7
Associate professionals	%	3.2	9.1	13.5	14.4	14.1	14.4	11.8	10.9	12.6
Tradespersons and related workers	%	14.8	15.3	14.1	12.1	10.9	10.6	11.7	8.9	12.6
Advanced clerical and service workers	%	0.9	3.0	3.8	4.3	3.9	4.6	3.9	3.3	3.7
Intermediate clerical, sales and service workers	%	16.2	24.1	16.8	15.8	15.9	14.2	12.2	8.7	16.6
Intermediate production and transport workers	%	7.2	7.3	7.9	9.0	8.5	9.9	10.1	7.8	8.4
Elementary clerical, sales and service workers	%	38.9	17.2	6.8	6.3	6.1	6.7	7.0	7.6	9.9
Labourers and related workers	%	16.5	9.8	7.7	8.3	8.7	8.5	10.0	6.9	9.0
All occupations	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Persons	'000	702.8	1 057.7	2 213.0	2 338.3	2 182.6	751.1	371.8	182.8	9 800.0

(a) Annual average of quarterly data. (b) Occupation of main job; classified according to the Australian Standard Classification of Occupations.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

There is a correlation between age and occupation, with a higher proportion of younger workers employed in the lower skilled occupations, and a higher proportion of older workers employed in the more highly skilled occupations. For example, less than 1% of the 15–19 year age group and less than 2% of the 20–24 year age group were employed as managers and administrators, while at the other end of the age spectrum, in the age group 65 years and over, 27% were employed in this occupation group. In the 15–19 year age group, 39% of people were employed as elementary clerical, sales and service workers, and a further 17% as labourers and related workers. The proportion of 20–24 year olds employed in these occupation groups was considerably lower (17% and 10% respectively), and was also lower for all other age groups.

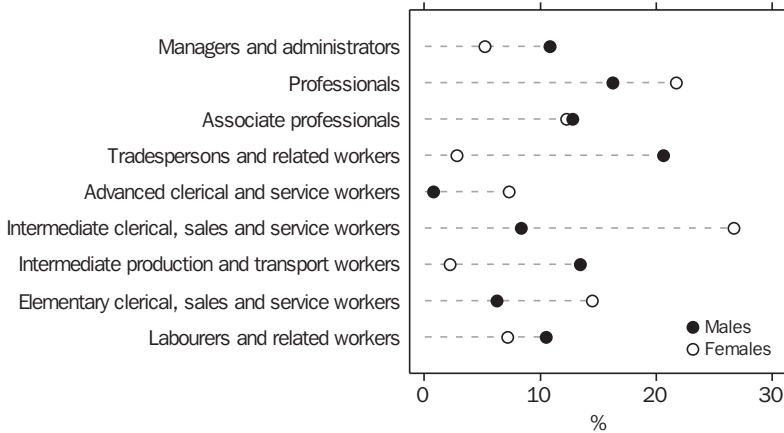
There are large gender differences in occupations. Women are more likely to be employed in clerical occupations, such as advanced clerical and

service workers; intermediate clerical, sales and service workers; and elementary clerical, sales and service workers. Men are more likely to be employed in the trade occupations, including tradespersons and related workers, and intermediate production and transport workers (graph 6.14). For example, a higher proportion of men were employed as tradespersons and related workers (21% compared with 3% of women), while a higher proportion of women were employed as intermediate clerical, sales and service workers (27% compared with 8% of men).

### Characteristics of employment

Working life in Australia continues to change. There are more diverse employment arrangements, more flexible working time patterns, and more people working part-time hours. This section looks at the types of arrangements people are employed under, and the hours they work.

**6.14 EMPLOYED PERSONS(a), By occupation(b) — 2004–05**



(a) Annual average of quarterly data. (b) Classified according to the Australian Standard Classification of Occupations.

Source: *Labour Force, Australia, Detailed – Electronic Delivery* (6291.0.55.001).

## Employment type

The ABS has developed a time series on the types of employment that people have, including employees who are not entitled to paid sick or holiday leave ('casual' employees), and people who operate their own business. The series was derived by combining data from the LFS and the annual ABS Survey of Employee Earnings, Benefits and Trade Union Membership. Employed people were classified to one of five employment types on the basis of their main job, that is, the job in which they usually worked the most hours. The employment types are: employees with paid leave entitlements; employees without paid leave entitlements; owner managers of incorporated enterprises; owner managers of unincorporated enterprises; and contributing family workers. For more detail see the article 'Changes in types of employment' in the October 2004 issue of *Australian Labour Market Statistics* (6105.0).

Of the 9.6 million employed people at August 2004, over half (59%) were employees with paid leave entitlements (table 6.15). Other large groups

were employees without paid leave entitlements (20%) and owner managers of unincorporated enterprises (14%).

Although the proportion of employed people who worked as employees with paid leave entitlements was similar for men (58%) and women (60%), more women were employees without paid leave entitlements (26%) than men (16%). The proportion of men working in their own business was higher than for women (25% compared with 14%).

Between 1992 and 2004, employees without paid leave entitlements rose as a proportion of total employment, from 17% to 21% (graph 6.16). Most of this increase occurred prior to 1998. Although owner managers as a proportion of the total employed remained stable between 1992 and 2004, the split between incorporated and unincorporated enterprises has changed. Owner managers of incorporated enterprises increased as a proportion of total employed from 5% in 1992 to 6% in 2004, while owner managers of unincorporated enterprises fell as a proportion of total employed from 15% in 1992 to 14% in 2004.

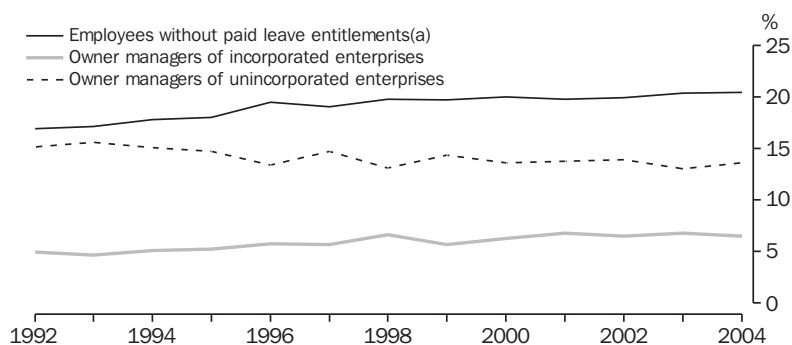
**6.15 EMPLOYED PERSONS, Distribution by type of employment — August 2004**

	Employees(a) with paid leave entitlements %	Employees(a) without paid leave entitlements %	Owner managers of incorporated enterprises %	Owner managers of unincorporated enterprises %	Contributing family workers %	Total %	Total '000
Males	58.4	16.2	8.4	16.7	0.3	100.0	5 278.2
Females	59.9	25.7	4.1	9.7	0.5	100.0	4 299.8
Persons	59.1	20.5	6.5	13.6	0.4	100.0	9 578.0

(a) Excluding owner managers of incorporated enterprises.

Source: *Australian Labour Market Statistics, Datacubes* (6105.0).

**6.16 TYPES OF EMPLOYMENT, Proportion of employed — August**



(a) Excluding owner managers of incorporated enterprises.

Source: *Australian Labour Market Statistics, Datacubes* (6105.0).

## Hours worked

Hours worked data have a wide range of uses, including the calculation of labour productivity, and monitoring working conditions. Information on hours worked allows the ABS to classify employed people as full-time or part-time, and also to identify underemployed people (in conjunction with measures of those wanting to work more hours).

The LFS now records weekly hours worked data for employed people on three different bases:

- *Actual hours worked in all jobs* refers to hours actually worked in the survey reference week, including overtime and excluding time off
- *Actual hours worked in main job* refers to hours actually worked (including overtime and excluding any time off) in the job which the most hours are usually worked
- *Usual hours worked in all jobs* refers to the normal working pattern over the past three months in all jobs, including overtime if that was a regular part of work over that period.

The data for the latter two measures are available from April 2001, while the first measure has been collected since the national LFS began in the 1960s.

Graph 6.17 shows average weekly hours worked for employed people for the three measures of hours worked. Average weekly hours worked is defined as aggregate hours worked by employed people during the reference week divided by the number of employed people.

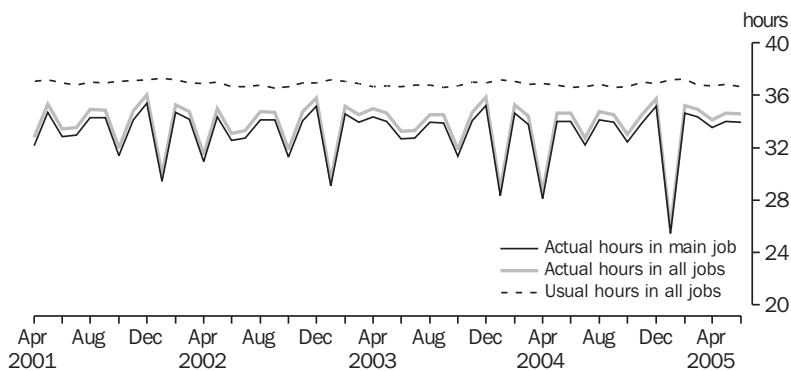
The two average weekly hours actually worked measures are influenced by seasonal factors (e.g. customs in taking leave at particular times of the year), economic factors (e.g. workplace-related influences such as seasonal employment), and absences from work due to public holidays, sickness, irregular shifts, etc. Large movements occur around the months of January, April and October. The average weekly hours worked in main job series closely follows the average weekly hours worked in all job series, but at a slightly lower level. This indicates that the number of hours worked in second and subsequent jobs, averaged across all employed people, is relatively small.

Average weekly hours usually worked in all jobs exhibits much lower levels of variability over the period since April 2001. This is because the usual hours worked series is not affected by the seasonal factors and absences from work that lead to fluctuations in the actual hours worked series.

### Actual hours worked in all jobs

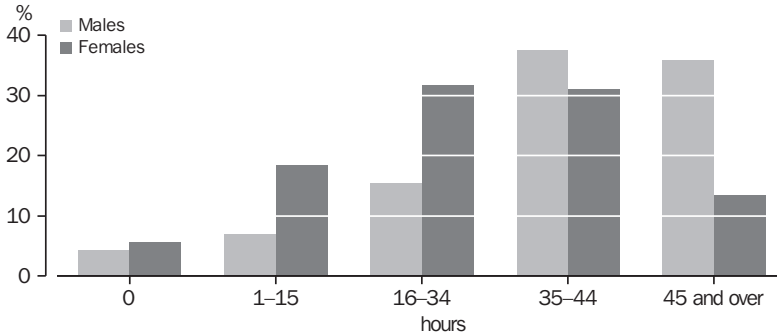
Graph 6.18 shows in June 2005, 37% of employed men actually worked between 35 and 44 hours per week, and a further 36% actually worked 45 hours or more per week. In contrast, women were most likely to have worked between 16 and 34 hours per week (32%), or between 35 and 44 hours (31%). Women who actually worked 45 hours or more per week made up 13% of all employed women.

**6.17 EMPLOYED PERSONS, Average weekly hours worked**



Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

### 6.18 EMPLOYED PERSONS(a), Actual hours worked in all jobs — June 2005



(a) Includes employed persons who were away from work during the survey reference week.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

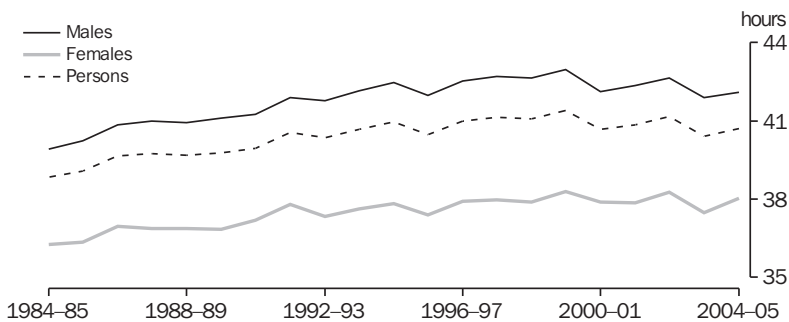
Average weekly hours actually worked by full-time employed people rose from 38.8 hours in 1984–85 to a peak of 41.4 hours in 1999–2000, an increase of 7% (graph 6.19). In 2004–05, full-time employed people worked an average of 40.7 hours per week, up from the 40.4 hours per week recorded in 2003–04.

Graph 6.20 shows that from 1984–85 to 2004–05 there was a steady increase in the number of hours actually worked by part-time workers as a proportion of the total number of hours actually worked. In 1984–85, 8% of all hours actually worked were in part-time employment; by 2004–05 this proportion had risen to 14%. For men, 6% of the total number of hours actually worked were in part-time employment in 2004–05, whereas for women the proportion was much greater (26%).

### Usual hours worked in all jobs

Graph 6.21 shows average weekly hours usually worked in all jobs, by occupation, for full-time employed people. In 2004–05, managers and administrators had the highest average weekly usual hours for full-time employed men (51.6 hours per week) and women (46.9), followed by associate professionals (48.0 and 44.2). The occupations with the lowest average weekly hours usually worked were elementary clerical, sales and service workers (42.5 hours per week for men and 39.3 hours per week for women), and intermediate clerical, sales and service workers (42.8 for men and 39.8 for women).

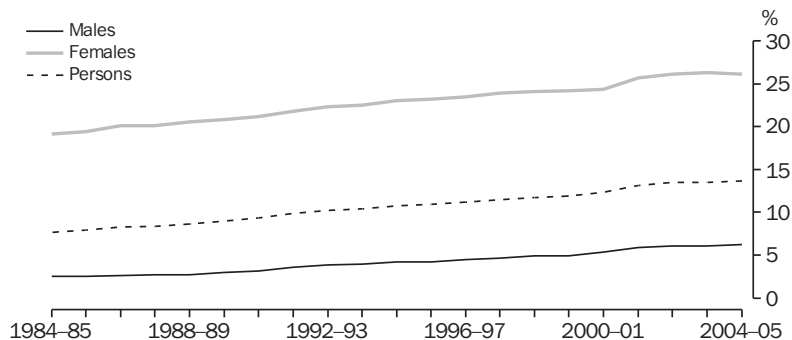
### 6.19 AVERAGE WEEKLY ACTUAL HOURS WORKED(a), Full-time employed persons(b)



(a) Annual average. (b) Includes employed persons who were away from work during the survey reference week.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

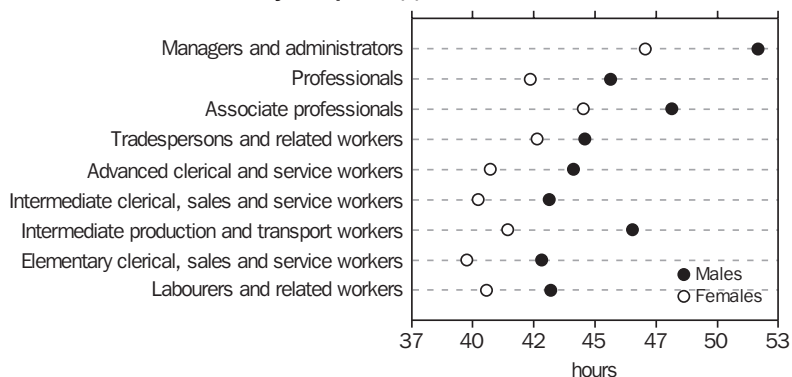
## 6.20 PART-TIME HOURS AS A PROPORTION OF TOTAL ACTUAL HOURS WORKED(a)



(a) Annual average.

Source: *Labour Force, Australia, Detailed – Electronic Delivery* (6291.0.55.001).

## 6.21 AVERAGE WEEKLY HOURS USUALLY WORKED(a), Full-time employed persons, By occupation(b) — 2004-05



(a) Annual average of quarterly data. (b) Occupation of main job; classified according to the Australian Standard Classification of Occupations.

Source: ABS data available on request, *Labour Force Survey*.

Table 6.22 shows that the overall average weekly hours usually worked for men (41.5) was over ten hours greater than for women (31.0). This was partly due to men working longer average weekly hours in full-time employment (45.7) than women (41.6), and also because women were more likely than men to work part time.

## 6.22 EMPLOYED PERSONS(a), Average weekly hours usually worked(b) — 2004-05

	Males hours	Females hours	Persons hours
Full-time workers	45.7	41.6	44.3
Part-time workers	17.9	18.3	18.2
All workers	41.5	31.0	36.8

(a) Annual average. (b) Estimates refer to usual hours worked, not hours paid for.

Source: *Labour Force, Australia, Detailed – Electronic Delivery* (6291.0.55.001).

## People who work few hours

The ABS definition of employment, used in the Labour Force Survey (LFS), counts as employed anyone who undertook paid work for one hour or more in the reference week of the LFS. From an economic perspective, such work contributes to the production of goods and services and is therefore considered employment, in line with International Labour Organisation standards. However, from a social perspective people who usually work a relatively small number of hours are of interest for a number of reasons. Some of these people may choose to work few hours to allow time for other aspects of their life (e.g. childcare or study). Others may be at risk of experiencing financial disadvantage or of not having their aspirations for work met.

This article examines the characteristics (e.g. age, sex, occupation) of those people who were employed in November 2004 and reported that they usually worked less than eight hours a week.

### Overview

In November 2004 there were 9.8 million people who were employed (table 6.23). Of these, 2.9 million people (or 30%) usually worked less than 35 hours a week in all jobs (i.e. worked part time).<sup>1</sup> About 400,000 people (or 4% of all employed people) usually worked less than eight hours a week.

**6.23 EMPLOYED PEOPLE, By hours usually worked in all jobs each week — November 2004**

Hours	Employed persons	
	'000	%
0	29.9	0.3
1–7	369.6	3.8
8–14	563.5	5.8
15–24	1 044.0	10.7
25–34	894.6	9.1
35–39	1 917.1	19.6
40 or more	4 967.7	50.8
<b>Total</b>	<b>9 786.5</b>	<b>100.0</b>

Source: ABS data available on request, Labour Force Survey.

People who usually don't work (i.e. 0 hours usually worked in table 6.23) are counted as employed in the LFS if they actually worked one hour or more in the reference week of the survey. In November 2004 there were about 30,000 people in this category. However, the focus of this article is on people who are working rather than those who usually don't work, so those people who usually don't work have been excluded from the analysis in the rest of this article.

People who work few hours are more likely to be women than men (more than twice as many women as men usually worked 1–7 hours per week in November 2004), but the men who work few hours are more likely than women to want more hours. People who work few hours tend to be young (about 43% of those working these hours were aged 15–24 years in November 2004), are often students, and are most often working as either clerical, sales and service workers or labourers.

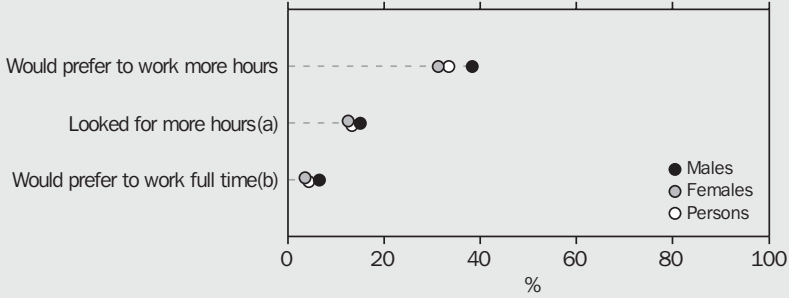
In November 2004, relatively few people (12,600 people, or 0.1% of all those who were employed) usually worked one hour per week.

### Preference for more hours

In November 2004, most people who usually worked 1–7 hours a week did not want to work more hours. Overall, about one-third (33%) of those people who worked 1–7 hours a week wanted to work more hours (graph 6.24). The proportion was higher for men (38%) than for women (31%). About 13% of people who usually worked 1–7 hours a week had looked for more hours of work at some time in the four weeks before the survey. About 4% of people who usually worked 1–7 hours would have preferred to work full time and were looking for additional work. This proportion was slightly higher for men (7%) than women (4%).



**6.24 PEOPLE WHO USUALLY WORK 1-7 HOURS PER WEEK — November 2004**



(a) In the four weeks prior to the survey. (b) This group is a subset of people who looked for more hours in the four weeks prior to the survey. People who did not look are not asked whether they would prefer to work full time.

Source: ABS data available on request, Labour Force Survey.

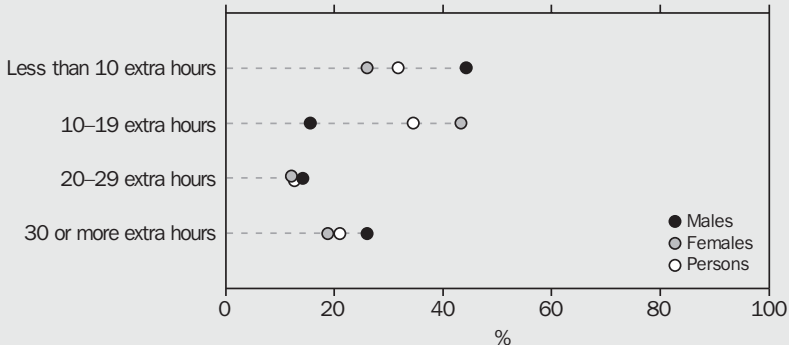
**Underemployed workers**

The fact that some people work few hours is of concern if these people are not satisfied with the amount of work they have. One measure that can be used to provide information on this issue is 'underemployed workers'. Underemployed workers are employed people who want, and are available for, more hours of work than they currently have.

In September 2004, about two-thirds (66%) of underemployed people who usually worked 1–7 hours per week wanted less than 19 additional

hours of work per week (graph 6.25).<sup>2</sup> There were some differences between the preferences of men and women. About 44% of underemployed men who usually worked 1–7 hours wanted less than 10 extra hours per week, while 26% wanted 30 or more additional hours per week. Underemployed women who usually worked 1–7 hours per week were more likely to want between 10 and 19 extra hours (43% wanted this amount), followed by 1–10 extra hours (26%).

**6.25 NUMBER OF EXTRA HOURS OF WORK WANTED PER WEEK, Underemployed people who usually work 1–7 hours per week — September 2004**



Source: ABS data available on request, Underemployed Workers Survey.

## Age and sex

In November 2004, almost 70% of the people who usually worked 1–7 hours per week were women. Women were less likely than men to want to work more hours (31% of women working 1–7 hours per week would have preferred to work more hours, compared with 38% of men) (table 6.26).

Men who worked 1–7 hours tended to be concentrated in the younger and older age groups. About 62% of men working these hours were younger than 25 years, and another 22% were aged at least 55 years. For men, working relatively few hours is associated with balancing work with education (see ‘Students’ below for more detail on people aged 15–24 years who are studying) or with the transition to retirement (for those aged 55 years or older).

In November 2004, people aged 35–44 years who usually worked 1–7 hours per week were more likely to prefer to work more hours than those in other age groups. This was particularly noticeable for men, with 86% wanting more hours. About 40% of women aged 35–44 years would have preferred to work more hours.

Women, like men, who worked 1–7 hours were more likely to be aged 15–24 years than any other age group (35% of women working those hours were in this age group). However, women were much less concentrated in any one age group than men. Almost half (49%) of women working

1–7 hours per week were aged 25–54 years. Many of these women had children who were younger than 15 years (see ‘Relationship in household’ below for more detail).

## Students

Most young people (aged 15–24 years) who were usually working 1–7 hours were balancing part-time work with full-time study or school. In November 2004, over nine out of ten (93%) people who were aged 15–19 years and usually worked 1–7 hours per week were studying full time (either at school or other educational institutions). Of people aged 20–24 years who were working 1–7 hours, 76% were studying full time.

## Relationship in household

In November 2004, most of the people who usually worked 1–7 hours per week were either dependent students or were women who had children who were less than 15 years old.

## Dependent students

Overall, about 32% of people who usually worked 1–7 hours per week were dependent students (table 6.27).<sup>3</sup> About one-quarter (25%) of women working 1–7 hours were dependent students, and nearly half (48%) of the men working 1–7 hours were dependent students. For dependent students the income earned from their employment may be supplementary rather than essential to pay the costs of living.

**6.26 PEOPLE WHO USUALLY WORK 1–7 HOURS PER WEEK, By age — November 2004**

Age group (years)	People who usually work 1–7 hours per week				Proportion who would prefer to work more hours		
	Units	Males	Females	Persons	Males	Females	Persons
15–19	%	48.8	24.7	32.2	36.8	36.9	36.8
20–24	%	13.1	10.3	11.1	37.9	37.0	37.3
25–34	%	5.3	16.4	13.0	*34.9	22.5	24.1
35–44	%	4.7	18.6	14.3	86.1	40.1	44.8
45–54	%	5.7	14.3	11.6	*50.4	31.1	34.0
55 and over	%	22.4	15.7	17.8	29.4	17.2	21.9
Total	%	100.0	100.0	100.0	38.3	31.2	33.4
Persons	'000	114.4	255.3	369.6	43.8	79.7	123.5

Source: ABS data available on request, Labour Force Survey.

## Women

In November 2004, the largest group of women who usually worked 1–7 hours were those who had a partner and had children who were younger than 15 years (this group made up 31% of all women working few hours), and three-quarters of these did not want to work more hours, suggesting that many of these women were combining work with caring for children, and had a partner's income to supplement their own. Another 6% of women working 1–7 hours per week were single parents with children, and over half (52%) of these women would have preferred to work more hours.

## Men

After dependent students, the second largest group of men usually working 1–7 hours per week were those who had a partner but no children (15% of the 114,400 men usually working 1–7 hours per week were in this situation). Most of these men (86%) were 55 years or older. 'Non-dependent child' was the

third largest group for men, accounting for 7% of those working 1–7 hours per week in November 2004.<sup>4</sup> Unlike women, the proportion of all men working 1–7 hours per week who had a partner and children was relatively low (4%).

## Occupation

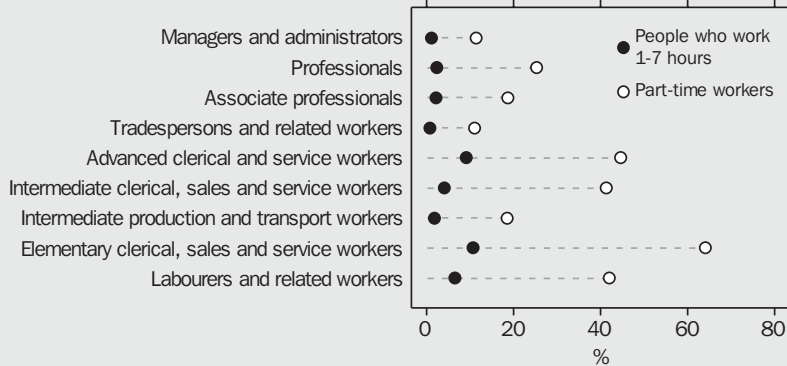
In November 2004, the occupations that had the highest proportions of people working 1–7 hours per week were elementary clerical, sales and service workers; advanced clerical and service workers; labourers and related workers; and intermediate clerical, sales and service workers (graph 6.28). These were also the occupations with the highest proportions of people working part time. Generally occupations with a high concentration of people working few hours per week were those which required lower levels of educational qualifications.<sup>5</sup> About 11% of people working as elementary clerical, sales and service workers were working 1–7 hours per week, while 64% of people working in this occupation were part-time workers.

**6.27 PEOPLE WHO USUALLY WORK 1–7 HOURS PER WEEK,  
By sex and relationship in household — November 2004**

Relationship in household	Units	Males	Females	Persons
Spouse or partner with				
Children under 15 years	%	4.1	30.6	22.4
No children under 15 years, but with dependent students	%	*2.1	2.2	2.2
No dependants but with children aged 15 years or older	%	4.0	4.2	4.1
No children	%	14.9	14.0	14.3
Single parent with				
Children under 15 years	%	*0.9	6.4	4.7
No children under 15 years, but with dependent students	%	*—	*0.7	*0.5
No dependants but with children aged 15 years or older	%	*0.4	*1.0	*0.8
Other				
Dependent student	%	48.0	25.5	32.4
Non-dependent child	%	6.8	2.8	4.1
Other relative	%	1.5	1.3	1.4
Non-family member not living alone	%	6.4	2.1	3.4
Person living alone	%	6.3	4.9	5.4
Relationship not determined	%	4.6	4.1	4.3
Total	%	100.0	100.0	100.0
Persons	'000	114.4	255.3	369.6

Source: ABS data available on request, Labour Force Survey.

### 6.28 PROPORTION OF PART-TIME WORKERS, By occupation — November 2004



Source: ABS data available on request, Labour Force Survey.

### End notes

- 1 People employed part time are those employed people who usually worked less than 35 hours a week in all jobs and either did so during the reference week, or were not at work in the reference week. For the purposes of this article, all people who usually worked less than 35 hours a week are considered to be part time, even if they worked more than 35 hours a week in the reference period.
- 2 These data come from the Underemployed Workers Survey, not the LFS, and therefore have a different reference period to the rest of the data in this article.
- 3 Dependent students are those who are 15–24 years of age, attending full-time education, and have no partner or child of their own usually resident in the same household.
- 4 A non-dependent child is a child of a couple or lone parent usually resident in the household, aged over 15 years and who is not a dependent student aged 15–24 years, and who has no partner or child of their own usually resident in the household.
- 5 See the *Australian Standard Classification of Occupations, Second Edition* (1220.0) for information about the skill levels required for different occupations.

## Casual employees

The arrangements under which people work impact on the wellbeing of individuals and society. Aspects of employment such as pay, conditions and tenure of employment, and the degree of opportunity or risk associated with work, can affect a worker's sense of economic security and overall wellbeing.

The nature of employment in Australia has become more diverse, with growth in forms of employment other than the 'traditional' arrangement of a full-time, ongoing wage or salary job, with regular hours and paid leave.<sup>1</sup> These changes may provide new opportunities for people seeking flexible working arrangements in order to balance work with family, study or other non-work activities. However, other people may find themselves in less than favourable employment arrangements. Casual employment is one form of employment where there can be a range of differing circumstances and individual impacts, both positive and negative.

This article examines the trends in casual employment over the past ten years using data from the Labour Force Survey (LFS) and the Survey of Employee Earnings, Benefits and Trade Union Membership.<sup>2</sup> It also looks at the age distribution of casuals, and the occupations and industries in which casuals work. For the

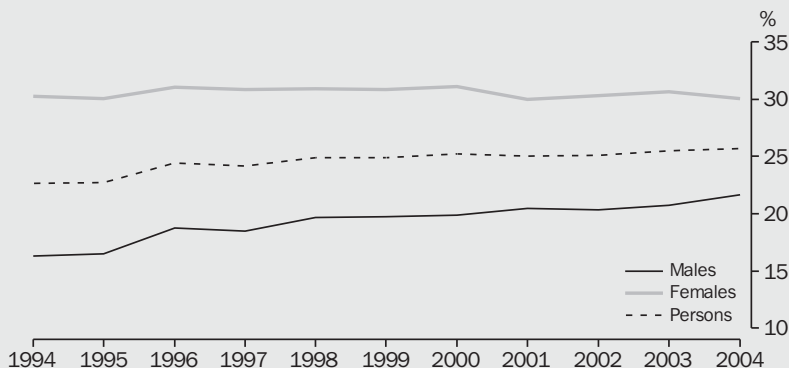
purposes of this article a *casual employee* is defined as an employee who is not entitled to either paid holiday leave or paid sick leave in their main job, while an *ongoing employee* is an employee who is entitled to either paid holiday leave or paid sick leave (or both) in their main job.<sup>3</sup>

### Trends in casual employment

While the nature and level of casual employment in Australia continues to be debated, it is widely agreed that casual employment has increased over the last decade and will continue to do so.<sup>1,4</sup> In 2004, 26% of employees were casual, compared with 23% in 1994 (graph 6.29). Most of this increase occurred prior to 1998, with the proportion remaining relatively stable since then. There has also been an increase in the number of people employed in casual jobs from 1.4 million in 1994 to 2.0 million in 2004.

The increase in the proportion of employees who were casual is due mainly to changes for men rather than women. The proportion of male employees who were casual increased over the period 1994 to 2004, from 16% to 22%, while the proportion for women remained relatively stable (either 30% or 31% over the same period).

6.29 PROPORTION OF EMPLOYEES WHO ARE CASUAL — August



Source: Australian Labour Market Statistics, Datacubes (6105.0).

The growth in casual employment for male employees can be partly attributed to the growth in the number of casual male employees working in lower skilled occupations. Between 1996 and 2004 almost two-thirds (64%) of the increase in the number of male casual employees occurred in the lower skilled occupations of intermediate production and transport workers, elementary clerical, sales and service workers and labourers and related workers.

### Characteristics of casual employees

The common understanding of casual employment is that it is short-term or irregular, but often this is not the case. Many casuals have long-term and regular jobs. In August 2004, 55% of the 2.0 million casual employees in Australia had been with their employer for 12 months or more, compared with 83% of the 5.7 million ongoing employees.

There is a strong link between working part-time hours (less than 35 hours a week in all jobs) and working as a casual employee. In 2004, 69% of casual employees worked part time, compared with 15% of ongoing employees.

### Age

Although young people (aged 15–24 years) made up 21% of all employees in 2004, they comprised 40% of casual employees. This is closely related

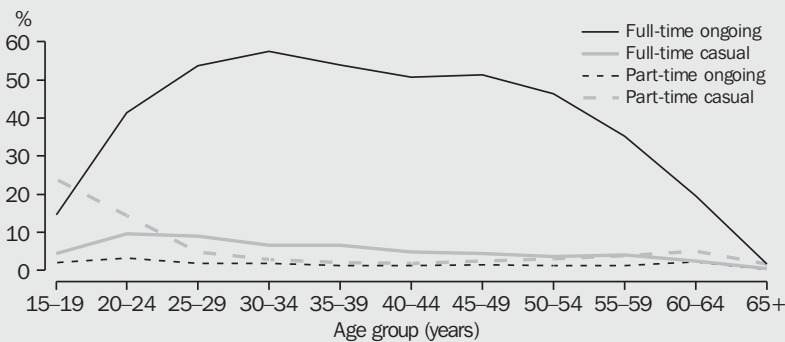
to the relatively high participation of young people in education and their tendency to combine work with study. Between May 1994 and May 2004, the proportion of part-time workers aged 15–24 years who were participating in study increased from 67% to 74%.<sup>5</sup>

Men and women exhibit different employee patterns over their life cycles (graphs 6.30 and 6.31). Men engage predominantly as full-time ongoing employees for all age groups, except 15–19 year olds. While this is also the case for women, the proportion of women who are full-time ongoing employees is lower for all age groups compared with men, and the proportion who are part-time ongoing or casual is higher.

### Industry and occupation

The industries and occupations in which casuals are employed tend to offer jobs which are part time and jobs which require lower levels of skill. Employers in these industries may need a workforce which is flexible to cover the seasonal nature of the job, or the daily variations in workload (such as more staff needed at mealtimes in cafes and restaurants).<sup>1</sup> These types of jobs attract younger workers as they offer the opportunity to gain work experience and the flexibility to combine work and study. Women are also attracted to these types of jobs in order to combine work and family responsibilities.<sup>1</sup>

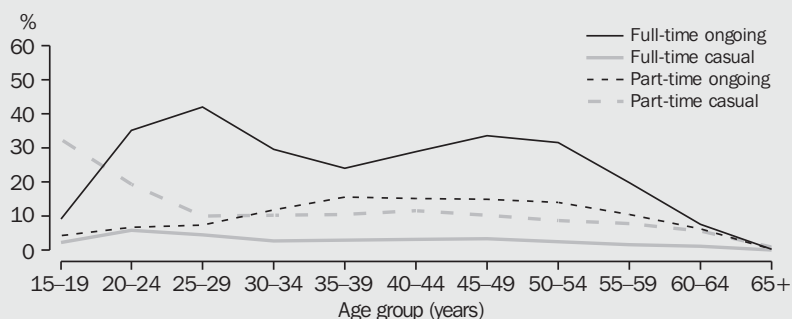
**6.30 MALE EMPLOYEES AS A PROPORTION OF THE POPULATION(a) — August 2004**



(a) Civilian population aged 15 years and over.

Source: Australian Labour Market Statistics, Datacubes (6105.0).

**6.31 FEMALE EMPLOYEES AS A PROPORTION OF THE POPULATION(a)**  
— August 2004



(a) Civilian population aged 15 years and over.

Source: Australian Labour Market Statistics, Datacubes (6105.0).

Over half of the employees in the Accommodation, cafes and restaurants industry (59%) were casual employees (table 6.32). The Agriculture, forestry and fishing (49%), Retail trade (45%) and Cultural and recreational services (45%) industries also had high proportions of casual employees. The industry with the lowest proportion of casual employees was Finance and insurance (6%), followed by Government administration and defence (7%) and Electricity, gas and water supply (8%).

The two lowest skilled occupation groups contained the highest proportion of casuals. Over half of elementary clerical, sales and service workers (56%) were casual, as were 47% of labourers and related workers (table 6.33). Conversely, the lowest proportions of casual employees were found in the highest skilled occupation groups: managers and administrators (6%), professionals (12%) and associate professionals (13%).

**6.32 INDUSTRY OF EMPLOYEES — August 2004**

ANZSIC Division	Employees '000	Proportion who are		
		Casuals %	Females %	Under 25 years %
Agriculture, forestry and fishing	133.0	48.9	30.7	22.2
Mining	85.8	14.2	12.6	9.4
Manufacturing	956.2	15.9	26.9	16.2
Electricity, gas and water supply	71.5	8.1	16.7	9.1
Construction	403.5	24.1	9.9	25.9
Wholesale trade	344.4	17.0	31.7	17.6
Retail trade	1 165.1	45.0	54.1	47.1
Accommodation, cafes and restaurants	428.6	59.1	57.1	40.6
Transport and storage	346.1	21.7	27.6	11.2
Communication services	139.2	19.4	36.1	13.2
Finance and insurance	295.2	6.4	58.7	14.2
Property and business services	779.5	24.7	48.5	19.1
Government administration and defence	427.7	7.3	50.3	7.1
Education	669.9	17.1	68.2	7.2
Health and community services	898.7	20.1	81.5	11.6
Cultural and recreational services	187.6	44.9	51.6	27.2
Personal and other services	289.3	23.3	48.6	17.2
<b>Total</b>	<b>7 621.3</b>	<b>25.7</b>	<b>48.3</b>	<b>21.2</b>

Source: Dataset constructed from the ABS 1992–2004 August Labour Force Surveys and the ABS 1992–2004 Surveys of Employee Earnings, Benefits and Trade Union Membership.



### 6.33 OCCUPATION OF EMPLOYEES — August 2004

ASCO Major group	Employees '000	Casuals %	Proportion who are	
			Females %	Under 25 years %
Managers and administrators	442.6	5.7	29.1	4.6
Professionals	1 520.8	12.4	57.2	8.3
Associate professionals	826.7	12.7	45.4	13.0
Tradespersons and related workers	819.5	17.0	9.1	26.6
Advanced clerical and service workers	239.5	16.5	85.6	13.1
Intermediate clerical, sales and service workers	1 490.0	28.7	72.9	24.3
Intermediate production and transport workers	682.4	29.6	13.8	17.7
Elementary clerical, sales and service workers	876.7	56.2	66.2	49.3
Labourers and related workers	723.1	47.1	37.3	27.3
<b>Total</b>	<b>7 621.3</b>	<b>25.7</b>	<b>48.3</b>	<b>21.2</b>

Source: Dataset constructed from the ABS 1992–2004 August Labour Force Surveys and the ABS 1992–2004 Surveys of Employee Earnings, Benefits and Trade Union Membership.

### End notes

- 1 Pocock, B, Buchanan, J & Campbell, I 2004, 'Meeting the Challenge of Casual Work in Australia: Evidence, Past Treatment and Future Policy', *Australian Bulletin of Labour*, vol. 30, no. 1, pp. 16–32.
- 2 Australian Bureau of Statistics 2004 'Changes in types of employment, 1992–2003', *Australian Labour Market Statistics*, October 2004, (6105.0), pp. 10–17, ABS, Canberra.
- 3 Employees are those people aged 15 years and over who, in their main job, work for a public or private employer and receive remuneration in wages, salary, a retainer fee from their employer while working on a commission basis, tips or piece rates. This article excludes employees working for payment in kind only and those who operate their own incorporated business.
- 4 Watts, R 2001, 'The ACTU's Response to the Growth in Long-term Casual Employment in Australia', *Australian Bulletin of Labour*, vol. 27, no. 2, pp. 137–149.
- 5 Australian Bureau of Statistics 2004, *Education and Work*, (6227.0), ABS, Canberra.

## Unemployed people

In the LFS, people are considered to be unemployed if they satisfy three criteria: they are not employed; they are available for work; and they are taking active steps to find work.

Two important measures of unemployment are the number of people unemployed and the unemployment rate. The unemployment rate, defined as the number of unemployed people expressed as a percentage of the labour force, offers an insight into the degree of slack in the labour market.

Movements in the unemployment rate over the past 20 years are dominated by the economic downturns of the early-1980s and early-1990s, and the subsequent periods of economic recovery (graph 6.34). In trend terms, the unemployment rate peaked at 10.7% in December 1992, then generally fell over the rest of the 1990s and early-2000s, and was 5.1% in June 2005.

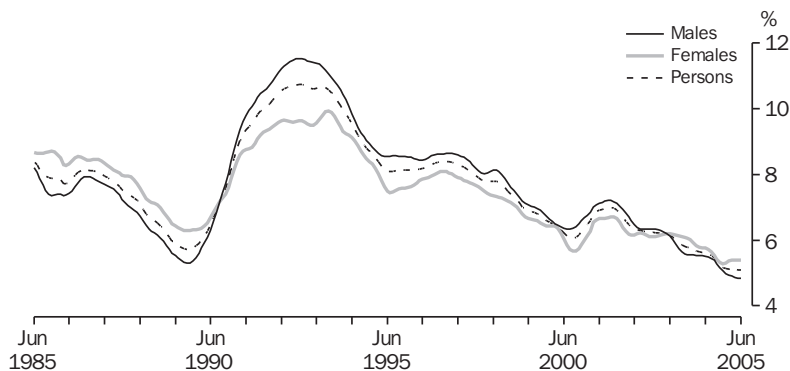
Prior to 1990, the unemployment rate for men was lower than for women. However, as the unemployment rate increased sharply in 1990–91,

the male unemployment rate increased to a level above the female unemployment rate. Since May 2003, this has reversed and the female unemployment rate has been slightly higher than the male unemployment rate.

As graph 6.35 shows, the number of unemployed people has generally declined from the levels recorded in the early-1990s. For the unemployed seeking full-time work, the trend has generally reflected the overall impact of the economic cycle. In contrast, over the past two decades, the trend for those seeking part-time work has generally increased steadily, rising from 97,600 people (or 16% of unemployed people) in June 1985 to 159,000 people (or 30% of unemployed people) in June 2005.

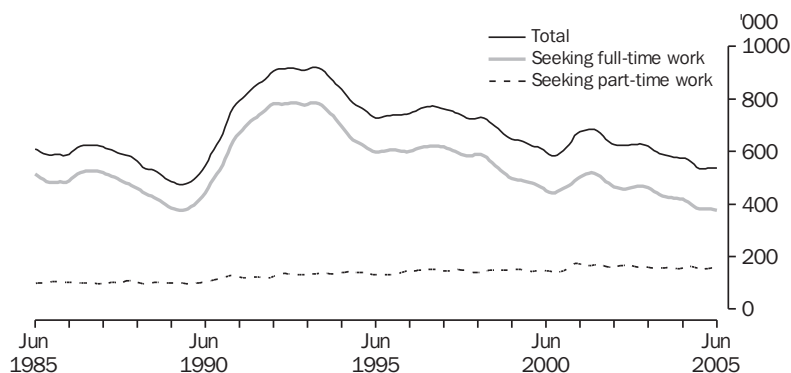
In recent years the proportion of the unemployed who had experienced unemployment for less than 26 weeks has been rising steadily, while the proportion who experienced unemployment for 52 weeks and over (long-term unemployment) has been in decline. In 2004–05, 69% of unemployed people had been unemployed for less than 26 weeks, while the long-term unemployed made up 19% of unemployed people (table 6.36).

**6.34 UNEMPLOYMENT RATE, Trend estimates**



Source: *Labour Force, Australia, Spreadsheets (6202.0.55.001)*.

### 6.35 UNEMPLOYED PERSONS, Trend estimates



Source: *Labour Force, Australia, Spreadsheets (6202.0.55.001)*.

### 6.36 UNEMPLOYED PERSONS(a), By duration of unemployment

Weeks	Units	2001-02	2002-03	2003-04	2004-05
Under 8	%	35.8	37.0	38.6	43.0
8 to under 26	%	28.0	27.7	26.9	25.7
<i>Under 26</i>	%	63.8	64.7	65.5	68.6
<i>26 to under 52</i>	%	14.1	13.7	13.5	12.4
52 to under 104	%	8.8	8.9	9.0	7.9
104 and over	%	13.3	12.8	12.0	11.2
<i>52 and over</i>	%	22.1	21.6	21.0	19.0
Total	%	100.0	100.0	100.0	100.0
Persons	'000	663.3	624.4	586.0	545.6

(a) Annual averages.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

Educational qualifications have a significant bearing on labour market prospects. Table 6.37 shows the relationship between the level of highest educational attainment and duration of unemployment. Of unemployed people with a bachelor degree or above in July 2004, 14% were long-term unemployed, compared with 22% of those whose highest educational attainment was Year 12 or below.

Unemployed people encounter a variety of difficulties in finding work. In July 2004, men and women reported most of the more common

difficulties in largely similar proportions (graph 6.38). However, women were more likely to report insufficient work experience as their main difficulty (15% compared with 12% for men), as well as difficulties that relate to concerns outside of the workplace, such as 'Unsuitable hours' (8% compared with 4%) and 'Difficulties with child care, other family responsibilities' (5% compared with 2%). Men were more likely to report their main difficulty as being 'Considered too old by employers' (12% compared with 10% for women) and 'No vacancies in line of work' (10% compared with 5%).

### 6.37 UNEMPLOYED PERSONS, Educational attainment and duration of unemployment — July 2004

Level of highest educational attainment(a)	Duration of current period of unemployment (weeks)					Total %	Number '000
	Under 8 %	8 to under 26 %	26 to under 52 %	52 to under 104 %	104 and over %		
Bachelor degree or above	44.4	32.5	9.5	*6.0	*7.6	100.0	59.0
Advanced diploma or diploma	38.6	31.4	*11.6	*8.7	*9.8	100.0	26.6
Certificate III / IV	35.9	25.8	13.9	10.2	14.1	100.0	55.5
Certificate I / II(b)	*32.6	*22.6	**4.6	*14.4	*25.8	100.0	10.4
Year 12 or below	32.6	29.1	16.3	7.3	14.7	100.0	370.9
Level not determined	*51.5	**15.5	*23.3	**9.7	—	100.0	5.4
<b>Total(c)</b>	<b>34.7</b>	<b>29.0</b>	<b>14.9</b>	<b>7.7</b>	<b>13.7</b>	<b>100.0</b>	<b>528.2</b>

(a) The levels of education are not necessarily listed in order from highest to lowest. For further details on how level of highest educational attainment is determined see 'Education and work, Australia' (6227.0). (b) Includes 'Certificate not further defined'. (c) Includes no educational attainment.

Source: Job Search Experience, Australia, July 2004 (6222.0).

### 6.38 UNEMPLOYED PERSONS, Main difficulty in finding work — July 2004



(a) Other includes considered too young by employers, difficulties because of ethnic background and other difficulties.

Source: Job Search Experience, Australia, July 2004 (6222.0).

## Persons not in the labour force

Persons not in the labour force represent that group of the population who, during the reference week of the LFS, are neither employed nor unemployed (see diagram 6.2). Interest in this group centres primarily on their potential to participate in the labour force.

There were 3.8 million people aged 15–69 years not in the labour force at September 2004 (table 6.39). Some 22% of people outside the labour force (855,300) were marginally attached to the labour force. These people wanted to work and were either actively looking for work but were not available to start work in the reference week, or were available to start work (within four weeks) but were not actively looking for work. Of people

not in the labour force, the proportion of women who were marginally attached (24%) was higher than that for men (20%). Of the marginally attached, 11% of men were actively looking for work compared with 6% of women.

In September 2004 there were 82,000 discouraged jobseekers. Discouraged jobseekers are people who are marginally attached to the labour force, want to work and are available to start work, but are not actively looking for work as they believe they will not find a job for labour market related reasons. Of men who were marginally attached to the labour force, 11% were discouraged jobseekers, compared with 9% of women.

### 6.39 CIVILIAN POPULATION AGED 15–69 years, Labour force status — September 2004

	Males '000	Females '000	Persons '000
Civilian population aged 15–69 years	6 989.9	7 081.4	14 071.3
Persons in the labour force	5 631.6	4 600.5	10 232.1
Employed	5 321.1	4 348.5	9 669.6
Unemployed	310.5	252.0	562.5
Persons not in the labour force	1 358.3	2 480.8	3 839.2
With marginal attachment to the labour force	269.5	585.8	855.3
Wanted to work and were actively looking for work	28.9	36.5	65.4
Were available to start work within four weeks	20.4	26.3	46.6
Were not available to start work within four weeks	8.6	10.2	18.8
Wanted to work but were not actively looking for work and were available to start work within four weeks	240.6	549.3	789.9
Discouraged jobseekers	28.4	53.6	82.0
Other	212.2	495.8	707.9
Without marginal attachment to the labour force	1 088.9	1 895.0	2 983.9
Wanted to work but were not actively looking for work and were not available to start work within four weeks	120.4	213.0	333.4
Did not want to work	857.8	1 618.3	2 476.1
Permanently unable to work	110.7	63.7	174.4

Source: *Persons Not in the Labour Force, Australia, September 2004* (6220.0).

## Labour force status of migrants

Net overseas migration contributes about half of Australia's population growth each year. Given current skills shortages in Australia and the ageing labour force, Australia's migration policies now have a strong emphasis on the intake of skilled migrants. There is interest in the characteristics of migrants (such as their age, educational qualifications and English skills) and in whether migrants are doing work that requires lower levels of skills than work they were doing prior to their migration, as well as in whether migrants are using qualifications obtained before their arrival in Australia. This article looks at the labour force status of migrants as well as other characteristics such as their educational qualifications and level of English proficiency.

In this article, a migrant is defined as a person who was born overseas, arrived in Australia after 1984, was aged 15 years or over on arrival, and had obtained permanent resident status prior to or after their arrival. In November 2004 there were 1.4 million migrants in Australia (table 6.40). This represents 9% of the civilian population aged 15 years and over.

Overall, 54% of migrants were women. The labour force participation was higher for male migrants (83.9%) than female migrants (58.6%), while the unemployment rate was lower for male migrants (5.1%) than female migrants (6.2%).

Table 6.41 shows the participation rate was higher for migrants (70.2%) than for people born in Australia (67.3%). Unemployment rates were also slightly higher for migrants (5.6%) than for people born in Australia (4.9%).

Migrants aged 35–54 had the highest participation rate (78.0%). In contrast, participation rates for people born in Australia were highest in the 20–24 and 25–34 year age groups (83.6% and 83.3% respectively), although participation rates in the 35–44 and 45–54 year age groups were only slightly lower. The unemployment rate was highest in the 15–19 and 20–24 year age groups for both migrants and people born in Australia.

Most (87%) employed migrants were employees, followed by own account workers (9%), employers (3%), and contributing family workers (less than 1%).

## 6.40 EMPLOYMENT STATUS OF MIGRANTS — November 2004

	Employed				Unemployed '000	Not in the labour force		Participation rate %	Unemployment rate %
	Full time	Part time	Total	Labour force		Total			
	'000	'000	'000	'000		'000			
Males	436.6	61.1	497.7	26.9	524.6	100.6	625.3	83.9	5.1
Females	264.3	141.3	405.6	26.8	432.3	305.0	737.3	58.6	6.2
<b>Persons</b>	<b>700.9</b>	<b>202.3</b>	<b>903.2</b>	<b>53.7</b>	<b>956.9</b>	<b>405.7</b>	<b>1 362.6</b>	<b>70.2</b>	<b>5.6</b>

Source: Labour Force Status and Other Characteristics of Migrants, Australia, November 2004 (6250.0).

## 6.41 MIGRANTS AND PEOPLE BORN IN AUSTRALIA, By age group — November 2004

Age group (years)	Migrants		People born in Australia		
	Participation rate %	Unemployment rate %	Participation rate %	Unemployment rate %	
15–19		51.5	*15.1	60.7	13.9
20–24		69.2	13.7	83.6	7.5
25–34		75.5	5.7	83.3	3.9
35–44		78.0	5.3	82.6	3.7
45–54		78.0	4.7	83.1	2.7
55–59		67.9	*2.7	65.0	2.7
60–64		34.9	*9.4	43.6	4.0
65 and over		*5.2	—	8.4	**0.3
<b>Total</b>		<b>70.2</b>	<b>5.6</b>	<b>67.3</b>	<b>4.9</b>

Source: ABS data available on request, Labour Force Status and Other Characteristics of Migrants Survey.

### Occupation

Overall, 877,700 migrants had held a job just before their arrival in Australia, with one-third (33%) indicating that their current occupation was the same as that held before migration (table 6.42). Professionals were most likely to continue in the same occupation after their arrival (44%), followed by tradespersons and related workers (42%) and intermediate production and transport workers (36%). A further 241,500 migrants who were employed in November 2004 were not employed just before their arrival in Australia.

### Qualifications

Almost half (49%) of migrants arrived in Australia with a non-school qualification (graph 6.43). Of these, 57% had a bachelor degree or above, 16% arrived with a diploma or an advanced diploma and 26% arrived with a certificate qualification.<sup>1</sup>

Migrants with overseas bachelor degrees or higher were more likely to have their qualification recognised than those holding diplomas or

certificates. Over three-fifths (61%) of migrants with an overseas bachelor degree or above as their highest non-school qualification had it recognised, compared with 37% of those with a diploma or advanced diploma, and 49% of those with certificate level qualifications.

Migrants from Oceania who arrived with overseas non-school qualifications were the most likely to have their qualification recognised in Australia (66%) and migrants from North-East Asia were the least likely (35%).

### Language

About half (53%) of migrants mainly spoke English at home, even though over two-thirds (68%) of migrants were born outside of the main English-speaking countries. Of those migrants who spoke another language at home, 24% spoke English very well, 37% spoke English well, 32% did not speak English well, and the remaining 7% did not speak English at all.

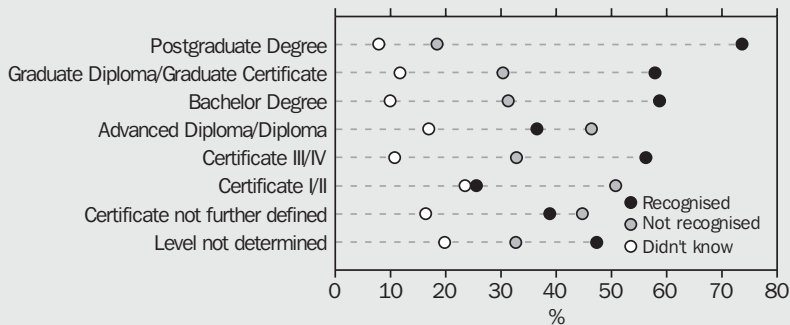
## 6.42 MIGRANTS, Whether occupation before arrival was same as occupation as at November 2004

Labour force status/ASCO Major group	Had a job just before arrival			Did not have a job just before arrival	Total	Changed major occupation group %
	Same occupation major group '000	Changed occupation major group '000	Total(a) '000			
<b>Employed</b>						
Managers and administrators	21.5	43.6	65.1	11.4	76.5	67.0
Professionals	119.3	48.3	167.6	49.2	216.8	28.8
Associate professionals	23.7	54.9	78.6	24.1	102.7	69.8
Tradespersons and related workers	51.8	30.6	82.4	19.1	101.5	37.1
Advanced clerical and service workers	5.5	10.6	16.1	9.5	25.6	66.0
Intermediate clerical, sales and service workers	35.3	58.5	93.7	44.5	138.2	62.4
Intermediate production and transport workers	17.0	42.4	59.3	23.4	82.7	71.4
Elementary clerical, sales and service workers	7.1	29.1	36.2	25.7	61.9	80.4
Labourers and related workers	10.0	52.8	62.8	34.5	97.3	84.1
<i>Total</i>	<i>291.0</i>	<i>370.8</i>	<i>661.8</i>	<i>241.5</i>	<i>903.2</i>	<i>56.0</i>
Unemployed	..	..	33.8	19.9	53.7	..
Not in the labour force	..	..	182.2	223.5	405.7	..
<b>Total</b>	<b>291.0</b>	<b>370.8</b>	<b>877.7</b>	<b>484.9</b>	<b>1 362.6</b>	<b>42.2</b>

(a) Includes people who were 'Unemployed' and 'Not in the labour force' as at November 2004 but had a job just before arrival.

Source: Labour Force Status and Other Characteristics of Migrants, Australia, November 2004 (6250.0).

## 6.43 WHETHER HIGHEST OVERSEAS NON-SCHOOL QUALIFICATION IS RECOGNISED IN AUSTRALIA — November 2004



Source: ABS data available on request, Labour Force Status and Other Characteristics of Migrants Survey.

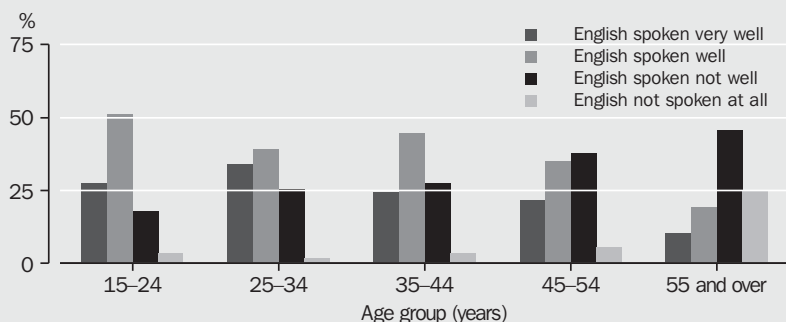
Of migrants who mainly spoke a language other than English at home, young migrants tended to have a higher level of English proficiency, with 80% of 15–24 year olds reporting that they spoke English well or very well (graph 6.44). English proficiency decreased with age, with 72% of 25–34 year olds reporting that they spoke English well or very well, followed by 69% of 35–44 year olds and 57% of 45–54 year olds. Migrants over

the age of 55 years reported a lower level of English proficiency, with 70% not speaking English well or not speaking English at all.

Over three-quarters (77%) of employed migrants who spoke a language other than English at home, spoke English well or very well, compared to two-thirds (66%) of unemployed migrants and 36% of those not in the labour force.



6.44 ENGLISH PROFICIENCY(a), By age — November 2004



(a) Migrants who mainly spoke a language other than English at home.

Source: ABS data available on request, Labour Force Status and Other Characteristics of Migrants Survey.

## End notes

1 The remaining 1% possessed a qualification that could not be defined.

## Underutilised labour

The extent to which the available supply of labour is used is an important social and economic issue. From a social viewpoint, concern centres around the number of people whose aspirations for work are not being met. From an economic perspective, there is interest in measuring the extent to which available labour resources are not being fully used within the economy.

The number of unemployed people and the unemployment rate are widely used measures of the available labour resources that are not currently utilised in the economy. However, these measures do not represent the full extent of labour underutilisation. As a result, the ABS has produced a series of broader measures that include other groups of people whose labour is underutilised, such as underemployed workers and discouraged jobseekers.

The ABS produces labour underutilisation measures based on the number of people whose labour is underutilised (headcount measures), and the number of hours of available labour that are underutilised (volume measures).

## Headcount measures of labour underutilisation

The ABS has developed a series of supplementary measures of labour underutilisation which were formed by combining information on unemployed people with that of other groups whose labour is underutilised. There are five measures: the unemployment rate; the long-term unemployment rate; the underemployment rate; the labour force underutilisation rate; and the extended labour force underutilisation rate. These are headcount measures and provide an indication of the proportion of the population affected by labour underutilisation.

The *underemployment rate* is the number of underemployed workers as a proportion of the labour force. Underemployed people include part-time workers who want, and are available to work, more hours, and full-time workers who worked part-time hours in the reference week for economic reasons (i.e. involuntarily). In September 2004 there were 578,300 underemployed people (table 6.45). The underemployment rate was higher for women (7.2%) than men (4.3%). This is related to the higher proportion of women who are in part-time employment.

The *labour force underutilisation rate* is the sum of the unemployment rate and the underemployment rate. In September 2004 the labour force underutilisation rate was 11.1%. Women have a higher labour force underutilisation rate than men, reflecting their higher rate of underemployment.

The *extended labour force underutilisation rate* is the broadest of the ABS measures of underutilised labour and is the sum of the unemployed, the underemployed, and two groups of people marginally attached to the labour force,

as a proportion of the labour force augmented by those two groups. The two groups of marginally attached people are: people actively looking for work, not available to start work in the reference week, but available to start within four weeks; and discouraged jobseekers. The extended labour force underutilisation rate was 12.2% in September 2004. The extended labour force underutilisation rate for women was higher than that for men, not only because women had a higher rate of underemployment, but also because women were more likely to be in the marginally attached populations that contribute to this rate.

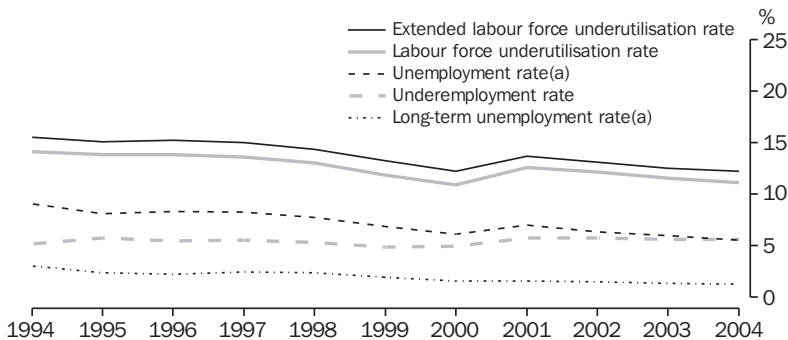
#### 6.45 LABOUR UNDERUTILISATION — September 2004

	Units	Males	Females	Persons
Unemployed	'000	315.8	253.8	569.6
Long-term unemployed	'000	73.3	50.7	124.0
Underemployed	'000	243.4	334.9	578.3
Marginally attached to the labour force(a)				
Actively looking for work, not available in reference week but available to start work within four weeks	'000	20.4	26.3	46.6
Discouraged jobseekers	'000	28.4	53.6	82.0
Labour underutilisation rates				
Long-term unemployment rate(b)	%	1.3	1.1	1.2
Unemployment rate(c)	%	5.5	5.5	5.5
Underemployment rate(d)	%	4.3	7.2	5.6
Labour force underutilisation rate(e)	%	9.8	12.7	11.1
Extended labour force underutilisation rate(f)	%	10.5	14.1	12.2

(a) In this table, marginal attachment to the labour force includes only a subset of the groups usually included. (b) The long-term unemployment rate is the long-term unemployed (persons unemployed for 12 months or more) expressed as a proportion of the labour force. (c) The unemployment rate is the unemployed expressed as a proportion of the labour force. (d) The underemployment rate is the underemployed expressed as a proportion of the labour force. (e) The labour force underutilisation rate is the unemployed, plus the underemployed, expressed as a proportion of the labour force. (f) The extended labour force underutilisation rate is the unemployed, plus the underemployed, plus a subset of persons marginally attached to the labour force, expressed as a proportion of the labour force augmented by the marginally attached persons.

Source: Australian Labour Market Statistics, Datacubes (6105.0).

#### 6.46 LABOUR UNDERUTILISATION RATES — September



(a) Trend series.

Source: Australian Labour Market Statistics, Datacubes (6105.0).

## 6.47 LABOUR UNDERUTILISATION, By states and territories — September 2004

	Long-term unemployment rate(a)	Unemployment rate(b)	Underemployment rate(c)	Labour force underutilisation rate(d)	Extended labour force underutilisation rate(e)
	%	%	%	%	%
New South Wales	1.3	5.1	5.4	10.5	11.6
Victoria	1.3	6.3	6.0	12.3	13.3
Queensland	1.0	5.1	5.5	10.6	11.7
South Australia	1.2	5.9	6.1	12.0	13.1
Western Australia	0.8	4.9	5.4	10.3	11.4
Tasmania	2.0	6.9	6.4	13.4	14.3
Northern Territory	*0.2	8.3	2.8	11.1	11.5
Australian Capital Territory	*0.4	4.2	4.1	8.3	9.2
<b>Australia</b>	<b>1.2</b>	<b>5.5</b>	<b>5.6</b>	<b>11.1</b>	<b>12.2</b>

(a) The long-term unemployment rate is the long-term unemployed (persons unemployed for 12 months or more) expressed as a proportion of the labour force. (b) The unemployment rate is the unemployed expressed as a proportion of the labour force. (c) The underemployment rate is the underemployed expressed as a proportion of the labour force. (d) The labour force underutilisation rate is the unemployed, plus the underemployed, expressed as a proportion of the labour force. (e) The extended labour force underutilisation rate is the unemployed, plus the underemployed, plus a subset of persons marginally attached to the labour force, expressed as a proportion of the labour force augmented by the marginally attached persons.

Source: Australian Labour Market Statistics, Datacubes (6105.0).

Overall, movement in unemployment is the primary driver of movements in the headcount measures, although underemployment has been increasing in relative importance in recent years, particularly for women. Levels of unemployment, and the unemployment rate, fluctuate with the economic cycle (graph 6.46).

Differences in labour underutilisation between states and territories are primarily driven by differences in unemployment rates. In September 2004, Tasmania (13.4%), Victoria (12.3%), South Australia (12.0%) and Northern Territory (11.1%) all had labour force underutilisation rates equal to or above the national average (11.1%) (table 6.47).

### Volume measures of labour force underutilisation

Labour underutilisation can also be measured in terms of the number of potential hours of labour that are not used. Such 'volume' measures represent the quantity of unutilised available labour (rather than the number of people affected) and may be more relevant for analysing the spare capacity of the labour force than measures based on the number of people whose labour is underutilised. The volume of underutilised labour in the labour force is derived as the number of hours of work sought by unemployed people plus the number of additional hours of work offered by underemployed workers. The volume labour force underutilisation rate is

the ratio of the number of hours that are unutilised to the total number of utilised and unutilised hours in the labour force.

Table 6.48 shows experimental volume measures of labour force underutilisation for September 2004. Separate rates relating to the volume of unemployment and the volume of underemployment can also be calculated from the way the volume labour force underutilisation rate is derived. For all three underutilisation measures (i.e. unemployment, underemployment and labour force underutilisation), the experimental volume rates were lower than the corresponding headcount rates.

In September 2004, hours sought by the unemployed (17.0 million hours) formed the largest component (66%) of the volume of underutilised labour in the labour force. Additional hours offered by the underemployed (8.9 million hours) formed the remainder. Table 6.49 shows the average number of weekly hours sought or offered by the two population groups included in the volume measures. On average, unemployed people sought 30 hours of work a week, with men seeking 32 hours compared with 27 hours for women. In contrast, underemployed people offered an average of 15 hours of additional labour, with men again offering more hours (17 hours) than women (14 hours).

## 6.48 VOLUME MEASURES(a) OF LABOUR UNDERUTILISATION — September 2004

	Units	Males	Females	Persons
Volume of potential labour in the labour force				
Unemployed persons (hours of work sought)	'000 hours	10 209.9	6 832.3	17 042.2
Underemployed workers (additional hours of work offered)	'000 hours	4 132.8	4 727.5	8 860.4
Employed persons (usual hours of work performed)(b)	'000 hours	222 330.6	135 255.4	357 586.0
<b>Total(c)</b>	<b>'000 hours</b>	<b>236 673.3</b>	<b>146 815.2</b>	<b>383 488.6</b>
Experimental volume measures of labour force underutilisation				
Volume unemployment rate	%	4.3	4.7	4.4
Volume underemployment rate	%	1.7	3.2	2.3
Volume labour force underutilisation rate	%	6.1	7.9	6.8

(a) Experimental estimates, based on the number of hours of work sought and offered. (b) Actual hours worked in the reference week for underemployed full-time workers and usual hours worked for all other employed persons. (c) The volume of potential labour in the labour force is equal to the hours of labour sought by unemployed persons, plus the hours of labour offered by underemployed workers (both utilised and unutilised), plus the hours of labour usually provided by employed persons who are not underemployed.

Source: ABS data available on request, Labour Force Survey, Survey of Job Search Experience, and Survey of Underemployed Workers.

## 6.49 UNDERUTILISED LABOUR(a), Average weekly hours sought or offered by selected groups — September 2004

	Males	Females	Persons
Unemployed	32.3	26.9	29.9
Seeking full-time work	36.7	33.0	35.3
Seeking part-time work	16.3	18.2	17.5
Underemployed	17.0	14.1	15.3
Seeking full-time work	20.8	16.6	20.0
Seeking part-time work	16.1	14.0	14.8

(a) Experimental estimates.

Source: ABS data available on request, Labour Force Survey, Survey of Job Search Experience, and Survey of Underemployed Workers.

Unlike the headcount measures of underutilised labour, the experimental volume measures take into account the number of hours worked or sought by individuals and this has the effect of weighting people according to the number of hours that they either worked or sought. For example, the large difference between the headcount and volume underemployment rates (5.6% and 2.3% respectively) reflects the large difference between the additional hours offered by the underemployed (15.3 hours a week) and the hours worked by the employed (36.5 hours).

## Earnings

Statistics on earnings are used to help evaluate the standard of living of employees and to make policy decisions regarding income redistribution, social welfare, taxation and wage setting.

The ABS concept of earnings is based on the definition adopted by the twelfth International Conference of Labour Statisticians in 1973. Earnings are considered to be remuneration to

employees for time worked or work done, as well as remuneration for time not worked (e.g. paid annual leave).

The ABS produces a range of statistics on earnings paid to workers. The quarterly Survey of Average Weekly Earnings (AWE) and the two-yearly Survey of Employee Earnings and Hours (EEH) both provide a statistical measure of the remuneration paid to employees. The EEH survey also provides estimates of earnings for each of the pay setting methods (i.e. awards, collective agreements and individual arrangements). The Survey of Employee Earnings, Benefits and Trade Union Membership, which is run annually as a Labour Force Supplementary Survey, also provides information about the earnings of employees.

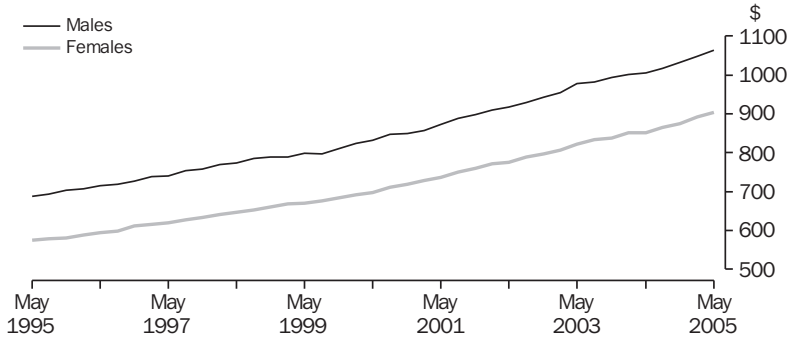
The quarterly Labour Price Index (LPI) measures the quarterly changes in wages and salaries, and other 'non-wage' components which contribute to the cost to employers of employing labour (i.e. annual leave, superannuation, payroll tax and workers' compensation). Unlike the AWE and EEH surveys, the LPI is unaffected by changes in the quantity or quality of work performed.

## Level of earnings

Data on the level of earnings reflect the variations within different population groups, and across industries and occupations. Differences in earnings are also of interest in reflecting the strength of labour demand and supply.

The AWE survey provides an estimate of the gross weekly earnings paid to employees by measuring earnings during a one-week reference period in the middle month of a quarter (excluding irregular earnings not related to the reference period). Data are collected from the payrolls of a sample of employers.

### 6.50 AVERAGE WEEKLY ORDINARY TIME EARNINGS(a)



(a) For full-time adult employees.

Source: *Average Weekly Earnings, Australia, Spreadsheets (6302.0)*.

The AWE survey provides three types of earnings measures. The first is average weekly ordinary time earnings (commonly referred to as AWOTE) for full-time adult employees, which relates to that part of total earnings attributable to award, standard or agreed hours of work. A second measure is full-time adult total earnings, which includes both ordinary time and overtime pay. A third measure is total earnings for all employees (including full-time and part-time, adult and junior).

Graph 6.50 shows AWOTE from May 1995 to May 2005. Over the 10-year period, AWOTE for full-time adult male employees increased by 55%, from \$688 to \$1,064, while AWOTE for full-time adult female employees increased by 57%, from \$576 to \$904.

Table 6.51 shows that in May 2005 the difference between male and female average weekly earnings was lowest for full-time adult AWOTE (women earned 85% of the male figure of \$1,064) and highest for all employees total earnings (women earned 66% of the male figure of \$943). The latter difference reflects the inclusion of part-time employees (a higher proportion of female employees work part

time) and the inclusion of overtime pay (of which men earn more than women). In May 2005, 45% of female employees worked part time compared with 14% of male employees.

### 6.51 AVERAGE WEEKLY EARNINGS — May 2005

	Males	Females	Persons
	\$	\$	\$
Full-time adult ordinary time earnings	1 064.00	903.50	1 006.70
Full-time adult total earnings	1 136.90	917.50	1 058.50
All employees total earnings	942.70	620.20	789.70

Source: *Average Weekly Earnings, Australia, May 2005 (6302.0)*.

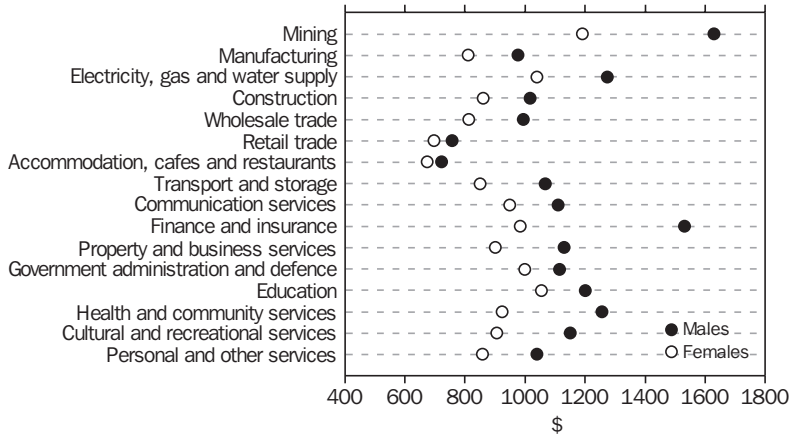
Table 6.52 presents AWOTE for full-time adult men and women by states and territories in May 2005. The highest weekly earnings for men and women were in the Australian Capital Territory. The lowest weekly earnings for men and women were in Tasmania.

### 6.52 AVERAGE WEEKLY EARNINGS, By state and territory — May 2005

	Full-time adult ordinary time earnings		
	Males	Females	Persons
	\$	\$	\$
New South Wales	1 108.90	950.60	1 051.50
Victoria	1 044.20	893.80	992.10
Queensland	1 009.50	861.80	954.50
South Australia	965.40	864.00	930.70
Western Australia	1 120.80	848.90	1 032.20
Tasmania	926.50	810.40	888.10
Northern Territory	1 112.70	906.90	1 023.30
Australian Capital Territory	1 250.20	1 052.70	1 160.70
<b>Australia</b>	<b>1 064.00</b>	<b>903.50</b>	<b>1 006.70</b>

Source: *Average Weekly Earnings, Australia, May 2005 (6302.0)*.

**6.53 AVERAGE WEEKLY ORDINARY TIME EARNINGS(a), By industry(b) — May 2005**



(a) For full-time adult employees. (b) Classified according to the Australian and New Zealand Standard Industrial Classification.

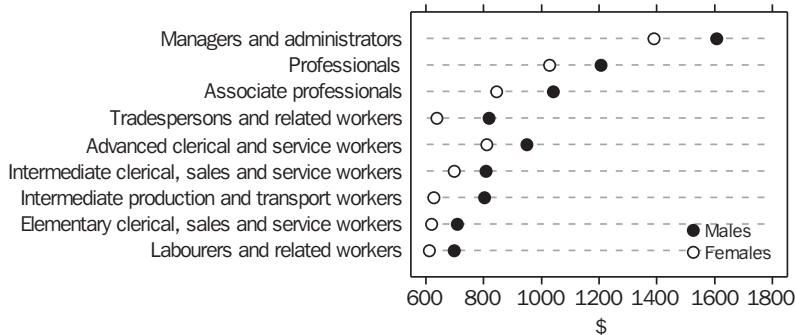
Source: *Average Weekly Earnings, Australia, May 2005* (6302.0).

Graph 6.53 shows that in May 2005, the mining industry recorded the highest AWOTE for full-time adults (\$1,628 for men and \$1,189 for women). The industries with the lowest AWOTE for full-time adults were Accommodation, cafes and restaurants (\$723 for men and \$674 for women) and Retail trade (\$757 and \$697 respectively).

AWOTE for full-time adult women was less than for men in all industries. Full-time adult women earned approximately two-thirds (64%) of male full-time adult ordinary time earnings in the finance and insurance industry, rising to 93% in the Accommodation, cafes and restaurants industry.

Data on average weekly earnings are also available from the EEH survey. This survey provides additional information, such as occupation. Average weekly ordinary time earnings for full-time adult employees by occupation for May 2004 are shown in graph 6.54. For both men and women, labourers and related workers earned the lowest average weekly ordinary time earnings of all the occupation groups (\$699 for men and \$612 for women), whereas the highest earnings were for managers and administrators (\$1,607 for men and \$1,391 for women).

**6.54 AVERAGE WEEKLY ORDINARY TIME EARNINGS(a), By occupation(b) — May 2004**



(a) For full-time adult employees. (b) Classified according to the Australian Standard Classification of Occupations.

Source: *ABS data available on request, Survey of Employee Earnings and Hours.*

Men had higher average earnings than women in each major occupation group. For full-time adult employees, the proportional difference between male and female average weekly ordinary time earnings was smallest for labourers and related workers (average earnings of women were 88% of those of men) and greatest for tradespersons and related workers (78%).

## How pay is set

Information on the methods of setting the main part of employees' pay is collected in the EEH survey. Three different methods of setting pay are identified: awards; collective agreements; and individual arrangements.

Awards are legally enforceable determinations made by federal or state industrial tribunals that set the terms of employment (pay and conditions). Awards usually cover a particular industry or occupation. Employees whose pay is set by 'award only' are those who have their pay set by an award, and who are not paid more than the award rate of pay.

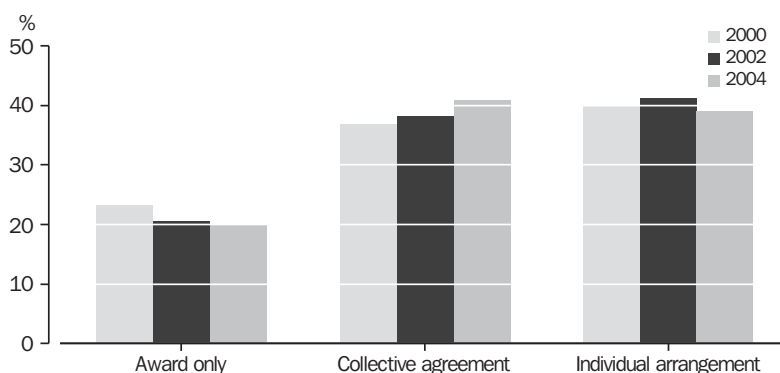
Collective agreements, which include enterprise and workplace agreements, are agreements between an employer (or group of employers) and a group of employees (or one or more unions or employee associations representing employees). Collective agreements set the terms of employment, and are usually registered with an industrial tribunal or authority.

Individual arrangements are arrangements between an employer and an individual employee on the terms of employment for the employee. Employees whose pay is set by an individual arrangement include those whose pay is set by an individual contract, registered individual agreement (e.g. an Australian Workplace Agreement), or common law contract, as well as employees receiving over-award payments by individual agreement, and working proprietors of incorporated businesses.

The proportion of employees who had their pay set by award only decreased from 23% in 2000 to 20% in 2004 (graph 6.55). Over the same period the proportion of employees who had their pay set by a collective agreement increased from 37% to 41%.

Table 6.56 shows that in May 2004, 38% of all private sector employees had their pay set through an unregistered individual arrangement, compared with only 4% of public sector employees. Most public sector employees had their pay set by a registered collective agreement (92%). Men were more likely than women to have their pay set by an unregistered individual arrangement (35% compared with 27%), and less likely than women to have their pay set by award only (16% compared with 24%). Part of the difference between male and female employees' pay setting methods can be attributed to the differing proportions of men and women in the various occupation and industry groups.

**6.55 METHODS OF SETTING PAY — May**



Source: ABS data available on request, Survey of Employee Earnings and Hours.



## 6.56 METHODS OF SETTING PAY, By sector — May 2004

	Collective agreement			Individual arrangement			
	Award only %	Registered %	Unregistered %	Registered %	Unregistered(a) %	Working proprietor of incorporated business(a) %	All methods of setting pay %
<b>Males</b>							
Private sector	19.0	23.3	3.6	3.0	41.7	9.5	100.0
Public sector	*0.7	90.7	*0.6	3.0	5.0	—	100.0
All sectors	15.7	35.2	3.0	3.0	35.2	7.8	100.0
<b>Females</b>							
Private sector	31.0	25.2	2.8	2.2	34.9	3.9	100.0
Public sector	*3.5	92.6	*0.2	0.9	2.8	—	100.0
All sectors	24.4	41.4	2.2	1.9	27.2	2.9	100.0
<b>Persons</b>							
Private sector	24.7	24.2	3.2	2.6	38.5	6.9	100.0
Public sector	*2.3	91.8	0.4	1.8	3.7	—	100.0
<b>All sectors</b>	<b>20.0</b>	<b>38.3</b>	<b>2.6</b>	<b>2.4</b>	<b>31.2</b>	<b>5.4</b>	<b>100.0</b>

(a) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: *Employee Earnings and Hours, Australia, May 2004 (6306.0)*.

Table 6.57 shows that the occupation groups which had the highest proportion of employees who had their pay set by a registered or unregistered individual arrangement were advanced clerical and service workers and managers and administrators (52% and 47% respectively). A further 27% of managers and administrators were working proprietors of their own incorporated business. Awards were far more prevalent in the lower skilled occupations, with 40% of elementary clerical, sales and service workers and 38% of labourers and related workers having their pay set by award only. In contrast, only 1% of managers and administrators, 7% of professionals and 8% of associate professionals had their pay set by award only. Collective agreements were most prevalent for professionals (56%) and intermediate production and transport workers (50%).

Table 6.58 shows that the Accommodation, cafes and restaurants and Retail trade industries had the highest proportion of employees who had their pay set by award only (60% and 31% respectively). Collective agreements were more prevalent in Government administration and defence (89%), Education (84%) and Electricity, gas and water supply (80%). The industries with the highest proportion of employees who had their pay set through a registered or unregistered individual arrangement were Wholesale trade (62%), Mining (58%) and Property and business services (57%).

## Changes in the price of labour

The LPI measures change in the price of labour services resulting from market pressures. The LPI is unaffected by changes in the quality or quantity of work performed, that is, it is unaffected by changes in the composition of the labour force, hours worked, or changes in characteristics of employees (e.g. work performance). The LPI is produced annually on a financial year basis and consists of two components: a wage price index (WPI), published quarterly; and a non-wage price index, which is available for each financial year.

Indexes are compiled using information collected from a representative sample of employee jobs within a sample of employing organisations. The ABS constructs four WPIs on a quarterly basis: ordinary time hourly rates of pay excluding bonuses; ordinary time hourly rates of pay including bonuses; total hourly rates of pay excluding bonuses; and total hourly rates of pay including bonuses. Four non-wage indexes are constructed on a financial year basis: annual and public holiday leave; superannuation; payroll tax; and workers' compensation. From these wage and non-wage components, two LPIs are constructed, also on a financial year basis, one including bonuses and one excluding bonuses. Only those indexes which exclude bonuses are pure price indexes because bonuses tend to reflect changes in the quality of work performed.

### 6.57 METHODS OF SETTING PAY, By occupation(a) — May 2004

	Individual arrangement					All methods of setting pay %
	Award only	Collective agreement(b)	Registered or unregistered(c)	Working proprietor of incorporated business(c)		
	%	%	%	%		
Managers and administrators	0.8	25.3	47.3	26.7	100.0	
Professionals	6.7	55.8	32.8	4.7	100.0	
Associate professionals	8.3	40.0	42.6	9.1	100.0	
Tradespersons and related workers	22.5	34.6	35.2	7.7	100.0	
Advanced clerical and service workers	8.2	30.2	51.8	9.8	100.0	
Intermediate clerical, sales and service workers	25.8	38.3	34.6	1.2	100.0	
Intermediate production and transport workers	17.3	50.0	29.9	2.9	100.0	
Elementary clerical, sales and service workers	39.9	37.1	21.8	*1.2	100.0	
Labourers and related workers	37.9	36.8	24.5	*0.8	100.0	
<b>All occupations</b>	<b>20.0</b>	<b>40.9</b>	<b>33.7</b>	<b>5.4</b>	<b>100.0</b>	

(a) Classified according to the Australian Standard Classification of Occupations. (b) Includes registered and unregistered agreements. (c) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: *Employee Earnings and Hours, Australia, May 2004 (6306.0)*.

### 6.58 METHODS OF SETTING PAY, By industry(a) — May 2004

	Individual arrangement					All methods of setting pay %
	Award only	Collective agreement(b)	Registered or unregistered(c)	Working proprietor of incorporated business(c)		
	%	%	%	%		
Mining	*1.9	38.8	57.6	*1.7	100.0	
Manufacturing	14.9	35.8	44.5	4.8	100.0	
Electricity, gas and water supply	*1.7	79.9	17.7	*0.7	100.0	
Construction	15.2	24.1	40.8	20.0	100.0	
Wholesale trade	14.9	16.0	61.8	7.3	100.0	
Retail trade	31.3	33.4	30.3	5.0	100.0	
Accommodation, cafes and restaurants	60.1	11.7	25.9	2.4	100.0	
Transport and storage	14.4	41.9	36.2	7.5	100.0	
Communication services	*2.1	62.6	32.8	*2.5	100.0	
Finance and insurance	4.5	43.7	46.9	4.9	100.0	
Property and business services	19.7	12.8	56.8	10.8	100.0	
Government administration and defence	*0.8	89.3	9.9	.	100.0	
Education	8.9	83.5	7.2	*0.4	100.0	
Health and community services	26.6	54.8	15.9	2.7	100.0	
Cultural and recreational services	17.7	38.7	40.4	*3.2	100.0	
Personal and other services	23.5	45.7	27.8	*2.9	100.0	
<b>All industries</b>	<b>20.0</b>	<b>40.9</b>	<b>33.7</b>	<b>5.4</b>	<b>100.0</b>	

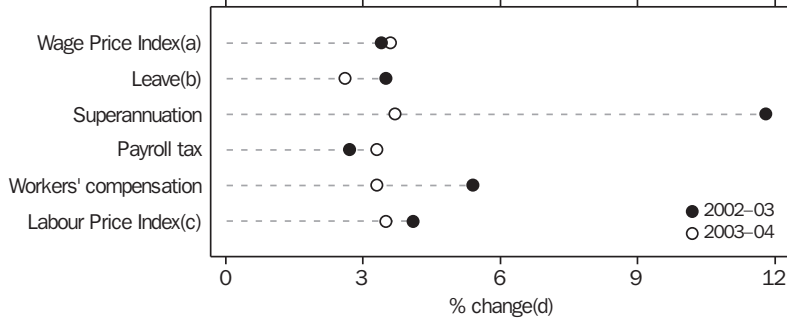
(a) Classified according to the Australian and New Zealand Standard Industrial Classification. (b) Includes registered and unregistered agreements. (c) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: *Employee Earnings and Hours, Australia, May 2004 (6306.0)*.

Graph 6.59 shows percentage changes from the previous financial year for several LPI series. The WPI (total hourly rates of pay excluding bonuses) and the LPI (excluding bonuses), show similar rates of change from the previous financial year for 2003–04. This was not the case for 2002–03 when the LPI showed a larger rate of increase than

the WPI. The main reason for the difference in 2002–03 was the impact of the changed Superannuation Guarantee Levy (SGL) upon the LPI. The SGL rose from 8% to 9% in July 2002 and this accounts for most of the increase (of 11.8%) for 2002–03 in the superannuation index.

### 6.59 WAGE, NON-WAGE AND LABOUR PRICE INDEXES



(a) Total hourly rates of pay excluding bonuses. (b) Annual leave and public holiday leave.  
(c) Excluding bonuses. (d) Percentage change from previous financial year.

Source: *Labour Price Index, Australia, March Quarter 2005* (6345.0).

As shown in table 6.60, increases in the indexes for total hourly rates of pay excluding bonuses varied across sectors, and across states and territories. For Australia, the growth in the year to June quarter 2005 (i.e. from the June quarter 2004 to the June quarter 2005) was 4.1%. In the year to June quarter 2005 the increase for the public sector was 4.7% compared with 4.0% for the private sector.

For the states and territories, the highest increase in the year to the June quarter 2005 was recorded by Western Australia (5.0%) and the lowest by South Australia (3.8%). Western Australia recorded the highest increase in the year to the June quarter 2005 in the private sector (4.7%), and South Australia the lowest (3.5%). In the public sector, Tasmania recorded the highest increase (5.8%) and Queensland the lowest increase (4.0%) for the same period.

Graph 6.61 compares the rate of increase in the total hourly rate of pay excluding bonuses across all major occupation groups for the year to June quarter 2004 and the year to June quarter 2005. Tradespersons and related workers (4.5%) and professionals (4.4%) recorded the highest growth in the year to June quarter 2005, while elementary clerical, sales and service workers recorded the lowest annual growth rate (3.5%). The only occupation group to record a lower rate of growth in the year to June quarter 2005 than in the year to June quarter 2004 was advanced clerical and service workers.

Annual movements in the total hourly rates of pay excluding bonuses, by industry, are shown in graph 6.62. For the year to June quarter 2005, the increases ranged from 3.1% for transport and storage to 5.7% for education.

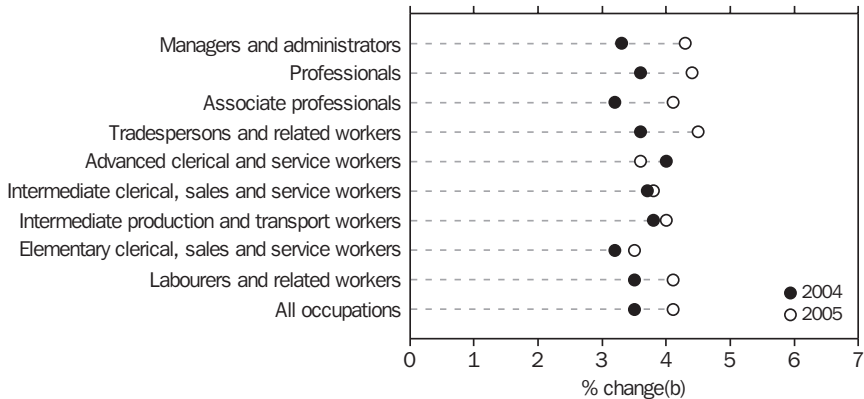
## 6.60 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, By sector

	Index numbers(a)					Percentage change from June qtr 2004 to June qtr 2005
	June qtr 2004	September qtr 2004	December qtr 2004	March qtr 2005	June qtr 2005	
<b>PRIVATE</b>						
New South Wales	101.0	102.1	102.8	103.8	104.7	3.7
Victoria	101.1	102.4	103.2	104.4	105.2	4.1
Queensland	101.1	102.1	103.4	104.2	104.9	3.8
South Australia	100.8	102.1	103.0	103.7	104.3	3.5
Western Australia	100.9	102.5	104.0	104.9	105.6	4.7
Tasmania	100.9	102.5	103.2	104.2	105.1	4.2
Northern Territory	101.2	102.2	103.1	104.6	105.3	4.1
Australian Capital Territory	100.8	102.4	103.1	103.7	104.4	3.6
Australia	101.0	102.3	103.2	104.1	105.0	4.0
<b>PUBLIC</b>						
New South Wales	101.1	102.5	103.1	105.7	105.8	4.6
Victoria	100.7	102.3	104.0	105.1	105.6	4.9
Queensland	101.2	103.4	104.0	104.8	105.2	4.0
South Australia	100.8	101.6	104.2	105.4	105.5	4.7
Western Australia	100.8	102.4	103.6	104.4	106.2	5.4
Tasmania	100.8	103.2	103.6	105.6	106.6	5.8
Northern Territory	101.2	101.8	102.2	104.5	105.4	4.2
Australian Capital Territory	101.0	102.4	104.8	105.8	106.4	5.3
Australia	101.0	102.6	103.7	105.2	105.7	4.7
<b>ALL SECTORS</b>						
New South Wales	101.1	102.2	102.8	104.2	105.0	3.9
Victoria	101.0	102.4	103.4	104.5	105.3	4.3
Queensland	101.1	102.4	103.5	104.3	105.0	3.9
South Australia	100.8	102.0	103.3	104.1	104.6	3.8
Western Australia	100.8	102.5	103.9	104.8	105.8	5.0
Tasmania	100.8	102.7	103.3	104.7	105.6	4.8
Northern Territory	101.2	102.0	102.7	104.6	105.4	4.2
Australian Capital Territory	100.8	102.4	104.2	105.0	105.7	4.9
Australia	101.0	102.3	103.3	104.4	105.1	4.1

(a) Reference base of each index 2003-04 = 100.0.

Source: *Labour Price Index, Australia, June Quarter 2005* (6345.0).

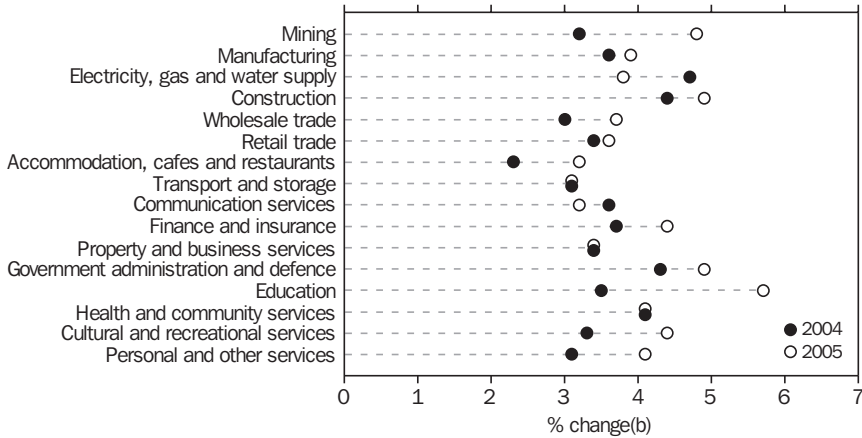
## 6.61 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, By occupation(a) — June quarter



(a) Classified according to the Australian Standard Classification of Occupations. (b) Percentage change from corresponding quarter of previous year.

Source: *Labour Price Index, Australia, June Quarter 2005* (6345.0).

**6.62 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, By industry(a) — June quarter**



(a) Classified according to the Australian and New Zealand Standard Industrial Classification.  
 (b) Percentage change from corresponding quarter of previous year.

Source: *Labour Price Index, Australia, June Quarter 2005 (6345.0)*.

**Industrial relations**

Industrial relations can be regarded as the relationships and interactions in the labour market between employers and employees (and their representatives), and the intervention in these relations by governments, government agencies and tribunals (e.g. the Australian Industrial Relations Commission).

Historically, governments have regulated the Australian labour market to varying degrees. Changes to the structure or processes underpinning the industrial relations environment have generally followed changes in governments, and periods of social or economic change. For most of the last century, employee-employer relationships were shaped by highly centralised Commonwealth and state tribunal-based systems of conciliation and arbitration. However, since the late-1980s, the industrial relations environment in Australia has undergone significant change and is now characterised by more decentralised arrangements.

The field of industrial relations is complex and diverse and, for statistical purposes, is not easily measured. The ABS collects information on a number of topics to provide an insight into the state of the industrial relations environment, including industrial disputes, trade union membership, and the methods used for setting pay (i.e. awards, collective agreements and individual arrangements, see *How pay is set*).

**Industrial disputes**

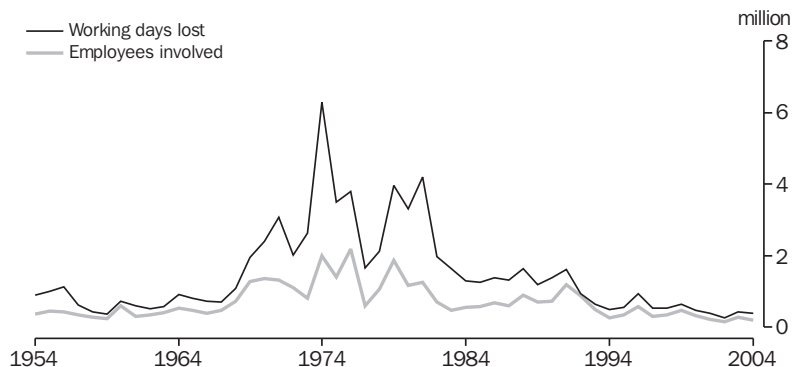
In ABS statistics, an industrial dispute is a disagreement over an issue or group of issues between an employer and its employees, which results in employees ceasing work. Industrial disputes comprise: strikes, which are a withdrawal from work by a group of employees; and lockouts, which are a refusal by an employer or group of employers to permit some or all of their employees to work.

This section presents statistics on industrial disputes involving work stoppages of ten or more working days lost. Working days lost refers to working days lost by employees directly and indirectly involved in the dispute. Directly involved employees are those who actually participated in the dispute. Indirectly involved employees are those who were stood down at the location where the stoppage occurred, but who were not themselves parties to the dispute.

The number of working days lost per year, and the number of employees involved, have fluctuated from year to year, but have decreased significantly over the last two decades (graph 6.63).

Table 6.64 shows that 379,800 working days were lost in 2004, a decrease of 14% from 2003. Over the same period the total number of employees involved in industrial disputes fell by 30% to 194,000. While there were more disputes in 2004 than in 2003 (692 compared with 643), the average number of working days lost per dispute decreased, from 683 in 2003 to 549 in 2004.

### 6.63 INDUSTRIAL DISPUTES



Source: ABS data available on request, Industrial Disputes Collection.

### 6.64 INDUSTRIAL DISPUTES

	Disputes	Employees involved	Working days lost	Working days lost per
	no.	'000	'000	dispute
1999	731	461.2	650.6	890
2000	700	325.4	469.1	670
2001	675	225.7	393.1	582
2002	767	159.7	259.0	338
2003	643	275.6	439.4	683
2004	692	194.0	379.8	549

Source: ABS data available on request, Industrial Disputes Collection.

### 6.65 WORKING DAYS LOST PER THOUSAND EMPLOYEES, By industry

ANZSIC Division	1999	2000	2001	2002	2003	2004
	no.	no.	no.	no.	no.	no.
Mining						
Coal	1 431.9	2 070.4	1 154.3	361.8	375.1	294.5
Other	35.9	63.1	32.9	19.6	330.1	117.5
Manufacturing						
Metal products; Machinery and equipment	283.2	173.1	269.2	92.2	214.9	71.7
Other	131.0	120.8	149.4	82.7	59.6	34.1
Construction	379.0	239.0	280.2	224.6	248.6	223.7
Transport and storage; Communication services	59.4	77.4	39.4	54.2	53.7	37.9
Education; Health and community services	149.0	71.0	7.0	3.1	76.1	81.8
Other industries(a)	6.9	8.7	7.1	8.7	4.9	10.0
<b>All industries</b>	<b>87.3</b>	<b>61.0</b>	<b>50.4</b>	<b>32.5</b>	<b>53.7</b>	<b>45.5</b>

(a) Includes: Agriculture, forestry and fishing; Electricity, gas and water supply; Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Finance and insurance; Property and business services; Government administration and defence; Cultural and recreational services; and Personal and other services.

Source: ABS data available on request, Industrial Disputes Collection.

Table 6.65 shows that the number of working days lost per thousand employees decreased from 54 in 2003 to 46 in 2004. The coal mining industry had the highest number in each year from 1999 to 2004, although the 295 working days lost per thousand employees in 2004 was considerably less than the number recorded in 1999 (1,432). The construction industry had the second highest

number of working days lost per thousand employees in 2004 (224), followed by other mining (118). The industries which recorded the largest decreases between 2003 and 2004 were other mining (down from 330 to 118) and metal products, machinery and equipment manufacturing (down from 215 to 72).

## Trade union membership

A trade union is defined as an organisation, consisting predominantly of employees, whose principal activities include the negotiation of rates of pay and conditions of employment for its members. In August 2004 there were 1.8 million employees who were trade union members in their main job, a 1% decrease on the number recorded in August 2003. As shown in table 6.66 this represents 23% of all employees. The public sector has a higher rate of unionisation, with 46% of employees having trade union membership, compared with 17% in the private sector. A slightly higher proportion of men than women are trade union members (24% compared with 22%).

**6.66 TRADE UNION MEMBERSHIP  
— August 2004**

Sector	Males	Females	Persons
	%	%	%
Public	49.6	44.1	46.4
Private	19.2	15.1	17.4
<b>All sectors</b>	<b>23.5</b>	<b>21.7</b>	<b>22.7</b>

Source: *Employee Earnings, Benefits and Trade Union Membership, Australia, August 2004* (6310.0).

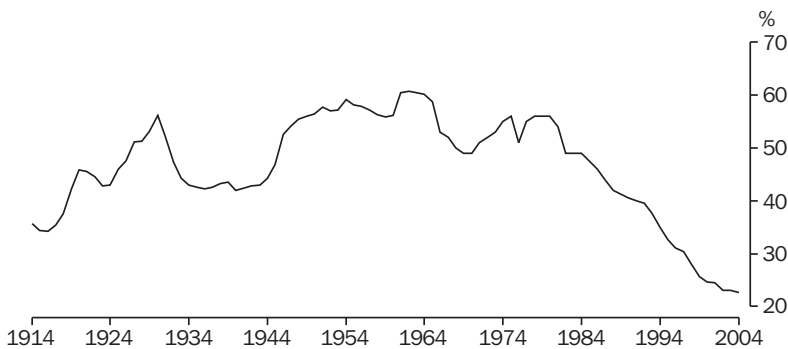
Trade union membership in Australia experienced growth throughout much of the 20th century, peaking at 61% in 1962 (graph 6.67). Between 1962 and 1970 trade union membership declined rapidly. This was followed by increasing membership during the 1970s. However, since then the proportion of employees who were trade union members has steadily declined.

Some of the factors contributing to the decline in trade union membership include the changing workplace relations environment and the changing industry composition of the labour market. These changes include declines in employment levels in traditionally highly unionised industries and the emergence of industries that are not highly unionised. Another factor in the decline in trade union membership is the increase in part-time and casual employment. These types of employment have historically been less unionised than full-time employment.

The level of trade union membership varies considerably across industries, with the Electricity, gas and water supply (52%), Education (44%), Government administration and defence (37%), and Transport and storage (36%) industries being the most unionised in 2004 (graph 6.68). The least unionised industries were Agriculture, forestry and fishing (5%), Property and business services (7%), Wholesale trade (8%), and Accommodation, cafes and restaurants (8%).

Between 1999 and 2004 most industries experienced a drop in their rate of unionisation. The largest declines occurred in the more unionised industries, with the proportion of employees who were trade union members falling in the Communication services industry (from 48% to 29%), Mining (from 35% to 17%), and Finance and insurance (from 28% to 17%). The Electricity, gas and water supply, Cultural and recreational services, and Agriculture, forestry and fishing industries were the only industries to experience an increase in the proportion of trade union members.

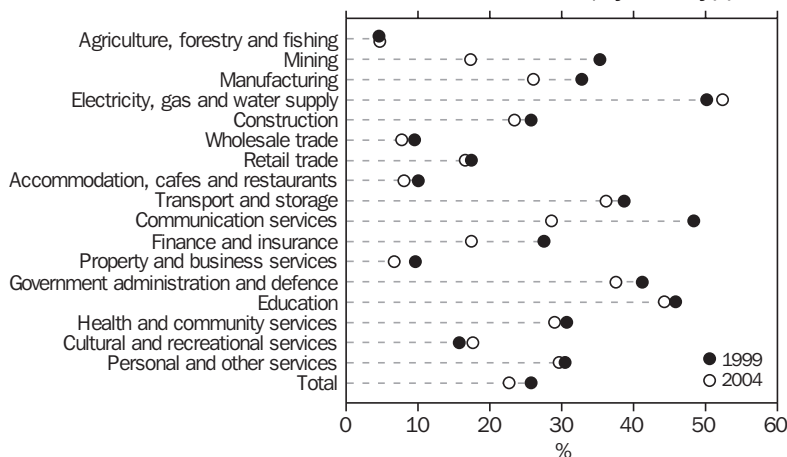
**6.67 TRADE UNION MEMBERSHIP, Proportion of employees**



Source: *Employee Earnings, Benefits and Trade Union Membership, Australia* (6310.0); *Trade Union Members, Australia* (6325.0); *Labour Report, 1912–1958*.



### 6.68 EMPLOYEES WHO WERE TRADE UNION MEMBERS, By industry(a)



(a) Classified according to the Australian and New Zealand Standard Industrial Classification.

Source: *Employee Earnings, Benefits and Trade Union Membership, Australia (6310.0)*.

## Job vacancies

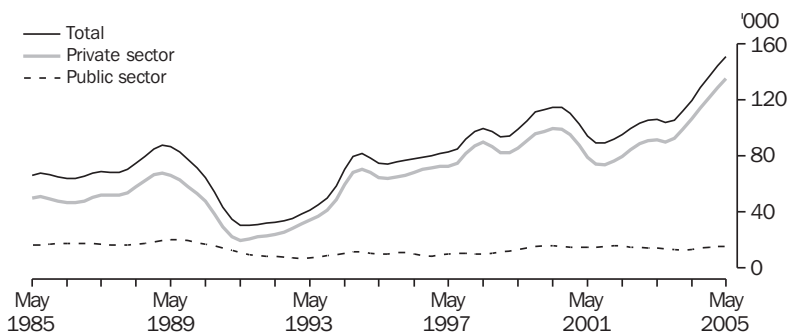
In ABS statistics, a job vacancy is defined as a job available for immediate filling on the survey reference date and for which recruitment action has been taken by the employer. Job vacancy statistics can be used to assess changes in the demand for labour.

Graph 6.69 presents quarterly trend estimates of job vacancies for the period May 1985 to May 2005. It shows that the number of job vacancies decreased to 30,300 in August 1991, reflecting the labour market downturn in the early-1990s. The number of job vacancies then trended upwards to

a high of 115,000 in May 2000, before falling to 89,100 in November 2001. Job vacancies then increased again, reaching a new record high of 151,000 in May 2005.

Table 6.70 shows the number of job vacancies in May 2005 was highest in the Property and business services industry (31,900) followed by the Retail trade (21,100), Manufacturing (14,000) and Health and community services (14,000) industries. Property and business services has had the highest number of job vacancies in May in each of the past six years.

6.69 JOB VACANCIES, Trend estimates



Source: *Job Vacancies, Australia, Spreadsheets (6354.0)*.

**6.70 JOB VACANCIES, By industry — May**

	2000	2001	2002	2003	2004	2005
ANZSIC Division	'000	'000	'000	'000	'000	'000
Mining	0.8	1.2	1.1	1.1	2.0	2.7
Manufacturing	*14.0	*9.6	11.6	10.9	16.1	14.0
Electricity, gas and water supply	0.4	0.3	0.4	0.3	0.4	1.0
Construction	*5.2	*4.0	*9.2	*5.5	*7.1	*9.7
Wholesale trade	6.1	*6.9	4.4	*4.1	7.3	*6.6
Retail trade	8.1	7.6	10.9	18.1	21.8	21.1
Accommodation, cafes and restaurants	*8.2	5.9	*6.3	5.0	*3.8	6.3
Transport and storage	2.9	1.5	2.4	*1.6	*3.0	*4.5
Communication services	1.8	0.7	0.4	0.5	0.7	0.6
Finance and insurance	5.6	5.1	4.0	5.0	4.7	7.4
Property and business services	*21.8	16.5	14.2	*18.8	27.7	31.9
Government administration and defence	5.1	6.1	5.8	4.9	4.9	6.3
Education	7.4	3.9	3.1	5.0	4.5	4.1
Health and community services	9.9	11.2	11.1	12.0	12.1	14.0
Cultural and recreational services	3.2	3.1	1.9	3.6	*2.0	3.7
Personal and other services	*7.2	*3.8	*3.5	*3.1	*4.6	*4.0
<b>All industries</b>	<b>107.6</b>	<b>87.4</b>	<b>90.3</b>	<b>99.5</b>	<b>122.7</b>	<b>137.8</b>

Source: Job Vacancies, Australia, Spreadsheets (6354.0).

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## INCOME AND WELFARE

The economic wellbeing or standard of living of individuals is largely dependent on the economic and social resources available to provide for their consumption of goods and services and for participation in society. Such resources may be in the form of income received from wages and salaries, investments, income support from government, and the like. However, income does not always accurately indicate command over goods and services, particularly when income is variable or expenditure can be financed through running down assets or acquiring debts. Other resources can also contribute to the level of consumption of goods and services, including the resources of government and welfare organisations which provide services such as aged care, respite care and child care, and the resources of family and friends who provide assistance when needed.

Government programs aim to help the economically disadvantaged to achieve social and economic outcomes and to participate in society. Such programs provide income support for the retired, people with disabilities, carers, unemployed people, students, families with children, and Indigenous Australians. Others provide income support for other special groups, such as war veterans, and war widows and their families. In addition to providing income security, government programs help those with low incomes to meet specific needs. Assistance is also provided for a range of goods and services through pensioner concession and health cards. Other types of programs aim to provide assistance with employment, and advocacy for people with disabilities.

This chapter provides information on the levels and sources of income of Australia's population, on the levels and patterns of expenditure on goods and services and on the levels of wealth. Information is provided on the main income and community support programs of the Australian Government, describing the eligibility requirements, numbers of beneficiaries and government expenditure on these programs. These topics are covered in *Income support and other community support programs*.

## Household income, expenditure and wealth

### Income

This section provides indicators of the level and distribution of after tax (disposable) household cash income, after adjusting for household size and composition. The estimates of disposable income are derived from the gross cash income data collected by the Australian Bureau of Statistics (ABS), in the 2003–04 Survey of Income and Housing, after deducting estimates of income tax liability and the Medicare levy. Gross cash income is defined as regular and recurring cash receipts from:

- wages and salaries
- profit or loss from own unincorporated business
- investment income in the form of interest
- rent and dividends
- private transfers in the form of superannuation and child support
- cash transfers from government pensions and allowances.

The restriction to cash incomes is one of practical measurement and is assessed to provide a reasonable, broad picture of the level and distribution of income. However, readers are advised that the relative mix of cash and non-cash incomes across sub-populations will be different, and can change over time.

While income is usually received by individuals, it is normally shared between partners in a couple relationship and with dependent children. To a lesser degree, there may be sharing with other members of the household. Even when there is no transfer of income between members of a household, nor provision of free or cheap accommodation, members are still likely to benefit from the economies of scale that arise from the sharing of dwellings. The income measures shown in this section therefore relate to household income. However, larger households normally require a greater level of income to maintain the same material standard of living as smaller households, and the needs of adults are normally greater than the needs of children. The income estimates are therefore adjusted by an equivalence scale to standardise the income estimates with respect to household size and composition while taking into account the economies of scale that

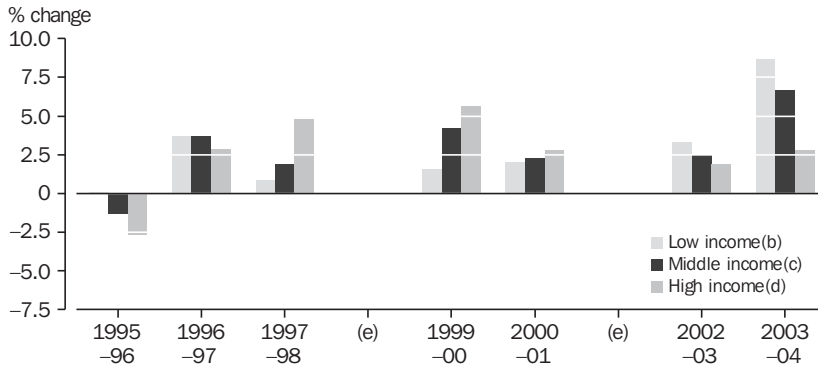
arise from the sharing of dwellings. The equivalised disposable income estimate for any household in this section is expressed as the amount of disposable cash income that a single person household would require to maintain the same standard of living as the household in question, regardless of the size or composition of the latter.

In 2003–04, average (mean) equivalised disposable household income for all people living in private dwellings (i.e. the income that a single person household would require to maintain the same standard of living as the average person living in all private dwellings in Australia) was \$549 per week. There were approximately 19.6 million people living in these dwellings.

After adjusting for changes in prices and before taking account of some breaks in series between 2002–03 and 2003–04, average real equivalised disposable household income in 2003–04 (\$549) was 5% higher than in 2002–03 (\$522) and 21% higher than in 1994–95 (\$455). Between 2002–03 and 2003–04, the \$27 increase in average real income in part reflects the one-off payments to families and carers announced in the May 2004 Australian Government budget. About \$2.2 billion (b) was payable to families in 2003–04 under this initiative which, on average, increased gross weekly household incomes by about \$6, and equivalised disposable household incomes by a little over \$4 per week. Increases in real incomes between the two years also reflects higher average wages and salaries (up 4.8% in 2003–04). (For more details on the breaks in series between 2002–03 and 2003–04, see *Household Income and Income Distribution, Australia, 2003–04* (6523.0).)

For low income people (represented by the 20% of people with household income between the bottom 10% and bottom 30% of incomes), average equivalised disposable household income in 2003–04 grew by 9% (\$24 per week), compared with 7% for middle income people and 3% for high income people. About \$7 (or more than one quarter) of the increase for the low income people resulted from the one-off payments to families and carers in 2003–04. The net impact of these one-off payments on the average real equivalised disposable household incomes of high income households was less than \$1 per week. Over the period from 1994–95, there was a 22% increase in the average real incomes of both low income people and middle income people and 19% for high income people.

## 7.1 CHANGES IN MEAN REAL EQUIVALISED DISPOSABLE HOUSEHOLD INCOME(a)



(a) Change from previous survey year. (b) Persons in the second and third income deciles after being ranked by their equivalised disposable household income. (c) Persons in the fifth and sixth income deciles after being ranked by their equivalised disposable household income. (d) Persons in the ninth and tenth income deciles after being ranked by their equivalised disposable household income. (e) No survey was conducted in 1998–99 or 2001–02

Source: *Household Income and Income Distribution, Australia, 2003–04* (6523.0).

## Household characteristics

Households with different income levels tend to differ with respect to other characteristics as shown in table 7.2. Wages and salaries were the principal source of income for households with middle and high income levels in 2003–04, while government pensions and allowances dominated for low income households. However, low income households had the highest incidence of full ownership of their home, reflecting the high proportion of elderly people in the low income category.

Middle income households contained more people on average than high income households (2.8 compared with 2.5) but contained considerably fewer people employed (1.5 compared with 1.9). In part, this reflects the different age profiles of the two groups. Low income households had an average of 0.5 employed persons, and housed an average of 2.5 persons.

## 7.2 HOUSEHOLD CHARACTERISTICS, By income group — 2003–04

	Units	Low income(a)	Middle income(b)	High income(c)	All households
Mean equivalised disposable household income per week	\$	300	492	1027	549
Has PSI of wages and salaries(d)	%	21.0	76.0	85.9	57.5
Has PSI of government pensions and allowances(d)	%	69.8	5.6	**0.1	27.7
Owns home without a mortgage	%	47.7	30.4	25.5	34.9
Owns home with a mortgage	%	16.9	41.2	51.7	35.1
Rents from state/territory housing authority	%	8.9	1.6	*0.2	4.9
Rents from private landlord	%	21.4	23.5	19.6	21.2
Average number of persons in the household	no.	2.5	2.8	2.5	2.5
Average number of employed persons in the household	no.	0.5	1.5	1.9	1.2
Average age of household reference person	years	56	47	44	49
Mean household net worth	\$	291 214	402 216	832 433	466 936

(a) Persons in the second and third income deciles after being ranked by their equivalised disposable household income. (b) Persons in the fifth and sixth income deciles after being ranked by their equivalised disposable household income. (c) Persons in the ninth and tenth income deciles after being ranked by their equivalised disposable household income. (d) Principal source of income.

Source: *Household Income and Income Distribution, Australia, 2003–04* (6523.0).

## Life cycle stages

The range of income levels across the population partly reflects the different life cycle stages that people have reached. A typical life cycle includes childhood, early adulthood, and the forming and maturing of families. Table 7.3 compares households in different life cycle stages.

Of the groups included in table 7.3, the group with the highest average equivalised income was younger couples without children. Their average equivalised disposable household income was \$821 per week, with the average number of employed persons in the household being 1.8. For couples with dependent children only, and with the eldest child being under 5 years, their average equivalised disposable household income was \$557 per week. Compared with younger couples without children, this lower income reflects a 12% lower after-tax income, principally reflecting the

lower average number of employed persons in these households (1.5) and the larger average household size (3.4 persons) over which incomes are shared. Average incomes were higher for households with non-dependent children, reflecting higher proportions of people employed in these households, but were lower again for households comprising older couples and lone persons, where the numbers of employed people were substantially lower.

People aged 65 years and over had the lowest average incomes, with lone persons' incomes at \$350 per week, somewhat lower than older couple only household incomes at \$399 per week. Elderly lone people were more likely than elderly couples to have government pensions and allowances as their principal source of income (77% compared with 67%), while couples were more likely to fully own their home (85% compared with 74%).

### 7.3 INCOME AND HOUSEHOLD CHARACTERISTICS FOR SELECTED LIFE CYCLE GROUPS — 2003–04

Household composition	Number of households ('000)	Average number of persons	Average number of employed persons in the household	Proportion with govt. benefits as PSI(a)	Mean equivalised disposable household income per week	Proportion owning home without mortgage	Mean household net worth
	no.	no.	%	\$	%	\$	
Lone person, under 35	336.1	1.0	0.8	12.9	567	*3.0	92 775
Couple only, reference person under 35	411.7	2.0	1.8	*2.0	821	2.9	225 797
Couple with dependent children only							
Eldest child under 5	417.0	3.4	1.5	6.2	557	6.9	365 787
Eldest child 5–14	866.0	4.2	1.6	8.4	536	13.2	469 051
Eldest child 15–24	515.4	4.2	2.3	7.7	556	27.1	683 039
Couple with							
Dependent and non-dependent children only	241.8	4.9	3.0	7.0	566	32.8	585 929
Non-dependent children only	431.1	3.3	2.2	12.2	652	51.2	729 243
Couple only, reference person 55–64	509.7	2.0	1.0	27.7	547	69.0	892 155
Couple only, reference person 65 and over	656.7	2.0	0.2	66.9	399	85.2	713 230
Lone person, 65 and over	717.0	1.0	—	76.5	350	73.8	437 280
One-parent, one-family households with dependent children	526.6	2.9	0.8	54.2	391	10.8	156 791
<b>All households</b>	<b>7 735.8</b>	<b>2.5</b>	<b>1.2</b>	<b>27.7</b>	<b>549</b>	<b>34.9</b>	<b>466 936</b>

(a) Principal source of income.

Source: ABS data available on request, Survey of Income and Housing, 2003–04



Households comprising one parent with dependent children had an average income of \$391 per week, similar to that of elderly couples (\$396 per week), but only 11% of the one-parent households fully owned their home and, therefore, a substantially greater proportion had to make mortgage or rental payments from their income. Of these households, 54% had government pensions and allowances as their principal source of income. On average they had 0.8 employed persons in the household.

### States and territories

There are considerable differences in the average levels of income between the states and territories. Tasmania's average weekly income was

13% below the national average income level and Queensland was 5% below. New South Wales recorded an average income 4% above the national average. In table 7.4 the Australian Capital Territory and the Northern Territory are shown to have the highest average incomes (22% and 17% above the national average respectively). The high income levels reflect in part the younger age profile of the Australian Capital Territory and the Northern Territory. However, it also reflects the exclusion from the results of households in areas of the Northern Territory defined as very remote or Indigenous communities which, if included, would be likely to significantly reduce the average incomes in that territory.

#### 7.4 HOUSEHOLD INCOME PER WEEK, By state and territory — 2003-04

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
CAPITAL CITY(a)									
Gross household income per week									
Mean income	1 360	1 209	1 070	1 058	1 116	1 035	1 408	1 399	1 216
Median income	1 125	986	900	839	900	795	1 233	1 108	982
Equivalised disposable household income per week									
Mean income	618	570	532	543	545	536	643	669	578
Median income	554	517	484	468	479	482	590	628	519
Mean household net worth	639 876	504 894	400 554	362 131	393 537	374 411	374 740	504 873	502 846
BALANCE OF STATE(b)									
Gross household income per week									
Mean income	974	946	1 006	961	1 047	799	n.a	n.a	977
Median income	770	756	857	717	874	640	n.a	n.a	792
Equivalised disposable household income per week									
Mean income	492	491	508	493	523	433	n.a	n.a	497
Median income	425	442	461	420	492	381	n.a	n.a	444
Mean household net worth	438 778	408 431	371 045	392 730	452 063	289 201	n.a	n.a	404 602
ALL HOUSEHOLDS									
Gross household income per week									
Mean income	1 212	1 134	1 036	1 033	1 098	897	1 401	1 399	1 128
Median income	970	923	880	815	889	720	1 227	1 108	915
Equivalised disposable household income per week									
Mean income	571	548	519	529	539	476	643	669	549
Median income	514	488	472	461	483	420	591	628	491
Mean household net worth	562 617	477 262	384 699	370 046	409 009	324 834	342 459	504 873	466 936

(a) Capital city estimates for the ACT relate to total ACT. (b) NT households included in Australian total for balance of state. NT estimates are not shown separately since estimates for the NT other than Darwin are not considered reliable. Households in areas defined as very remote or Indigenous communities were excluded, accounting for about 23% of the population of the NT.

Source: *Household Income and Income Distribution, Australia, 2003-04* (6523.0).

There are also considerable differences between the equivalised disposable household incomes recorded in capital cities in Australia compared with those earned elsewhere. At the national level, average incomes in the capital cities were 16% above those in the balance of state, and in all states the capital city average incomes were above those in the balance of state. The largest differences recorded were for New South Wales and Tasmania where the capital city incomes were respectively 26% and 24% above the average incomes across the rest of the state.

### Income distribution

While the average equivalised disposable household income of all households in Australia in 2003–04 was \$549 per week, the median (i.e. the midpoint when all people are ranked in ascending order of income) was somewhat lower at \$491 per week. This difference reflects the typically asymmetric distribution of income where a relatively small number of people have relatively very high household incomes, and a large number of people have relatively lower household incomes (graph 7.5).

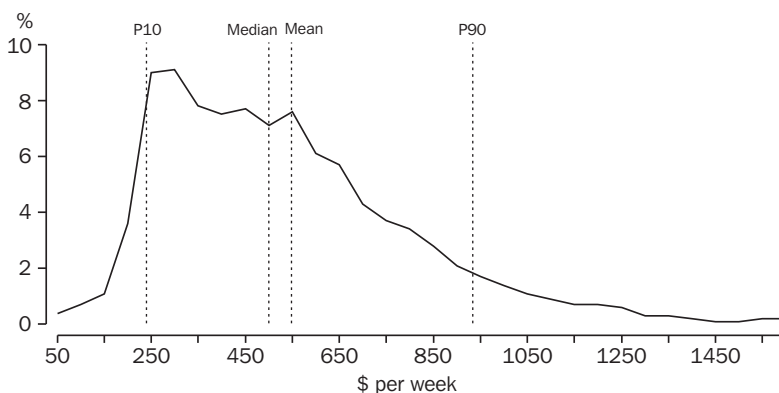
Percentile ratios are one measure of the spread of incomes across the population. P90 (i.e. the income level dividing the bottom 90% of the population from the top 10%) and P10 (i.e.

dividing the bottom 10% of the population from the rest) are shown in graph 7.5. In 2003–04, P90 was \$912 per week and P10 was \$246 per week, giving a P90/P10 ratio of 3.70. Various percentile ratios for selected years are shown in table 7.6, and the changes in these ratios can provide a picture of changing income distribution over time.

Another measure of income distribution is provided by the income shares going to groups of people at different points in the income distribution. Table 7.6 shows that, in 2003–04, 10.9% of total equivalised disposable household income went to people in the ‘low income’ group (i.e. the 20% of the population in the second and third income deciles), with 37.4% going to the ‘high income’ group (represented by the 20% of the population in the highest income quintile).

The Gini coefficient is a single statistic that lies between 0 and 1 and is a summary indicator of the degree of inequality, with values closer to 0 representing a lesser degree of inequality, and values closer to 1 representing greater inequality. For 2003–04, the Gini coefficient was 0.294. About one third of the decline in the Gini coefficient between 2002–03 and 2003–04 (down about 5%) results from the one-off payments to families and carers. This real world effect also explains a significant proportion of the movement in the remaining indicators in table 7.6.

**7.5 DISTRIBUTION OF EQUIVALISED DISPOSABLE HOUSEHOLD INCOME — 2003–04**



Note: Persons with an income between \$25 and \$1,625 are shown in \$50 ranges on the graph.

Source: ABS data available on request, Survey of Income and Housing, 2003–04.

## 7.6 SELECTED INCOME DISTRIBUTION INDICATORS, Equivalised disposable household income

	Units	1996-97	1997-98	1999-2000	2000-01	2002-03	2003-04
Ratio of incomes of households at top of selected income percentiles							
P90/P10	ratio	3.66	3.77	3.89	3.97	4.00	3.70
P80/P20	ratio	2.53	2.56	2.64	2.63	2.63	2.49
P80/P50	ratio	1.56	1.56	1.57	1.56	1.57	1.52
P20/P50	ratio	0.62	0.61	0.59	0.59	0.60	0.61
Percentage share of total income received by persons with							
Low income(a)	%	11.0	10.8	10.5	10.5	10.6	10.9
Middle income(b)	%	17.8	17.7	17.7	17.6	17.6	17.9
High income(c)	%	37.1	37.9	38.4	38.5	38.3	37.4
Gini coefficient	no.	0.292	0.303	0.310	0.311	0.309	0.294

(a) Persons in the second and third income deciles after being ranked by their equivalised disposable household income. (b) Persons in the fifth and sixth income deciles after being ranked by their equivalised disposable household income. (c) Persons in the ninth and tenth income deciles after being ranked by their equivalised disposable household income.

Source: *Household Income and Income Distribution, Australia, 2003-04* (6523.0).

Some of the change in the indicators between 2002-03 and 2003-04 will reflect methodological improvements introduced in 2003-04, although it is not possible to quantify these impacts on the distributional measures shown in table 7.6. However, if the former method of imputing business and investment incomes based on reported previous year incomes had been continued for 2003-04, the Gini coefficient would have been about 1% higher.

While it is difficult to assess changes in income distribution over time due to the methodological improvements introduced with the 2003-04 survey, it appears that there has been no significant change in income inequality from the mid-1990s to 2003-04. If only the real impact of the one-off payments to families and carers were to be taken into account, the Gini coefficient for 2003-04 would be below the estimate for 2002-03, and not significantly different from the Gini coefficients for either 1994-95 or 1995-96 (0.302 and 0.296 respectively). This pattern would also be reflected in the other selected indicators of income distribution.

### Household expenditure

The latest household expenditure information available is from the 2003-04 Household Expenditure Survey, conducted by the ABS. This survey collected detailed information on the expenditure, income and characteristics of households in Australia.

The household is the usual unit of analysis for expenditure because it is assumed that sharing of the use of goods and services occurs at this level. If smaller units are adopted, for example, person, then it is difficult to attribute the use of both shared items such as accommodation and household goods, and of expenditure on items consumed by others, such as food.

In 2003-04, Australian households spent an average of \$883 per week on goods and services. The level and pattern of expenditure differ between households, reflecting characteristics such as income, household composition, household size and location.

Predictably the level of household expenditure differs between households with differing income levels. In 2003-04, households in the lowest income quintile (i.e. the 20% of households with the lowest equivalised disposable income) spent \$488 per week on goods and services, compared with \$1,306 spent by households in the highest income quintile. Households in these quintiles had average gross weekly incomes of \$337 and \$2,280 respectively. Since the Household Expenditure Survey does not collect information on all forms of income and expenditure, and there are significant timing differences between the different components of income and expenditure collected, caution should be exercised in comparing the income and expenditure data. Nevertheless, for both the lowest and the second lowest income quintiles, average weekly household income as measured in the survey is less than average weekly household expenditure.

This does not necessarily mean that these households are spending beyond their means. Some of the households in these quintiles will have had higher income in the past and so can finance their expenditure by drawing on past savings. This is especially so for retired people. Other households may take out loans in the expectation of higher incomes at a later time. The lowest quintile also includes households who reported zero or negative income. These households' losses from their unincorporated businesses or investments equalled or were greater than their income from all other sources. In general this group can draw on economic resources other than income to maintain their standard of living, at least in the short term.

The composition of a household's weekly expenditure is also affected by the level of household income. For example, food and non-alcoholic drinks accounted for 20% of the expenditure on goods and services of households in the lowest income quintile, compared with 16% for households in the highest income quintile. In general, the proportion spent on household services, domestic fuel and power and tobacco products also declined as household income rose, while the proportion spent on recreation, clothing and footwear, and alcohol increased.

**7.7 HOUSEHOLD EXPENDITURE AND CHARACTERISTICS, By equivalised disposable household income quintile groups — 2003–04**

	Units	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile	All households
Mean gross household income per week	\$	337	697	1 033	1 396	2 280	1 128
Mean equivalised disposable household income per week	\$	227	361	495	645	1024	543
Average age of household reference person	years	57	52	47	43	44	49
Average number of persons in the household	no.	2.1	2.8	2.8	2.7	2.4	2.5
Average number of employed persons in the household	no.	0.3	0.9	1.4	1.8	1.9	1.2
Mean household net worth	\$	284 492	365 709	410 866	489 800	828 383	473 125
Family composition of household(a)							
Couple family with dependent children	%	15.0	31.9	36.0	33.5	22.7	26.9
One-parent family with dependent children	%	10.3	9.0	6.3	4.9	1.9	6.6
Couple only	%	25.6	27.6	19.7	22.5	35.9	26.5
Other one family households	%	4.5	9.8	12.3	12.8	14.2	10.5
Multiple family households	%	*0.7	*1.0	*1.5	*1.8	*1.3	1.2
Lone person	%	42.2	18.8	21.2	20.2	19.6	25.4
Group household	%	1.6	1.9	2.9	4.4	4.4	3.0
Expenditure(b)							
Current housing costs (selected dwelling)	%	17.6	14.8	14.8	14.7	15.2	15.3
Domestic fuel and power	%	3.8	3.2	2.7	2.4	2.1	2.7
Food and non-alcoholic beverages	%	19.9	19.3	17.7	16.5	15.5	17.3
Alcoholic beverages	%	1.9	2.2	2.5	2.9	3.1	2.6
Tobacco products	%	2.0	1.5	1.4	1.4	0.8	1.3
Clothing and footwear	%	3.5	3.8	4.0	4.1	4.2	4.0
Household furnishings and equipment	%	6.0	5.9	5.8	5.8	6.0	5.9
Household services and operation	%	7.3	6.7	6.5	6.5	5.6	6.4
Medical care and health expenses	%	4.8	5.2	4.9	5.6	5.2	5.2
Transport	%	14.1	15.1	16.4	17.1	15.4	15.8
Recreation	%	10.1	12.4	12.6	12.2	14.6	12.8
Personal care	%	1.8	1.8	1.9	2.0	2.1	1.9
Miscellaneous goods and services	%	7.2	8.2	8.8	8.9	10.1	8.9
Mean expenditure on all goods and services per week	\$	488	722	905	1 067	1 306	883
Number of households	'000	1 882.7	1 418.9	1 388.1	1 441.8	1 604.3	7 735.8

(a) As a proportion of all households. (b) As a proportion of total expenditure on goods and services.

Source: Household Expenditure Survey, Australia, 2003–04 (6530.0).

## Wealth distribution

The distribution of net worth, or wealth, across households is very unequal, partly reflecting the common pattern of people gradually accumulating wealth throughout their working life. In 2003–04 the 20% of households with the least net worth accounted for only 1% of total household net worth, with an average net worth of \$23,800 per household. The share of net worth increases with each higher net worth quintile, with 6% for the second quintile, 13% for the third quintile, 21% for the fourth quintile, while the wealthiest 20% of households in Australia accounted for 59% of total household net worth, with average net worth of \$1.4 million (m) per household.

The distributional pattern of net worth is also marked when considered in terms of sources of income. The households where the principal source of household income was 'other' income (principally investment income) had average household net worth of \$1.1m, while for those

where the principal source of income was government pensions and allowances the average household net worth was \$249,000. Net worth in renter households was on average only about 10% of the net worth in owner households with no mortgage, and about 20% of owner households with a mortgage.

The picture of wealth (net worth) is a little different and more equally distributed when viewed from the perspective of the distribution of incomes. The households in which the 20% of people with the lowest household incomes live accounted for 15% of total household net worth, similar to the shares of net worth held by the households with people in the second and third household income quintiles. The households in which the 20% of people with the highest household incomes live accounted for 37% of total household net worth.

### 7.8 HOUSEHOLD CHARACTERISTICS, By household net worth quintile groups 2003–04(a)

	unit	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile	All households
Average number of persons in the household	no.	2.2	2.4	2.6	2.7	2.8	2.5
Average number of employed persons in the household	no.	0.8	1.2	1.3	1.4	1.5	1.2
Average age of household reference person	years	41	45	50	53	55	49
Mean equivalised disposable household income per week	\$	403	518	507	554	726	541
Mean household net worth	\$	23 817	142 763	299 918	502 427	1 383 999	466 936
Has wages and salaries as PSI(b)	%	45.3	65.4	60.0	60.2	56.9	57.5
Has Government pensions and allowances as PSI(b)	%	47.6	27.1	30.0	22.7	10.8	27.7
Owns home without a mortgage	%	1.1	19.1	40.1	50.7	65.0	34.9
Owns home with a mortgage	%	3.3	44.2	52.2	44.7	31.7	35.1
Rents from state/territory housing authority	%	21.5	2.2	**0.2	**0.1	—	4.9
Rents from private landlord	%	64.7	29.0	5.3	3.4	2.1	21.2
Estimated number of households	'000	1 573.9	1 561.1	1 548.1	1 517.0	1 535.6	7 735.8

(a) Household weighted. (b) Principal source of income.

Source: ABS data available on request, Survey of Income and Housing, 2003–04.

## Income support and other community support programs

*Information in this section was contributed by the Australian Government departments of Family and Community Services; Veterans' Affairs; Health and Ageing; Education, Science and Training; and Employment and Workplace Relations (September 2005).*

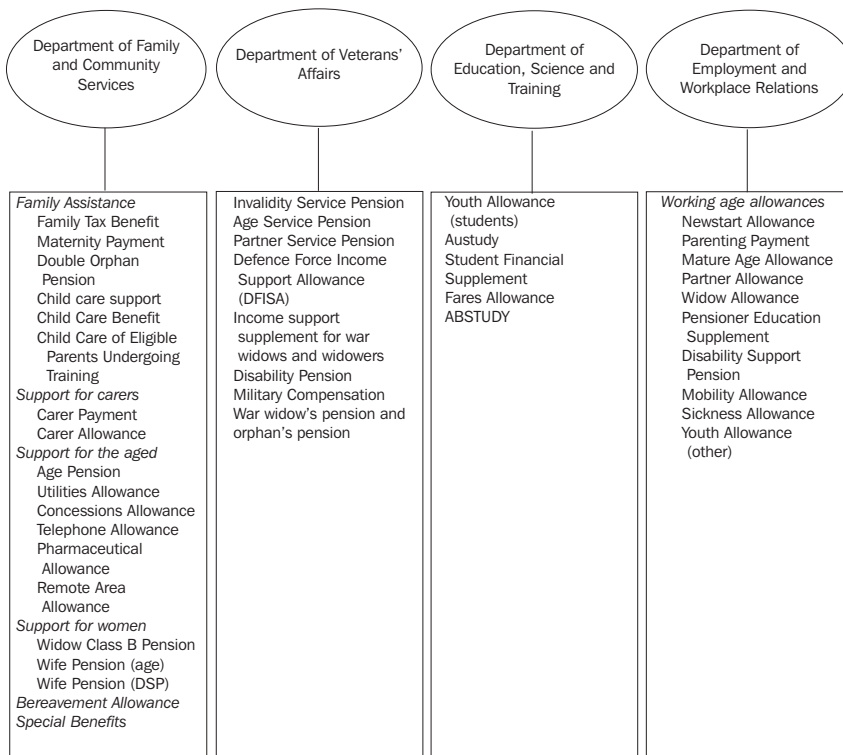
Australian governments, at all levels, provide welfare support to the community through a range of income support and other community programs. The largest component of this welfare is through income support provided by the Australian Government. A listing of web sites is provided at the end of this chapter where additional information about specific welfare programs provided by the Australian Government can be obtained.

## Income support programs

During 2004 administrative changes were made to the arrangements for the delivery of Australia's welfare system by Australian Government departments. Responsibility for working age income support payments and related programs transferred from the Department of Family and Community Services to the Department of Employment and Workplace Relations, and responsibility for student programs and related income support transferred to the Department of Education, Science and Training.

The Australian system of income support programs is summarised in diagram 7.9 with the main programs described in this section. The new structure of Australian Government departments involved in the delivery of income support programs is also shown in diagram 7.9.

**7.9 INCOME SUPPORT PROGRAMS — 2005**



Note: Pensions, allowances and Family Tax Benefits can include rent assistance. Details of rent assistance are included in the *Housing* chapter.

The Australian income support system provides financial assistance to a variety of groups, including families, jobseekers, the aged, people with a disability, carers, mature age people, students and Indigenous Australians. Assistance is also provided for a range of goods and services through pensioner concession and health cards. Over four million people, or one in five individuals, are direct beneficiaries of income support and supplementary payments at any one time.

The main income support payments provided by Australian Government departments for the financial years 2001–02 to 2004–05 are listed in table 7.10 (all tables in this chapter are based on current dollars). Details of the main payments

effective during the 2004–05 financial year, together with associated statistics, are provided in this chapter.

Most allowance types are adjusted once or twice a year in line with movements in the Consumer Price Index (CPI) to maintain purchasing power. Pension payments are adjusted in line with the CPI and male total average weekly earnings, ensuring the maximum single pension rate does not fall below 25% of male total average weekly earnings. Many income support payments are subject to income, assets and activity tests, to ensure benefits are targeted to those in greatest need. Details of the rates in effect at 30 June 2005 are listed in table 7.11.

### 7.10 MAJOR INCOME SUPPORT PAYMENTS(a)(b)

	2001–02	2002–03	2003–04	2004–05
	\$'000	\$'000	\$'000	\$'000
<b>DEPARTMENT OF FAMILY AND COMMUNITY SERVICES</b>				
Family assistance				
Family Tax Benefit – Centrelink payments(c)	10 927 703	10 473 856	12 869 904	12 826 730
Family Assistance Legislative Amendment (More Help for Families – ‘One-off’ payments)	..	..	2 222 990	..
Family Assistance Scheme	..	..	..	174 362
Maternity Allowance(d)	216 887	216 634	180 063	20 053
Maternity Immunisation Allowance(d)	..	..	43 193	43 280
Maternity Payment	..	..	..	726 814
Double Orphan Pension	1 976	2 052	2 165	2 389
Child care support				
Child Care Benefit	1 315 912	1 364 358	1 387 946	1 462 670
Child Care for Eligible Parents Undergoing Training	11 067	12 985	12 880	17 215
Support for carers				
Carer Payment	595 810	702 649	(f)921 008	(f)1 062 101
Carer Allowance(e)	645 722	744 488	(f)965 430	(f)1 109 346
Support for the aged(g)				
Age Pension	16 665 653	17 740 214	19 540 401	19 970 348
Aged Persons Savings Bonus	23 723	-144	13	-28
One-off Payment to Seniors'	10 454	-2	-5	..
Self-Funded Retirees' Supplementary Bonus	28 519	569	169	56
Utilities Allowance	..	..	..	68 667
Seniors Concession Allowance	..	..	..	57 967
Widow Class B Pension	59 787	39 804	26 275	8 064
Wife Pension (Age)	216 160	195 071	194 176	179 017
Wife Pension (DSP)	401 969	351 491	326 083	290 125
Special Benefits	119 811	116 286	113 141	98 772
Bereavement Allowance	813	986	1 075	1 065

For footnotes see end of table.

...continued



## 7.10 MAJOR INCOME SUPPORT PAYMENTS(a)(b) – continued

	2001–02	2002–03	2003–04	2004–05
	\$'000	\$'000	\$'000	\$'000
<b>DEPARTMENT OF EMPLOYMENT AND WORKPLACE RELATIONS</b>				
Working age income support allowances(h)				
Newstart Allowance	5 078 220	4 831 069	4 754 733	4 627 413
Parenting Payment	5 571 718	5 731 117	5 995 135	6 127 018
Mature Age Allowance	364 210	381 155	372 523	258 898
Partner Allowance	817 599	860 768	860 462	703 894
Widow Allowance	389 550	429 662	469 276	477 552
Pensioner Education Supplement	65 784	68 574	72 139	78 985
Disability Support Pension	6 404 351	6 851 608	7 492 532	7 910 767
Mobility Allowance	67 852	74 975	82 163	85 562
Sickness Allowance	93 724	85 528	85 375	89 407
<b>DEPARTMENT OF EDUCATION, SCIENCE AND TRAINING</b>				
Youth and student support				
Youth Allowance(i)	2 213 719	2 235 020	2 257 447	2 218 469
Austudy	280 794	270 623	258 848	240 047
Student Financial Supplement	500 967	114 359	65 423	38 406
Fares Allowance	525	1 304	1 176	1 496
<b>DEPARTMENT OF VETERANS' AFFAIRS</b>				
Income Support Program				
Service Pension	2 518 768	2 528 030	2 535 576	2 503 390
Income Support Supplement	259 778	274 170	294 949	313 035
Compensation Program				
Disability Support Pension	1 199 591	1 244 684	1 288 539	1 304 662
War Widow (er)/ Orphan Pensions	1 301 609	1 370 486	1 445 065	1 501 728
<b>ALL MAJOR INCOME SUPPORT PAYMENTS</b>				
Total(j)	58 370 725	59 314 429	67 138 268	66 599 742

(a) Outlays on pensions, allowances and Family Tax Benefits include expenditure on Commonwealth Rent Assistance. Details of rent assistance are included in the Housing chapter. (b) Negative values are recoveries from previous years. (c) This does not include payments made by the Australian Taxation Office. (d) Separate expenditure figures are not available for Maternity Allowance and Maternity Immunisation for years prior to 2003–04. Expenditure on Maternity Allowance prior to 2003–04 includes Maternity Immunisation Allowance. (e) Carer Allowance was introduced on 1 July 1999. It combined Child Disability Allowance with Domiciliary Nursing Care Benefit, which was the responsibility of the Department of Health and Ageing. (f) Includes 'one-off' carer bonus payments. (g) Pharmaceutical Allowance and Remote Area Allowance have not been added as expenditure for these items cannot be separately identifiable. (h) Expenditure on Youth Allowance for unemployed people is included in the expenditure and programs administered by the Department of Education, Science and Training. (i) Youth Allowance is composed of an allowance for full-time students administered by the Department of Education, Science and Training and an allowance for the part-time students and unemployed which is administered by the Department of Employment and Workplace Relations. (j) Total is for the above programs only and does not include some minor income support payments.

Source: Department of Family and Community Services, Department of Employment and Workplace Relations, Department of Veterans' Affairs, Department of Health and Ageing.

Since September 1997 Centrelink has delivered most income support payments on behalf of Australian Government departments. Centrelink is a statutory agency established to deliver a range of Australian Government services to the Australian community. It operates under the *Services Delivery Agency Act 1997* (Cwlth). Centrelink provides advice about payment entitlements, provides referrals to Centrelink specialist staff for additional assistance, and may refer customers to other departments, agencies or community organisations where appropriate.

The Department of Veterans' Affairs (DVA) delivers various income support payments and pensions to eligible veterans and their families.

Numbers of income support customers referred to in this section generally relate to June of the reference year. These numbers are taken from extracts of administrative data as close to 30 June as possible. The dates of extracts, however, can vary between payment types. All financial data refer to the full financial year.

**7.11 MAXIMUM RATES FOR INCOME SUPPORT PAYMENTS AND BENEFITS(a)(b)**

	\$
Age Pension	
Single	476.30
Couple(c)	397.70
Austudy	
Single or partnered, no children	326.50
Single, with children	427.80
Partnered, with children	358.80
ABSTUDY	variable
Carer Allowance	92.40
Community Development Employment Project (CDEP) Participant Supplement	20.80
Child Care Benefit	
Approved care(d)	
Non-school age child	2.81
School age child	2.39
Registered care(d)	
Non-school age child	0.47
School age child	0.40
Defence Force Income Support Allowance (DFISA)(e)	variable
Disability Support Pension (DSP)	
Single	476.30
Couple(c)	397.70
Disability Pension (DVA)	
General Rate	300.00
Extreme Disablement Adjustment (EDA)	452.40
Intermediate Rate	550.00
Special Rate (TPI)	798.80
Double Orphan Pension	46.30
Education Entry Payment(f)	208.00
Family Tax Benefit Part A	
For each dependent child	
Aged under 13 years	133.56
Aged 13–15 years	169.40
Aged 16–17 years	42.98
Aged 18–24 years	57.82
Family Tax Benefit Part B	
Age of youngest child	
Aged under 5 years	114.66
Aged 5–15 years, or aged 16–18 years and full-time students	79.94
Income Support Supplement for war widows and widowers (DVA)	141.60
Maternity Payment One-off lump sum, per birth	3 079.00
Maternity Immunisation Allowance	
One-off lump sum	216.20
Military Compensation (DVA)	variable
Mobility Allowance	69.70

For footnotes see end of table.

...continued

**7.11 MAXIMUM RATES FOR INCOME SUPPORT PAYMENTS AND BENEFITS(a)(b) – continued**

	\$
Newstart Allowance	
Single	
Aged 21 or over, no children	399.30
Aged 21 or over, with children	432.00
Aged 60 or over, after 9 months	437.80
Partnered	360.30
Orphan's Pension (DVA)	
Single	74.20
Double	148.40
Parenting Payment	
Sole parents	476.30
Partnered parents	360.30
Partner Allowance	360.30
Pensioner Education Supplement	
At least 50% study load	62.40
At least 25% study load	31.20
Service Pension (DVA)	
Single	476.30
Couple(c)	397.70
Youth Allowance	
Single, no children	
Aged under 18 years, at home	178.70
Aged 18 years and over, at home	214.90
Away from home	326.50
Single with children	427.80
Partnered with no children	326.50
Partnered with children	358.50
War widow's pension and orphan's pension (DVA)	501.30
Wife Pension (DSP)	
Single	476.30
Couple(c)	397.70

(a) Rates do not include Commonwealth Rent Assistance payments. (b) Per fortnight, unless otherwise indicated. (c) Per person. (d) Per hour. (e) DFISA is covered by the maximum age or service pension. If an individual receives maximum age or service pension then that individual will not be entitled to any DFISA. If a person has a reduced age or service pension then the maximum DFISA will be the difference between the maximum age or service pension and the actual age or service pension. (f) One-off.

Note: For Bereavement Allowance see single Age Pension. For Carer Payment, Widow Class B Pension, Wife Pension (Age) and Wife Pension (DSP) see Age Pension. For Mature Age Allowance, Sickness Allowance, Widow Allowance see Newstart Allowance. Special Payment generally as for Newstart/Youth Allowance.

Source: Centrelink, 'A guide to Australian Government payments 20 March – 30 June 2005'. DVA, 'You and Your Pension', 2004 Edition.

## Family assistance

Family assistance policies are formulated to provide income support to families to assist with the costs of raising children, including newborns, in a way that recognises the needs and choices of both single and dual income families.

Family Tax Benefit Part A (FTB Part A) helps families with the cost of raising dependent children. It is paid to families with dependent children up to 21 years, and young people between 21 and 24 years who are studying full time (and not receiving Youth Allowance or a similar payment).

Family Tax Benefit Part B (FTB Part B) provides extra assistance for families with only one main income earner, particularly those with children under 5 years. It is paid to families for children up to the age of 16 years and children aged between 16 and 18 years who are studying full time. Payment to a family is based on the age of the youngest child, and is assessed on the income of the family's second income earner.

FTB Part A and Part B payments are administered by the Family Assistance Office and are available as a direct payment from Centrelink, either fortnightly or as a lump sum, or via tax instalment deductions or an end of year lump sum payment through the Australian Taxation Office (ATO). Some FTB recipients can receive fortnightly payments for part of the tax year with the balance as a lump sum at the end of the tax year. At the end of June 2005, 1.8 million families with 3.5 million children received FTB A, and 1.4 million families with 2.3 million children received FTB part B via Centrelink fortnightly payments.

The 'More Help for Families' package introduced in the 2004–05 Budget included a universal Maternity Payment, which recognises the extra costs associated with the birth or adoption of a child. All families with a child born or adopted from 1 July 2004 are eligible for the payment. Other measures in the package included a one-off

\$600 per child bonus payment to over 2 million families and an ongoing increase of \$600 per child in the base and maximum rates of FTB Part A, payable as a lump sum supplement.

The Double Orphan Pension is not means tested and is a payment for children who have at least one deceased parent and who cannot have contact with the other parent (e.g. because that parent is a long-term prisoner or their whereabouts is unknown).

Table 7.12 shows the number of recipients and expenditure for Family Assistance.

## Child care support

Child care support policies have been developed to help families to participate in the economic and social life of the community through providing support for child care.

Child care services include centre-based long-day care, family day care, in-home care, before and after school hours care, vacation care, occasional care, and Multi-functional Aboriginal Children's Services. Flexible services that can combine various models of care are also available to meet the needs of families in rural and remote areas.

Child Care Benefit (CCB) helps families with the cost of child care, with financial assistance proportionally higher for lower income families. Eligible families can have the benefit paid directly to the child care service to reduce their ongoing fees. Alternatively they can receive the benefit as a lump sum refund at the end of the financial year.

Jobs Education and Training (JET) Child Care provides flexible child care assistance to parents receiving certain Centrelink payments who wish to undertake study, work or job search activities and are aiming to enter or re-enter the workforce.

Table 7.13 shows the number of recipients and expenditure for CCB.

## 7.12 RECIPIENTS AND EXPENDITURE FOR FAMILY ASSISTANCE

	Units	2001-02	2002-03	2003-04	2004-05
<b>Family Tax Benefit</b>					
Centrelink					
Recipients(a)					
Part A – fortnightly instalments(b)	no.	1 795 355	1 785 123	1 809 122	1 828 495
Part B – fortnightly instalments(b)	no.	1 199 233	1 223 572	1 205 760	1 396 918
Lump sum payments(c)	no.	40 319	59 323	63 946	77 070
Claims lodged with ATO but paid by Centrelink(d)	no.	16 792	14 016	12 083	16 869
Total payments (Part A and Part B)(e)	\$'000	10 927 703	10 473 856	12 869 904	12 826 730
Australian Taxation Office					
Recipients(a)(d)					
Paid by tax instalment deduction or on assessment	no.	80 326	83 762	99 075	117 722
Payments					
Paid by tax instalment deduction or on assessment(d)	\$'000	171 380	193 796	243 493	345 000
Reconciliation credits(d)(e)	\$'000	164 570	217 975	257 466	820 000
Family Assistance Legislative Amendment (More help for families – One-off payments)	\$'000	..	..	2 222 990	..
Family Assistance Scheme	\$'000	..	..	..	174 362
<b>Maternity Payment</b>					
Recipients	no.	..	..	..	235 371
Payments(f)(g)	\$'000	..	..	..	726 814
<b>Maternity Allowance</b>					
Recipients	no.	212 237	207 029	209 218	22 292
Payments(f)(g)	\$'000	216 887	216 634	180 063	20 053
<b>Maternity Immunisation Allowance</b>					
Recipients	no.	206 803	203 900	203 658	200 343
Payments(f)(g)	\$'000	..	..	43 193	43 280
<b>Double Orphan Pension</b>					
Recipients	no.	1 207	1 137	1 151	1 286
Payments(f)	\$'000	1 976	2 052	2 165	2 389

(a) Recipients who claimed assistance using more than one payment method for the year are included in each category. (b) This provides a count of the customers eligible for payment at the time of data extraction (in June of the relevant tax year). It does not show all the customers who are eligible throughout the course of the year. (c) Figures for lump sum payments refer to payments made in the relevant tax year ending 30 June for the FTB entitlement for the previous year. (d) Number of recipients and expenditure refer to FTB payments made by ATO within the relevant tax year (i.e. regardless of FTB entitlement year) at the last Friday of June of the relevant tax year. (e) This refers to payments to customers who received FTB via Centrelink fortnightly instalment but were paid top-up by ATO after they lodged tax return and were reconciled. Reconciliation credits for 2004-05 tax year also include FTB Part A supplement. (f) Expenditure refers to total payments at end of June of the relevant tax year. (g) Separate expenditure figures are not available for Maternity Allowance and Maternity Immunisation Allowance for years prior to 2003-04.

Source: Department of Family and Community Services.

## 7.13 RECIPIENTS AND EXPENDITURE FOR CHILD CARE SUPPORT(a)

	2001-02		2002-03		2003-04		2004-05	
	no.	\$'000	no.	\$'000	no.	\$'000	no.	\$'000
<b>Child Care Benefit (CCB)</b>								
Approved service(a)	672 016	..	697 912	..	681 400	..	n.y.a.	..
Registered carers(b)	53 900	..	57 600	..	n.y.a.	..	n.y.a.	..
Total CCB expenditure	..	1 315 912	..	1 364 358	..	1 387 946	..	1 462 670
<b>Child Care for Eligible Parents</b>								
Undergoing Training	(c)18,352	11 067	(d)12,941	12 985	12 388	12 880	18 316	17 215

(a) Number of customers in June. Includes CCB paid to recipients as a reduction in service fees and a lump sum payment (nationally weighted data). (b) CCB for registered care is paid at minimum rate. (c) Does not include five months of data for NT and seven months of data for the ACT. (d) Number of children in child care assisted through JET. Due to improved recording methods, comparisons between previous years are not appropriate.

Source: Department of Family and Community Services.

## Support for carers

There are two forms of Australian Government financial assistance that may be available in a caring situation – Carer Payment and Carer Allowance.

Carer Payment provides income support to people who, due to the demands of their caring role, are unable to support themselves through substantial workforce participation.

Carer Allowance is a supplementary payment that is available to people who provide daily care and attention in a private home for an adult or child with a disability or severe medical condition. It can be paid in addition to a social security income support payment.

Table 7.14 shows the number of support for carer recipients and expenditure by payment type.

## Support for the aged

The principal form of support for the aged is the Age Pension. Age Pension age for men is 65 years and for women is being progressively raised to 65 years by 2014. The qualifying age for women

depends on their date of birth, with the minimum age increasing by six months at two-year intervals until it reaches 65 years for those born on or after 1 January 1949.

Other payments available for older Australians include Wife Pension and Widow B Pension. However, these payments have been closed off to new claimants, so the population on and expenditure for these payments have decreased over time. These payments were designed to provide financial assistance to women below the pension age who are either the partner of an age pensioner or who have lost the financial support of a male partner through death, separation or divorce. There are now payments administered by the Department of Employment and Workplace Relations for women in these circumstances.

DVA provides support for the aged through the Age Service Pension and Partner Service Pension, which are components of the Service Pension and are described in a later section.

Table 7.15 shows the number of recipients and expenditure by payment type for support for the aged.

### 7.14 SUPPORT FOR CARERS

	Units	2001–02	2002–03	2003–04	2004–05
Carer Payment					
Recipients(a)	no.	67 260	75 937	84 082	95 446
Total payments	\$'000	595 810	702 649	(b)921 008	(b)1 062 101
Carer Allowance					
Recipients(a)	no.	272 045	299 609	297 607	340 005
Total payments	\$'000	645 722	744 488	(b)965 430	(b)1 109 346

(a) Number of customers in June. (b) Includes carer bonus payments.

Source: Department of Family and Community Services.

### 7.15 SUPPORT FOR AGED(a)

	Units	2001–02	2002–03	2003–04	2004–05
Age Pension(b)					
Males	no.	714 324	739 187	761 025	782 977
Females	no.	1 103 881	1 121 868	1 115 225	1 132 059
Persons	no.	1 818 205	1 861 055	1 876 250	1 915 036
Total payments	\$'000	16 665 653	17 740 214	19 540 401	19 970 348
Widow B Pension					
Recipients	no.	5 130	2 986	1 879	839
Total payments	\$'000	59 787	39 804	26 275	8 064
Wife Pension (Age)(b)					
Recipients	no.	23 823	20 319	19 728	17 025
Total payments	\$'000	216 160	195 071	194 176	179 017

(a) Number of customers in June. (b) Includes the Pension Savings Bonus Scheme, and amounts paid by the Department of Veterans' Affairs in relation to the Age Pension, related Wife Pension and Disability Support Pension.

Source: Department of Family and Community Services.

## Working age allowances

Working age allowance programs help people of working age by providing income support to those seeking work or undertaking other activities such as training or community work or caring for children.

The main working age allowances are: Newstart Allowance (NSA), Parenting Payment (Single and Partnered), Disability Support Pension and Youth Allowance (other).

In the 2005–06 Budget, the Australian Government announced a number of Welfare-to-Work measures aimed at addressing the specific needs of parents, mature-aged people with a disability and the very long-term unemployed that encourage these people to (re-)enter the workforce. Subject to the passage of legislation, these Welfare-to-Work measures aim to lift workforce participation and reduce welfare dependency, while maintaining a strong safety net for those who need it.

NSA is paid to people aged 21–64 years who are unemployed and actively searching for work. They must be willing to undertake suitable paid work, which includes full-time, part-time or casual employment.

NSA and Youth Allowance jobseekers aged 18–49 years and some Special Benefit customers may be asked to undertake Mutual Obligation activities, in addition to their job search, after six months of unemployment and annually thereafter. Mutual Obligation requires people to take part in activities to improve their skills and work habits. Currently, people aged 50 years and over on NSA are not subject to Mutual Obligation but have a Personal Adviser to ensure that their requirements are appropriate, and that they have access to appropriate services. Under the Welfare-to-Work measures, from 1 July 2006 the same job search obligations will apply to mature-aged people aged 50–64 years receiving NSA as they do for other jobseekers. Mature aged NSA recipients will not be required to participate in Work for the Dole, while

those aged over 55 years will be able to meet their obligations through part-time and/or voluntary work.

Currently, Parenting Payment is paid to single and partnered low-income parents with responsibility for the care of at least one dependent child aged less than 16 years. Under the Welfare-to-Work measures, parents applying for Parenting Payment on or after 1 July 2006 will receive Parenting Payment while their youngest child is less than 6 years old. When their youngest child turns 6 years, this group of parents will receive NSA and be subject to an obligation to seek part-time work of at least 15 hours per week. Parents receiving Parenting Payment prior to 1 July 2006 will be able to remain on Parenting Payment under the current entitlement until their youngest child turns 16 years. While remaining on Parenting Payment until this time, these parents will have a year to seek work voluntarily from the later of 1 July 2006 or when their youngest child turns 6 years. After that they will be subject to an obligation to seek part-time work of at least 15 hours per week. Assistance for preparing for work is provided to these customers through the services of Centrelink, the Job Network and specialist services, where appropriate.

Other non-activity tested payments for people of workforce age include Mature Age Allowance, Partner Allowance, Widow Allowance and some Special Benefit customers. Special Benefit provides assistance to people in severe financial need and for whom no other pension, allowance or other support is available. There is also a Bereavement Allowance, which is a short-term payment for recently widowed people without dependent children, payable for up to 14 weeks. Since 20 September 2003 the Mature Age Allowance and Partner Allowance have been closed to new entrants. Since 1 July 2005, new claims for Widow Allowance have been limited to women born before 1 July 1955.

Table 7.16 shows the number of NSA, Parenting Payment and other working age allowances recipients by expenditure and payment type.

## 7.16 WORKING AGE ALLOWANCES(a)(b)

	Units	2001–02	2002–03	2003–04	2004–05
<b>Newstart Allowance</b>					
Short-term (less than 12 months)					
Males	no.	160 677	144 691	128 530	123 340
Females	no.	65 486	58 744	60 155	57 777
Persons	no.	226 163	203 435	188 685	181 117
Long-term (12 months and over)					
Males	no.	224 073	210 834	196 006	176 314
Females	no.	95 299	98 063	98 402	96 183
Persons	no.	319 372	308 897	294 408	272 497
Total payments	\$'000	5 078 220	4 831 069	4 754 733	4 627 413
<b>Parenting Payment</b>					
Single					
Males	no.	32 966	33 909	34 866	34 436
Females	no.	394 880	403 049	414 446	414 130
Persons	no.	427 846	436 958	449 312	448 566
Total payments	\$'000	4 145 834	4 350 133	4 657 296	4 847 856
Partnered					
Persons	no.	191 576	181 405	177 157	167 260
Total payments	\$'000	1 425 884	1 380 984	1 337 839	1 279 162
<b>Mature Age Allowance</b>					
Recipients	no.	40 125	41 070	32 905	20 877
Total payments	\$'000	364 210	381 155	372 523	258 898
<b>Partner Allowance</b>					
Recipients	no.	102 325	102 805	90 930	71 615
Total payments	\$'000	817 599	860 768	860 462	703 894
<b>Widow Allowance</b>					
Recipients	no.	41 271	43 202	45 315	44 329
Total payments	\$'000	389 550	429 662	469 276	477 552
<b>Pensioner Education Supplement</b>					
Recipients	no.	50 865	52 923	50 445	52 093
Total payments	\$'000	65 784	68 574	72 139	78 985

(a) Number of customers in June. (b) The number of Newstart, Mature Age, Partner and Widow Allowance customers in this table excludes Community Development Employment Projects (CDEP) participants. CDEP participants receive a CDEP scheme payment and may be eligible for the CDEP Scheme Participant Supplement and certain social security 'add-ons', such as Commonwealth Rent Assistance and Pharmaceutical Allowance. However, the basic rate of these labour market allowances is not payable to CDEP scheme participants, hence their exclusion from the customer numbers data.

Source: Department of Employment and Workplace Relations.

### Youth and student support

Youth Allowance is the main income support payment for young people aged 16–20 years who are actively seeking employment and for full-time students aged 16–24 years. It is subject to a personal income and assets test. If the person does not meet the Youth Allowance independence criteria then parental income, family assets, and family actual means tests also apply. If the person is independent and partnered, a partner income test applies and the couple's combined assets are assessed.

The rate of Youth Allowance is determined on the young person's age, whether they are single or partnered, whether they have children, whether

they live at home or need to live away from home, and whether the person is a 'long-term income support student'.

Austudy payment is paid to students 25 years and over whose financial circumstances are such that without financial help, full-time study would not be possible. The rate of Austudy is dependent on whether the person is single or partnered, whether they have children, and whether the person is a 'long-term income support student'. An individual and (if applicable) partner income and assets test applies.



### 7.17 RECIPIENTS AND EXPENDITURE FOR YOUTH AND STUDENT SUPPORT(a)

	Units	2001–02	2002–03	2003–04	2004–05
Youth Allowance (YA)					
Full-time students	no.	308 192	310 009	297 140	275 175
Other(b)	no.	87 304	90 625	84 665	79 573
Total YA population	no.	395 496	400 634	381 805	354 748
Payments – Full-time students	\$'000	n.a.	n.a.	n.a.	1 715 025
Payments – Other	\$'000	n.a.	n.a.	n.a.	503 444
Total YA payments	\$'000	2 213 719	2 235 020	2 257 447	2 218 469
Austudy					
Recipients	no.	41 007	39 092	35 026	29 558
Total payments	\$'000	280 794	270 623	258 848	240 047
ABSTUDY					
Student financial supplement payments(c)	\$'000	500 967	114 359	65 423	38 406
Fare allowance payments	\$'000	525	1 304	1 176	1 496

(a) Number of customers in June. (b) Jobseekers and Part-time students – including those undertaking full-time training/agreement study. (c) The Government announced on 24 April 2003 that no loans would be issued under the Student Financial Supplement Scheme from 1 January 2004. The closure of the Scheme from 1 January 2004 does not affect repayment arrangements.

Source: Department of Education, Science and Training, and Department of Employment and Workplace Relations.

ABSTUDY payment is paid to students of Aboriginal and Torres Strait Islander descent according to the ABSTUDY definition of Aboriginality who are studying an approved course at an approved educational institution and who are not receiving other government assistance for study.

Eligible students receiving Youth Allowance, Austudy or Pensioner Education Supplement, who live away from home to study, can receive a Fares Allowance which contributes to their travel costs.

Table 7.17 shows the number of Youth and Student Support recipients and expenditure by payment type.

#### Support for people with a disability

Disability Support Pension (DSP) is the main form of income support for people with a physical, intellectual or psychiatric impairment that prevents them from working for at least 30 hours per week at award wages, or being retrained for such work, for at least two years.

However, as a result of the Australian Government's Welfare-to-Work measures announced in the 2005–06 Budget and subject to the passage of legislation, from 1 July 2006 the hours threshold will be reduced to 15 hours per week. This means that people with disabilities who have a part-time work capacity of 15–29 hours per week will no longer be eligible for DSP. Instead, these people will generally be eligible for Newstart or Youth Allowance, with modified activity

requirements tailored to reflect their assessed level of work capacity. The Welfare-to-Work measures also included substantially increased funding for the provision of vocational rehabilitation and employment assistance to help people with disabilities to maximise their ability to work.

DSP is income and assets tested. However, recipients who are permanently blind are exempt from the income test. DSP for people aged 21 years and over is paid at the same rate as Age Pension. Youth rates apply to those aged under 21 years. These are largely tied to Youth Allowance rates, but include a supplement of \$90.10 per fortnight in recognition of the additional costs faced by people with disabilities. DSP youth rates are not subject to parental income or assets tests.

Other support for people with a disability includes Mobility Allowance and Sickness Allowance. Mobility Allowance is intended to help those who are involved in paid work, vocational training or voluntary work or a combination of these, who are unable to use public transport without substantial assistance. Sickness Allowance may be paid to people aged between 21 years and Age Pension age, who are temporarily unable to work or continue with their full-time study due to illness or injury but who have a job or study to return to. Wife Pension (DSP) is for female partners of DSP recipients who were on payment as at 30 June 1995. It has been closed to new entrants since 1 July 1995.

Table 7.18 shows the number of recipients of support for people with a disability, and expenditure by payment type.

### 7.18 SUPPORT FOR PEOPLE WITH A DISABILITY(a)

	Units	2001-02	2002-03	2003-04	2004-05
Disability Support Pension					
Males	no.	406 893	412 777	418 829	420 073
Females	no.	252 022	260 557	277 913	286 709
Persons	no.	658 915	673 334	696 742	706 782
Total payments	\$'000	6 404 351	6 851 608	7 492 532	7 910 767
Mobility Allowance					
Recipients	no.	41 456	44 239	46 847	49 215
Total payments	\$'000	67 852	74 975	82 163	85 562
Sickness Allowance					
Recipients	no.	9 540	8 755	8 478	8 367
Total payments	\$'000	93 724	85 528	85 375	89 407

(a) Number of customers in June.

Source: Department of Employment and Workplace Relations.

#### Compensation and income support provided to veterans and their families

Compensation Pension is paid to veterans for the effects of war caused injury or disease resulting from eligible war or defence service. The injuries or diseases must have been caused or aggravated by war service or certain defence service on behalf of Australia. Disability compensation is paid at varying rates depending on the person's incapacity and lifestyle.

General Rate Disability Pension is payable to a veteran as compensation for the impairment and lifestyle effects of war or defence service. The general rate of pension is payable according to the degree of impairment of the person in increments of 10 per cent up to 100 per cent.

Extreme Disablement Adjustment is payable to a veteran who is severely incapacitated due to war caused or defence caused injury or disease, has reached 65 years of age and is not eligible to receive the Special or Intermediate Rate.

Intermediate Rate Pension is payable to a veteran suffering incapacity from war or defence caused disabilities in which the veteran is only able to undertake part-time or intermittent employment.

Special (Totally & Permanently Incapacitated) Rate Pension is payable to a veteran whose incapacity from war or defence caused disabilities prevent the veteran from working more than eight hours per week. Any veteran who is blind because of war or defence caused conditions is also eligible for a special rate pension.

War Widow(er)'s Pension is payable to compensate widowed partners of veterans who have died as a result of war service or eligible defence service or before his or her death received a certain rate of disability pension or was an Australian prisoner of war.

Various ancillary benefits may also be provided and dependent children of defence force members who have been killed or severely injured have access to educational guidance and counselling from the Veterans' Children Education Boards.

Table 7.19 shows the number of disability and war widows' pensioners and total expenditure in pensions.

The Veterans' Children Education Scheme provides financial help, guidance and counselling to certain students up to 25 years of age (table 7.20). To be eligible a student must be the child of a veteran, an Australian mariner, or a member of the Forces, who is (or has been) in receipt of a Special Rate or Extreme Disablement Adjustment Disability Pension. Children of former prisoners of war, of veterans, or of Australian mariners whose death has been accepted as war-caused, are also eligible.

The main income support pensions payable to veterans and their dependants are the Age Service Pension, Invalidity Service Pension, Partner Service Pension and the Income Support Supplement.

### 7.19 DISABILITY AND WAR WIDOWS' PENSIONERS(a)

Recipient	Units	2001–02	2002–03	2003–04	2004–05
Incapacitated veterans	no.	159 425	157 865	154 602	150 615
General Rate — from 10% to 100%	no.	119 508	114 872	110 577	106 139
Extreme Disablement Adjustment	no.	12 510	14 256	14 603	14 723
Intermediate Rate	no.	984	965	973	967
Special Rate (TPI or equivalent)	no.	26 423	27 772	28 449	28 786
Wives and widows(b)	no.	47 016	43 078	39 399	35 878
Children	no.	1 404	243	206	170
War widows and widowers(c)	no.	113 059	114 235	114 418	114 239
Orphans	no.	344	298	270	239
Other dependants	no.	600	576	555	539
Total(d)	no.	320 571	314 358	307 514	299 774
<b>Total expenditure(e)</b>	<b>\$'000</b>	<b>2 501 200</b>	<b>2 615 170</b>	<b>2 733 604</b>	<b>2 806 389</b>

(a) Number of customers in June. (b) Wives of incapacitated veterans and widows of deceased veterans who have not died from an accepted war caused condition. (c) Widows and widowers of deceased veterans who have died from an accepted war caused condition. (d) The totals do not equal the sum of the components due to overlaps. (e) Include associated allowances.

Source: Department of Veterans' Affairs.

### 7.20 VETERANS' CHILDREN EDUCATION SCHEME, Number of education beneficiaries and expenditure(a)

Type of training	Units	2001–02	2002–03	2003–04	2004–05
At school					
Primary(b)	no.	1 314	1 263	1 181	1 189
Secondary	no.	2 415	2 440	2 512	2 171
Total	no.	3 729	3 703	3 693	3 360
Tertiary	no.	1 615	1 572	1 424	1 443
Total	no.	5 344	5 275	5 117	4 803
<b>Total expenditure</b>	<b>\$'000</b>	<b>18 320</b>	<b>19 236</b>	<b>19 510</b>	<b>18 242</b>

(a) Number of customers in June. (b) Receive an annual payment rather than fortnight payment like others.

Source: Department of Veterans' Affairs.

Age Service Pension (ASP), is payable to male veterans with qualifying service at 60 years of age. The ASP is similar to the age and disability support pensions paid by Centrelink but is granted 5 years earlier than the age pension paid by Centrelink. The Government has introduced changes to the minimum age at which a female veteran can be granted an ASP. Under the changes, the minimum age is to be progressively lifted from 55 to 60 years in six-monthly increments every two years over the period 1995–2013.

Invalidity Service Pension is payable to veterans with qualifying service if they are permanently incapacitated for work.

Partner Service Pension is payable on the basis that the person is the partner or widow(er) of a veteran with qualifying service.

Income Support Supplement (ISS) is payable to war or defence widow(er)s of service pension age. ISS may also be paid to a widow(er) under service

pension age if he or she has a dependent child, is caring for a severely handicapped person or is permanently incapacitated for work. All recipients of income support payments are eligible for supplementary benefits, provided by the Australian Government, including some medical and hospital treatment, pharmaceutical benefits and the payment of a telephone allowance. They are also entitled to a range of concessions provided by state/territory and local governments.

A number of additional supplementary benefits and allowances are also available to eligible veterans and their dependants including the Defence Force Income Support Allowance, Rent Assistance, Remote Area Allowance, Utilities Allowance, Seniors Concessions Allowance and Bereavement Payment.

Table 7.21 shows the total number and annual expenditure on service pensions.

## 7.21 SERVICE PENSIONS, Number of beneficiaries and expenditure(a)

	Units	2001-02	2002-03	2003-04	2004-05
Veterans					
Old age	no.	138 066	129 382	119 803	111 491
Permanently incapacitated	no.	16 922	18 144	18 854	19 160
Tuberculosis(b)	no.	111	91	83	68
Total	no.	155 099	147 617	138 740	130 719
Wives and widows	no.	124 419	119 887	114 011	108 598
Total	no.	279 518	267 504	252 751	239 317
<b>Total expenditure</b>	<b>\$'000</b>	<b>2 778 546</b>	<b>2 802 200</b>	<b>2 830 518</b>	<b>2 816 425</b>

(a) Number of customers in June. (b) Eligibility on these grounds ceased on 2 November 1978. (c) Includes associated allowances.

Source: Department of Veterans' Affairs.

### Other community support programs

In addition to the direct monetary support provided to individuals, governments also support the community through the provision of services, either directly or by subsidising the activities of third parties. These services are provided by the Australian Government, state and territory governments, and local governments. The main services that the Australian Government has responsibility for are described in the remainder of this section.

### The National Strategy for an Ageing Australia

Recognising the significant implications of population ageing across a number of public policy areas, the Australian Government has developed the National Strategy for an Ageing Australia. It provides a framework to address current issues facing older people and to prepare for the ageing of Australia's population over the next 50 years.

The main themes of the National Strategy are:

- retirement income – pensions and superannuation
- a changing workforce – employment for mature age workers
- attitude, lifestyle and community support issues – housing, transport, lifelong learning and volunteering
- healthy ageing – health promotion, maintaining health and wellbeing through physical, mental and social activity
- world-class health and aged care.

### Aged care programs

Aged care programs support healthy ageing for older Australians, provide quality, cost effective care for frail older people, and give support to their carers. Australia's aged care programs include residential care and community care, as well as a range of associated programs.

#### Assessment for aged care

Using a holistic, multi-disciplinary approach, Aged Care Assessment Teams (ACATs) assess people's care needs and their eligibility for residential aged care and some community aged care services. Clients' medical, physical, social, psychological and restorative care needs are assessed before they are referred to the care they need. A person must be assessed as eligible by an ACAT before he or she can receive subsidised residential care, a Community Aged Care Package, an Extended Aged Care at Home Package, or some other forms of flexible care.

In 2004-05 the Australian Government provided \$48.4m to state and territory governments for the operation of 119 ACATs throughout Australia, as well as an evaluation unit in each state.

### Care in the community

#### Home and Community Care

The Home and Community Care (HACC) program is a joint initiative of the Australian, state and territory governments. The Australian Government contributes approximately 60 per cent of HACC funding and maintains a broad strategic role. States and territories contribute approximately 40 per cent of program funding and manage the program on a day-to-day basis. Australian Government funding available for

HACC in 2004–05 was \$791.9m. Total combined Australian, state and territory funding for 2004–05 was \$1.3b.

The HACC program aims to provide a comprehensive, coordinated and integrated range of maintenance and support services for frail aged people, people with a disability and their carers. It helps people to be more independent at home and in the community. This enhances their quality of life and may prevent inappropriate admission to long term residential care.

The HACC program funds care services, including nursing, personal care, domestic assistance, delivered meals, day care, transport, home modification and maintenance, and respite care. These services may delay or prevent the need for residential care.

### **Community Aged Care Packages**

The Community Aged Care Packages (CACPs) provide care in the home for frail older people who have complex care needs requiring care planning and case management. CACPs are tailored to meet the needs of each individual. Services may include personal care assistance, assistance with meals, domestic assistance, and transport to help the person shop or visit a medical practitioner. To be eligible for a CACP, the care recipient must be assessed by an ACAT as requiring low level residential care, have a preference to remain at home, be able to do so.

### **Extended Aged Care at Home (EACH)**

Extended Aged Care at Home (EACH) packages provides care to frail older people who have been assessed by an ACAT as eligible for high level residential care, but have expressed a preference to live at home and are able to do so. An EACH package typically provides about 18–22 hours of assistance each week, tailored to meet the needs of the individual. Packages are flexible in content but generally include nursing input, particularly in their design and management. Services provided include clinical care, personal assistance, meal preparation, continence management, assistance with leisure activities, emotional support, therapy services, and home safety and modification.

### **Residential aged care**

The residential aged care program seeks to enhance the quality of life of frail older Australians through a cohesive framework of high quality and cost effective residential care services.

The Australian Government subsidises the costs for each person in residential aged care. The level of funding depends on the care needs of the resident. Residents can be asked to pay fees and charges.

To receive Australian Government funding, each aged care home must meet specific care and building standards, be accredited by the Aged Care Standards and Accreditation Agency.

### **Other aged care programs**

Other aged care programs include the National Respite for Carers Program, Assistance with Care and Housing for the Aged, Commonwealth Carelink, Day Therapy Centres, the Dementia Education and Support Program; the Continence Aids Assistance Scheme; the National Continence Management Strategy and National Continence Management Program. All of these programs are directed towards assisting frail aged people and younger people with a disability to remain in their own homes.

### **Places and funding**

Aged care places are allocated in proportion to the number of people aged 70 years and older. At 30 June 2005, there were 193,753 operational aged care places; including 161,165 residential places, 30,916 CACPs and 1,627 EACH packages.

Australian Government expenditure on residential aged care is shown in table 7.22.

Table 7.23 shows Australian Government expenditure on selected other aged care programs.

### **Family assistance and community support**

The Stronger Families and Communities Strategy is an Australian Government initiative giving families, their children and communities the opportunity to build a better future. The Strategy has an appropriation of nearly \$500m (for the period 2004–09) and builds on the achievements of the first Strategy (2000–04).

## 7.22 AUSTRALIAN GOVERNMENT EXPENDITURE ON RESIDENTIAL AGED CARE

	Residential care (recurrent)				Capital grants			
	2001-02	2002-03	2003-04(a)	2004-05(a)	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
NSW	1 441.9	1 543.0	1 620.7	1 749.3	7.0	4.5	3.1	6.9
Vic.	973.0	1 046.9	1 122.9	1 237.2	4.6	3.6	5.2	5.1
Qld.	698.9	774.7	819.0	903.0	2.8	4.2	4.2	7.8
SA	382.8	347.8	454.4	505.8	0.8	3.9	2.1	4.0
WA	322.6	417.6	369.7	414.0	1.5	2.6	0.6	1.4
Tas.	117.1	125.1	129.8	140.7	1.8	3.8	2.1	1.3
NT	11.8	36.1	14.8	15.9	1.2	0.7	..	2.1
ACT	39.2	19.1	44.1	48.0	0.1	0.1	..	..
<b>Australia(b)</b>	<b>3 987.3</b>	<b>4 310.3</b>	<b>4 592.1</b>	<b>5 021.5</b>	<b>19.7</b>	<b>23.3</b>	<b>17.3</b>	<b>28.6</b>

(a) To enable comparison between years, these figures exclude a 'one-off' payment of \$3,500 per resident (\$518.7m) in 2003-04 and a \$1,000 per resident payment (\$152.0m) in 2004-05. (b) Includes expenditure by the Department of Health and Ageing and the Department of Veterans' Affairs, in accrual terms. Actual expenditures may change slightly due to late claims and adjustments.

Source: Department of Health and Ageing.

## 7.23 EXPENDITURE FOR SELECTED AGED CARE PROGRAMS

	2001-02	2002-03	2003-04	2004-05
	\$'000	\$'000	\$'000	\$'000
Community care programs				
Home and Community Care (HACC) Program	615.5	674.1	732.8	791.9
Community Aged Care Packages (CACAP) Program	246.3	287.9	308.6	327.8
Extended Aged Care at Home (EACH) Program	8.9	10.4	15.4	33.3
Other aged care programs				
Assistance with Care and Housing for the Aged (ACHA) Program	2.6	2.6	2.7	2.7
National Respite for Carers Program (NRCP)	67.3	92	99.7	99.3
Commonwealth Carelink Program (CCP)	11.5	12.1	13.9	13.9
Dementia Specific Programs(a)	n.a.	7.7	8.8	9.7
Day Therapy Centres	29.3	31	31.6	32.5
National Continence Management Strategy (NCMS)	4.9	4.8	8.7	5.5

(a) Excludes national dementia initiatives funded under NRCP.

Source: Department of Health and Ageing.

The renewed Strategy has a specific early childhood focus and has been aligned with four key areas identified in the developing National Agenda for Early Childhood (NAEC) – healthy young families; early learning and care; support for families and parenting; and child friendly communities. The NAEC promotes early intervention and prevention as an important strategy for improving the life chances of all children and tackling the root cause of complex social problems. It comprises four initiatives:

- Communities for Children – \$142m over five years
- Early Childhood-Invest to Grow – \$70m over four years
- Local Answers – \$151m over five years
- Choice and Flexibility in Child Care – \$125m over four years.

Local Answers funds the *Volunteer Small Equipment Grants* initiative.

A longitudinal study of child health and development is also funded by the Strategy.

The Strategy and Children's Services projects occupy a central place in the Australian Government's long-term objective of improving the social and economic participation of children, families and communities from disadvantaged areas. The Children's Services section is funded on an ongoing basis and supports children, parents and families at risk of achieving poor outcomes and/or experiencing abuse and neglect. This initiative currently attracts funding of approximately \$17.5m for 2004-05.



The Australian Government also provides funding to programs such as:

- the Family Relationships Services Program
- the Early Intervention and Parenting
- the Emergency Relief Program
- the Australian concessions cards.

### **Youth support**

Youth and community support programs develop new partnerships within and across levels of government and with community organisations to support innovations in youth and family support arrangements around young people's transition to independence and adulthood. Some of the initiatives under this program are:

- Strengthening and Supporting Families Coping with Illicit Drug Use
- Reconnect
- Mentor Marketplace
- Youth Activities Services/Family Liaison Worker Program
- the Transition to Independent Living Allowance.

### **Child support**

The Child Support Agency (CSA) is the agency that manages the assessment, collection and enforcement of child support liabilities. It aims to ensure that parents continue to financially support their children after separation, according to their capacity to do so. Parents may transfer their assessed liability privately, or have it collected and transferred through CSA.

The total amount transferred between parents in 2003–04 was \$2.19b, an increase of \$250m over the previous financial year (\$1.94b). This includes child support assessed by CSA and transferred directly between parents, as well as child support assessed and collected by CSA. In addition, Child Support associated with parents who elect to transfer payments privately amounted to approximately \$1.4b in 2003–04.

### **Housing support**

Housing support policies are in place to assist low and moderate income householders to access appropriate affordable housing, and provide supporting initiatives to assist homeless people. Housing assistance programs are discussed further in the *Housing* chapter.

### **Volunteering**

Volunteering is an essential part of the Australian Government's objective to promote social and economic participation, and to strengthen connections within communities. The Australian Government supports volunteering through a number of programs such as:

- the Volunteer Small Equipment Grants (administered by the Department of Family and Community Services)
- the Volunteer Management Program which funds 26 Volunteer Resource Centres throughout Australia (administered by Department of Family and Community Services)
- the Voluntary Work Initiative (administered by Department of Employment and Workplace Relations).

### **Retirement planning assistance**

The National Information Centre on Retirement Investments (NICRI) is an independent body funded by the Australian Government to provide the public with free information on financial investments, financial industry services and saving for retirement. NICRI can assist customers to provide for their retirement and to make the investment choices that are best for them.

The Financial Information Service (FIS) provided by specialist Centrelink officers, is an education and information service available to everyone in the community. FIS helps people make informed decisions about investment and financial issues for their current and future financial needs.

### **Youth and student support**

Youth and student support initiatives help young people's transition to independence and adulthood. Programs under this initiative include the Job, Placement, Employment and Training and Green Corps.

### **Working age assistance**

The Australia's Working Together initiative provides assistance to people of workforce age including job seekers, parents, people with disabilities, the unemployed, mature age people and Indigenous Australians. Initiatives include a Working Credit to encourage people on income support to take up full-time, part-time or irregular casual work; Training Credits; the Language, Literacy and Numeracy supplement; more places in employment services; and initiatives to assist Indigenous Australians.



## 7.24 DEFENCE SERVICE HOMES SCHEME

	Units	2001–02	2002–03	2003–04	2004–05
Subsidised loans					
Loans granted	no.	2 224	2 936	2 565	1 955
Loan accounts at 30 June	no.	57 096	51 120	45 755	41 393
Interest subsidy	\$m	12.0	10.5	9.2	7.5
Building insurance					
Homes insured at 30 June	no.	109 517	104 509	100 022	95 843

Source: Department of Veterans' Affairs.

Other programs include the Personal Support Programme and JET. The Government also funds Personal advisors who provide extra help to a range of eligible customers including those at a high risk of long-term dependency on income support.

Many of these initiatives will be superseded by the Australian Government's Welfare-to-Work measures announced in the 2005–06 Budget that take effect from 1 July 2006, subject to the passage of legislation.

### Support for people with a disability

The Disability Employment Assistance Program funds organisations under the *Disability Services Act 1986* (Cwth) to provide employment support to people with a disability who require assistance to gain and/or retain paid employment. This assistance may be provided in the open labour market or within a supported employment setting. In addition to this support, the Australian Government also funds programs designed to encourage employers to provide durable job opportunities for people with disabilities.

Support for people with disabilities is also provided through rehabilitation services to improve function and independence in people with a disability so they can gain or retain suitable employment, or live independently.

### Services provided to veterans and their families

#### Defence Service Homes (DSH) Scheme

The DSH Scheme provides financial benefits to recognise the contribution of certain men and women who have served Australia in either peacetime or wartime. The benefits include housing loan interest subsidies, comprehensive homeowners insurance cover at competitive rates, and home contents insurance (table 7.24).

### Military Compensation and Rehabilitation Service (MCRS)

The objective of MCRS is to ensure that current and former members of the Australian Defence Force (ADF), who suffer an injury or disease which is related to service in the ADF, are provided with compensation and rehabilitation benefits and services. The MCRS is responsible for providing benefits through the *Safety, Rehabilitation and Compensation Act 1988* (Cwlth). Table 7.25 summarises activities under the MCRS for 2003–04.

## 7.25 MILITARY COMPENSATION AND REHABILITATION SERVICE, Activities — 2004–05

	no.
Total lump sum and incapacity payees for 12 months ended 30 June 2005 (incl. dependent children)	5 284
New primary injury claims received	5 485
New permanent impairment claims received	5 475
New rehabilitation referrals received	1 113
New reconsideration requests received	1 534
New applications made to the AAT(a)	365
All accounts paid (incl. medical household services and attendant care)	113 015

(a) Administrative Appeals Tribunal.

Source: Department of Veterans' Affairs.

### Health program

Health care treatment is provided to people whose disabilities have been accepted by DVA as service-related, and for pulmonary tuberculosis, post-traumatic stress disorder and malignant neoplasia whether they are service-related or not. Vietnam veterans with anxiety and depression and Gulf War veterans with undiagnosable conditions are also eligible for health care treatment whether the conditions are service-related or not.

In addition, and subject to certain conditions, health care treatment in Australia is provided to certain veterans of Australia's defence forces for all health conditions. War widow(er)s and certain other dependants of deceased veterans are also entitled to treatment for all conditions.

Other services include:

- vocational rehabilitation services
- acute hospital care
- dental and pharmaceutical assistance
- transport assistance.

### **Vietnam Veterans' Counselling Service (VVCS)**

The VVCS provides counselling to veterans of all conflicts and their families, as well as working with the ex-service community to promote understanding and acceptance of veterans' problems.

Access to counselling services for rural veterans and their families was greatly improved with the establishment of the Country Outreach Program in 1988, followed soon after by a toll-free 1800 telephone link to all VVCS centres. Table 7.26 shows use of the VVCS.

**7.26 VIETNAM VETERANS' COUNSELLING SERVICE**

Type of counselling	Units	2001-02	2002-03	2003-04	2004-05
Centre-based consultation	visits	31 603	30 210	27 550	23 864
Group session consultation	hours	(a)15,910	14 792	13 709	13 140
Country outreach consultation	visits	31 353	36 314	39 518	41 178

(a) Estimates.

Source: *Department of Veterans' Affairs*.

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## HOUSING

Housing satisfies the essential needs of people for shelter, security and privacy. Shelter is recognised throughout the world as a basic human right. The adequacy or otherwise of housing is an important component of individual wellbeing. Housing also has great significance in the national economy, with its influence on investment levels, interest rates, building activity and employment.

The ways in which Australian families and individuals are housed reflect social, political and economic factors over the last century. For example, public health concerns towards the end of the 19th century resulted in legislation in the states which gave local government the authority to make building regulations and inspect dwellings, a responsibility they have to this day. Also at that time, demand for housing exceeded supply, rents were high, and overcrowding and slum conditions continued to be a problem into the 20th century. This led to states introducing further legislation for the provision of public rental housing for low income earners. In the 1920s, the Commonwealth Government moved to provide financial assistance for access to home ownership for moderate and low income groups, and a number of policy initiatives over recent decades have focused on this goal. Governments have continued to actively promote home ownership as part of an overall policy directed at achieving people's self-reliance in housing, and a quality of housing adequate for their needs.

The predominance of separate, free-standing houses situated on 'quarter-acre blocks' is a feature of Australian urban development. More recently, governments have moved to promote higher housing density, to provide greater choice of housing types and to make better use of existing infrastructure. This has resulted in changes to urban planning and building regulation. There have been some changes in the nature of housing, and efficiencies in the use of land and infrastructure. However, even within this new framework, green field developments and free-standing houses still predominate.

This chapter provides information on the types of dwellings Australians live in and their tenure arrangements, the affordability of housing, and the government assistance provided through housing and income support programs. It is based largely on information from the 2002–03 Survey of Income and Housing conducted by the Australian Bureau of Statistics. It also draws on information about house prices, finance commitments for owner occupation, and administrative data relating to public housing and rent assistance. Care should be taken when comparing statistics from different sources because of differences in the timing, conceptual bases and scope of individual statistical sources.

## Types of dwellings

The separate house is the most popular type of dwelling in Australia, making up almost 78% of total dwellings in 2002–03. Table 8.1 shows the different dwelling structure types in each state and territory in 2002–03. Tasmania had the highest proportion of separate houses (86%) and New South Wales and the Australian Capital Territory each had the lowest (73%).

Flats, units or apartments comprise 11% of total dwellings. New South Wales had the highest proportion of flats, units or apartments (16%), followed by the Northern Territory (15%). Western Australia, South Australia, Tasmania and the Australian Capital Territory had relatively low percentages of flats, units or apartments (5–8%).

Semi-detached, row or terrace houses, and townhouses accounted for 10% of total dwellings. There was a substantially greater proportion of semi-detached housing than of flats, units or apartments in Western Australia, South Australia

and the Australian Capital Territory. Conversely, New South Wales, Queensland and the Northern Territory had substantially more flats, units or apartments than semi-detached housing.

## Number of bedrooms

One indicator of dwelling size is the number of bedrooms. In 2002–03 nearly half (49%) of all dwellings had three bedrooms, 26% had four or more bedrooms and 21% had two bedrooms (table 8.2). Of separate houses, 56% had three bedrooms, while two-bedroom dwellings were more common in semi-detached houses and in flats, units and apartments (45% and 63% respectively).

Over a fifth (21%) of three-bedroom dwellings had only one person living in them, over a third (38%) had only two people, a further 19% had three people, and 16% had four people (table 8.3). Of two bedroom dwellings, most had one or two people living in them (45% and 40% respectively).

**8.1 ALL HOUSEHOLDS, By dwelling structure and state/territory — 2002–03**

	Separate house %	Semi-detached/row or terrace house/ townhouse %	Flat/unit/ apartment %	Total(a) %	All households(a) '000
New South Wales	73.0	10.4	15.8	100.0	2 537.7
Victoria	80.6	9.5	9.7	100.0	1 883.3
Queensland	79.2	7.7	11.9	100.0	1 471.6
South Australia	79.4	13.0	7.2	100.0	612.9
Western Australia	81.2	13.4	5.3	100.0	763.9
Tasmania	85.5	6.6	7.0	100.0	192.7
Northern Territory(b)	74.2	*8.0	14.9	100.0	53.2
Australian Capital Territory	73.0	19.5	7.5	100.0	122.9
<b>Australia</b>	<b>77.7</b>	<b>10.2</b>	<b>11.4</b>	<b>100.0</b>	<b>7 638.2</b>

(a) Includes other dwelling structures. (b) Excludes remote and sparsely settled areas.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

**8.2 ALL HOUSEHOLDS, By dwelling structure and number of bedrooms — 2002–03**

	Separate house '000	Semi-detached/row or terrace house/ townhouse '000	Flat/unit/ apartment '000	All households(a) '000
One bedroom	47.9	77.2	201.4	339.3
2 bedrooms	662.7	348.7	549.3	1 580.5
3 bedrooms	3 298.8	324.1	111.6	3 746.3
4 or more bedrooms	1 927.7	28.9	n.p.	1 958.0
<b>Total(b)</b>	<b>5 937.1</b>	<b>778.9</b>	<b>872.7</b>	<b>7 638.2</b>

(a) Includes other dwelling structures. (b) Includes bedsits and dwellings with zero bedrooms.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

### 8.3 ALL HOUSEHOLDS, By number of persons and number of bedrooms — 2002–03

	One person	Two persons	Three persons	Four persons	Five or more	Total	All households
	%	%	%	%	%		
One bedroom	85.9	13.0	n.p.	n.p.	n.p.	100.0	339.3
2 bedrooms	44.6	40.2	10.8	3.3	1.2	100.0	1 580.5
3 bedrooms	20.7	37.5	19.1	16.3	6.4	100.0	3 746.3
4 or more bedrooms	7.2	25.6	18.2	26.7	22.3	100.0	1 958.0
<b>Total(a)</b>	<b>25.2</b>	<b>33.8</b>	<b>16.3</b>	<b>15.5</b>	<b>9.1</b>	<b>100.0</b>	<b>7 638.2</b>

(a) Includes bedsits and dwellings with zero bedrooms.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

## Home ownership and renting

Of the 7.6 million households in Australia in 2002–03, 69% were living in their own home, and 27% were renting their dwelling from a private landlord or a state or territory housing authority (table 8.4).

In 2002–03, 36% of households owned their homes outright. In addition, 33% of households were paying off a mortgage or loan secured against their dwelling.

Of the nearly 2.2 million households renting their dwellings, 78% were renting from a private landlord (although some of the renters were receiving Commonwealth Rent Assistance (CRA)), 17% were renting from a state or territory housing authority and the remaining 5% from other landlords such as the owner/manager of a caravan

park, an employer (including a government authority) or a community or church group.

Almost 89% of owners lived in separate houses in 2002–03. Of renter households, 51% lived in separate houses and 28% lived in flats, units or apartments.

Over a third of households (37%) owning their own home outright were couples with no children. One-parent households accounted for 8% of outright owners, and lone-person households made up 28% (table 8.5).

For couple households with dependent children only, the majority (79%) were owners, while 20% were renting. Of one-parent families, 48% were home owners, 35% were renting from a private landlord and 13% were renting from a state or territory housing authority.

### 8.4 ALL HOUSEHOLDS, By dwelling structure and tenure and landlord type — 2002–03

Tenure and landlord type	Separate house	Semi-detached/row or terrace house/townhouse	Flat/unit/apartment	All households(a)
	'000	'000	'000	'000
Owner without a mortgage	2 450.2	181.3	124.3	2 780.4
Owner with a mortgage	2 260.1	151.3	107.2	2 525.0
Renter				
State/territory housing authority	173.5	120.9	78.4	372.8
Private landlord	875.9	285.1	512.6	1 680.2
Total(b)	1 097.3	426.8	611.4	2 153.2
Other tenure(c)	129.5	19.6	29.9	179.6
<b>Total</b>	<b>5 937.1</b>	<b>778.9</b>	<b>872.7</b>	<b>7 638.2</b>

(a) Includes other dwelling structures. (b) Includes other landlord types. (c) Includes rent free and life tenure.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

## 8.5 ALL HOUSEHOLDS, By tenure and landlord type and household composition — 2002–03

	Owner		Renter				All households '000
	Without a mortgage '000	With a mortgage '000	State/ territory housing authority '000	Private landlord '000	Total(a) '000	Other tenure(b) '000	
Couple, one family							
Couple only	1 033.8	531.8	28.6	303.9	348.8	28.8	1 943.2
Couple with dependent children only	321.4	1 044.5	28.9	294.7	338.0	25.5	1 729.4
Couple – other(c)	376.4	350.1	20.8	73.0	96.3	*3.5	826.2
Total	1 731.6	1 926.4	78.3	671.6	783.1	57.7	4 498.8
One parent, one family(d)	222.0	196.3	113.6	302.7	429.7	23.3	871.3
Lone person	768.6	315.6	173.8	536.4	758.0	85.0	1 927.3
Other	58.2	86.7	*7.2	169.5	182.4	*13.7	340.9
<b>Total</b>	<b>2 780.4</b>	<b>2 525.0</b>	<b>372.8</b>	<b>1 680.2</b>	<b>2 153.2</b>	<b>179.6</b>	<b>7 638.2</b>

(a) Includes other landlord types. (b) Includes rent free and life tenure. (c) Includes couples with non-dependent children and may include other family members. (d) Includes one-parent families with dependants or non-dependent children and may include other family members.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

Tenure patterns vary across states and territories. Victoria and Tasmania had a high proportion of overall home ownership, each having 74% of dwellings either owned outright or owned with a mortgage (table 8.6). The lowest proportion of overall home ownership (56%) was in the Northern Territory. The Australian Capital Territory, Northern Territory and Western Australia had the highest proportion of households with a mortgage on their home (41%, 40% and 37% respectively).

The Northern Territory had the highest proportion of renters at 43%. This was considerably higher than the national rate of 28%. The proportion of households renting from private landlords ranged from 16% in South Australia to 28% in the Northern Territory.

The differences in tenure partly reflect differences in the age and life cycle and family structures across states and territories (see *Housing and life cycle*).

## 8.6 ALL HOUSEHOLDS, By tenure and landlord type and state/territory — 2002–03

	Owner		Renter				All households '000	
	Without a mortgage %	With a mortgage %	State/ territory housing authority %	Private landlord %	Total(a) %	Other tenure(b) %		Total %
New South Wales	37.5	29.8	5.5	23.4	29.7	3.1	100.0	2 537.7
Victoria	39.6	34.4	3.5	19.9	24.5	1.5	100.0	1 883.3
Queensland	32.7	33.2	3.6	26.5	32.0	2.2	100.0	1 471.6
South Australia	35.9	35.1	8.2	15.5	26.3	2.7	100.0	612.9
Western Australia	34.1	37.1	4.7	20.1	26.4	2.5	100.0	763.9
Tasmania	41.1	32.9	6.3	16.3	23.8	2.3	100.0	192.7
Northern Territory(c)	16.0	39.8	*9.6	28.2	43.3	**1.0	100.0	53.2
Australian Capital Territory	28.2	40.8	9.2	20.4	29.6	*1.4	100.0	122.9
<b>Australia</b>	<b>36.4</b>	<b>33.1</b>	<b>4.9</b>	<b>22.0</b>	<b>28.2</b>	<b>2.4</b>	<b>100.0</b>	<b>7 638.2</b>

(a) Includes other landlord type. (b) Includes rent free and life tenure. (c) Excludes remote and sparsely settled areas.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.



## Housing costs and income

Housing costs cover different items for different types of tenure. For owners who have no mortgage, housing costs comprise the rates paid. For owners with a mortgage, housing costs consist of the value of the mortgage payments as well as property rates. For households renting their dwelling, housing costs comprise the regular rental amounts paid to landlords.

In the 2002–03 Survey of Income and Housing, owners with a mortgage reported average housing costs of \$246 per week, somewhat

higher than the average housing costs for other forms of tenure (table 8.7). Households renting from private landlords had average weekly housing costs of \$189, compared with \$81 for tenants of state or territory housing authorities. However, comparisons between the gross private rents paid and the rents paid by tenants of housing authorities do not account for those private renters receiving CRA. Whereas housing authority tenants pay a reduced rent, CRA recipients receive additional benefits from the Australian Government to enable higher private rents to be paid.

### 8.7 OWNER AND RENTER HOUSEHOLDS, Housing costs by household composition — 2002–03

Tenure and landlord type	Couple, one family						Other	Total
	Couple only	Couple with dependent children only	Couple –other	Total couples, one family	One parent and dependents, one family	Lone person		
<b>AVERAGE WEEKLY HOUSING COSTS (\$)</b>								
Owner without a mortgage	24	31	29	26	30	20	29	25
Owner with a mortgage	262	266	229	258	183	199	239	246
Renter – state/territory housing authority	93	125	146	119	84	59	101	81
Renter – private landlord	211	218	223	215	171	157	204	189
Total renters(a)	197	204	204	201	143	130	191	166
<b>Total owner and renter households</b>	<b>121</b>	<b>209</b>	<b>135</b>	<b>158</b>	<b>136</b>	<b>96</b>	<b>152</b>	<b>140</b>
<b>AVERAGE GROSS WEEKLY INCOME (\$)</b>								
Owner without a mortgage	807	1 352	1 613	1 083	880	437	1 105	901
Owner with a mortgage	1 514	1 455	1 997	1 570	853	810	1 562	1 439
Renter – state/territory housing authority	551	701	1 037	735	468	254	708	443
Renter – private landlord	1 223	1 111	1 611	1 216	618	606	1 248	950
Total renters(a)	1 162	1 078	1 492	1 167	570	518	1 189	854
<b>Total owner and renter households</b>	<b>1 068</b>	<b>1 361</b>	<b>1 763</b>	<b>1 309</b>	<b>683</b>	<b>534</b>	<b>1 253</b>	<b>1 070</b>
<b>AVERAGE HOUSING COSTS AS A PROPORTION OF INCOME (%)</b>								
Owner without a mortgage	3	2	2	2	3	*5	3	3
Owner with a mortgage	17	18	11	16	21	*25	15	17
Renter – state/territory housing authority	17	18	14	16	18	23	14	18
Renter – private landlord	17	20	14	18	28	26	**16	20
Total renters(a)	17	19	14	17	25	25	**16	19
<b>Total owner and renter households</b>	<b>11</b>	<b>15</b>	<b>8</b>	<b>12</b>	<b>20</b>	<b>17</b>	<b>*12</b>	<b>13</b>
<b>HOUSEHOLDS ('000)</b>								
Owner without a mortgage	1 033.8	321.4	376.4	1 731.6	74.3	768.6	205.9	2 780.4
Owner with a mortgage	531.8	1 044.5	350.1	1 926.4	123.7	315.6	159.3	2 525.0
Renter – state/territory housing authority	28.6	28.9	20.8	78.3	91.0	173.8	29.7	372.8
Renter – private landlord	303.9	294.7	73.0	671.6	212.5	536.4	259.7	1 680.2
Total renters(a)	348.8	338.0	96.3	783.1	315.6	758.0	296.4	2 153.2
<b>Total owner and renter households</b>	<b>1 914.4</b>	<b>1 703.9</b>	<b>822.7</b>	<b>4 444.1</b>	<b>513.6</b>	<b>1 842.3</b>	<b>661.6</b>	<b>7 458.6</b>
<b>HOUSEHOLD AND DWELLING SIZE (no.)</b>								
Average persons in household	2.0	4.0	3.9	3.1	2.9	1.0	2.7	2.5
Average bedrooms in dwelling	3.0	3.4	3.5	3.2	3.1	2.4	3.0	3.0

(a) Includes other landlord types.

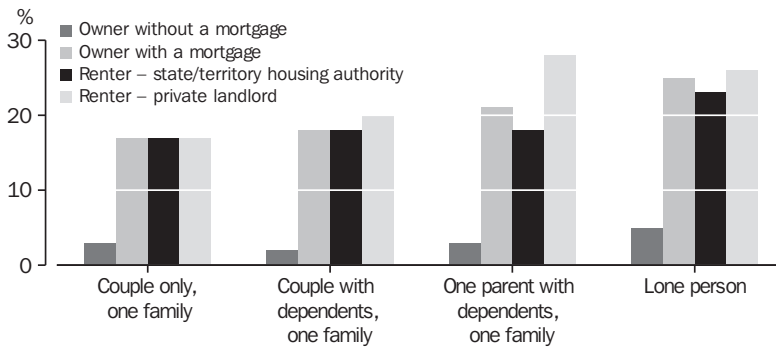
Source: ABS data available on request, Survey of Income and Housing, 2002–03.

For many households, weekly housing costs are a significant proportion of their gross weekly income. In 2002–03 housing costs represented 17% of gross weekly income for owners with a mortgage, 18% of gross weekly income for tenants of a state or territory housing authority and 20% of gross weekly income for tenants renting from a private landlord (table 8.7). Housing costs as a proportion of income differed depending on

tenure type, landlord type and household composition (graph 8.8 and table 8.9). However, treating CRA as a rent subsidy rather than as a component of income would reduce the difference in rents between private renters and housing authority tenants.

See also *Housing costs – capital cities*, which focuses on capital city households, drawing on results from the same survey.

**8.8 AVERAGE HOUSING COSTS AS A PROPORTION OF INCOME, By tenure and landlord type, and household composition — 2002–03**



Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

**8.9 OWNER AND RENTER HOUSEHOLDS, Housing costs as a proportion of income — 2002–03**

Housing costs as a proportion of income	Units	Owner without a mortgage	Owner with a mortgage	Renter			Total
				State/territory housing authority	Private landlord	Total(a)	
25% or less	%	96.8	71.1	78.5	57.0	61.4	77.9
More than 25–30%	%	*0.2	9.6	10.6	10.6	10.8	6.5
More than 30–50%	%	0.5	12.8	9.5	21.2	18.8	9.9
More than 50%(b)	%	2.5	6.5	*1.3	11.2	9.1	5.7
Total	%	100.0	100.0	100.0	100.0	100.0	100.0
Total households	'000	2 780.4	2 525.0	372.8	1 680.2	2 153.3	7 458.6

(a) Includes other landlord types. (b) Includes households with nil or negative total income.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

## Housing and life cycle

As people progress through different life-cycle stages and their family structures and financial situations change, so do their housing needs and preferences. An understanding of the relationships between life-cycle stage, income, housing costs and level of investment in home ownership can be useful in developing policies which enable home purchase among those who would otherwise find this difficult.

There are long-term benefits in home ownership. Initially, the cost of home purchase is often far greater than renting (due to the costs of deposits and fees, as well as ongoing mortgage repayments). However, the much lower costs associated with owning a home outright, and the investment that a home represents, can be major factors in the ongoing economic wellbeing of many Australians, particularly as many retire on considerably reduced incomes.

In the 2002–03 Survey of Income and Housing, ongoing housing costs comprised:

- mortgage or loan repayments (secured or unsecured) where the purpose of the loan was to buy or build, add to or alter the dwelling
- rental payments
- water and general council rates.

Only payments which related to the dwelling occupied at the time of the survey interview were included.

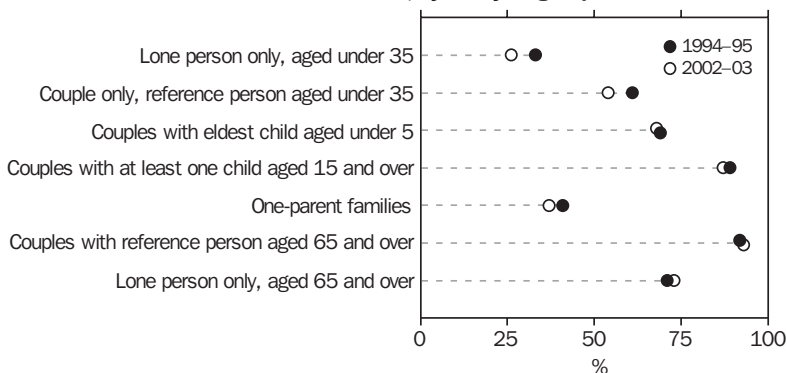
The survey estimated that the average weekly housing costs for all households in 2002–03 were \$137. Outright owners (those without a mortgage) had the lowest average weekly housing costs (\$25), while those with a mortgage had the highest costs, spending an average of \$246 per week. On average, those households that were renting paid \$166 per week in housing costs (table 8.7).

Most Australian households live in separate houses (78% in 2002–03). However, as with tenure, the type and size of dwellings and housing costs vary across different life-cycle groups.

The life-cycle groups whose housing circumstances are discussed in this section include:

- lone person aged under 35 years
- couple only, reference person aged under 35 years
- couple, eldest child aged under 5 years
- couple, at least one dependent child aged 15 years and over
- one-parent family with dependent children
- couple only, reference person aged 65 years and over
- lone person aged 65 years and over.

**8.10 HOME OWNERS, By life-cycle group**



Source: ABS data available on request, Survey of Income and Housing, 1994–95 and 2002–03.

*Dependent children* are children aged under 15 years plus full-time students aged 15–24 years living with a parent and without a partner or child of their own in the household.

The *reference person* for each household is chosen by applying, to all usual residents aged 15 years and over in the household, the following selection criteria, in order of precedence:

- the person with the highest tenure type ranked from owner without a mortgage, owner with a mortgage, renter, other tenure, or
- the person with the highest income, or
- the oldest person.

In 2002–03, 69% of Australian households owned their homes (table 8.6). The tenure of a household is strongly related to life-cycle stages, generally following a pattern of renting in early adulthood, moving to home purchase and mortgages as partnerships are formed and children are born, and owning the home outright in older age. However for some, family breakdown disrupts this pattern.

Between 1994–95 and 2002–03 the home ownership rates of various life-cycle groups showed little change. However, there were exceptions. For young households, both lone person and couples without children, the rate fell (33% to 26% and 61% to 54% respectively) (graph 8.10).

### **Young households (under 35 years)**

In 2002–03 young lone-person and couple-only households (those with a reference person aged under 35 years), comprised about 11% of all households in Australia (lone-person households comprising 5% and couple-only households comprising 6%). People in these households are generally more mobile. Many are studying or starting their careers, and are likely to be on lower incomes than they will be at later stages in their lives. In many cases, they are yet to move into home ownership.

Young lone-person households were most likely of all life-cycle groups to be renting (66%), with most of these (94%) renting from private landlords (table 8.11). Only a quarter of young lone-person households had moved into home ownership, and most that had, did so with a

mortgage. However, young people are more inclined to move into home ownership as they form couples. Just over half of young couple households without children owned their own home. As was the case for young lone-person households, most of these couples had a mortgage.

In keeping with their larger household size, young couples without children lived in dwellings where the average number of bedrooms was higher than for young lone persons (2.7 compared with 2.2). Young couple households without children were also more likely than young lone-person households to live in separate dwellings (64% compared with 42%), with the majority of young singles living in semi-detached dwellings or flats.

Reflecting their lower household incomes, young lone persons spent on average over a fifth (23%) of their income on housing. Young couple households without children (many of whom are on dual incomes) on average spent a lower proportion of their income on housing costs (17%) than young lone-person households, despite the fact that they had much higher average weekly housing costs (\$255 compared with \$154).

### **Families with children**

As families are formed and grow, housing needs and preferences change. The birth of children increases family size and often results in the household shifting back to dependence on a single income when children are very young. The trend to home purchase and moving into larger dwellings increases as couples and their children grow older. At this time, parents' incomes are likely to be higher than those in younger life-cycle groups due to their more established careers and the move of parents (mainly mothers) back into the workforce and full-time employment.

Of couple families with all children aged under 5 years, 68% were home owners (60% were paying off a mortgage) (table 8.12). Among households containing couple families with older children (at least one aged 15 years and over), home ownership was higher (87%) than for those with younger children and nearly a third (31%) owned their home outright.

### 8.11 YOUNG PEOPLE, Selected characteristics — 2002–03

	Units	Household composition	
		Lone person aged under 35 years	Couple only, reference person aged under 35 years
<b>Tenure type</b>			
Owner without a mortgage	%	3.9	5.5
Owner with a mortgage	%	22.6	48.5
Renters	%	66.0	44.4
<b>Average housing costs as a proportion of income</b>			
Owner without a mortgage	%	3	2
Owner with a mortgage	%	27	21
Renters	%	24	16
All households	%	23	17
<b>Proportion of income spent on housing costs</b>			
25% or less	%	50.8	76.3
More than 50%(a)	%	15.4	5.2
Proportion in a separate house	%	41.9	64.4
<b>Average weekly housing costs</b>			
Owner without a mortgage	\$	25	32
Owner with a mortgage	\$	219	332
Renters	\$	158	209
All households	\$	154	255
Average bedrooms in dwelling	no.	2.2	2.7
Total households	'000	371.8	442.6

(a) Includes households with nil or negative total income.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

Income levels vary considerably over a person's life cycle. Household incomes for couples, and hence their capacity to pay for larger, more expensive homes, usually increase as their children grow older. In 2002–03, most couple households with young children lived in separate houses (82%) and in homes with three or more bedrooms (82%). However, couple households with older dependent children were even more likely to do so (93% and 97% respectively). Despite this, housing costs for couple households with young children were generally higher (\$230 on average per week, representing 20% of their average weekly income) than for couples with older children (\$171 which constituted 11% of their weekly income). This is likely to reflect the fact that couple households with young children usually have less equity in their homes than couples with older children. The former households are also more likely to have bought their home more recently and, therefore, to have purchased their house at a higher price.

For those who owned a house, average weekly housing costs for couples with young children

ranged from \$280 for those with a mortgage to \$30 for those without a mortgage. For couples with older children, average weekly housing costs ranged from \$239 for those with a mortgage to \$32 for those without a mortgage.

When families are disrupted through divorce or separation, the trend towards home ownership is often reversed, reflecting reduced household incomes and the splitting of family assets. As a result, the household may move from home ownership back to renting, and also into a smaller, more affordable home. One-parent households with dependent children were more likely to be renting (60%) than to own their home (37%), and they were the life-cycle group most likely to be renting through a state or territory housing authority (17%). In 2002–03, while most one-parent households with dependent children lived in separate dwellings (77%) and in dwellings with at least three bedrooms (80%), these proportions were lower than for couples with dependent children.

Average weekly housing costs for lone-parent households with dependent children were \$132 or 19% of their average weekly income. Among these households, private renters paid \$171, on average, in housing costs which represented 28% of average weekly income. One-parent households with dependent children were nearly three times as likely as couple households with at least one dependent child aged 15 years or over to spend more than 25% of their income on housing (15% compared with 39%). Just 7% of lone-parent households with dependent children spent more than 50% of their income on housing.

### Older persons (65 years and over)

Home ownership is very high among older people, with outright ownership by far the most common tenure type for Australians aged 65 years

and over. The benefits of this to older people include lower housing costs, security of tenure, and having an asset that may be realised for future expenditure or passed on to later generations as inheritance.

In 2002–03 older persons living in a couple only household (those where the reference person was aged 65 years and over) had very high ownership rates (93%), with 89% owning their home outright. Older lone-person households (which are often formed when a partner dies) had a home ownership rate of 73%, with 72% owning their home outright. Older lone-person households were more likely to be renting than older couple only households (21% compared with 6%) with 10% of older people living alone renting from state or territory housing authorities.

## 8.12 FAMILIES WITH CHILDREN, Selected characteristics — 2002–03

	Units	Household composition		
		Couple with eldest child aged under 5 years	Couple with at least one dependent child aged 15 years and over	Lone parent with dependent children
<b>Tenure type</b>				
Owner without a mortgage	%	8.1	31.0	14.0
Owner with a mortgage	%	59.6	55.9	23.4
Renters	%	29.8	12.3	59.7
<b>Average housing costs as a proportion of income</b>				
Owner without a mortgage	%	3	2	3
Owner with a mortgage	%	22	15	21
Renters	%	20	17	25
All households	%	20	11	19
<b>Proportion of income spent on housing costs</b>				
25% or less	%	67.1	85.3	60.5
More than 50%(a)	%	7.0	2.8	7.4
<b>Proportion in a separate house</b>	%	82.2	92.7	76.8
<b>Average weekly housing costs</b>				
Owner without a mortgage	\$	30	32	30
Owner with a mortgage	\$	280	239	183
Renters	\$	203	220	143
All households	\$	230	171	132
<b>Average persons in household</b>	no.	3.4	4.3	2.9
<b>Average bedrooms in dwelling</b>	no.	3.1	3.7	3.1
<b>Total households</b>	'000	405.6	664.3	528.8

(a) Includes households with nil or negative total income.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

In 2002–03 the average weekly income of older person households was lower than for any other life-cycle group (reflecting the likelihood that household members had retired). However, average weekly housing costs for this group were also lower than for other life-cycle groups (\$31 for both couple households and lone-person households). Even for those older person households with a mortgage, average weekly housing costs were relatively low (\$98 for older couple households and \$52 for older lone-person households) (table 8.13). This partly reflects the fact many of these households purchased their first home some decades earlier when home prices and mortgages were considerably lower. However, for the small proportion who were renting, housing payments consumed a relatively large proportion of their incomes. The 8% of older lone-person households that were renting from private landlords spent a very high proportion of their income (46%) on housing costs. However, those older lone persons on low incomes that were renting privately may also have received CRA.

Reflecting their smaller household size, the homes of older lone persons were more likely to be smaller than those of older couples. Older lone persons were less likely to live in separate dwellings than older couples (65% compared with 88%) and more likely to be living in dwellings with fewer bedrooms than older couples (2.4 bedrooms on average compared with 3.0).

For many older people the onset of diminished health and disabilities, and the need for security and ready access to services such as public transport, are often key considerations in their choice of housing, especially after the death of a partner. The growing proportion of older persons (in particular of persons aged 80 years and over) has led to the emergence of new types of housing such as self-care dwellings in retirement villages. Results from the 2001 census show there were 62,570 occupied dwellings of this type.

### 8.13 OLDER PEOPLE, Selected characteristics — 2002–03

	Units	Household composition	
		Couple only, reference person aged 65 years and over	Lone person aged 65 years and over
<b>Tenure type</b>			
Owner without a mortgage	%	88.7	71.7
Owner with a mortgage	%	3.8	1.6
Renters	%	5.6	21.1
<b>Average housing costs as a proportion of income</b>			
Owner without a mortgage	%	4	5
Owner with a mortgage	%	16	21
Renters	%	28	33
All households	%	5	10
<b>Proportion of income spent on housing costs</b>			
25% or less	%	92.5	87.1
More than 50%(a)	%	*2.1	4.4
<b>Proportion in a separate house</b>	%	87.7	65.0
<b>Average weekly housing costs</b>			
Owner without a mortgage	\$	21	18
Owner with a mortgage	\$	98	52
Renters	\$	141	83
All households	\$	31	31
<b>Average bedrooms in dwelling</b>	no.	3.0	2.4
<b>Total households</b>	'000	609.9	680.2

(a) Includes households with nil or negative total income.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.



## Housing costs – capital cities

In 2002–03 the average weekly housing costs for households in all capital cities were \$158 (table 8.14). However, there was considerable variation between capital cities. Hobart had the lowest average housing costs at \$98 per week.

Sydney had the highest average weekly housing costs for most tenure and landlord types. Canberra recorded the second highest average weekly housing costs for total households (\$167 compared with Sydney's \$190), partially reflecting the larger proportion of households in Canberra with mortgages on their homes.

### 8.14 CAPITAL CITY OWNER AND RENTER HOUSEHOLDS, Housing costs — 2002–03

Tenure and landlord type	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Canberra	All capital cities(a)
<b>AVERAGE WEEKLY HOUSING COSTS (\$)</b>								
Owner without a mortgage	29	25	28	23	22	23	29	26
Owner with a mortgage	330	266	235	193	237	170	254	267
Renter – state/territory housing authority	82	87	77	81	68	91	112	83
Renter – private landlord	260	196	177	158	160	134	209	209
Total renters(b)	230	180	162	129	143	120	179	185
<b>Total owner and renter households</b>	<b>190</b>	<b>152</b>	<b>147</b>	<b>115</b>	<b>139</b>	<b>98</b>	<b>167</b>	<b>158</b>
<b>AVERAGE GROSS WEEKLY INCOME (\$)</b>								
Owner without a mortgage	1 047	958	934	817	928	790	1 395	975
Owner with a mortgage	1 735	1 563	1 438	1 321	1 409	1 146	1 675	1 547
Renter – state/territory housing authority	437	421	481	399	348	441	672	439
Renter – private landlord	1 211	1 021	873	866	849	752	1 169	1 041
Total renters(b)	1 080	928	818	690	756	650	1 014	926
<b>Total owner and renter households</b>	<b>1 280</b>	<b>1 170</b>	<b>1 074</b>	<b>966</b>	<b>1 078</b>	<b>876</b>	<b>1 397</b>	<b>1 164</b>
<b>AVERAGE HOUSING COSTS AS A PROPORTION OF INCOME (%)</b>								
Owner without a mortgage	3	3	3	3	2	3	2	3
Owner with a mortgage	19	17	16	15	17	15	15	17
Renter – state/territory housing authority	19	21	16	20	20	21	17	19
Renter – private landlord	21	19	20	18	19	18	18	20
Total renters(b)	21	19	20	19	19	18	18	20
<b>Total owner and renter households</b>	<b>15</b>	<b>13</b>	<b>14</b>	<b>12</b>	<b>13</b>	<b>11</b>	<b>12</b>	<b>14</b>
<b>HOUSEHOLDS ('000)</b>								
Owner without a mortgage	538.9	512.1	199.4	157.1	189.6	31.7	34.6	1 672.1
Owner with a mortgage	486.9	483.7	228.8	164.3	223.1	27.2	50.2	1 685.2
Renter – state/territory housing authority	75.8	37.6	25.6	37.1	24.6	6.5	11.3	223.6
Renter – private landlord	399.0	284.2	177.2	77.3	115.0	13.5	25.1	1 106.2
Total renters(b)	481.0	336.7	214.9	125.4	141.0	20.2	36.4	1 378.6
<b>Total owner and renter households</b>	<b>1 506.7</b>	<b>1 332.5</b>	<b>643.1</b>	<b>446.8</b>	<b>553.8</b>	<b>79.0</b>	<b>121.2</b>	<b>4 735.8</b>

(a) Includes households in the NT, for which disaggregated data are not sufficiently accurate for most purposes. (b) Includes other landlord type.

Source: ABS data available on request, Survey of Income and Housing, 2002–03.

## House prices – capital cities

In 2004–05 the established house price index for the weighted average of eight capital cities index rose by 2.7% (table 8.15). This was the lowest annual increase since 1996–97. Established house prices rose in Darwin (12.1%), Perth (10.6%), Adelaide (9.3%), Brisbane (7.7%), Hobart (4.6%) and Canberra (2.2%), but fell in Sydney (–0.9%) and Melbourne (–0.7%).

In 2004–05 project home prices (cost of new dwellings excluding land) rose in all capital cities (table 8.16). Perth recorded the largest increase (11.9%), followed by Hobart (11.6%), Darwin (9.4%), Brisbane (5.5%), Sydney (5.2%), Adelaide (3.6%), Melbourne (3.3%) and Canberra (2.0%). The index for the weighted average of eight capital cities rose by 6.1% in 2004–05.

The price index of materials used in house building is discussed in the *Construction* chapter.

### 8.15 PRICE INDEXES FOR ESTABLISHED HOUSES(a)(b)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER									
2002–03	233.0	216.4	211.8	182.6	164.4	157.1	218.2	207.2	209.9
2003–04	266.3	237.0	279.6	221.9	195.0	187.5	245.3	252.4	245.0
2004–05	264.0	235.3	301.2	242.5	215.7	196.2	275.1	258.0	251.5
CHANGE FROM PREVIOUS YEAR (%)									
2002–03	21.2	11.7	24.7	21.7	13.0	12.1	6.9	19.7	17.9
2003–04	14.3	9.5	32.0	21.5	18.6	19.4	12.4	21.8	16.7
2004–05	–0.9	–0.7	7.7	9.3	10.6	4.6	12.1	2.2	2.7

(a) Reference base year is 1989–90 = 100.0. (b) The separate city indexes measure price movement within each city individually. They do not compare price levels between cities.

Source: *House Price Indexes: Eight Capital Cities (6416.0)*.

### 8.16 PRICE INDEXES FOR PROJECT HOMES(a)(b)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER									
2002–03	145.2	147.2	142.9	155.9	132.9	158.5	167.2	171.4	144.1
2003–04	151.2	153.1	161.7	165.9	145.4	172.0	176.4	187.0	154.8
2004–05	159.1	158.1	170.6	171.9	162.7	191.9	193.0	190.7	164.2
CHANGE FROM PREVIOUS YEAR (%)									
2002–03	2.8	3.6	7.0	5.2	3.2	9.2	5.5	6.3	4.3
2003–04	4.1	4.0	13.2	6.4	9.4	8.5	5.5	9.1	7.4
2004–05	5.2	3.3	5.5	3.6	11.9	11.6	9.4	2.0	6.1

(a) Reference base year is 1989–90 = 100.0. (b) The separate city indexes measure price movement within each city individually. They do not compare price levels between cities.

Source: *House Price Indexes: Eight Capital Cities (6416.0)*.

## Value of dwellings

In the 2002–03 Survey of Income and Housing, owners were asked to estimate the value of their dwelling. These estimates may differ significantly from valuations made by accredited valuers and from an achievable sale price of the dwelling. The extent of the possible difference has not been measured. Therefore some care needs to be exercised in the use of these data.

The median owner-estimated value of dwellings for capital cities was \$300,000, 20% higher than the national median (\$250,000). The median value was highest in Sydney at \$431,000 and lowest in Hobart at \$151,000 (table 8.17).

## Housing finance for owner occupation and investment

In 2004–05 a total of 637,166 housing finance commitments for owner occupation were made by lenders, a moderate decrease (down 3.5%) on the previous year total of 660,264 (table 8.18). The total value of commitments for owner occupied housing increased to \$133,666 million (m), up 4.7% from \$127,632m in 2003–04. The average loan size rose from \$193,300 in 2003–04 to \$209,800 in 2004–05.

Construction finance commitments for owner occupied housing in 2004–05, at 53,120, were 8.8% lower than in 2003–04, continuing a downturn that began in the second half of 2003–04. The total value of commitments for the construction of owner occupied housing

decreased slightly to \$11,544m (down 1.3% on 2003–04). Commitments to purchase new dwellings for owner occupation rose by 9.9% from 2003–04 to 24,483 and increased in value to \$5,763m (up 14.6%).

The number of commitments for the purchase of established dwellings for owner occupation (including refinancing) fell by 3.5% (or 20,192 commitments) in 2004–05. The total value of commitments for the purchase of established dwellings, however, grew – increasing by 4.9% in 2004–05 to reach \$116,358m. The average loan size for the purchase of established dwellings for owner occupation increased to \$207,900 in 2004–05, rising from \$191,300 in 2003–04.

In number terms, bank commitments for owner occupied housing fell by 2.4% in 2004–05, while commitments from permanent building societies fell 11.8%. Other lenders, which include credit unions and wholesale lenders, decreased commitments by 6.1% in 2004–05.

There were 102,144 commitments for owner occupied housing to first home buyers in 2004–05, up on the previous year total of 88,400. First home buyers accounted for 16.0% of all commitments for owner occupied housing in 2004–05, up from the 2003–04 figure of 13.4%.

In 2004–05 a total of \$67,481m was approved for investment housing purposes, down 13.0% on the figure recorded in 2003–04. In 2004–05 the largest component of investment housing, the purchase of dwellings by individuals for rent or resale, fell 15.2% to \$54,827m (table 8.19).

**8.17 CAPITAL CITY OWNER HOUSEHOLDS, Value of dwelling(a) by dwelling structure — 2002–03**

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Canberra	Capital city owner households(b)	Total owner households
MEDIAN ESTIMATED VALUE OF DWELLING (\$'000)									
Separate house	450.0	290.0	240.0	185.0	235.0	160.0	290.0	300.0	250.0
Semi-detached/row or terrace house/townhouse	425.0	320.0	230.0	162.0	170.0	90.0	220.0	300.0	270.0
Flat/unit/apartment	340.0	250.0	250.0	140.0	n.p.	n.p.	n.p.	285.0	275.0
Total(c)	430.0	290.0	240.0	185.0	220.0	150.0	280.0	300.0	250.0
NUMBER ('000)									
Households	1 025.8	995.8	428.2	321.4	412.7	58.8	84.8	3 357.2	5 305.4

(a) As reported by owners. (b) Includes households in the NT, for which data are not available separately due to high sampling error. (c) Includes other dwelling structure.

Source: ABS data available on request, *Survey of Income and Housing, 2002–03*.

**8.18 SECURED HOUSING FINANCE COMMITMENTS FOR OWNER OCCUPATION(a),  
By purpose and type of lender(b)**

	Units	Type of lender			Total
		Banks	Permanent building societies	Other lenders(c)	
<b>CONSTRUCTION OF DWELLINGS</b>					
Dwelling units					
2001-02	no.	56 267	3 697	7 861	67 825
2002-03	no.	46 887	2 617	6 656	56 160
2003-04	no.	46 406	2 650	9 166	58 222
2004-05	no.	42 524	2144	8 452	53 120
Value of commitments					
2001-02	\$m	8 939	548	1 111	10 597
2002-03	\$m	8 717	418	958	10 093
2003-04	\$m	9 668	453	1 569	11 690
2004-05	\$m	9 510	406	1 628	11 544
<b>PURCHASE OF NEWLY ERECTED DWELLINGS</b>					
Dwelling units					
2001-02	no.	17 006	283	3 154	20 443
2002-03	no.	14 302	393	3 095	17 790
2003-04	no.	15 573	425	6 289	22 287
2004-05	no.	14 720	432	9 331	24 483
Value of commitments					
2001-02	\$m	3 057	39	444	3 540
2002-03	\$m	2 962	57	461	3 480
2003-04	\$m	3 673	71	1 285	5 030
2004-05	\$m	3 696	69	1 998	5 763
<b>PURCHASE OF ESTABLISHED DWELLINGS(d)</b>					
Dwelling units					
2001-02	no.	404 120	22 918	114 261	541 299
2002-03	no.	412 886	22 715	125 243	560 844
2003-04	no.	433 721	22 649	123 385	579 755
2004-05	no.	426 797	20 120	112 646	559 563
Value of commitments					
2001-02	\$m	62 602	2 971	17 040	82 613
2002-03	\$m	72 230	3 209	19 357	94 796
2003-04	\$m	85 377	3 426	22 109	110 912
2004-05	\$m	91 406	3 331	21 621	116 358
<b>TOTAL</b>					
Dwelling units					
2001-02	no.	477 393	26 898	125 276	629 567
2002-03	no.	474 075	25 725	134 994	634 794
2003-04	no.	495 700	25 724	138 840	660 264
2004-05	no.	484 041	22 696	130 429	637 166
Value of commitments					
2001-02	\$m	74 598	3 558	18 595	96 750
2002-03	\$m	83 909	3 685	20 776	108 370
2003-04	\$m	98 718	3 950	24 964	127 632
2004-05	\$m	104 612	3 806	25 248	133 666

(a) Excludes alterations and additions. (b) Caution should be exercised in using these statistics to calculate market share because, while all banks and permanent building societies are selected, only a sample of other lenders are selected. (c) Includes wholesale lenders n.e.c. (d) Includes refinancing.

Source: *Housing Finance, Australia (5609.0)*.

## 8.19 FINANCE COMMITMENTS FOR INVESTMENT HOUSING, By purpose

	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m
Construction of dwellings for rent or resale	4 443	8 006	6 481	7 107
Purchase of dwellings by individuals for rent or resale	39 317	52 115	64 666	54 827
Purchase of dwellings by others for rent or resale	3 846	5 538	6 344	5 547
<b>Total</b>	<b>47 606</b>	<b>65 660</b>	<b>77 491</b>	<b>67 481</b>

Source: *Housing Finance, Australia* (5609.0).

## Housing assistance

*This section was contributed by the Australian Government Department of Family and Community Services (September 2005).*

While most Australians are able to house themselves without government assistance, such assistance remains important for various population groups, especially low income earners and social security recipients. Housing assistance is provided by the Australian Government, and the state and territory governments through a range of housing and other programs. Assistance for people with low incomes is provided through public housing, home purchase assistance and rent assistance schemes. Assistance is also provided to community organisations and local governments for refuges and crisis accommodation.

The Commonwealth State Housing Agreement (CSHA) is an agreement made between the Australian, state and territory governments under the *Housing Assistance Act 1996* (Cwlth) to

provide strategic direction and funding certainty for the provision of housing assistance. The aim of this agreement is to provide appropriate, affordable and secure housing assistance for those who most need it, for the duration of their need.

The Australian Government Minister for Family and Community Services, and state and territory Housing Ministers committed to a new CSHA operating from July 2003 to June 2008. Ministers expressed commitment to the development of positive options for a new CSHA that will create: a modern, sustainable housing system; support community development and the renewal of public housing estates; support wider government outcomes in health, education and labour market reform; and stimulate private sector investment in the supply of low cost housing. The Australian Government contribution will be \$4.75 billion over the five-year agreement. The CSHA sets out the terms for the provision of housing assistance for rental housing, home purchase and other specific housing programs. Details of Australian Government assistance provided under the CSHA for 2004-05 are set out in table 8.20.

## 8.20 COMMONWEALTH STATE HOUSING AGREEMENT, Payments to states and territories — 2004-05

	NSW	Vic.	Qld	WA	SA	Tas.	ACT	NT	Aust.
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Base funding	241 180	177 681	137 897	70 708	54 991	21 401	16 777	13 138	<b>733 773</b>
Community Housing Program	21 735	16 013	12 428	6 372	4 956	1 553	1 044	643	<b>64 744</b>
Aboriginal Rental Housing Program	17 987	3 680	27 900	18 364	9 025	696	—	24 420	<b>102 072</b>
Crisis Accommodation Program	13 469	9 923	7 701	3 949	3 071	963	647	399	<b>40 122</b>
<b>Total</b>	<b>294 371</b>	<b>207 297</b>	<b>185 926</b>	<b>99 393</b>	<b>72 043</b>	<b>24 613</b>	<b>18 468</b>	<b>38 600</b>	<b>940 711</b>

Source: *Department of Family and Community Services*.

## Home purchase assistance

Home Purchase Assistance (HPA) is provided by some states to assist low-to-moderate income households to purchase a home or to provide help with mortgage repayments. Some of the mechanisms used to assist low-to-moderate income earners include loans, shared equity schemes, deposit assistance and mortgage relief. States offer HPA options in line with local market conditions. The emphasis given to loan products varies significantly between jurisdictions. Western Australia and South Australia placed the greatest emphasis on various forms of subsidised loan products, partly due to lower housing prices, which make home purchase feasible on lower incomes. Other jurisdictions such as New South Wales gave greater emphasis to mortgage relief for home purchasers experiencing hardship.

## Rent assistance

The Australian Government pays rent assistance, a non-taxable income supplement, to eligible social security customers who pay rent in the private rental market. Rent can include private rent, lodgings, board and lodgings, site fees, fees to moor a vessel, or service and maintenance fees in a retirement village.

To be eligible for rent assistance, a customer must first pay rent above a certain threshold level, then rent assistance is paid at the rate of 75 cents in each dollar above the threshold, until a maximum amount is reached. Maximum rates and thresholds vary depending on a person's family situation.

Rent assistance is indexed twice-yearly in March and September to the consumer price index.

At 4 March 2005 there were 941,120 income units entitled to rent assistance, where an income unit is defined as a single person with or without dependants, or a couple with or without dependants. The average rent paid by rent assistance customers was \$290 per fortnight while the average rent assistance received was \$80 per fortnight.

A large proportion of rent assistance customers are either single people or sole parents. In March 2005, 52% of rent assistance customers were single with no dependent children, 24% were single with dependent children, 15% were couples with dependent children and 8% were couples without dependent children.

Table 8.21 provides details of the number of rent assistance customers, average fortnightly rates of rent assistance and average fortnightly rents in March 2005. Outlays on rent assistance are included in the total expenditure on Pensions, Allowance and Family Tax Benefits, details of which are provided in the *Income and welfare* chapter.

## Crisis accommodation

The Australian Government, and the state and territory governments provide assistance to people who are homeless or at imminent risk of homelessness, through the Supported Accommodation Assistance Program (SAAP) (AIHW 2002). SAAP is a jointly funded program between Australian, state and territory governments. SAAP V is currently being negotiated between the Australian Government and state and territory governments.

## Housing assistance programs for Indigenous people

The Australian Government Department of Family and Community Services administers a number of programs to improve the living environment of Aboriginal and Torres Strait Islander peoples, including the Community Housing and Infrastructure Program (CHIP). CHIP aims to provide appropriate, safe and affordable housing and improve community and individual health and well being.

CHIP provides funds for the construction, purchase, repair and management of community housing as well as for the provision and maintenance of housing related infrastructure (essential services such as water, sewerage, electricity and community roads) and recurrent funding for the provision of municipal services. Through CHIP, funding is provided to:

- Indigenous community organisations
- state Indigenous housing authorities where bilateral agreements are in place
- Indigenous community organisations under the National Aboriginal Health Strategy where the financial and technical aspects of the projects are managed under Contracted Program Management arrangements.

## 8.21 RECIPIENTS OF RENT ASSISTANCE, Average rent assistance and rent paid — 4 March 2005

	Income units(a) no.	Average rent assistance(b) \$ per fortnight	Average rent paid(c) \$ per fortnight
<b>All recipients</b>	<b>941 120</b>	<b>80.5</b>	<b>290.3</b>
Primary payment type(d)			
Youth Allowance	69 464	64	214
Age Pension	167 135	74	247
Disability Support Pension	171 282	81	250
Newstart Allowance	176 634	76	257
Parenting Payment (single)	198 476	92	342
Parenting Payment (partnered)	27 637	105	405
Family Tax Benefit Part A	93 315	78	422
Other	37 177	80	272
Income unit type			
Single – no dependent children	492 389	73	228
Couple – no dependent children	78 477	76	311
Single – 1 or 2 dependent children	193 414	89	338
Single – 3 or more dependent children	33 476	103	374
Couple – 1 or 2 dependent children	100 619	86	404
Couple – 3 or more dependent children	40 043	99	421
Couple – temporarily separated	2 702	98	338

(a) Income units are couples or singles either with or without dependent children. Dependent children are those for whom Family Tax Benefit is being paid. Income units are counted if either member is entitled to Rent Assistance as at 4 March 2005. (b) Average Rent Assistance is taken to be 14 times the daily entitlement to Rent Assistance for 4 March 2005. (c) Average rent is the average rent taken into account in working out entitlements for 4 March 2005. (d) One member of a couple is treated as the reference person for the income unit, based on the type of payment they receive. The general order of priority is Pensions, Allowances, Family Tax Benefit. An income unit will be reported as receiving Parenting Payment (Partnered) only if neither member of the couple receives another social security payment. They will only be reported as receiving FTB Part A if neither receives a social security payment.

Source: Department of Family and Community Services.

In 2004–05, CHIP expenditure totalled \$249m, of which around half went to the provision of housing. Over 500 houses were purchased/constructed and over 1,000 houses upgraded/renovated. CHIP has a particular focus on environmental health related infrastructure, via a specific sub-program called the National Aboriginal Health Strategy (NAHS). NAHS projects are generally large-scale projects targeting priority housing and infrastructure including power, water and waste removal, mainly in rural and remote Indigenous communities. In 2004–05 more than \$56m of funding was provided under NAHS.

As shown below in table 8.22, most expenditure under the CHIP is in Queensland, Western Australia and the Northern Territory.

CHIP supplements the efforts of state and territory governments who also receive Aboriginal Rental Housing Program funding (\$102m in 2004–05) through the Commonwealth/State Housing Agreement.

The Australian Government and the state and territory governments are developing new Indigenous Housing and Infrastructure Agreements in order to maximise Indigenous housing program efficiency and effectiveness through an integrated approach to the planning and delivery of housing and housing related infrastructure services. These agreements will cover the period 2005–08 and will replace interim agreements in place for 2004–05.

### National Indigenous Housing Reforms

The Standing Committee on Indigenous Housing (SCIH) is comprised of Australian Government and state and territory Indigenous housing officials. SCIH reports on its activities directly to the Housing Ministers Advisory Council (HMAC) and, in particular, manages the implementation of the Housing Ministers' Ten Year Statement of New Directions *Building a Better Future: Indigenous Housing to 2010* (BBF).



## 8.22 COMMUNITY HOUSING AND INFRASTRUCTURE PROGRAM EXPENDITURE — 2004–05

	Expenditure	Proportion of total
	\$	%
New South Wales	21 847 441	8.79
Victoria	7 950 619	3.20
Queensland	37 998 071	15.28
South Australia	30 147 595	12.13
Western Australia	72 657 023	29.23
Tasmania	2 004 831	0.81
Northern Territory	68 575 247	27.58
National(a)	7 428 942	2.99
<b>Australia</b>	<b>248 609 769</b>	<b>100.00</b>

(a) Activities funded having outcomes over multiple jurisdictions.

Source: Department of Family and Community Services.

Through the BBF, Housing Ministers agreed to four objectives to achieve housing improvements for Indigenous people:

- identify and address unmet housing needs of Indigenous people
- improve the capacity of Indigenous community housing organisations and involve Indigenous people in planning and service delivery
- achieve safe, healthy and sustainable housing
- coordinate program administration.

Each objective has a number of implementation strategies.

Various SCIH Working Groups have been involved in a range of activities. The National Skills Development Strategy Working Group aims to develop and maintain a national plan to guide national, state and territory industry and training agencies and government departments in implementing the training strategy for Indigenous community housing.

The National Indigenous Housing Information Implementation Committee aims to improve the National Reporting Framework which provides the basis for data collection work at a jurisdictional level and which will provide the relevant information for all national reporting structured around the outcomes required by the BBF. SCIH members also provide advice to the Australian Housing Urban Research Institute (AHURI) including development of scoping papers for the 2004–05 funding rounds. SCIH members have contributed to AHURI planning processes and have developed ongoing communication on the role of AHURI in Indigenous housing research.

### Home ownership

*This section was contributed by Indigenous Business Australia (September 2005).*

The Indigenous Business Australia's Home Ownership Programme (HOP) provides affordable home loan finance to eligible Indigenous people to assist in reducing the disparity between the rate of home ownership in Indigenous communities and that in the wider Australian community. The rate of home ownership for Indigenous family and lone-person households was estimated in the 2001 census to be 32%. This compares with a national non-Indigenous figure of 71%.

The HOP provides home loans at concessional interest rates to Aboriginal and Torres Strait Islander families. The scheme targets low income Indigenous families with the capacity to repay a long-term loan, but who have difficulty obtaining finance from traditional lending institutions. The loan portfolio currently includes 3,425 loans valued at \$366.1m. In 2004–05, there were 502 new loans provided.

### Residential aged care

*This section was contributed by the Australian Government Department of Health and Ageing (September 2005).*

The Australian Government, through the Department of Health and Ageing, subsidises and regulates residential care for frail older people. Most of the residential care is provided by the non-government sector, including not-for-profit and private sector providers. Australian Government payments include subsidies paid to providers for the provision of care. Targeted

capital assistance available to aged care homes catering largely for residents with special needs or on low incomes, or located in rural and remote areas of Australia (see *Residential aged care* in the *Income and welfare* chapter).

### **Support for people with a disability**

*This section was contributed by the Australian Government Department of Family and Community Services (September 2005).*

The Commonwealth State Territory Disability Agreement provides the national framework for

the provision of government support to services for people with disabilities. Under the three agreements signed so far (the first in 1991) all parties are responsible for funding specialist services for people with disabilities. The Australian Government has responsibility for the planning, policy setting and management of specialised employment assistance. The state and territory governments have similar responsibilities for services other than employment (see *Support for people with a disability*, in the *Income and welfare* chapter).

## **Bibliography**

### **ABS products**

*Housing Occupancy and Costs, Australia* (4130.0.55.001)

*House Price Indexes: Eight Capital Cities* (6416.0)

*Housing Finance, Australia* (5609.0)

### **Other references**

AIHW (Australian Institute of Health and Welfare), 2002, *SAAP National Data Collection Annual Report 2001–02 Australia*, AIHW, Canberra

The latest annual reports of the state and territory government housing authorities, and the latest annual report of the Department of Family and Community Services in relation to the *Housing Assistance Act 1996* (Cwlth), show further details of government activities in the field of housing

### **Web sites**

Australian Government Department of Family and Community Services, last viewed September 2005  
<<http://www.facs.gov.au>>

Australian Government Department of Health and Ageing, last viewed September 2005  
<<http://www.health.gov.au>>

Australian Housing and Urban Research Institute, last viewed September 2005  
<<http://www.ahuri.edu.au>>

Australian Institute of Health and Welfare, last viewed September 2005 <<http://www.aihw.gov.au>>

Indigenous Business Australia, last viewed September 2005 <<http://www.iba.gov.au>>

## HEALTH

The Australian health system has a diversity of arrangements for planning, funding, delivering and regulating health services, featuring a mix of private and public sector involvement.

The Australian Government, through the Health and Ageing portfolio, has significant financial and policy responsibility for health services, including hospitals, public health and mental health, while the state and territory governments are largely responsible for the direct provision of such services. Local governments and non-government organisations are also involved in the direct provision of health services. Private, non-salaried practitioners provide most medical, dental and allied health care. Two major national subsidy schemes, Medicare and the Pharmaceutical Benefits Scheme, are funded by the Australian Government to cover all Australian citizens and permanent residents, and are discussed in *Health care delivery and financing*. In 2003–04 total expenditure on health as a proportion of Australia's gross domestic product was 9.7%.

Under the National Health Information Agreement, to which the Australian Bureau of Statistics (ABS), the Australian Institute of Health and Welfare, Australian Government Department of Health and Ageing, and the various state and territory health authorities are signatories, the National Health Information Development Plan sets out agreed national priorities for health information to be considered by the Australian Health Ministers' Advisory Council.

The chapter provides information on various aspects of the health of the population and the health-related activities of government and other bodies. A listing of web sites is provided at the end of this chapter where additional information on health topics and organisations involved in health-related activities can be obtained.

The chapter contains three articles. The first, *Older people with disabilities*, discusses disabilities experienced by persons aged 65 years and over in 2003, and issues such as their living arrangements. The second article, *Labour force characteristics of people with a disability*, examines how labour force participation is affected by disability characteristics. The third, *Children's injuries*, discusses causes of fatal and non-fatal injuries among children.

## National health surveys

Data in this chapter are obtained from the most up-to-date sources available, including information on the health status of Australians collected in the 2001 National Health Survey (NHS), conducted by the ABS, and data from the ABS Causes of Death Collection. Previous health surveys were conducted in 1989–90 and 1995.

Data from the 2001 NHS in this chapter are presented using the International Classification of Diseases, 10th revision (ICD–10). Comparisons between the Indigenous and non-Indigenous populations are presented after adjusting for their differing age structures.

## How Australians rate their health

The World Health Organisation (WHO) defines health as ‘a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity’. While the level of disease or

infirmity can be assessed by mortality, disability and morbidity statistics, the presence of positive wellbeing is more difficult to measure.

## Health and wellbeing

In 2001 the majority of Australians aged 15 years and over considered themselves to be in good health, with 82% reporting their health status as good, very good or excellent (table 9.1). This is similar to the proportion reported in the 1995 NHS (83%). In general, a higher proportion of younger people reported their health to be either excellent, very good or good compared to those in the older age groups.

In 2001 people with higher educational qualifications were generally more likely to report their health to be excellent. People who were employed or in a higher income unit were more likely to report their health as very good or better.

**9.1 SELF-ASSESSED HEALTH STATUS(a), Persons aged 15 years and over — 2001**

	Excellent %	Very good %	Good %	Fair %	Poor %
<b>Population characteristics</b>					
Highest educational qualification(b)					
Associate diploma or above	23.7	37.7	27.3	8.8	2.5
Other qualification	17.5	32.1	31.1	14.3	4.9
Labour force status					
Employed	21.2	37.4	29.8	9.8	1.8
Unemployed	20.8	28.7	34.4	12.6	3.5
Not in the labour force	14.5	25.1	30.5	19.7	10.2
Location					
Major cities of Australia	19.2	33.1	30.1	12.8	4.8
Inner regional Australia	18.5	32.0	30.9	14.1	4.4
Outer regional Australia/other areas	17.6	32.5	29.9	15.0	4.9
Household composition					
Person living alone	14.7	27.3	31.2	18.8	8.0
Couple only	16.3	30.8	31.2	15.5	6.1
Couple with children	22.1	36.2	29.4	9.7	2.6
All other households	18.1	31.9	30.2	14.4	5.5
Income unit income					
1st quintile (lowest income)	12.1	23.1	32.2	21.6	11.1
5th quintile (highest income)	25.7	39.3	27.7	6.3	0.9
Index of socioeconomic disadvantage(c)					
1st quintile (most disadvantaged)	13.8	28.5	31.9	17.9	7.9
5th quintile (least disadvantaged)	23.3	35.9	28.0	9.8	3.1
<b>Persons</b>	<b>18.9</b>	<b>32.8</b>	<b>30.2</b>	<b>13.3</b>	<b>4.8</b>

(a) This table shows the percentage of persons in the specified population (e.g. persons employed) who have reported their health status as either excellent, very good, good, fair or poor. The age distribution of the population should be considered in interpreting these estimates. (b) Persons aged 18 years and over. (c) Where the first quintile represents the 20% of the total population living in areas with the highest levels of disadvantage and the fifth quintile represents the 20% of the population with the lowest levels of disadvantage.

Source: ABS data available on request, 2001 National Health Survey.

## Health status

### Morbidity

The 2001 NHS found almost 78% of the Australian population reported one or more long-term conditions (i.e. conditions that have lasted, or are expected to last for six months or more). In most cases, respondents were asked about conditions which had been medically diagnosed.

Among adults aged 18 years and over in 2001, females in general were more likely than males to report selected long-term conditions with the exception of total/partial hearing loss (table 9.2). While similar proportions of females and males reported having back problems, diabetes and neoplasms, females were more likely to consult health professionals. For example, in 2001 it was estimated 27% of females had consulted a doctor in the two weeks prior to the survey interview, compared with 21% of males. Females also have a longer life expectancy. This results in higher proportions of females in the older age groups where long-term conditions are common. Adult males had a higher prevalence of neoplasms and hearing loss.

The proportion of people who reported back pain, back problems and disc disorders increased rapidly after early teenage years from 2% among those aged 10–14 years, to 30% among people aged 40–44 years. Prevalence then decreased among those aged between 65 and 85 years before increasing slightly among people in very old age (graph 9.3).

The proportion of people reporting diabetes mellitus as a long-term condition remained below 1% among people aged less than 35 years before

slowly increasing. Rates then remained between 10% and 12% for those aged in their early-60s to late-70s before the proportion declined.

The proportion of people who reported having malignant neoplasms also remained relatively low at under 1% among people aged less than 35 years. After this age, proportions of people reporting having a malignant neoplasm steadily increased to 6% among those aged 70 years and over.

### Mortality

There were 132,292 deaths registered in 2003, consisting of 68,330 male and 63,962 female deaths (table 9.4). The number of deaths registered in 2003 represented a decrease of 1.1% on the corresponding figure for 2002 (133,707 deaths). The age-standardised death rate of 642 per 100,000 population in 2003 was lower than the corresponding rate of 667 in 2002. Malignant neoplasms (cancer) and ischaemic heart diseases were the leading underlying causes of death, accounting for 28% and 19% respectively of total deaths registered (table 9.4).

The age-standardised death rate of 642 deaths per 100,000 population in 2003 was 20% lower than the corresponding rate of 800 in 1993. This is consistent with continuing improvements in life expectancy in Australia.

Over the ten years to 2003 there were quite different patterns of decline in the two leading causes of death from malignant neoplasms and ischaemic heart diseases, which together account for nearly half the total deaths. Between 1993 and 2003 the standardised death rate for malignant neoplasms decreased by 12%, while the rate for ischaemic heart diseases decreased by 38% (graph 9.5).

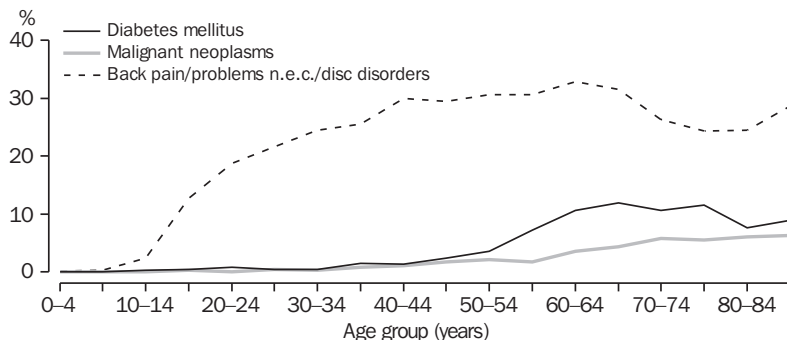
#### 9.2 SELECTED LONG-TERM CONDITIONS(a), Persons aged 18 years and over — 2001

Long-term condition	Males	Females	Persons
	%	%	%
Long sightedness	25.6	30.7	28.2
Short sightedness	23.0	29.4	26.2
Back problems(b)	27.4	26.6	27.0
Arthritis	14.9	21.1	18.1
Asthma	8.9	12.7	10.8
Hayfever and allergic rhinitis	17.0	18.5	17.8
Total/partial hearing loss	17.5	9.7	13.5
Hypertensive disease	12.5	14.4	13.4
Diabetes mellitus	3.9	3.8	3.9
Neoplasms	2.5	1.8	2.1

(a) Conditions which have lasted or are expected to last 6 months or more. (b) Includes back pain, back problems n.e.c. and disc disorders.

Source: National Health Survey, Summary of Results, Australia, 2001 (4364.0).

### 9.3 SELECTED LONG-TERM CONDITIONS(a) — 2001



(a) Conditions which have lasted or are expected to last 6 months or more.

Source: ABS data available on request, 2001 National Health Survey.

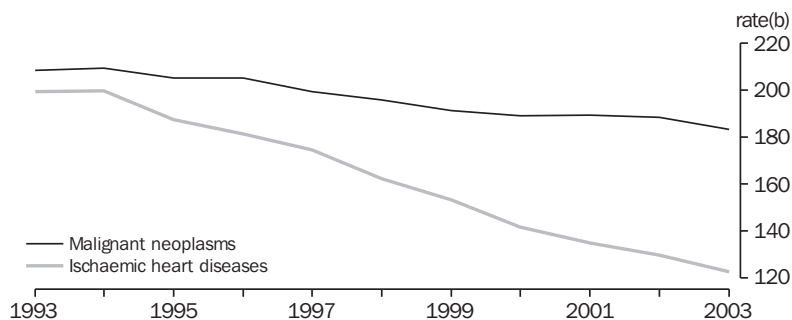
### 9.4 LEADING CAUSES OF DEATH — 2003

Cause of death (ICD-10 code)	Males	Females	Persons	Proportion of total deaths
	no.	no.	no.	%
<b>All causes</b>	<b>68 330</b>	<b>63 962</b>	<b>132 292</b>	<b>100.0</b>
Malignant neoplasms (cancer) (C00-C97)(a)	21 081	16 477	37 558	28.4
Trachea, bronchus and lung (C33, C34)	4 510	2 466	6 976	5.3
Ischaemic heart diseases (I20-I25)	13 534	11 905	25 439	19.2
Cerebrovascular diseases (stroke) (I60-I69)	4 835	7 405	12 240	9.3
Chronic lower respiratory diseases (incl. asthma, emphysema and bronchitis) (J40-J47)	3 373	2 612	5 985	4.5
Accidents (V01-X59)	3 100	1 765	4 865	3.7
Transport accidents (V01-V99)	1 336	475	1 811	1.4
Diabetes mellitus (E10-E14)	1 807	1 582	3 389	2.6
Diseases of arteries, arterioles and capillaries (incl. atherosclerosis and aortic aneurysm) (I70-I77)	1 335	1 207	2 542	1.9
Intentional self-harm (X60-X84)	1 736	477	2 213	1.7
Organic, including symptomatic, mental disorders (F00-F09)	889	1 807	2 696	2.0
Influenza and pneumonia (J10-J18)	1 558	2 008	3 566	2.7
All other causes	15 082	16 717	31 799	24.0

(a) Includes deaths from non-melanocytic skin cancer.

Source: ABS data available on request, Causes of Death Collection.

### 9.5 AGE-STANDARDISED DEATH RATES FROM CANCER AND HEART DISEASES(a)



(a) Ischaemic heart diseases. (b) Per 100,000 population, age standardised to the 2001 population (persons).

Source: AIHW 2005a.

## International comparisons

### Healthy life expectancy

The WHO has proposed health-adjusted life expectancy as a measure of the expected number of years to be lived without reduced functioning. Healthy life expectancy calculations adjust the overall life expectancy (see *Life expectancy* in the *Population* chapter) by the years of life lived with reduced functioning because of ill health.

Australia's healthy life expectancy is among the highest in the world. Australian males can expect to live 70.9 years of life without reduced functioning, and females 74.3 years. Table 9.6 shows healthy life expectancy for selected countries in 2002.

### Infant mortality rates

The infant mortality rate (IMR) is defined as the number of deaths of children under one year of age per 1,000 live births. In 2003, 1,200 infant deaths were registered in Australia. This number was 25% lower than the number registered in 1993 (1,600), and 48% lower than in 1983 (2,300). The infant mortality rate of 4.8 infant deaths per 1,000 live births in 2003 was 22% lower than the IMR in 1993 (6.1 deaths per 1,000 live births), and half that recorded in 1983 (9.6 deaths per 1,000 live births). Australia's infant mortality has declined significantly in the last 100 years. In 1903, over one in ten infants born did not survive to their first birthday (IMR of 111). In 2003, around one in 200 infants born did not survive their first year of life (IMR of 4.8) (graph 9.7).

The early decline in infant mortality has been linked to improvements in public sanitation and health education. Later declines may be a consequence of the introduction of universal health insurance (Medicare) and improvements in medical technology, such as neonatal intensive care units.

### 9.6 HEALTH-ADJUSTED LIFE EXPECTANCY(a), Selected countries — 2002

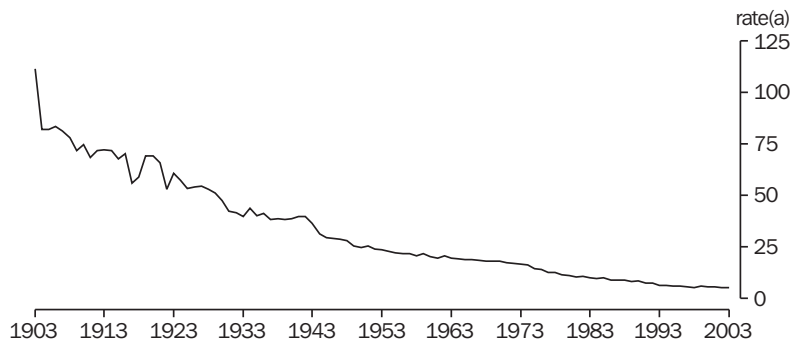
	Health-adjusted life expectancy years
MALES	
Japan	72.3
Iceland	72.1
Sweden	71.9
Switzerland	71.1
<b>Australia</b>	<b>70.9</b>
Italy	70.7
Norway	70.4
Canada	70.1
Spain	69.9
Germany	69.6
New Zealand	69.5
France	69.3
Austria	69.3
United Kingdom	69.1
Greece	69.1
Belgium	68.9
Singapore	68.8
Finland	68.7
Denmark	68.6
Ireland	68.1
United States of America	67.2
Portugal	66.7
Poland	63.1
Russian Federation	52.8
South Africa	43.3
FEMALES	
Japan	77.7
Spain	75.3
Switzerland	75.3
Sweden	74.8
France	74.7
Italy	74.7
<b>Australia</b>	<b>74.3</b>
Canada	74.0
Germany	74.0
Iceland	73.6
Norway	73.6
Austria	73.5
Finland	73.5
Belgium	73.3
Greece	72.9
New Zealand	72.2
United Kingdom	72.1
Portugal	71.7
Ireland	71.5
Singapore	71.3
United States of America	71.3
Denmark	71.1
Poland	68.5
Russian Federation	64.1
South Africa	45.3

(a) Health-adjusted life expectancy is based on life expectancy, but includes an adjustment for time spent in poor health.

Source: WHO 2004.



## 9.7 INFANT MORTALITY RATE



(a) Per 1,000 live births.

Source: *Deaths, Australia, 2003* (3302.0).

## Older people with disabilities

This article uses information from the 2003 and 1998 Surveys of Disability, Ageing and Carers (SDAC) conducted by the ABS. Older people in this article are those aged 65 years and over.

People aged 65 years and over are more likely to have disabilities than younger people, and the likelihood of acquiring a disability increases with age. Disability as defined in the SDAC refers to a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months.

Severity of disability also increases as people get older. Consequently, as people age they tend to need greater assistance with health-related and day-to-day activities, and greater access to health and community services. With increasing numbers of people living to older ages, and the prospect of the 'baby boomer'<sup>1</sup> cohorts reaching older ages, questions of how best to meet the needs of greater numbers of older people with disabilities are becoming more acute.

In recent years, older people have increasingly been supported to remain living in the wider community, and wherever possible in their own homes, through the provision of appropriate services (AIHW, 2001). Therefore, the focus is not only on the supply of cared accommodation, but on the supply of suitable community-based facilities and services, and of informal carers.

### Trends in disability

The prevalence of disability among older people did not change significantly between 1998 and 2003. A little more than half of older people had a disability in both years (54% and 56% respectively). However, largely due to an increase in the total number of older people in Australia over the period (from 2.3 million to 2.5 million), as well as ageing in this group, older people with disabilities increased in number by 14%, from 1.2 million to 1.4 million.

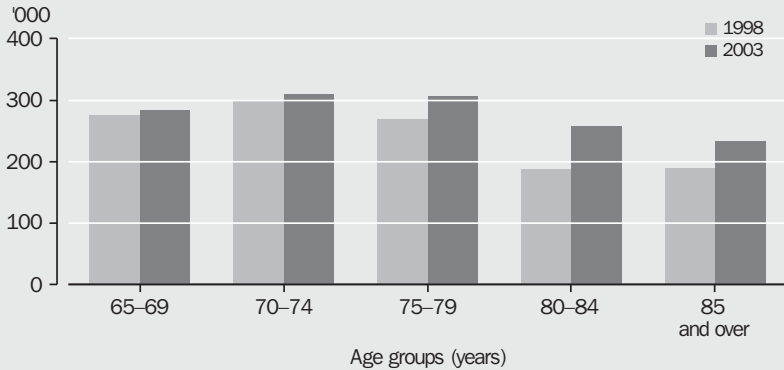
The greatest increases in the number of older people with disabilities (and of older people as a whole) were recorded for those in the range over 74 years (graph 9.8). The rate of disability was similar for men and women in both 1998 (54% in each case) and 2003 (55% and 56% respectively). However, as more women than men live to older ages, the number of older women with disabilities was 28% higher than that of older men with disabilities, in both 1998 and 2003.

### Profound or severe limitation

*Core-activity limitation* refers to a limitation in the core activities of self care, communication or mobility. Levels of severity of these limitations are: profound; severe; moderate; and mild.

Older people with a disability varied in the type and severity of the limitations or impairments they had. In 2003, 22% of all older people had a profound or severe core-activity limitation. That

### 9.8 PERSONS AGED 65 YEARS AND OVER WITH DISABILITIES



Source: ABS data available on request, 1998 and 2003 Surveys of Disability, Ageing and Carers.

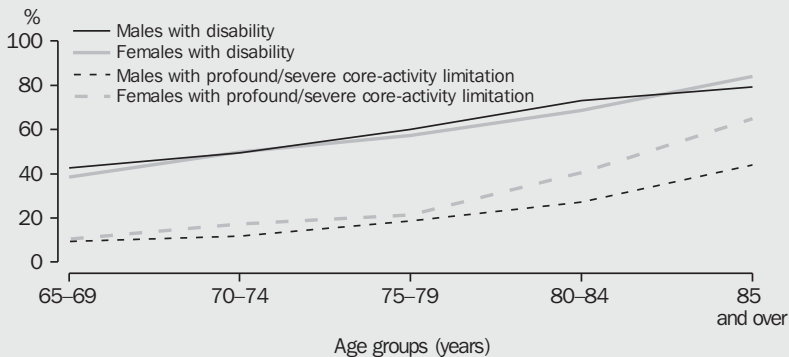
is, they were limited in everyday activities (e.g. walking or dressing), or sometimes needed help to do these things, or had difficulty communicating. Of people aged 65–69 years, 10% had a profound or severe core-activity limitation, increasing to 20% of those aged 75–79 years and 58% of those aged 85 years and over (graph 9.9).

The proportion of older people with a profound or severe core-activity limitation remained about the same in 1998 and 2003 (21% and 22% respectively). Mostly resulting from the total increase in the number of older people, older

people with a profound or severe core-activity limitation increased in number between 1998 and 2003 from 481,000 to 562,000.

In contrast to the similar overall rates of disability reported for older men and older women, older women were more likely than older men to have a profound or severe core-activity limitation. In 1998 and 2003, this was observed for all five-year age groups of older people, with the greatest differences between the rates observed for the oldest age groups. In 1998, 16% of older men and 25% of older women had a profound or severe core-activity limitation, increasing to 17% and 27% respectively in 2003.

### 9.9 OLDER PEOPLE WITH DISABILITIES AND OLDER PEOPLE WITH PROFOUND/SEVERE LIMITATIONS(a)



(a) Limitations are core activities of self care, communication or mobility.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

## Living arrangements

In both 1998 and 2003, most older people with disabilities lived in private dwellings, either with other people or alone. As people age, their living arrangements may change to suit their circumstances. This is often as a result of illness or disability, or of a transition in their life, such as the death of a spouse. People with disabilities aged 85 years and over are less likely than people aged 65–74 years to be living with a partner or other family member, and more likely to be living alone or in cared accommodation (graph 9.10).

Because men have a shorter life expectancy than women, and are on average somewhat older than the women they marry, older men are more likely than older women to live in family situations, particularly with partners. In 2003, this pattern was observed for older people with disabilities and for older people as a whole.

In 2003, most of the 1.4 million older people with disabilities (83%) lived in a private dwelling such as a house, a flat or a home unit (table 9.11). About one in ten older people with disabilities lived in cared accommodation such as nursing homes and aged-care hostels (12%). The remaining 6% lived in non-private dwellings other than cared accommodation, such as retirement villages, staff quarters, religious institutions, or boarding houses.

There were differences in living arrangements of older people with disabilities by age. The proportion living in cared accommodation, or

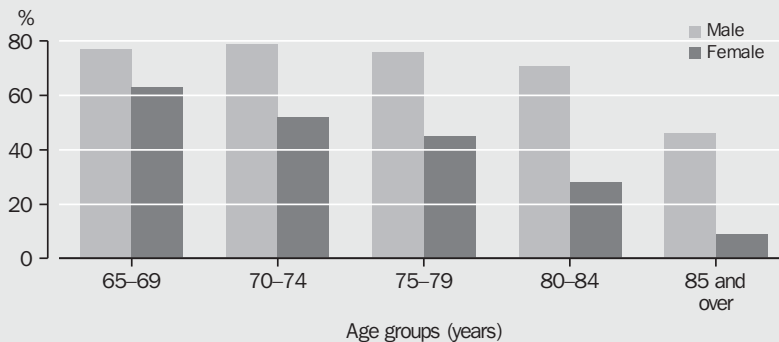
living alone in a private dwelling, was higher at older ages. In 2003, 3% of people with disabilities aged 65–74 years lived in cared accommodation, compared with 10% of people aged 75–84 years and 37% of people aged 85 years and over.

Between 1998 and 2003 there was an increase in the proportion of older people with disabilities living in non-private dwellings other than cared accommodation, from 2% to 6%. This may relate to increases in the availability of community care or older people choosing age-specific housing such as units in retirement villages which provide some care on-site. The increase was accompanied by decreases both in the proportion living in private dwellings (from 85% to 83%) and in cared accommodation (from 13% to 12% respectively).

## Cared accommodation

Changes in the use of cared accommodation are of particular interest. The decrease in the proportion of older people with disabilities living in cared accommodation occurred across all age groups of older people. The decrease among those aged 85 years and over was from 42% in 1998 to 37% in 2003 (graph 9.12). These decreases in the proportion of older people with disabilities living in cared accommodation were essentially offset by the increase in the older population over the period. Nevertheless there was a small decrease in the absolute number of older people with disabilities living in cared accommodation, from 162,000 to 159,000.

**9.10 OLDER PEOPLE WITH DISABILITIES LIVING WITH A PARTNER(a) — 2003**



(a) As a proportion of all people of that age with a disability living in private dwellings.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

In both 1998 and 2003, almost all older people with a disability who were in cared accommodation had a profound or severe core-activity limitation (96% and 97% respectively). This is consistent with the fact that entry to cared accommodation involves a disability assessment. However, the majority of older people with

profound or severe core-activity limitations lived in households (73% in 2003), rather than in cared accommodation. The proportion who did live in cared accommodation decreased from 32% to 27% between 1998 and 2003.

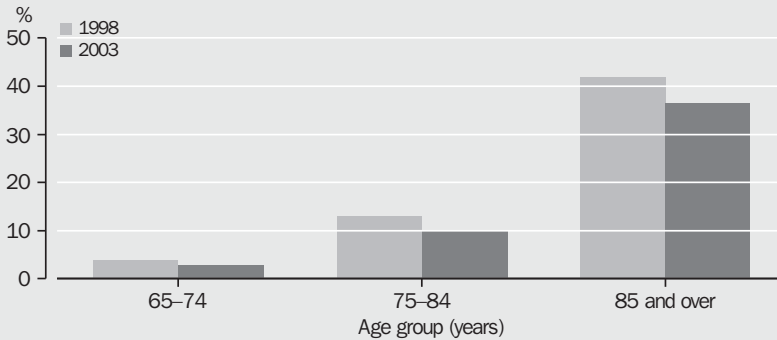
### 9.11 LIVING ARRANGEMENTS OF OLDER PEOPLE WITH DISABILITIES — 1998 and 2003

Arrangement	Units	1998		2003	
		With profound/ severe core-activity limitation	Total (all with reported disability)	With profound/ severe core-activity limitation	Total (all with reported disability)
Households	%	67.8	86.8	72.6	88.5
Private dwelling	%	65.8	84.6	68.0	82.8
With other people	%	45.5	57.3	48.8	57.3
Alone	%	20.3	27.4	19.2	25.6
Other non-private dwelling(a)	%	2.0	2.1	4.6	5.7
Cared accommodation	%	32.2	13.2	27.4	11.5
Total	%	100.0	100.0	100.0	100.0
Persons	'000	481.2	1 225.2	561.7	1 391.5

(a) Includes: hotels for the homeless, hotels, motels, educational and religious institutions, construction camps, boarding houses, staff quarters, guest houses, short-stay caravan parks, youth camps and camping grounds, and self-care units in a retirement village which may have cared accommodation on-site.

Source: ABS data available on request, 1998 and 2003 Surveys of Disability, Ageing and Carers.

### 9.12 OLDER PEOPLE WITH DISABILITIES LIVING IN CARED ACCOMMODATION(a)



(a) As a proportion of all people of that age with a disability.

Source: ABS data available on request, 1998 and 2003 Surveys of Disability, Ageing and Carers.

## Endnote

1 People born in the period 1946 to 1965.

## References

Australian Institute of Health and Welfare 2001, *Australia's Welfare 2001*, AIHW, Canberra.

## Labour force characteristics of people with a disability

This article uses information from the 2003 and 1998 Surveys of Disability, Ageing and Carers (SDAC) conducted by the ABS. Unless otherwise stated, this article limits its analysis to working-age people (i.e. people aged 15–64 years) living in households.

Income gained through employment is vital to the well-being of most working-age Australians and their families, contributing to their financial independence and security. People with reported disability generally experience lower levels of employment than other Australians. Disability as defined in the SDAC refers to a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months.

The ageing of the population is one of the major transformations being experienced by Australia's population, and has implications for the size and structure of Australia's future labour force. The decline in the proportion of the population of working age is expected to result in an increase in the ratio of adults not in the labour force to those who are employed in coming decades. Therefore, greater labour force participation is being encouraged by the

Australian Government, among both the population in general and among people with a disability.

Disability rates increase with age. In 2003 the rate of reported disability among 15–19 year olds was 9%. This rate was higher for successively older age groups, reaching 39% of 60–64 year olds. Disabilities can be broadly grouped depending on the type of functional limitation. A person could be classified to more than one of the following five disability groups: sensory or speech; intellectual; physical; psychological; head injury, stroke or other brain damage. Of the five disability groups, the likelihood of having a physical disability increased most strongly with age, from 4% of 15–19 year olds to 32% of 60–64 year olds.

### Labour force participation

Labour force participation (working or looking for work) provides an indication of both the desire for paid work and the ability to obtain and perform such work. People with disabilities have lower rates of labour force participation than people without disabilities. Just over half of all people with a disability participate in the labour force compared with four in five people without a disability.

**9.13 DISABILITY STATUS, By labour force status(a) — 2003**

	Units	Males			Females		
		Profound or severe core-activity limitation(b)	All with reported disability(c)	No reported disability	Profound or severe core-activity limitation(b)	All with reported disability(c)	No reported disability
Employed full time	%	21.1	41.7	71.8	7.7	19.5	36.5
Employed part time	%	9.4	12.4	12.7	16.3	23.5	32.0
Unemployed	%	*3.3	5.2	4.3	*2.8	3.9	3.8
Not in the labour force	%	66.3	40.7	11.1	73.2	53.1	27.8
<b>Total</b>	%	100.0	100.0	100.0	100.0	100.0	100.0
Participation rate	%	33.7	59.3	88.9	26.8	46.9	72.2
Unemployment rate	%	*9.7	8.8	4.8	*10.5	8.3	5.3
<b>Total</b>	'000	<b>229.8</b>	<b>1 137.2</b>	<b>5 603.6</b>	<b>270.4</b>	<b>1 091.6</b>	<b>5 560.7</b>

(a) Persons aged 15–64 years living in households. (b) Core activities comprise self care, communication and mobility.

(c) Includes those who do not have a specific limitation or restriction.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

In 2003 most (58%) working-age people with a disability who were not in the labour force reported being permanently unable to work. The majority (52%) of those permanently unable to work were aged 55 years or older. Some disability groups had higher rates of reported permanent incapacity for work than others. For example, 48% of people with a psychological disability reported being permanently unable to work, compared with 28% of those with a sensory disability.

### Disability characteristics

People with a profound core-activity limitation always need help with self care, mobility or communication, or are unable to do these tasks. People with a severe core-activity limitation sometimes need help with self care, mobility or communication; or have difficulty understanding or being understood by family or friends; or communicate more easily using sign language or other non-spoken forms of communication.

In some cases, the severity of the disability limits the person's participation in the labour market. Generally, labour force participation decreases as severity of disability increases. People with a profound or severe core-activity limitation had the lowest participation rate of 30% in 2003 (compared with 81% of people without a disability).

The nature of the disability can also limit labour market participation. People with sensory disabilities were most likely to be participating in

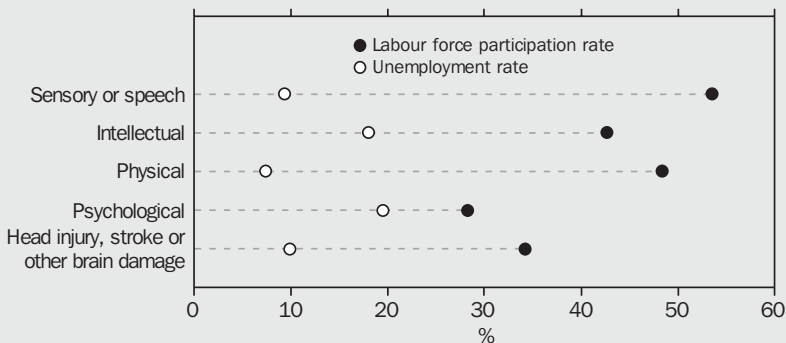
the labour market (54%) whereas people with psychological disabilities were least likely (28%) (graph 9.14). This difference may reflect greater difficulty in accommodating people with psychological conditions in the workplace, and greater difficulty faced by people with these conditions in obtaining and retaining a job.

### Employment restrictions

Some people with disabilities experience employment restrictions such as being unable to work, being restricted in the types or hours of work they can do, or needing special assistance in the workplace. People with disabilities who had an employment restriction were far less likely to be participating in the labour market (45%) than those without an employment restriction (72%). Of the 1.5 million people who had a disability and an employment restriction, 39% reported being permanently unable to work.

The more severe a person's core-activity limitation the more likely it was that he or she had an employment restriction. While 70% of working-age people with a reported disability had an employment restriction, the rate was higher for those with profound (95%) and severe (90%) levels of core-activity limitation. Among the disability groups, the proportion with an employment restriction ranged from 64% of the sensory or speech group to 91% of the psychological group.

**9.14 PARTICIPATION AND UNEMPLOYMENT AMONG DISABILITY GROUPS(a) — 2003**



(a) Persons aged 15–64 years living in households.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

## Employed people

Paid work can provide many benefits including an income, skill development and a sense of contributing to the community. In 2003, among 15–64 year olds, more than three-quarters (77%) of those with no reported disability were employed. The rate of employment was considerably lower among those with a disability (49%), and much lower still among those with a profound or severe core-activity limitation (27%). Women with and without disabilities were less likely to be employed than men, consistent with their lower labour force participation. Women were also more likely to be working part time than men.

Increased severity of disability was also associated with greater propensity to work part time rather than full time. Among employed 15–64 year olds, 29% of those with no disability usually worked less than 35 hours each week in all jobs. This rate of part-time work was higher among those with a disability (37%), and higher again among those with a profound or severe core-activity limitation (49%). One-quarter of the latter usually worked less than 16 hours per week (graph 9.15).

Some employers make special arrangements to accommodate people with disabilities in their workplace. This happened for 12% of wage or salary earners with disabilities, in 2003. Around 6% had been provided with special equipment by their employer and 3% had been allocated different duties. Nearly 3% had been provided

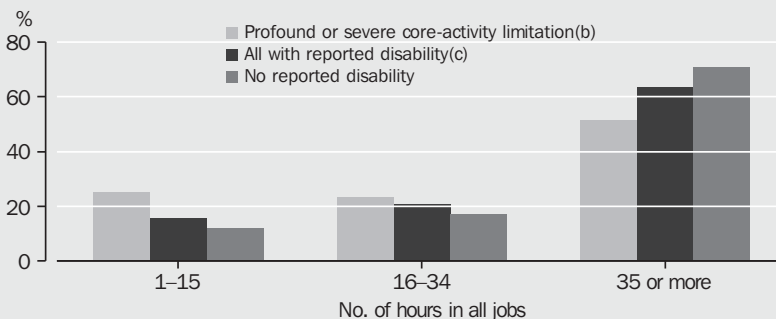
with, or allowed to have, a special support person to give ongoing assistance or supervision at work because of their health condition(s) (table 9.16). Of the disability groups, wage or salary earners with a sensory or speech disability were least likely to have had a special arrangement made for them by their employer (12%), while those in the psychological group were most likely (27%).

## Unemployed people

As well as being less likely to participate in the labour force, people with a disability who do participate are less likely to be working. The unemployment rate in 2003 for working-age people with disabilities in 2003 was 8.6% compared with 5.0% for people without disabilities. The unemployment rate in 2003 was lower for both groups than in 1998.

The unemployment rate varied considerably between disability groups. Groups with a relatively high rate of participation in the labour force (i.e. the physical group and the sensory or speech group) had comparatively low unemployment rates (7.4% and 9.3% respectively). Conversely, the psychological group had a low labour force participation rate (28%) and a high unemployment rate (19%). These labour market outcomes were poorer than prevailed among people with a profound or severe core-activity limitation (30% participation rate and 10% unemployment rate).

**9.15 HOURS USUALLY WORKED EACH WEEK(a)**



(a) Persons aged 15–64 years living in households. (b) Core activities comprise self care, mobility or communication. (c) Includes those who do not have a specific limitation or restriction.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.



Around one-third (34%) of unemployed people with a disability were long-term unemployed (i.e. had been unemployed for at least the previous 52 weeks). This was higher than for unemployed people without a disability (23%).

Those with a disability were also a little more likely to be looking for part-time work than those without a disability (36% compared with 34%)(graph 9.17).

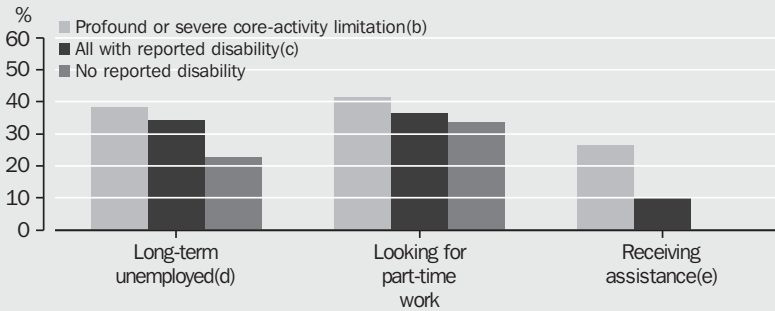
**9.16 SPECIAL ARRANGEMENTS MADE BY EMPLOYERS BECAUSE OF HEALTH CONDITIONS(a) — 2003**

	Units	
No special arrangement made	%	87.7
At least one special arrangement made	%	12.3
Special equipment	%	6.4
Different duties	%	2.9
Special support person(b)	%	2.6
Building or fitting modification	%	1.8
Help from someone at work	%	1.3
Training or retraining	%	*0.7
Special or free transport or parking	%	*0.5
Another special arrangement	%	1.5
<b>Total(a)</b>	<b>'000</b>	<b>826.4</b>

(a) Wage or salary earners aged 15–64 years with a reported disability living in households. (b) To give ongoing assistance or supervision.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

**9.17 SELECTED CHARACTERISTICS OF UNEMPLOYED PERSONS(a) — 2003**



(a) Aged 15–64 years living in households. (b) Core activities comprise self care, mobility and communication. (c) Includes those who do not have a specific limitation or restriction. (d) Unemployed for a period of 52 weeks or longer. (e) From a disability job placement program or agency.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

## National Health Priority Areas (NHPAs)

The NHPAs initiative is a collaborative approach to dealing with a range of conditions which are associated with a high burden of disease and account for a high financial burden in Australia.

The NHPAs include cardiovascular health, cancer control, injury prevention and control, diabetes mellitus, mental health, asthma, and arthritis and musculoskeletal conditions. Dementia was also announced in the 2005–06 budget as a NHPA. A range of program initiatives has been established aimed at improving health outcomes in these areas.

Table 9.18 shows health expenditure on seven NHPA conditions. In total, expenditure on NHPAs in 2000–01 accounted for \$22.3 billion (b), that is 44% of allocated recurrent expenditure or 36% of total health expenditure for the year. Hospital expenditure accounted for 48% of all expenditure on NHPAs (AIHW 2005b).

### Cardiovascular disease

Cardiovascular disease, also known as ‘circulatory disease’, comprises all diseases and conditions involving the heart and blood vessels including high blood pressure, heart disease, stroke, and peripheral vascular diseases. Although the death rates from cardiovascular disease in Australia have notably decreased over the last three decades, this group of diseases causes more deaths than any other disease group (AIHW 2004a). Total health expenditure attributable to cardiovascular disease is \$5.5b, which accounts for 10.9% of allocated recurrent health system expenditure in 2000–01 (AIHW 2005b).

### Morbidity

The 2001 NHS indicated that around 3.2 million Australians (17%) reported having a circulatory system condition as a long-term condition (having lasted or being expected to last for six months or

more). The most common cardiovascular condition reported was hypertension (high blood pressure) which affected 10% of the population.

The prevalence of long-term circulatory system conditions increases with age. For people aged 55 years and over, the prevalence of all circulatory system conditions is 48%. The prevalence of hypertensive disease is 34%, and ischaemic heart disease (also called coronary heart disease) is 5.8%. The prevalence of cerebrovascular disease (stroke) is 2.2%.

### Mortality

Despite declines in mortality rates in the past 30 years, cardiovascular disease (or diseases of the circulatory system) remains the leading cause of death in Australia in 2003, accounting for 48,835 or 37% of all deaths. Ischaemic heart disease accounted for 19.2% of all deaths, and cerebrovascular diseases a further 9.3%.

Between 1993 and 2003, age-standardised death rates for diseases of the circulatory system declined by 36% for males (from 441 to 282 per 100,000 population), and 34% for females (from 300 to 197 per 100,000 population). In the same period age-standardised death rates for people declined from 362 to 236 per 100,000 population (graph 9.19).

### Arthritis and other musculoskeletal diseases

Osteoarthritis, rheumatoid arthritis and osteoporosis are the most commonly occurring musculoskeletal conditions. Although they are not immediately life threatening and have low associated mortality, they have substantial influence on the quality of life and impose a heavy economic burden on the community. Total health expenditure attributable to musculoskeletal diseases is \$4.6b, which accounts for 9.2% of allocated recurrent health system expenditure in 2000–01 (AIHW 2005b).

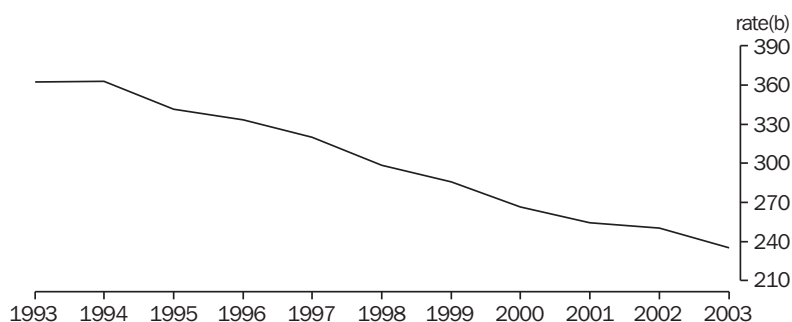
### 9.18 HEALTH EXPENDITURE ON NATIONAL HEALTH PRIORITY AREAS(a) — 2000–01

Disease group	Hospital \$m	Aged care homes(b) \$m	Out-of- hospital medical services \$m	Other professional services(c) \$m	Pharmaceuticals \$m	Research \$m	Total \$m
Cardiovascular diseases	2 533	526	782	73	1 411	153	5 479
Arthritis and other musculoskeletal conditions	1 828	482	879	710	680	55	4 634
Injuries	2 831	105	622	265	184	6	4 013
Mental disorders	1 196	366	499	134	616	109	3 741
Cancer	1 988	37	343	22	183	215	2 918
Diabetes mellitus	289	38	183	33	234	35	812
Asthma	170	16	110	21	370	6	692
<b>All NHPAs</b>	<b>10 835</b>	<b>1 570</b>	<b>3 418</b>	<b>1 258</b>	<b>3 678</b>	<b>580</b>	<b>22 289</b>

(a) Allocated recurrent expenditure (which totalled \$50.1b in 2000–01). (b) Includes expenditure on residents that require and receive a level of care that falls within one of the four highest levels in residential aged care services. (c) Includes services delivered outside of hospitals by paramedical professionals such as physiotherapists, chiropractors, occupational therapists, audiologists, speech therapists, hydropaths, podiatrists, therapeutic and clinical massage therapists, clinical psychologists, dietitians and osteopaths.

Source: AIHW 2005b.

### 9.19 AGE-STANDARDISED DEATH RATES FROM CARDIOVASCULAR DISEASE(a)



(a) ICD-10 codes I00–I99. (b) Per 100,000 population, age standardised to the 2001 population (persons).

Source: AIHW 2005a.

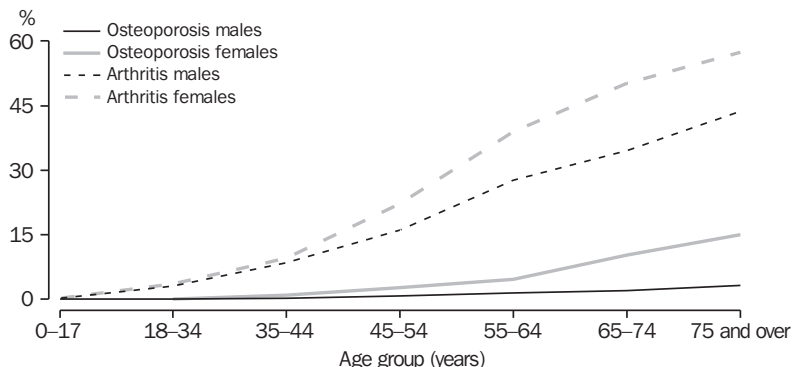
Osteoarthritis is one of the most common types of arthritis and affects the cartilage in the joints. Cartilage cushions the ends of bones where bones meet to form a joint. In osteoarthritis this cartilage degenerates. Osteoarthritis is most commonly found in the knees, neck, lower back, hip and fingers.

Rheumatoid arthritis is the most common form of inflammatory arthritis. Inflammatory arthritis is characterised by joint swelling and destruction. In rheumatoid arthritis the immune system attacks

the tissues lining the joints. As a result of this attack, inflammation occurs causing pain, heat and swelling. The disease can also cause inflammation of connective tissue, blood vessels and organs.

Osteoporosis (porous bones) is a disease where bone density and structural quality deteriorate, leading to an increased risk of fracture. The most common sites of fracture are the bones of the spine, the hip and the wrist. However other bones are commonly affected, including the shoulder, ribs and the pelvis.

## 9.20 PREVALENCE OF ARTHRITIS — 2001



Source: ABS data available on request, 2001 National Health Survey.

### Morbidity

The 2001 NHS shows over 2.5 million Australians (14%) had some form of arthritis and over 299,000 Australians (1.6%) had osteoporosis. The prevalence is greater in females at nearly all ages. The overall prevalence of arthritis is 16% for females compared with 11% for males, while the prevalence of osteoporosis is 3.0% for females and 0.6% for males. The prevalence of arthritis and osteoporosis was increasingly higher for older age groups in 2001 (graph 9.20). For people aged 65 years and over, the prevalence of arthritis was 47% and the prevalence of osteoporosis was 8.0%.

### Injuries and deaths due to external causes

Injury and poisoning are broad terms that encompass the adverse effects on the human body that may result from events. These events may be accidental, such as falls, vehicle accidents and exposure to chemicals, or intentional such as suicide attempts and assaults by other people. Such events, and the factors involved in them, are collectively known as 'external causes of injury and poisoning', and are a significant source of preventable illness, disability and premature death in Australia.

Males and females, and people in different age groups, experience different levels and types of risk from injury events (risk in this sense refers to both the probability of an injury event occurring and the severity of the injuries that may result).

### Morbidity

Respondents to the 2001 NHS were asked about events in the four weeks prior to interview that resulted in an injury for which they had sought

medical treatment or taken some other action. Injuries data from the survey are presented in graph 9.21 and highlight differences in the reporting of injury events among males and females of different age groups.

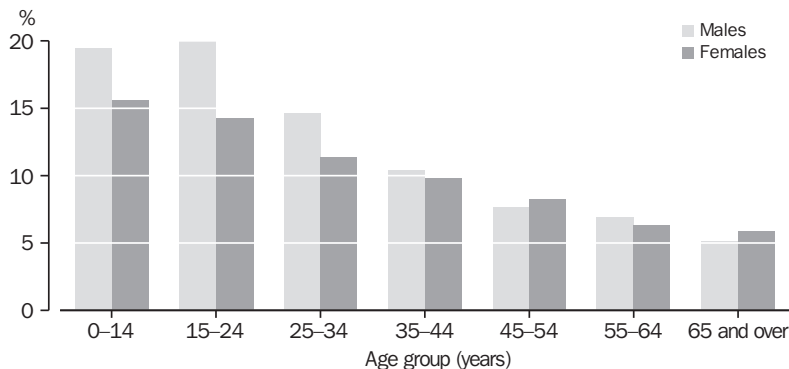
During the 1990s, the number of people dying as a result of injury from traffic accidents decreased. However, traffic accidents remain a serious source of preventable death, injury and disability. Results from the 2001 NHS indicate three in 1,000 people experienced a recent injury as a result of a vehicle accident. Inexperienced road users are an acknowledged risk group in terms of the potential for death or injury from vehicle accidents (Australian Transport Council 2001). Results from the 2001 NHS showed people aged 15–34 years experienced a higher rate of recent injury from vehicle accidents compared with people aged 35 years and over (graph 9.22).

### Mortality

External causes were responsible for 7,749 deaths (5.9% of all deaths) registered in 2003 (table 9.23). Since 1993 there has been a 6% decrease in the standardised death rate for deaths from external causes of injury and poisoning. This decrease has been influenced largely by the decline in deaths from motor vehicle accidents.

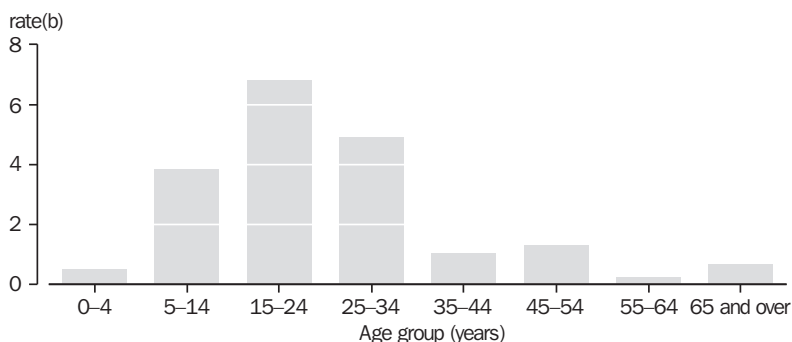
In 2003, suicide and transport accidents accounted for 52% of all deaths due to external causes. There were 2,213 deaths attributed to intentional self-harm (suicide) in 2003, accounting for 29% of the total deaths from external causes. Transport accidents accounted for 1,811 deaths, or 23% of total registered deaths in 2003 due to external causes.

### 9.21 PROPORTION WHO WERE RECENTLY INJURED — 2001



Source: National Health Survey: Injuries, Australia (4384.0).

### 9.22 RECENTLY INJURED BY VEHICLE ACCIDENT(a) — 2001



(a) Includes motorised and non-motorised vehicles. (b) Rate per 1,000 persons.

Source: National Health Survey: Injuries, Australia (4384.0).

### 9.23 EXTERNAL CAUSES OF DEATH — 2003

Cause of death (ICD-10 code)	no.	%	Crude death rate(a)		
			Males	Females	Persons
Suicide (intentional self-harm) (X60-X84)	2 213	28.6	17.6	4.8	11.1
Transport accidents (V01-V99)	1 811	23.4	13.5	4.8	9.1
Accidental poisoning by and exposure to noxious substances (X40-X49)	629	8.1	4.4	2.0	3.2
Falls (W00-W19)	709	9.1	3.8	3.3	3.6
Assault (X85-Y09)	278	3.6	2.0	0.8	1.4
Accidental drowning and submersion (W65-W74)	201	2.6	1.4	0.6	1.0
Other(b)	1 908	24.6	10.6	8.6	9.6
<b>All external causes</b>	<b>7 749</b>	<b>100.0</b>	<b>53.4</b>	<b>24.8</b>	<b>39.0</b>

(a) Per 100,000 population. (b) Includes accidental exposure to other and unspecified factors (X58-X59), other accidental threats to breathing (W75-W84) as well as a variety of other external causes of death.

Source: ABS data available on request, Causes of Death Collection.

The article *Children's injuries* examines the trends and causes of fatal and non-fatal injuries among children.

### Mental health

Most people in Australia enjoy good mental health. However, in 2001, approximately 1.8 million people (9.6% of the population) reported having a long-term mental or behavioural problem that had lasted, or was expected to last, for six months or more. Mental illness is not a major direct cause of death, but it is associated with a proportion of deaths due to suicide and some other conditions, and can lead to chronic disability. For males, substance use disorders (from alcohol or other drugs) accounted for 33% of the mental health burden, while for females affective disorders such as depression accounted for 39% of the mental health burden in 1996 (AIHW 1999). Together, mental disorders accounted for 7.5% of allocated recurrent health system expenditure in 2000–01 (AIHW 2005b).

### Morbidity

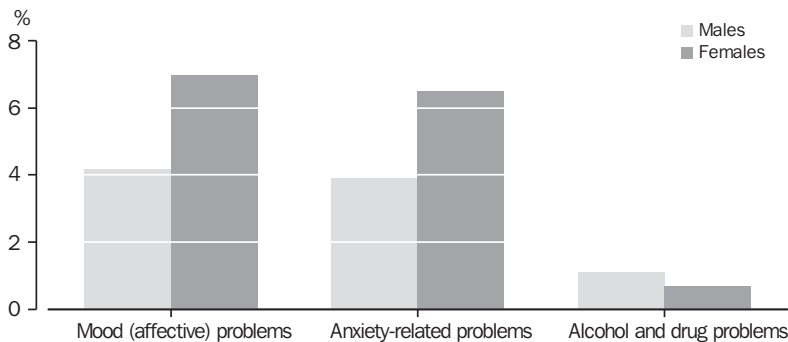
In the 2001 NHS, information on long-term mental and behavioural problems was collected from all respondents. A long-term condition was defined as one which the respondent regarded as having lasted or was expecting to last six months or more. Respondents in the survey were not specifically asked if they had been diagnosed with any mental

disorders, so the information they provided could be based on self-diagnosis rather than diagnosis by a health professional.

In 2001, 9.6% of the Australian population reported that they had a long-term mental or behavioural problem. Proportionally more females (11%) than males (8.5%) reported these problems. The most commonly reported problems for adults (aged 18 years and over) were classified into two groups: anxiety-related problems and mood (affective) problems such as depression and bipolar disorder; each were reported by approximately 4% of all males and 7% of all females. In addition, around 1% of the population reported that they had a mental and behavioural disorder due to substance use (graph 9.24).

The child and adolescent component of the 1998 National Survey of Mental Health and Wellbeing studied 4,500 children and young people from metropolitan and rural areas across Australia. The results show 14% of children and young people (aged 4–17 years) had mental health problems. The specific problems most frequently identified by parents were somatic complaints (chronic physical complaints without known cause or medically verified basis) and delinquent behaviour, with 7% of children and adolescents scoring in the clinical range on each scale. The next most frequently identified problems were attention problems (6%) and aggressive behaviour (5%) (graph 9.25).

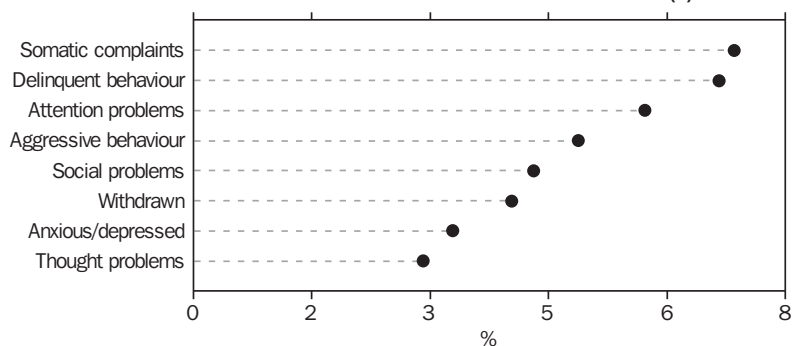
9.24 SELF-REPORTED MENTAL DISORDER(a) — 2001



(a) Persons aged 18 years and over.

Source: ABS data available on request, 2001 National Health Survey.

## 9.25 PREVALENCE OF MENTAL HEALTH PROBLEMS: YOUNG PEOPLE(a) — 1998



(a) Persons aged 4–17 years.

Source: DoHA 2000.

## Cancer

Cancer is a disease caused by abnormal cells which grow in an uncontrolled way and invade and spread to other parts of the body. Cancer can develop from most types of cells in different parts of the body, and each cancer has its own pattern of growth and spread. Some cancers remain in the body for years without showing any symptoms. Others can grow, invade and spread rapidly, and are fatal in a short period of time. Cancer is a major cause of death in Australia and accounted for 5.8% of allocated recurrent health system expenditure in 2000–01 (AIHW 2005b).

## Morbidity

In the 2001 NHS, an estimated 261,300 Australians (1.4%) reported they currently had a malignant neoplasm.

The AIHW cancer registry data shows there were 88,398 registered new cancer cases in 2001. The most common registrable cancers are the combination of cancers of the colon and rectum (12,844), breast cancer (11,886), prostate cancer (11,191), melanoma (8,885) and lung cancer (8,275). Together they accounted for 60% of all registrable new cancer cases in that year. Cancer occurs more commonly in males than females. At the incidence rates prevailing in 2001, it would be expected that one in three men and one in four women would be diagnosed with a malignant cancer before the age of 75 years (AIHW 2004b).

## Mortality

In 2003 malignant neoplasms (cancer) accounted for 37,163 deaths (excluding deaths from non-melanocytic skin cancer), or 28% of all deaths registered (table 9.26). Of these, there were 20,822 male deaths and 16,341 female deaths. Overall, cancer of the trachea, bronchus and lung was the leading cause of cancer deaths, accounting for 19% of all cancer deaths.

There were some differences in cancer death rates between males and females. Among males, the leading causes of cancer deaths were cancer of the trachea, bronchus and lung (22% of all male cancer deaths), prostate cancer (14%) and colon cancer (8%). Among females the leading causes of cancer deaths were breast cancer (17% of all female cancer deaths), cancer of the trachea, bronchus and lung (15%) and colon cancer (9%). Age-specific death rates for cancer increased markedly with age, and were generally greater for males than for females (apart from age groups between 25 and 49 years).

Mortality is influenced by the number of new cases of cancer (incidence) and the length of time lived after the initial diagnosis of cancer is made (survival). Relative survival is a measure that takes into consideration the crude survival (time between diagnosis and death) in the cancer population, and the corresponding expected survival in the general population. Expressed as a percentage, it is the cancer population that survives a specific number of years after the diagnosis divided by the general population that survives the same number of years.



## 9.26 DEATHS, INCIDENCE AND SURVIVAL RATES FOR COMMON REGISTRABLE CANCERS

Cancer site	Deaths (2003)		Incidence (2001)		Five-year relative survival (1992–97)	
	Males no.	Females no.	Males no.	Females no.	Males %	Females %
Stomach	703	477	1 202	700	22.6	24.8
Colon	1 584	1 455	4 233	4 085	58.3	58.7
Rectum(a)	835	573	2 728	1 798	56.6	60.6
Pancreas	946	956	958	900	5.4	5.2
Lung(b)	4 510	2 466	5 384	2 891	11.0	14.0
Skin (melanoma)	759	373	5 024	3 861	90.0	94.6
Breast	9	2 713	95	11 791	n.a.	84.0
Uterus	—	295	—	1 537	—	81.4
Cervix	—	238	—	735	—	74.6
Ovary	—	782	—	1 248	—	42.0
Prostate	2 842	—	11 191	—	82.7	—
Testis	16	—	604	—	95.4	—
Bladder	589	280	2 258	696	70.8	64.7
Kidney(c)	534	342	1 514	944	59.9	57.5
Brain	652	471	786	562	23.8	23.8
Thyroid	39	44	298	882	87.9	95.6
Unknown primary	1 564	1 547	1 736	1 568	13.4	11.5
Hodgkin's Lymphoma	39	33	218	183	82.6	84.4
Non-Hodgkin's Lymphoma	816	657	1 923	1 576	54.6	55.8
Leukaemia	808	596	1 465	1 051	41.2	43.2
<b>All cancers(d)</b>	<b>20 822</b>	<b>16 341</b>	<b>47 820</b>	<b>40 578</b>	<b>56.8</b>	<b>63.4</b>

(a) Including rectosigmoid junction, anus and anal canal. (b) Including trachea and bronchus. (c) Including ureter and urethra. (d) Excluding non-melanocytic skin cancer.

Source: ABS Causes of Death Collection; AIHW 2001, 2005c.

In the general population during 1992–97, the expected proportion of males aged 60–69 years who survive for the next five years was 91%. The observed survival rate during 1992–97 after five years for males diagnosed with lung cancer at age 60–69 years is 11%. The five-year relative survival proportion for males diagnosed with lung cancer at age 60–69 years is the ratio of these two percentages, that is 12% (AIHW 2001).

By convention, the proportion of people surviving is measured at one, five and ten years after diagnosis. The periods reflect different stages of management during the life of a person diagnosed. For instance, the proportion of people surviving after one year can be a measure of the success of the interventions on the immediately detectable cancer, whereas five-year and ten-year measurements are strong indicators for remission or cure.

During 1992–97 the five-year relative survival proportions for all cancers for females (63%) were higher than those for males (57%) (table 9.26). Australian five-year relative survival proportions for all cancers was ranked second behind the

United States of America for both males and females when compared with other western countries for which relative survival data are available.

### Diabetes mellitus

Diabetes is a long-term condition characterised by high blood glucose (a type of sugar) level, which results from either the body producing little or no insulin, or the body not using the insulin properly (insulin resistance). Insulin is a hormone produced by the pancreas that helps the body cells use glucose.

There are three major types of diabetes mellitus. Type 1 diabetes is marked by extremely low levels of insulin. Type 2 diabetes is marked by reduced levels of insulin, or the inability of the body to use insulin properly. Gestational diabetes (which occurs in about 4–6% of pregnancies of women who have not been previously diagnosed with diabetes) is not usually long-term. However, for women diagnosed with gestational diabetes, there is an increased risk of developing Type 2 diabetes later in life (AIHW 2003a).

Diabetes is a costly disease, associated with substantial morbidity and mortality, primarily from cardiovascular complications, eye and kidney diseases, and limb amputations. Total health expenditure attributable to diabetes was \$0.8b in 2000–01, accounting for 1.6% of allocated recurrent health system expenditure (AIHW 2005b).

### **Morbidity**

Results from the 2001 NHS indicate over half a million Australians (around 3%) reported having diabetes as a long-term condition. Results from the three successive NHSs show diabetes is a growing health problem in Australia. The prevalence of diabetes has risen from 1.2% in 1989–90 to 2.0% in 1995, and to 2.9% in 2001.

People born in some overseas regions have a higher prevalence of diabetes than people born in Australia. This difference may be largely due to a combination of genetic, biological, behavioural and environmental risk factors. In 2001, men born in the Middle East and North Africa were 3.6 times as likely to report having diabetes as Australian-born men; women born in Southern and Eastern Europe and Central Asia were 1.5 times as likely to report diabetes as Australian-born women (AIHW 2004c).

### **Mortality**

In 2003 diabetes mellitus was the underlying cause of death in 3,389 deaths, 2.6% of all deaths registered. Of these, 1,807 deaths were males and 1,582 females. The age-standardised death rate due to diabetes was 16.5 per 100,000 people (20.9 per 100,000 for males and 12.9 per 100,000 for females).

In addition to deaths where diabetes was the underlying cause, there were a further 8,011 deaths in 2003 where diabetes was listed as an associated (or contributing) cause of death. When diabetes was recorded as the underlying cause of death, other conditions listed as associated causes included coronary heart disease (53% of cases), stroke (24%) and renal failure (26%).

### **Asthma**

Asthma is a chronic inflammatory disorder of the lung's air passages which makes them narrow in response to various triggers. This leads to episodes of shortness of breath and wheezing.

Asthma can begin at all ages, including the very young. The disease can start as a mild chronic cough and lead to mild or severe wheezing, and sometimes even to respiratory arrest.

Although asthma has low associated mortality, people with asthma can experience reduced quality of life and require a range of health services, from general practitioner care to emergency department visits or hospital in-patient care. It is one of the most frequent reasons for hospitalisation among children aged 0–14 years (AIHW 2004c).

The management of asthma is an important public health issue because of the personal burden it places on those with asthma, often with onset in childhood, and the financial burden it places on the health system. In 2000–01 health expenditure on asthma accounted for \$0.7b, which represented 1.4% of allocated recurrent health expenditure (AIHW 2005b).

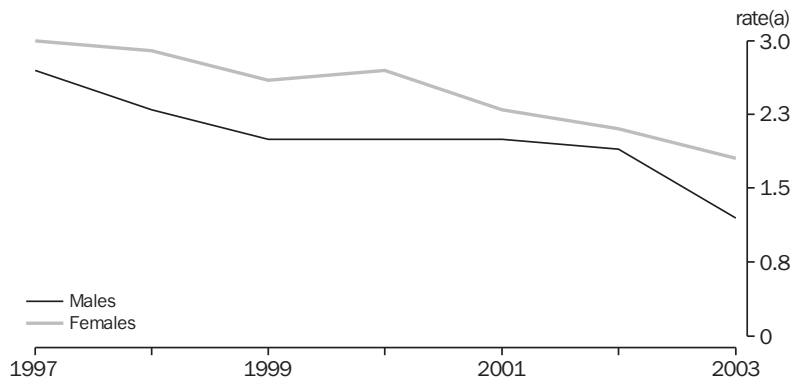
### **Morbidity**

The prevalence of asthma in Australia is one of the highest in the world (AIHW 2003b), with more than two million Australians (12%) reporting the disease in 2001. Asthma is more prevalent in young people than older age groups. For people under 25 years of age, the prevalence of asthma is 15%. Up to 14 years of age, asthma was more common among males than among females. In older age groups, however, asthma was more common among females than among males.

### **Mortality**

Asthma was identified as the underlying cause of a very small number of deaths (108 male and 206 female deaths), amounting to 0.2% of deaths registered in Australia in 2003. Most asthma deaths occur in older age groups. The most recent peak in asthma deaths occurred in 1989, and age-standardised death rates for asthma have generally declined since then. Changes in coding rules for ICD-10, which apply to deaths data from 1997 onwards, have resulted in substantially decreased recording of asthma as underlying cause of death compared with previous years (see *Causes of Death, Australia, 2003* (3303.0)). Consequently, graph 9.27 shows trends for 1997 onwards.

## 9.27 AGE-STANDARDISED DEATH RATES FROM ASTHMA



(a) Per 100,000 population, age standardised to the 2001 population (persons).

Source: AIHW 2005a.

## Communicable diseases

Communicable diseases are those diseases capable of being transmitted from one person to another, or from one species to another. Two major groups of communicable diseases, classified in the *International Classification of Diseases (ICD-10)*, are certain infectious and parasitic diseases (ICD-10 codes A00-B99) and acute respiratory infections (ICD-10 codes J00-J22) which includes influenza and pneumonia as well as other acute upper and lower respiratory infections. In 2003 these two groups accounted for 4.1% of all deaths in Australia (5,429 deaths). Influenza and pneumonia accounted for 66% (3,566) of these deaths. Death rates increase with age, and were greater for males than females in most age groups. In 2003–04, there were 92,892 hospital separations in Australia with a principal diagnosis of infectious and parasitic diseases (AIHW 2005d).

Under the National Notifiable Diseases Surveillance System (NNDSS), state and territory health authorities submit reports of more than 60 communicable disease notifications for compilation by the Australian Government Department of Health and Ageing (DoHA). In 2001, the diseases reported to the NNDSS were revised to include cryptosporidiosis, influenza, pneumococcal disease, Japanese encephalitis,

Kunjin virus, Murray Valley encephalitis, anthrax, Australian bat lyssavirus, and other lyssavirus infections. At the same time, diseases that were becoming rare or of less public health significance in Australia, namely chancroid, lymphogranuloma venereum, hydatid disease and yersiniosis were removed from the NNDSS.

The total of notifications to the NNDSS in 2004 was 110,710, a small increase (4.0%) on the 106,191 notifications in 2003 (table 9.28). In 2004 sexually transmitted infections (STI) were the most commonly reported communicable diseases, accounting for 40% of all notifications, followed by gastrointestinal diseases (23%) and blood-borne diseases (17%). Chlamydia was the most common STI (25,189 notifications, 79.5% of total STIs), campylobacteriosis the most common gastroenteritis (15,008 notifications, 59% of total) and hepatitis C (unspecified) was the most common blood-borne disease (12,667 notifications, 66% of total). Compared with 2003, there were increases in notifications of STIs (by 13%) due mainly to increases in chlamydia; gastrointestinal diseases (by 2%) and vaccine preventable diseases (by 17%), while there were decreases in reports of blood borne diseases (by 10%), vector borne diseases (by 11%), and other bacterial diseases such as legionellosis (by 9%) and meningococcal disease (by 29%).

## 9.28 NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM REPORTS

Disease(c)	Notifications			Rate(a)		
	2002(b) no.	2003(b) no.	2004 no.	2002(b) %	2003(b) %	2004 %
<b>Blood-borne diseases</b>						
Hepatitis B (incident)	392	349	275	2.0	1.8	1.4
Hepatitis B (unspecified)	6 677	6 637	5 861	34.0	33.4	29.1
Hepatitis C (incident)	448	477	361	2.8	3.0	2.3
Hepatitis C (unspecified)	15 906	13 911	12 667	81.0	70.0	63.0
Hepatitis D	23	28	27	0.1	0.1	0.1
Hepatitis n.e.c.	—	—	—	—	—	—
<b>Gastrointestinal diseases</b>						
Botulism	—	1	1	—	—	—
Campylobacteriosis	14 736	15 323	15 008	113.3	116.2	112.2
Cryptosporidiosis	3 272	1 225	1 573	16.7	6.2	7.8
Haemolytic uraemic syndrome	11	15	15	0.1	0.1	0.1
Hepatitis A	392	439	315	2.0	2.2	1.6
Hepatitis E	12	14	29	0.1	0.1	0.1
Listeriosis	62	70	65	0.3	0.4	0.3
Salmonellosis	7 848	7 042	7 607	40.0	35.4	37.8
Shigellosis	507	444	518	2.6	2.2	2.6
SLTEC, VTEC(d)	59	52	44	0.3	0.3	0.2
Typhoid	70	51	73	0.4	0.3	0.4
<b>Quarantinable diseases</b>						
Cholera	5	2	5	—	—	—
<b>Sexually transmissible diseases</b>						
Chlamydial infection	24 426	30 437	35 189	124.4	153.2	175.0
Donovanosis	16	16	11	0.1	0.1	0.1
Gonococcal infection	6 433	6 828	7 098	32.8	34.4	35.3
Syphilis (all categories)	2 015	2 012	2 296	10.3	10.1	11.4
Syphilis < 2 years duration	—	—	596	—	—	3.0
Syphilis > 2 years duration	—	—	1 561	—	—	7.8
Syphilis – congenital	18	15	11	0.1	0.1	0.1
<b>Vaccine preventable diseases</b>						
Diphtheria	—	—	—	—	—	—
Haemophilus influenza type b	31	23	15	0.2	0.1	0.1
Influenza (laboratory confirmed)	3 674	3 491	2 073	18.7	17.6	10.3
Measles	32	98	45	0.2	0.5	0.2
Mumps	69	82	102	0.4	0.4	0.5
Pertussis	5 570	5 159	8 557	28.4	26.0	42.5
Pneumococcal disease	2 430	2 303	2 316	12.4	11.6	11.5
Rubella	254	55	33	1.3	0.3	0.2
Rubella – congenital	1	3	1	—	—	—
Tetanus	4	4	5	—	—	—

For footnotes see end of table.

...continued

## 9.28 NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM REPORTS — *continued*

Disease(c)	Notifications			Rate(a)		
	2002(b) no.	2003(b) no.	2004 no.	2002(b) %	2003(b) %	2004 %
<b>Vector-borne diseases</b>						
Flavivirus NEC	73	61	59	0.4	0.3	0.3
Barmah Forest virus infection	896	1 369	1 052	4.6	6.9	5.2
Dengue	169	854	326	0.9	4.3	1.6
Japanese encephalitis	—	1	1	—	—	—
Kunjin virus	—	19	12	—	0.1	0.1
Malaria	469	598	533	2.4	3.0	2.7
Murray Valley encephalitis	2	—	1	—	—	—
Ross River virus infection	1 458	3 832	4 000	7.4	19.3	19.9
<b>Zoonoses</b>						
Brucellosis	39	19	37	0.2	0.1	0.2
Leptospirosis	163	132	166	0.8	0.7	0.8
Ornithosis	212	201	235	1.1	1.0	1.2
Q fever	784	583	440	4.0	2.9	2.2
<b>Other diseases</b>						
Legionellosis	317	340	310	1.6	1.7	1.5
Leprosy	6	5	5	—	—	—
Meningococcal infection	686	578	408	3.5	2.9	2.0
Tuberculosis	1 051	993	1 068	5.4	5.0	5.3
<b>Total</b>	<b>101 718</b>	<b>106 191</b>	<b>110 710</b>	<b>517.9</b>	<b>534.4</b>	<b>550.5</b>

(a) Rate per 100,000 population is calculated using the estimated resident population at the midpoint (30 June) of the relevant calendar year. (b) NNDSS data for 2002 and 2003 revised after consultations with states and territories. (c) Diseases reported to NNDSS from all jurisdictions except hepatitis B (unspecified) not reported from NT; incident hepatitis C not reported from Qld; campylobacteriosis not reported from NSW. Diseases under surveillance for which no notifications were received in the period 2002–04 were plague, rabies, viral haemorrhagic fever, yellow fever, diphtheria, poliomyelitis, anthrax, Australian bat lyssavirus, other lyssavirus n.e.c. (d) SLTEC/VTEC is shiga-like toxins and verotoxin producing *E. coli* infections.

Source: DoHA 2005a.

### HIV and AIDS

In collaboration with the state and territory health authorities and the Australian Government, surveillance for human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) is conducted by the National Centre in HIV Epidemiology and Clinical Research. This centre is part of the Faculty of Medicine, University of New South Wales and is funded primarily by DoHA.

At 31 December 2004 the cumulative number of cases of newly diagnosed HIV infections (since 1985) was 24,243. The annual number of new HIV diagnoses reached a low of 714 in 1999, after which there was a continual increase (to 886 in 2004). The cumulative number of AIDS diagnoses, adjusted for reporting delay, was 9,618 (since 1981) and there was a total of 6,590 deaths following AIDS (table 9.29).

There has been a reduction in numbers of new AIDS diagnoses since the late 1990s, which has been due to the decline in HIV incidence that took place in the mid-1980s, and the use, since around 1996, of effective combination antiretroviral therapy for the treatment of HIV infection. In Australia, an estimated 53% of all people living with HIV infection are receiving antiretroviral treatment. However, the long-term effectiveness of antiretroviral treatment in preventing progression of HIV infection remains unknown.

Transmission of HIV in Australia continues to be mainly through sexual contact between men (77% in 2004). Exposure to HIV was attributed to heterosexual contact in 23.2% of new diagnoses and to injecting drug use in 4.2% of diagnoses (table 9.30). Mother-to-child transmission of HIV remains rare in Australia.

## 9.29 NEWLY DIAGNOSED HIV CASES(a), AIDS CASES AND DEATHS FOLLOWING AIDS(b)

	Year of diagnosis(c)										Total
	Prior to 1996	1996	1997	1998	1999	2000	2001	2002	2003	2004	
HIV cases(a)	16 940	900	821	753	714	755	765	848	861	886	24 243
AIDS cases(b)	6 832	670	391	325	206	261	208	234	252	239	9 618
AIDS deaths(b)	4 904	516	245	164	137	146	126	109	127	116	6 590

(a) Not adjusted for multiple reporting. (b) AIDS cases diagnosed and deaths following AIDS in 2002, 2003 and 2004 were adjusted for reporting delays; AIDS cases diagnosed and deaths following AIDS in previous years were assumed to be completely reported.

(c) The number of HIV/AIDS diagnoses for each year may be revised over time due to late reports, updated information on exposure and testing history for reported cases, and removal of previously unrecognised duplicate diagnoses.

Source: National Centre in HIV Epidemiology and Clinical Research, 'HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2005', National Centre in HIV Epidemiology and Clinical Research, The University of New South Wales, Sydney, NSW; Australian Institute of Health and Welfare, Canberra, ACT, 2005.

## 9.30 CHARACTERISTICS OF CASES OF NEWLY DIAGNOSED HIV INFECTION(a), Number of cases and proportion of total cases

	Units	Year of diagnosis(b)										Total
		Prior to 1996	1996	1997	1998	1999	2000	2001	2002	2003	2004	
Total cases	no.	16 940	900	821	753	714	755	765	848	861	886	24 243
Males	%	93.4	91.9	91.2	89.4	87.0	89.5	89.2	87.8	88.7	89.0	92.1
State/territory												
New South Wales	%	59.8	50.7	52.6	53.1	52.5	48.7	45.0	47.9	49.2	45.7	56.7
Victoria	%	20.3	20.2	22.0	18.5	19.2	25.2	27.1	25.8	23.7	24.2	21.1
Queensland	%	9.2	16.0	13.9	13.8	17.1	15.1	13.6	15.3	14.8	17.5	11.0
South Australia	%	3.5	5.1	4.3	4.6	3.2	3.0	5.6	3.5	5.1	5.6	3.8
Western Australia	%	5.0	6.3	4.9	6.9	5.7	6.1	6.5	5.3	6.0	4.6	5.2
Tasmania	%	0.4	0.3	—	0.4	0.4	—	0.7	0.6	—	0.6	0.4
Northern Territory	%	0.5	0.6	1.3	1.6	0.7	0.4	0.5	0.9	0.6	0.9	0.6
Australian Capital Territory	%	1.2	0.8	1.0	1.1	1.1	1.5	1.0	0.6	0.6	0.9	1.1
Exposure category(c)												
Male homosexual contact	%	80.3	75.3	72.9	65.7	65.4	68.3	66.3	70.8	73.6	68.4	76.9
Male homosexual contact and injecting drug use	%	4.1	4.2	4.8	4.7	6.5	3.6	5.1	4.1	4.3	3.9	4.3
Injecting drug use(d)	%	4.4	2.7	3.1	3.6	5.4	4.3	5.6	2.6	3.8	4.2	4.2
Heterosexual contact	%	7.0	16.7	18.2	24.9	21.8	23.3	22.4	22.1	18.1	23.2	11.6
Haemophilia/coagulation disorder	%	2.1	—	—	0.1	0.5	—	0.1	—	—	—	1.4
Receipt of blood/tissue	%	1.6	0.2	0.1	0.6	0.3	—	—	—	—	0.1	1.1
Mother with/at risk of HIV infection	%	0.3	0.9	0.9	0.4	0.1	0.4	0.4	0.3	0.2	0.1	0.4
Health care setting	%	0.1	—	—	—	—	—	—	0.1	—	—	0.1
Other/undetermined	%	18.9	9.4	8.1	7.6	9.0	8.1	7.2	9.9	7.7	9.6	15.8

(a) Not adjusted for multiple reporting. (b) The number of HIV/AIDS diagnoses for each year may be revised over time due to late reports, updated information on exposure and testing history for reported cases, and removal of previously unrecognised duplicate diagnoses. (c) The 'Other/undetermined' category was excluded from the calculation of the percentage of cases attributed to each HIV exposure category. (d) Excludes males who also reported a history of homosexual/bisexual contact.

Source: National Centre in HIV Epidemiology and Clinical Research, 'HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2005', National Centre in HIV Epidemiology and Clinical Research, The University of New South Wales, Sydney, NSW; Australian Institute of Health and Welfare, Canberra, ACT, 2005.

## Children's immunisation

Immunisation programs for children are recognised as an effective public health intervention, and have been responsible for eradicating or minimising infectious diseases such as diphtheria, whooping cough and polio as major causes of death and disability in Australia.

The Australian Childhood Immunisation Register (ACIR), which commenced operation on 1 January 1996, aims to provide accurate and comprehensive information about immunisation coverage for all children under the age of seven. The register is administered by the Health Insurance Commission (HIC) on behalf of DoHA and is a key component of initiatives to improve the immunisation status of Australian children.

Immunisation coverage goals for Australia for the year 2000, recommended by the National Health and Medical Research Council (NHMRC), called for 90% or more coverage of children at two years of age, and near universal coverage of children at school-entry age, against diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, measles, mumps, rubella and Hib (Haemophilus influenza type b).

ACIR data indicated, at 30 June 2005, 91% of one year olds, 92% of two year olds and 83% of six year olds were fully immunised according to the NHMRC Recommended Australian Standard Vaccination Schedule. State summaries by age group based on ACIR data are contained in the quarterly *Communicable Diseases Intelligence Bulletin*, published on the HIC web site at: <<http://www.hic.gov.au>>.

## Children's injuries

Children are much less likely to have long-term health conditions than adults, and infant and child death rates are generally declining and are at their lowest in a century. In 2003, 20% of the Australian population was aged 0–14 years (around four million children), while child deaths accounted for 1.3% of all deaths registered in that year. High rates of preventable injuries among children relative to other age groups are of concern to health professionals, the community and governments.

### Injury deaths

Most child deaths are of infants aged less than one year (68% of deaths of 0–14 year olds in 2003), and are related to perinatal and congenital factors. However, once the infancy period has passed, injury deaths (e.g. from transport accidents, drownings or assaults) emerge as the leading cause of death for children. Over the five-year period 1999–2003, 41% of all deaths of children aged 1–14 years were injury deaths (1,260 children) (graph 9.31). By comparison, injuries caused around 6% of deaths of people aged 15 years and over. The next most common cause of death of children aged 1–14 years – malignant neoplasms, or cancer – caused less than half the number of child deaths over the same period (537 children).

Boys are more likely than girls to experience and die as a result of an injury. While half of all children are boys, nearly two-thirds of injury deaths for this age group between 1999 and 2003 were boys (62%). This difference between girls and boys in relation to injury and deaths exists regardless of the child's age, and across all OECD countries (UN 2001).

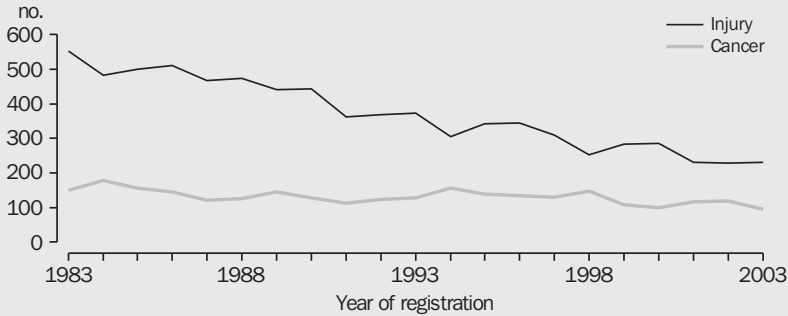
### Transport accidents

When infant deaths are included, there were 1,473 child injury deaths between 1999 and 2003 (table 9.32). Children who had died from injuries were more likely to have died in transport accidents, than in any other way – 587 children aged 0–14 years (40%) died this way between 1999 and 2003.

In most deaths that were the result of a transport accident, the child was either the occupant of a motor vehicle (44% of deaths) or a pedestrian (35%). The remaining deaths were in accidents where the child was a pedal cyclist (5%) or motorcycle rider (4%), or were other transport accidents (12%). Children were much more likely than adults to have been a pedestrian in the accident (16% of people aged over 15 years).



9.31 LEADING CAUSES OF DEATH FOR CHILDREN(a)(b)



(a) Aged 1–14 years. (b) Underlying cause of death data for 1983–96 were coded to ICD-9 while data for 1997 onward were coded to ICD-10.

Source: ABS data available on request, Causes of Death Collection.

The overall decline in injury deaths between 1983 and 2003 was partly due to a decline in transport accident deaths. Many factors can contribute to such a decline, including accident prevention strategies (e.g. speed limit initiatives), improved car safety, improved emergency and medical response, or fewer children travelling on foot (UN 2001).

### Accidental drowning

Accidental drowning accounted for 19% of all child injury deaths between 1999 and 2003 (286 children). Other accidental threats to breathing, such as suffocation or choking, accounted for 11% (163 children). More than twice as many boys as girls drowned over the period (193 boys, 93 girls).

Children aged less than 5 years are most vulnerable to drowning – 80% of child drowning deaths were of children aged under 5 years (229 children). Most of these were 1–4 year olds, who are more mobile than infants but are still developing motor skills and not of an age to judge hazards. The death rate from accidental drowning for 1–4 year olds (3.9 per 100,000) was higher than for all age groupings for both children and adults.

The events leading to drowning were also different for young children – who tended to drown following a fall into water, while older children were more likely to have drowned once already in water. For example, most children aged less than 5 years who drowned in a swimming pool fell into the pool (78%).

The most common location of infant drowning was in the bath (62% of children aged less than 1 year). Drowning deaths of older children (aged 1–14 years) most commonly occurred in a swimming pool (42%) or a body of natural water such as a lake, river, stream or the open sea (24%).

### Other types of injury death

Assault accounted for 9% of child deaths (128 children) between 1999 and 2003. Young children were more likely to have died from assault than older children. Two thirds (65%) of child deaths from assault were of children aged less than 5 years (83 children). More boys than girls died from assault between 1999 and 2003 (70 compared with 58).

Other types of injury death each individually accounted for less than 5% of child deaths over the five year period. This included 64 children who died in accidents resulting from exposure to mechanical forces, and 50 who died in fires. A further 4% of children who died from injuries, died through intentional self-harm (56 children), most of whom were aged 13 or 14 years.

### Recent injuries

While fatal outcomes are rare, the ABS 2001 NHS found that many more Australian children than adults had recently been injured. In 2001, 18% of children aged 0–14 years had received an injury in the previous four weeks for which some action had been taken. This proportion declined with age (ranging from 17% of 15–24 year olds to 6% of people aged 65 years and over).

### 9.32 TOTAL CHILDREN INJURY DEATHS IN THE FIVE YEARS 1999 TO 2003(a)

	Age (years)				Total deaths 0–14 years	
	under 1	1–4	5–9	10–14		
	no.	no.	no.	no.	no.	%
Transport accidents	17	182	161	227	587	39.9
Accidental drowning	29	200	35	22	286	19.4
Other accidental threats to breathing(b)	88	45	12	18	163	11.1
Assault	39	44	30	15	128	8.7
Exposure to mechanical forces(c)	10	25	13	16	64	4.3
Intentional self-harm	..	..	n.p.	n.p.	56	3.8
Smoke, fire, flames	7	21	14	8	50	3.4
Falls	3	12	11	7	33	2.2
Accidental poisoning	3	10	n.p.	n.p.	25	1.7
Other injury deaths	17	22	19	23	81	5.5
<b>All injury deaths</b>	<b>213</b>	<b>561</b>	<b>299</b>	<b>400</b>	<b>1 473</b>	<b>100.0</b>

(a) Persons aged 0–14 years. (b) Includes accidental suffocation, strangulation, and hanging as well as selected other separate causes. (c) Includes animate mechanical forces and inanimate mechanical forces.

Source: ABS data available on request, Causes of Death Collection.

While this included injuries needing minor first aid (e.g. applying a bandage), it extended to more serious events that required medical advice or hospitalisation. Injuries are the main reason children are hospitalised. In 2002–03 there were 68,000 hospitalisations of children aged 0–14 years for injury (graph 9.33).

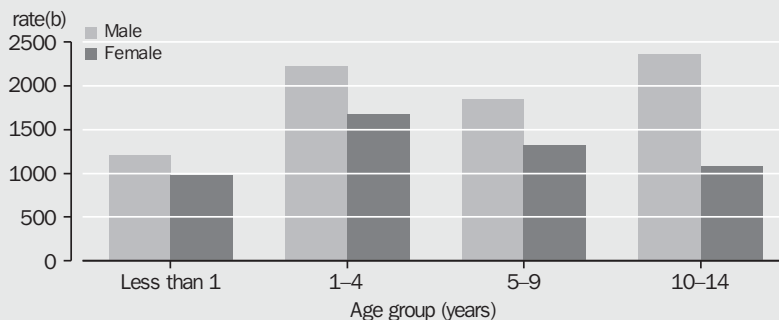
Consistent with mortality patterns, boys are more likely to be injured than girls – in 2001, 19% of boys had recently been injured compared with 16% of girls. Boys were also hospitalised for injury more often than girls. In 2002–03, there were 42,600 hospitalisations for injuries to boys, and 25,400 to girls. Boys aged 10–14 years had the highest rate of hospitalisation among all boys. In contrast, hospitalisation for injury to girls peaked among girls aged 1–4 years. Thus, the difference between boys and girls was most marked among

10–14 year olds – boys this age had more than twice as many hospitalisations for injury as girls in 2002–03 (16,600 and 7,300 respectively).

#### Activity and location when injured

Australian children are generally physically active. Among 498,000 children aged 5–14 years who reported being injured recently, the most common activities these children had been undertaking at the time of injury were leisure activities (e.g. playing non-organised sport or games), and organised sports. In 2001, half of all recent injuries for children this age (51%) occurred during leisure activities, and around a third (27%) while children were playing sports. A further 17% occurred while attending school (Clapperton A. et al 2003).

### 9.33 HOSPITAL SEPARATIONS FOR INJURY(a) — 2002–03



(a) Includes poisoning and certain other consequences of external causes. (b) Rate per 100,000 population, using estimated resident population as at December 2002.

Source: AIHW National Hospital Morbidity Database.

The most common locations at which 5–14 year olds received injuries were outside their own or someone else’s home (32%), at school (30%), at a sports facility (20%), or inside their own or someone else’s home (16%).

### Events leading to injury

In 2001, 11% of all children aged 0–14 years were injured in a fall, 3% in a collision (hitting something or being hit by something), 2% by a bite or sting, and 0.6% in an attack by another person.

Falls caused the greatest proportion of recent injuries for children (61%). Of children injured in falls, most were injured in a low fall of one metre or less (93%), rather than a high fall from more than one metre (7%), and most were engaged in sporting or leisure activities at the time (75%).

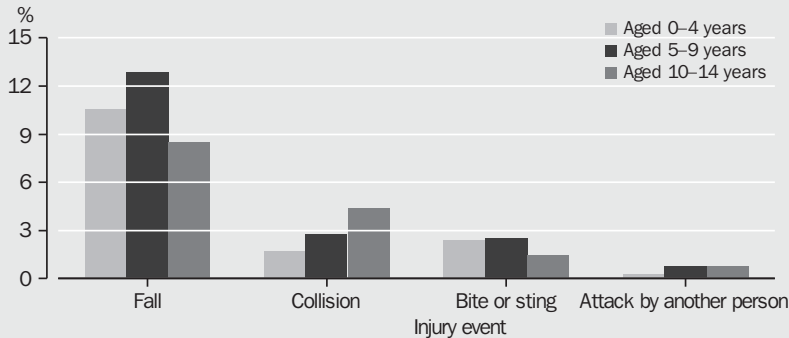
Collisions were the next most common cause of recent injury for children (17%). Boys were more likely to be injured this way than girls (20% of recently injured boys, and 13% of girls in 2001). As with falls, sports and leisure activities were the most common activities being undertaken at the time of

the collision. Of children injured in collisions, 41% were participating in leisure activities (38% of boys and 46% of girls), and 34% were involved in sports (37% of boys and 29% of girls).

Of children recently injured, 12% were injured by a bite or sting (including bites from animals such as dogs and snakes, and some insects and spider bites). Children were more likely than any other age group to have been injured this way. Half (51%) of children who were bitten or stung were outside their own or someone else’s home at the time.

In 2001, around 25,000 children had been injured in an attack by another person in the four weeks prior to interview – accounting for 4% of recent child injuries. Children were more likely than adults to have experienced injury from attack in the previous four weeks (0.8% of children aged 5–14 years compared with 0.2% of people aged 15 years and over). Most 5–14 year olds recently injured in an attack, had been at school at the time (72%) (AIHW 2003). Boys in this age group had been injured in an attack by another person at three times the rate of girls (1.2% and 0.4% respectively).

**9.34 EVENTS LEADING TO RECENT INJURY(a) — 2001**



(a) As a proportion of the total population in that age group.

Source: ABS data available on request, 2001 National Health Survey.

### References

UN (United Nations) 2001, Children’s Fund, *A League Table of Child Deaths by Injury in Rich Nations*, Innocenti Report Card, Issue no.2, UNICEF Innocenti Research Centre, Florence.

Clapperton, A, Cassell, E & Wallace, A 2003, ‘Injury to children aged 5–15 years at school’, *Hazard*, edition no. 53, pp.1–16.

Australian Institute of Health and Welfare 2003, *Rural, Regional and Remote Health: A study on mortality*, Rural Health Series No.2, AIHW, Canberra.

## Health care delivery and financing

*This section draws extensively on material provided by the Australian Government Department of Health and Ageing (September 2005).*

### Governments' role

Australia's health policy is funded and delivered by several levels of government, and is supported by private health insurance arrangements. Medicare, the national health insurance scheme, is funded and administered by the Australian (Commonwealth) Government and provides cover for a range of primary care services, including visits to medical practitioners. This is supported by optional private health insurance for ancillary services and private hospital treatments. The public hospital system is jointly funded by the Australian, and state and territory governments, and administered at the state/territory level.

Most non-hospital medical services, pharmaceuticals and health research receive funding directly or indirectly from the Australian Government. Public hospital services, and home and community care for aged and disabled people are jointly funded by the Australian, state and territory governments. Residential facilities for aged people are funded by a number of sources, including the Australian Government. Public health insurance is provided through Medicare, which is discussed in more detail later in this chapter.

The states and territories are primarily responsible for the delivery and management of public health services and the regulation of health care providers and private health facilities. They deliver public hospital services and a wide range of community and public health services. For example, some state and territory government funded organisations provide school dental care and dental care for low income earners, with other dental care being delivered in the private sector without government funding. Local governments within states deliver most environmental health programs.

Public hospitals, which provide the majority of acute care beds, are funded by the Australian, state and territory governments, in addition to receiving revenue from services to private patients. Large urban public hospitals provide most of the more complex types of hospital care such as intensive care, major surgery and organ transplants, as well as non-admitted patient care. Many public hospitals have their own pharmacies which provide medicines to admitted patients

free-of-charge and do not attract direct Australian Government subsidies under the Pharmaceutical Benefits Scheme (PBS). The Australian Health Care Agreements provide for reforms to the pharmaceutical arrangements. Where a state or territory enters into a reform agreement with the Australian Government, under some circumstances pharmaceuticals provided to non-admitted and same-day patients may be charged to the PBS. The reforms also provide for admitted patients to receive up to one month's supply of pharmaceuticals on discharge from hospital, paid by the PBS rather than the hospital.

A small number of doctors and paramedical professionals are salaried employees of the various tiers of government. Many salaried specialist doctors in public hospitals are able to treat some private patients in hospital and usually contribute to the hospital a portion of the income earned from fees charged. Other doctors may contract with public hospitals to provide medical services.

### The private sector role

The private sector, operating in the delivery of, and insurance for, health services, receives both direct and indirect government subsidies. Within this sector, organisations operating for profit and not-for-profit play a significant role in providing health services, public health and health insurance. For example, privately owned nursing homes provide the majority of long-term aged care beds.

The private sector's share of surgical episodes requiring the use of an operating room was 55.5% in 2003–04, compared with 55.2% in 2002–03. This sector includes a large number of doctors and paramedical professionals who are self-employed, generally providing services such as general practice and specialist services, diagnostic imaging, pathology and physiotherapy.

Most prescribed pharmaceuticals dispensed by private sector pharmacies are directly subsidised by the Australian Government through the PBS. A component of the Australian health care system is private health insurance, which can cover part or all of the hospital charges to private patients directly, a portion of medical fees for services provided to private admitted patients in hospitals, paramedical services, some dental services and some aids such as spectacles. The Australian Government subsidises private health insurance premiums through a 30% rebate. The rebate was increased in April 2005 to 35% for people aged 65–69 years and to 40% for people aged 70 years and over.

## National health care system

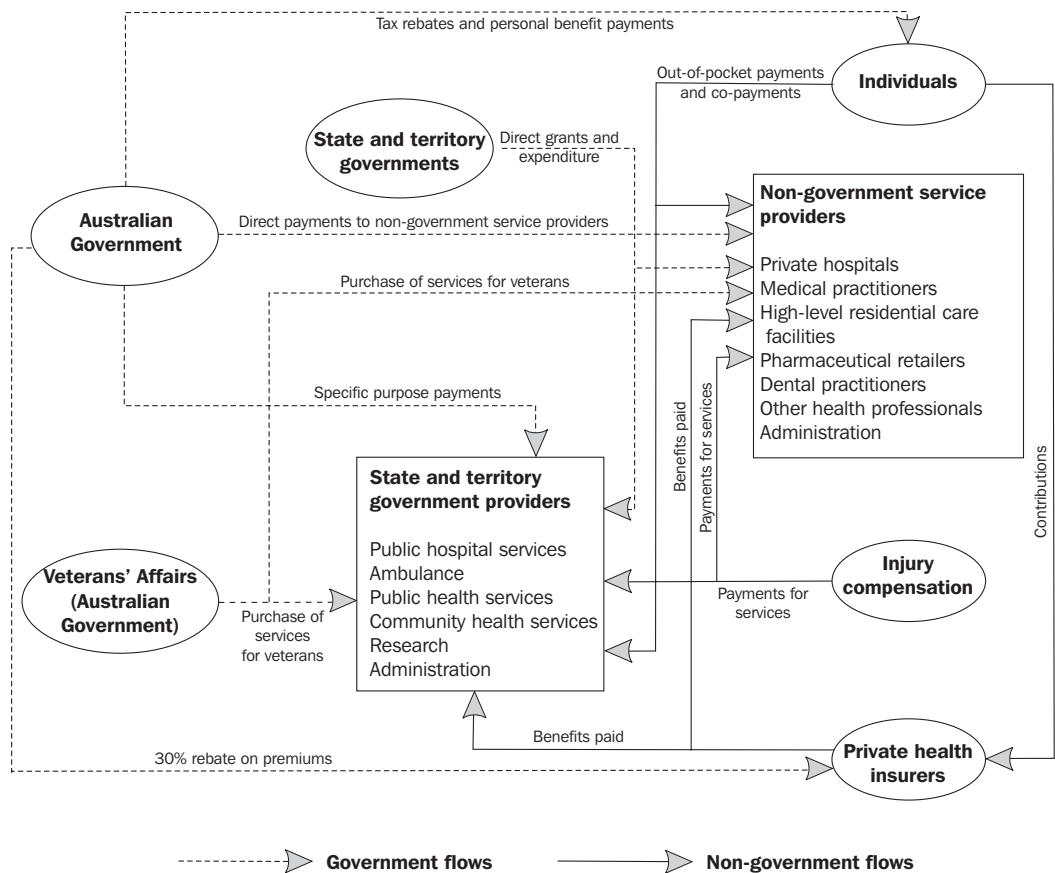
There are five major kinds of Australian Government health funding mechanisms:

- grants to state and territory governments under the Australian Health Care Agreements to assist with the cost of providing public hospital services
- medical benefits, providing patients with rebates on fees paid to privately practising doctors, optometrists and other allied health practitioners
- pharmaceutical benefits, through the PBS, providing patients with access to a broad range of subsidised medicines

- health program grants to government and non-government service providers for a range of health services (e.g. radiation oncology (capital component), pathology and primary medical services) – health program grants are used to achieve health policy objectives such as improving access for specific population groups, influencing the growth and distribution of selected and potentially high cost services, or providing an alternative to fee-for-service arrangements, such as the Medicare and PBS
- the private health insurance rebate for private health insurance.

Diagram 9.35 shows the major flows of funding between the government and non-government sectors, and the providers of health goods and services.

### 9.35 THE STRUCTURE OF THE AUSTRALIAN HEALTH CARE SYSTEM AND ITS MAJOR FLOW OF FUNDS



Source: AIHW 2005e.

## Medicare

Medicare is Australia's universal health insurance scheme. Introduced in 1984, its three objectives are to make health care affordable for all Australians, to give all Australians access to health care services, and to provide a high quality of care.

### Medicare benefits

Medicare benefits provide financial assistance to people who incur medical expenses for selected professional services rendered by medical practitioners, participating optometrists, practice nurses, dentists and other allied health professionals. Medicare benefits are based on a schedule of fees.

Practitioners are not required to adhere to the schedule fee, except for optometry, which is a participating scheme under which practitioners sign an undertaking to charge no more than the schedule fee for the services they perform.

Where practitioners bulk bill the Health Insurance Commission, they receive the Medicare rebate, and they cannot levy additional charges on the patient.

Medicare benefits do not cover services to public patients in public and private hospitals, services provided under Veterans' Affairs arrangements (see *Services provided to veterans and their families* in the *Income and welfare* chapter), some compensation cases, and some services provided under other publicly-funded programs.

For private in-patients in hospitals or approved day surgeries, the Medicare benefit is 75% of the schedule fee. Amounts paid in excess of the rebate may be claimed under private health insurance arrangements.

For non-hospital services, from 1 January 2005, the Medicare benefit is 100% of the schedule fee for out-of-hospital non-referred general practitioner (GP) attendances, including practice nurse items, and for all other out-of-hospital services, 85% of the schedule fee or the schedule fee less the maximum gap (\$60.00 from 1 November 2004), whichever is greater.

With effect from 1 February 2004, additional benefits (\$5.10 and \$7.65, from 1 November 2004) are paid to GPs as an incentive for bulk billing. The \$7.65 incentive applies to bulk-billed services provided by GPs, to people under 16 years of age or concession card holders, to people in Tasmania or in specified rural and remote areas, and with effect from 1 September 2004, to a number of other geographical areas. The \$5.10 incentive applies to bulk-billed services provided by GPs to people under 16 years of age or to concession card holders in other parts of Australia.

A number of 'safety net' arrangements apply for patients billed for out-of-hospital services. For Commonwealth concession card holders and families who receive Family Tax Benefit Part A, once out-of-pocket costs (fee charged less benefit paid) exceed \$306.90 in 2005, Medicare covers 80% of the out-of-pocket costs for the remainder of the year. For other singles and families, Medicare covers 80% of the out-of-pocket costs, once those costs have exceeded \$716.10 in 2005. In addition, when gap payments (fee charged less benefit paid, where fee charged is less than the schedule fee; or schedule fee less benefit paid, where fee charged is at or above the schedule fee) exceed \$335.50 for an individual or family in 2005, Medicare benefits increase to up to 100% of the schedule fee for the remainder of the year.

In 2004–05, the Australian Government Health Insurance Commission paid benefits of \$9,922.9 million (m) (or \$487.62 per person) for 236.3 million items of services (11.6 services per person) (table 9.36).

### Medicare levy

When Medicare began in 1984, a levy was introduced as a supplement to other taxation revenue to enable the Australian Government to meet the additional costs of the universal national health care system, which were greater than the costs of the more restricted systems that preceded it.

The Australian Taxation Office estimated revenue raised from the Medicare levy in 2004–05 to be \$6.1b which represents 17.2% of estimated total Australian Government health expenditure for the year.



### 9.36 MEDICARE SERVICES PROVIDED AND BENEFITS PAID

	Services(a)		Benefits(b)	
	Total million	Per person no.	Total \$m	Per person \$
1993–94	180.2	10.1	5 373.3	300.94
1994–95	188.0	10.4	5 696.7	315.23
1995–96	196.0	10.7	6 038.4	329.77
1996–97	198.8	10.7	6 158.0	332.55
1997–98	202.2	10.8	6 333.5	338.49
1998–99	206.3	10.9	6 669.1	352.38
1999–2000	209.6	10.9	6 945.0	362.60
2000–01	213.9	11.0	7 326.8	377.41
2001–02	220.7	11.2	7 829.5	398.63
2002–03	221.4	11.1	8 115.5	408.38
2003–04	226.4	11.3	8 600.0	427.62
2004–05	236.3	11.6	9 922.9	487.62

(a) Increases in services over time also reflect structural changes to Medicare and changes in service provision (including services previously provided by state government under grant arrangements). (b) In current prices.

Source: Health Insurance Commission.

## Pharmaceutical Benefits Scheme (PBS)

The Australian Government provides Medicare-eligible people with affordable access to a wide range of necessary and cost effective prescription medicines through the PBS. The following details relate to charges and ‘safety net’ levels applying at 1 January 2005.

Medicare-eligible patients who do not hold a Health Care Card, Pensioner Concession Card or Commonwealth Seniors Health Card, are required to pay up to the first \$28.60 for each prescription item for medicines listed on the PBS. Concessional patients who hold a concession card must pay \$4.60 per prescription item.

Individuals and families are protected from large overall expenses for PBS listed medicines by safety nets. For general patients (non-cardholders), once the eligible expenditure of a person and/or their immediate family exceeds \$874.90 within a calendar year, the additional payments the patient has to make per item (co-payment) decreases from \$28.60 to the concessional co-payment rate of \$4.60.

For concessional and pensioner patients (cardholders), once their total eligible expenditure exceeds \$239.20 within a calendar year, any further prescriptions are free for the remainder of that year. All pensioners continue to have their pensions supplemented by a pharmaceutical allowance of \$2.90 per week payable fortnightly, or \$150.80 per year, to help defray their out-of-pocket pharmaceutical expenses. The allowance is not paid to other concessional beneficiaries.

Patients may pay more than the relevant co-payment in certain circumstances. A *special patient contribution* is payable for a pharmaceutical benefit where there is a disagreement between the manufacturer and the Government over the dispensed price for that benefit item. This extra charge is paid by all patients, together with their usual patient contribution.

- In the case of *brand premiums*, the Government subsidises on the basis of the lowest priced drug, and any difference in price due to a *brand premium* must be met by the patient. The premium cannot be counted towards the patient’s safety net. There is always one brand of a drug available on the PBS that does not have a brand premium.
- Under the *therapeutic group premium* arrangements, the Government reimbursement to pharmacists is based on the lowest priced benefit items within identified therapeutic groups. Patients pay the difference for higher priced items. Exemptions on medical grounds are available.
- For other *special patient contributions*, although some medicines in reference pricing groups deliver similar health outcomes, they may not be interchangeable for patients. Unlike products with brand and therapeutic group premiums, patients may not be able to avoid the additional costs by taking another medicine. Where the prescribing doctor believes that there is no clinically appropriate alternative, the Government will pay the special patient contribution on behalf of the patient for most of the drugs with these patient paid charges.



### 9.37 PBS, Subsidised prescriptions(a)

Year	Government cost(b)	Script volume(c)	Average Government cost per script(c)	Average patient cost per script(c)(d)	Subsidised prescriptions per capita(c)
	\$m	millions	\$	\$	no.
2000–01	4 257.5	147.6	25.81	5.02	7.7
2001–02	4 578.1	154.5	27.08	5.21	7.9
2002–03	5 054.7	158.5	28.84	5.40	8.0
2003–04	5 607.5	165.4	30.17	5.67	8.2
2004–05	6 001.2	170.3	31.16	6.11	8.3

(a) In current prices. (b) PBS Government cost is reported on an accrual accounting basis. Categories included are expenditure for Section 85 drugs (Concessional and General), Emergency (Doctor's Bag) Drugs, Highly Specialised Drugs, Section 100 drugs and issue costs of Safety Net cards. (c) All other information is sourced from the relevant Pharmaceutical Benefits Branch publications 'Expenditure and prescriptions twelve months to...' and is reported on a cash basis. The data only relate to Concessional, General and Doctor's Bag categories. (d) Average patient cost per script is based on patient co-payments. However, this does not include the cost of patient purchase of medicines that fall below the co-payment level or on private (non PBS) prescriptions.

Note: Payments for IVF Centre Hormones, Human Growth Hormones, Aboriginal Health Services, and prescription medicines subsidised by the Government under the Repatriation Pharmaceutical Benefits Scheme which is administered by the Department of Veterans' Affairs, are totally excluded.

Source: HIC Data, DoHA 2005b.

In 2004–05 the PBS had 170.3 million benefit prescriptions, representing a cost to the Government of \$6,001.2m (table 9.37).

The number of PBS subsidised prescriptions per capita in 2004–05 was 8.3, compared with 8.2 in 2003–04. The number of subsidised prescriptions increased by 3.0% over the previous year, and the cost to Government of these prescriptions grew by 7.0% (in current dollars).

The rate of growth in prescription numbers and their cost reflects the ongoing trend towards newer and more costly medicines.

#### Private health insurance

At 30 June 2005 private health insurance was offered by 40 registered health insurers, giving a voluntary option to all Australians for private funding of their hospital and ancillary health treatment. It supplements the Medicare system, which provides a tax-financed public system that is available to all Australians. Depending on the type of cover purchased, private health insurance provides cover against all or part of hospital theatre and accommodation costs in either a public or private hospital, medical costs in hospital, and costs associated with a range of services not covered under Medicare including private dental services, optical, chiropractic, home nursing, ambulance and natural therapies. Overall, the private health sector funds around a third of all health care in Australia.

#### Health insurance coverage

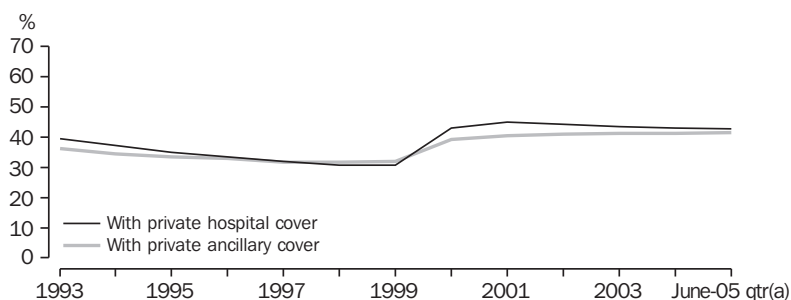
The introduction of Medicare in 1984 resulted in Australians' participation in private health insurance steadily declining. The introduction of the Australian Government 30% rebate on private health insurance in 1999, and the Government's Lifetime Health Cover policy in 2000, saw participation in private hospital cover increase strongly, with participation rates rising from 31% in June 1999 to 46% in September 2000. Rates appear now to have stabilised to a participation rate of 43% as at June 2005 (graph 9.38).

#### Funding of hospitals

Australian Government funding to the state and territory health systems is made through the Australian Health Care Agreements.

In 2004–05 total Australian Government funding under the Australian Health Care Agreements was around \$8.0b. Of this amount, over 99% was paid to the states and territories as Health Care Grants, while the residual was either allocated to national initiatives in areas of mental health, palliative care and casemix development, or paid to those states and territories which were eligible to receive financial assistance from the Pathways Home initiative.

**9.38 PERSONS WITH PRIVATE HEALTH INSURANCE, Proportion of total population**



(a) For the previous 3 months ending June 2005.

Source: Private Health Insurance Administration Council, 'Annual Statistics, 1992–03 and Quarterly Statistics, June 2005'.

### Public hospitals

In 2003–04 there were 761 public hospitals nationally, including 20 psychiatric hospitals, compared with 748 in 1999–2000. There was an average of 53,327 beds in public hospitals during 2003–04 (table 9.39), representing 67% of all beds in the hospital sector (public and private hospitals combined). Public hospital beds have declined from 2.8 beds per 1,000 population in 1999–2000 to 2.7 beds in 2003–04.

The number of patient separations (discharges, deaths, and transfers) from public hospitals during 2003–04 was 4.2 million compared with just under 3.9 million in 1999–2000. Same-day separations accounted for 49% of total public hospital separations in 2003–04 compared with 46% in 1999–2000.

Total days of hospitalisation for public health patients during 2003–04 amounted to 16.4 million, an increase of 1% since 1999–2000. The average length of hospital stay per patient in 2003–04 was 3.9 days. For 1999–2000 the corresponding figure was 4.2, reflecting the lower number of same-day patients compared with 2003–04. If same-day patients are excluded, the 2003–04 average length of stay was 6.7 days compared with 6.9 days in 1999–2000.

### Private hospitals

There were 525 private hospitals in operation in 2003–04, comprising 291 private and acute hospitals and 234 free-standing day hospital facilities. The number of acute and psychiatric hospitals has decreased from last year continuing the downward trend since 1999–2000 when 302 of these hospitals were in operation. In contrast, day

hospital facilities have shown strong growth for several years, with only 207 in operation in 1999–2000.

For private acute and psychiatric hospitals during 2003–04, the average number of beds available was 24,642. This was a slight increase on the previous year due to growth in the average number of beds available in regions outside the capital cities. Between 1999–2000 and 2003–04, the average number of beds available increased by 4.1%. There were 1.2 private hospital beds available per 1,000 population in 2003–04. The average number of beds or chairs available at free-standing day hospital facilities (used mainly for short post-operative recovery periods) increased over the same five-year period by 23% to 1,947, reflecting the continued growth in the numbers of free-standing day hospitals.

Private hospital separations in 2003–04 totalled more than 2.7 million, of which 81% were from private acute and psychiatric hospitals and 19% from free-standing day hospital facilities. Same-day separations accounted for 61% of all private hospital separations (compared with 49% of public hospital separations). This higher proportion of same-day separations contributed to the lower average length of stay in private hospitals (2.7 days) compared with public hospitals (3.9 days) (table 9.39).

The average number of full-time equivalent staff employed at all private hospitals was 48,577, of whom 63% were nursing staff. Total operating expenditure for private acute and psychiatric hospitals during 2003–04 amounted to \$5,576m. Some 52% of this amount was spent on salaries and wages (including on-costs). Revenue received

### 9.39 PUBLIC AND PRIVATE HOSPITALS — 2003–04

	Units	Public(a)	Private(b)	Total
Bed supply				
Facilities	no.	761	525	1 286
Beds/chairs(c)	no.	53 327	(d)26 589	(d)79 889
Activity				
Total separations	'000	4 200	2 688	6 888
Same day separations	'000	2 057	1 632	3 689
Total patient days	'000	16 418	7 329	23 747
Average length of stay	days	3.9	2.7	3.4
Average length of stay excluding all same-day separations	days	6.7	5.6	6.3
Average occupancy rate	%	84.2	(e)75.7	(e)81.5
Non-admitted patient occasions of service	'000	43 622	(e)1 909	(e)45 531
Staff (full-time equivalent)(c)	'000	205	49	254
Revenue	\$m	1 640	6 273	7 913
Recurrent expenditure	\$m	(f)20 013	5 859	25 872

(a) Acute and psychiatric hospitals. (b) Acute and psychiatric hospitals and free-standing day hospital facilities. (c) Annual average. (d) Including beds, chairs, recliners at free-standing day hospital facilities. (e) Excluding free-standing day hospital facilities. (f) Excluding depreciation.

Source: *Private Hospitals, Australia, 2003–04 (4390.0)*; AIHW 2005d.

during the year was \$5,933m, of which 95.6% was received as payments from, or in respect of, patients. Total recurrent expenditure for free-standing day hospital facilities during 2003–04 amounted to \$282m, and revenue received during the year was \$341m.

#### Health work force

In 2004–05 approximately 402,700 people were employed in health occupations in Australia, comprising 4.1% of the total number of employed people (table 9.40). The largest components of the health work force were registered nurses (163,200), generalist medical practitioners (33,700) and enrolled nurses (28,500).

Females comprised 75% of the health work force. The high proportion of females in the health work force is due to their predominance in registered midwifery (99.8%), enrolled nursing (94%), registered nursing (92%) and physiotherapy (71%). Conversely, males represented 84% of the ambulance officers and paramedics, 75% specialist medical practitioners and 58% generalist medical practitioners.

Over a third (39%) of the health work force were employed on a part-time basis, compared with 28% of other employed people in Australia. Of people employed part time in the health work force, 91% were female, a higher proportion than in the total part-time work force (71%). Males constituted 9% of those working part time in the health work force compared with 29% of those working part time in the total work force. The higher proportion of part-time workers in the

health sector is a reflection of the greater number of females in the health work force, who are more likely to work part time.

#### Household expenditure on health and medical care

Average household expenditure on health and medical care increased steadily between 1984 and 2003–04. As a proportion of total household expenditure on goods and services, health and medical care increased from 3.9% in 1984 to 5.2% in 2003–04.

The Household Expenditure Survey (HES) provides estimates of expenditure on medical care and health by households across Australia. Expenditure is net of any refunds and rebates received from Medicare, private health insurance companies and employers. The ABS has undertaken the HES at five-yearly intervals since 1984. Average expenditure in this survey is calculated across all households, not just those households that spent money on specific goods or services.

Household expenditure on accident and health insurance accounted for the largest percentage of total average household expenditure on health and medical care in each of the survey periods. However, this percentage was lower in 2003–04 than in 1993–94 (39% compared with 50%) reflecting a decrease in the hospital, medical and dental insurance share of total health expenditure (from 44% in 1993–94 to 34% in 2003–04), possibly as a result of the private health insurance rebate.

#### 9.40 EMPLOYED PERSONS IN HEALTH OCCUPATIONS(a) — 2004–05

	'000	% males	% part-time workers
Health professionals(b)	348.9	24.8	38.7
Generalist medical practitioners	33.7	58.1	21.7
Specialist medical practitioners	21.2	75.2	13.6
Registered nurses	163.2	7.5	48.4
Registered midwives	14.6	0.2	67.6
Physiotherapists	13.3	29.0	32.6
Other health professionals(b)	102.9	33.6	30.9
Health associate professionals	53.8	29.1	42.8
Enrolled nurses	28.5	5.5	50.2
Ambulance officers and paramedics	9.1	83.8	3.3
Aboriginal and Torres Strait Islander health workers	0.6	13.9	21.5
Other health associate professionals	15.6	40.5	53.0
Total employed in health occupations(c)	402.7	25.3	39.2
Total employed	9 800.0	55.2	28.4

(a) Annual average of quarterly data. (b) Includes health service managers; excludes veterinarians. (c) Includes health professionals, health service managers, health associate professionals.

Source: ABS data available on request, Labour Force Survey.

While the proportion of household health expenditure spent on health practitioners' fees has been similar in each survey since 1984, expenditures on individual items have varied. In particular, general practitioner doctors' fees were higher at 3.8% of total health expenditure in 1984 compared with 3.5% in 2003–04, while specialist doctors' fees were lower at 3.9% compared with 9.3% in 2003–04.

The proportion of total health expenditure spent on medicines, pharmaceutical products and therapeutic appliances increased from 20% in 1984 to 25% in 2003–04.

#### Total health expenditure

Health expenditure in Australia includes expenditure funded by the Australian, state and territory governments, by private health insurance and by individuals and households. Total expenditure on health in 2003–04 was \$78.4b compared with expenditure of \$72.2b in the previous year (table 9.41). This represented an average rate of health expenditure in 2003–04 of \$3,919 per person. In 2003–04 governments combined provided just over two thirds (68%) of the total funding for health expenditure.

#### 9.41 TOTAL HEALTH EXPENDITURE AND RATE OF GROWTH

	Expenditure		Rate of growth		Ratio of health expenditure to GDP
	Current prices(a)	Chain volume measures(b)	Current prices	Chain volume measures(b)	Ratio
	\$m	\$m	%	%	%
1993–94	36 990	48 112	..	..	8.3
1994–95	39 216	49 973	6.0	3.9	8.3
1995–96	42 082	52 089	7.3	4.2	8.4
1996–97	45 296	54 752	7.6	5.1	8.6
1997–98	48 288	56 615	6.6	3.4	8.6
1998–99	51 440	58 918	6.5	4.1	8.7
1999–2000	55 255	61 855	7.4	5.0	8.9
2000–01	61 635	66 540	11.5	7.6	9.2
2001–02	66 769	69 506	8.3	4.5	9.4
2002–03	72 249	72 249	8.2	3.9	9.5
2003–04	78 369	75 475	8.5	4.5	9.7

(a) Comprises allocated recurrent expenditure, unallocated recurrent expenditure, capital expenditure/outlays and capital consumption. (b) Reference year for chain volume measures is 2002–03.

Source: AIHW 2005e.

Health expenditure in chain volume terms, that is after adjustment for changes in prices, grew at an average annual rate of 4.6% between 1993–94 and 2003–04. In 2003–04 total health expenditure as a proportion of gross domestic product (GDP) was 9.7% compared with 8.3% in 1993–94.

## Web sites for further information

This section provides an alphabetic listing of web sites where additional information on health topics, and organisations involved in health-related activities can be obtained. The web sites were last viewed in August 2005.

Arthritis Australia  
<<http://www.arthritisfoundation.com.au>>

- different types of arthritis
- available treatments
- research grants
- programs and publications

Asthma Australia  
<<http://www.asthmaaustralia.org.au>>

- links to state and territory branches
- information, resources, support and advice for asthma sufferers and their carers

Australian Childhood Immunisation Register (ACIR) <[http://www.hic.gov.au/yourhealth/our\\_services/aacir.htm](http://www.hic.gov.au/yourhealth/our_services/aacir.htm)>

- general information for parents about immunisation
- information for parents on the ACIR

Australian Government Department of Health and Ageing <<http://www.health.gov.au>>

- government policies pertaining to health and ageing
- information on some current health issues or health warnings
- communicable diseases intelligence reports

Australian Indigenous HealthInfoNet  
<<http://www.healthinfonet.ecu.edu.au/frames.htm>>

- Indigenous health, population and distribution, cultural, social and physical environments

- policies and programs
- HealthInfoNet peer reviewed electronic journal
- conferences and courses

Australian Institute of Health and Welfare  
<<http://www.aihw.gov.au>>

- information and statistics on health and welfare issues
- interactive data such as hospital morbidity, cancer registry and other data which can be analysed online

Australian Kidney Foundation  
<<http://www.kidney.org.au>>

- information packs, newsletters, guidelines for patients, potential donors, medical practitioners, school students and the general community
- information on scholarships and grants

Australian Red Cross  
<<http://www.redcross.org.au>>

- current humanitarian appeals
- donating blood
- disaster appeals
- first aid tips and courses
- financial donations

The Australasian Cochrane Centre  
<<http://www.cochrane.org.au>>

- reviews on various treatments and health programs

Cancer Council Australia  
<<http://www.cancer.org.au>>

- fund raising events, cancer prevention, publications and media releases
- volunteering and donating

Cardiac Society of Australia and New Zealand  
<<http://www.csanz.edu.au>>

- information for cardiac specialists and other health professionals
- practice guidelines
- competence and training
- meetings and conferences

Consumers' Health Forum of Australia  
<<http://www.chf.org.au>>

- information on consumer rights
- current and back issues of 'Health update'
- media releases and other information
- membership

Diabetes Australia  
<<http://www.diabetesaustralia.com.au>>

- information on subsidised products, publications, fundraising and awareness raising events and campaigns
- information and facts sheets for people with diabetes, health professionals, and researchers
- also contains information in other languages

HealthInsite <<http://www.healthinsite.gov.au>>

- up-to-date and quality assessed information on important health topics such as diabetes, cancer, mental health and asthma

Heart Support – Australia  
<<http://www.heartnet.org.au>>

- information for patients and their families
- a discussion forum
- up and coming events
- virtual library
- membership

International Agency for Research on Cancer  
<<http://www.iarc.fr>>

- research information
- training courses
- fellowships
- cancer databases

Mental Health Council of Australia  
<<http://www.mhca.com.au>>

- information for the non-government sector
- submissions to various inquiries
- reports and publications
- events and helplines

National Asthma Council  
<<http://www.nationalasthma.org.au/>>

- information on national asthma strategies

- asthma information for health professionals and consumers
- information on donations and volunteering

National Breast Cancer Centre  
<<http://www.nbcc.org.au>>

- information on breast cancer, risk factors, early detection, support groups, consumer issues, ovarian cancer program

National Cancer Control Initiative  
<<http://www.ncci.org.au>>

- information on current and completed projects
- publications on medical practice, etc.

National Health and Medical Research Council  
<<http://www.nhmrc.gov.au>>

- information on councils and committees
- health advice on priority areas
- applying for funding
- ethical issues
- embryo research
- research reports, publications and evaluations

National Heart Foundation of Australia  
<<http://www.heartfoundation.com.au>>

- information for health professionals, schools and the media as well as the general population
- health promotion activities
- research grants and local government awards
- statistics
- information on gifts and products
- information on donations

National Institute of Clinical Studies  
<<http://www.nicsl.com.au>>

- the goals of the National Institute of Clinical Studies
- International Collaborative Evaluation Forum

National Stroke Foundation  
<<http://www.strokefoundation.com.au>>

- statistical facts about stroke
- campaigns and awards
- information on donations

Osteoporosis Australia  
<<http://www.osteoporosis.org.au>>

- osteoporosis risk test
- prevention and treatment
- information for health professionals
- information on donations

Royal Flying Doctor Service of Australia  
<<http://www.flyingdoctor.net>>

- annual reports

- flying doctor stories
- information on donations

World Health Organization <<http://www.who.int>>

- information on current international health issues
- the 'Bulletin of the World Health Organisation'
- other journals and reports can also be downloaded

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## EDUCATION AND TRAINING

At the broadest level, education and training can be thought of as the lifetime process of obtaining knowledge, attitudes, skills, and socially valued qualities of character and behaviour. In this sense, education is initiated at birth, encouraged early by social interaction and specific learning aids, developed in schooling and other formal pathways of learning, and continued throughout adult life. Education can occur within a variety of environments, some more formal than others.

Formal learning has traditionally taken place within three major sectors – schools, vocational education and training, and higher education. Typically this is characterised by delivery that is systematic, planned and organised ahead of time, and which usually involves some evaluation of achievement. However, in recent years the boundaries between these sectors have become less distinct. Many other kinds of structured learning can take place outside formal institutions and can continue after a person has completed schooling or gained trade or higher qualifications. For instance, structured learning might be undertaken in the workplace, in order to acquire, develop or upgrade work-related skills.

At the other end of the spectrum is non-formal education, which is intentional, but is delivered in an informal and unstructured way, on an ad hoc basis. It does not necessarily involve any student-teacher relationship nor evaluation of achievement. Non-formal education includes on-the-job training and self-directed learning.

Core measures of educational activity in Australia currently focus on participation (the process of education), attainment (the outputs) and educational resources (the inputs). The structure of this chapter reflects these core measures. After a brief discussion of government responsibilities in education, the chapter describes the hierarchy of participation from preschool through to higher education. It then examines educational participation and attainment, and concludes with information on sources of educational funding.

The chapter concludes with an article, *School students' mathematics and science literacy*, which examines the mathematical and scientific literacy of 15 year-old Australian school students. The article is based on the results of a 2003 survey conducted in Australia as part of the Programme for International Student Assessment, which was developed by the Organisation for Economic Cooperation and Development.

## Government responsibilities in education

State and territory governments' responsibilities in education and training include: the constitutional responsibility for the provision of schooling to all children of school age; the major financial responsibility for government school education and contributing funds to non-government schools; regulating school activities and policies; and determining curricula, course accreditation, student assessment and awards for both government and non-government schools. They are also responsible for the administration and major funding of vocational education and training (VET) and legislation relating to the establishment and accreditation of higher education courses.

The Australian (Commonwealth) Government has special responsibilities in education and training for Aboriginal and Torres Strait Islander peoples, migrants, international partnerships in education, and financial assistance for students. It is also principally responsible for the funding of non-government schools and higher education institutions and provides supplementary funding for government schools and VET.

The Australian Government provides special grants to the states and territories for areas of particular need. The Government is also involved in promoting national consistency and coherence in the provision of education and training across Australia.

Government responsibilities in education and training extend beyond funding and administration. There is a broader responsibility to plan for future demand for education resources and for future demand for particular skills in the Australian workforce. Governments are also responsible for monitoring the performance of education services, and evaluating the outcomes of education.

## Early childhood education

Early childhood education in Australia encompasses both the preschool sector, and the skills development of children aged from 6 months to 3–4 years. A number of studies at the domestic and international level have noted the lower educational assets of older children who did not participate in some formal early childhood program. Research also indicates that all children are at the peak of their learning potential from

ages 1 to 3. This has prompted various educational providers to introduce formal programs to maximise the uptake of basic skills in their 1–3 year old age cohorts. Such programs are generally available in child care or family day care centres. Currently, the statistical focus is on developing new data sources describing the activity within the sector, and improving the comparability of existing data.

Data about preschool participation can be obtained from a number of sources, including the triennial Australian Bureau of Statistics (ABS) Child Care Survey (last conducted in 2002) and the National Indigenous Preschool Census (NIPC), which is conducted annually by the Australian Government Department of Education, Science and Training. The scope of the NIPC is 3–5 year olds attending preschools which have been identified as registered providers and have a preschool educational program. The purpose of the NIPC is to allocate Australian Government funding to preschools for Indigenous students.

## Preschool students

Preschool generally refers to education that is provided for children from 3 years of age to school starting age. It is largely sessional and operates only during school terms. Preschools may be operated by government, community organisations or the private sector. Preschool programs may also be provided in long-day child care centres.

There is no national policy on the provision of preschool education, the responsibility for this resting with individual states and territories. The age at which children may attend preschool varies, reflecting the different school commencement ages in each jurisdiction. The 2002 ABS Child Care Survey showed 62% of preschoolers were aged 4 at the time of the survey in June 2002.

## Indigenous preschool students

In 2004, 9,055 Indigenous children were enrolled in government and non-government preschools, representing 4.4% of total preschool enrolments, as counted by the NIPC. Of these enrolments 30% were in New South Wales. Table 10.1 contains data for Indigenous preschool enrolments from 2002 to 2004. Between 2003 and 2004, the number of Indigenous children enrolled in preschools increased in all states and territories except New South Wales, Victoria and Queensland.

## 10.1 INDIGENOUS PRESCHOOL ENROLMENTS

	2002	2003	2004
New South Wales	2 661	2 694	2 672
Victoria	530	559	535
Queensland(a)	863	896	862
South Australia	1 035	1 114	1 148
Western Australia	1 875	1 834	1 858
Tasmania	249	331	341
Northern Territory	1 420	1 535	1 544
Australian Capital Territory	98	88	95
<b>Total Indigenous enrolments</b>	<b>8 731</b>	<b>9 051</b>	<b>9 055</b>
Total non-Indigenous enrolments	216 793	211 627	205 004

(a) Some Queensland enrolments are excluded from the NIPC. Consequently, Indigenous preschool enrolments are understated.

Source: Department of Education, Science and Training, 'National Indigenous Preschool Census'.

## Primary and secondary education

### School attendance

School attendance is compulsory throughout Australia between the ages of 6–15 years (16 years in South Australia and Tasmania). Most children start primary school at around 5 years of age. The final two years of secondary schooling generally fall outside the compulsory stage of education. Despite this, just under 88% of the cohort of students who entered secondary school in 1999 or 2000 (depending on the state or territory of schooling) continued on to Year 11 in 2003, and 76% continued to Year 12 in 2004.

Although each state and territory has developed its own approach to schooling, moves are underway across Australia to standardise core education curriculum modules (such as mathematics, science and English) and the age of commencement of students. The expectation is that these changes will then ensure that all Australian children have access to 13 years of schooling, on a comparable basis, transferable anywhere in Australia.

### School organisation and operation

In Australia, schools are classified as either government or non-government. Government schools are those which are the direct responsibility of the Director-General (or equivalent) of Education within each state or territory and receive the majority of their funding from the relevant state or territory government. Non-government refers to all other institutions delivering school education. They operate under

conditions determined by state and territory government regulatory authorities and also receive Australian, and state or territory, government funding.

Schooling in most states and territories begins with a preparatory or kindergarten year, followed by six or seven primary grades. Secondary schooling then involves a further six or five years to complete a full course of school study. Primary and secondary schools are more often separate institutions, but in some areas there are central, combined or area schools which provide both levels of study. In Tasmania and the Australian Capital Territory, the final two years of government secondary schooling are available at separate secondary colleges.

Generally, schools in Australia have a considerable degree of autonomy. Most states and territories have established regional administrations which are responsible for matters such as planning school buildings and deploying staff, while a central curriculum unit provides general guidelines on course planning. Typically, individual schools determine teaching and learning approaches within the given guidelines and offer various course options. The assessment of students varies across states and territories, some having a completely school-based assessment system, while others combine school-based assessment with external examinations.

### Primary schooling

In early primary education, the main emphasis is on the development of basic language and literacy skills, simple arithmetic, moral and social education, health training and some creative activities.

In the upper primary years the focus is on development of the skills learned in earlier years. English, mathematics, social studies, science, music appreciation, art and craft, physical education and health are studied. There are also optional subjects such as religious instruction, foreign and community languages, and specific music courses.

### Secondary schooling

In some jurisdictions the first one or two years of secondary school consist of a general program which is undertaken by all students, although there may be some electives. In later years, a basic core of subjects is retained, with students able to select additional optional subjects. In other jurisdictions, students select options from the beginning of secondary school.

In senior secondary years, a wider range of subject options is available in the larger schools and there is an increasing trend towards encouraging individual schools to develop courses suited to the needs and interests of their students, subject to accreditation and moderation procedures. There is also an increasing emphasis on the incorporation of vocational programs into the senior secondary curriculum. School students may obtain VET certificates and undertake apprenticeships in the VET sector as part of their senior school study, and undertake some parts of these programs in the workplace.

Students reaching the minimum school leaving age may leave school and seek employment, or enrol in a vocational course with a VET institution, such as a technical and further education (TAFE) institution or a private business college. For many VET courses, completion of Year 10 of secondary school is a minimum entry requirement. For those continuing to the end of secondary school (Year 12), opportunities for further study are available at higher education institutions, VET institutions and other educational institutions. For students continuing to higher education, eligibility to undertake university courses is almost always based on completion (at a satisfactory level) of a senior secondary school certificate (Year 12 qualification).

### **Other schooling arrangements**

Children may be exempt from the requirement of compulsory attendance at a school if they live too far from a school or have a disability. These children receive tuition through a variety of educational delivery mechanisms, including distance education, School of the Air, and use of computer and facsimile technologies.

Children of some Indigenous groups in remote areas of the Northern Territory, who live in small decentralised communities, receive schooling mainly in Homeland Learning Centres or Catholic Indigenous schools. They are taught by Indigenous teaching assistants supported by visiting teachers from established schools.

Boarding facilities are available at some non-government schools, mainly in the larger towns and cities. A small number of government schools, in particular those catering for groups such as Indigenous people, have residential hostels located close by.

Children may receive tuition at home, but they must have applied to their state or territory Department of Education for permission. They must be enrolled as a student at a day school and be available when required for assessment against the regular school year curriculum.

Special education is provided by government and non-government authorities in special classes or units in regular schools, by withdrawal from regular classes for periods of intensive assistance by special staff, or in specialist schools. In all states and territories, and particularly in New South Wales, Queensland and Victoria, parents have formed voluntary organisations to establish additional schools catering for their children's special needs. The Australian Government provides funds to states and territories, non-government authorities and community groups to assist in the provision of services and upgrading of special education facilities.

### **Schools, students, and teaching staff**

There were 9,615 schools operating in Australia at the time of the August 2004 schools census, of which 72.2% were government schools. There were 156,156 teaching staff (full-time, plus full-time equivalent (FTE) of part-time), employed in government schools (67.0% of all teachers) and a further 76,910 employed in non-government schools (table 10.2).

In August 2004, 3.3 million students (FTE) were attending primary and secondary schools, comprising 2.3 million (68%) in government schools and 1.1 million (32%) in non-government schools. Between 1999 and 2004 the number of students (FTE) attending government schools increased by 1,200 (0.1%), while the number of students attending non-government schools increased by 103,700 (11%) (table 10.3).

## 10.2 SCHOOLS, STUDENTS AND TEACHING STAFF — August 2004

	Government schools %	Non-government schools			All schools '000
		Catholic %	Independent %	Total %	
Schools	72.2	17.6	10.2	27.8	9.6
Students (FTE)(a)					
Males	68.1	19.6	12.3	31.9	1 702.6
Females	67.1	20.3	12.7	32.9	1 641.3
Persons	67.6	19.9	12.5	32.4	3 343.9
Teaching staff (FTE)(b)					
Males	65.2	17.9	16.9	34.8	75.3
Females	67.9	18.8	13.3	32.1	157.7
Persons	67.0	18.5	14.5	33.0	233.1

(a) Full-time students plus full-time equivalent of part-time students. (b) Full-time teaching staff plus full-time equivalent of part-time teaching staff.

Source: ABS data available on request, National Schools Statistics Collection, 2004.

## 10.3 STUDENTS(a), By category of school — August

	1999 '000	2000 '000	2001 '000	2002 '000	2003 '000	2004 '000
Government schools						
Males	1 153.1	1 154.8	1 156.9	1 163.4	1 161.9	1 159.7
Females	1 105.9	1 105.6	1 103.0	1 105.4	1 103.1	1 100.6
Persons	2 259.0	2 260.3	2 259.9	2 268.8	2 265.0	2 260.2
Non-government schools						
Males	492.2	501.7	512.2	524.7	534.1	543.0
Females	487.8	498.4	508.9	521.4	531.3	540.7
Persons	979.9	1 000.1	1 021.1	1 046.2	1 065.4	1 083.6
All schools						
Males	1 645.3	1 656.5	1 669.0	1 688.1	1 696.0	1 702.6
Females	1 593.7	1 604.0	1 611.9	1 626.8	1 634.3	1 641.3
Persons	<b>3 238.9</b>	<b>3 260.5</b>	<b>3 280.9</b>	<b>3 314.9</b>	<b>3 330.3</b>	<b>3 343.9</b>

(a) Full-time equivalent students.

Source: ABS annual data available on request, National Schools Statistics Collection.

Table 10.4 shows the percentage of school students (FTE) in 2004 by level of education. Among primary school students, 71.3% attended government schools and 28.7% attended non-government schools. For the secondary school students, 62.5% attended government schools and 37.5% attended non-government schools. Approximately a fifth of all school students attended Catholic schools (19.0% of primary school students and 21.2% of secondary school students).

Graph 10.5 shows student/teacher ratios by category of school by level, in 1994 and 2004. These ratios represent the number of school students (FTE) divided by teaching staff (FTE). The most significant reduction in these ratios

between 1994 and 2004 was an almost 2 percentage point decrease for primary schools – down from 18.5 students per teacher in 1994 to 16.4 in 2004. Among secondary schools, both the Catholic and Independent schools showed decreases (from 13.7 to 13.0, and 11.8 to 10.8 respectively). Government secondary schools reported a small decrease from 12.5 to 12.4 students per teacher over the same period. Non-government schools had a higher student/teacher ratio than government schools in 1994 (15.5 and 15.4 respectively). In 2004 the student/teacher ratio for non-government schools was lower than for government schools (14.1 and 14.4 respectively). Both school systems showed decreases in their student/teacher ratios.



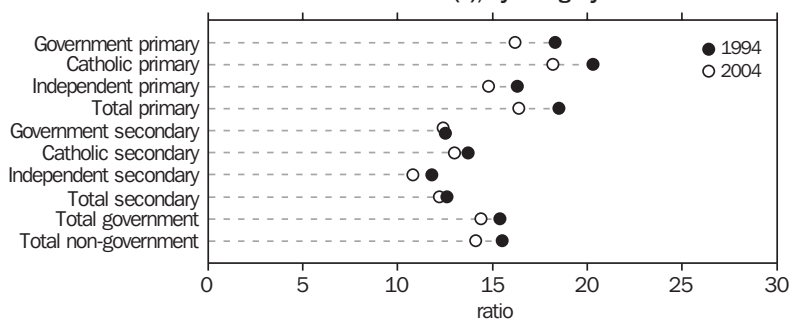
### 10.4 STUDENTS(a), By level/year of education — August 2004

	Government schools %	Non-government schools			All schools		
		Catholic %	Independent %	Total %	Males %	Females %	Persons '000
<b>Primary</b>							
Pre-year 1(b)	70.8	19.9	9.3	29.2	51.6	48.4	216.5
Year 1	71.4	19.4	9.1	28.6	51.3	48.7	263.4
Year 2	71.0	19.7	9.3	29.0	51.2	48.8	252.8
Year 3	71.4	19.4	9.2	28.6	51.1	48.9	265.1
Year 4	71.5	19.1	9.4	28.5	51.2	48.8	269.9
Year 5	71.0	19.0	9.9	29.0	51.2	48.8	270.5
Year 6	70.8	18.9	10.4	29.2	51.1	48.9	272.1
Year 7 (Qld, SA, WA, NT)	71.9	15.7	12.4	28.1	51.0	49.0	106.3
Ungraded	86.9	1.6	11.5	13.1	67.3	32.7	16.7
<b>Total</b>	<b>71.3</b>	<b>19.0</b>	<b>9.7</b>	<b>28.7</b>	<b>51.4</b>	<b>48.6</b>	<b>1 933.2</b>
<b>Secondary</b>							
Year 7 (NSW, Vic.,Tas., ACT)	61.5	23.3	15.1	38.5	51.4	48.6	163.9
Year 8	62.6	21.5	15.9	37.4	51.0	49.0	271.6
Year 9	62.9	21.3	15.8	37.1	51.0	49.0	266.4
Year 10	62.4	21.3	16.4	37.6	50.7	49.3	258.6
Year 11	62.0	20.7	17.2	38.0	48.8	51.2	229.9
Year 12	60.3	21.7	18.0	39.7	47.4	52.6	198.8
Ungraded	89.1	3.1	7.9	10.9	61.3	38.7	21.4
<b>Total</b>	<b>62.5</b>	<b>21.2</b>	<b>16.3</b>	<b>37.5</b>	<b>50.3</b>	<b>49.7</b>	<b>1 410.6</b>
<b>All students</b>	<b>67.6</b>	<b>19.9</b>	<b>12.5</b>	<b>32.4</b>	<b>50.9</b>	<b>49.1</b>	<b>3 343.9</b>

(a) Full-time equivalent students. (b) Pre-year 1 includes a small number of Qld students engaged in a trial of Pre-year 1 education.

Source: ABS data available on request, National Schools Statistics Collection, 2004.

### 10.5 STUDENTS TO TEACHING STAFF(a), By category of school



(a) Number of students (FTE) divided by the number of teaching staff (FTE).

Note: This graph should not be used as a measure of class size.

Source: ABS data available on request, National Schools Statistics Collection.

## Apparent retention rates

Apparent retention rates are regarded as important measures of the performance of education systems and related government policies. The apparent retention rate is an estimate of the percentage of students of a given cohort who continued to a particular level or year of education. For instance, in 2004 the apparent retention rate of full-time secondary school students from Year 7/8 to Year 12 was 75.7%. As in

previous years, the 2004 apparent retention rate for female students (81.2%) was higher than the corresponding rate for male students (70.4%).

Table 10.6 shows apparent retention rates from Year 10 to Year 12 rather than from the commencement of secondary schooling, where attendance due to age requirements is generally compulsory. Retention rates have been calculated for full-time students, and for all students.

The apparent retention rate in 2004 of all students from Year 10 to Year 12 was 2.8 percentage points higher than the 1999 rate.

Care should be taken in interpreting apparent retention rates as the method of calculation does not take into account a range of factors such as interstate or overseas migration, repeating students, mature age students, and other net changes to the school population.

### Indigenous school students

In August 2004 there were 86,605 full-time equivalent (FTE) Indigenous students attending primary schools and a further 44,454 Indigenous students (FTE) attending secondary schools (table 10.8).

Most Indigenous students (87%) attended government schools in 2004. Of the remainder attending non-government schools, most were attending Catholic schools (66%).

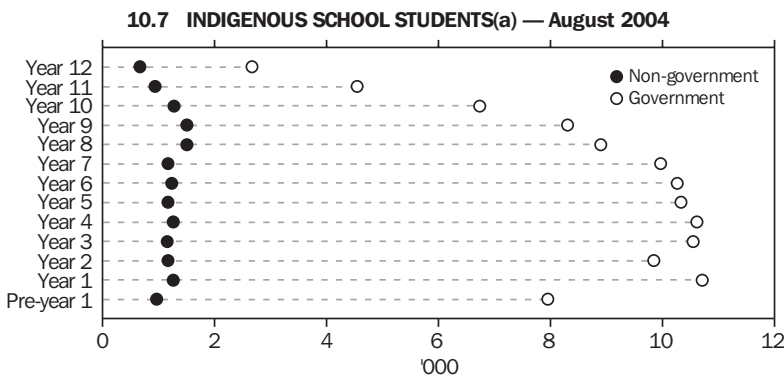
Graph 10.7 shows a decline in the number of Indigenous school students at secondary school level, after Year 7. This decline is most marked in government schools and is due to a number of factors, such as declining retention, movement of students to non-government schools and to the difficulty in allocating a specific grade for some students. The number of Indigenous students attending non-government schools remained relatively stable across the early grades, followed by a slight increase in Year 8 and Year 9 students, then a moderate drop-off until Year 12.

**10.6 APPARENT RETENTION RATES, From Year 10 to Year 12**

	1999	2000	2001	2002	2003	2004
	%	%	%	%	%	%
Full-time students						
Males	68.9	69.0	70.8	72.4	72.3	72.3
Females	79.9	80.0	80.1	81.7	81.6	82.1
Persons	74.4	74.4	75.4	77.0	76.9	77.1
Total students(a)						
Males	71.9	72.1	73.9	75.7	75.1	75.1
Females	84.5	84.7	84.9	86.9	86.4	86.9
Persons	78.1	78.3	79.4	81.3	80.7	80.9

(a) Includes part-time students.

Source: ABS data available on request, National Schools Statistics Collection.



(a) Full-time equivalent students.

Source: ABS data available on request, National Schools Statistics Collection, 2004.

Table 10.8 shows an increase in Indigenous students (FTE) attending school between 1999 and 2004, from 106,961 to 131,060 students. New South Wales and Queensland experienced the largest increases in Indigenous school student (FTE) numbers, by 8,248 and 7,018 respectively. The number of Indigenous students (FTE) attending primary and secondary schools increased in every state and territory over the period.

Between 1999 and 2004 overall growth of Indigenous school students (FTE) was 23%. With the exception of the Northern Territory, all states had growth of over 15%. The Northern Territory grew by 6.5%. The number of secondary school Indigenous students (FTE) grew by 32% between 1999 and 2004, compared with 18% for primary students.

The retention of Indigenous students in senior secondary years has increased over the five-year period to 2004. The growth in Indigenous retention has generally been more notable than is the case for non-Indigenous students (table 10.9).

The apparent retention rate for Indigenous students to Year 12 rose 4.8 percentage points from 1999 to 2004 compared with a rise of 3.6 percentage points for non-Indigenous students over the same period. Nonetheless, retention of Indigenous students in secondary schools remains substantially below that for non-Indigenous students. The apparent retention rate to Year 12 was 39.5% in 2004 for Indigenous compared with 76.8% for non-Indigenous students.

**10.8 INDIGENOUS SCHOOL STUDENTS(a), By level of education — August**

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
PRIMARY									
Students									
1999	20 233	3 630	20 266	4 558	11 903	2 587	9 537	513	73 225
2004	24 894	4 668	24 229	5 323	14 203	2 932	9 677	681	86 605
SECONDARY									
Students									
1999	10 570	1 883	9 179	1 657	4 728	1 805	3 602	312	33 736
2004	14 157	2 602	12 234	2 231	6 279	2 213	4 319	419	44 454
TOTAL									
Students									
1999	30 803	5 513	29 445	6 214	16 631	4 392	13 138	825	106 961
2004	39 051	7 271	36 463	7 553	20 482	5 145	13 996	1 100	131 060

(a) Full-time equivalent students.

Source: ABS data available on request, National Schools Statistics Collection.

**10.9 APPARENT RETENTION RATES(a), Indigenous and non-Indigenous students**

	1999	2000	2001	2002	2003	2004
Apparent retention of students from Year 7/8(a)	%	%	%	%	%	%
To Year 9						
Indigenous	93.9	95.5	96.5	97.8	96.8	97.2
Non-Indigenous	99.9	99.8	99.9	99.8	99.9	99.9
To Year 10						
Indigenous	82.0	83.0	85.7	86.4	87.2	85.8
Non-Indigenous	97.9	98.0	98.4	98.5	98.9	98.5
To Year 11						
Indigenous	56.0	53.6	56.1	58.9	61.4	61.0
Non-Indigenous	86.4	86.2	87.6	88.7	89.5	88.9
To Year 12						
Indigenous	34.7	36.4	35.7	38.0	39.1	39.5
Non-Indigenous	73.2	73.3	74.5	76.3	76.5	76.8

(a) Refers to retention from the first year of secondary school in each state. See 'Schools, Australia, 2004' (4221.0) for further detail.

Source: ABS data available on request, National Schools Statistics Collection.

## Vocational education and training (VET)

### Institutions

Most vocational education and training (VET) in Australia is provided in government-administered colleges. In some states and territories these are referred to as technical and further education (TAFE) colleges or institutes. To a lesser extent, VET may also be provided by Institutes of Technology, some higher education institutions, schools and agricultural colleges, adult and community education authorities, private providers of education (such as business colleges) and employers. VET institutions offer programs for a wide range of purposes, ranging from recreation and leisure, through basic employment and educational preparation, to trades training, and para-professional and professional levels.

One of the continuing functions of VET is the establishment of partnerships between student, education institution and employer in relation to apprenticeships. In recent years these partnerships have extended beyond the traditional trades to encompass a much broader range of occupations and employers.

In 2004 there were 78 TAFE and other publicly-funded institutions delivering VET training. A further 518 community education providers and 1,354 other providers (mainly private providers) delivering VET were at least partly publicly funded.

### Clients and courses

During 2004 almost 1.6 million clients enrolled in a publicly-funded VET course, comprising 828,900 male clients and 760,700 female clients (table 10.10). Just under 56% of VET clients aged under 30 years were male. Females, however, were in the majority (51%) for VET clients aged 30 years or more.

VET programs are classified to specific fields of education on the basis of similar emphasis or subject matter orientation. Table 10.11 shows the number of course enrolments in 2004 in each of twelve fields of education. Since clients may be enrolled in more than one VET course, the number of course enrolments is greater than the

total number of clients – there were 1.9 million course enrolments in 2004 compared with 1.6 million clients.

**10.10 VET CLIENTS(a), Vocational and preparatory courses(b) — 2004**

Age group (years)	Males	Females	Persons(c)
	'000	'000	'000
Under 16	21.5	18.2	39.7
16	32.3	26.6	58.9
17	40.8	32.3	73.3
18	56.4	45.0	101.5
19	53.5	40.6	94.2
20–24	151.0	114.9	266.2
25–29	86.7	74.7	161.7
30–39	152.0	144.4	296.9
40–49	120.4	141.0	261.9
50–59	71.7	76.8	148.9
60–64	14.5	13.5	28.1
65 and over	12.0	13.6	25.7
Not stated	16.0	18.8	38.1
<b>Total clients</b>	<b>828.9</b>	<b>760.7</b>	<b>1 595.2</b>

(a) Includes all VET delivery by TAFE and other government providers, registered community providers and publicly-funded delivery by private providers. Fee-for-service VET delivery by private providers has been excluded. School students undertaking VET in schools have also been excluded. A client is any individual participating in a specific enrolment or training contract with a specific organisation at any time in 2004. (b) Courses leading to a vocational award. (c) Includes 'sex not stated'.

Source: National Centre for Vocational Education Research, data available on request, Australian Vocational Education and Training Statistics: Students and Courses.

Some 21% of enrolments in vocational and preparatory courses in 2004 were in the management and commerce field, while 16% were in the engineering and related technologies field, and 10% in the society and culture field. A further 15% of total enrolments were in mixed field programmes (table 10.11).

Males made up a clear majority of enrolments in the education fields of architecture and building (90%); engineering and related technologies (88%); agriculture, environmental and related studies (75%); and information technology (64%). Females were in the majority in the fields of society and culture (72%); management and commerce (64%); creative arts (62%); education (60%); food, hospitality and personal services (58%); and natural and physical sciences (57%) (table 10.11).

### 10.11 VET COURSE ENROLMENTS(a), Vocational and preparatory courses(b) — 2004

Field of education	Males '000	Females '000	Persons(c) '000
Natural and physical sciences	3.2	4.3	7.5
Information technology	51.1	28.0	79.8
Engineering and related technologies	273.1	35.5	309.5
Architecture and building	105.0	12.1	117.1
Agriculture, environmental and related studies	72.3	24.0	96.4
Health	54.1	52.4	107.2
Education	24.2	36.1	60.5
Management and commerce	143.3	260.7	405.3
Society and culture	55.0	144.0	199.3
Creative arts	21.8	35.7	57.5
Food, hospitality and personal services	77.4	107.1	185.0
Mixed field programmes	129.3	154.1	284.8
<b>Total enrolments(a)</b>	<b>1 009.8</b>	<b>894.0</b>	<b>1 910.0</b>

(a) Includes all VET delivery by TAFE and other government providers, registered community providers, and publicly-funded delivery by private providers. Fee-for-service VET delivery by private providers has been excluded. School students undertaking VET in schools have also been excluded. (b) Courses leading to a vocational award. (c) Includes 'sex not stated'.

Source: National Centre for Vocational Education Research, data available on request, Australian Vocational Education and Training Statistics: Students and Courses.

### Apprenticeships and traineeships

Some 39% of all apprentices and trainees at 31 December 2004 were in the tradespersons and related workers occupational group. In this group, construction and automotive trades accounted for 25% and 17%, respectively, of the group total (table 10.12).

Most (87%) of the apprentices and trainees in the tradespersons and related workers occupational group were male. The only field of trade in this group with a female majority was hairdressers where 92% were females.

### 10.12 APPRENTICES AND TRAINEES, In training — 31 December 2004

ASCO major group	Males '000	Females '000	Persons '000	Total %
Managers and administrators	3.0	1.5	4.5	1.2
Professionals	1.2	1.6	2.9	0.7
Associate professionals	12.8	13.7	26.5	6.9
Tradespersons and related workers				
Mechanical and fabrication engineering	17.8	0.4	18.2	4.8
Automotive	25.1	0.6	25.6	6.7
Electrical and electronic	20.6	0.3	20.9	5.5
Construction	37.7	0.4	38.1	10.0
Food	14.8	5.0	19.9	5.2
Skilled agricultural and horticultural workers	4.5	0.7	5.2	1.4
Hairdressers	0.9	10.7	11.6	3.0
Tradespersons and related workers n.e.c.	0.4	0.1	0.5	0.1
Other	8.8	1.0	9.9	2.6
Total	130.7	19.2	149.8	39.2
Advanced clerical and service workers	1.7	4.0	5.7	1.5
Intermediate clerical, sales and service workers	28.1	65.7	93.9	24.6
Intermediate production and transport workers	36.7	5.4	42.1	11.0
Elementary clerical, sales and service workers	10.4	14.1	24.5	6.4
Labourers and related workers	22.6	9.8	32.4	8.5
<b>Total</b>	<b>247.4</b>	<b>135.0</b>	<b>382.4</b>	<b>100.0</b>

Source: National Centre for Vocational Education Research, data available on request, Australian Vocational Education and Training Statistics: Students and Courses.

## Staff

Table 10.13 shows the number of teachers working in VET institutions in 2003–04. Of all VET teachers 51% were employed full time. The majority of full-time VET teachers (67%) were male. In contrast, 66% of part-time VET teachers were female.

**10.13 VET TEACHING STAFF(a) — 2003–04**

	Full-time staff(b)	Part-time staff	All teaching staff
	'000	'000	'000
Males	10.4	5.0	15.4
Females	5.2	9.8	15.0
<b>Persons</b>	<b>15.5</b>	<b>14.8</b>	<b>30.4</b>

(a) Annual average of quarterly data. (b) Full-time refers to persons working 35 hours or more in the survey week.

Source: *Labour Force, Australia, Detailed – Electronic Delivery, April 2005 (6291.0.55.001)*.

## Higher education

### Institutions

In 2004 there were 41 higher education institutions which received operating grants from the Australian Government Department of Education, Science and Training (DEST). Seven other educational institutions received funding for students enrolled in accredited higher education courses. These included the Australian Film, Television and Radio School, the National Institute of Dramatic Art and the Australian Defence Force Academy. Higher education student tables in this section include enrolments from these institutions.

Apart from the Australian National University and the Australian Maritime College, which are established under Commonwealth legislation, Australian universities operate under state or territory legislation. However, they are autonomous bodies responsible for their own governance and make their own decisions on allocation of funding, staffing and academic courses.

Most higher education institutions provide both full-time and part-time courses, and external or distance education courses. In addition, some institutions offer courses which associate full-time study with periods of employment.

### Students and courses

Table 10.14 shows the number of higher education students and their mode of participation at higher education institutions. The number of such students enrolled during the 12-month period 1 September 2003 to 31 August 2004 was 944,977, an increase of more than 15,000 (or 1.6%) on that for the 12-month period ended 31 August 2003. The greatest increase in numbers of students occurred among those choosing multi-modal (a mixture of face-to-face and external) tuition (up by 10,181 or 24%). Students choosing internal mode (face-to-face) increased by 7,407 (1.0%). Almost 65% of multi-modal higher education students in 2004 were female, compared with 54% of all higher education students.

The basic undergraduate course at most institutions is a bachelor degree of three or four years duration. At some institutions, courses may also be offered at the diploma or advanced diploma level. Most institutions also offer postgraduate level study. One to two years of full-time postgraduate study are required for a master's degree and three to five years for a doctoral degree. Postgraduate diplomas and certificates are offered in some disciplines. In 2004, 68% of higher education students were enrolled in bachelor degree courses, with a further 27% enrolled in higher degree and other postgraduate courses (table 10.15).

Higher education institutions offer a wide variety of courses. The most commonly chosen fields of education for award course students in 2004 were: management and commerce; society and culture; health; and education (table 10.15).

### 10.14 HIGHER EDUCATION STUDENTS(a), By mode(b) and type of enrolment

	2003			2004		
	Males	Females	Persons	Males	Females	Persons
Internal						
Full time	254 331	293 852	548 183	260 404	296 535	556 939
Part time	93 243	105 995	199 238	92 408	105 481	197 889
Total	347 574	399 847	747 421	352 812	402 016	754 828
External						
Full time	10 819	14 442	25 261	11 237	13 702	24 939
Part time	50 796	63 971	114 767	48 896	63 630	112 526
Total	61 615	78 413	140 028	60 133	77 332	137 465
Multi-modal						
Full time	11 205	20 581	31 786	13 316	24 502	37 818
Part time	3 734	6 983	10 717	5 296	9 570	14 866
Total	14 939	27 564	42 503	18 612	34 072	52 684
Total						
Full time	276 355	328 875	605 230	284 957	334 739	619 696
Part time	147 773	176 949	324 722	146 600	178 681	325 281
Total	<b>424 128</b>	<b>505 824</b>	<b>929 952</b>	<b>431 557</b>	<b>513 420</b>	<b>944 977</b>

(a) The scope of the data in this table is students enrolled at anytime within the 12-month period 1 September to 31 August.

(b) This relates to the delivery of education to the student. 'Internal' is where the delivery of education is done entirely within the institution, 'external' refers to delivery of course material to students off-campus, and 'multi-modal' is where at least one, but not all units, are provided at the institution.

Source: Department of Education, Science and Training, 'Students: Selected Higher Education Statistics'.

### 10.15 HIGHER EDUCATION STUDENTS, By level and field of education — 2004

Field of education	Level of education of study					Total courses
	Post-graduate degree	Graduate diploma/ Graduate certificate	Bachelor degree	Advanced diploma/ Diploma	Other education	
	'000	'000	'000	'000	'000	'000
Natural and physical sciences	10.4	2.0	61.0	0.2	0.4	74.0
Information technology	17.4	3.3	51.8	0.1	0.1	72.7
Engineering and related technologies	12.4	2.2	50.0	0.3	0.6	65.5
Architecture and building	2.3	1.1	15.5	0.9	—	19.1
Agriculture, environment and related studies	3.7	1.2	12.1	1.0	0.4	18.4
Health	15.6	9.7	76.9	0.6	0.2	103.0
Education	16.3	13.1	61.9	0.5	0.2	92.0
Management and commerce	71.8	19.7	173.9	0.6	1.0	267.0
Society and culture	33.0	13.4	150.0	4.0	2.9	203.2
Creative arts	6.6	2.7	49.3	0.3	0.9	59.7
Food, hospitality and personal services	—	—	0.1	—	—	0.1
Mixed field programmes	—	—	—	—	2.1	2.1
Non-award	—	—	—	—	23.8	23.8
<b>All students(a)</b>	<b>189.5</b>	<b>68.3</b>	<b>646.8</b>	<b>7.8</b>	<b>32.7</b>	<b>945.0</b>

(a) Students undertaking combined courses are counted in each field they are studying. Because of this, the field of education component will not necessarily add to All students.

Source: Department of Education, Science and Training, 'Students 2004: Selected Higher Education Statistics'.



Table 10.16 shows the number of higher education students by age group and sex. Between 2003 and 2004 the growth in higher education student numbers (1.6%) has been strongest among 20–24 year olds (6.0%).

**10.16 HIGHER EDUCATION STUDENTS(a),  
By age group**

	2002	2003	2004
Age group (years)	'000	'000	'000
19 and under			
Males	88.8	88.3	88.2
Females	123.3	122.2	120.6
Persons	212.1	210.5	208.8
20–24			
Males	141.2	152.9	163.1
Females	164.3	176.9	186.4
Persons	305.5	329.8	349.5
25–29			
Males	63.7	65.4	65.6
Females	67.3	70.0	69.7
Persons	131.0	135.4	135.3
30 and over			
Males	115.0	117.5	114.7
Females	133.0	136.8	136.7
Persons	248.0	254.3	251.4
Total			
Males	408.6	424.1	431.6
Females	488.0	505.9	513.4
Persons	<b>896.6</b>	<b>930.0</b>	<b>945.0</b>

(a) The scope of the data in this table is students enrolled at anytime within the 12-month period 1 September to 31 August. Includes students in enabling and non-award courses.

Source: Department of Education, Science and Training, 'Students: Selected Higher Education Student Statistics'.

**Staff**

Higher education staff may be classified as academic or non-academic. In 2004, as in previous years, there were more non-academic than academic staff. The largest number of academic staff were at the lecturer and senior lecturer levels.

Table 10.17 shows the ratio of male to female staff has turned around over the past decade. In 1994, 54.1% of all staff were male. The proportions were about equal in 1999, but by 2004, 52.7% of higher education staff were female.

Growth in female representation occurred at all levels of academic staff, but was most notable at senior lecturer (from 21.9% in 1994 to 34.7% in 2004) and above senior lecturer (from 11.6% to 20.2%) levels. Despite this, men still outnumbered women at all levels of academic staff except at below lecturer level. In 2004, 60.5% of all academic staff were male, compared with 64.5% in 1999 and 68.4% in 1994.

**Adult and community education (ACE)**

Adult and community education (ACE) is the most decentralised of the education sectors. As used here, ACE refers to the provision of those general adult education programs and activities (personal enrichment programs) which fall outside, but complement, the formal programs and qualification pathways provided by the school, VET and higher education sectors. ACE focuses on the provision of learning opportunities at a community level, rather than work-related training.

**10.17 HIGHER EDUCATION STAFF**

Staff classification	1994			1999			2004		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
	%	%	no.	%	%	no.	%	%	no.
Academic staff									
Above senior lecturer	88.4	11.6	5 766	84.4	14.6	6 626	79.8	20.2	8 206
Senior lecturer	78.1	21.9	7 702	72.1	27.9	8 114	65.3	34.7	9 086
Lecturer	60.7	39.3	11 432	56.6	43.4	11 302	52.9	47.1	12 794
Below lecturer	49.3	50.7	5 375	48.2	51.8	6 364	46.3	53.7	7 301
Total	68.4	31.6	30 276	64.5	35.5	32 406	60.5	39.5	37 387
Non-academic staff	43.3	56.7	39 983	39.1	60.9	43 634	37.5	62.5	50 271
<b>All staff</b>	<b>54.1</b>	<b>45.9</b>	<b>70 259</b>	<b>49.9</b>	<b>50.1</b>	<b>76 040</b>	<b>47.3</b>	<b>52.7</b>	<b>87 658</b>

Source: Department of Education, Science and Training, 'Staff: Selected Higher Education Statistics'.

Courses range from general interest, recreational and leisure activities, personal development, social awareness and craft, through to vocational, remedial and basic education. Community-based adult education is open to all, and it demonstrates the capacity of the community to develop alternatives to institution-based education.

During 2004 there were 180,700 enrolments in personal enrichment programs, of which 68% were by females. The majority of these enrolments were with community-based providers, with TAFE and other publicly-funded providers making up the remainder. It should be noted, however, there is no national data standard for ACE and no obligation for some course providers to provide data on ACE activity to a national data collection. Consequently, enrolments in personal enrichment programs are understated.

Some 25% of enrolments in personal enrichment programs in 2004 were in society and culture courses, while 22% were in creative arts courses, 11% in education courses and 10% in health (table 10.18). A further 8.4% of total enrolments were in mixed field programmes.

#### 10.18 COURSE ENROLMENTS IN PERSONAL ENRICHMENT PROGRAMS — 2004

Field of education	Males '000	Females '000	Total enrolments(a) '000
Natural and physical sciences	0.2	0.2	0.4
Information technology	1.5	1.3	2.8
Engineering and related technologies	4.6	2.9	7.6
Architecture and building	1.8	2.0	3.8
Agriculture, environmental and related studies	1.2	2.1	3.3
Health	5.1	11.9	17.2
Education	6.7	13.0	19.7
Management and commerce	5.1	9.9	15.1
Society and culture	11.9	32.4	44.6
Creative arts	8.8	31.1	40.1
Food, hospitality and personal services	2.9	7.9	10.9
Mixed field programmes	6.0	9.0	15.1
<b>Total</b>	<b>55.8</b>	<b>123.7</b>	<b>180.7</b>

(a) Includes 'sex not stated'.

Source: National Centre for Vocational Education Research, data available on request, Australian Vocational Education and Training Statistics: Students and Courses.

## Participation in education

In May 2004, 2.6 million people aged 15–64 years had applied to enrol in a course of study. Of these, 92% had gained a place and were studying (table 10.19).

#### 10.19 PARTICIPATION IN EDUCATION(a) — May 2004

	Males '000	Females '000	Persons '000
<b>Applied to enrol</b>	<b>1 237.7</b>	<b>1 405.1</b>	<b>2 642.8</b>
Studying	1 144.9	1 281.5	2 426.5
Gained placement but deferred study	61.7	81.6	143.3
Unable to gain placement	31.1	42.0	73.0

(a) Persons aged 15–64 years.

Source: ABS data available on request, Survey of Education and Work, 2004.

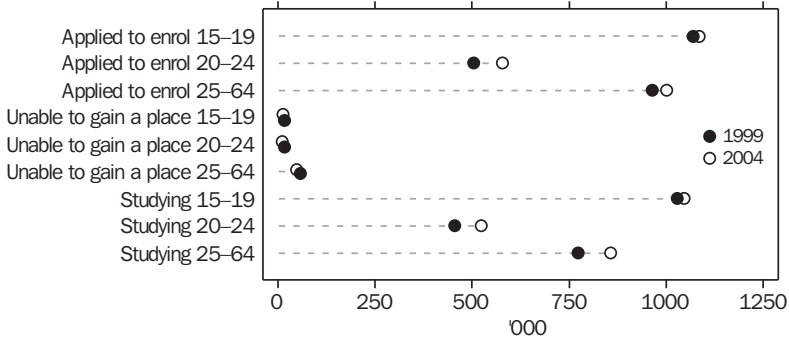
Between 1999 and 2004 the demand for placements in education increased, as did the number of people being accepted into educational institutions. Although there was a rise in the number of enrolment applications across all age groups, the number of people unable to gain placement in courses was stable (graph 10.20).

Many young people continue in full-time education immediately after completing compulsory schooling, either in post-compulsory schooling or in other forms of education, such as VET. In May 2004, 69% of 15–19 year olds were in full-time education (including 51% still at school). Some young people return to full-time study after a period of absence after completing compulsory schooling. At age 20–24 years, 26% were undertaking full-time study (including a small proportion still at school) and 12% were participating in part-time tertiary study (table 10.21).

Many people aged 25 years and over return to study, to upgrade their skills or to gain new skills, and often in conjunction with employment. The education participation rate in May 2004 for people in this age group was higher for those in part-time study (6%) than for those in full-time study (2%).

Between 1999 and 2004 there was a marked shift in the attendance patterns of tertiary students aged 20–24 years, away from part-time study to full-time study. The number of full-time students in this age group increased by 80,700 compared

**10.20 PARTICIPATION IN EDUCATION(a), By age group**



(a) Persons aged 15-64 years.

Source: ABS data available on request, Survey of Education and Work, 1999 and 2004.

with a decline in part-time student numbers of 14,300. The number of both full-time and part-time students aged 25-64 years increased noticeably during the five-year period (45,500 and 41,000 respectively). Small decreases were recorded for full-time and part-time students aged 15-19 years (graph 10.22).

**Education and work**

Graph 10.23 shows the labour force status of all students aged 15-64 years in May 2004. Some 37% of those studying Year 12 or below were employed and 55% were not in the labour force. In contrast, 66% of those studying for a degree or higher were employed and 29% were not in the labour force.

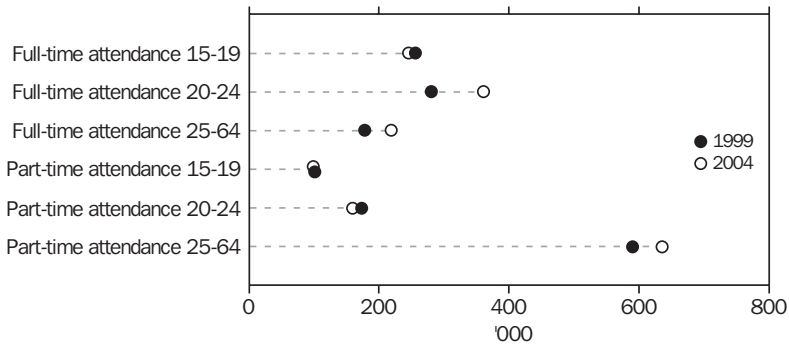
**10.21 EDUCATION PARTICIPATION RATES(a) — May 2004**

	Age group (years)		
	15-19	20-24	25-64
	%	%	%
Attending school	51.2	—	—
Attending tertiary(b)			
Full time	17.9	26.0	2.1
Part time	7.2	11.5	6.1
Total	25.1	37.5	8.2
Attending	76.2	37.7	8.2
Not attending	23.8	62.3	91.8

(a) Persons aged 15-64 years. (b) Educational institutions offering post-school courses.

Source: ABS data available on request, Survey of Education and Work, 2004.

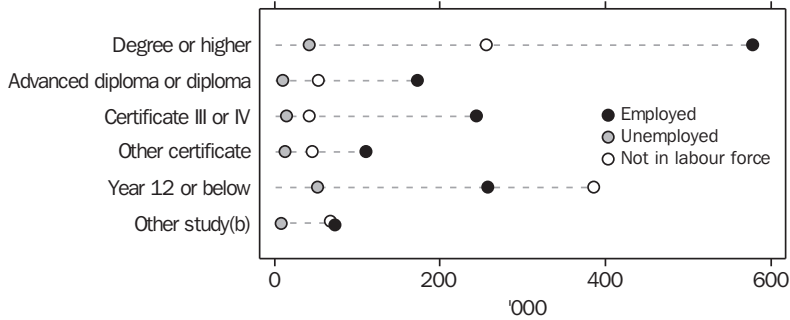
**10.22 PARTICIPATION IN TERTIARY EDUCATION(a), By age group**



(a) Persons aged 15-64 years.

Source: ABS data available on request, Survey of Education and Work, 1999 and 2004.

### 10.23 PARTICIPATION IN EDUCATION(a), By labour force status — May 2004



(a) Persons aged 15–64 years. (b) Comprises persons in bridging courses, studying for statements of attainment, other study not leading to a qualification or unable to be determined.

Source: ABS data available on request, Survey of Education and Work, 2004.

In May 2004 full-time employment was much higher among students aged 20–24 years who were enrolled in a course of study, than among those aged 15–19 years (23% compared with 8%). In both age groups, students who undertook part-time study were more frequently employed full time than part time (table 10.24).

#### Full-time participation

The ‘full-time participation rate’ describes the proportion of the population who are either in full-time education, or in full-time work, or in both part-time work and part-time education or training. This helps to identify those young people not currently engaged in full-time educational activity who may have difficulty in fully participating in the labour market. Table 10.24 implies that, in May 2004, 14% of people aged 15–19 years and 23% of 20–24 year olds would be at risk of marginal participation in the labour market later in their lives.

#### Educational attainment

Formal educational qualifications are the desired outcome of most study at educational institutions. When issued by an accredited authority they denote a particular level of knowledge, skills and perhaps competencies. This assists the graduates themselves when entering the labour market, employers in selecting appropriate personnel, and clients in assessing the quality of professional

services. The classification of educational attainment to level assists in measuring the stocks of available skills in a community, enabling policy makers to monitor the volume of skill levels compared with skill shortages, and to influence the direction of future educational focus.

In May 2004, of the 13.2 million people aged 15–64 years, 6.7 million (51%) had at least one non-school qualification. These comprised 2.5 million whose level of highest non-school qualification was a bachelor degree or higher, 1.0 million whose highest was an advanced diploma or diploma, 2.0 million whose highest was a certificate III or IV and 0.8 million whose highest was a certificate I or II. Among those without a non-school qualification, 34% had completed Year 12, while for 31%, their highest year of school completed was Year 10 (table 10.25).

Graph 10.26 shows the proportion of males and females aged 15–64 years and their level of highest non-school qualification in 1994, 1999, and 2004. During this period the proportion of people aged 15–64 years with a bachelor degree or higher increased by 5.9 percentage points for males and by 9.0 percentage points for females. In 1994 there was a greater percentage of males (12%) with a bachelor degree or higher than females (11%). Females had moved ahead by 1999 (15% of males, 16% of females). In 2004, 20% of females had a bachelor degree or higher, compared with 18% of males.

## 10.24 YOUTH PARTICIPATION IN EDUCATION, By labour force status — May 2004

	Enrolled in all study(a)			Not enrolled '000	Total '000
	Full-time '000	Part-time '000	Total '000		
<b>15–19 YEARS</b>					
In the labour force					
Employed					
Full time	8.6	72.8	81.5	141.6	223.1
Part time	371.7	17.6	389.3	81.9	471.3
Total	380.3	90.5	470.8	223.5	694.3
Unemployed	68.7	*4.7	73.5	55.0	128.5
Not in the labour force	498.2	*4.0	502.2	48.1	550.3
<b>Total</b>	<b>947.3</b>	<b>99.2</b>	<b>1 046.5</b>	<b>326.6</b>	<b>1 373.1</b>
<b>20–24 YEARS</b>					
In the labour force					
Employed					
Full time	15.6	106.3	121.8	567.2	689.0
Part time	175.3	38.1	213.4	126.7	340.1
Total	190.9	144.3	335.2	693.8	1 029.1
Unemployed	21.2	*4.5	25.6	64.6	90.2
Not in the labour force	151.8	10.5	162.3	106.3	268.6
<b>Total</b>	<b>363.8</b>	<b>159.3</b>	<b>523.1</b>	<b>864.7</b>	<b>1387.8</b>

(a) All persons participating in education, including those whose study will not lead to a qualification.

Source: ABS data available on request, Survey of Education and Work, 2004.

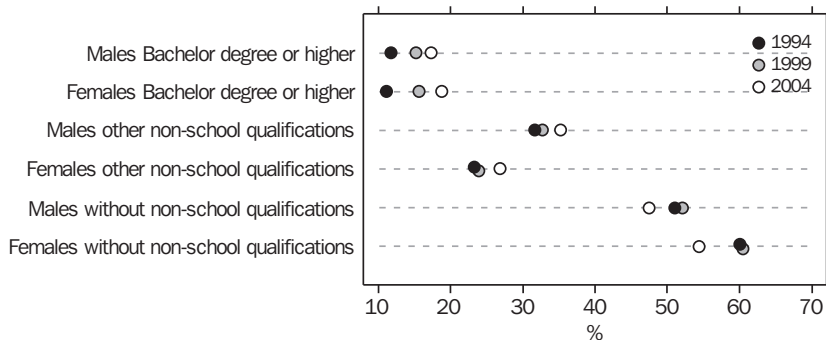
## 10.25 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION(a), By highest year of school completed — May 2004

	Highest year of school completed				Total(b) '000
	Year 12 '000	Year 11 '000	Year 10 '000	Year 9 or below '000	
Postgraduate degree	355.2	*4.8	8.3	**1.2	369.5
Graduate diploma/Graduate certificate	295.3	16.3	17.4	**1.7	330.6
Bachelor degree	1 660.1	49.0	64.1	14.2	1 787.6
Advanced diploma/Diploma	742.4	106.1	153.1	26.2	1 027.8
Certificate III/IV	637.3	317.2	862.0	221.3	2 038.1
Certificate I/II	313.2	120.5	305.7	79.5	819.3
Certificate not further defined	109.1	37.2	63.2	22.6	232.1
Level not determined	40.3	12.7	32.0	9.0	94.0
<i>Total with non-school qualification</i>	<i>4 152.9</i>	<i>663.8</i>	<i>1 505.7</i>	<i>375.6</i>	<i>6 699.2</i>
Total without non-school qualification	2 214.6	874.7	1 979.3	1 358.8	6 473.9
<b>Total</b>	<b>6 367.5</b>	<b>1 538.5</b>	<b>3 485.0</b>	<b>1 734.4</b>	<b>13 173.0</b>

(a) Persons aged 15–64 years. (b) Includes persons who never attended school. Boarding school pupils at May 2004 have not been allocated a highest year of school completed but are included in the total.

Source: ABS data available on request, Survey of Education and Work, Australia, 2004.

### 10.26 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION(a)



(a) Persons aged 15–64 years.

Source: ABS data available on request, Survey of Education and Work, 1994, 1999 and 2004.

Tables 10.27 and 10.28 examine the highest non-school qualification held by people aged 15–64 years. The most qualified age group was those aged 25–44 years, 61% of whom held non-school qualifications, as did 53% of those aged 45–64 years. While the younger age groups held fewer non-school qualifications, their participation in education was relatively high (graph 10.20 and table 10.21).

In the 25–44 years age group, 24% had a highest non-school qualification of bachelor degree or above, compared with 19% in the 45–64 years age

group (table 10.27). In the 25–44 years age group, 18% had a highest non-school qualification of certificate III or IV, compared with 17% in the 45–64 years age group.

The most common main fields of education for the highest non-school qualification held were management and commerce (23% of those with qualifications), and engineering and related technologies (20%) (table 10.28).

### 10.27 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION(a), By age group — May 2004

	Age group (years)				Total
	15–19	20–24	25–44	45–64	
	'000	'000	'000	'000	'000
Postgraduate degree	—	6.3	193.2	170.1	369.5
Graduate diploma/Graduate certificate	**0.4	12.4	161.2	156.7	330.6
Bachelor degree	—	187.4	1 042.5	557.7	1 787.6
Advanced diploma/Diploma	7.0	92.7	524.8	403.2	1 027.8
Certificate III/IV	35.5	195.8	1 017.8	789.0	2 038.1
Certificate I/II	42.9	48.9	396.0	331.6	819.3
Certificate not further defined	24.7	55.2	106.6	45.5	232.1
Level not determined	*2.2	*4.2	46.9	40.6	94.0
Total with non-school qualifications	112.8	602.9	3 489.1	2 494.4	6 699.2
Total without non-school qualifications	1 260.4	784.9	2 231.0	2 197.6	6 473.9
<b>Total</b>	<b>1 373.1</b>	<b>1 387.8</b>	<b>5 720.0</b>	<b>4 692.1</b>	<b>13 173.0</b>

(a) Persons aged 15–64 years.

Source: Education and Work, Australia, May 2004 (6227.0).

## 10.28 MAIN FIELD OF HIGHEST NON-SCHOOL QUALIFICATION(a), By age group — May 2004

Field of education	Age group (years)				Total
	15–19	20–24	25–44	45–64	
	'000	'000	'000	'000	'000
Natural and physical sciences	**0.3	21.1	131.7	85.9	239.0
Information technology	8.4	44.8	154.7	54.6	262.5
Engineering and related technologies	13.2	83.6	647.7	579.2	1 323.7
Architecture and building	*3.5	35.1	233.3	177.3	449.3
Agriculture, environment and related studies	*4.7	20.4	109.5	48.8	183.3
Health	*4.2	34.8	313.1	282.7	634.8
Education	**1.4	19.8	221.5	260.9	503.5
Management and commerce	30.2	151.7	834.3	498.0	1 514.2
Society and culture	10.2	76.6	412.1	296.2	795.1
Creative arts	6.7	52.2	156.3	71.0	286.2
Food, hospitality and personal services	28.1	57.2	232.8	107.8	425.9
Mixed field programmes	**1.3	*2.5	*4.7	*3.8	12.3
Field not determined	**0.5	*3.1	37.4	28.2	69.3
<b>Total</b>	<b>112.8</b>	<b>602.9</b>	<b>3 489.1</b>	<b>2 494.4</b>	<b>6 699.2</b>

(a) Persons aged 15–64 years.

Source: *Education and Work, Australia, May 2004* (6227.0).

## Expenditure on education

### National funding

Total expenditure on education has two components – public and private. In this chapter, the data for the public component is compiled in accordance with the International Monetary Fund's Government Finance Statistics (GFS) framework, while the private component is sourced from the Australian System of National Accounts.

It is not possible to simply add the public expenditure on education aggregate to the private expenditure on education aggregate to get a figure for total expenditure on education for two main reasons. First, the data presented here are for the general government sector only and do not cover expenditure on education by other sectors of the government. Secondly, double counting may also occur because the Australian (Commonwealth) Government records expenses when supplying grants to private schools which in turn spend these grant amounts, thus producing two expenditure transactions.

Data for individual time periods are expressed 'in current prices', or in terms of prices prevailing at the time. Consequently, changes from period to period in, for example, the value of operating expenses may be affected by price changes.

### General government expenditure

The GFS provides a framework for measuring and analysing the financial activities of government. The GFS data presented in this chapter is recorded on an accrual accounting basis. This means that transactions are recorded in the period in which income is earned or expenses incurred, regardless of when a cash payment is made. Further information on the GFS framework may be obtained from *Australian System of Government Finance Statistics: Concepts, Sources and Methods* (5514.0).

Operating expenses on education include employee expenses, non-employee expenses, depreciation of fixed assets, and current and capital transfer expenses. Operating expenses for all levels of government classified by purpose are shown in table 10.29. Operating expenditure in 2003–04 was \$43,611 million (m), an increase of \$2,414m from the previous year. This largely reflects increases in expenditure on primary and secondary education of \$1,305m and tertiary education of \$808m.

Table 10.30 shows the operating expenses on education for each level of government for the period 1999–2000 to 2003–04. Total operating expenses of state and local government increased by \$1,725m from 2002–03 to 2003–04, while operating expenses for the Commonwealth Government increased by \$1,289m. Intra-sector transfers are transfers or transactions that occur between different levels of government for the purposes of education.



### 10.29 GOVERNMENT OPERATING EXPENSES ON EDUCATION(a), By purpose

	1999–2000	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
Primary and secondary education	18 293	19 465	20 815	22 417	23 722
Tertiary education	12 040	12 863	13 918	15 273	16 081
Preschool and education not definable by level	1 313	1 451	1 511	1 562	1 736
Transportation of students	818	827	900	1 194	1 336
Education n.e.c.	268	589	731	751	736
<b>Total</b>	<b>32 733</b>	<b>35 195</b>	<b>37 875</b>	<b>41 197</b>	<b>43 611</b>

(a) All levels of government.

Source: Government Finance Statistics, Education, Australia – Electronic Delivery, 2003–04 (5518.0.55.001).

### 10.30 GOVERNMENT OPERATING EXPENSES ON EDUCATION, By level of government

	1999–2000	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
Commonwealth Government	9 959	10 970	11 769	12 109	13 398
State and local government	23 814	25 300	27 273	29 526	31 251
Multi-jurisdictional(a)	8 654	9 258	9 993	11 124	11 718
less Intra-sector transfers	9 693	10 333	11 159	11 562	12 756
<b>Total</b>	<b>32 733</b>	<b>35 195</b>	<b>37 875</b>	<b>41 197</b>	<b>43 611</b>

(a) The multi-jurisdictional sector currently contains units where jurisdiction is shared between two or more governments, or the classification of a unit to a jurisdiction is otherwise unclear. The main type of units falling into this category are public universities.

Source: Government Finance Statistics, Education, Australia – Electronic Delivery, 2003–04 (5518.0.55.001).

### 10.31 SALES OF GOODS AND SERVICES, By level of education

	1999–2000	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
Primary and secondary education	416	452	549	659	623
Tertiary education	4 702	5 152	5 923	6 712	7 025
Preschool and education not definable by level	45	49	39	7	10
Transportation of students	—	1	1	2	2
Education n.e.c.	10	8	14	18	33
<b>Total</b>	<b>5 174</b>	<b>5 661</b>	<b>6 525</b>	<b>7 398</b>	<b>7 693</b>

Source: Government Finance Statistics, Education, Australia – Electronic Delivery, 2003–04 (5518.0.55.001).

Sales of goods and services (table 10.31), from a GFS perspective, is defined as the revenue from the direct provision of goods and services by general government. In the context of education, this would include fees paid by students for the provision of education services. Tertiary education has by far the highest value for sales of goods and services of any level of education, with a total of \$7,025m in 2003–04. Sales of goods and services from tertiary education institutions increased by

\$313m (4.7%) from 2002–03 to 2003–04. Primary and secondary education institutions had sales of goods and services of \$623m in 2003–04.

Table 10.32 shows the amount of Commonwealth Government grants to different levels of government by level of education. Primary and secondary education was the major recipient of grants from the Commonwealth in 2003–04 with \$6,538m, while the universities sector received a total of \$4,396m for the same period.

## 10.32 COMMONWEALTH GRANTS TO OTHER LEVELS OF GOVERNMENT, By level of education — 2003–04

	Primary and secondary education	Technical and further education	Universities	Other	Total
	\$m	\$m	\$m	\$m	\$m
State and local government					
New South Wales	2 189	365	—	41	2 595
Victoria	1 669	276	—	9	1 954
Queensland	1 212	185	—	38	1 435
South Australia	494	86	—	10	590
Western Australia	634	100	—	29	763
Tasmania	148	28	—	3	179
Northern Territory	68	15	—	35	118
Australian Capital Territory	124	21	—	2	147
Total	6 538	1 076	—	167	7 781
Multi-jurisdictional(a)	—	—	4 396	—	4 396
<b>Total</b>	<b>6 538</b>	<b>1 076</b>	<b>4 396</b>	<b>167</b>	<b>12 177</b>

(a) The multi-jurisdictional sector currently contains units where jurisdiction is shared between two or more governments, or the classification of a unit to a jurisdiction is otherwise unclear. The main type of units falling into this category are public universities.

Source: Government Finance Statistics, Education, Australia – Electronic Delivery, 2003–04 (5518.0.55.001).

### Private expenditure

Private sector expenditure on education (sourced from the Australian national accounts) consists of gross fixed capital formation by private educational institutions and household final consumption expenditure on education services.

Gross fixed capital formation in the field of education is estimated from statistics of the value of work done on new building and major additions to buildings of private educational institutions.

Household final consumption expenditure on education services is estimated as: fees paid by persons to government schools (including technical and agricultural colleges); fees (other than boarding fees) and gifts to universities, independent schools, business colleges, etc.; plus current expenditure of non-profit educational institutions (net of fees and other current receipts). Expenditure on such items as school books, uniforms, fares for students' travel, etc. and expenditure by parents' associations on school equipment are not included.

Table 10.33 provides data for private sector expenditure on education. Both gross fixed capital formation and household final consumption expenditure have increased in every year since 1999–2000. For 2003–04, household final consumption expenditure comprised 86% of the \$13,329m total for private expenditure on education.

### Funding by sector

#### Schools

The primary and secondary education operating expenses of all levels of government totalled \$23,722m in 2003–04 (table 10.29). Operating expenses associated with preschool, special, and other education were \$1,736m. Preschool, primary, secondary, special school and other education expenses were largely met by state and territory governments. State and territory governments also contributed funds to the transportation of students, totalling \$1,336m in 2003–04.

### 10.33 PRIVATE EXPENDITURE ON EDUCATION

	1999–2000	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
Gross fixed capital formation	1 155	1 296	1 491	1 685	1 815
Household final consumption expenditure	8 798	9 415	10 068	10 758	11 514
<b>Total</b>	<b>9 953</b>	<b>10 711</b>	<b>11 559</b>	<b>12 443</b>	<b>13 329</b>

Source: ABS data available on request, Australian System of National Accounts, 2003–04.

While primary and secondary education is free in government schools in all states and territories, fees may be charged for the hire of text books and other school equipment (particularly in secondary schools). Voluntary contributions may also be sought from parents.

In addition to funding schools directly, most state and territory governments provide financial assistance to parents (under specified conditions) for educational expenses of school children. Assistance includes scholarships, bursaries, and transport and boarding allowances, many of which are intended to assist low-income families. The Australian Government also provides a number of assistance schemes to facilitate access to education.

### **Vocational education and training (VET)**

Information supplied by the National Centre for Vocational Education Research shows that VET providers in receipt of public funds primarily receive recurrent revenue from the state and territory governments (55% or \$2,619m in 2004) with additional funds being provided by the Australian Government (22% or \$1,049m). Recurrent revenue comprises revenues appropriated by the Australian Government and state and territory governments to fund the normally occurring business activities of the sector and specifically excludes funds for capital asset construction, improvement or replacement.

The remaining 23% (\$1,063m) is made up of on-going (recurrent) revenue earned by the sector from fees and charges arising from fee-for-service activities (11%), student fees and charges (5%) and other ordinary operating activities (7%).

Most providers charge students fees for the administration of VET courses, for tuition, for materials or for student amenities. These fees vary according to the type of course and its duration.

### **Higher education**

Most higher education institutions are funded by the Australian Government under the *Higher Education Funding Act 1988* (Cwlth). In 2003–04

the operating revenue (before extraordinary items) of these institutions amounted to \$11,874m, 41% of which came from Government grants. Government funding is also provided to higher education institutions through various research programs by the Australian Research Council and the National Health and Medical Research Council.

In addition to government funding, institutions receive revenue from students who are required to contribute to the cost of their education through the Higher Education Contribution Scheme (HECS), and from other fee-paying students. Higher education fees and charges have increased in importance in recent years. In 2003–04, 16% of operating revenue was raised from HECS, while other fees and charges accounted for a further 22% of operating revenue. These fees and charges included \$1,700.1m from fee-paying overseas students, representing 65% of other fees and charges – a rise of 17% since 2002–03. The article, 'Paying for university education', in *Year Book Australia 2005* provides more information on the operation of HECS.

Some institutions rely more heavily than others on fees paid by overseas students. For example, the Central Queensland University, Curtin University of Technology in Western Australia and the Royal Melbourne Institute of Technology received 38%, 24% and 22% respectively of their revenue from fee-paying overseas students. This is well above the overall national average of 14%.

### **Adult and community education (ACE)**

ACE programs are typically provided by adult migrant education centres, evening colleges, language centres, welfare organisations and other community-based organisations. Educational institutions including universities and TAFE may also offer ACE programs. ACE complements the formal programs and qualification pathways provided by the schools, VET and higher education sectors. However, separate funding information for ACE is not available.

## School students' mathematics and science literacy

Mathematics and science have been identified as two of the eight key learning areas for Australian school students.<sup>1</sup> Mathematics and science skills are part of a broader skill set that can assist young people in further education, participation in home and life activities, and in obtaining employment. Higher achievers in literacy and numeracy in Year 9 are more likely to stay at school until Year 12, have a higher tertiary entrance performance, be employed and earning more when they leave school.<sup>2</sup>

According to the Programme for International Student Assessment (PISA), Australian students have high levels of mathematics and science literacy. In 2003, their average scores placed them among the top third of 41 countries.

This article discusses mathematics and science literacy of 15 year-old students (approximate grade is Year 10) using data from the PISA 2003 survey. The Australian Council for Educational Research conducted the survey for PISA using 12,600 15 year-old students from 321 government and non-government schools.

PISA was developed by the Organisation for Economic Co-operation and Development (OECD). The first survey took place in 2000 and the second in 2003 with 41 countries taking part. It assesses the abilities of 15 year olds to apply knowledge and skills to real-life problems and situations.<sup>3</sup>

PISA measures literacy in three domains – reading, science literacy and mathematics literacy. A scaling method assigns scores so that 500 is the OECD average in each domain. Students are also assessed in terms of proficiency levels for mathematics literacy.

### Concepts

*Mathematics literacy* (also termed numeracy) is an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen.<sup>4</sup>

*Science literacy* is an individual's capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to

understand and help make decisions about the natural world and the changes made to it through human activity.<sup>4</sup>

*Proficiency levels* for mathematics literacy represent assessed performance on groups of tasks of ascending difficulty, with level 6 as the highest level of proficiency and 'below level 1' the lowest. Levels 1 and below represent items with relatively low difficulty while levels 4 and above reflect items with moderate through to high difficulty.

### Main findings

In most countries, 15 year olds are nearing the end of compulsory secondary schooling.<sup>4</sup> The mathematics and science literacy of 15 year olds is an indicator of how well equipped they are for future education, work and life.

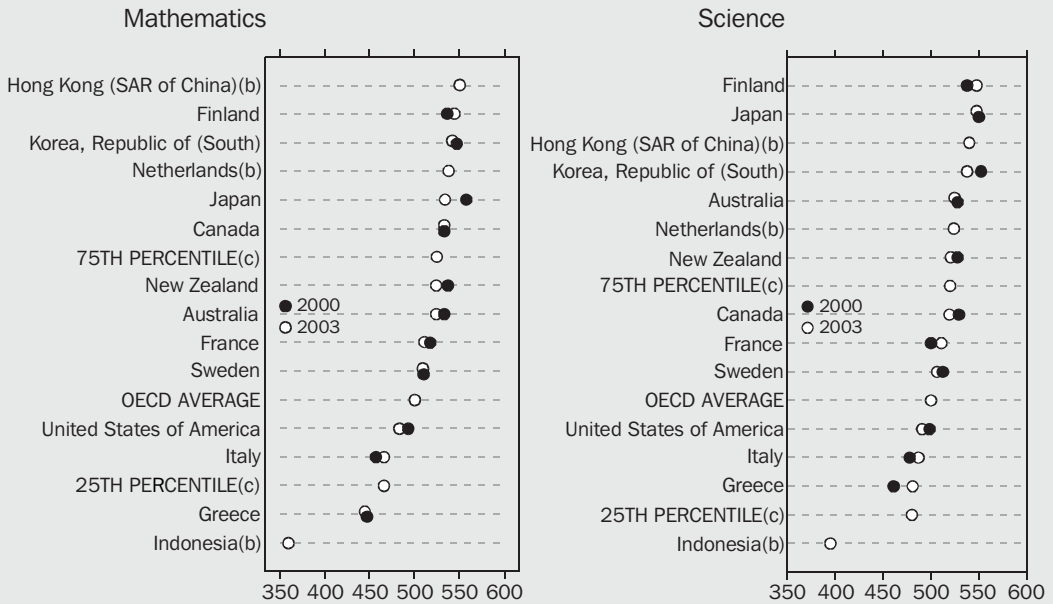
In 2003, PISA results showed Australian 15 year olds performed well when compared with 41 OECD and other countries across both mathematics and science scores. Australia's average (mean) scores of 524 in mathematics literacy and 525 in science literacy placed it above the OECD average of 500 for each skill area and in the top third of countries (graph 10.34).

Four countries performed significantly better than Australia in mathematics literacy – Finland, Hong Kong, Republic of (South) Korea and the Netherlands – while nine countries, including Canada and New Zealand, had similar scores. Three countries scored significantly higher average proficiency levels in science literacy than Australia, while eight countries (also including New Zealand and Canada) had similar results. Australia performed significantly better than the remaining countries.

Most countries had some variation between their performance in 2000 and 2003. Australian students' average performance was similar in 2000 and 2003, but more countries outperformed Australia in 2003.

Over four in ten Australian students (43%) were capable of tackling items in mathematics with moderate difficulty through to items with relatively high difficulty (proficiency level 4 through to level 6). Only 14% were unable to do items with relatively low difficulty (level 1 or below).<sup>4</sup>

### 10.34 MATHEMATICS AND SCIENCE LITERACY AVERAGE SCORES(a), Selected countries



(a) Of 15 year-old school students as assessed by PISA. Mathematics literacy in 2000 tested two areas while 2003 tested four areas. Ranked by 2003 average scores (b) Did not participate in PISA 2000. (c) Percentiles are based on average scores for all countries. Source: Thomson, S et al. 2004.

While Australian students attained a good overall result in 2003, achievement varied across students with different characteristics.

Mathematics and science literacy is associated with a variety of social and demographic factors such as sex, socioeconomic status, family background, teacher characteristics and school setting.

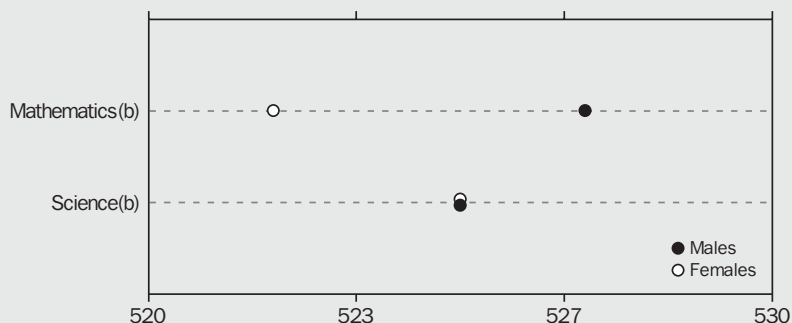
Research shows that overall, while many boys in Australian schools are doing well, boys are not achieving as well as girls across a range of educational and social measures. Boys are more likely to drop out of school early and less likely to go on to university than girls.<sup>5</sup> However, recent research on school subject selection and subsequent study and work participation in Australia has found that males are still much more likely than females to be taking advanced mathematics and science at senior secondary

school, and much more likely to move into mathematics and science-related courses in higher education.<sup>4</sup>

In 2003, there were no significant sex differences in scores for Australian 15 year olds, with boys' mathematics literacy (average score of 527) similar to that of girls' (522) (graph 10.35). Australian male and female students had the same average score of 525 for science literacy. Overall, more boys (45%) than girls (42%) achieved the higher levels of proficiency in mathematics (levels 4, 5 and 6) (graph 10.36).<sup>4</sup>

There are differences in school starting ages between Australian states and territories, which makes it difficult to compare aspects of education. The bulk of students tested were in Year 10 for all the states with the exception of Western Australia where more than half were in Year 11.<sup>4</sup>

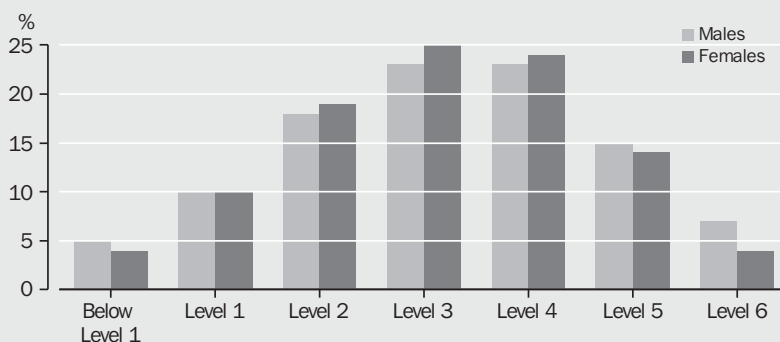
**10.35 MATHEMATICS AND SCIENCE LITERACY AVERAGE SCORES(a), Australian students — 2003**



(a) Of 15 year-old school students as assessed by PISA. (b) OECD average score is 500.

Source: Thomson, S et al. 2004.

**10.36 MATHEMATICS PROFICIENCY LEVELS(a), Australian students—2003**



(a) Of 15 year-old school students as assessed by PISA.

Source: Thomson, S et al. 2004.

In all states and territories, Australian 15 year-old students performed on average at least as well as the average performance of students across all OECD countries in the study (table 10.37). Students in the Australian Capital Territory and Western Australia scored the highest within Australia, on average, in mathematics and science literacy. Over half of their students performed at or above the top three proficiency levels in mathematics literacy.<sup>4</sup> The average scores of the Australian Capital Territory and Western Australia were similar to the highest performing countries for mathematics and science.<sup>4</sup>

**10.37 LITERACY AVERAGE SCORES(a), By state and territory**

	Mathematics(b)	Science(b)
New South Wales	526	530
Victoria	511	510
Queensland	520	519
South Australia	535	535
Western Australia	548	546
Tasmania	507	509
Northern Territory	496	495
Australian Capital Territory	548	553

(a) Of 15 year-old school students in Australia as assessed by PISA. (b) OECD average score is 500.

Source: Thomson, S et al. 2004.

Students attending schools in rural and remote areas experience educational disadvantage in a variety of ways. In remote areas, some of the major issues are recruiting and retaining teachers, barriers to accessing educational services and issues surrounding the access to, costs and use of information and communications technology.<sup>6</sup>

In 2003, metropolitan students had higher average scores in both mathematics and science literacy (528 and 529) compared with provincial or rural (515 and 516) and remote areas (493 and 489).<sup>4</sup>

The 2003 PISA results for Indigenous students were consistently lower than for non-Indigenous students. Indigenous students had an average mathematics literacy score of 440 and science score of 434, compared with non-Indigenous students scores of 526 and 527 respectively.<sup>4</sup> The National Indigenous English Literacy and Numeracy Strategy was launched in 2000 with the objective to achieve literacy and numeracy for Aboriginal and Torres Strait Islander students at levels comparable to those achieved by other young Australians.<sup>7</sup>

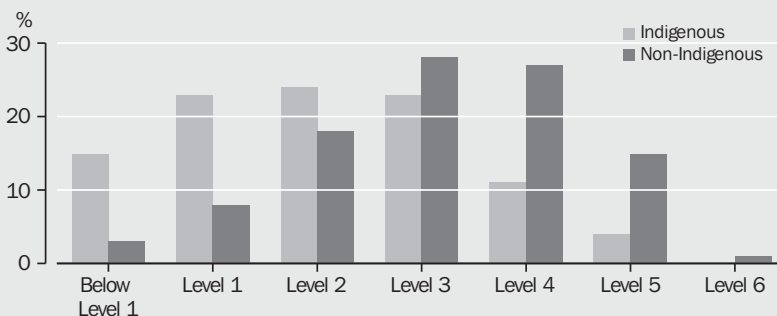
For mathematics literacy, there was an over-representation of Indigenous students at the lowest proficiency levels (level 1 and below) with 43% of Indigenous students compared with 14% of all students in Australia, and the OECD average of 21%. However, 13% of Indigenous students were performing at the higher levels (levels 4, 5 and 6).<sup>4</sup>

The home environment has an influence on the reading literacy and numeracy outcomes for students. (See 'Literacy and numeracy among school students', *Australian Social Trends 2002* (4102.0)). Further analysis of the PISA results for 15 year-old students in Australia has shown a moderately positive relationship between the mathematical literacy performance of 15 year-old students and home environment factors such as parental education, the number of books in the home, computer resources, access to educational software and cultural possessions in the home, such as books of poetry and works of art.<sup>4</sup>

The OECD developed a socioeconomic index based on the types of factors discussed above. In 2003, Australian students in the lowest quartile of the socioeconomic index (signifying the highest degree of disadvantage) scored about 79 points less in mathematics literacy than students in the highest quartile (signifying the lowest degree of disadvantage). Overall, socioeconomic status had less of an impact on mathematics performance in Australia than across other OECD countries on average.<sup>4</sup>

In 2003, Australian students who spoke English at home had higher average scores for both mathematics and science literacy (scores of 529 in each domain) than those who spoke a language other than English at home (505 and 509 respectively).<sup>4</sup>

### 10.38 INDIGENOUS AND NON-INDIGENOUS MATHEMATICS PROFICIENCY LEVELS(a)—2003



(a) Of 15 year-old Australian school students as assessed by PISA.

Source: Thomson, S et al. 2004.



## Endnotes

- 1 Ministerial Council on Education, Employment, Training and Youth Affairs 1999, *The National Goals for Schooling in the Twenty-first Century*, <<http://www.mceetya.edu.au/nationalgoals/natgoals.htm>>, accessed 16 May 2005.
- 2 Penman, R 2004, *An easy reference guide to Longitudinal Surveys of Australian Youth research reports, 1996–2003*, Australian Council for Educational Research, Camberwell.
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- 4 Thomson, S. et al 2004, *Facing the Future: A focus on mathematical literacy among Australian 15 year old students in PISA 2003*, Australian Council for Educational Research, Camberwell.
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## CRIME AND JUSTICE

The effects of criminal activity, as well as people's perceptions about the extent of such activity, are issues that impact directly or indirectly on the quality of people's lives. This chapter provides an overview of the Australian criminal justice system, including people's involvement with the system either as offenders or as victims of crime. As well as presenting data on the characteristics of crime victims and offenders and on outcomes from the justice process, the chapter also looks at levels of non-reporting of crime. The data presented are based on national crime and justice statistics produced by the Australian Bureau of Statistics (ABS). These are sourced from surveys such as the ABS Crime and Safety Survey and from administrative data that provide information about crimes recorded by police, the volume and flow of work through the Criminal Courts, and about people held in correctional services agencies. Justice is primarily administered through state and territory governments, with local variation in legislation, processes and operational structures. However, by taking account of these differences, nationally comparable crime and justice statistics provide indicators of the level and nature of crime across Australia and the associated outcomes of the criminal justice system.

The chapter includes an article *Likelihood of victims reporting crime to police*.

## The criminal justice system

The criminal justice system comprises the state/territory and Australian Government institutions, agencies, departments and personnel responsible for dealing with the justice aspects of crime, victims of crime, people accused or convicted of committing a crime, and related issues and processes.

The states and territories have independent legislative powers in relation to all matters that are not otherwise specifically vested in the Commonwealth of Australia. It is the statute law and the common law of the states and territories that primarily govern the day-to-day lives of most Australians.

The eight states and territories have powers to enact their own criminal laws, while the Commonwealth has powers to enact laws, including sanctions for criminal offences, in relation to its responsibilities under the Constitution. Thus there are nine different systems of criminal law in Australia. The existence of cooperative arrangements between the various states and territories and the Commonwealth, such as those relating to extradition or to the creation of joint police services, helps address issues that have arisen out of the separate development of these various systems of criminal law.

Each state and territory has its own police, courts and corrections systems that deal with offences against local laws and also federal laws in some cases. The federal criminal justice system deals with offences against Commonwealth laws. Criminal law is administered principally through the federal, state and territory police, the courts, and state and territory corrective services. As there is no independent federal corrective service, the relevant state or territory agencies provide corrective services for federal offenders.

The various agencies that comprise the criminal justice system act within a broader process in which criminal offenders interact with police, courts and corrective services. Diagram 11.1 illustrates the various stages involved in the

processing of criminal cases and shows some of the links between these three elements of the criminal justice system.

The police, as well as other agencies such as Australian Customs Service, are responsible for the prevention, detection and investigation of crimes. When alleged offenders are detected by police, they can be proceeded against either through the use of a non-court process (such as a caution, fine or diversionary conference) or charges may be laid before a criminal court. The court, including judicial officers and a jury (in the higher courts), with the assistance of the prosecution and the defence, determines the guilt or innocence of the defendant.

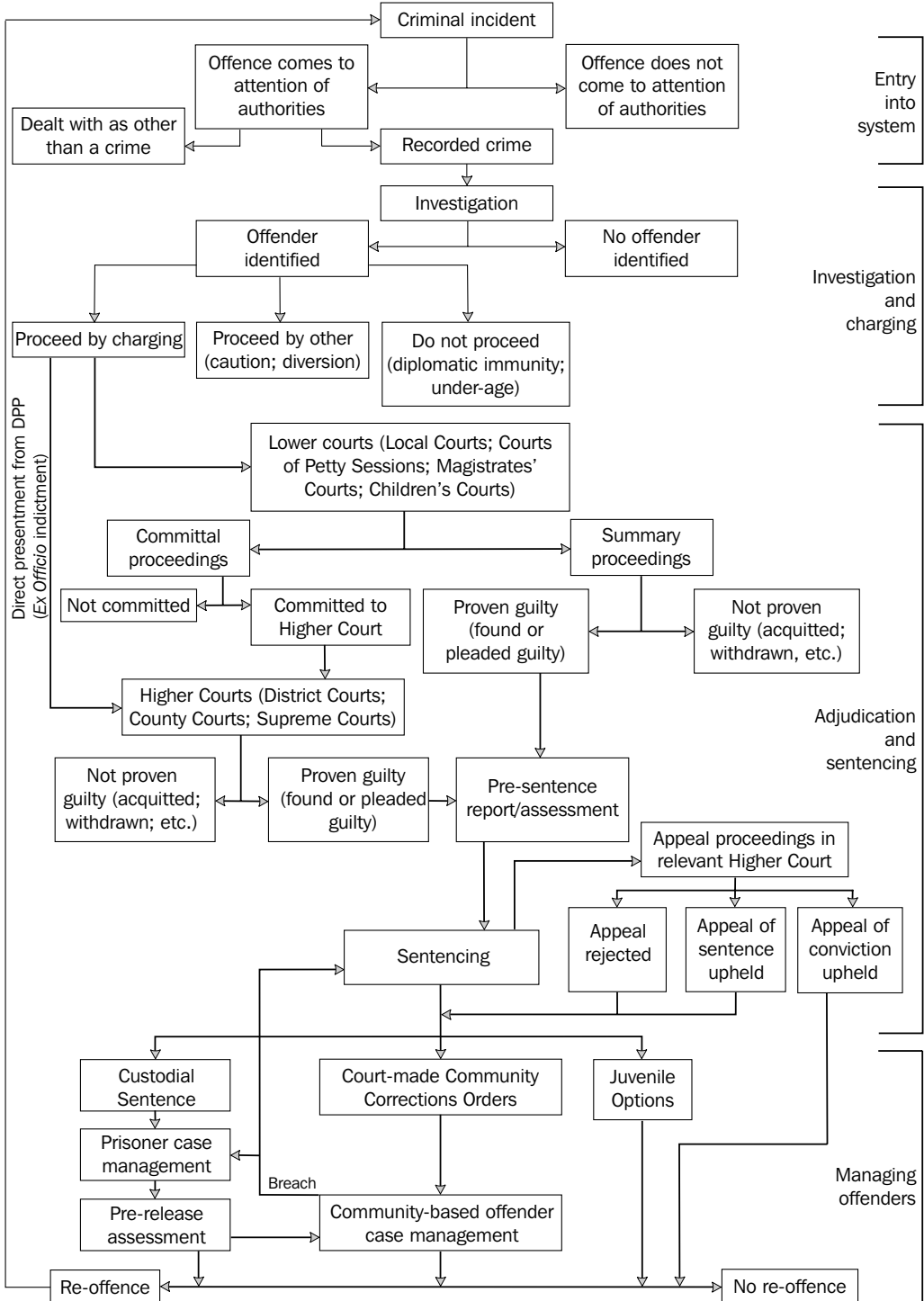
Following the hearing of the charges, in cases where a finding of guilt is made by the court, sentences may be imposed. These may include imprisonment, community service orders of various kinds, fines or bonds. A number of jurisdictions have also introduced penalties such as home detention or work outreach camps that are administered by correctional agencies.

## Expenditure on public order and safety

The Steering Committee for the Review of Commonwealth/State Service Provision, in its *Report on Government Services 2005*, estimated recurrent expenditure on justice in 2003–04 was approximately \$380 per person. This excluded spending by governments on items such as justice-related capital works (i.e. new police stations, prisons or court facilities). Total recurrent expenditure was \$7.6 billion (b) in 2003–04; \$5.2b was spent on police services and \$1.6b on corrective services (table 11.2).

Between 1999–2000 and 2003–04 and after adjustment for changes in prices, expenditure on corrective services grew at an annual average rate of 4.6%, while civil courts administration decreased at an annual average rate of 4.9%.

### 11.1 FLOWS THROUGH THE CRIMINAL JUSTICE SYSTEM



Source: Adapted from ABS unpublished paper, 'National Criminal Justice Statistical Framework', July 2001.

## 11.2 GOVERNMENT EXPENDITURE ON JUSTICE(a)(b)

Justice sector	1999–2000(c)	2000–01	2001–02	2002–03	2003–04	Growth(c)(d)
	\$m	\$m	\$m	\$m	\$m	%
Police services	4 633.7	4 588.9	4 731.0	5 043.8	5 163.5	2.7
Court administration – criminal(d)	469.6	427.4	427.1	424.9	423.5	-2.6
Court administration – civil(e)	524.2	368.9	336.7	419.5	429.1	-4.9
Corrective services	1 314.9	1 340.8	1 449.6	1 545.5	1 571.4	4.6
<b>Total justice system</b>	<b>6 942.5</b>	<b>6 726.0</b>	<b>6 944.5</b>	<b>7 433.7</b>	<b>7 587.6</b>	<b>2.2</b>

(a) In 2003–04 dollars. (b) Excludes payroll tax. (c) Care needs to be taken in comparing court expenditure in 1999–2000 with future years. In 1999–2000, court administration net recurrent expenditure included only a small portion of total revenue collected by courts. This has been rectified from 2000–01 and accounts for the large drop experienced in net recurrent expenditure in the following years (particularly in the civil courts). (d) Includes the cost of Magistrates' (including electronic and Children's), District/County, Supreme and Coroners' courts. (e) Includes Magistrates' (including Children's), District/County, and Supreme courts, Family Court, Federal Court of Australia and the Family Court of WA and the Federal Magistrates Court. The Federal Magistrates Court was included for the first time in 2001–02. The data exclude the cost of probate hearings for all years.

Source: Steering Committee for the Review of Commonwealth/State Service Provision, 'Report on Government Services 2005'.

## The police

Australia is served by police agencies in each state and the Northern Territory, with the Australian Federal Police (AFP) being responsible for policing the Australian Capital Territory. The Australian Crime Commission (ACC), the Australian Customs Service (ACS) and the Australian High Tech Crime Centre (AHTCC) also have responsibility for the maintenance of law, order and safety.

While the principal duties of the police are the prevention, detection and investigation of crime, the protection of life and property, and the enforcement of law to maintain peace and good order, they may perform a variety of additional duties in the service of the state. These duties include the prosecution of summary offences, regulation of street traffic, performing duties as clerks of petty sessions, Crown land bailiffs, mining wardens and inspectors under fisheries and other relevant legislation.

With the exception of the AFP and the ACC, police in Australia are under the control of the relevant state and territory government. However their members also perform certain functions on behalf of the Australian Government such as the registration of aliens, and the enforcement of

various Commonwealth Acts and Regulations in conjunction with the AFP and other Commonwealth officers.

## Australian Government policing agencies

### Australian Federal Police (AFP)

The AFP is a statutory authority established by the *Australian Federal Police Act 1979* (Cwlth). The AFP has its headquarters in Canberra. Its Criminal Investigations Program is conducted through six Regional Commands, its Headquarters Investigations Department and its numerous liaison officers in many countries.

The AFP is responsible for the prevention, detection and investigation of criminal offences such as drug offences, money laundering and organised crime, identifying the proceeds of crime, and investigation of fraud against Commonwealth revenue and expenditure such as social security and taxation fraud. In the Australian Capital Territory, the AFP provides a full range of general community policing services, including traffic control, special operations, search and rescue services and conventional crime investigations.

## Australian Crime Commission (ACC)

The ACC is responsible for providing a coordinated national criminal intelligence framework to deal with serious and organised criminal activity. It has access to special coercive powers to assist in intelligence operations and investigation, for circumstances where traditional law enforcement methods are not sufficient to combat sophisticated criminal activity.

Special investigations are undertaken by the ACC. These include matters such as firearms trafficking, established criminal networks, money laundering and tax fraud, people trafficking for sexual exploitation, amphetamines and other synthetic drugs, identity crime and card skimming, and vehicle rebirthing.

## Australian High Tech Crime Centre (AHTCC)

The AHTCC is a national centre for coordination of the efforts of Australian law enforcement in combating serious crime involving complex technology. It provides a national coordinated approach to combating serious, complex and

multi-jurisdictional high tech crimes, especially those beyond the capability of single jurisdictions. It assists in improving the capacity of all jurisdictions to deal with high tech crime, and supports efforts to protect the National Information Infrastructure.

## Number of sworn police officers

The number of sworn police officers in the various police services is shown in table 11.3. The figures in the table are not directly comparable across the various jurisdictions, as data for ACC, AFP, New South Wales and the Australian Capital Territory are based on a headcount at the end of the financial year, whereas those for the other states and territories are on a full-time equivalent basis.

Between 2002–03 and 2003–04 all states and territories, except South Australia, experienced increases in the number of sworn police officers, with the largest increases occurring in the Northern Territory (8%), New South Wales (7%), the Australian Capital Territory and Queensland (4% each). Sworn police officers within the ACC declined by 12%.

**11.3 SWORN POLICE OFFICERS(a)**

Police officers	2002–03		2003–04	
	no.	rate(b)	no.	rate(b)
Australian Crime Commission(c)	133	n.a.	117	n.a.
Australian Federal Police(d)	1 703	n.a.	1 708	n.a.
New South Wales	14 091	212	15 009	224
Victoria	10 256	211	10 300	209
Queensland	8 180	220	8 496	223
South Australia	3 766	248	3 710	243
Western Australia	4 786	248	4 827	247
Tasmania	1 094	231	1 117	234
Northern Territory(e)	783	395	845	426
Australian Capital Territory	594	185	618	192

(a) Where possible, based on full-time equivalents. However, NSW figures for 2003–04 and the ACC and AFP figures for both 2002–03 and 2003–04 are based on actual number of sworn officers. (b) Per 100,000 persons. (c) Seconded officers from home force. (d) Excludes the AFP officers who were responsible for ACT policing and who were separately counted against the ACT. (e) For the NT, sworn police officers include Police auxiliaries and Aboriginal Community Police Officers.

Source: Australian Federal Police 'Annual Report, 2003–04'; Steering Committee for the Review of Commonwealth/State Service Provision, 'Report on Government Services 2005', Attachment 5A for state and territory figures; Australian Crime Commission 'Annual Report 2003–04', Appendix B.



## National crime statistics

National crime statistics aim to provide comparable data across the states and territories for selected crimes in Australia.

There are two sources of national crime statistics: crimes recorded by police, and crime victimisation surveys. Crimes recorded by police relate to victims of criminal incidents who have become known to police and whose experiences have been recorded by police. These offences may have been reported by a victim, witness or other person, or they may have been detected by police. These statistics do not provide a total picture of crime, as not all crimes come to the attention of police. In addition, care should be taken in interpreting police statistics, as fluctuations in recorded crime may be a reflection of changes in community attitudes to reporting crime, changes and differences in police procedures or resources, or changes and differences in crime recording systems, rather than a change in the incidence of criminal behaviour. Significant events occurring in particular years may also contribute to fluctuations in recorded crime.

A complementary picture of the nature and extent of crime comes from crime victimisation surveys. One of the primary reasons for conducting victimisation surveys is that many victims of crime do not report their experiences to the police, and so are not counted in police data. Victimisation surveys provide more information about the

broader community experience of crime, including the volume of crime that is not officially recorded. Crime victimisation surveys are suitable for measuring crimes against individuals (or households) who are aware of and recall the incident and how it happened, and who are willing to relate what they know. These surveys allow crime information to be related to personal and household characteristics, and facilitate the study of patterns of victimisation over time and across crime categories.

Reliable and comprehensive information about certain types of crime such as sexual offences and assaults are difficult to obtain from both household surveys and police records. Problems arise from issues of perception (e.g. whether an incident was one of sexual assault and whether it was a crime) and therefore of self-classification by the victim. Under-reporting and under-recording are also issues that limit attempts to measure particular crimes. In some instances, there may also be reporting of incidents which were not in fact crimes.

Not all types of crime are suitable for measurement by household surveys. No reliable victim-based information can be obtained about crimes where there is no specific victim (e.g. trafficking in narcotics) or where the victim is deceased (e.g. murder). Crimes of which the victim may not be aware cannot be measured effectively; some instances of fraud and many types of attempted crimes fall into this category.

## Likelihood of victims reporting crime to police

Not all victims of crime report an incident to police resulting in a level of under-reporting of crime in the community. Under-reporting of crime results in an incomplete picture of total crime, victims and offenders and may therefore have an impact on community crime prevention and control strategies, and decisions about the allocation of police resources. Understanding the factors that affect the likelihood of victims reporting crime to police may assist in the development of policies and strategies to improve reporting rates in the future.

A person's decision to report a crime to police may be influenced by a range of factors such as: the characteristics of the victim; the nature of the offence; attitudes towards police; and the victim's relationship to the offender.

Assault is the most common form of crime against a person, yet it is the most widely under-reported offence to police. This article explores the various factors that may impact on a victim's likelihood to report an assault to police.

Data for this article are obtained from the results of the 2002 National Crime and Safety Survey (NCSS) – a household survey, conducted by the ABS, relating to the 12-month period ended April 2002. Further information regarding survey results and methodology can be found in *Crime and Safety, Australia* (4509.0).

### Characteristics of victims

A person's age is a significant factor in reporting assault to police while sex is also a factor, but to a lesser extent. Reporting of crime increased with each age cohort (table 11.4). Young people had a lower reporting rate for assault than older people. Those aged 15–19 years had a reporting rate of 21%, increasing to 43% for those aged 65 years and over.

Males were more likely to report assault than females (33% and 28% respectively). Female reporting to police was much lower for those aged 65 years and over with a rate of 31% compared with 51% for males. Female victims aged 15–19 years had the lowest reporting rates to police with a rate of 17% (24% for males).

Marital status appears to impact on the likelihood of a victim reporting an assault to police, with married people having a higher proportion (37%) than unmarried people (27%) (table 11.5). The difference may actually be driven by age rather than marital status as younger people are more likely to be unmarried.

A person's labour force status (i.e. employed, unemployed or not in the labour force) does not appear to be a significant contributor to a victim's propensity to report assault to police.

Victims in capital cities (29%) are marginally less likely to report assault to police than victims in non-metropolitan areas (34%).

#### 11.4 ASSAULT REPORTING RATES TO POLICE, By age group — 2002

Age group (years)	Males	Females	Persons
	%	%	%
15–19	23.6	16.5	20.6
20–24	25.4	27.0	25.9
25–34	37.7	28.8	33.1
35–44	35.1	33.6	34.3
45–54	38.4	32.1	35.5
55–64	35.2	35.2	35.2
65 years and over	51.3	*31.2	*43.1
<b>Total</b>	<b>32.8</b>	<b>28.4</b>	<b>30.8</b>

Source: ABS data available on request, National Crime and Safety Survey 2002.

**11.5 ASSAULT REPORTING RATES TO POLICE,  
By selected characteristics — 2002**

	Persons %
Marital status	
Married(a)	36.8
Not married	26.8
Labour force status	
Employed	30.2
Unemployed	29.4
Not in the labour force	32.8
Area of usual residence	
Capital city	28.8
Balance of state/territory	34.0
<b>Total</b>	<b>30.8</b>

(a) Married includes those living in de facto relationships.

Source: ABS data available on request, National Crime and Safety Survey 2002.

**Characteristics of the assault**

Differences were found in the reporting of assault to police by location of the assault (graph 11.6). Victims were more likely to report the most recent assault to police if the assault occurred at home (37%) or place of work/study (36%), than if the assault occurred in a public place or some other location (25% each).

Despite the propensity of victims to report an assault that occurred in their own home, victims were less likely to report an assault if the offender

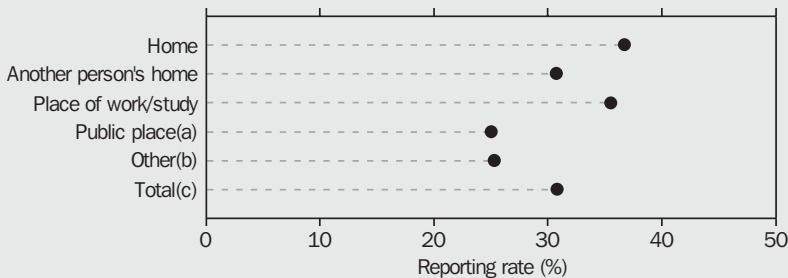
was their partner (17%) than if the offender was not personally known to them (48%) or was a neighbour (54%) (graph 11.7). Victims of offenders who were friends were also less likely to report an assault to police (23%). There was no significant difference in the proportion of victims reporting an offence where the offender was the victim's ex-partner, acquaintance or work/study colleague.

Physical injury is a major contributor to a victims propensity to report the most recent assault to police, rising with the severity of injury (graph 11.8). Over three quarters (77%) of victims would report an assault to police when admitted to hospital. Those injured, but not admitted to hospital comprised 42%. Only 26% of victims that were not physically injured reported the most recent incident to police.

The number of offenders involved in an assault did not significantly influence the likelihood of a victim reporting to police (graph 11.9).

The use of a weapon influenced a victims decision to report the most recent assault to police (graph 11.10). Over half of victims (55%) of assault involving a weapon reported the most recent assault to police compared to victims where there was no weapon used (28%).

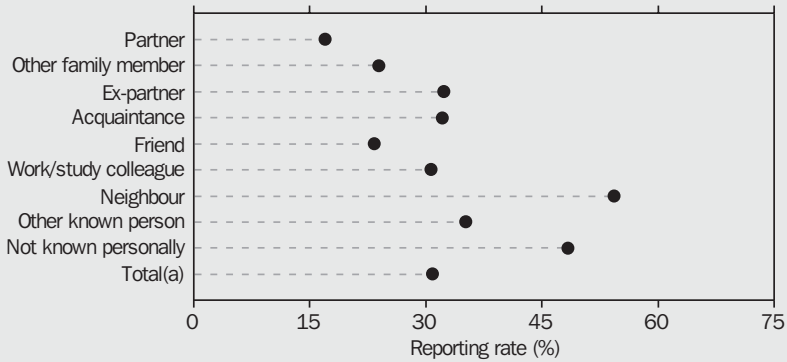
**11.6 ASSAULT REPORTING RATES TO POLICE, Location of most recent incident — 2002**



(a) Includes train station, bus stop or interchange, pub, night club etc., place of entertainment, including carpark, street or open land, shopping centre and public transport. (b) Includes private vehicles. (c) Includes persons who did not give details of the most recent incident.

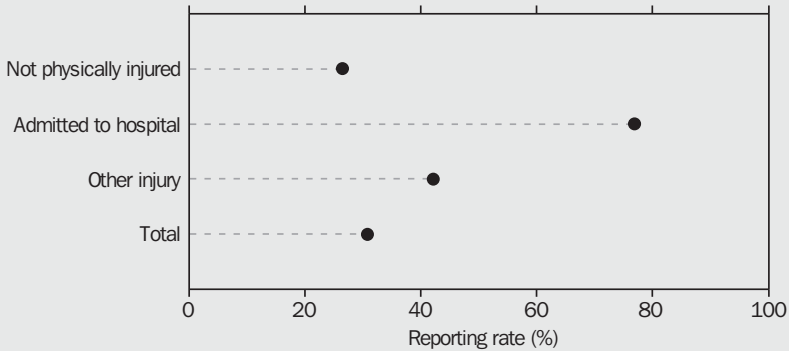
Source: ABS data available on request, National Crime and Safety Survey 2002.

**11.7 ASSAULT REPORTING RATES TO POLICE, How offender in most recent incident known — 2002**



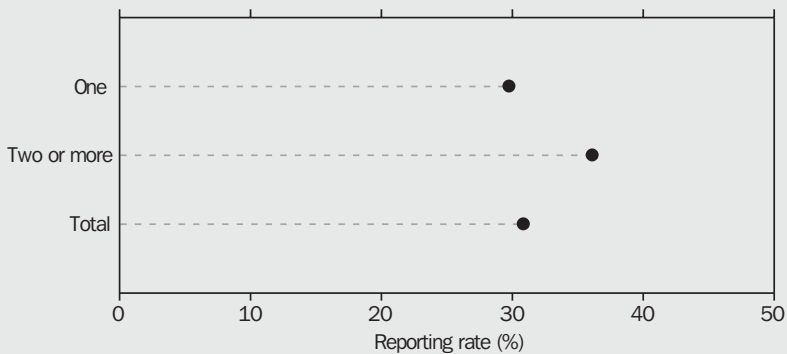
(a) Includes persons who did not give details of the most recent incident.  
 Source: ABS data available on request, National Crime and Safety Survey 2002.

**11.8 ASSAULT REPORTING RATES TO POLICE, Whether physically injured in most recent incident — 2002**



Source: ABS data available on request, National Crime and Safety Survey 2002.

**11.9 ASSAULT REPORTING RATES TO POLICE, Number of offenders in most recent incident — 2002**



Source: ABS data available on request, National Crime and Safety Survey 2002.

Victims that considered the most recent incident to be a crime were more likely to report the most recent assault to police (45%) than those that did not consider the incident a crime (11%) (graph 11.11).

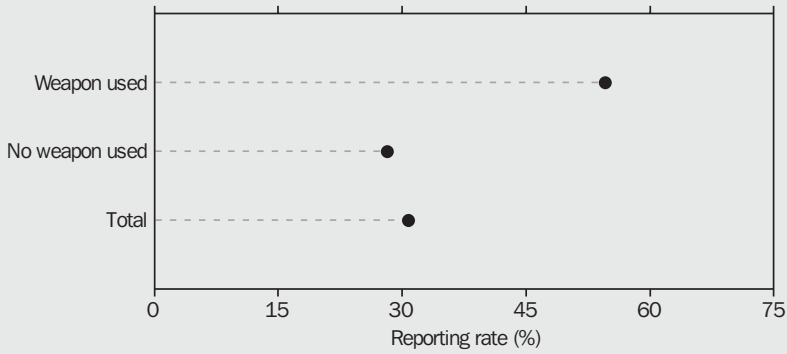
### Summary

Victims were more likely to report the most recent assault incident to police if it was serious. The extent of injury resulting from the incident, the use of a weapon in the incident and whether

the victim considered the incident to be a crime all had a significant impact on the likelihood of a victim reporting the incident to police.

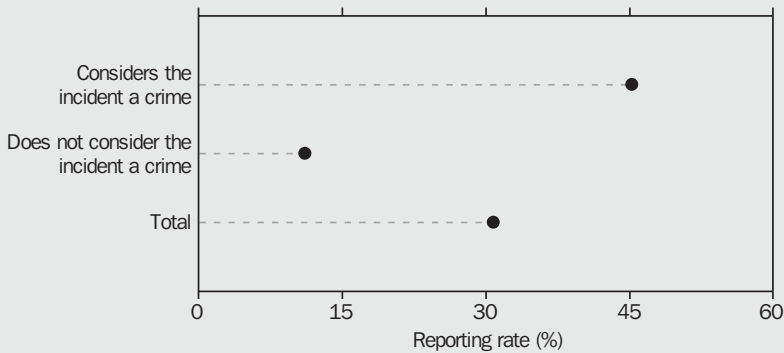
Age also is a factor with older people more likely to report to police. The location of the incident and whether the offender was known to the victim also had some impact, with victims more likely to report if the incident occurred at home than if it occurred in a public place or some other location, and less likely to report the incident if the offender was their partner.

**11.10 ASSAULT REPORTING RATES TO POLICE, Use of weapon in most recent incident — 2002**



Source: ABS data available on request, National Crime and Safety Survey 2002.

**11.11 ASSAULT REPORTING RATES TO POLICE, Whether considers the most recent incident a crime — 2002**



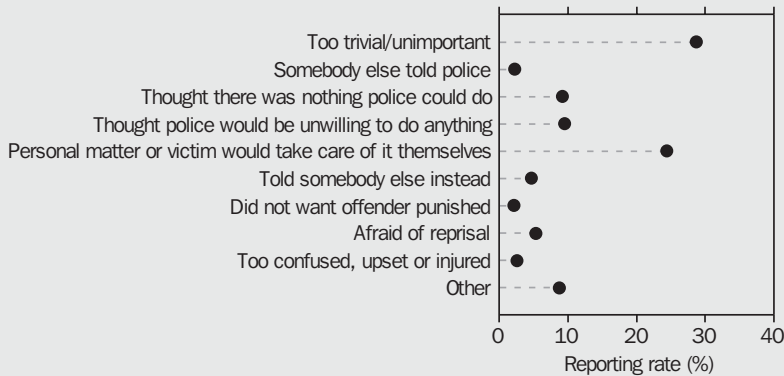
Source: ABS data available on request, National Crime and Safety Survey 2002.

## Reasons for not reporting

The most common reason provided by victims who did not report an assault to police was that the matter was too trivial/unimportant (29%) (graph 11.12). This is consistent with findings that show that victims were more likely to report incidents of a serious nature.

Less than a quarter of victims (24%) indicated that the incident was a personal matter or the victim would take care of it themselves as the reason for not reporting to police. Other reasons for not reporting included: there was nothing the police could do (9%); and police would be unwilling to do anything (10%).

**11.12 REASONS WHY THE ASSAULT WAS NOT REPORTED — 2002**



Source: ABS data available on request, National Crime and Safety Survey 2002.

## Crimes recorded by police

The number of victims recorded by Australian police declined in most offence categories in 2004 when compared with 2003. Victims of the following offence categories recorded a decrease: homicide and related offences (18%); robbery (16%); unlawful entry with intent (13%); other theft (12%), motor vehicle theft (11%); and blackmail/extortion (4%). Victims of kidnapping/abduction recorded an increase (10%). Variation from year to year is likely to be higher for both homicide and related offences and kidnapping/abduction due to small numbers.

Graph 11.13 shows the percentage change between 2003 and 2004 in the number of victims of selected offences.

Other theft (which includes theft from persons, retail premises and motor vehicles) continues to have the largest number of victims. In 2004,

there were 547,800 recorded victims of other theft, a decrease of just over 76,000 since 2003 (table 11.14).

In 2004, the victimisation rates for unlawful entry with intent (1,534 per 100,000 population), motor vehicle theft (437 per 100,000 population) and homicide and related offences (4 per 100,000 population) were the lowest since national reporting began in 1993. The victimisation rate for robbery (82 per 100,000 population) was the lowest since 1996.

## Personal crime

Kidnapping/abduction has remained stable at approximately 4 victims per 100,000 persons since 1999. There were 256 victims of murder in 2004, a rate of 1 murder victim per 100,000 persons. The homicide and related offences rate continued to decline from approximately 5 victims per 100,000 persons in 2003 to 4 victims per 100,000 persons in 2004.

## Property crime

Unlawful entry with intent (UEWI) and other theft were the most frequently occurring property offences. The UEWI victimisation rate decreased by 30%, from 2,196 victims per 100,000 persons in 1999 to 1,534 victims per 100,000 persons in 2004. The victimisation rate for motor vehicle theft was at its lowest rate since 1993. The 2004 motor vehicle theft rate of 437 victims per 100,000 persons was 12% lower than in the previous year (495 victims per 100,000 persons) and 36% lower than in 1999 (684 victims per 100,000 persons). The victimisation rate for other theft decreased by 13% between 2003 and 2004.

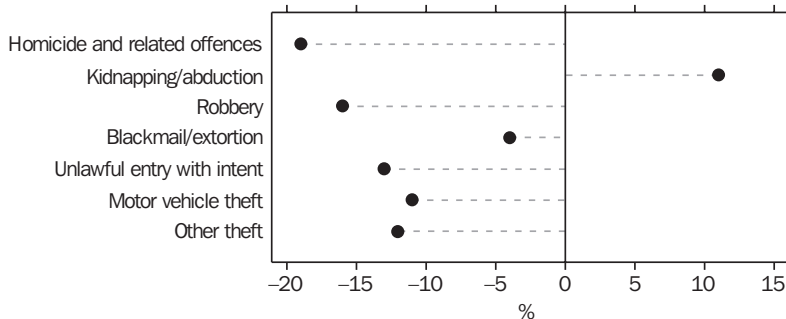
## Characteristics of victims

Males aged 15–19 years had a victimisation rate of 3.4 per 100,000 persons for driving causing death, which was almost three times the rate for females in this age group and more than three times the rate for the general population (table 11.16).

The victimisation rate for kidnapping/abduction was highest in the 15–19 year age group at 13.2 per 100,000 persons, which was more than three times the rate for the general population. In particular, females in this age group were four times (21.9 per 100,000 persons) more likely to be victims of kidnapping/abduction than females in all age groups. Males in this same age group were twice (4.5 per 100,000 persons) as likely to be victims of kidnapping/abduction than males in all age groups. The highest rate for male victims of kidnapping/abduction was in the 10–14 year age group (6.6 per 100,000 persons).

People aged 15–19 years were more than three times likely to be victims of robbery than the general population. The victimisation rate for robbery was highest in the 20–24 year age group for females (100.8 per 100,000 persons) but highest in the 15–19 year age group for males (342.2 per 100,000 persons), as shown in table 11.15.

**11.13 VICTIMS(a), Percentage change in number — 2003 to 2004**



(a) Depending on the type of offence, a victim may be a person, a premise, an organisation or a motor vehicle.

Source: Recorded Crime – Victims, Australia, 2004 (4510.0).



### 11.14 VICTIMS AND VICTIMISATION RATES(a), By selected offences

	1999	2000	2001	2002	2003	2004
NUMBER						
<i>Homicide and related offences</i>	969	1 020	1 066	979	958	789
Murder	344	316	310	318	302	256
Attempted murder	360	393	459	399	361	307
Manslaughter	41	46	37	48	39	37
Driving causing death	224	265	260	214	256	189
Kidnapping/abduction	766	695	767	706	696	768
<i>Robbery</i>	22 606	23 336	26 591	20 989	19 709	16 490
Armed robbery	9 452	9 483	11 233	7 840	7 189	5 993
Unarmed robbery	13 154	13 853	15 358	13 149	12 520	10 497
Blackmail/extortion	254	255	358	355	386	370
<i>Unlawful entry with intent</i>	415 735	436 968	435 754	394 323	354 020	308 368
Property theft(b)	322 983	n.a.	325 220	292 748	262 657	224 638
Other(b)	92 752	n.a.	110 534	101 575	91 363	83 730
Motor vehicle theft(c)	129 552	138 912	139 894	113 460	98 298	87 916
Other theft(d)	612 559	681 268	700 137	680 799	624 036	547 800
RATE(e)						
<i>Homicide and related offences</i>	5.1	5.3	5.5	5.0	4.8	3.9
Murder	1.8	1.6	1.6	1.6	1.5	1.3
Attempted murder	1.9	2.1	2.4	2.0	1.8	1.5
Manslaughter	0.2	0.2	0.2	0.2	0.2	0.2
Driving causing death	1.2	1.4	1.3	1.1	1.3	0.9
Kidnapping/abduction	4.0	3.6	4.0	3.6	3.5	3.8
<i>Robbery</i>	119.4	121.8	137.0	106.9	99.2	82.0
Armed robbery	49.9	49.5	57.9	39.9	36.2	29.8
Unarmed robbery	69.5	72.3	79.1	67.0	63.0	52.2
Blackmail/extortion	1.3	1.3	1.8	1.8	1.9	1.8
<i>Unlawful entry with intent</i>	2 195.7	2 281.3	2 244.9	2 007.9	1 781.7	1 533.5
Property theft(b)	1 705.8	n.a.	1 675.5	1 490.7	1 321.9	1 117.1
Other(b)	489.9	n.a.	569.5	517.2	459.8	416.4
Motor vehicle theft(c)	684.2	725.2	720.7	577.7	494.7	437.2
Other theft(d)	3 235.2	3 556.8	3 607.0	3 466.7	3 140.6	2 724.2

(a) Recorded by police in all jurisdictions. Depending on the type of offence recorded, a victim may be a person, a premise, an organisation or a motor vehicle. (b) A change in the legislation related to unlawful entry with intent (UEWI) offences in South Australia resulted in an inability to provide UEWI disaggregated into property theft and other for 2000. (c) Prior to 2002, Northern Territory police incorrectly included theft of motor vehicle parts and contents and some theft n.e.c. in the count of motor vehicle theft. Since 2002, these offences were correctly included in the other theft offence category. (d) Prior to 2004, counts of UEWI involving the taking of property were included in this offence category as well as in other theft for South Australia. The 2003 data for other theft have been revised to exclude counts of UEWI involving the taking of property, resulting in a break in the time series for other theft. (e) Per 100,000 persons.

Source: Recorded Crime – Victims, Australia, 2004 (4510.0).

### 11.15 VICTIMISATION RATES(a) OF SELECTED CRIMES(b) — 2004

Age group (years)	Offence category					
	Murder	Attempted murder	Driving causing death	Kidnapping/abduction	Robbery(c)	Blackmail/extortion(c)
<b>MALES</b>						
0–9	1.2	0.5	0.2	3.4	2.8	—
10–14	—	—	—	6.6	77.4	0.6
15–19	1.3	2.8	3.4	4.5	342.2	3.3
20–24	1.9	3.5	1.9	3.8	258.5	3.6
25–34	1.9	4.7	0.8	2.6	129.1	2.9
35–44	2.7	2.7	0.6	0.8	70.5	3.0
45–54	1.5	2.1	0.9	0.9	48.7	2.6
55–64	0.9	1.1	0.6	0.3	31.8	1.7
65 and over	0.8	—	0.5	—	16.6	1.2
<b>All ages(d)</b>	<b>1.6</b>	<b>2.2</b>	<b>0.9</b>	<b>2.3</b>	<b>93.4</b>	<b>2.2</b>
<b>FEMALES</b>						
0–9	0.8	0.4	—	4.2	0.8	—
10–14	0.4	—	—	13.2	17.6	0.4
15–19	0.9	0.9	1.2	21.9	95.6	1.6
20–24	0.9	0.7	1.0	11.2	100.8	3.2
25–34	1.2	1.5	0.3	4.7	64.5	1.2
35–44	1.1	1.0	0.3	2.1	41.8	1.1
45–54	0.9	0.9	0.6	0.9	37.3	1.1
55–64	0.6	0.3	0.5	0.3	30.6	0.7
65 and over	0.6	0.2	—	—	21.3	0.4
<b>All ages(d)</b>	<b>0.9</b>	<b>0.8</b>	<b>0.4</b>	<b>5.2</b>	<b>43.0</b>	<b>1.0</b>
<b>PERSONS</b>						
0–9	1.0	0.5	0.1	3.8	1.8	—
10–14	0.2	—	—	9.8	48.5	0.5
15–19	1.1	1.9	2.3	13.2	222.9	2.5
20–24	1.4	2.3	1.5	7.4	182.1	3.4
25–34	1.6	3.1	0.6	3.6	97.3	2.0
35–44	1.9	1.9	0.5	1.4	56.3	2.1
45–54	1.2	1.5	0.7	0.9	43.2	1.9
55–64	0.8	0.7	0.5	0.3	31.3	1.2
65 and over	0.7	0.1	0.2	—	19.5	0.8
<b>All ages(d)</b>	<b>1.3</b>	<b>1.5</b>	<b>0.9</b>	<b>3.8</b>	<b>68.9</b>	<b>1.7</b>

(a) Victims per 100,000 persons. (b) As recorded by police forces in all jurisdictions. (c) Refers to person victims only and therefore does not include organisations as victims. (d) Includes victims for whom age and/or sex was not specified.

Source: *Recorded Crime – Victims, Australia, 2004 (4510.0)*.

## Weapons used against victims of crime

In 2004, a weapon was most likely to have been used in attempted murder (73%) and murder (59%). A knife was the most common type of weapon used and was involved in 32% of attempted murders, 28% of murders, 18% of robberies and 6% of kidnappings/abductions. A firearm was involved in 23% of attempted murders, 13% of murders, 6% of robberies and 2% of kidnappings/abductions.

The proportion of murders involving a weapon peaked in 1996 at 78%, while the proportion of attempted murders involving a weapon peaked in 1997 at 87%. The proportion of robberies in which a weapon was used increased from 36% in 1995 to 46% in 1998 and has since generally declined to 36% in 2004 (graph 11.16).

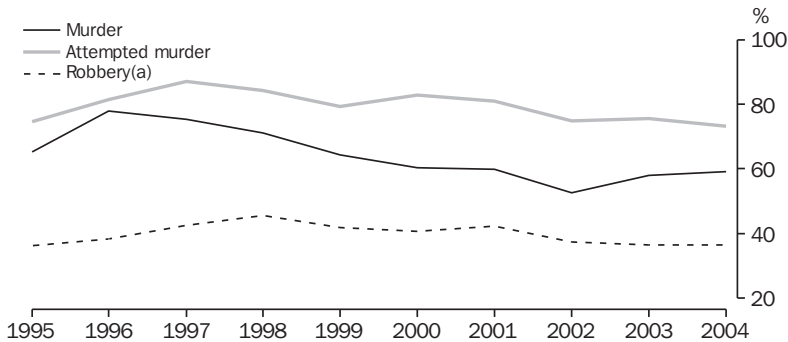
Firearms used in attempted murders in 2004 accounted for 23% of offences, marginally above its low of 19% in 1998, and well below its high of 32% in 1999. The proportion of murders involving a firearm was 13% in 2004, decreasing significantly since 1996 when 32% of murders involved a firearm. The proportion of robberies involving a firearm, decreased from a high of 10% in 1997 to 6% in 2000, and has been stable in the period 2000–04, at around 6%. (graph 11.18).

## Drug offences

The traffic in, and abuse of, illicit drugs results in significant social and financial costs to both individuals and the community. To minimise the harm associated with illicit drug activity, there is close cooperation between the Australian Government, the state and territory governments, the various police services and other law enforcement agencies. Included in these agencies is the Australian Customs Service which has, among other things, responsibility for the enforcement of laws controlling the import and export of illicit drugs. These agencies direct particular attention to monitoring the various types and forms of illicit drugs and identifying emerging patterns of use through the analysis of law enforcement data on illicit drug seizures and arrests.

In 2003–04 by far the largest category of drug arrests involved cannabis offences, with 56,747 arrests, or 72% of the national total (table 11.19). Queensland recorded over a third of these arrests (22,065). The next largest category of arrests involved amphetamine offences, with 9,593 arrests, or 12% of the national total.

**11.16 VICTIMS(a), Weapon used in commission of selected offences**



(a) A victim may be a person or an organisation.

Source: Recorded Crime – Victims, Australia, 2004 (4510.0).

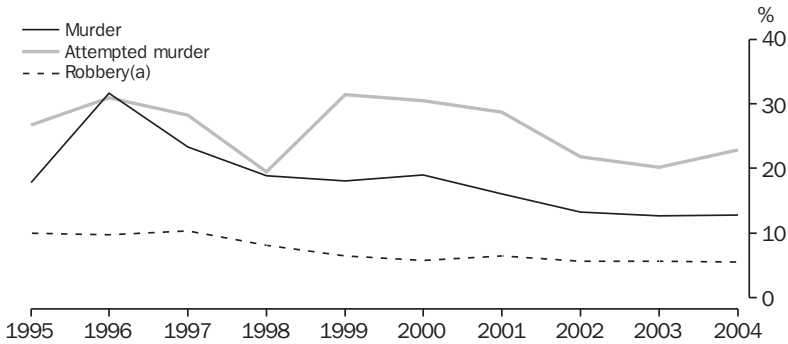
**11.17 VICTIMS(a), By use of weapon in commission of selected offences — 2004**

Weapon used	Offence category			
	Murder	Attempted murder	Kidnapping/ abduction	Robbery
NUMBER				
Weapon used				
Firearm	33	70	18	903
Knife	71	98	48	2 953
Syringe	—	—	—	327
Other weapon	36	45	19	1 077
Total(b)	152	225	98	5 993
No weapon used(c)	105	82	669	10 497
Total	257	307	767	16 490
PROPORTION (%)				
Weapon used				
Firearm	12.8	22.8	2.3	5.5
Knife	27.6	31.9	6.3	17.9
Syringe	—	—	—	2.0
Other weapon	14.0	14.7	2.5	6.5
Total(b)	59.1	73.3	12.8	36.3
No weapon used(c)	40.9	26.7	87.2	63.7
Total	100.0	100.0	100.0	100.0

(a) For the offence of robbery, a victim may be a person or an organisation. (b) Includes offences where a weapon was used but was not further defined. (c) Includes offences where weapon use was not known or not stated.

Source: Recorded Crime – Victims, Australia, 2004 (4510.0).

**11.18 VICTIMS, Firearm used in commission of selected offences**



(a) A victim may be a person or an organisation.

Source: Recorded Crime – Victims, Australia, 2004 (4510.0).

### 11.19 DRUG ARRESTS(a) — 2003–04

Drug type	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
NUMBER									
Cannabis(b)	11 054	7 620	22 065	7 301	6 108	1 638	615	346	56 747
Cocaine	185	85	35	—	21	—	—	2	328
Heroin and other opioids	1 007	2 079	367	37	151	10	1	39	3 691
Amphetamine-type stimulants	2 001	2 240	3 000	451	1 711	39	52	99	9 593
Hallucinogens	18	38	31	5	31	—	1	—	124
Steroids	31	—	54	—	5	—	5	4	99
Other drugs(c)	967	1 117	4 645	118	1 578	17	—	2	8 444
<b>Total</b>	<b>15 263</b>	<b>13 179</b>	<b>30 197</b>	<b>7 912</b>	<b>9 605</b>	<b>1 704</b>	<b>674</b>	<b>492</b>	<b>79 026</b>
RATE(d)									
Cannabis(b)	226.4	199.4	759.9	620.2	416.6	455.8	441.5	140.8	373.5
Cocaine	3.6	2.2	1.2	—	1.4	—	—	0.8	2.2
Heroin and other opioids	19.8	54.4	12.6	3.1	10.3	2.8	0.7	15.9	24.3
Amphetamine-type stimulants	39.4	58.6	103.3	38.3	116.7	10.9	37.3	40.3	63.1
Hallucinogens	0.4	1.0	1.1	0.4	2.1	—	0.7	—	0.8
Steroids	0.6	—	1.9	—	0.3	—	3.6	1.6	0.7
Other drugs(c)	19.0	29.2	160.0	10.0	107.6	4.7	—	0.8	55.6
<b>Total</b>	<b>300.4</b>	<b>344.8</b>	<b>1 039.9</b>	<b>672.1</b>	<b>655.1</b>	<b>474.2</b>	<b>483.8</b>	<b>200.2</b>	<b>520.1</b>

(a) The arrest data for each state and territory include AFP data. (b) The SA, NT and ACT figures include infringement notices. (c) 'Other drugs' includes phencyclidine (PCP or 'angel dust'), diazepam, lignocaine, benzocaine, dothiepin, flunitrazepam, other prescription drugs, and any drug not included in the other categories. (d) Per 100,000 adult persons, i.e. persons aged 18 years and over in all states and territories except Vic. and Qld, where 'adult' refers to persons aged 17 years and over.

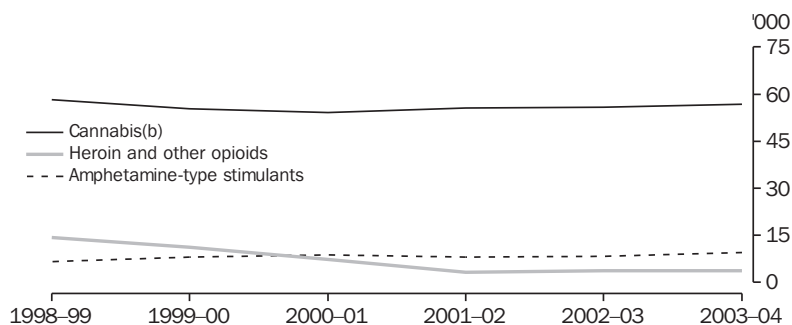
Source: Australian Crime Commission, *Illicit Drug Data Report, 2003–04*; Australian Demographic Statistics June 2004 (3101.0).

Arrests for most types of drugs increased between 2002–03 and 2003–04. Amphetamine arrests increased by 15% to 9,593. Arrests and infringement notices for cannabis rose slightly to 56,747, after declining steadily between 1998–99 and 2000–01. Heroin arrests decreased by 4% to 3,691 after declining markedly between 1998–99

and 2001–02, then increasing by 17% in 2002–03 (graph 11.20). Arrests for 'Other drugs' increased by 27% to 8,444.

Information on the widespread problems arising from drug abuse in Australia, and on how these problems are being approached, is presented in the *Illicit Drug Data Report* produced by the ACC.

### 11.20 SELECTED DRUG ARRESTS(a)



(a) The arrest data for each state and territory include AFP. (b) The SA, NT and ACT figures include infringement notices.

Source: Australian Crime Commission, *Illicit Drug Data Report, 2002–03*.

## Outcomes of police investigations

Statistics about the outcomes of police investigations describe the status of the processes of police investigations that are initiated following the reporting or detection of an offence. At any point in time, the status of investigations can include:

- not finalised (i.e. were still continuing, were pending or were suspended)
- finalised without an offender being proceeded against because the reported offence was not verified, the complaint was withdrawn, or the alleged offender could not be proceeded against because of some statutory or procedural bar
- finalised and an offender was proceeded against by initiating court action or some other form of formal proceeding (e.g. a diversionary conference or a formal caution).

In 2004, nearly two-thirds of the investigations into murder (65%), attempted murder (64%) and driving causing death (62%) had been finalised within 30 days after a victim became known to police (table 11.21). Of those investigations finalised, police were most likely to have proceeded against an offender at 30 days for victims of homicide and related offences: manslaughter (100%), attempted murder (96%), driving causing death (95%) and murder (87%).

The lowest proportions of finalisations at 30 days were for victims of unlawful entry with intent (8%) and motor vehicle theft (11%). However, of those

that were finalised, a higher proportion had an offender proceeded against by police (80% and 71% respectively).

The highest proportions of investigations finalised where there was no offender proceeded against were for victims of kidnapping/abduction (35%), motor vehicle theft (29%) and robbery (28%).

## Courts

Many courts and court-related tribunals operate throughout Australia. The majority of courts handle matters that are criminal or civil in nature, while tribunals provide a less costly alternative for progressing some civil and administrative matters outside the formality of a court. A criminal matter generally arises where a charge has been laid either by police or some other prosecuting authority on the basis of a breach of criminal law. A civil matter occurs where there is a dispute between two or more individuals or organisations, where one party seeks legal remedy for an injury or loss from the other party who is alleged to be liable.

There are many other types of courts and tribunals in operation, commonly referred to as specialist courts and tribunals. Examples of these include the Coroners' Courts, Family Court, Federal Magistrates' Court, Drug Courts, Domestic Violence Courts, Workers' Compensation Commissions/Tribunals, Industrial Relations Commission, Small Claims Tribunals, Administrative Appeals Tribunal and Residential Tenancy Tribunal.

**11.21 VICTIMS OF RECORDED CRIME(a), By outcome of investigations at 30 days — 2004**

Investigation status	Murder %	Attempted murder %	Manslaughter %	Driving causing death %	Kidnapping/ abduction %	Robbery(b) %	UEWI(c) %	Motor vehicle theft %
Investigation not finalised	35.4	35.8	51.4	38.1	63.3	79.6	92.1	89.3
Investigation finalised								
No offender proceeded against	8.2	2.3	—	3.2	12.8	5.7	1.6	3.1
Offender proceeded against	56.4	61.9	48.6	58.7	24.0	14.7	6.3	7.6
Total	64.6	64.2	48.6	61.9	36.7	20.4	7.8	10.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) For selected offences recorded by police during 1 January–31 December 2004. (b) Robbery includes both armed and unarmed robbery. (c) Unlawful entry with intent.

Source: *Recorded Crime – Victims, Australia, 2004 (4510.0)*.

Courts and tribunals tend to be arranged in a hierarchy (diagram 11.22), with the majority of less serious matters being heard before magistrates and more serious matters being heard before judges. For criminal matters the seriousness is often determined by the nature of the alleged offence. In a civil context, seriousness is generally determined according to the amount being sought in compensation. A court's or tribunal's ability to deal with a civil, criminal or other matter will depend on the state or territory's legislation or jurisdiction applicable to that particular level of court.

The hierarchy of courts also applies to appeal matters. Where grounds for appeal exist, the appeal process is available in both criminal and civil matters. Appeals resulting from civil tribunal decisions may be referred to the Magistrates', District/County, Supreme or Commonwealth Courts, depending on the jurisdiction and the right of appeals. Criminal appeals resulting from the Magistrates' Court can be appealed at the District/County, Supreme or Commonwealth Court level in the first instance. The High Court of Australia is the highest court of appeal for both criminal and civil cases.

## **Criminal courts**

A system of courts for the hearing of criminal matters exists in all Australian states and territories. Once charges are laid by police, the court will hear evidence by both prosecution and defence, and will make a decision as to whether or not the defendant is guilty. In cases where the defendant is found guilty, the court may also record a conviction and impose a penalty.

The lowest level of criminal court is the Magistrates' Court or Court of Summary Jurisdiction. The majority of all criminal cases are

heard in these courts. Cases heard in Magistrates' Courts do not involve a jury and a magistrate determines the guilt or innocence of the defendant. This is known as a summary proceeding. Relatively minor offences such as property damage or minor road traffic offences can be dealt with in this way. More serious offences are dealt with by the higher court levels.

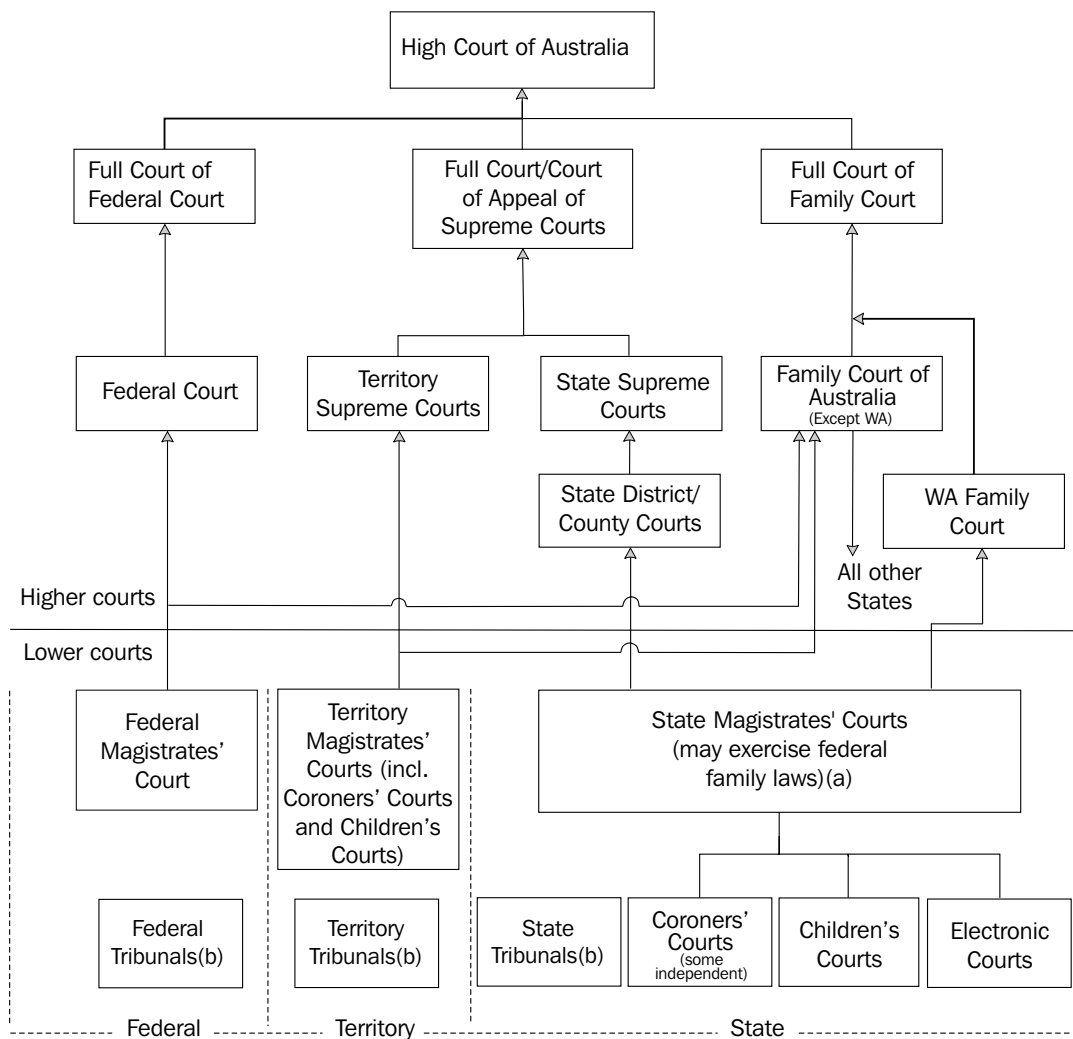
All states and territories have a Supreme Court that can deal with all criminal matters. The larger jurisdictions also have an intermediate level of court, known as the District or County Court, that deals with the majority of serious offences. The Supreme Courts and Intermediate Courts are collectively referred to as the Higher Courts.

All offences that are dealt with by the Higher Courts have an automatic entitlement to a trial before a judge and jury. In some jurisdictions, the defendant may elect to have the matter heard before a judge alone. Offences that must be heard before a judge and jury are known as indictable offences. These include offences such as murder, manslaughter and drug importation as well as serious sexual offences, robberies and assaults.

A defendant proven guilty in a criminal matter is entitled to appeal against the conviction or against the severity of penalty imposed. Under some circumstances, the prosecution is also entitled to appeal against the leniency of the penalty. The states and territories differ in the ways in which they deal with appeals. Some appeals from Magistrates' Courts may be heard before the Intermediate Courts. In other jurisdictions the Supreme Court may hear these appeals. In most jurisdictions an appeal court or Court of Criminal Appeal may be constituted to hear appeals from the Supreme or Intermediate Courts, with the highest court of appeal for all jurisdictions being the High Court of Australia.



## 11.22 HIERARCHY OF COURTS



—————> Indicates the flow of cases on appeal.

- - - - - Indicates a separation between state/territory or court jurisdiction.

(a) In some jurisdictions, appeals from lower courts may go directly to the court of appeal in the Supreme Court. In the ACT, the court of appeal of the Supreme Court commenced exercising limited jurisdiction on 31 October 2001; full jurisdiction did not commence until 14 October 2002. (b) Appeals from federal, state and territory tribunals may go to any higher court in their jurisdiction.

Source: Steering Committee for the Review of Commonwealth/State Service Provision, Report on Government Services 2005.

## National criminal courts statistics

The aim of the Criminal Courts collection is to provide comparable statistics for the states and territories and for Australia on the characteristics of defendants dealt with by the Criminal Courts. This includes information on the offences and sentences associated with those defendants. In order to ensure consistency between the states and territories, the statistics have been compiled according to national standards and classifications. However, some legislative and processing differences may limit the degree to which the statistics are comparable across the states and territories. Differences may also arise as a result of other factors, including refinements in data quality procedures and modifications in the systems used to obtain and compile the figures.

### Criminal courts defendant summary characteristics

Diagram 11.23 presents summary characteristics of defendants dealt with by the Higher and Magistrates' Courts of Australia. 'Finalised defendant' refers to all charges against a person or organisation having been formally completed so that the defendant ceases to be an item of work to be dealt with by a particular court. Adjudication is a method of finalisation based on a judgement or decision by the court as to whether or not a defendant is guilty of the charge(s) laid against them.

In 2003–04, 544,689 defendants were finalised in the Higher and Magistrates' Courts. Of these, 17,315 (3%) were in the Higher Courts and 527,374 (97%) were in the Magistrates' Courts.

The majority (87% or 15,003) of defendants finalised in the Higher Courts during 2003–04 were adjudicated. Those proven guilty comprised 93% (13,950) of all adjudications, while acquittals comprised 7% (1,053) of the total. Of those

proven guilty, 90% pleaded guilty and 10% were declared guilty at trial. The remaining defendants (13%) were finalised by a non-adjudicated method such as all charges withdrawn by the prosecution.

The Magistrates' Courts finalised 527,374 defendants during 2003–04. Adjudications comprised 88% (466,661) of all finalisations. Defendants proven guilty (i.e. pleaded guilty or were declared guilty) and defendants acquitted comprised 96% and 4% respectively of all adjudications. Non-adjudicated methods (such as all charges withdrawn by the prosecution or transferred to another court level) comprised 12% of finalised defendants.

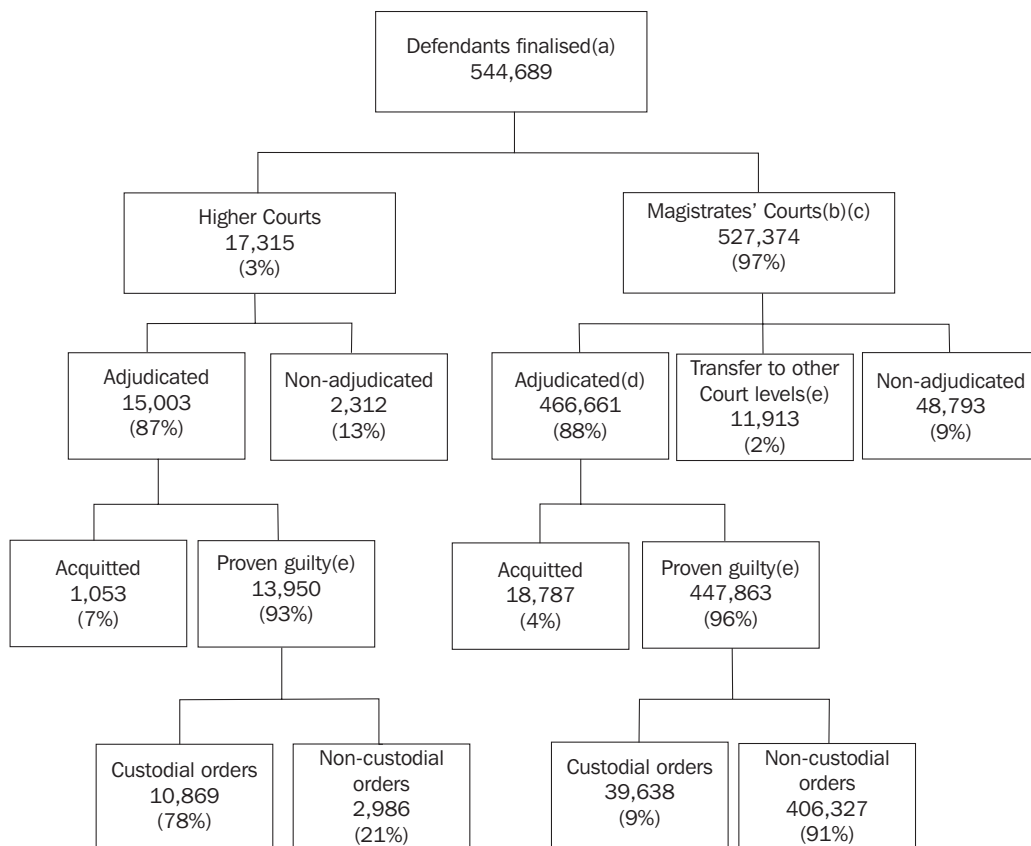
### Criminal courts finalisations

For combined court levels, New South Wales, Queensland and Victoria accounted for 70% of finalisations nationally (28%, 24% and 17% respectively). Queensland accounted for the highest proportions of finalisations for the Higher Courts (40%) and New South Wales for the highest proportion of finalisations in the Magistrates' Courts (28%) (table 11.24).

The number of defendants finalised in the Higher Courts increased by 4% from 16,643 defendants in 2002–03 to 17,315 defendants in 2003–04. Finalisations of defendants decreased in Western Australia (8%), Tasmania (11%) and the Australian Capital Territory (27%) (table 11.25).

Males represented the majority of finalised defendants (78% or 425,880) in the Higher and Magistrates' courts during 2003–04. Half (269,924) the total number of these finalised defendants were males aged less than 35 years of age. Males in the 20–24 year age group had the highest number of finalised male defendants (94,797) while the 35–44 year age group was the highest for females (22,612) (table 11.26).

### 11.23 CRIMINAL COURT FINALISATIONS — 2003-04



(a) Defendants will be counted twice where they are transferred from the Magistrates' Court to a Higher Court and then finalised in the Higher Court in the same reference period. (b) Includes defendants with an unknown method of finalisation. (c) Excludes defendants finalised by committal or transfer to a Higher Court and refers to finalised appearances rather than finalised defendants in Magistrates' Court in New South Wales. (d) Includes defendants adjudicated n.f.d. (e) Includes defendants for whom a principal sentence is unknown.

Source: *Criminal Courts, Australia, 2003-04* (4513.0).

### 11.24 CRIMINAL COURT FINALISATIONS, By court level — 2003-04

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
NUMBER									
Higher Courts	3 456	2 548	6 863	869	2 667	537	256	119	17 315
Magistrates' Courts(b)	146 950	90 572	129 029	43 326	58 589	46 723	7 048	5 137	527 374
<b>Total(b)(c)</b>	<b>150 406</b>	<b>93 120</b>	<b>135 892</b>	<b>44 195</b>	<b>61 256</b>	<b>47 260</b>	<b>7 304</b>	<b>5 256</b>	<b>544 689</b>
PROPORTION (%)									
Higher Courts	20.0	14.7	39.6	5.0	15.4	3.1	1.5	0.7	100.0
Magistrates' Courts(b)	27.9	17.2	24.4	8.2	11.1	8.9	1.3	1.0	100.0
<b>Total(b)(c)</b>	<b>27.6</b>	<b>17.1</b>	<b>24.4</b>	<b>8.1</b>	<b>11.2</b>	<b>8.7</b>	<b>1.3</b>	<b>1.0</b>	<b>100.0</b>

(a) Refers to finalised appearances rather than finalised defendants in the Magistrates' Court, resulting in a possible increase in the population counts. (b) Excludes defendants finalised by committal or transfer to a Higher court in NSW. (c) Defendants will be counted twice where they are transferred from the Magistrates' Court to a Higher Court and then finalised in the Higher Court within the same reference period.

Source: *Criminal Courts, Australia, 2003-04* (4513.0).

### 11.25 TOTAL HIGHER CRIMINAL COURT FINALISATIONS

	1996–97	1997–98	1998–99	1999–2000	2000–01	2001–02	2002–03(a)	2003–04(a)
NSW	3 584	3 961	4 186	4 300	3 917	3 654	3 204	3 456
Vic.	1 631	1 737	1 977	2 277	2 147	1 993	2 078	2 548
QLD	6 264	6 477	7 595	7 379	6 932	7 230	6 630	6 863
SA	1 299	1 004	943	936	928	1 131	821	869
WA	2 228	2 718	2 893	3 113	3 055	3 070	2 885	2 667
Tas.	322	337	611	749	441	486	605	537
NT	206	311	288	268	404	262	256	256
ACT	150	138	161	190	205	171	164	119
<b>Australia</b>	<b>15 684</b>	<b>16 683</b>	<b>18 654</b>	<b>19 212</b>	<b>18 029</b>	<b>17 997</b>	<b>16 643</b>	<b>17 315</b>

(a) Excludes defendants finalised by a bench warrant being issued.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

### 11.26 FINALISED DEFENDANTS, By age group

	Under 20 years	20–24 years	25–29 years	30–34 years	35–44 years	45 years and over	Total(a)
HIGHER COURTS							
Males	1 522	3 443	2 557	2 271	2 955	2 203	15 005
Females	171	536	388	371	539	276	2 292
<b>Persons(b)</b>	<b>1 693</b>	<b>3 979</b>	<b>2 945</b>	<b>2 642</b>	<b>3 494</b>	<b>2 479</b>	<b>17 315</b>
MAGISTRATES' COURTS(c)							
Males	45 873	91 354	65 833	57 071	75 562	56 593	410 875
Females	8 644	19 568	16 316	15 576	22 073	13 599	104 246
<b>Persons(b)</b>	<b>54 638</b>	<b>111 328</b>	<b>82 489</b>	<b>72 873</b>	<b>97 969</b>	<b>70 509</b>	<b>527 374</b>
HIGHER AND MAGISTRATES' COURTS(c)(d)							
Males	47 395	94 797	68 390	59 342	78 517	58 796	425 880
Females	8 815	20 104	16 704	15 947	22 612	13 875	106 538
<b>Persons(b)</b>	<b>56 331</b>	<b>115 307</b>	<b>85 434</b>	<b>75 515</b>	<b>101 463</b>	<b>72 988</b>	<b>544 689</b>

(a) Includes defendants with unknown age. (b) Includes organisations and persons with unknown sex. (c) Excludes defendants finalised by committal or transfer to a Higher Court in NSW. (d) Defendants will be counted twice where they are transferred from the Magistrates' Court to a Higher Court and then finalised in the Higher Court within the same reference period.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

## Adjudicated defendants – principal offence

Defendants were more likely to be adjudicated in the Higher Courts during 2003–04 for the following categories of principal offences, using Divisions of the Australian Criminal Standard Offence Classification (ASOC): Acts intended to cause injury (21%); Unlawful entry with intent/burglary, break and enter (15%); Illicit drug offences (14%); and Robbery, extortion and related offences, and Sexual assault and related offences (both 11%) (table 11.27). There were 10,732 (72%) defendants adjudicated by the Higher Courts with a principal offence in one of these five categories.

In contrast, the five categories of principal offences that accounted for the majority of adjudicated defendants in the Magistrates' Courts in 2003–04 were: Road traffic and motor vehicle

regulatory offences (44%); Public order offences (9%); Theft and related offences (8%); and Acts intended to cause injury and Dangerous or negligent acts endangering persons (both 7%). Overall, approximately three out of every four defendants adjudicated in the Magistrates' Courts had one of these five categories of principal offences (table 11.28).

When defendants with a principal offence related to traffic are excluded from the adjudicated population in the Magistrates' Courts, the five categories of principal offences that accounted for the majority of defendants nationally were: Public order offences (19%); Theft and related offences (17%); Acts intended to cause injury (14%); Illicit drug offences (12%); and Offences against justice procedures, government security and government operations (11%) (graph 11.29).

**11.27 HIGHER CRIMINAL COURTS ADJUDICATED DEFENDANTS, Principal offence — 2003–04**

ASOC Division(a)	Age group (years)						Total(b)
	Under 20	20–24	25–29	30–34	35–44	45 and over	
	NUMBER						
Homicide and related offences	34	79	65	65	98	77	421
Acts intended to cause injury	326	761	599	538	614	270	3 114
Sexual assault and related offences	81	185	169	182	414	543	1 577
Dangerous or negligent acts endangering persons	55	154	94	64	61	46	474
Abduction and related offences	8	25	27	18	21	13	112
Robbery, extortion and related offences	361	613	302	182	172	48	1 685
Unlawful entry with intent/burglary, break and enter	401	724	431	342	279	66	2 246
Theft and related offences	77	216	140	124	137	91	792
Deception and related offences	24	156	171	169	309	263	1 101
Illicit drug offences	48	343	362	375	564	414	2 110
Weapons and explosives offences	3	12	15	12	11	15	68
Property damage and environmental pollution	75	91	60	53	61	37	383
Public order offences	14	45	43	40	47	25	217
Road traffic and motor vehicle regulatory offences	—	—	—	—	—	—	—
Offences against justice procedures, government security and government operations	15	74	48	50	54	33	274
Miscellaneous offences	9	41	54	48	68	58	297
<b>All offence categories(c)</b>	<b>1 539</b>	<b>3 541</b>	<b>2 597</b>	<b>2 283</b>	<b>2 939</b>	<b>2 026</b>	<b>14 998</b>
	PROPORTION (%)						
Homicide and related offences	2.2	2.2	2.5	2.8	3.3	3.8	2.8
Acts intended to cause injury	21.2	21.5	23.1	23.6	20.9	13.3	20.8
Sexual assault and related offences	5.3	5.2	6.5	8.0	14.1	26.8	10.5
Dangerous or negligent acts endangering persons	3.6	4.3	3.6	2.8	2.1	2.3	3.2
Abduction and related offences	0.5	0.7	1.0	0.8	0.7	0.6	0.7
Robbery, extortion and related offences	23.5	17.3	11.6	8.0	5.9	2.4	11.2
Unlawful entry with intent/burglary, break and enter	26.1	20.4	16.6	15.0	9.5	3.3	15.0
Theft and related offences	5.0	6.1	5.4	5.4	4.7	4.5	5.3
Deception and related offences	1.6	4.4	6.6	7.4	10.5	13.0	7.3
Illicit drug offences	3.1	9.7	13.9	16.4	19.2	20.4	14.1
Weapons and explosives offences	0.2	0.3	0.6	0.5	0.4	0.7	0.5
Property damage and environmental pollution	4.9	2.6	2.3	2.3	2.1	1.8	2.6
Public order offences	0.9	1.3	1.7	1.8	1.6	1.2	1.4
Road traffic and motor vehicle regulatory offences	—	—	—	—	—	—	—
Offences against justice procedures, government security and government operations	1.0	2.1	1.8	2.2	1.8	1.6	1.8
Miscellaneous offences	0.6	1.2	2.1	2.1	2.3	2.9	2.0
All offence categories(c)	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) Australian Standard Offence Classification. (b) Includes defendants with unknown age. (c) Includes defendants for whom offence data were missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

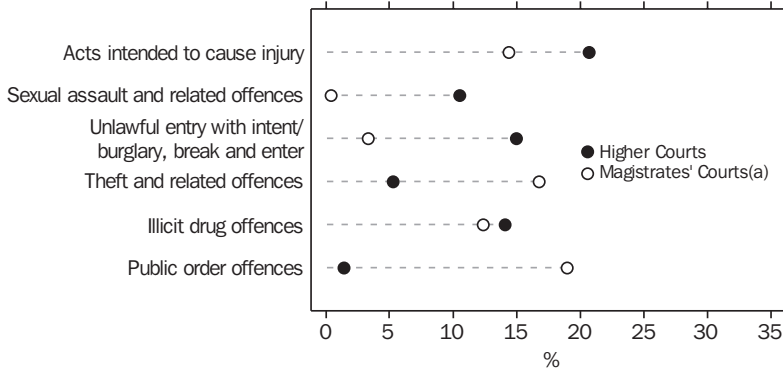
**11.28 MAGISTRATES' CRIMINAL COURTS ADJUDICATED DEFENDANTS, Principal offence — 2003–04**

ASOC Division(a)	Age group (years)						Total(b)
	Under 20	20–24	25–29	30–34	35–44	45 and over	
	NUMBER						
Homicide and related offences	5	26	17	13	24	24	109
Acts intended to cause injury	3 000	6 962	5 810	5 620	7 632	3 897	32 994
Sexual assault and related offences	33	103	79	116	231	302	871
Dangerous or negligent acts endangering persons	4 839	8 261	5 116	4 064	5 753	5 086	33 348
Abduction and related offences	—	8	7	5	9	6	35
Robbery, extortion and related offences	112	91	45	52	36	9	345
Unlawful entry with intent/burglary, break and enter	1 630	2 231	1 462	1 023	948	227	7 538
Theft and related offences	6 748	9 143	6 312	5 338	6 525	4 160	38 364
Deception and related offences	1 648	3 679	3 020	2 527	3 212	2 275	16 857
Illicit drug offences	3 015	6 750	5 299	4 738	5 955	2 556	28 355
Weapons and explosives offences	750	1 292	899	842	1 357	1 169	6 331
Property damage and environmental pollution	2 393	3 422	2 088	1 703	1 932	866	12 800
Public order offences	7 193	10 894	6 803	5 786	7 721	4 147	43 322
Road traffic and motor vehicle regulatory offences	15 694	42 470	31 913	27 572	37 933	31 967	205 672
Offences against justice procedures, government security and government operations	2 417	4 376	3 776	3 792	5 379	3 530	25 504
Miscellaneous offences	570	1 325	1 261	1 440	2 107	1 919	13 792
<b>All offence categories(c)</b>	<b>50 067</b>	<b>101 108</b>	<b>73 978</b>	<b>64 699</b>	<b>86 832</b>	<b>62 198</b>	<b>466 658</b>
	PROPORTION (%)						
Homicide and related offences	—	—	—	—	—	—	—
Acts intended to cause injury	6.0	6.9	7.9	8.7	8.8	6.3	7.1
Sexual assault and related offences	0.1	0.1	0.1	0.2	0.3	0.5	0.2
Dangerous or negligent acts endangering persons	9.7	8.2	6.9	6.3	6.6	8.2	7.1
Abduction and related offences	—	—	—	—	—	—	—
Robbery, extortion and related offences	0.2	0.1	0.1	0.1	—	—	0.1
Unlawful entry with intent/burglary, break and enter	3.3	2.2	2.0	1.6	1.1	0.4	1.6
Theft and related offences	13.5	9.0	8.5	8.3	7.5	6.7	8.2
Deception and related offences	3.3	3.6	4.1	3.9	3.7	3.7	3.6
Illicit drug offences	6.0	6.7	7.2	7.3	6.9	4.1	6.1
Weapons and explosives offences	1.5	1.3	1.2	1.3	1.6	1.9	1.4
Property damage and environmental pollution	4.8	3.4	2.8	2.6	2.2	1.4	2.7
Public order offences	14.4	10.8	9.2	8.9	8.9	6.7	9.3
Road traffic and motor vehicle regulatory offences	31.3	42.0	43.1	42.6	43.7	51.4	44.1
Offences against justice procedures, government security and government operations	4.8	4.3	5.1	5.9	6.2	5.7	5.5
Miscellaneous offences	1.1	1.3	1.7	2.2	2.4	3.1	3.0
All offence categories(c)	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) Australian Standard Offence Classification. (b) Includes defendants with unknown age. (c) Includes defendants for whom offence data were missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

**11.29 DEFENDANTS ADJUDICATED, Selected principal offences by court level — 2003–04**

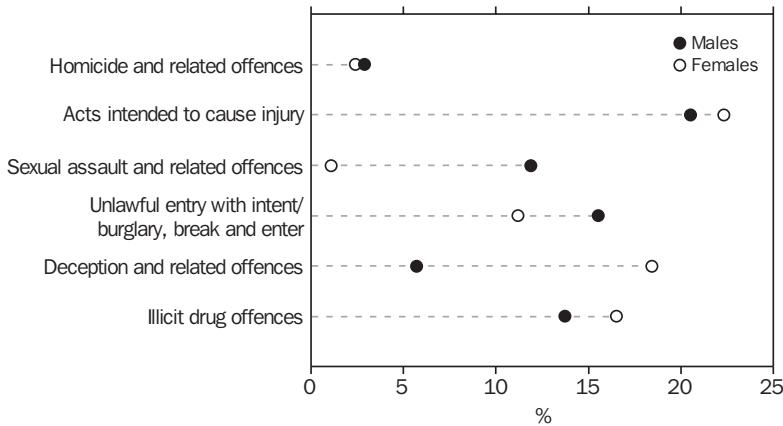


(a) Excludes defendants with a principal offence in ASOC Division 14 (Road traffic and motor vehicle regulatory offences) and Subdivision 041 (Dangerous or negligent operation of a vehicle).  
 Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

In the Higher Courts, the most prevalent principal offence category for which both male and female defendants were adjudicated was Acts intended to cause injury (21% and 22% respectively) (graph 11.30). Proportionally, more females were adjudicated for the principal offence of Deception

and related offences (18% than males (6%). In contrast, there were proportionally more males than females with a principal offence category of Sexual assault and related offences (12% and 1% respectively).

**11.30 HIGHER COURTS DEFENDANTS ADJUDICATED, Selected principal offences by sex — 2003–04**



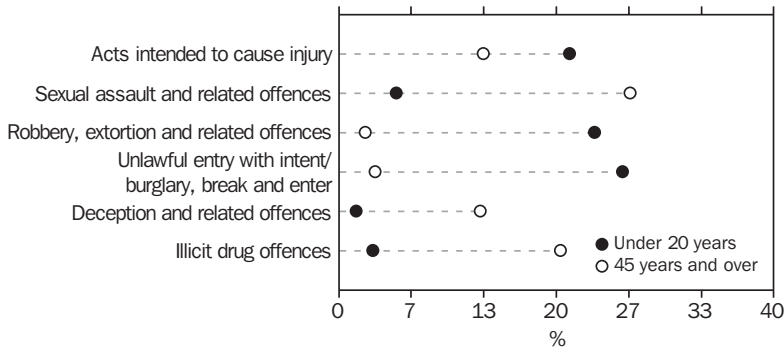
Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.



Nationally, the proportions of principal offences for defendants adjudicated were different across age groups in the Higher Courts. Defendants aged less than 20 years were more likely to be adjudicated for a principal offence in the categories of: Unlawful entry with intent/burglary, break and enter (26%); Robbery, extortion and related offences (23%); and Acts intended to cause injury (21%) (graph 11.31). Those within the age group of 45 years and over were more likely to be adjudicated for: Sexual assault and related offences (27%); Illicit drug offences (20%); and Acts intended to cause injury, and Deception and related offences (both 13%).

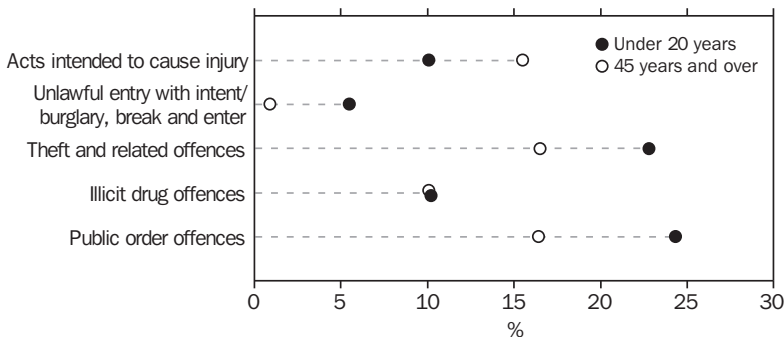
As age increased the proportions of defendants with a principal offence of Road traffic and motor vehicle regulatory offences increased in the Magistrates' Courts. This was the principal offence category for 31% of adjudicated defendants aged less than 20 years, increasing to 51% for defendants aged 45 years and over. Excluding traffic offences, defendants aged less than 20 years were more likely to be adjudicated for a principal offence in the categories of Public order offences (24%) and Theft and related offences (23%). Those 45 years and over were more likely to be adjudicated for Theft and related offences, and Public order offences (both 16%) and Acts intended to cause injury (15%) (graph 11.32).

**11.31 HIGHER COURTS DEFENDANTS ADJUDICATED, Selected principal offences by selected age groups — 2003–04**



Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

**11.32 MAGISTRATES' COURTS DEFENDANTS ADJUDICATED(a), Selected principal offences by selected age groups — 2003–04**



(a) Excludes defendants with a principal offence in ASOC Division 14 (Road traffic and motor vehicle regulatory offences) and Subdivision 041 (Dangerous or negligent operation of a vehicle).

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

## Adjudicated defendants by type of adjudication

Nationally, 84% of adjudicated defendants in the Higher Courts were finalised by pleading guilty (table 11.33). Those with the principal offence categories of Weapons and explosives offences (96%) and Unlawful entry with intent/burglary, break and enter (94%) had the highest proportion of defendants finalised with a plea of guilty. In contrast, adjudicated defendants with a principal offence of Homicide and related offences and Sexual assault and related offences were least likely to plead guilty (53% and 62% respectively) and, therefore, most likely to have a trial outcome (acquittal or guilty verdict).

Three categories of principal offences accounted for the majority of trial outcomes in the Higher Courts. These were: Sexual assault and related offences (24%); Acts intended to cause injury (23%); and Illicit drug offences (11%). There were 1,413 (58%) adjudicated defendants with a trial outcome in the Higher Courts with one of these three categories of principal offences.

Across all categories of principal offences, the acquittal rate for Higher Court defendants as a proportion of trial outcomes was 43%. The principal offence with the highest acquittal rate (as a proportion of trial outcomes for this offence type) was Sexual assault and related offences (61%) followed by Acts intended to cause injury (47%). The category of principal offence with the lowest acquittal rate was Illicit drug offences (18%).

Nationally, 93% of adjudicated defendants were proven guilty or pleaded guilty in the Higher Courts, while 96% of adjudicated defendants were proven guilty in the Magistrates' Courts. For combined court levels, defendants with a principal offence of illicit drug offences had the highest proportion of defendants either pleading guilty or proven guilty in both courts (98% for Higher Courts and 99% for Magistrates' Courts). Defendants adjudicated in the Higher and Magistrates' Courts were most likely to be acquitted for the categories of principal offences of Homicide and related offences (17% and 30% respectively), and Sexual assault and related offences (both 23%).

### 11.33 TOTAL CRIMINAL COURTS ADJUDICATED DEFENDANTS, Principal offence by court level and adjudication type — 2003–04

ASOC Division	Higher Courts				Magistrates' Courts		
	Acquitted	Guilty verdict	Guilty plea	Total	Acquitted	Proven guilty	Total(a)
Homicide and related offences	70	128	221	419	33	78	111
Acts intended to cause injury	255	291	2 566	3 112	2 764	30 230	32 995
Sexual assault and related offences	363	230	984	1 577	196	673	869
Dangerous or negligent acts endangering persons	13	24	438	475	510	32 838	33 348
Abduction and related offences	12	20	84	116	5	31	36
Robbery, extortion and related offences	95	125	1 464	1 684	31	313	344
Unlawful entry with intent/burglary, break and enter	50	93	2 103	2 246	220	7 315	7 537
Theft and related offences	22	65	703	790	883	37 483	38 366
Deception and related offences	31	72	999	1 102	408	16 449	16 857
Illicit drug offences	49	225	1 836	2 110	260	28 095	28 355
Weapons and explosives offences	—	3	64	67	120	6 213	6 333
Property damage and environmental pollution	17	26	339	382	349	12 450	12 799
Public order offences	9	13	194	216	2 081	41 241	43 322
Road traffic and motor vehicle regulatory offences	—	3	5	8	9 169	196 503	205 672
Offences against justice procedures, government security and government operations	7	20	247	274	977	24 527	25 504
Miscellaneous offences	12	25	258	295	734	13 054	13 792
<b>All offence categories(b)</b>	<b>1 051</b>	<b>1 375</b>	<b>12 578</b>	<b>15 004</b>	<b>18 787</b>	<b>447 863</b>	<b>466 661</b>

(a) Includes defendants adjudicated n.f.d. (b) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

## Defendants proven guilty – principal sentence

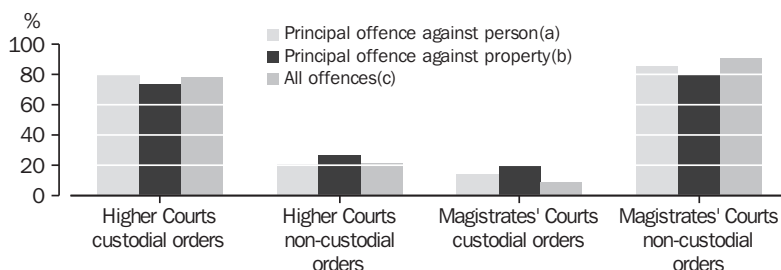
Defendants proven guilty in the Higher Courts were more likely to receive custodial orders (i.e. custody in a correctional institution or the community or fully suspended sentences) compared with those in the Magistrates' Court (78% and 9% respectively) (graph 11.34). Acts of a more serious nature are usually dealt with in a Higher Court and are, therefore, far more likely to incur a custodial sentence.

Defendants proven guilty in the Higher Courts incurred a higher proportion of custodial orders (including custody in corrections, custody in the community and fully suspended sentences) than non-custodial orders for most offences.

Defendants proven guilty in the Higher Courts for Homicide and related offences; Robbery, extortion and related offences; and Sexual assault and related offences incurred the highest proportion of custodial orders to be served in corrections or the community (87%, 79% and 72% respectively). Defendants proven guilty for Public order offences and Property damage and environmental pollution offences in the Higher Courts incurred the highest proportion of non-custodial sentences (46% and 39% respectively).

Defendants proven guilty in the Magistrates' Courts predominantly received non-custodial sentences for all offences except those in the categories of Robbery, extortion and related offences (51%) and Unlawful entry with intent/burglary, break and enter (51%) (table 11.35).

**11.34 DEFENDANTS PROVEN GUILTY, Principal offence by principal sentence and court level — 2003-04**



(a) Principal offences against the person includes Divisions 1–5 of the ASOC. (b) Principal offences against property include Divisions 7–9 and 12 of the ASOC. (c) Other principal offence includes Divisions 6, 10, 11 and 13–16.

Source: *Criminal Courts, Australia, 2003–04* (4513.0).

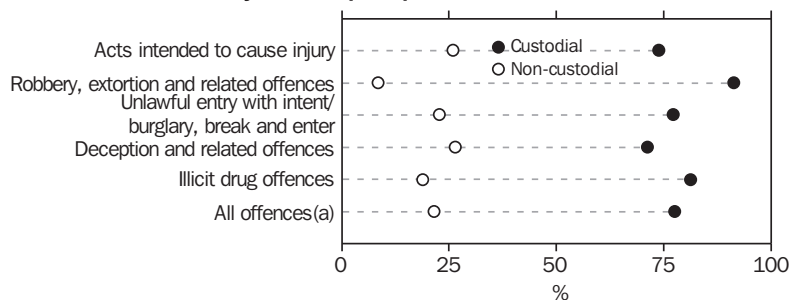
### 11.35 DEFENDANTS PROVEN GUILTY, Principal offence by court level and principal sentence — 2003–04

ASOC Division(a)	Higher Courts				Magistrates' Courts			
	Custody in corrections/ community	Fully suspended sentences	Non-custodial orders	Total(b)(c)	Custodial orders	Monetary orders	Non-custodial –other(d)	Total(c)
NUMBER								
Homicide and related offences	304	39	6	349	23	18	36	78
Acts intended to cause injury	1 591	519	740	2 857	7 321	11 877	10 901	30 230
Sexual assault and related offences	869	187	155	1 214	318	131	205	673
Dangerous or negligent acts endangering persons	278	78	106	462	1 622	27 864	3 333	32 838
Abduction and related offences	70	13	21	104	7	7	16	31
Robbery, extortion and related offences	1 256	196	135	1 590	161	30	110	313
Unlawful entry with intent/burglary, break and enter	1 384	314	498	2 196	3 750	1 270	2 256	7 315
Theft and related offences	350	168	249	770	6 734	19 581	10 909	37 483
Deception and related offences	539	224	283	1 071	2 877	8 870	4 651	16 449
Illicit drug offences	1 175	496	388	2 059	2 506	20 313	5 218	28 095
Weapons and explosives offences	45	12	9	66	640	4 339	1 194	6 213
Property damage and environmental pollution	146	76	141	363	971	8 215	3 206	12 450
Public order offences	74	34	95	206	1 167	28 126	11 661	41 241
Road traffic and motor vehicle regulatory offences	—	—	4	4	8 512	165 786	21 630	196 503
Offences against justice procedures, government security and operations	125	72	69	266	2 284	17 213	4 884	24 527
Miscellaneous offences	148	34	87	283	691	9 738	2 519	13 054
<b>All offence categories(e)</b>	<b>8 354</b>	<b>2 462</b>	<b>2 986</b>	<b>13 945</b>	<b>39 638</b>	<b>323 543</b>	<b>82 784</b>	<b>447 863</b>
PROPORTION (%)								
Homicide and related offences	87.1	11.2	1.7	100.0	29.5	23.1	46.2	100.0
Acts intended to cause injury	55.7	18.2	25.9	100.0	24.2	39.3	36.1	100.0
Sexual assault and related offences	71.6	15.4	12.8	100.0	47.3	19.5	30.5	100.0
Dangerous or negligent acts endangering persons	60.2	16.9	22.9	100.0	4.9	84.9	10.1	100.0
Abduction and related offences	67.3	12.5	20.2	100.0	22.6	22.6	51.6	100.0
Robbery, extortion and related offences	79.0	12.3	8.5	100.0	51.4	9.6	35.1	100.0
Unlawful entry with intent/burglary, break and enter	63.0	14.3	22.7	100.0	51.3	17.4	30.8	100.0
Theft and related offences	45.5	21.8	32.3	100.0	18.0	52.2	29.1	100.0
Deception and related offences	50.3	20.9	26.4	100.0	17.5	53.9	28.3	100.0
Illicit drug offences	57.1	24.1	18.8	100.0	8.9	72.3	18.6	100.0
Weapons and explosives offences	68.2	18.2	13.6	100.0	10.3	69.8	19.2	100.0
Property damage and environmental pollution	40.2	20.9	38.8	100.0	7.8	66.0	25.8	100.0
Public order offences	35.9	16.5	46.1	100.0	2.8	68.2	28.3	100.0
Road traffic and motor vehicle regulatory offences	—	—	100.0	100.0	4.3	84.4	11.0	100.0
Offences against justice procedures, government security and operations	47.0	27.1	25.9	100.0	9.3	70.2	19.9	100.0
Miscellaneous offences	52.3	12.0	30.7	100.0	5.3	74.6	19.3	100.0
<b>All offence categories(d)</b>	<b>59.9</b>	<b>17.7</b>	<b>21.4</b>	<b>100.0</b>	<b>8.9</b>	<b>72.2</b>	<b>18.5</b>	<b>100.0</b>

(a) Australian Standard Offence Classification. (b) Includes custodial orders not further defined. (c) Includes defendants for whom a principal sentence is unknown. (d) Includes other non-custodial orders excluding monetary orders. (e) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

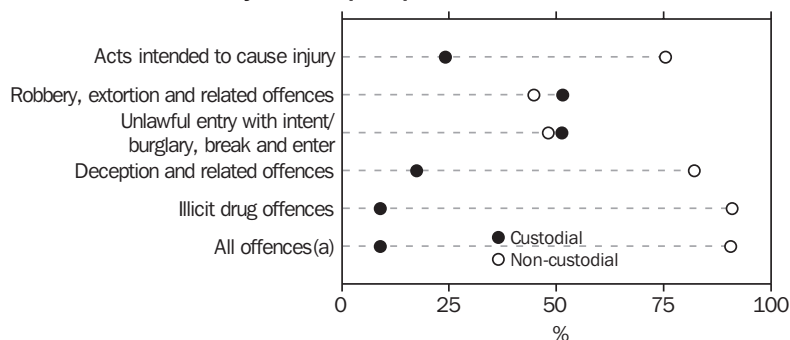
**11.36 HIGHER COURTS DEFENDANTS PROVEN GUILTY, Selected principal offences by selected principal sentences — 2003–04**



(a) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

**11.37 MAGISTRATES' COURTS DEFENDANTS PROVEN GUILTY, Selected principal offences by selected principal sentences — 2003–04**



(a) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2003–04 (4513.0)*.

## Corrective services

Corrective services agencies are responsible for administering those penalties handed down by the criminal courts that require some form of supervision or custody of the offender. This may include imprisonment on either a full-time or part-time basis, community service and other forms of supervised work, home detention, or good behaviour bonds under supervision. Most people for whom corrective services have responsibility have received a sentence from a criminal court. Corrective service agencies may also be responsible for people prior to sentencing. Unsentenced people may be held on remand in correctional facilities or be subject to supervised bail or similar community-based court orders.

All states and territories operate prisons and other types of corrective services. Separate provisions exist in each state and territory for dealing with juvenile offenders. The Australian Government does not operate any prisons or other corrective services, as federal offenders (persons convicted of offences under Commonwealth laws) are supervised by state or territory agencies for correctional purposes. The majority of convicted adult prisoners from the Australian Capital Territory serve their sentences in New South Wales prisons, but local provision is made for the custody of unsentenced prisoners and periodic detainees, and for those under the supervision of community corrections (e.g. probation and parole).

In 2003–04, of the 121 custodial facilities in Australia 10 were privately operated. Custodial facilities include: prisons, community custody centres, periodic detention centres and court-cell centres (under the responsibility of corrective services).

Corrective services oversee prisons, periodic detention and community-based corrections. Community-based corrections includes restricted movement, reparation (fine option and community service) and supervision (parole, bail and sentenced probation).

At March 2005, just over 77,000 people were serving either a custodial or community-based order in Australia (table 11.38). Persons in full-time custody comprised 31% of the total, while persons serving a community-based order comprised 68% of the total.

## Prisoners

The National Prisoner Census, conducted annually on the night of 30 June, counts all people who are in the legal custody of adult corrective services, including periodic detainees in New South Wales and the Australian Capital Territory. At any given point in time, most prisoners are serving long sentences for relatively serious offences, but the flow of offenders in and out of prisons consists primarily of people serving short sentences for less serious offences.

The total prison population on 30 June 2004 was 24,171 (table 11.39). New South Wales had the highest proportion of prisoners (39%), followed by Queensland (22%).

### 11.38 PERSONS IN CUSTODY AND COMMUNITY-BASED PROGRAMS — March quarter 2005

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	ACT in ACT(b)	ACT in NSW(a)	ACT total	Aust.(a)
<b>PRISONERS IN FULL-TIME CUSTODY(c)</b>											
Males	8 306	3 278	4 952	1 446	3 182	492	772	64	106	170	22 491
Females	633	257	353	90	271	28	26	3	6	8	1 660
Persons	8 939	3 535	5 305	1 536	3 453	520	798	67	112	178	24 152
<b>PERSONS IN PERIODIC DETENTION(c)</b>											
Males	716	..	..	..	..	..	..	93	..	93	810
Females	82	..	..	..	..	..	..	5	..	5	86
Persons	798	..	..	..	..	..	..	98	..	98	896
<b>PERSONS WITH COMMUNITY-BASED CORRECTIONS ORDERS(d)</b>											
Males	15 147	6 700	9 103	4 762	4 274	823	945	960	..	960	42 714
Females	2 654	1 474	2 458	1 062	1 246	208	140	175	..	175	9 417
Persons(e)	17 865	8 187	11 561	5 841	5 520	1 032	1 086	1 135	..	1 135	52 227
<b>TOTAL PERSONS UNDER CORRECTIVE SERVICES AUTHORITY</b>											
Males	24 169	9 978	14 055	6 208	7 456	1 317	1 717	1 117	106	1 223	66 015
Females	3 369	1 731	2 811	1 152	1 517	236	166	183	6	188	11 163
<b>Persons(e)</b>	<b>27 538</b>	<b>11 722</b>	<b>16 866</b>	<b>7 360</b>	<b>8 973</b>	<b>1 553</b>	<b>1 883</b>	<b>1 300</b>	<b>112</b>	<b>1 411</b>	<b>77 275</b>

(a) Data for NSW include ACT prisoners held in NSW prisons. The ACT in NSW figures are a subset of NSW figures and are not separately counted in the Australian totals. (b) Refers to unsentenced persons in ACT prison custody and may include some sentenced fine default only prisoners. (c) Data for persons in full-time custody and periodic detention is collected as average daily. (d) Average figures for the first day of each month in the quarter. (e) Includes persons whose sex is unknown.

Source: Corrective Services, Australia, March Quarter 2005 (4512.0).

There were 22,499 male prisoners at 30 June 2004, comprising 93% of the total prisoner population (table 11.40). The median age of prisoners was 32 years for both males and females. The majority (53% or 12,783) of prisoners were young adult males aged 20–34 years (graph 11.40).

There were 5,048 Indigenous prisoners (21% of the prisoner population) at 30 June 2004. Over the past decade, Indigenous prisoners have accounted for an increasing proportion of the total prisoner population (graph 11.41).

Unsentenced prisoners include prisoners awaiting a court hearing or trial and convicted prisoners awaiting sentencing. At 30 June 2004, one in five (20%) of the total prisoner population were unsentenced prisoners. Over the past ten years, unsentenced prisoners have accounted for an increasing number and proportion of the total prisoner population. The proportion of prisoners who were unsentenced increased from 12% in 1994 to 20% in 2004 (graph 11.42).

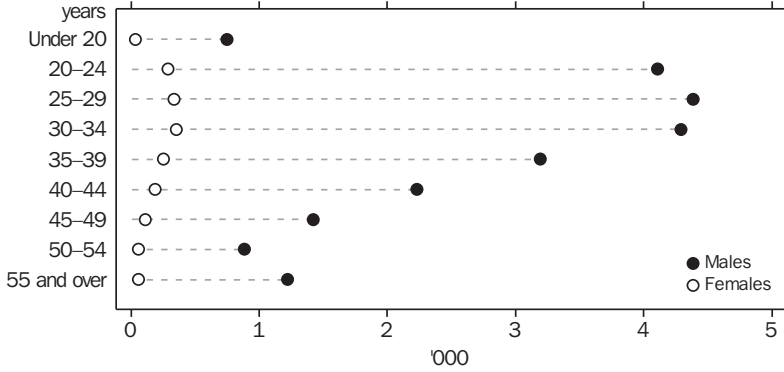
**11.39 PRISONERS, By states and territories — 30 June 2004**

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	ACT in ACT	ACT in NSW(a)	ACT total	Aust.(b)
NUMBER											
<b>All prisoners</b>	<b>9 329</b>	<b>3 624</b>	<b>5 240</b>	<b>1 485</b>	<b>3 169</b>	<b>447</b>	<b>717</b>	<b>160</b>	<b>118</b>	<b>278</b>	<b>24 171</b>
Males	8 671	3 380	4 881	1 393	2 900	425	701	148	111	259	22 499
Females	658	244	359	92	269	22	16	12	7	19	1 672
Indigenous	1 576	186	1 195	249	1 217	59	556	10	16	26	5 048
Non-Indigenous	7 629	3 438	3 989	1 069	1 952	388	161	150	102	252	18 776
Unknown	124	—	56	167	—	—	—	—	—	—	347
Sentenced	7 458	3 010	4 079	970	2 668	379	587	85	118	203	19 236
Unsentenced	1 871	614	1 161	515	501	68	130	75	—	75	4 935
PROPORTION (%)											
All prisoners	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Males	92.9	93.3	93.1	93.8	91.5	95.1	97.8	92.5	94.1	93.2	93.1
Females	7.1	6.7	6.9	6.2	8.5	4.9	2.2	7.5	5.9	6.8	6.9
Indigenous	16.9	5.1	22.8	16.8	38.4	13.2	77.5	6.3	13.6	9.4	20.9
Non-Indigenous	81.8	94.9	76.1	72.0	61.6	86.6	22.5	93.8	86.4	90.6	77.7
Unknown	1.3	—	1.1	11.2	—	—	—	—	—	—	1.4
Sentenced	79.9	83.1	77.8	65.3	84.2	84.8	81.9	53.1	100.0	73.0	79.6
Unsentenced	20.1	16.9	22.2	34.7	15.8	15.2	18.1	46.9	—	27.0	20.4

(a) The majority of full-time prisoners sentenced in the ACT are held in NSW prisons. (b) The ACT in NSW figures are a subset of the NSW figures, and are not separately counted in the Australian totals.

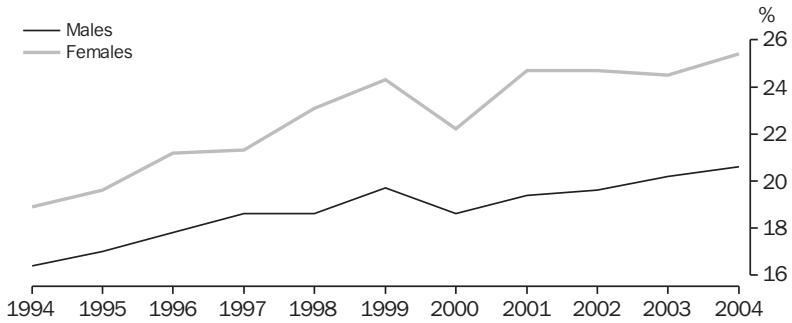
Source: *Prisoners in Australia, 2004 (4517.0)*.

**11.40 PRISONERS, By age group — 30 June 2004**



Source: *Prisoners in Australia, 2004* (4517.0).

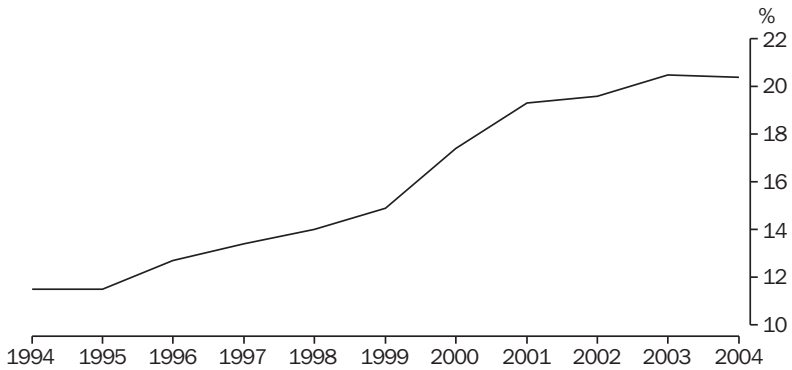
**11.41 PROPORTION OF PRISONERS WHO ARE INDIGENOUS(a)**



(a) Indigenous male prisoners as a proportion of all male prisoners and Indigenous female prisoners as a proportion of all female prisoners.

Source: *Prisoners in Australia, 2004* (4517.0).

**11.42 PROPORTION OF UNSENTENCED PRISONERS**



Source: *Prisoners in Australia, 2004* (4517.0).



## Most serious offence

At 30 June 2004, almost half (47%) of all sentenced prisoners were convicted with a most serious offence involving violence or the threat of violence, including homicide and related offences (10%), sexual assault and related offences (11%), acts intended to cause injury (assault) (14%) and robbery/extortion (12%) (table 11.43). A further 13% of sentenced prisoners had a most serious offence of unlawful entry with intent, and 10% were serving sentences for a most serious offence involving illicit drugs.

There were differences in the types of most serious offence for which men and women were imprisoned. The highest proportion of most serious offences for males in prison at 30 June 2004 involved acts intended to cause injury (14%), unlawful entry with intent (13%), robbery/extortion (12%), and sexual assault (12%). Illicit drug offences (15%), deception offences (13%) and acts intended to cause injury (12%) were the most frequent most serious offences for females (graph 11.44).

## Sentence length

Aggregate length of sentence is a measure of the sentences imposed on an offender, sometimes taking multiple offences into account. Average sentence length excludes prisoners who receive an indeterminate type of sentence such as 'life' as well as periodic detainee sentences. At 30 June 2004 the average aggregate sentence of all prisoners sentenced to a specific term was 4.9 years (graph 11.45). Nearly one in four sentenced prisoners (23%) had an aggregate sentence of 2–5 years, and prisoners with a sentence of 5–10 years comprised 22% of the prisoner population.

The time a prisoner is expected to serve in custody depends upon the sentence originally handed down, the system of remissions and the forms of parole available. Taking into account the earliest dates for release of sentenced prisoners, the average expected time to serve at 30 June 2004 was 3.5 years.

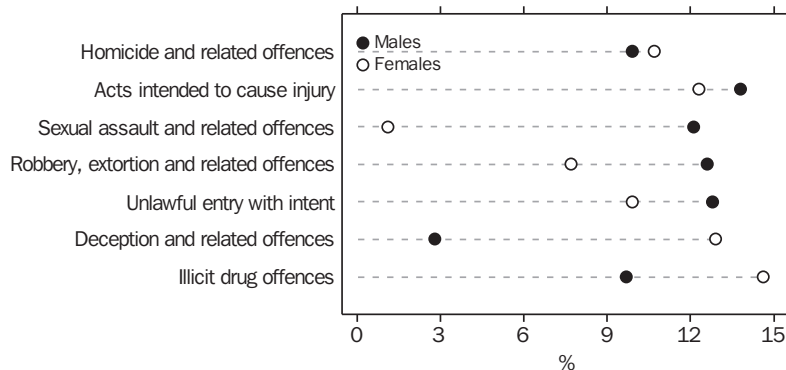
**11.43 SENTENCED PRISONERS, By most serious offence — 30 June 2004**

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	ACT in ACT	ACT in NSW(a)	ACT total	Aust.(b)
Homicide and related offences	619	368	484	126	221	49	54	—	12	12	1 921
Acts intended to cause injury	1 152	217	614	61	322	69	190	15	11	26	2 640
Sexual assault and related offences	593	362	627	121	359	58	61	n.p.	n.p.	18	2 182
Dangerous or negligent acts endangering persons	53	29	97	n.p.	98	9	15	n.p.	n.p.	5	307
Abduction and related offences	64	28	8	n.p.	14	—	3	n.p.	—	n.p.	121
Robbery, extortion and related offences	930	357	527	113	397	28	14	n.p.	n.p.	19	2 367
Unlawful entry with intent	900	388	471	139	415	56	58	7	12	19	2 434
Theft and related offences	460	340	154	38	180	22	18	15	12	27	1 227
Deception and related offences	238	103	192	64	53	15	6	n.p.	n.p.	5	674
Illicit drug offences	877	350	370	76	211	12	20	9	5	14	1 925
Weapons and explosive offences	66	13	5	4	5	6	n.p.	n.p.	—	n.p.	104
Property damage and environmental pollution	57	35	56	54	22	13	n.p.	n.p.	n.p.	n.p.	250
Public order offences	61	30	6	n.p.	24	n.p.	—	—	n.p.	n.p.	124
Road traffic and motor vehicle regulatory offences	558	105	132	21	144	13	86	14	3	17	1 073
Offences against justice procedures, government security and government operations	797	266	126	144	160	24	37	8	23	31	1 562
Miscellaneous offences	33	19	210	n.p.	43	n.p.	11	3	—	3	325
<b>Total</b>	<b>7 458</b>	<b>3 010</b>	<b>4 079</b>	<b>970</b>	<b>2 668</b>	<b>379</b>	<b>587</b>	<b>85</b>	<b>118</b>	<b>203</b>	<b>19 236</b>

(a) The majority of full-time prisoners sentenced in the ACT are held in NSW prisons. (b) The ACT in NSW figures are a subset of the NSW figures and are not separately counted in the Australian totals.

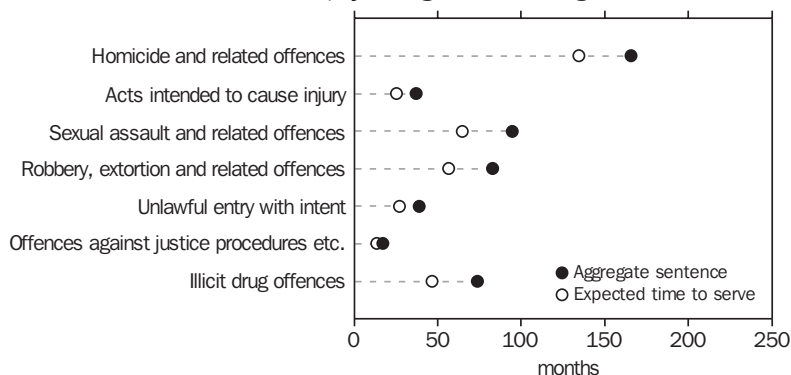
Source: *Prisoners in Australia, 2004 (4517.0)*.

#### 11.44 SENTENCED PRISONERS, By selected most serious offence — 30 June 2004



Source: *Prisoners in Australia, 2004* (4517.0).

#### 11.45 SENTENCED PRISONERS, By average sentence length — 30 June 2004



Source: *Prisoners in Australia, 2004* (4517.0).

## Community-based corrections

During the March quarter 2005 there was an average of 52,227 people in community-based corrections, with sentenced probation being the most prevalent option for all states and territories (table 11.46).

## Deaths in custody

In 1991 the Royal Commission into Aboriginal Deaths in Custody investigated the deaths of 99 Indigenous people that occurred in police or prison custody between January 1980 and

May 1989. One of the outcomes was the establishment of a National Deaths in Custody Monitoring and Research Program at the Australian Institute of Criminology.

During 2004, 67 people died in all forms of custody in Australia, one fewer than for 2003. Of the 67 deaths, 13 were of Indigenous persons (with the Indigenous status of one person still to be determined). The largest number of deaths in custody recorded since 1990 was in 1997 (105), while the largest number of deaths of Indigenous persons was in 1995 (21) (table 11.47).

### 11.46 PERSONS IN COMMUNITY-BASED CORRECTIONS(a)(b) — March quarter 2005

Type of penalty	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Community-based corrections	17 865	8 187	11 561	5 841	5 520	1 032	1 086	1 135	52 227
Restricted movement	192	20	69	336	20	..	60	4	701
Reparation									
Fine option	159	1 610	1 391	827	311	n.p.	n.p.	..	4 413
Community service	4 704	1 000	1 867	1 380	2 208	450	244	96	11 950
Supervision (compliance)									
Parole	4 092	1 482	953	946	1 315	90	144	120	9 142
Bail	240	..	..	733	229	..	4	210	1 417
Sentenced probation	10 586	4 302	7 631	2 591	3 523	517	668	827	30 645

(a) Average of figures for the first day of each month in the quarter. (b) As a person may have more than one type of order, the sum of the components may be greater than the total.

Source: *Corrective Services, Australia, March Quarter 2005 (4512.0)*.

### 11.47 DEATHS IN CUSTODY

	Police		Prison		Total(a)		
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Total
1990	5	26	5	28	10	55	65
1991	5	26	8	31	13	57	70
1992	7	24	2	34	9	58	67
1993	3	28	7	42	10	71	81
1994	3	24	11	42	14	67	81
1995	4	22	17	42	21	66	87
1996	6	23	12	40	18	64	82
1997	6	23	9	67	15	90	105
1998	6	19	9	60	16	79	95
1999	6	20	13	46	19	66	85
2000	5	20	11	53	17	74	91
2001	5	26	14	42	19	68	87
2002	6	13	8	42	14	55	69
2003	7	26	10	25	17	51	68
2004	7	21	7	32	14	53	67

(a) Includes deaths that occurred in custody other than police or prison custody (such as juvenile detention).

Source: *Australian Institute of Criminology, National Deaths in Custody database, 1990–2003*.

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## Web sites

Australian Crime Commission 2005, last viewed September 2005, <<http://www.crimecommission.gov.au>>. Responsible for criminal intelligence collections and analysis, setting national criminal intelligence priorities, conducting intelligence led investigations of criminal activity of national significance, and the exercise of coercive powers to assist intelligence operations and investigations.

Australian Federal Police 2005, last viewed September 2005, <<http://www.afp.gov.au>>. Principal law enforcement agency through which the Australian Government pursues its law enforcement interests.

Australian Institute of Criminology 2005, last viewed September 2005, <<http://www.aic.gov.au>>. Has a national focus for the study of crime and criminal justice in Australia and the dissemination of criminal justice information. The Institute draws on information supplied to it by a wide variety of sources.

Australian Law Online 2002, last viewed September 2005, <<http://www.law.gov.au>>. Gives all Australians access to Government legal information and services available nationwide.

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Home Office 2005, last viewed September 2005, <<http://www.homeoffice.gov.uk/rds>>. Government Department responsible for internal affairs in England and Wales. Crime and policing information includes policies on crime reduction and prevention as well as specific crime and justice statistics.

International Victimology 2004, last viewed September 2005, <<http://www.victimology.nl>>. Launched in 1999 as a resource for improving justice for victims of crime and abuse of power. Features two databases: Victimology Research (victimology research in progress), and Victimisation Prevention (promising international practices).

National Crime Prevention 2004, last viewed September 2005, <<http://www.ncp.gov.au>>. Formerly known as the National Campaign Against Violence and Crime, it was launched in 1997 by the Prime Minister, with the aim of preventing violence and crime and reducing fear of violence and crime in the community.

NSW Bureau of Crime Statistics and Research 2005, last viewed September 2005, <<http://www.lawlink.nsw.gov.au/bocsar1.nsf>>. The statistical and research agency within the NSW Attorney General's Department. Conducts statistical monitoring, research and evaluation and provides comprehensive statistical information on crime and criminal justice in New South Wales.

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- University of Melbourne Department of Criminology 2005, last viewed September 2005, <<http://www.criminology.unimelb.edu.au>>. The first school of criminology in Australia. Provides information on current research, and links to criminology and related resources.
- University of Western Australia Crime Research Centre 2005, last viewed September 2005, <<http://www.crc.law.uwa.edu.au>>. Coordinates and publishes comprehensive statistics on crime and justice for Western Australia. Also conducts research into various aspects of crime and criminal justice.
- US Bureau of Justice Statistics 2005, last viewed September 2005, <<http://www.ojp.usdoj.gov/bjs>>. Provides statistics on crime and victims, criminal offenders, law enforcement, prosecution, Federal justice system, courts and sentencing, corrections, the criminal records system and special topics (including drugs, firearms, homicide trends, re-entry trends and international statistics).



## CULTURE AND RECREATION

Cultural and recreational activities are important contributors to the wellbeing of individuals and communities. They take many forms including involvement in creative and performing arts, music, literature, cultural heritage, religious activities, libraries, radio, television, sports and amusements.

This chapter reviews a range of cultural and recreational activities which Australians undertake and provides a statistical summary, where available, for those activities. It also provides information on the industries providing a range of culture and recreation services in Australia, and information on religious affiliation.

Statistics have been drawn from household and industry surveys conducted by the Australian Bureau of Statistics (ABS), as well as its compilations of administrative data, such as information about government funding of heritage and arts activities. Other Australian Government organisations have also supplied data used in this chapter.

Further information on the operations of organisations referred to in this chapter, including their administrative and legislative background, may be obtained from their individual web sites, addresses of which are provided throughout and at the end of the chapter.

## Cultural and natural heritage

Australia's heritage draws on its cultural and natural environments and the history of its people.

Cultural heritage includes historic places of significance, such as: old towns, and residential and commercial buildings; Indigenous ceremonial grounds and rock art galleries; shipwrecks; streetscapes; as well as paintings, objects, books, aircraft and natural history specimens.

Increasingly, what was formerly intangible (such as traditions, customs and habits) is being recorded and documented in photographs, films, tapes and digital records – these also add to Australia's cultural heritage.

Natural heritage refers to natural features, sites or landscapes that are significant because of their ecosystems, biodiversity or geodiversity, or because of their scientific, social, aesthetic or life-support value to present and future generations of people. Extensive areas of coastline, forests, wetlands and deserts are included in national parks, nature reserves and wilderness areas. Many smaller sites are important habitats for native flora and fauna, enabling the conservation of threatened species. Many natural places are significant to Indigenous communities for cultural reasons.

Conservation of heritage places involves identifying them, assessing their values, and classifying and managing them. These functions are shared between all levels of government and their statutory authorities, with assistance from academic and professional bodies, individuals, community conservation organisations such as the national trusts, and conservation councils in each state and territory.

The Australian Government focuses on the assessment and protection of places of world and national heritage significance and on heritage under its control. The statutory provisions for national and Commonwealth heritage were inserted into the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) on 1 January 2004. The legislation establishes procedures to identify, conserve and protect places of national heritage significance, provides for the identification and management of Commonwealth heritage places, and establishes an independent expert body, the Australian Heritage Council, to advise the Minister on the listing and protection of heritage places.

The National Heritage List has been established by the legislation in order to protect places of outstanding heritage significance to Australia. The list presents and protects the places that best tell the story of the unique Australian continent, the development of the nation, and the evolution of the distinctively Australian character and national identity. The list includes natural, historic and Indigenous places. As at the end of June 2005, the public had nominated a total of 88 places for inclusion and, to this date, eleven had been listed – six historic, three Indigenous and two natural.

Another list, the Commonwealth Heritage List, specifies places of heritage value which are owned or leased by the Australian Government. Australian Government-owned places include telegraph stations, defence sites, migration centres, customs houses, lighthouses, national institutions such as Old Parliament House, memorials, islands and marine areas. In June 2004, 334 places of heritage value were named on the Commonwealth Heritage List. During 2004–05 a further 25 places were nominated for inclusion, of which three were accepted, resulting in there being 337 places on the Commonwealth Heritage List at the end of June 2005.

Other major Australian Government heritage activities include the nomination of sites for World Heritage listing, and the protection of Aboriginal and Torres Strait Islander heritage. At 30 June 2005 there were 16 Australian places on the World Heritage List.

The Register of the National Estate, accessible at <<http://www.ahc.gov.au/register>>, is a list of important natural, historic and Indigenous places throughout Australia, from local to national significance, and both publicly and privately owned. No additional places were entered in the Register of the National Estate during 2004–05. The number of places on the Register, by state or territory and type of place, is shown in table 12.1.

All states and territories maintain lists or registers of heritage places that have particular importance to the people of the state or territory. There is also a register of historic shipwrecks in Australian waters, and heritage registers or lists are maintained by many local governments and the National Trust.

The Australian Heritage Directory, at <<http://www.heritage.gov.au>>, provides public access to the National Heritage List, Commonwealth Heritage List, World Heritage List, Register of the National Estate, state and territory historic Heritage Lists, and the Australian National Shipwreck Database.



## 12.1 PLACES ON THE REGISTER OF THE NATIONAL ESTATE — JUNE 2005

	Indigenous places	Historic places	Natural places	Total
New South Wales	221	3 136	488	3 845
Victoria	111	2 431	254	2 796
Queensland	155	739	324	1 218
South Australia	153	1 205	391	1 749
Western Australia	74	972	285	1 331
Tasmania	66	1 210	263	1 539
Northern Territory	107	157	68	332
Australian Capital Territory(a)	30	193	30	253
External territories	—	42	24	66
<b>Total</b>	<b>917</b>	<b>10 088</b>	<b>2 128</b>	<b>13 129</b>

(a) Includes Jervis Bay.

Source: Department of the Environment and Heritage.

### Collaborative Australian Protected Areas Database

The Collaborative Australian Protected Areas Database (CAPAD) (<<http://www.deh.gov.au/parks/nrs/capad>>) records the area of conservation reserves in each state and territory, using the World Conservation Union (IUCN) classification system of protected areas (<<http://www.deh.gov.au/parks/iucn.html>>). The classification system comprises seven categories based on the main (or primary) management intent of protected areas as follows:

- IA – Strict nature reserve: managed mainly for science
- IB – Wilderness area: wilderness protection

- II – National park: ecosystem conservation and recreation
- III – National monument: conservation of specific natural features
- IV – Habitat/species management area: conservation through management intervention
- V – Protected landscape/seascape: landscape/seascape conservation and recreation
- VI – Managed resource protected areas: sustainable use of natural ecosystems.

Table 12.2 shows the amount of protected land in each category by state and territory. Most of the land recorded in CAPAD is public land.

## 12.2 PROTECTED AREAS, By state and territory — October 2004

	IUCN category						Total	
	IA	IB	II	III	IV	V		VI
AREA ('000 ha)								
New South Wales	775	1 682	3 239	5	208	4	222	6 134
Victoria	263	202	2 849	65	77	139	151	3 746
Queensland	37	—	6 971	44	84	—	1 483	8 619
South Australia	6 248	2 216	2 643	758	1 985	506	10 988	25 344
Western Australia	10 821	—	6 148	74	15	1	10 340	27 400
Tasmania	24	—	1 495	18	187	90	777	2 590
Northern Territory	44	—	6 204	7	263	181	234	6 932
Australian Capital Territory	—	—	129	—	—	—	—	129
<b>Australia</b>	<b>18 213</b>	<b>4 100</b>	<b>29 678</b>	<b>971</b>	<b>2 819</b>	<b>920</b>	<b>24 196</b>	<b>80 895</b>
PROPORTION (%)								
New South Wales	1.0	2.1	4.0	—	0.3	—	0.3	7.7
Victoria	1.2	0.9	12.5	0.3	0.3	0.6	0.7	16.5
Queensland	—	—	4.0	—	—	—	0.9	5.0
South Australia	6.3	2.3	2.7	0.8	2.0	0.5	11.2	25.8
Western Australia	4.3	—	2.4	—	—	—	4.1	10.8
Tasmania	0.4	—	21.9	0.3	2.7	1.3	11.4	37.9
Northern Territory	—	—	4.6	—	0.2	0.1	0.2	5.1
Australian Capital Territory	—	—	54.7	—	—	—	—	54.8
<b>Australia</b>	<b>2.4</b>	<b>0.5</b>	<b>3.9</b>	<b>0.1</b>	<b>0.4</b>	<b>0.1</b>	<b>3.1</b>	<b>10.5</b>

Source: Cummings, B, Department of the Environment and Heritage, 2005, pers. comm., 26 July 2005.

## National parks

National parks and other protected areas are areas of land and/or sea especially dedicated to the protection of biodiversity and other natural and cultural resources. They are established under Commonwealth, state or territory laws or other legal means. All governments participate in the development of a comprehensive, adequate and representative national reserve system as part of Australia's obligation under the United Nations Biodiversity Convention established in 1993. Most national parks and other protected areas in Australia are declared and managed by state and territory governments although, during the last decade, some protected areas have been established which are managed by conservation or other groups. Declaration and management of Indigenous protected areas – Indigenous-owned land that is managed to protect its natural and associated cultural values – commenced in 1998. The Australian Government declares and manages parks and reserves on land owned or leased by the Commonwealth, in Commonwealth waters and on Indigenous land leased to the Commonwealth.

Although there are nearly 50 different protection designations in Australia, all protected areas are classified into one or more of the IUCN protected area management categories (<<http://www.deh.gov.au/parks/iucn.html>>), the most common being 'national park' and 'nature reserve'. The types of areas managed include: strictly protected areas managed mainly for science with very limited public access; areas where recreation is encouraged, but where resource development adverse to conservation of the environment is not; and multiple use areas

where ecologically sustainable resource utilisation, recreation and nature conservation can coexist. Table 12.2 shows the total area protected for each IUCN category for each state and territory in Australia.

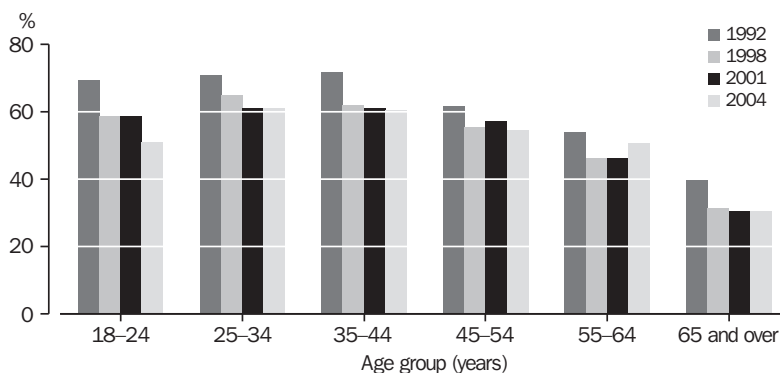
Lists and descriptions of the parks and reserves managed by Australian, state and territory governments can be accessed using links on the Parks and Reserves page of the Department of Environment and Heritage web site at <<http://www.deh.gov.au/parks>>.

## Visits to World Heritage areas, national and state parks

The ABS Environmental Attitudes and Practices Survey is a household survey collecting data on several environmental topics, including visits to World Heritage areas, and national and state parks. The most recent survey found that people aged 25–34 years or 35–44 years were the most likely to have visited these areas and parks in the 12 months prior to March 2004. During that period, for both age groups, just over 60% of people visited one of these areas compared with 52% for the adult population as a whole. With a visit rate of 31%, people aged 65 years or over were the least likely to have visited these areas.

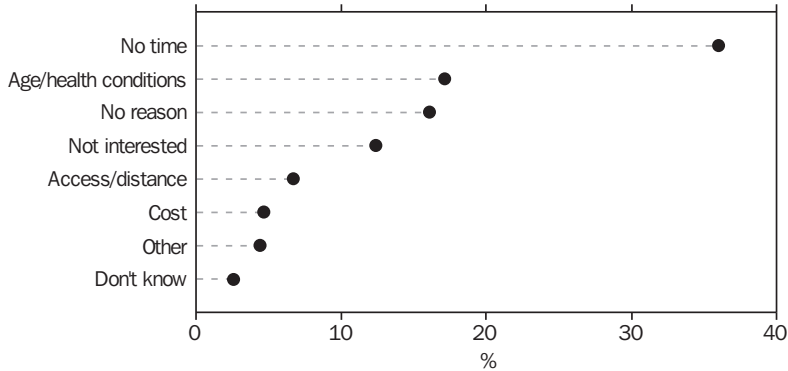
Graph 12.3 shows visit rates have tended to decline between 1992 and 2004 within each age group. For the 2004 survey, the overall adult visit rate dropped to 52% from the 54% recorded for 2001. The age group contributing most to the overall fall in the visit rate was the 18–24 year-olds. For this age group, the visit rate declined from 59% for the 2001 survey to 51% for 2004.

**12.3 VISITS TO WORLD HERITAGE AREAS, National and state parks**



Source: *Environmental Issues: People's Views and Practices, March 2004 (4602.0)*.

## 12.4 MAIN REASON FOR NOT VISITING A WORLD HERITAGE AREA OR PARK — 2004



Source: *Environmental Issues: People's Views and Practices, March 2004 (4602.0)*.

Of those people who had not visited a World Heritage area, national or state park in the 12 months prior to March 2004, 36% cited lack of time as the main reason for this. Lack of time was the most common main reason for not visiting for all age groups except people aged 65 years and over, for whom age or health conditions was the most common main reason. People aged 25–34 years and people aged 35–44 years had the highest incidences of lack of time being the most common main reason (both 49%).

Inability to visit because of age or health conditions was the second most common main reason for not visiting (17% overall, and 53% of people aged 65 years and over).

## Museums and art galleries

Museums (including art galleries) engage in the acquisition, collection management, conservation, interpretation, communication and exhibition of heritage objects and artefacts. Heritage objects include those that inform people about natural science, applied science, history, transport, art and other culture.

Australian Museums and Galleries On Line (AMOL) – formerly known as Australian Museums On Line – provides access to a database of information on national, state, territory, regional and local museums at <<http://www.amol.org.au>>. AMOL includes a searchable database of objects from collecting institutions across Australia. AMOL is being replaced by the Collections Australia Network (CAN) at <<http://www.collectionsaustralia.net>>. It is intended that CAN's search capabilities and on-line resources will eclipse those of its predecessor, and that it will increase collaboration in the on-line environment between organisations spanning galleries, libraries, museums and archives.

## Museum attendance

The 2002 Survey of Attendance at Selected Cultural Venues and Events showed 24.9% of the population aged 18 years and over (3.6 million people) had visited an art gallery at least once in the previous 12 months (table 12.5). This is higher than the attendance rate of 20.9% (2.9 million people) when the survey was run in 1999. The attendance rate at museums (other than art galleries) was 25.0% (3.6 million people) in 2002 compared with 19.6% (2.8 million people) in 1999. This large rise in attendance can be partly explained by the temporary closure of some large museums during the 1999 survey period.

### 12.5 ATTENDANCE AT MUSEUMS(a) — 2002

	Attendance rate(b)	
	Art galleries %	Museums %
Males	22.0	24.6
Females	27.7	25.4
Persons	24.9	25.0
Age group (years)		
18–24	23.8	22.3
25–34	23.9	27.0
35–44	25.8	29.1
45–54	27.8	25.3
55–64	28.0	25.7
65 and over	19.7	18.3
Birthplace		
Australia	24.8	24.9
Main English-speaking countries	29.0	29.6
Other countries	22.6	22.6

(a) Attendance at least once in the 12 months prior to interview in 2002. (b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Attendance at Selected Cultural Venues and Events, Australia, 2002 (4114.0)*.

## Museums industry

The ABS conducted a survey, in respect of 2003–04, of museums which were open to the general public during that period. The scope of this survey included: historic trusts and sites; historic societies with a collection; house museums; social and natural history museums; archives (excluding the national and state archives); art galleries (excluding commercial art galleries); keeping places and cultural centres; outdoor museums; science museums; maritime museums; military museums and transport museums.

At the end of June 2004 there were 1,329 museum locations operating in Australia, containing a total of 54.9 million museum objects and artworks (table 12.6). Almost half (49.1%) of these locations were operated without employees, relying on the assistance of 9,382 volunteers. Volunteers were also important to museums operating with employees. The 676 museum locations with employees, employed a total of 7,624 people and were assisted by 11,061 volunteers.

The 74 museum locations with employment of 100 or more people averaged 159,800 admissions each in 2003–04. This compares with an average of 41,300 admissions for museum locations with employment of 20–99, and 26,000 admissions for museum locations with employment of 1–19. Museum locations which were operated solely by volunteers had an average of 3,200 admissions. Of total museum admissions in 2003–04, 37.9% were to museum locations with employment of 100 or more.

Of the 54.9 million museum objects and artworks held by museums at the end of June 2004, only 9.7% were on display. The large majority (84.0%)

of all museum objects and artworks were held by museums with employment of 20 or more. These museums displayed only 2.9% of their museum objects and artworks.

More information from the ABS survey of museums can be found in the *Services Industries* chapter.

## Botanic gardens, zoological parks and aquariums

### Botanic gardens and herbaria

Botanic gardens are scientific and cultural institutions established to collect, study, exchange and display plants for research and for the education and enjoyment of the public. Some botanic gardens have an associated herbarium, which is a scientific collection of dried preserved plant specimens used for research and the accurate classification and identification of plants and plant material. Many recently established gardens operate under the auspices of local government or community groups and have a native plant and conservation focus.

There are major botanic gardens in each capital city, and these are managed by the respective state or territory governments, with the exception of those in Brisbane (which are managed by the Brisbane City Council) and in Canberra (which are managed by the Australian Government). The Booderee Botanic Gardens at Jervis Bay are managed by the Australian Government on behalf of the traditional Aboriginal owners of the land, the Wreck Bay Aboriginal Community Council, under arrangements in place since December 1995.

**12.6 MUSEUMS — 2003–04**

	Units	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Museum/ gallery locations at 30 June	no.	413	286	232	127	153	^61	35	23	1 329
Museum objects/ artworks at 30 June	'000	16 680.3	20 704.0	6 808.0	4 424.4	2 832.7	1 140.5	1 272.1	1 053.7	54 915.5
Special exhibitions held	no.	^1 198	^1 028	^496	^191	^188	^142	62	100	3 405
Admissions										
Paid	'000	^3 883.8	3 203.5	^972.3	446.2	875.7	*438.5	*189.7	549.9	10 559.5
Free	'000	^5 817.2	*6 588.1	1 760.6	1 575.7	1 209.7	397.6	416.2	2 865.5	^20 630.6
Total	'000	^9 701.0	*9 791.6	2 732.8	2 022.0	2 085.4	*836.1	^606.0	3 415.3	^31 190.1
Employment at 30 June	no.	2 542	2 011	816	316	627	170	^149	993	7 624
Volunteers during the month of June	no.	^7 853	^4 455	^2 793	^1 595	^1 729	^1 254	154	611	20 443
Income	\$m	288.3	272.6	70.1	33.7	69.4	12.8	11.9	160.6	919.4
Expenses	\$m	245.7	254.3	66.4	32.6	56.9	11.0	7.3	136.1	810.3

Source: *Museums, Australia, 2003–04 (8560.0)*.

Information about the botanic gardens and herbaria in Australia can be obtained from the web sites: Australian National Botanic Gardens at <<http://www.anbg.gov.au>>, Council of Heads of Australian Botanic Gardens at <<http://www.chabg.gov.au>>, Directory of Australian Botanic Gardens and Arboreta at <<http://www.chabg.gov.au/bg-dir>>, and Resources of Australian Herbaria at <<http://www.chah.gov.au/resources>>.

Australia's Virtual Herbarium (AVH) is an on-line botanical information resource accessible via the web, which links the databases of the eight major herbaria. More than 75% of the specimens housed in Australian herbaria have been 'databased' to date, and it is anticipated that by the end of 2006 the AVH will provide on-line access to information and locational data for over six million plant specimens. The Australia's Virtual Herbarium web site address is <<http://www.chah.gov.au/avh>>.

### Attendance at botanic gardens

The 2002 Survey of Attendance at Selected Cultural Venues and Events showed 41.6% of the population aged 18 years and over (6.0 million people) visited a botanic garden at least once in the 12 months prior to interview (table 12.7). In 1999 the attendance rate by adults was 36.4% (5.1 million people).

#### 12.7 ATTENDANCE AT BOTANIC GARDENS(a) — 2002

	Attendance rate(b) %
Males	40.0
Females	43.2
Persons	41.6
Age group (years)	
18–24	42.6
25–34	45.5
35–44	43.4
45–54	41.4
55–64	42.2
65 and over	33.1
Birthplace	
Australia	40.4
Main English-speaking countries	48.1
Other countries	42.8

(a) Attendance at least once in the 12 months prior to interview in 2002. (b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Attendance at Selected Cultural Venues and Events, Australia, 2002 (4114.0)*.

The ABS Botanic Gardens Census, which was a census of employing organisations with the operation of botanic gardens as their main activity, showed that there were 11.8 million visits to botanic gardens during 1999–2000. This figure includes visits by Australian adults and children, and visits by people from outside Australia, as well as multiple visits by individuals. The six largest botanic gardens (i.e. those employing 50 or more persons) accounted for 61.9% of these visits at an average of 332,000 visits per location.

### Botanic gardens industry

The ABS Botanic Gardens Census in respect of 1999–2000 found that there were 72 employing organisations operating botanic gardens at 123 locations at the end of June 2000. The operations of these organisations covered 3,664 hectares (ha), comprising 3,050 ha of botanic gardens and 614 ha of arboreta. The organisations employed 1,250 people at the end of June 2000 and utilised the services of 1,991 volunteers during the month of June. Many of the smaller botanic gardens had few staff (if any), and were particularly reliant on volunteers for their operation. The 54 smaller organisations, those employing less than ten people, provided paid employment for a total of 156 people at the end of June 2000. They were assisted by 871 volunteers during that month.

### Zoological parks and aquariums

Zoological parks and aquariums (i.e. animal, fauna, bird and reptile parks, aquariums, aviaries, butterfly houses and dolphinariums) are primarily engaged in the breeding, preservation, study and display of native and/or exotic fauna in captivity, and are accessible to the general public.

There are zoological parks and aquariums throughout Australia. As well as the four traditional zoos in Sydney, Melbourne, Adelaide and Perth, there are numerous wildlife parks and sanctuaries, some of which are associated with urban zoos and others which are privately owned. Some of the better known zoological parks and sanctuaries are Taronga Park (Sydney), Healesville Sanctuary (60 kilometres (km) from Melbourne), the Western Plains Zoo (Dubbo), Victoria's Open Range Zoo at Werribee (a Melbourne suburb), The Territory Wildlife Park (Darwin), Monarto Zoological Park (70 km from Adelaide), Lone Pine Koala Sanctuary (Brisbane) and Currumbin Sanctuary (Gold Coast).

More information about Australian zoological parks and aquariums can be obtained from the 'Zoos in Australia' page on the Australian

Government's culture and recreation web site, <<http://www.cultureandrecreation.gov.au/articles/zoo>>.

### Attendance at zoological parks and aquariums

The 2002 Survey of Attendance at Selected Cultural Venues and Events found that 40.0% of the Australian population aged 18 years and over (5.8 million people) visited a zoological park or aquarium during the 12 months prior to interview (table 12.8). The highest adult attendance rate was the 49.8% recorded for the Australian Capital Territory, while Tasmania had the lowest rate at 29.6%.

An ABS survey in 1999 found that the attendance rate by adults at zoological parks and aquariums for Australia overall was 33.8% (4.8 million people).

#### 12.8 ATTENDANCE AT ZOOLOGICAL PARKS AND AQUARIUMS(a) — 2002

	Attendance rate(b) %
Males	38.3
Females	41.8
Persons	40.0
Age group (years)	
18–24	43.2
25–34	51.9
35–44	49.1
45–54	36.7
55–64	32.8
65 and over	20.1
Birthplace	
Australia	39.9
Main English-speaking countries	46.2
Other countries	36.7

(a) Attendance at least once in the 12 months prior to interview in 2002. (b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Attendance at Selected Cultural Venues and Events, Australia, 2002 (4114.0)*.

## Libraries and archives

### Libraries

The main activities of libraries are the acquisition, collection, organisation, preservation and loan of library materials such as books, magazines, manuscripts, musical scores, maps and prints.

The National Library of Australia (NLA) is the country's largest reference library. The NLA's role is to ensure that documentary resources of national significance relating to Australia and the Australian people, as well as significant non-Australian library materials, are collected, preserved and made accessible either through the Library itself or through collaborative arrangements with other libraries and information providers.

Libraries are increasingly making use of the Internet as a way of enhancing access to information, and the NLA site at <<http://www.nla.gov.au>> is an example of this principle at work. It provides on-line visitors with access to information about more than 5,400 Australian libraries, their collections and services via the Australian Libraries Gateway at <<http://www.nla.gov.au/libraries>>. Over 1,500 of these libraries are public libraries, mainly operated by local governments. Others include school and university libraries, parliamentary libraries, corporate or business libraries, family history libraries and subject-specific libraries.

### Public Lending Right (PLR)

PLR is a cultural program of the Australian Government, first established in 1974 and currently administered by the Department of Communications, Information Technology and the Arts (DCITA). It makes payments to eligible Australian book creators and publishers on the basis that income is lost as a result of the availability of their books for loan in public lending libraries. PLR also supports the enrichment of Australian culture by encouraging the growth and development of Australian writing and publishing. Australia is one of 20 countries operating a PLR program.

Some 8,737 book creators and publishers received PLR payments in 2004–05, totalling about \$6.5 million (m). The rates of payment under the current PLR scheme are \$1.40 per copy of each eligible book for creators and 35 cents per copy of each eligible book for publishers.

### Educational Lending Right (ELR)

ELR complements PLR and is another cultural program of the Australian Government administered by DCITA. Commencing in 2000–01 as part of the Government's Book Industry Assistance Plan, ELR was extended in 2003–04 to continue for another four years until 2007–08. An annual survey of the book stock of a representative sample of educational lending libraries (including school, technical and further



education (TAFE), and university libraries) is used to determine payments. In 2004–05, 8,995 book creators and publishers received ELR payments totalling about \$10.4m.

Further information on the two lending right programs can be obtained from the web site, <<http://www.dcita.gov.au>> under the heading 'Grants and Funding'.

### Library attendance

The 2002 Survey of Attendance at Selected Cultural Venues and Events found that 42.1% of persons aged 18 years and over (6.1 million) visited a national, state or local government library at least once in the 12 months prior to interview (table 12.9). In 1999 the adult attendance rate for libraries was 36.8% (5.2 million persons).

#### 12.9 ATTENDANCE AT LIBRARIES(a)(b) — 2002

	Attendance rate(c) %
Males	34.5
Females	49.6
Persons	42.1
Age group (years)	
18–24	47.2
25–34	42.0
35–44	47.4
45–54	41.9
55–64	36.9
65 and over	35.7
Birthplace	
Australia	41.5
Main English-speaking countries	49.3
Other countries	40.4

(a) Attendance at least once in the 12 months prior to interview in 2002. (b) National, state or local government libraries only. (c) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Attendance at Selected Cultural Venues and Events, Australia, 2002 (4114.0)*.

### Archives

The primary function of archives is the permanent preservation of records which are unique because of their administrative, financial, legal, research, cultural or other information value. The records are generally no longer required for the conduct of current activities by government agencies, non-government organisations or individuals.

The National Archives of Australia (NAA) promotes reliable record keeping and maintains a visible and accessible archival collection on behalf of the

Australian Government. There are NAA offices and reading rooms in all states and territories, and their national headquarters in Canberra features various public exhibitions such as the Federation Gallery, where Australia's original 'birth certificates', including the Constitution and Queen Victoria's Royal Commission of Assent, are on display.

Archives, as is the case with libraries, are increasingly making use of the Internet to provide access to their records. The Archives of Australia web site, at <<http://www.archivenet.gov.au>>, provides information about archives in Australia and operates as a portal to the web sites of other Australian archival institutions. These include: the Australian War Memorial, which collects private material concerning Australians at war, and is the custodian of official Commonwealth records relating to war or war-like operations; the National Film and Sound Archive (which was integrated with the Australian Film Commission in July 2003) which collects cultural material relevant to film and sound media; state and territory government archives; and archives established by churches, business corporations, universities and city councils.

### Libraries and archives industry

The ABS Survey of Public Libraries and Archives in respect of 2003–04 found, at the end of June 2004, there were 532 local government library organisations with 1,716 library locations, eight national and state library organisations with 17 locations, and eight national and state archive organisations with 21 locations (table 12.10). The libraries held 52.8 million books and other library materials at the end of June 2004, of which 39.0 million were available as lending stock.

During 2003–04 there were 104.7 million visits to local government, national and state libraries – an average of just over five visits per head of population. Visits to local government libraries accounted for 95% of all visits (99.6 million). At the end of June 2004 there were 10.1 million registered borrowers in Australia. However, 34.9% of these (3.5 million) had not utilised the services of libraries during the 12 months to June 30.

During 2003–04 there were 137,000 visits to the search rooms of the eight national and state archive organisations. This was an increase of 43,000 on the number of visits during 1999–2000. Over the same period, the number of recorded archival enquiries increased from 218,000 to 245,000. More information from the ABS Survey of Public Libraries and Archives can be found in the *Service Industries* chapter.

## 12.10 LIBRARIES

	Units	Local government libraries		National and state libraries	
		1999–2000	2003–04	1999–2000	2003–04
Organisations at end June	no.	505	532	8	8
Locations at end June	no.	1 510	1 716	26	(a)17
Visits	'000	93 335	99 622	6 064	5 048
Library holdings at end June(b)					
Lending	'000	36 416.4	38 984.5	..	..
Non-lending	'000	2 963.9	2 511.8	14 925.0	11 276.3
Total	'000	39 380.3	41 496.3	14 925.0	11 276.3

(a) Excludes storage facilities. (b) Excludes heritage items for 2003–04.

Source: *Public Libraries, Australia, 2003–04 (8561.0)*.

## Literature and print media

### Book publishing and retailing

During 2003–04 there were 244 businesses which were either predominantly engaged in book publishing, or generated income of \$2m or more from this activity. Table 12.11 shows that these organisations generated \$1,560.6m in income, of which \$1,353.2m was from the sale of books. Of the total book sales, \$811.9m (60.0%) was attributed to Australian titles. Between 2002–03 and 2003–04 the operating profit before tax for book publishing businesses increased from \$88.4m to \$152.1m and the profit margin increased from 5.6% to 9.7%.

Table 12.12 shows that, apart from a slight dip in 2000–01, the total sales of books has generally risen steadily from \$841.7m in 1994 to \$1,369.4m in 2002–03. For 2003–04, however, there was another slight decline in sales – down 1.2% to \$1,353.2m. The general increase in the value of books sold has not been reflected in the number of books sold. This has fluctuated over the period, peaking at 130.6 million in 1995–96 and falling to its lowest level of 104.3 million in 2000–01. The 128.8 million sold in 2003–04 was 12.6% higher than the number sold in the previous year.

Book sales valued at \$1,406.5m were reported by the 1,572 employing businesses identified as having retail bookselling activity in 2003–04 (table 12.13).

## 12.11 BOOK PUBLISHERS

	Units	2002–03	2003–04
Organisations at end June	no.	246	244
Income			
Sales of all books	\$m	1 369.4	1 353.2
Sales of Australian titles	\$m	877.0	811.9
Sales of imported titles	\$m	492.4	541.3
Sales of other goods	\$m	73.9	68.6
Other income	\$m	135.3	138.9
Total	\$m	1 578.6	1 560.6
Average income per business	\$m	6.4	6.4
Expenses			
Wages and salaries paid	\$m	248.6	266.1
Royalties and fees paid	\$m	102.3	90.6
Other expenses	\$m	1 136.8	1 047.8
Total	\$m	1 487.7	1 404.4
Average expenses per business	\$m	6.0	5.8
Ratio of royalties and fees paid to sales of Australian titles	%	11.7	11.2
Export sales of books	\$m	209.5	190.5
Internet sales of books	\$m	**14.1	7.3
Operating profit before tax	\$m	88.4	152.1
Profit margin	%	5.6	9.7
Industry value added	\$m	444.3	511.8

Source: *Book Publishers, Australia, 2003–04 (1363.0)*.



Most of the income from book sales was generated by the 561 businesses classified as bookshops (78% or \$1,103.3m). In total, book retailers sold 79.9 million new books during 2003–04.

The total number of businesses reporting book sales increased by 11% (161) in 2003–04. Booksellers other than bookshops were largely responsible for this increase, with 121 more businesses reporting book sales. However, despite this increase in the number of booksellers other than bookshops, their income from selling new books fell by 4% to \$303.2m. In contrast, the income of bookshops from selling new books (\$1,103.3m) was 17% higher in 2003–04 than the \$941.7m recorded for 2002–03.

## Children's reading

In April 2003 the ABS conducted a survey of children's participation in cultural and leisure activities, which included reading for pleasure as one of six selected leisure activities. The survey found 75% of children aged 5–14 years had spent an average time of eight hours reading for pleasure outside of school hours during the two school weeks prior to interview, making it the second-most popular leisure activity for children after watching television or videos. More information about this survey can be found in *Children's participation in selected leisure activities*.

### 12.12 BOOK PUBLISHERS, Selected years

	Units	1994(a)	1995–96	1997–98	1999–2000	2000–01	2001–02	2002–03	2003–04
Number of books sold	million	124.8	130.6	111.5	129.4	104.3	129.8	114.4	128.8
Sales of all books	\$m	841.7	950.0	1 035.6	1 270.4	1 260.6	1 356.8	1 369.4	1 353.2
Sales of Australian titles	\$m	487.7	561.1	623.5	756.1	747.7	853.8	877.0	811.9
Sales of imported titles	\$m	354.0	388.9	412.1	514.3	512.9	503.0	492.4	541.3
Export sales of books(b)	\$m	81.1	80.3	109.8	151.1	162.5	189.2	209.5	190.5

(a) Data were collected on a calendar year basis in 1994. (b) Includes re-export sales and excludes sales of rights.

Source: *Book Publishers, Australia, 2003–04* (1363.0).

### 12.13 BOOK RETAILERS

	Units	Bookshops(a)		Other booksellers(b)		Total businesses	
		2002–03	2003–04	2002–03	2003–04	2002–03	2003–04
Number of businesses	no.	522	561	889	1 010	1 411	1 572
Number of new books sold	million	42.8	53.2	31.9	26.7	74.7	79.9
<b>Income</b>							
Retail sales of new books(c)	\$m	941.7	1 103.3	316.7	303.2	1 258.4	1 406.5
Other retail sales	\$m	92.1	131.2	51 314.5	55 341.4	51 406.6	55 472.6
Other income	\$m	26.0	62.5	5 440.1	4 192.8	5 466.0	4 255.3
<i>Total</i>	\$m	1 059.7	1 297.0	57 071.3	59 837.5	58 131.0	61 134.4
Average income per business	\$m	2.0	2.3	64.2	59.2	41.2	38.9
Average sales of new books per business	\$m	1.8	2.0	0.4	0.3	0.9	0.9
<b>Expenses</b>							
Purchases of new books	\$m	587.3	678.4	259.0	262.1	846.3	940.6
Other expenses	\$m	457.9	609.2	54 911.2	57 485.9	55 369.1	58 095.1
<i>Total</i>	\$m	1 045.2	1 287.6	55 170.2	57 748.0	56 215.4	59 035.6
Average expenses per business	\$m	2.0	2.3	62.0	57.2	39.8	37.6
Average purchases of new books per business	\$m	1.1	1.2	0.3	0.3	0.6	0.6

(a) Includes only those businesses which are classified according to the ANZSIC as Newspaper, book and stationery retailing and for which the value of new book sales comprises at least 50% of all income. (b) Includes only those businesses which are classified according to the ANZSIC as Supermarket and grocery stores; Department stores; Retailing n.e.c.; or Newspaper, book and stationery retailing and for which the value of new book sales comprises less than 50% of all income. (c) Includes electronic and audio books.

Source: *Book Retailers, Australia, 2003–04* (1371.0).

## Performing arts

The performing arts include music performances, acting, dance performances, opera and musicals, circuses and puppet shows.

### Attendance at the performing arts

Attendance at the performing arts is a significant aspect of the cultural life of many Australians. Table 12.14 shows that, in the 12 months prior to interview in 2002, 26.4% of the Australian population aged 18 years and over (3.8 million people) attended at least one popular music concert, 18.7% (2.7 million people) attended at least one musical or opera, and 18.0% (2.6 million people) attended at least one theatre performance. Attendance rates at most of the performing arts were generally similar to or slightly higher than those recorded in a survey conducted in 1999.

### Performing arts industries

At the end of June 2003 there were 865 businesses mainly involved in music and theatre production (table 12.15). This was an increase of 23% over the number recorded at the end of June 2000. During 2002–03 these businesses put on 53,241 paid performances which attracted 14.2 million paid

attendances. The highest numbers of paid attendances were for popular music performances (4.0 million attendances) and musical theatre productions (3.2 million attendances). The total income generated from music and theatre production activities was \$622.1m, with box office takings accounting for 53% (\$331.6m) of this figure. Government funding provided 22% (\$134.4m) of total income. Operating profit before tax for 2002–03 was \$46.5m, which was \$18.7m more than for 1999–2000. A total of 7,842 persons were employed by music and theatre production businesses at the end of June 2003 and a further 2,548 were volunteers. The number of volunteers was down 16% from the number recorded at the end of June 2000 (3,034).

There were 176 performing arts festivals (of greater than two days duration) conducted during the year ended June 2003. There were 29,707 performances at these festivals – 23,138 paid and 6,569 free – which altogether attracted 7.5 million attendances. Of these, 80% (6.0 million) were free of charge. Performing arts festivals generated \$88.5m in income of which 31% (\$27.2m) came from ticket sales. The total operating profit was \$5.7m. The bulk of the workforce utilised by these festivals consisted of 15,728 volunteers.

**12.14 ATTENDANCE AT THE PERFORMING ARTS(a) — 2002**

	Attendance rate(b)					
	Popular music concerts	Classical music concerts	Dance performances	Musicals and operas	Theatre performances	Other performing arts
	%	%	%	%	%	%
Males	26.6	7.7	8.4	15.1	15.3	19.2
Females	26.2	10.2	13.4	22.1	20.6	21.5
Persons	26.4	9.0	10.9	18.7	18.0	20.4
Age group (years)						
18–24	43.8	6.3	10.5	16.0	19.8	23.3
25–34	33.2	6.6	10.3	17.9	17.7	24.0
35–44	25.9	8.1	14.0	17.1	19.4	20.9
45–54	24.9	10.9	12.1	21.6	19.9	20.6
55–64	20.3	13.2	10.7	23.2	17.6	19.5
65 and over	10.4	9.7	6.9	16.6	13.0	12.9
Birthplace						
Australia	27.8	8.1	10.5	19.8	18.9	20.5
Main English-speaking countries	28.5	11.5	12.6	20.5	21.3	23.5
Other countries	19.5	10.8	11.6	12.7	12.1	17.9

(a) Attendance at least once in the 12 months prior to interview in 2002. (b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Attendance at Selected Cultural Venues and Events, Australia, 2002 (4114.0)*.

## 12.15 PERFORMING ARTS — 2002–03

	Units	Music and theatre production	Performing arts festivals(a)
Organisations at the end of June	no.	865	..
Number of festivals	no.	..	176
Employment(b)	no.	7 842	1 272
Volunteers(b)	no.	2 548	15 728
Income			
Box office takings/ticket sales	\$m	331.6	27.2
Government funding	\$m	134.4	27.0
Other	\$m	156.0	34.3
Total	\$m	622.1	88.5
Total expenses	\$m	575.6	82.8
Operating profit before tax	\$m	46.5	5.7
Operating profit margin	%	10.7	15.6
Productions with			
Paid performances(c)	no.	53 241	23 138
Paid attendances(d)	'000	14 230	1 508

(a) Of greater than 2 days duration. (b) Measured at the end of June for Music and theatre production, and during the conduct of performing arts festivals. (c) Productions relate to headline acts only, support acts are excluded. Includes overseas performances. Caution should be exercised in using this data – some music and theatre organisations did not keep records of the number of paid performances (because these were likely to be kept by the venues) and hence could only provide estimates. (d) Includes overseas attendances.

Source: *Performing Arts, Australia, 2002–03* (8697.0).

Information about many of the performing arts companies in Australia is available under the headings 'Music' and 'Performing Arts' in the Australian Government's Culture and Recreation Portal at <<http://www.cultureandrecreation.gov.au>>. The Australia Dancing portal, hosted by the NLA, provides an information and directory database relating to dance in Australia and can be accessed at <<http://www.australiadancing.org>>. Prominent Australian companies, such as Symphony Australia, Opera Australia, The Australian Ballet and Musica Viva publish annual reports on their web sites (see *Bibliography*) which provide information about employment and attendances.

## Film and video

### Film and video production

The film and video production industry comprises businesses mainly engaged in the production of motion pictures on film or video tape for theatre or television projection. Services such as casting, film editing and titling are also included.

Australia has a well-developed film and video production industry comprising, for the most part, small specialised companies. They produce programmes ranging from feature films to sports coverage, documentaries and television

commercials. A relatively small number of Australian companies engage exclusively in film and television drama production. The majority specialise in the production of commissioned programmes such as commercials and corporate communications.

According to the Australian Film Commission (AFC) the major market for Australian audiovisual products is the domestic television broadcast industry. However, export markets are also important for feature films and television dramas, some high-budget documentaries and some commercials.

A survey of businesses involved in film and video production services was conducted by the ABS in respect of 2002–03. At the end of June 2003 there were 2,174 businesses which were primarily engaged in providing film and video production services, and which employed a total of 16,427 people (table 12.16). These businesses generated an income of \$1,596.6m and an operating profit before tax of \$91.7m in 2002–03. Although total income was 8.3% higher than the 1999–2000 figure of \$1,473.8m, income from the production of television programmes was down 16.6% to \$393.6m. Income from the production of other completed works also declined from 1999–2000, down 18.2% to \$156.7m.

## 12.16 FILM AND VIDEO PRODUCTION SERVICES

	Units	1999–2000	2002–03
Businesses at end June	no.	1 975	2 174
Total employment at end June	no.	15 195	16 427
Income			
Production of television programmes	\$m	^ 472.2	393.6
Production of commercials	\$m	^ 186.2	228.4
Production of other completed works	\$m	191.5	156.7
Other	\$m	623.9	817.9
Total	\$m	1 473.8	1 596.6
Total expenses	\$m	1 397.9	1 504.8
Operating profit before tax	\$m	^ 76.5	^ 91.7
Operating profit margin	%	^ 5.4	^ 5.9

Source: *Television, Film and Video Production, Australia, 2002–03* (8679.0).

Film and video production activity is undertaken not only by film and video production businesses (as shown in table 12.16), but also by film and video distribution businesses and television broadcasting businesses. During 2002–03 businesses undertaking film and video production incurred \$1,502.5m in production costs. Productions made specifically for television accounted for most of these costs (\$1,140.7m or 75.9%). Production of commercials, station promotions and interstitials accounted for 14.6% (\$219.3m) and productions other than for television accounted for 9.5% (\$142.4m).

Of productions made specifically for television in 2002–03, the highest total production costs were incurred by news and current affairs programmes (\$351.0m) and sport programmes (\$305.1m). However, these types of programmes were among the cheapest to produce on a cost per hour basis. The average production costs per hour were \$19,700 for news and current affairs, and \$13,000 for sport. These figures contrast starkly with the corresponding figures for drama (\$246,600) and situation and sketch comedy (\$222,700). Details of the proportion of first release commercial broadcast hours allocated to each type of programme are provided in *Radio and television broadcasting*.

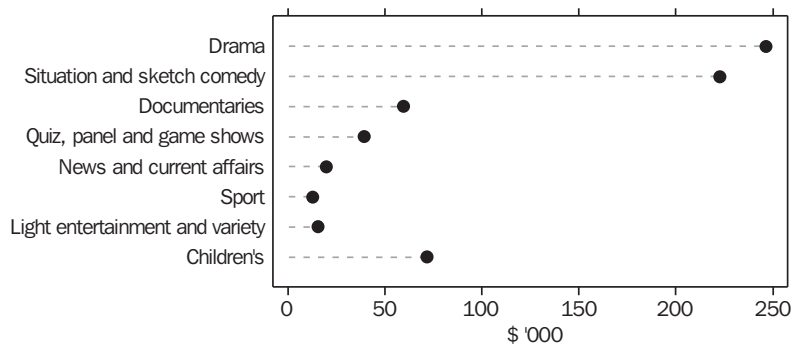
Businesses undertaking film and video production completed, or were working on, 5,774 productions other than for television in 2002–03,

of which 5,057 were corporate, marketing or training productions and 66 were feature films. For feature films, the average cost of production was \$1.1m.

The Australian Government provides assistance and encouragement, for the production of high-cost feature films, television dramas and documentaries, through measures such as the investment program of the Film Finance Corporation Australia, the development program of the AFC and the Australian content regulations of the Australian Communications and Media Authority.

Table 12.18 shows the number and value of Australian, co-produced and foreign titles shot in Australia from 2001–02 to 2004–05. The total production value of these titles in 2004–05 was \$811m, of which \$536m was spent in Australia – close to the 10-year average of \$537m. Foreign production accounted for \$248m (or 46%) of the amount spent in Australia in 2004–05, well above the 10-year average of \$170m. Australian production accounted for a further \$248m (46%), but this was well below the 10-year average of \$307m. The amount spent in Australia on co-productions in 2004–05 was \$40m (8% of the total), which was below the 10-year average of \$60m.

### 12.17 AVERAGE COST PER HOUR, By type of production(a) — 2002-03



(a) For productions made specifically for television.

Source: *Television, Film and Video Production, Australia, 2002-03* (8679.0).

### 12.18 FILM AND VIDEO PRODUCTION

Type of film	2001-02			2002-03			2003-04			2004-05		
	no.	Total Value \$m	Spent in Aust.(a) \$m	no.	Total Value \$m	Spent in Aust.(a) \$m	no.	Total Value \$m	Spent in Aust.(a) \$m	no.	Total Value \$m	Spent in Aust.(a) \$m
<b>Features</b>												
Australian(b)(c)	24	131	129	16	49	49	16	134	113	19	61	60
Co-production(d)	2	39	28	2	22	14	1	7	5	3	45	27
Foreign(e)	7	374	185	5	256	162	7	432	249	9	482	243
<b>Total</b>	<b>33</b>	<b>544</b>	<b>341</b>	<b>23</b>	<b>327</b>	<b>225</b>	<b>24</b>	<b>573</b>	<b>366</b>	<b>31</b>	<b>588</b>	<b>330</b>
<b>TV drama</b>												
Australian(b)	38	212	207	38	222	214	35	190	185	29	195	187
Co-production(d)	6	101	83	4	27	12	3	19	10	4	23	13
Foreign(e)	5	39	31	12	91	56	5	38	30	1	5	4
<b>Total</b>	<b>49</b>	<b>352</b>	<b>321</b>	<b>54</b>	<b>339</b>	<b>281</b>	<b>43</b>	<b>247</b>	<b>225</b>	<b>34</b>	<b>223</b>	<b>204</b>
<b>Total</b>												
Australian(b)	62	343	336	54	271	263	51	325	298	48	256	248
Co-production(d)	8	140	111	6	48	26	4	26	15	7	67	40
Foreign(e)	12	413	216	17	347	218	12	470	279	10	488	248
<b>Total</b>	<b>82</b>	<b>896</b>	<b>662</b>	<b>77</b>	<b>666</b>	<b>507</b>	<b>67</b>	<b>821</b>	<b>592</b>	<b>65</b>	<b>811</b>	<b>536</b>

(a) Includes some expenditure on foreign production elements, e.g. fees for non-Australian actors or other individuals while working in Australia. (b) Productions under Australian creative control. (c) Figures for Australian features in 2003-04 include one high-budget animation feature that is being made over a number of years, but in order to be consistent with survey methodology its budget is counted in a single year, not apportioned across the duration of the production. (d) Includes official co-productions and other productions involving shared creative control, that is, with a mix of Australians and foreigners in key creative positions. (e) Productions under foreign creative control with a substantial amount shot in Australia.

Source: *Australian Film Commission*.

Table 12.19 shows the number and value of TV drama productions (Australian and foreign titles) shot in Australia from 2000-01 to 2004-05. From a high of \$495m in 2000-01, the value of TV drama productions has fallen each year to be \$223m in 2004-05. The number of productions has declined from 62 to 34 over the same time period, mainly due to a reduction in the number of series and serials and the number of telemovies in 2000-01 being unusually high.

Additional information about film and video production, can be obtained from the AFC web site at <<http://www.afc.gov.au/gtp>>. Links to nearly 800 Australian film and television web sites are available on the AFC web site at <<http://www.afc.gov.au/industrylinks>>.

## 12.19 TV DRAMA PRODUCTION

Type of TV drama	2000–01		2001–02		2002–03		2003–04		2004–05	
	Number no.	Value \$m	Number no.	Value \$m	Number no.	Value \$m	Number no.	Value \$m	Number no.	Value \$m
Adult										
Mini-series	4	41	—	—	6	49	2	37	4	35
Series/serials	24	222	28	258	20	122	17	107	15	122
Telemovies	21	144	9	24	12	69	12	31	6	15
Total	49	407	37	282	38	240	31	175	25	172
Children's	13	88	12	70	16	100	12	73	9	51
<b>Total</b>	<b>62</b>	<b>495</b>	<b>49</b>	<b>352</b>	<b>54</b>	<b>339</b>	<b>43</b>	<b>248</b>	<b>34</b>	<b>223</b>

Source: Australian Film Commission.

### Film and video distribution

The film and video distribution industry comprises businesses mainly engaged in leasing or wholesaling motion pictures on film, video tape or DVD to organisations for exhibition or sale. Agents mainly engaged in leasing and wholesaling films and videos to organisations are also included.

At 30 June 2000 there were 58 businesses in the industry, which employed 1,426 people. In 1999–2000 these businesses generated \$1,141.8m in total income and had an operating profit before tax of \$103.6m. The main sources of income were the sale, rental or lease of prerecorded video tapes, disks, films and interactive software (\$841.1m), and the provision of channels to pay television broadcasters (\$169.2m).

### Motion picture exhibition

The motion picture exhibition industry comprises businesses mainly engaged in screening motion pictures on film, video tape or DVD. It also includes businesses mainly engaged in drive-in theatre operation, cinema operation and film or video festival operation.

The ABS conducted a survey on the motion picture exhibition industry in respect of 1999–2000. At the end of June 2000, there were 173 businesses in the industry employing 9,282 people. There were 326 cinema sites and 17 drive-in sites in Australia at this time. While the number of cinema sites remained virtually unchanged from June 1994, the number of drive-in sites reduced from 41 in June 1994 to 28 in June 1997 to 17 in June 2000.

From June 1994, the number of cinema screens more than doubled, from 754 in June 1994 to 1,513 screens in June 2000. Paid admissions to

cinemas increased by almost a third, from 60 million paid admissions during 1993–94 to 79 million during 1999–2000.

### Cinema attendance

The 2002 Survey of Attendance at Selected Cultural Venues and Events found 69.9% of the Australian population aged 18 years and over (10.1 million people) attended a cinema, drive-in or other public screening of a film at least once in the 12 months prior to interview in 2002 (table 12.20). Attendance at cinemas was significantly higher than in 1999, when the attendance rate was 65.6% (9.2 million people).

#### 12.20 ATTENDANCE AT CINEMAS(a) — 2002

	Attendance rate(b)
	%
Males	68.2
Females	71.6
Persons	69.9
Age group (years)	
18–24	92.1
25–34	81.0
35–44	76.7
45–54	69.9
55–64	56.7
65 and over	38.6
Birthplace	
Australia	71.7
Main English-speaking countries	75.9
Other countries	58.5

(a) Attendance at least once in the 12 months prior to interview in 2002. (b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: Attendance at Selected Cultural Venues and Events, Australia, 2002 (4.114.0).

## Radio and television broadcasting

Broadcasting services in Australia are regulated primarily through the *Broadcasting Services Act 1992* (Cwlth). The Act identifies and defines categories of broadcasting services, establishes regulatory arrangements for broadcasting services, and established the Australian Broadcasting Authority as the independent regulator for radio and television in Australia. On 1 July 2005, the Australian Broadcasting Authority merged with the Australian Communications Authority to form the Australian Communications and Media Authority, and it is this body which now has regulatory responsibility for radio and television in Australia.

The Act defines six categories of broadcasting services covering both radio and television:

- national broadcasting services – the Australian Broadcasting Corporation and the Special Broadcasting Service, which are largely regulated through separate legislation
- commercial broadcasting services – free-to-air radio and television services operated for profit and funded predominantly by advertising revenue
- community broadcasting services – non-profit free-to-air services provided for community purposes
- subscription broadcasting services – services with general appeal to the public and funded predominantly by customer subscriptions
- subscription narrowcasting services – services with limited appeal to the general public (either because of content or availability) and funded predominantly by customer subscriptions
- open narrowcasting services – services providing programmes targeted to special interests groups (e.g. foreign language), or of limited appeal because of content or availability, and not funded by subscriptions.

International broadcasting services may fall into any of the last five categories and are targeted, to a significant extent, to audiences outside Australia, using a radiocommunications transmitter in Australia.

## Radio and television licences

The Australian Communications and Media Authority (ACMA) is the regulator for radio and television broadcasting, digital broadcasting, and Internet content in Australia. As well as planning the availability of segments of the broadcasting services bands (VHF/UHF television, FM and AM radio), the ACMA has the power to allocate, renew, suspend and cancel licences and to collect any fees payable for those licences. Table 12.21 shows the number of radio and television licences on issue in Australia.

The ACMA sets various standards which must be adhered to by commercial television broadcasters. For example, the Australian Content Standard requires all commercial free-to-air broadcasters to transmit an annual minimum of 55% Australian content between 6.00 am and midnight. Further specific annual minimum quotas exist regarding the broadcasting of Australian (adult) drama, documentary and children's programmes. In addition there is a standard for Australian Content in Advertising which requires that at least 80% of advertising time broadcast each year by commercial free-to-air television licensees, between the hours of 6.00 am and midnight, be used for Australian produced advertisements.

Further information about the ACMA can be obtained from the web site, <<http://www.acma.gov.au>>.

**12.21 RADIO AND TELEVISION LICENCES ON ISSUE(a) — 30 June**

	2002	2003	2004
Commercial television broadcasting licences	52	53	53
Community television broadcasting licences	—	—	2
Commercial radio broadcasting licences	255	269	271
Community radio broadcasting licences	312	334	341
Remote Aboriginal community television licences	80	76	80
Open narrowcasting services planned in licence area plans	170	207	207
International broadcasting licences	10	10	10

(a) The number of licences on issue does not necessarily reflect the number of services operating, as some licences have been issued but a service is yet to commence.

Source: Australian Broadcasting Authority, *Annual Reports, 2002–03 and 2003–04*.



## Television broadcasting services

There were 9,094 employees working for 27 commercial free-to-air and 6 subscription television broadcasting businesses at the end of June 2003 (table 12.22). These businesses earned a total income of \$5,158.8m and an operating profit before tax of \$207.4m during 2002–03. Profitability was markedly different between commercial free-to-air and subscription broadcasters. The commercial free-to-air television broadcasters recorded an operating profit before tax of \$658.9m, and an operating profit margin of 17.7%. In contrast, subscription broadcasters recorded an operating loss of \$451.5m before tax, while their operating profit margin was negative 33.6%.

Commercial broadcast hours represent the airtime of completed first release programmes, including commercial breaks. Programme re-runs and the production time for commercials, advertisements and station programme promotions are excluded. In 2002–03 there were 54,743 commercial broadcast hours for first release productions made specifically for television by businesses based in Australia. Sport had the highest number of broadcast hours (23,556 hours or 43.0% of the total), followed by news and current affairs (17,837 hours or 32.6%). The production type with the lowest number of broadcast hours was situation and sketch comedy (71 hours or 0.1%). Productions made specifically for children accounted for 1,100 hours (2.0%).

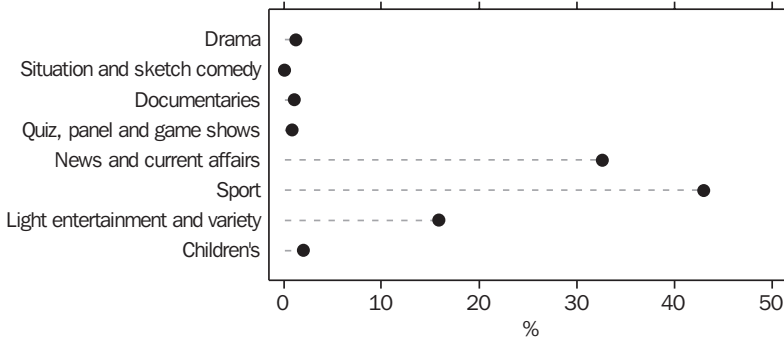
### 12.22 TELEVISION SERVICES OPERATIONS(a) — 2002–03

	Units	Commercial free-to-air broadcasters	Subscription broadcasters	Total
Businesses at end June 2003	no.	27	6	33
Total employment at end June 2003	no.	6 577	2 517	9 094
Total income	\$m	3 810.6	1 348.2	5 158.8
Total expenses	\$m	3 154.0	1 837.3	4 991.3
Operating profit before tax	\$m	658.9	-451.5	207.4
Operating profit margin	%	17.7	-33.6	4.1

(a) Excludes public and community television broadcasters.

Source: *Television, Film and Video Production, Australia, 2002–03 (8679.0)*.

### 12.23 FIRST RELEASE COMMERCIAL BROADCAST HOURS, By type of production(a)



(a) For productions made specifically for television.

Source: *Television, Film and Video Production Activity, Australia, 2002–03 (8679.0)*.



## Support for heritage and arts

### Cultural Ministers Council (CMC)

The CMC was established in 1984 to provide a forum for the exchange of views on issues affecting cultural activities in Australia and New Zealand. It comprises Australian Government, state and territory government ministers responsible for arts and cultural heritage, as well as the corresponding New Zealand government minister. The relevant minister from Papua New Guinea participates with observer status.

Governments are aware of the significance of the impact of cultural activities on general civic, social, political and economic development. One of the Council's many roles is to recognise and promote the linkages between the cultural aspects of our lives and the development of a robust Australian society. CMC's core activities include the commissioning of studies and investigations through the appointment of working or advisory groups and/or consultants. The CMC's Statistics Working Group plays an important role in this regard. This group liaises with the ABS on cultural statistics; monitors the need for the development, collection and dissemination of culture and leisure statistics; commissions studies; and provides advice to the CMC on statistical matters. Additional information about the CMC and its activities can be obtained from the web site, <<http://www.dcita.gov.au/cmc>>.

### Australia Council

The Australia Council for the Arts is the Australian Government's arts funding and advisory body. It was formed as an interim council in 1973 and was given statutory authority by the *Australia Council Act 1975* (Cwlth).

The Australia Council supports Australian artists and arts organisations through diverse funding options, in order to allow them to pursue artistic excellence, to create and present their work, to take advantage of opportunities to improve and develop their skills, and to tour and promote their work to wider audiences nationally and internationally. It supports young, emerging,

developing and established artists through a range of grant programs. These programs cover: Aboriginal and Torres Strait Islander arts; community and cultural development; dance; literature; major performing arts; music; new media arts; theatre; and visual arts and craft.

During 2003–04, 5,072 grant applications were made to the Australia Council, of which 1,879 were successful. These grants totalled \$132.2m in 2003–04. Two-thirds of the grants, amounting to 94% of the funding, went to organisations or groups, and the remaining grants, with an average value of \$12,769, were paid directly to individual artists. Further information about the Australia Council and its activities can be obtained from their web site, <<http://www.ozco.gov.au>>.

## Funding for heritage and arts

### Government funding

In 2003–04 the Australian Government provided \$1,699.4m in funding for heritage and arts activities, while the state and territory governments contributed \$2,356.2m in total (table 12.24). Local governments provided a further \$945.1m, taking total government funding for heritage and arts activities to \$5,000.7m.

Between 2000–01 and 2003–04 funding of arts activities by the Australian Government steadily rose, while funding of heritage activities steadily declined. Nevertheless, the overall funding of heritage and arts activities by the Australian Government in 2003–04 (\$1,699.4m) was higher than in any of the previous three years, and 1.7% higher than the funding provided in 2002–03.

The amount of funding provided for arts activities by state and territory governments fluctuated between 2000–01 and 2003–04. However, the funding of heritage activities during this time steadily rose, as did the overall funding of heritage and arts activities. The \$2,356.2m provided in 2003–04 for heritage and arts activities combined was 5.3% more than the amount provided in the previous year.

## 12.24 GOVERNMENT FUNDING FOR HERITAGE AND ARTS, By level of government(a)

Category of funding	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m
<b>Australian</b>				
Heritage	502.3	471.1	461.1	440.3
Arts	1 146.6	1 149.3	1 209.4	1 259.2
<i>Total</i>	1 648.9	1 620.4	1 670.5	1 699.4
<b>State and territory</b>				
Heritage	1 632.0	1 806.6	1 891.3	1 951.4
Arts	292.6	414.0	346.9	404.8
<i>Total</i>	1 924.6	2 220.7	2 238.1	2 356.2
<b>Total</b>	<b>3 573.5</b>	<b>3 841.1</b>	<b>3 908.6</b>	<b>4 055.6</b>

(a) Excludes funding by local government.

Source: *Cultural Funding by Government, Australia, 2003–04 (4183.0)*.

In 2003–04 total funding of over \$1 billion was allocated to both broadcasting and film activities (\$1,075.8m) and nature parks and reserves (\$1,051.8m) by the Australian, state and territory governments. The other major recipients of funding from these governments were museums (excluding art museums) with \$527.2m, and libraries and archives with \$473.1m (table 12.25). It is not possible to determine the contribution of local governments to these activities because comprehensive details regarding funding by local governments are not available for 2003–04.

Local governments are significant providers of library services to the community. For 2000–01, when information about funding by local government was available in greater detail, libraries and archives received more than half of the heritage and arts funding provided by local governments (\$458.7m out of a total of \$872.4m). This was 55% of the total funding provided to libraries and archives by all three levels of government.

## 12.25 GOVERNMENT FUNDING FOR HERITAGE AND ARTS(a) — 2003–04

Category of funding	Level of government	
	Australian \$m	State and territory \$m
<b>Heritage</b>		
Art museums	45.7	159.9
Other museums	202.4	324.8
Nature parks and reserves	68.8	983.0
Zoological parks, aquaria and botanic gardens	7.4	126.6
Libraries and archives	116.0	357.1
<i>Total</i>	440.3	1 951.4
<b>Arts</b>		
Literature and print media	27.9	4.5
Performing arts	105.4	79.8
Performing arts venues	1.0	144.5
Visual arts and crafts	10.7	16.7
Broadcasting and film	1 012.8	63.0
Community cultural centres and activities	12.0	12.7
Administration of culture	36.1	41.2
Other arts n.e.c.	53.1	42.5
<i>Total</i>	1 259.2	404.8
<b>Total</b>	<b>1 699.4</b>	<b>2 356.2</b>

(a) Excludes funding by local government.

Source: *Cultural Funding by Government, Australia, 2003–04 (4183.0)*.

## Business funding

The ABS conducted the Business Generosity Survey in respect of 2000–01. During the 12 months businesses gave \$1,447m to organisations or individuals, of which ‘arts and culture activities’ (namely the performing arts; the creative arts; museum, art gallery and library activities; and zoological or botanical parks and gardens operation) received \$70m. This comprised \$40m of sponsorship, \$23m of donations and over \$6m of ‘business to community projects’ funding. Sport and recreation activities received 43% of the total given by businesses to organisations or individuals. For additional information see *Funding for sport and recreation*. Other activities covered by the survey were community service and welfare, health, education and training, and environmental activities.

## Religious affiliation

Precise definition of the concept of religion, or of what generally constitutes ‘a religion’, is difficult, if not impossible, because of the intangible and wide-ranging nature of the topic. Generally, a religion is regarded as a set of beliefs and practices, usually involving acknowledgment of a divine or higher being or power, by which people order the conduct of their lives both practically and in a moral sense.

At the time of European settlement, the Aboriginal inhabitants followed their own religions involving beliefs in spirits behind the forces of nature, and the influence of ancestral spirit beings.

During the 1800s, European settlers brought their traditional churches to Australia. These included the Church of England (now the Anglican Church), and the Methodist, Catholic, Presbyterian, Congregationalist, Lutheran and Baptist churches.

With the exception of a small but significant Lutheran population of Germanic descent, Australian society in 1901 was predominantly Anglo-Celtic, with 40% of the population being Anglican, 23% Catholic, 34% other Christian and about 1% professing non-Christian religions.

Further waves of migration helped to reshape the profile of Australia’s religious affiliations over subsequent decades. The impact of migration from Europe in the aftermath of World War II led to increases in affiliates of the Orthodox Churches, the establishment of Reformed bodies, growth in the number of Catholics (largely from Italian

migration), and the creation of ethnic parishes among many other denominations. More recently, immigration from South-East Asia and the Middle East has expanded Buddhist and Muslim numbers considerably, and increased the ethnic diversity of existing Christian denominations.

In response to the 2001 Census of Population and Housing question, stated religious affiliations were: 27% Catholic; 21% Anglican; 21% other Christian denominations; and 5% non-Christian religions. Just over a quarter of all persons either stated they had no religion, or did not adequately respond to the question to enable classification of their religion.

A question on religious affiliation has been asked in every census taken in Australia, with the voluntary nature of this question having been specifically stated since 1933. In 1971 the instruction ‘if no religion, write none’ was introduced. This saw a seven-fold increase from the previous census year in the percentage of persons stating they had no religion. Since 1971 this percentage has progressively increased to about 16% in 1996 and 2001. Table 12.26 provides a summary of the major religious affiliations at each census since 1901.

Table 12.27 shows the number and percentage of affiliates for each religion at the 1996 and 2001 censuses, and the percentage change which occurred during the five-year period. Followers of religions other than Christianity have shown the largest proportional increases since the 1996 census. The number of persons affiliated with Buddhism increased by 79%, with Hinduism by 42%, Islam 40% and Judaism 5%.

Growth in the numbers and proportions of persons of all ages affiliating with Buddhism, Islam and Hinduism are largely due to changes in the countries of origin of recent immigrants. Between 1996 and 2001 there were just over half a million new arrivals to Australia and, although the most common religious affiliation of immigrants is Christianity, affiliates of other religions are more highly represented among recent immigrants than in the total population.

Of all people affiliating with Hinduism in 2001, 82% had been born overseas, with 34% born in India and 11% in Sri Lanka. Similarly, nearly three-quarters of all those affiliating with Buddhism had been born overseas – 26% in Vietnam and 8% in China. Of persons of all ages affiliating with Islam in 2001, 62% were overseas born, with almost 11% born in Lebanon and 9% in Turkey.

## 12.26 MAJOR RELIGIOUS AFFILIATIONS

Census year	Christianity				Other religions	No religion	Not stated/ inadequately described	Total '000
	Anglican %	Catholic %	Other %	Total %				
1901	39.7	22.7	33.7	96.1	1.4	0.4	(a)2.0	3 773.8
1911	38.4	22.4	35.1	95.9	0.8	0.4	(a)2.9	4 455.0
1921	43.7	21.7	31.6	96.9	0.7	0.5	(a)1.9	5 435.7
1933	38.7	19.6	28.1	86.4	0.4	0.2	12.9	6 629.8
1947	39.0	20.9	28.1	88.0	0.5	0.3	11.1	7 579.4
1954	37.9	22.9	28.5	89.4	0.6	0.3	9.7	8 986.5
1961	34.9	24.9	28.4	88.3	0.7	0.4	10.7	10 508.2
1966	33.5	26.2	28.5	88.2	0.7	0.8	10.3	11 599.5
1971	31.0	27.0	28.2	86.2	0.8	6.7	6.2	12 755.6
1976	27.7	25.7	25.2	78.6	1.0	8.3	11.4	13 548.4
1981	26.1	26.0	24.3	76.4	1.4	10.8	11.4	14 576.3
1986	23.9	26.0	23.0	73.0	2.0	12.7	12.4	15 602.2
1991	23.8	27.3	22.9	74.0	2.6	12.9	10.5	16 850.3
1996	22.0	27.0	21.9	70.9	3.5	16.6	9.0	17 752.8
2001	20.7	26.6	20.7	68.0	4.9	15.5	11.7	18 769.2

(a) Includes 'object to state'.

Source: ABS data available on request, *Census of Population and Housing*.

## 12.27 RELIGIOUS AFFILIATION

	1996		2001		Change
	'000	%	'000	%	%
Christianity					
Anglican	3 903.3	22.0	3 881.2	20.7	-0.6
Baptist	295.2	1.7	309.2	1.6	4.8
Catholic	4 799.0	27.0	5 001.6	26.6	4.2
Churches of Christ	75.0	0.4	61.3	0.3	-18.2
Jehovah's Witness	83.4	0.5	81.1	0.4	-2.8
Lutheran	250.0	1.4	250.4	1.3	0.2
Orthodox	497.0	2.8	529.4	2.8	6.5
Pentecostal	174.7	1.0	194.6	1.0	11.4
Presbyterian and Reformed	675.5	3.8	637.5	3.4	-5.6
Salvation Army	74.1	0.4	71.4	0.4	-3.7
Uniting Church	1 334.9	7.5	1 248.7	6.7	-6.5
Other Christian	420.6	2.4	497.9	2.7	18.4
Buddhism	199.8	1.1	357.8	1.9	79.1
Hinduism	67.3	0.4	95.5	0.5	41.9
Islam	200.9	1.1	281.6	1.5	40.2
Judaism	79.8	0.4	84.0	0.4	5.2
Other religions	68.6	0.4	92.4	0.5	34.6
No religion	2 948.9	16.6	2 906.0	15.5	-1.5
Not stated/inadequately described	1 604.7	9.0	2 187.7	11.7	36.3
<b>Total</b>	<b>17 752.8</b>	<b>100.0</b>	<b>18 769.2</b>	<b>100.0</b>	<b>5.7</b>

Source: ABS data available on request, 1996 and 2001 Censuses of Population and Housing.

Christian denominations had smaller proportional changes in the numbers of affiliates than the non-Christian religions. Between 1996 and 2001 Catholic affiliates increased by 4.2% and Baptist affiliates by 4.8%. However, as the total population grew by 6% during this period, the actual percentage of the population professing affiliation to these denominations remained virtually unchanged. The most notable decreases in Christian affiliation occurred for Churches of Christ (decreasing by 18%), the Uniting Church (decreasing by 7%), and Presbyterian and Reformed (decreasing by 6%). An 11% increase was seen for Pentecostal affiliation between 1996 and 2001 (from 174,720 to 194,592). A substantial increase, associated with immigration from South Eastern Europe, was also seen for the Orthodox Churches, with the number of Orthodox affiliates increasing by 7% (from 497,015 to 529,444).

In 2001, 82% of persons aged 65 years and over identified themselves as Christian, compared with 60% of 18–24 year olds. In contrast, the other religions have a younger age profile. For example, 15% of all Christian affiliates were aged 65 years and over, compared with 6% of Buddhist affiliates; and 8% of Christian affiliates were aged between 18 and 24 years, compared with 13% of Buddhist affiliates. The largest group of Buddhist affiliates was 35–44 year olds. Similar trends were evident for Hindu and Muslim affiliates. In the 2001 census, people in the 18–24 years age group were the most likely to state that they had no religion (20%). Information about involvement in religious activities can be found in *Employment and involvement in cultural activities*.

## Employment and involvement in cultural activities

### Employment in cultural occupations

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the census was in a cultural occupation. People who had unpaid involvement in cultural activities, or who worked part time in cultural activities but had another job they regarded as their main job in the week prior to the census, would not be recorded in the census as being in cultural occupations.

The 2001 census found 259,909 people (3.1% of all employed persons) worked in a cultural occupation. This was a 13.3% increase from 1996, when 229,330 people had their main job in a cultural occupation, and compares with an 8.7% increase for all occupations. In 2001, 56.1% of all people employed in cultural occupations as their main job were males and 43.9% were females. In 1996 the percentage who were females was slightly lower at 42.8%.

Table 12.28 shows the number and sex of people who were recorded as having a main job in selected cultural occupations in the 2001 Census of Population and Housing. The ten occupations shown are those in which the highest numbers of people were employed.

**12.28 CULTURAL OCCUPATIONS WITH HIGHEST NUMBERS OF EMPLOYED PERSONS — 2001**

Occupation	Males	Females	Persons
Graphic designer	11 545	9 599	21 144
Minister of religion	11 415	2 823	14 238
Architect	9 012	2 297	11 309
Librarian	1 748	8 565	10 313
Music teacher (private)	2 569	5 876	8 445
Library assistant	1 174	7 224	8 398
Photographer	4 453	2 392	6 845
Instrumental musician	5 070	1 555	6 625
Architectural associate	5 223	1 188	6 411
Printing machinist	5 705	561	6 266

Source: *Employment in Culture, Australia, 2001* (6273.0).

## Involvement in culture and leisure activities

Cultural work is often intermittent, unpaid or not a person's main job. Therefore, in order to obtain a more complete picture of cultural work, the ABS conducted a household survey in 2004 to measure all involvement over a 12-month period.

During the 12 months prior to interview in April 2004, an estimated 2.9 million people (18.4% of the Australian population aged 15 years and over) were involved in some form of paid or unpaid work relating to the culture and leisure activities covered in the survey. The Australian Capital Territory had the highest participation rate for work in culture and leisure activities (29.4%), and this was significantly higher than the participation rate for Australia as a whole (18.4%) (table 12.29). The Australian Capital Territory also had the highest proportion of paid involvement, with 42.0% of those involved in culture and leisure activities receiving some payment. The involvement figures exclude hobby activities (i.e. involvement solely for the person's own use or that of their family).

The overall number of people involved in work in culture and leisure activities increased by 376,000 between 2001 and 2004, with unpaid involvement accounting for the majority of this increase (318,400). The state with the largest overall increase in involvement was New South Wales, where involvement grew by 182,100 and the participation rate increased by 2.9 percentage points to 17.8%.

The 2004 survey found that more people had paid involvement in design (239,100), writing (185,500) and visual art activities (183,100) than in any other culture or leisure activities included in the survey. The previous survey in April 2001 had similar findings except that writing had the highest level of paid involvement (214,800) followed by design with 210,700 and visual art activities with 175,800. Of the 370,200 people involved in design in 2004, 65.4% received some payment. This was the highest percentage with paid involvement for any culture or leisure activity included in the survey, and was followed by television for which 63.8% of the 76,200 people involved were paid. Of people involved in writing, 35.5% received payment while for visual art activities, the equivalent figure was 23.5%.

According to the General Social Survey, conducted by the ABS in 2002, 23% of adults participated in church or religious activities during the three months prior to interview. Women (26%) were more likely than men (20%) to have participated in church or religious activities. This pattern was evident among all age groups. As with religious affiliation, participation in church or religious activities tended to increase with age. Among 18–24 year olds, 23% of women and 16% of men had participated in church or religious activities. Rates for people 65 years and over were higher at 29% for women and 24% for men. Information about religious affiliation can be found in *Religious affiliation*.

### 12.29 PERSONS INVOLVED IN SELECTED CULTURE AND LEISURE ACTIVITIES(a) — 2004

	Some paid involvement(b)	Unpaid involvement only	Total persons involved	Persons with no involvement	Total persons	Participation rate(c)
	'000	'000	'000	'000	'000	%
New South Wales	296.3	642.7	938.9	4 333.2	5 272.1	17.8
Victoria	260.8	498.5	759.3	3 166.3	3 925.6	19.3
Queensland	186.9	339.3	526.2	2 457.3	2 983.5	17.6
South Australia	71.0	154.3	225.2	992.9	1 218.1	18.5
Western Australia	88.6	183.1	271.7	1 269.5	1 541.1	17.6
Tasmania	18.9	54.8	73.7	303.2	376.9	19.6
Northern Territory(d)	*4.4	15.1	19.6	86.2	105.8	18.5
Australian Capital Territory	30.6	42.2	72.8	175.2	248.0	29.4
<b>Australia</b>	<b>957.5</b>	<b>1 929.9</b>	<b>2 887.5</b>	<b>12 783.7</b>	<b>15 671.1</b>	<b>18.4</b>

(a) Excludes persons whose involvement was solely as a hobby for their own use or that of their family. (b) Includes persons who only received payment in kind. Of the 957,500 people who received some payment, 108,800 (11.0%) only received payment in kind.

(c) The number of persons who reported working in the selected culture or leisure activities, expressed as a percentage of the civilian population in the same group. (d) Refers to mainly urban areas only.

Source: *Work in Selected Culture and Leisure Activities, Australia, April 2004* (6281.0).



The 2002 General Social Survey found that, during the 12 months prior to interview, religious organisations received unpaid help from 1,114,400 volunteers aged 18 years and over, of whom 56.9% were female. These volunteers for religious organisations constituted 7.7% of the adult population. South Australia was the state with the highest rate of volunteering for religious organisations – 8.3% of the adult population. There were 334,300 people who undertook voluntary work for arts and culture organisations, and this figure was 2.3% of the adult population. Of these arts and culture volunteers, 53.3% were female. The highest rate of volunteering for arts and culture organisations – 3.8% of the adult population – occurred in the Australian Capital Territory. For both religious and arts and culture organisations, the rate of volunteering was slightly lower in the capital cities overall than it was in the balance of the states. The General Social Survey found the highest levels of volunteering were for organisations categorised as sport, recreation and hobby (1.8 million volunteers), welfare and community (1.6 million) and education, training and youth development (1.2 million).

## Children's participation in organised cultural activities

A survey of children's activities in the 12 months to April 2003 found 29% of children aged 5–14 years (780,400 children) participated in at least one of four selected organised cultural activities outside of school hours.

Girls were more than twice as likely as boys (43% compared with 17%) to participate in at least one of these activities (table 12.30). Girls were also more likely than boys to be participate in two or more of the selected activities (12% of girls compared with 2% of boys). The rate of children's

participation in at least one of the organised cultural activities ranged from 33% in Western Australia to 25% in the Northern Territory.

Playing a musical instrument was the most popular of the selected cultural activities (17%), followed by dancing (12%), singing (5%) and drama (4%). The activity with the highest ratio of girls to boys was dancing, with 14 times more girls participating than boys.

During the 12 months to April 2003, 94% of those children who participated in dancing had lessons, while 80% of those participating in drama, 78% of those playing a musical instrument, and 70% of those participating in singing, had lessons.

## Changes in participation since 2000

While the overall picture of children's participation did not change substantially between 2000 and 2003 – 29.4% of children participated in at least one of the four selected organised cultural activities in the 12 months to April 2000 compared with 29.5% in 2003 – there were some interesting differences in the participation rates for girls and boys.

Participation in organised cultural activities varied markedly between boys and girls in 2000, and the differences became even more pronounced in 2003. While the girls' participation rate increased from 40% to 43% (driven mainly by greater involvement in dancing), the participation rate for boys fell from 20% to 17%, largely as a result of the decrease in boys playing a musical instrument (table 12.31).

Details about children's participation in organised sports and other leisure activities are provided in *Children's participation in organised sport* and *Children's participation in selected leisure activities*.

### 12.30 CHILDREN PARTICIPATING IN SELECTED ORGANISED CULTURAL ACTIVITIES(a) — 2003

	Participation rate										
	Age (years)										All children
	5	6	7	8	9	10	11	12	13	14	
%	%	%	%	%	%	%	%	%	%	%	%
<b>MALES</b>											
Playing a musical instrument	4.8	4.5	7.3	13.8	16.0	17.5	22.1	14.9	15.0	15.2	13.2
Singing	*1.2	*1.2	*1.1	3.2	3.3	*2.4	6.1	*1.4	*1.9	*1.2	2.3
Dancing	**0.5	*1.3	*1.8	*1.9	*1.4	*2.6	2.9	*1.3	*1.6	*1.0	1.6
Drama	**0.5	*1.8	*1.3	3.3	*2.3	3.5	3.3	*2.5	*2.0	*2.7	2.3
<b>Total(b)</b>	<b>6.4</b>	<b>8.3</b>	<b>10.3</b>	<b>18.2</b>	<b>20.6</b>	<b>22.4</b>	<b>27.6</b>	<b>16.9</b>	<b>17.9</b>	<b>18.8</b>	<b>16.8</b>
<b>FEMALES</b>											
Playing a musical instrument	5.3	9.4	17.2	21.1	30.1	23.9	27.9	26.9	23.8	19.6	20.7
Singing	*1.9	4.5	6.2	6.1	10.6	8.2	9.9	7.8	7.1	7.8	7.0
Dancing	26.9	29.3	26.6	25.3	23.2	19.9	28.4	23.9	19.4	15.3	23.8
Drama	*2.3	4.5	5.3	5.8	7.2	6.3	8.8	8.2	5.8	8.2	6.3
<b>Total(b)</b>	<b>30.2</b>	<b>37.9</b>	<b>41.5</b>	<b>44.6</b>	<b>49.7</b>	<b>43.2</b>	<b>51.8</b>	<b>48.4</b>	<b>43.2</b>	<b>36.3</b>	<b>42.8</b>
<b>PERSONS</b>											
Playing a musical instrument	5.0	6.8	12.1	17.4	22.8	20.6	24.9	20.8	19.3	17.4	16.8
Singing	*1.5	2.8	3.6	4.6	6.9	5.2	7.9	4.5	4.4	4.5	4.6
Dancing	13.3	14.9	13.9	13.3	12.0	11.0	15.3	12.4	10.3	8.0	12.4
Drama	*1.4	3.1	3.3	4.5	4.7	4.9	6.0	5.3	3.8	5.4	4.3
<b>Total(b)</b>	<b>18.0</b>	<b>22.7</b>	<b>25.5</b>	<b>31.0</b>	<b>34.8</b>	<b>32.5</b>	<b>39.4</b>	<b>32.3</b>	<b>30.3</b>	<b>27.3</b>	<b>29.5</b>

(a) Outside of school hours during the 12 months prior to interview in April 2003. (b) The sum of activities do not add to the total because some children participated in more than one activity.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

### 12.31 CHILDREN PARTICIPATING IN SELECTED ORGANISED CULTURAL ACTIVITIES(a)

	2000		2003	
	Number	Participation rate	Number	Participation rate
	'000	%	'000	%
<b>MALES</b>				
Playing a musical instrument	213.8	15.8	179.0	13.2
Singing	38.9	2.9	31.6	2.3
Dancing	22.9	1.7	22.2	1.6
Drama	42.8	3.2	31.5	2.3
<b>Total(b)</b>	<b>266.8</b>	<b>19.7</b>	<b>228.5</b>	<b>16.8</b>
<b>FEMALES</b>				
Playing a musical instrument	260.1	20.2	266.5	20.7
Singing	85.6	6.7	90.9	7.0
Dancing	251.1	19.5	307.1	23.8
Drama	79.0	6.1	81.0	6.3
<b>Total(b)</b>	<b>510.9</b>	<b>39.7</b>	<b>552.0</b>	<b>42.8</b>

(a) Outside of school hours during the 12 months prior to interview in April. (b) The sum of activities do not add to the total because some children participated in more than one activity.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.



## Sport and recreation

Australia is recognised internationally as a nation that is very much involved in sport. There are believed to be many benefits associated with participation in sport and physical activity, including enjoyment, social interaction, health, personal achievement, national pride and community involvement. In many ways sport unites and personifies the nation. Interestingly, Australians were competing internationally as 'Australia' before Australia was federated as a nation.

## Sport and recreation administration

Governments of all levels play an important role in the development of Australian sport and recreation. The functions of some government (and non-government) national administrative bodies are described in the following paragraphs.

### Sport and Recreation Ministers' Council (SRMC)

The SRMC provides the major mechanism for liaison between the Australian Government and state and territory governments on matters concerned with the development of sport and recreation in Australia and, more recently, in New Zealand and Papua New Guinea. The SRMC is a forum for cooperation and coordination between the respective governments, with its membership comprising ministers with prime responsibility for sport and recreation. The Standing Committee on Recreation and Sport – comprising representatives of the relevant ministers' departments and the Australian Sports Commission – provides advice and administrative support to the SRMC.

### Australian Sports Commission (ASC) and Australian Institute of Sport (AIS)

The ASC is the Australian Government agency responsible for the funding and development of sport at the national level. The ASC supports a wide range of programs designed to develop sporting excellence and increase participation in sports by all Australians.

A major program within the ASC is the AIS. The AIS is responsible for developing elite sport on a national basis with a particular focus on success at the international level. For the purposes of elite sports development, it integrates sport science and medical services, sports management activities, funding, athlete welfare and implementation of the technical requirements for

sporting success. The AIS conducts a national scholarship program that includes 35 programs in 26 sports, involving approximately 700 athletes.

More information about the ASC and the AIS can be obtained from the web sites, <<http://www.ausport.gov.au>> and <<http://www.ais.org.au>>.

### Australian Sports Drug Agency (ASDA)

ASDA is the custodian of Australia's athlete anti-doping program and plays a leading role, within Australian and international sports communities, in delivering drug testing and education services. It also provides policy advice to sporting organisations and the Australian Government regarding 'drugs in sport' issues. ASDA is an independent statutory authority and was established in 1990. Its web site is <<http://www.asda.org.au>>.

### National Sporting Organisations (NSOs)

Sports in Australia are managed and coordinated by NSOs. Each organisation manages the participation in, and development of, a specific sport in Australia. Many NSOs receive funding from the ASC to assist them to develop community participation programs and high performance activities. There are around 125 such organisations in Australia. More information about most of these organisations can be obtained from the Australian Sports Directory on the ASC web site at <<http://www.ausport.gov.au>>.

## Sports and physical recreation services

The ABS conducted a series of surveys of the sports and physical recreation industries, and government organisations providing sports and physical recreation services, in respect of 2000–01. Because of the large and one-off impact of the Olympic and Paralympic Games, which took place in Sydney in September and October 2000, data relating to the activities of the respective organising committees for these games have been excluded from the analysis presented here.

At the end of June 2001 there were 7,145 employing organisations involved in the provision of sports and physical recreation activities (table 12.32). This total comprised: 1,034 horse and dog racing organisations; 667 health and fitness centres and gymnasias; 863 other sports and physical recreation venues; 755 sports and physical recreation administrative organisations

(collectively referred to below as 'sports administration'); 1,937 sports and physical recreation clubs, teams and sports professionals (collectively referred to below as 'sports clubs'); 1,259 other sports and physical recreation support services; and 630 government organisations providing sports and physical recreation services. These organisations had a total income of \$5,491.1m and expenses of \$5,632.9m in 2000–01. At the end of June 2001 the organisations employed 98,267 people and during that month they were assisted by 178,837 volunteers.

There is considerable variation in the nature of the industries. For example, while 44% of the private sector organisations were 'not for profit', these were mainly concentrated in the sports administration industry, in which all 755 organisations operated on a not-for-profit basis, and in the sports clubs industry, in which 1,565 (81%) were not for profit. The sports administration and sports clubs industries were

also responsible for the vast majority (94%) of the volunteers working for sports and physical recreation industries during the month of June. There were nine volunteers for each one employee in the sports administration industry in June 2001, and the ratio of volunteers to employees in the sports clubs industry was 2.7:1. Employees outnumbered volunteers in each of the other industries.

At least 60% of the employees in the sports administration, sports clubs and the horse and dog racing industries were males. Health and fitness centres and gymnasia had the highest level of female employment, both in absolute terms (8,062) and as a percentage of people employed (64%). Casual employment was a feature of all of the industries. The percentage of employees employed on a casual basis ranged from 52% in the sports clubs industry to 71% in health and fitness centres and gymnasia.

### 12.32 SPORTS AND PHYSICAL RECREATION SERVICES(a) — 2000–01

	Units	Horse and dog racing	Health and fitness centres and gymnasia	Other sports venues and physical recreation venues	Sports and physical recreation administration	Sports and physical recreation clubs, teams and professionals	Other sports services(b)	Government organisations(c)	Total
<b>Businesses/ organisations at 30 June 2001</b>									
For profit	no.	750	620	743	—	372	1 181	—	3 667
Not for profit	no.	284	47	119	755	1 565	78	—	2 848
Government	no.	—	—	—	—	—	—	630	630
<b>Total</b>	<b>no.</b>	<b>1 034</b>	<b>667</b>	<b>863</b>	<b>755</b>	<b>1 937</b>	<b>1 259</b>	<b>630</b>	<b>7 145</b>
<b>Total employment at end June 2001</b>									
Males	no.	9 641	4 490	8 239	8 443	15 736	3 141	—	(d)49 690
Females	no.	6 259	8 062	7 603	3 370	7 575	4 887	—	(d)37 756
<b>Persons</b>	<b>no.</b>	<b>15 900</b>	<b>12 552</b>	<b>15 842</b>	<b>11 814</b>	<b>23 312</b>	<b>8 028</b>	<b>10 820</b>	<b>98 267</b>
<b>Total volunteers during the month of June</b>									
	no.	n.a.	*546	*7,962	106 427	61 950	1 952	—	178 837
Total income	\$m	1 135.6	294.3	733.8	1 000.9	1 381.8	215.2	729.5	5 491.1
Total expenses	\$m	1 107.3	278.1	754.3	954.5	1 386.9	186.5	965.3	5 632.9
Operating profit/surplus before tax(e)	\$m	30.6	16.0	*-18.6	45.7	**-12.5	28.0	—	89.3

(a) Excludes data relating to the organising committees of the Sydney 2000 Olympic and Paralympic Games. (b) Includes sports services such as education and coaching. (c) For Government organisations, only income and expenditure related to sports and physical recreation services were included, and only employees who spent the majority of their time on sports and physical recreation related activities were included. (d) Excludes Government organisations. (e) This item is derived as total income minus total expenses, plus closing inventories minus opening inventories.

Source: *Sports Industries, Australia, 2000–01* (8686.0).

The main sources of income for each industry were:

- for the horse and dog racing industry, net industry and TAB distributions (49% of total income) and training fees (12%)
- for health and fitness centres and gymnasia, membership fees (65%) and casual playing fees (19%)
- for other sports and physical recreation venues, casual playing fees (40%) and rent, leasing and hiring income (8.5%)
- for sports administration, admissions including season ticket memberships (20%) and sponsorship and fundraising (18%)
- for sports clubs, subscription or membership fees (23%) and sponsorship and fundraising (18%)
- for sports and physical recreation support services, which include sports coaches, personal fitness training services and sports management services, 57% of the total income mainly comprised fees for services, such as fees for coaching and other specialist sports services.

## Amusement and leisure industries

The latest ABS surveys of major amusement and theme parks, and amusement centres were conducted in respect of 2000–01. Major amusement and theme parks were defined as parks which were operated on a commercial basis, were permanently based at a fixed site, had multiple rides and attractions and had over 50,000 attendees for the year.

At the end of June 2001 there were 30 major amusement and theme parks operating in Australia, employing 4,150 persons. During 2000–01 there were 8.9 million visits to these amusement and theme parks. Total income for businesses operating these parks was \$287m. The seven parks in Queensland earned 71% of this total income and had 59% of the total employment; and the twelve parks in New South Wales earned 24% of the total income and had 36% of the total employment.

Amusement centres include indoor play centres, amusement machine centres, mini-golf centres, go-kart venues and similar operations. At the end of June 2001 there were 288 businesses operating amusement centres. These operations were carried out at 384 locations – 236 in capital cities and suburbs and 148 in other areas. Of the 384 locations, 138 were amusement machine centres. Amusement centres employed 2,793 people at the end of June 2001 and earned a total income of \$136.9m in 2000–01 (table 12.33).

## Funding for sport and recreation

### Government funding

Total expenditure by all three levels of government on sport and recreation activities in 2000–01 was \$2,124.2m. Of this, Australian Government expenditure was \$198.9m (9.4% of the total), state and territory governments spent \$875.2m (41.2%) and local governments spent \$1,050.1m (49.4%) (table 12.34). The recurrent expenditure component (\$1,585.5m) of total government expenditure on sport and recreation activities was much larger than the capital expenditure component (\$538.6m).

**12.33 AMUSEMENT CENTRES — 2000–01**

	Businesses at end June(a)	Locations at end June		Employment at end June		Wages and salaries		Total income	
		no.	%	no.	%	\$m	%	\$m	%
New South Wales	79	107	27.8	697	25.0	9.7	26.8	37.6	27.5
Victoria	88	109	28.3	1 162	41.6	16.0	44.1	54.9	40.1
Queensland	47	63	16.4	367	13.1	4.7	12.8	21.5	15.7
Western Australia	30	35	9.1	168	6.0	1.8	5.0	8.0	5.8
South Australia	36	45	11.7	295	10.6	3.0	8.4	10.2	7.5
Tasmania	10	14	3.6	35	1.3	0.5	1.4	1.8	1.3
Northern Territory	3	3	0.8	7	0.3	—	0.1	0.2	0.2
Australian Capital Territory	9	9	2.3	63	2.3	0.5	1.4	2.7	2.0
<b>Australia</b>	<b>288</b>	<b>384</b>	<b>100.0</b>	<b>2 793</b>	<b>100.0</b>	<b>36.2</b>	<b>100.0</b>	<b>136.9</b>	<b>100.0</b>

(a) Multi-state businesses are counted in each state in which they operate. Hence the counts of businesses for states and territories do not sum to the total for Australia.

Source: *Selected Amusement and Leisure Industries, Australia, 2000–01 (8688.0)*.

The Sydney 2000 Olympic and Paralympic Games were held in the 2000–01 financial year. While the Australian Government and New South Wales Government contributed most of the funding for these Games, other state and territory governments also provided funds for hosting events and providing training venues for overseas athletes. The Australian Government contributed an estimated \$71.8m, while the New South Wales Government provided \$382.3m for the Games.

### Business funding

According to the ABS Business Generosity Survey, during 2000–01, businesses gave \$1,447m to organisations and individuals, of which those involved in sport and recreation activities (which included the operation of sporting events, clubs and teams; indoor or outdoor recreational facility operations; social, leisure and hobby club activities; and recreational parks and gardens operations) received \$628m (43%). This comprised \$480m of sponsorship, \$109m of donations and \$39m of 'business to community projects' funding. Activities associated with sport

and recreation attracted the most business sponsorship funding compared with the other activities surveyed, namely community service and welfare, arts and culture, health, education and training, and environmental activities.

## Employment and involvement in sports and physical activities

### Employment in sport and physical recreation occupations

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the census was in a sport and physical recreation occupation. People who had unpaid involvement in sport and physical recreation activities and people who worked in sport and physical recreation as a 'second job' were not recorded as being in sport and physical recreation occupations, unless their main job (in terms of hours worked) was a sport and physical recreation occupation.

#### 12.34 GOVERNMENT FUNDING FOR SPORT AND RECREATION — 2000–01

Category of funding	Level of government				Proportion of total %
	Commonwealth \$m	State and territory \$m	Local \$m	Total \$m	
<b>Administration and regulation</b>					
Administration, policy and planning	29.8	74.2	37.3	141.2	6.6
Regulation and control	39.7	20.3	4.6	64.6	3.0
<i>Total</i>	69.5	94.4	41.9	205.8	9.7
<b>Venues, grounds and facilities</b>					
Venues and sports grounds(a)	14.5	185.8	410.1	610.5	28.7
Recreation parks and waterways	—	94.4	587.4	681.8	32.1
<i>Total</i>	14.5	280.2	997.5	1 292.2	60.8
<b>Participation and special events</b>					
Participation by clubs, teams and individuals	2.4	67.0	6.5	75.9	3.6
Special events(b)	77.0	374.9	—	451.9	21.3
<i>Total</i>	79.4	441.9	6.5	527.8	24.8
<b>Other services</b>					
Horse and dog racing	—	22.5	n.a.	22.5	1.1
Coaching and training	24.4	26.5	n.a.	50.9	2.4
Other support services	11.2	9.6	n.a.	20.8	1.0
<i>Total</i>	35.5	58.6	4.2	98.4	4.6
<b>Total</b>	<b>198.9</b>	<b>875.2</b>	<b>1 050.1</b>	<b>2 124.2</b>	<b>100.0</b>

(a) Includes funding for Sydney 2000 Olympic and Paralympic Games venues. (b) Includes funding for Sydney 2000 Olympic and Paralympic Games, excluding venues.

Source: *Sport and Recreation Funding by Government, Australia, 2000–01 (4147.0)*.

## 12.35 PERSONS EMPLOYED IN SELECTED SPORT AND PHYSICAL RECREATION OCCUPATIONS — 2001

	Males	Females	Persons
Fitness instructor(a)	3 685	8 679	12 364
Greenkeeper(b)	11 637	291	11 928
Veterinarian	2 975	2 032	5 007
Veterinary nurse	121	4 737	4 858
Recreation officer	1 035	2 807	3 842
Stud hand or stable hand	1 626	1 867	3 493
Boat builder and repairer(c)	3 153	60	3 213
Ticket collector or usher	1 576	1 624	3 200
Animal trainer(d)	2 251	875	3 126
Other sports coach	1 991	887	2 878

(a) Comprises Fitness instructors and related workers n.f.d. and Fitness instructor. (b) Comprises Greenkeepers n.f.d., Greenkeeper and Apprentice greenkeeper. (c) Comprises Boat builder and repairer, and Apprentice boat builder and repairer. (d) Comprises Animal trainers n.f.d., Horse trainer and Animal trainers n.e.c.

Source: *Employment in Sport and Recreation, Australia, 2001 (4148.0)*.

The 2001 census found 83,008 people (1.0% of all employed persons) had their main job in a sport and physical recreation occupation. This is a 21.6% increase from 1996 when 68,274 people (0.9%) had their main job in a sport and physical recreation occupation, and compares with an 8.7% increase for all occupations.

Of those employed in a sport and physical recreation occupation in 2001, fitness instructors (12,364 persons) and greenkeepers (11,928 persons) were prominent (table 12.35). In August 2001 there were more males (50,113 or 60.4%) than females (32,895 or 39.6%) employed in sport and physical recreation occupations. By comparison, of all employed persons, 54.8% were male.

### Involvement in organised sports and physical activities

In the 12 months to April 2004, 4.3 million people (27.2% of all people aged 15 years and over) were involved in sport and physical activity organised by a club, association or other organisation. This involvement included not only players and participants, but also people involved in non-playing roles that support, arrange and/or run organised sport and physical activity. There were 1.5 million people (9.6% of all people aged 15 years and over) who were involved as coaches, referees, administrators, scorers or in other non-playing roles.

Of the 4.3 million people involved in organised sport and physical activity, 895,800 (21.0% of those involved) were both a player and involved in at least one non-playing role. Of the 1.5 million people with non-playing involvement, 32.8% participated in more than one non-playing role. In

all, these 1.5 million people had 2.2 million involvements in non-playing roles in the 12 months prior to interview.

Of the 3.7 million players, 87,700 (2.4%) received some payment (in dollars and/or goods and services) for their involvement, and of the 2.2 million non-playing involvements, 267,100 (11.9%) attracted some payment (table 12.36). These data, and the figures in table 12.32, indicate how heavily reliant sports organisations are on the support of unpaid helpers.

The General Social Survey, conducted by the ABS in 2002, collected information on the types of organisations, clubs and associations to which people provided unpaid help in the form of time, services or skills. The survey found that just over one-third (5.0 million) of Australians aged 18 years and over undertook some form of voluntary work in the 12 months before interview in 2002. Sport, recreation and hobby organisations had the largest number of volunteers at 1,756,700, giving a volunteer rate of 12.1%. Although the overall volunteer rate for females (35.1%) was higher than for males (33.6%), the reverse was true for sport, recreation and hobby organisations with the male volunteer rate being 15.1% and the female 9.2%. The peak age group for volunteering for sport, recreation and hobby organisations was 40–44 year olds with a volunteer rate of 18.9%. The volunteer rate for these organisations was higher in the balance of the states (15.6%) than it was in the capital cities (10.2%). Higher rates of volunteering for these organisations were also associated with being employed (15.4%), being in a couple family with dependent children (17.8%), attending sporting events (19.3%) and participating in organised sport (25.6%).

### 12.36 INVOLVEMENT IN ORGANISED SPORTS AND PHYSICAL ACTIVITIES(a)

Type of involvement	Some paid involvement(b)		Unpaid involvement only		Total involvements		Participation rate(c)	
	2001 '000	2004 '000	2001 '000	2004 '000	2001 '000	2004 '000	2001 %	2004 %
Playing	88.1	87.7	3 428.3	3 580.5	3 516.4	3 668.2	23.5	23.4
Non-playing roles								
Coach, instructor or teacher	105.8	122.1	452.6	472.3	558.4	594.5	3.7	3.8
Referee or umpire	69.5	78.6	270.5	256.8	340.0	335.4	2.3	2.1
Committee member or administrator	24.3	21.6	570.7	552.8	595.0	574.4	4.0	3.7
Scorer or timekeeper	*14.6	16.7	439.1	496.3	453.7	513.0	3.0	3.3
Medical support	*11.9	14.1	78.2	90.4	90.1	104.5	0.6	0.7
Other involvement	*7.3	14.0	79.8	113.9	87.1	127.9	0.6	0.8
Total non-playing involvements(d)	233.5	267.1	1 890.9	1 982.6	2 124.3	2 249.6	..	..
<b>Total involvements(d)</b>	<b>321.6</b>	<b>354.8</b>	<b>5 319.2</b>	<b>5 563.0</b>	<b>5 640.8</b>	<b>5 917.8</b>	<b>..</b>	<b>..</b>

(a) Relates to persons aged 15 years and over who were involved in sport or physical activity organised by a club, association or other organisation in the 12 months prior to interview in April 2004. (b) Includes those who were paid for all or some of their involvement. Payment includes payment in dollars and/or goods and services. (c) Refers to the number of persons involved in organised sport and physical activity, expressed as a percentage of the civilian population aged 15 years and over. (d) The total number of involvements is greater than the corresponding total number of persons because persons can have more than one involvement each.

Source: *Involvement in Organised Sport and Physical Activity, Australia, April 2001 and April 2004 (6285.0)*.

## Participation in sports and physical activities

The ABS conducted a survey on the sports and physical activities in which people participated during a 12-month period prior to interview in 2002. This includes participation in sports or physical activities, such as football or netball, which are usually organised by a club or association. It also includes other sports and physical activities undertaken for recreation or exercise, which may not be organised, such as walking for exercise. Thus, for example, participation in swimming will include people who swim for recreation at the beach, those who swim competitively as part of a team, and those who swim laps at the local pool for exercise.

The survey found 62.4% of the population aged 18 years and over (9,056,300 people) participated as a player (rather than in a support role) at least once during the 12-month period in one or more sports or physical activities (table 12.37). Participation rates were highest for the 18–24 year age group (72.6%), and declined steadily with age. The rate for persons aged 65 years and over was 45.6%. Slightly more males (65.0%) than females (59.9%) had participated in sports or physical activities at least once during the 12 months prior to interview. However, 38.6% (5.6 million) of the population had participated at least weekly, on average, during this period, with females (38.7% or 2.8 million) reporting a similar weekly participation rate to males (38.6% or 2.8 million).

### 12.37 PARTICIPATION IN SPORT AND PHYSICAL ACTIVITIES(a) — 2002

Age group (years)	Males		Females		Persons	
	Number '000	Participation rate %	Number '000	Participation rate %	Number '000	Participation rate %
18–24	751.6	77.6	630.5	67.4	1 382.1	72.6
25–34	1 098.3	75.5	988.2	68.0	2 086.5	71.8
35–44	994.1	68.1	915.8	62.2	1 909.9	65.1
45–54	771.5	58.3	799.7	60.5	1 571.2	59.4
55–64	533.2	56.1	557.4	59.7	1 090.7	57.9
65 and over	516.0	50.6	500.0	41.3	1 016.0	45.6
<b>Total</b>	<b>4 664.7</b>	<b>65.0</b>	<b>4 391.6</b>	<b>59.9</b>	<b>9 056.3</b>	<b>62.4</b>

(a) Relates to persons aged 18 years and over who participated in sport or physical activity as a player at least once during the 12 months prior to interview.

Source: *Participation in Sport and Physical Activities, Australia, 2002 (4177.0)*.



## Popular sports and physical activities

The 2002 survey indicated the activities which attracted the most participants were walking (3.7 million people), swimming (1.6 million), aerobics/fitness (1.6 million) and tennis (1.0 million).

For men, the most popular activities were walking and golf. For women, walking and aerobics/fitness were most popular. Table 12.38 shows the ten sports or physical activities in which the most men participated and the ten in which the most women participated.

**12.38 ADULT PARTICIPATION IN SELECTED SPORTS AND PHYSICAL ACTIVITIES(a) — 2002**

	Number '000	Participation rate %
<b>MALES</b>		
Walking for exercise	1 255.2	17.5
Golf	890.3	12.4
Swimming	708.4	9.9
Aerobics/fitness	632.3	8.8
Tennis	544.5	7.6
Cycling	524.0	7.3
Running	440.9	6.1
Fishing	437.5	6.1
Cricket (outdoor)	340.8	4.7
Soccer (outdoor)	318.9	4.4
<b>FEMALES</b>		
Walking for exercise	2 407.9	32.9
Aerobics/fitness	953.2	13.0
Swimming	867.4	11.8
Tennis	443.4	6.1
Netball	389.4	5.3
Cycling	305.6	4.2
Yoga	266.2	3.6
Bush walking	240.1	3.3
Running	221.9	3.0
Dancing	206.4	2.8

(a) Relates to persons aged 18 years and over who participated in sport or physical activity as a player at least once during the 12 months prior to interview.

Source: *Participation in Sport and Physical Activities, Australia, 2002 (4177.0)*.

## Exercise

The ABS National Health Survey, conducted in 2001, found 70% of adults had exercised for recreation, sport or fitness during the previous two weeks. Overall proportions of males and females who exercised were similar, but males were more likely to have undertaken moderate

(40%) and vigorous (20%) exercise in the last two weeks, compared with females (33% and 11% respectively).

## Attendance at sporting events

Attending sports events (such as club matches and international competitions) is a popular pastime of many Australians. The 2002 ABS Sports Attendance Survey indicated seven million people, or 48% of all people aged 18 years and over, attended a sporting event (excluding junior and school sport) at least once in the previous 12 months. The overall attendance rate was virtually unchanged from the rates recorded in similar surveys conducted in 1995 and 1999. Men (56%) were more likely to have attended a sporting event than women (41%). For both men and women, attendance rates were highest for the 18–24 year age group (70% and 59% respectively) and steadily declined with age. Among men aged 65 years and over, the attendance rate was 27%, while for women in this age group it was 16%.

The sport with the highest attendance was Australian Rules football – 2.5 million people attended this sport on at least one occasion during the year (table 12.39). Horse racing (1.9 million), motor sports (1.5 million) and Rugby League (1.5 million) were also among the most attended sports.

## Children's participation in organised sport

A survey of children's activities in the 12 months to April 2003 found 1.6 million children aged 5–14 years (62%) participated outside of school hours in sport that had been organised by a school, club or association.

Participation in organised sport peaked at the age of 10 years for boys and 11 years for girls. However, across all ages boys were more likely to participate than girls – the total participation rate was 69% for boys and 54% for girls (table 12.40). There was also a higher percentage of boys participating in more than one sport (35% of boys compared with 23% of girls).

Children in Western Australia had the highest participation rate (66%) in organised sport outside of school hours, while those in Queensland had the lowest participation rate (54%).

### 12.39 ATTENDANCE AT SELECTED SPORTING EVENTS(a) — 2002

	Number			Attendance rate(b)		
	Males	Females	Persons	Males	Females	Persons
	'000	'000	'000	%	%	%
Australian Rules football	1 503.9	982.0	2 486.0	21.0	13.4	17.1
Horse racing	1 062.6	802.6	1 865.2	14.8	11.0	12.9
Motor sports	993.3	480.1	1 473.4	13.8	6.6	10.2
Rugby League	951.4	513.2	1 464.6	13.3	7.0	10.1
Cricket (outdoor)	635.2	231.0	866.2	8.9	3.2	6.0
Soccer (outdoor)	519.3	282.6	801.9	7.2	3.9	5.5
Rugby Union	469.7	203.9	673.6	6.5	2.8	4.6
Harness racing	318.9	189.4	508.3	4.4	2.6	3.5
Basketball	226.0	208.4	434.4	3.1	2.8	3.0
Tennis	192.5	201.0	393.5	2.7	2.7	2.7
Dog racing	150.7	81.6	232.3	2.1	1.1	1.6
Netball	66.9	152.8	219.7	0.9	2.1	1.5

(a) Attendance at least once in the 12 months prior to interview in 2002 by persons aged 18 years and over. (b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Sports Attendance, Australia, 2002 (4174.0)*.

### 12.40 CHILDREN'S PARTICIPATION IN ORGANISED SPORT(a) — 2003

Age (years)	Number			Participation rate		
	Males	Females	Persons	Males	Females	Persons
	'000	'000	'000	%	%	%
5	67.1	45.4	112.5	51.5	36.7	44.3
6	80.4	52.9	133.3	60.5	42.1	51.5
7	91.0	66.1	157.1	67.4	51.4	59.6
8	101.1	73.6	174.7	73.8	56.9	65.6
9	98.9	74.1	173.0	72.0	56.7	64.6
10	104.2	81.6	185.8	75.6	62.5	69.3
11	102.0	84.1	186.1	73.7	64.0	69.0
12	102.7	79.6	182.2	74.1	60.2	67.3
13	91.0	73.7	164.7	66.5	56.5	61.6
14	93.5	67.5	161.0	70.1	53.0	61.7
<b>Total</b>	<b>931.9</b>	<b>698.5</b>	<b>1 630.4</b>	<b>68.6</b>	<b>54.2</b>	<b>61.6</b>

(a) Outside of school hours during the 12 months prior to interview in April 2003.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

## Children's sports with the most participants

The most popular organised sport for children was swimming (with a participation rate of 17%), followed by outdoor soccer (13%). The organised sports that attracted most boys were outdoor soccer (with a participation rate of 22%), swimming (16%), and Australian Rules football (14%). For girls, the sports with the highest participation rates were netball (18%), swimming (17%), and tennis (8%) (table 12.41). Dancing was

an organised cultural (and physical) activity with a higher participation rate for girls (24%) than any organised sport.

About equal percentages of girls and boys participated in athletics, hockey and swimming. However, there is a clear difference between the sexes in preference or opportunities for some sports. Most netball players and gymnasts were girls (97% and 76%), while boys made up 99% of Rugby League players, 95% of Australian Rules footballers, and 93% of outdoor cricket players.



### 12.41 CHILDREN'S PARTICIPATION IN SELECTED ORGANISED SPORTS(a) — 2003

	Number			Participation rate		
	Males	Females	Persons	Males	Females	Persons
	'000	'000	'000	%	%	%
Swimming	213.6	225.5	439.1	15.7	17.5	16.6
Soccer (outdoor)	301.1	54.8	355.9	22.2	4.2	13.4
Netball	8.2	233.0	241.2	0.6	18.1	9.1
Tennis	128.3	100.1	228.5	9.5	7.8	8.6
Basketball	116.1	88.9	205.0	8.6	6.9	7.7
Australian Rules football	184.2	9.4	193.6	13.6	0.7	7.3
Cricket (outdoor)	124.2	9.5	133.6	9.1	0.7	5.0
Martial arts	83.9	45.8	129.7	6.2	3.6	4.9
Athletics and track and field	51.7	48.6	100.2	3.8	3.8	3.8
Gymnastics and trampolining	22.5	69.9	92.4	1.7	5.4	3.5
Rugby League	76.2	**0.9	77.1	5.6	**0.1	2.9
Hockey	33.3	33.0	66.3	2.5	2.6	2.5

(a) Outside of school hours during the 12 months prior to interview in April 2003.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

### Changes in participation since 2000

The overall number of children participating in organised sport increased by more than 62,000 between 2000 and 2003, increasing the participation rate by two percentage points to 62%. This was mainly caused by an increased participation rate among boys (from 66% in 2000 to 69% in 2003).

The organised sport with the highest participation rate in both 2000 and 2003 was swimming, which attracted an additional 59,000 participants during

this period. Of the twelve sports with the highest participation rates, the one showing the largest decrease in participation was Rugby League, with 18,000 fewer children participating in 2003 than in 2000 (table 12.42).

For information about children's participating in cultural and leisure activities, see *Children's participation in organised cultural activities* and *Children's participation in selected leisure activities*.

### 12.42 CHILDREN'S PARTICIPATION IN ORGANISED SPORTS(a) — 2000 and 2003

	2000		2003	
	Number	Participation rate	Number	Participation rate
	'000	%	'000	%
Swimming	380.1	14.4	439.1	16.6
Soccer (outdoor)	302.3	11.4	355.9	13.4
Netball	241.4	9.1	241.2	9.1
Tennis	223.8	8.5	228.5	8.6
Basketball	200.3	7.6	205.0	7.7
Australian Rules football	174.4	6.6	193.6	7.3
Cricket (outdoor)	140.9	5.3	133.6	5.0
Martial arts	104.6	4.0	129.7	4.9
Athletics and track and field	104.1	3.9	100.2	3.8
Gymnastics and trampolining	67.7	2.6	92.4	3.5
Rugby League	95.1	3.6	77.1	2.9
Hockey	64.2	2.4	66.3	2.5
Other organised sports	371.7	14.1	396.6	15.0
<b>Total(b)</b>	<b>1 568.2</b>	<b>59.4</b>	<b>1 630.4</b>	<b>61.6</b>

(a) Outside of school hours during the 12 months prior to interview in April. (b) The sum of activities do not add to the total because some children participated in more than one activity.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

## Children's participation in selected leisure activities

A survey of children's activities conducted in April 2003 found almost all children aged 5–14 years (99.8% or 2,641,500) participated in at least one of six selected leisure activities outside of school hours in the two school-weeks prior to interview.

While TV or video watching attracted almost equal percentages of boys (99%) and girls (98%), a much greater percentage of boys played electronic or computer games (82% of boys compared with 59% of girls), rode bikes (70% versus 53%), or went skateboarding or rollerblading (28% versus 17%). Girls participated to a much greater extent than boys in reading for pleasure (82% of girls compared with 68% of boys), and art and craft activities (61% versus 39%) (table 12.43).

Children spent more time watching television or videos than they did on any of the other selected activities, with an average of 22 hours over a school fortnight. By contrast, the average time spent by participants on each of the two next-most popular activities (reading for pleasure and playing electronic or computer games) was eight hours

over a school fortnight. The average amounts of time children spent participating in the remaining selected activities were very similar, with both bike riding and art and craft activities averaging six hours, and skateboarding or rollerblading averaging five hours, over a school fortnight.

### Changes in participation since 2000

The largest changes between 2000 and 2003 in participation in these selected leisure activities were a decline of 212,900 in the number of children who skateboarded or rollerbladed, and an increase of 140,500 in the number of children who did art and craft activities (table 12.43). However, this does not necessarily imply that children's leisure activities have become more sedentary over the period, as they may have increased their participation in organised sport or other active leisure pursuits not covered by the survey.

Details about children's participation in organised sports and organised cultural activities are outlined in *Children's participation in organised sport* and *Children's participation in organised cultural activities*.

**12.43 CHILDREN'S PARTICIPATION IN SELECTED LEISURE ACTIVITIES(a)**

	2000		2003	
	Number '000	Participation rate %	Number '000	Participation rate %
<b>MALES</b>				
Skateboarding or rollerblading	481.6	35.6	386.4	28.5
Bike riding	963.1	71.1	957.4	70.5
Watching TV or videos	1 312.2	96.9	1 338.6	98.6
Playing electronic or computer games	1 071.5	79.1	1 110.8	81.8
Art and craft activities	466.1	34.4	529.8	39.0
Reading for pleasure(b)	..	..	919.2	67.7
<b>Total(c)</b>	<b>1 342.6</b>	<b>99.1</b>	<b>1 356.3</b>	<b>99.9</b>
<b>FEMALES</b>				
Skateboarding or rollerblading	335.8	26.1	218.2	16.9
Bike riding	723.0	56.2	687.4	53.3
Watching TV or videos	1 248.1	96.9	1 262.4	97.9
Playing electronic or computer games	747.5	58.1	759.7	58.9
Art and craft activities	704.6	54.7	781.5	60.6
Reading for pleasure(b)	..	..	1 061.8	82.3
<b>Total(c)</b>	<b>1 276.0</b>	<b>99.1</b>	<b>1 285.2</b>	<b>99.6</b>
<b>PERSONS</b>				
Skateboarding or rollerblading	817.4	30.9	604.5	22.8
Bike riding	1 686.1	63.8	1 644.8	62.1
Watching TV or videos	2 560.3	96.9	2 601.0	98.2
Playing electronic or computer games	1 818.9	68.9	1 870.5	70.7
Art and craft activities	1 170.7	44.3	1 311.2	49.5
Reading for pleasure(b)	..	..	1 981.0	74.8
<b>Total(c)</b>	<b>2 618.6</b>	<b>99.1</b>	<b>2 641.5</b>	<b>99.8</b>

(a) Outside of school hours during the past two school weeks prior to interview in April. (b) Reading for pleasure was not included as a leisure activity in 2000. (c) The sum of activities do not add to the total because some children participated in more than one activity.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

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## INDUSTRY STRUCTURE AND PERFORMANCE

This chapter presents a consolidated view of industrial production in Australia. The current structure and performance of the main industrial components of the Australian economy, and their relative contribution to overall economic activity, are described in terms of the value of production and employment by industries. Statistics are also provided on the growth of industries over the past ten years and the changing contribution of individual industries to total economic activity during the period. More information on the economic contribution, structure and performance of individual industries is provided in later chapters.

This chapter begins by outlining the development of industry since European settlement in *The evolution of Australian industry*. The section *Value of goods and services produced by industries* examines industry gross value added and the contribution of individual industries to Australia's gross domestic product. *An industry view of employment* looks at industry shares of total employment, average weekly paid hours, and compensation of employees. The chapter concludes with the section *Industry productivity* which provides data on multifactor productivity for the market sector as a whole and gross value added per hour worked for market sector industries.



## The evolution of Australian industry

Australia's economic development has been one of contrast and change. In the early years of European settlement, between 1788 and 1820, there was little scope for industrial or commercial enterprises. The government, as both main producer and main consumer, established workshops to produce the basic necessities of life – flour, salt, bread, candles, leather and leather articles, blacksmith's products, tools and domestic items.

Between 1820 and 1850 the pastoral industry led Australia's economic development, and by 1850 it was supplying well over 50% of the British market for imported wool. The growth in the wool industry brought great advances in the rest of the economy, with local manufacturing industries being established in response to new market opportunities. Gold surpassed wool as Australia's major export earner throughout the 1850s and 1860s, resulting in a rapid expansion of banking and commerce. Increased public works activity during the 1870s played an important role in encouraging expansion in manufacturing. By 1901 this expansion had resulted in an economy where agriculture, manufacturing, mining, construction and the service industries all provided significant contributions to Australia's wealth.

From 1901 to 1930 manufacturing expanded further, with impetus from Federation and the elimination of customs barriers between states, and from World War I. With the onset of World War II, the Australian manufacturing sector was sufficiently developed and diversified to respond to the demand for war materials and equipment. Key industries expanded and new ones developed rapidly to produce munitions, ships, aircraft, new kinds of equipment and machinery, chemicals, textiles and so on. After the war all sectors of the economy experienced growth. The onset of the oil price rises in 1973–74 led the world into recession. Inflation, coupled with slower growth in Australia's gross domestic product (GDP), affected all sectors of the economy. The modest employment growth between 1968 and 1979 was dominated by the service industries.

The 1980s and 1990s saw a decline in the relative contribution to GDP from goods-producing industries and a rise in the contribution from service industries. The falling contribution from

goods-producing industries is largely the result of a decline in manufacturing's share of GDP. The mining, manufacturing, and electricity, gas and water supply industries experienced declining employment, along with outsourcing of some activities, particularly support services.

## Value of goods and services produced by industries

One measure of the importance of an industry is its contribution to the Australian economy. The size of the Australian economy is typically described in terms of GDP, and the structure and performance of the economy in terms of industry gross value added (GVA).

GDP is an estimate of the total market value of goods and services produced in Australia in a given period after deducting the cost of goods and services used up in the process of production (intermediate consumption), but before deducting consumption of fixed capital. This is also described as the unduplicated value of economic production. This measure avoids double counting the goods and services produced at successive stages of production. Accordingly, it is a measure of the value added in production.

Industry GVA is the term used to describe the unduplicated value of goods and services produced by individual industries. This measure removes the distortion caused by variations in the incidence of commodity taxes and subsidies across the output of individual industries. Movements in the chain volume measures of GDP and industry GVA (from which the direct effects of price changes have been removed) are important indicators of economic growth. More information is provided in the *National accounts* chapter.

Table 13.1 provides details of industry GVA and GDP for 2003–04. Data are presented at a broad industry level, generally equating to the Division level of the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0). In the ANZSIC, individual businesses are assigned an appropriate industry category on the basis of their predominant activities. The table provides estimates of the unduplicated production of goods and services (industry GVA) in 2003–04, along with percentage changes from 2002–03 and average annual rates of growth between 1993–94 and 2003–04.

In 2003–04 the value of Australian production (GDP) was \$787 billion (b) (in chain volume terms), an increase of 3.8% from 2002–03. The average annual rate of growth in GDP between 1993–94 and 2003–04 was 3.9%. In 2003–04 the ratio of GDP to the estimated resident population (GDP per person) was \$39,120.

Graph 13.2 shows industry GVA shares of GDP (in current prices) in 2003–04. The manufacturing industry contributed the largest share to GDP (10.9% or \$88b) in 2003–04. This was followed by the property and business services industry (10.5% of GDP or \$86b). The finance and insurance industry was the third most important industry in terms of contribution to GDP, contributing 7.6% or \$62b.

Between 1993–94 and 2003–04, the greatest relative increase in industry GVA share of GDP was for the property and business services industry (up 1.8 percentage points). The next largest increases were for the finance and insurance (1.3 percentage points), and construction (0.8 percentage points) industries.

In the same period, the greatest fall in relative shares of GDP was for the manufacturing industry (down 2.0 percentage points). The next largest decreases in relative shares were for the electricity, gas and water supply industry (0.8 percentage points) followed by agriculture, forestry and fishing (0.4 percentage points) and mining, wholesale trade, and education industries, all of which had a decrease in relative share of GDP of 0.3 percentage points.

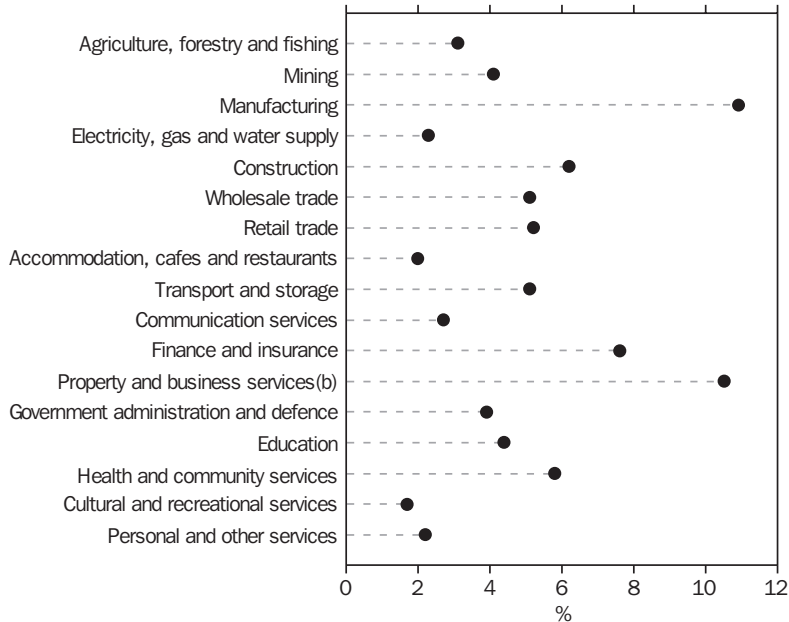
### 13.1 INDUSTRY GROSS VALUE ADDED(a) AND GROSS DOMESTIC PRODUCT, Chain volume measures(b)

	1993–94	2002–03	2003–04	Change from 2002–03 to 2003–04	Average annual rate of growth from 1993–94 to 2003–04
	\$m	\$m	\$m	%	%
Agriculture, forestry and fishing	20 540	21 164	26 800	26.6	2.7
Mining	25 378	34 272	33 139	-3.3	2.7
Manufacturing	67 141	82 462	83 622	1.4	2.2
Electricity, gas and water supply	14 941	16 961	17 202	1.4	1.4
Construction	29 344	45 668	48 556	6.3	5.2
Wholesale trade	25 533	39 282	42 164	7.3	5.1
Retail trade	27 016	39 403	42 321	7.4	4.6
Accommodation, cafes and restaurants	10 897	15 456	16 468	6.5	4.2
Transport and storage	25 039	37 389	39 164	4.7	4.6
Communication services	10 572	20 351	20 986	3.1	7.1
Finance and insurance	37 906	57 963	60 445	4.3	4.8
Property and business services(c)	47 595	79 390	82 149	3.5	5.6
Government administration and defence	23 417	29 634	30 125	1.7	2.6
Education	28 293	33 144	33 547	1.2	1.7
Health and community services	30 637	43 957	45 398	3.3	4.0
Cultural and recreational services	10 067	13 160	13 585	3.2	3.0
Personal and other services	12 345	17 494	17 716	1.3	3.7
Ownership of dwellings	44 997	63 860	66 306	3.8	4.0
Taxes less subsidies on products	45 697	67 137	69 200	3.1	4.2
Statistical discrepancy	606	—	-2 138	..	..
<b>Gross domestic product</b>	<b>(d)538 269</b>	<b>758 147</b>	<b>786 754</b>	<b>3.8</b>	<b>3.9</b>

(a) At basic prices. (b) Reference year is 2002–03. (c) Excludes ownership of dwellings. (d) Chain volume measures for 1993–94 are not additive.

Source: Australian System of National Accounts, 2003–04 (5204.0).

**13.2 CONTRIBUTION TO GROSS DOMESTIC PRODUCT(a),  
Current prices — 2003-04**



(a) Industry GVA as a proportion of GDP. (b) Excludes ownership of dwellings.

Source: Australian System of National Accounts, 2003-04 (5204.0).

Graph 13.3 shows the average annual rate of growth in GVA (in chain volume terms) for individual industries between 1993-94 and 2003-04. The communication services industry had the highest average annual rate of growth (7.1%), followed by property and business services (5.6%) and construction industries (5.2%). Average annual growth rates provide an indicator of the broad underlying behaviour of the annual series over several years. These averages, however, smooth annual movements in the series and mask the highest and lowest annual movements.

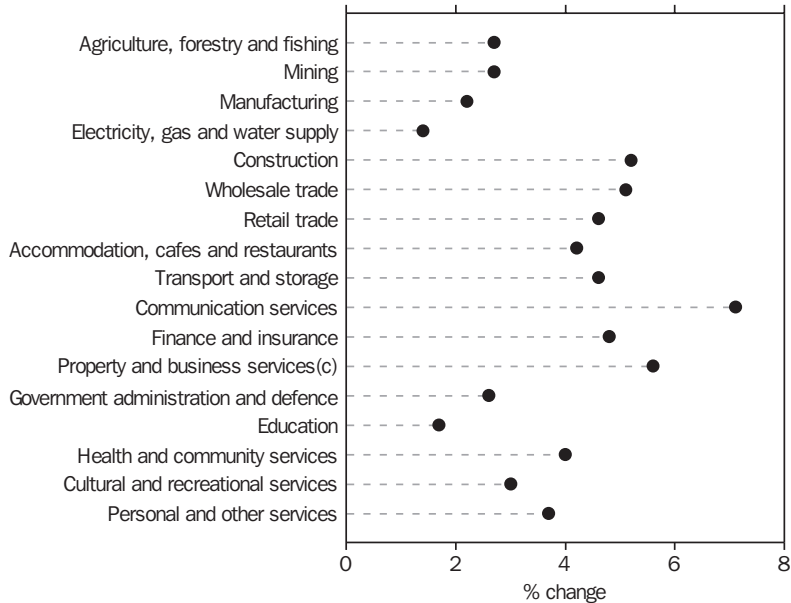
The average annual growth rates shown were affected by year-on-year changes in levels between 1993-94 and 2003-04. In terms of year-on-year changes, the fastest growing industry in this period, the communication services industry, showed strong and relatively steady increases in GVA from 1993-94 to 1998-99. After this period, the year-on-year increases were much lower. In the twelve months following 2002-03 production of the communication services industry rose by 3%.

The year-on-year changes for the agriculture, forestry and fishing industry varied significantly over time. While the value of production (GVA) of

this industry grew by only 2.7% on average each year between 1993-94 and 2003-04, its GVA fell by 17% between 1993-94 and 1994-95 and by 24% in the period 2001-02 to 2002-03, due largely to the effects of drought on agricultural production. Over the 10-year period, 1993-94 to 2003-04, the largest year-on-year growth followed the recent drought with a 27% increase between 2002-03 and 2003-04.

Another industry that had been subjected to quite significant variation in year-on-year changes especially in recent years, is the construction industry. In the period 2001-02 to 2002-03 the value of production (GVA) of the construction industry grew by 16%, with the previous annual period (2000-01 to 2001-02) also recording strong growth (12%). This growth followed a fall of 14% between 1999-2000 and 2000-01, coinciding with the introduction of The New Tax System in July 2000. On average, GVA of this industry grew by 5.2% each year in the period 1993-94 to 2003-04.

**13.3 AVERAGE ANNUAL RATE OF GROWTH IN THE PRODUCTION OF GOODS AND SERVICES(a), Chain volume measures(b) — 1993–94 to 2003–04**



(a) Industry GVA at basic prices. (b) Reference year is 2002–03.  
(c) Excludes ownership of dwellings.  
Source: Australian System of National Accounts, 2003–04 (5204.0).

**An industry view of employment**

Another measure of the significance of an industry is its contribution to employment. Employment (and unemployment) data are used as social indicators by government, research and welfare organisations. Employment is also an indicator of economic activity, although turning points in the employment series tend to lag turning points in the business cycle.

Graph 13.4 shows industry shares of total employment in 2003–04. These data were derived from the Australian Bureau of Statistics (ABS) Labour Force Survey and relate to the civilian population aged 15 years and over. People are considered to be employed if they were in paid work for one hour or more in the reference week, or worked for one hour or more without pay in a family business or farm. Employment is further described in the *Labour* chapter.

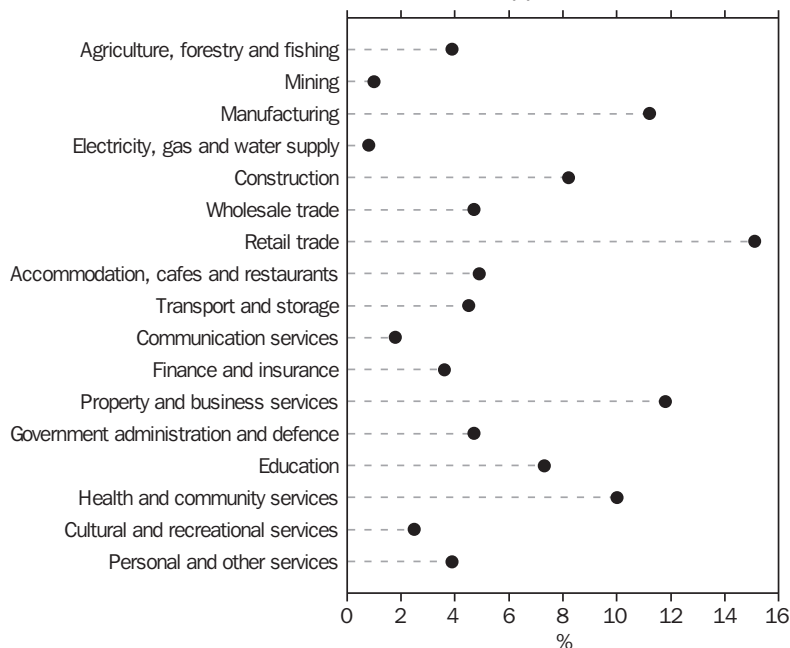
In 2003–04, 9.5 million people were employed across all industries. The retail trade industry employed the greatest number of people of all industries (1.4 million employed persons or 15% of total employment). Property and business

services employed 1.1 million people (12% of total employment) followed by manufacturing (11%), health and community services (10%), construction (8%) and education (7%) industries.

These industries were also the main employing industries in 1993–94 although property and business services has displaced manufacturing as the second largest employer. Between 1993–94 and 2003–04 the property and business services industry share of total employment increased by 3.5 percentage points. Conversely, manufacturing industry’s share of total employment declined by 2.8 percentage points over this period.

The industry composition of average weekly paid hours for wage and salary earners provides an insight into the labour market. Data on this topic are derived from the biennial ABS Survey of Employee Earnings and Hours. This survey covers all employing organisations in Australia (public and private sectors) except enterprises primarily engaged in the agriculture, forestry and fishing industry, private households employing staff, and foreign embassies and consulates.

### 13.4 SHARE OF TOTAL EMPLOYMENT(a) — 2003–04



(a) Annual average of quarterly data.

Source: *Labour Force, Australia, Detailed – Electronic Delivery, May 2005 (6291.0.55.001)*.

Graph 13.5 shows average weekly total paid hours for full-time adult non-managerial employees by industry in May 2004 compared with the average for all industries in the period (39.5 hours). Total paid hours are equal to ordinary time paid hours plus overtime paid hours. The highest average weekly paid hours for full-time adult non-managerial employees was in the mining industry (45.3 hours), followed by the construction (42.1 hours) and, transport and storage (41.7 hours) industries. The lowest average weekly paid hours was in the education industry (37.6 hours).

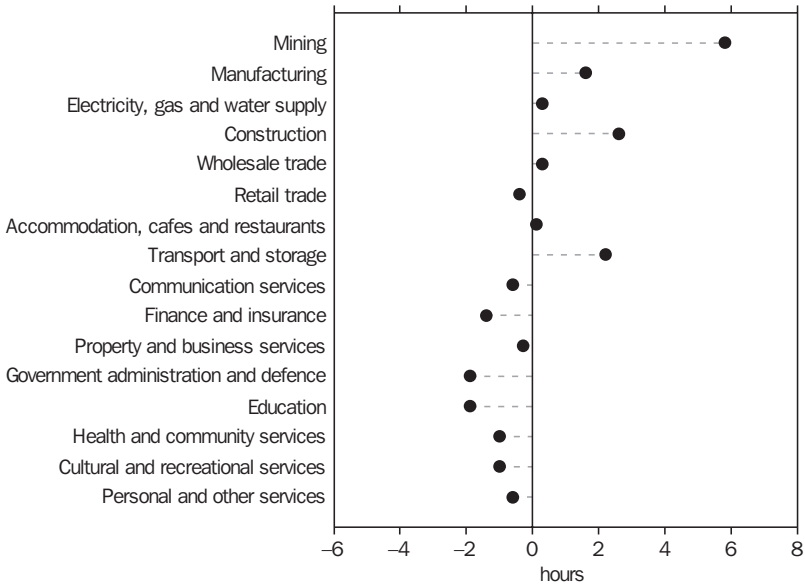
Paid overtime accounted for 4% of average weekly total paid hours for full-time adult non-managerial employees. The industry in which employees worked the most paid overtime was mining (7.7% of total paid hours for that industry). Paid overtime in the construction, manufacturing, and transport and storage industries accounted for 7.6%, 7.3% and 7.2% of total paid hours respectively.

Compensation of employees is both an economic and social indicator. This item includes wages and salaries (paid in cash and in kind) and employer social contributions (e.g. employers' contributions to superannuation and worker's compensation premiums). Wages and salaries in kind can include meals, housing, uniforms, and vehicles.

Graph 13.6 shows industry shares of total compensation of employees in 2003–04. In this period, total compensation of employees was \$379b. Total wages and salaries was \$343b (90% of total compensation of employees).

The property and business services industry held the largest share of total compensation of employees (15%), followed by the manufacturing (12%), health and community services (10%), education (8.3%) and retail trade (7.9%) industries. These industries were also in the top six industries (along with construction industry) that had the highest share of total employment in 2003–04.

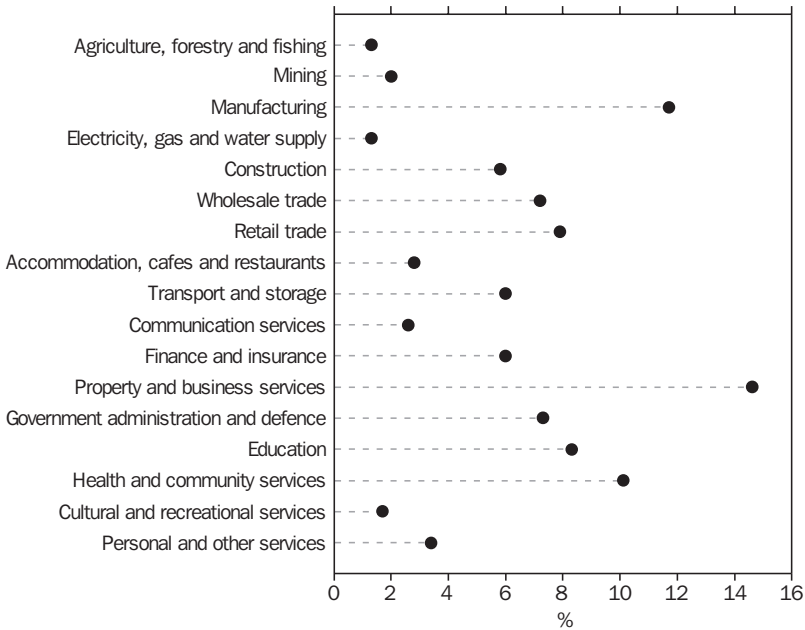
**13.5 AVERAGE WEEKLY TOTAL PAID HOURS FOR FULL-TIME ADULT NON-MANAGERIAL EMPLOYEES(a), Difference from all industries average(b) — May 2004**



(a) Excludes agriculture, forestry and fishing. (b) The all industries average weekly total paid hours is 39.5 hours.

Source: *Employee Earnings and Hours, Australia, May 2004* (6306.0).

**13.6 SHARE OF TOTAL COMPENSATION OF EMPLOYEES(a) — 2003-04**



(a) This item comprises wages and salaries plus employers' social contributions.

Source: *Australian System of National Accounts, 2003-04* (5204.0).

## Industry productivity

Multifactor productivity (MFP) statistics provide a measure of changes in the efficiency of production. These measures are used by both government and private organisations to help gauge the effect of changes in work practices, technology, education and training.

MFP is the ratio of a measure of economic output to a combination of two or more factor inputs. In simple terms, MFP represents that part of the change in production that cannot be explained by changes in the measured inputs.

MFP statistics use industry GVA (in chain volume terms) as the measure of economic output. Two inputs are used – labour (hours worked) and capital. The capital input used is a measure of different capital assets such as dwellings, other buildings and structures, and machinery and equipment, along with livestock, intangibles and non-agricultural land.

This means that MFP largely represents the effects of technical progress, improvements in the work force, improvements in management practices, and economies of scale. MFP can also be affected in the short to medium term by other factors such as the weather, and by variations in capacity utilisation associated with the business cycle.

MFP measures are calculated for the market sector, an industry grouping comprising the following industries: agriculture, forestry and fishing; mining; manufacturing; electricity, gas and water supply; construction; wholesale trade; retail trade; accommodation, cafes and restaurants; transport and storage; communication services; finance and insurance; and the cultural and

recreational services industries. These are industries with marketed activities for which there are satisfactory estimates of the growth in the volume of output.

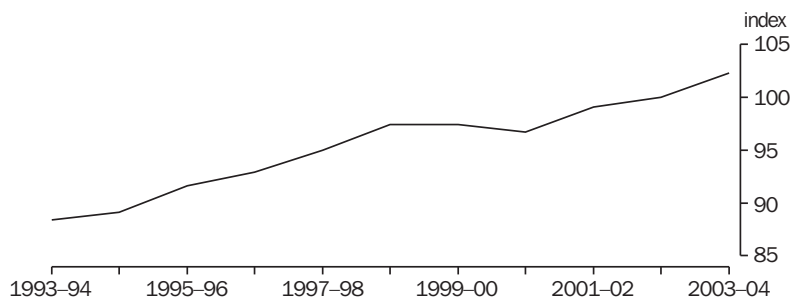
MFP estimates are subject to growth in the business cycle. It is for this reason that MFP growth is generally analysed as average growth rates from the peak of one growth cycle to the peak of another. This analysis assumes that labour is being utilised to the same degree at each peak in the growth cycle.

MFP statistics are available only for the market sector as a whole. During the period 1998–99 to 2003–04 (the current business growth cycle), the average annual rate of growth in MFP of the market sector (on an hours worked basis) was 1%, half that for the period 1993–94 to 1998–99 (the previous business growth cycle) (graph 13.7).

Although MFP is the more comprehensive measure of productivity, the ABS also produces industry labour productivity indexes. One measure of labour productivity, an index of industry GVA in chain volume measures per hour worked, is useful because it is available for each market sector industry.

Labour productivity is constant if there is no change in the amount produced (chain volume GVA) per hour worked. Changes in this ratio reflect changes in the average skill or productivity level of the workforce. This measure reflects not only the contribution of labour to changes in production but also the contribution of capital and other factors (e.g. technological changes and managerial efficiency).

**13.7 MULTIFACTOR PRODUCTIVITY OF THE MARKET SECTOR(a)(b) —  
1993–94 to 2003–04**



(a) Reference year for index is 2002–03 = 100.0. (b) Gross domestic product per combined unit of labour and capital.

Source: Australian System of National Accounts, 2003–04 (5204.0).

Movements in employment and hours worked tend to lag movements in GDP. The implication being, in the period of the growth cycle when the growth in output starts to decline, indexes of labour productivity are likely to decline sharply, particularly if rapid growth in GDP is abruptly ended. Conversely, labour productivity indexes are likely to grow strongly when the economy comes out of a cyclical trough.

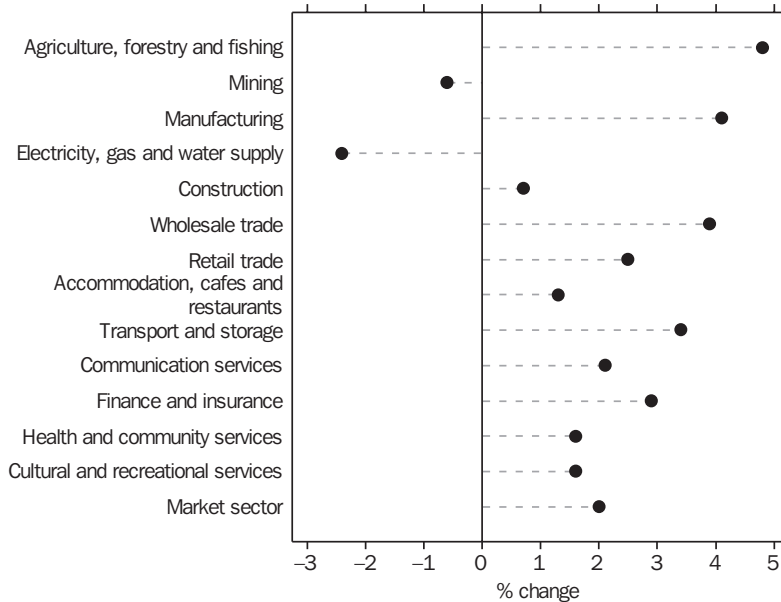
Graph 13.8 shows the average annual rate of growth in the amount produced per hour worked for market sector industries over the current business growth cycle (1998–99 to 2003–04). Over this period, the average annual growth rate of the market sector as a whole was 2.0%.

Most of the market sector industries increased their productivity per hour worked. In the current business cycle the industries with the highest average annual productivity growth rates are agriculture, forestry and fishing (4.8%), manufacturing (4.1%), wholesale trade (3.9%) and transport and storage (3.4%). Negative growth is seen only in the electricity, gas and water supply (-2.4%), and the mining industries (-0.6%).

In the previous business growth cycle (1993–94 to 1998–99), market sector productivity per hour worked grew, on average, by 3.4% each year. The communication services industry (7.4%) and the electricity, gas and water supply industry (7.2%) were the top two productive industries in terms of growth in amount produced per hour worked. The wholesale trade industry was the third most productive industry (rising on average by 6.8% each year). In this cycle, negative growth in amount produced per hour worked was only seen in the cultural and recreational services industry (-0.7%).

The average annual rate of growth for a large number of market sector industries had fallen between the two business cycles (1993–94 to 1998–99 and 1998–99 to 2003–04). The largest decreases were in the electricity, gas and water supply (-9.6 percentage points), mining (-5.7 percentage points) and communication services (-5.4 percentage points) industries.

**13.8 AVERAGE ANNUAL RATE OF GROWTH IN AMOUNT PRODUCED PER HOUR WORKED(a), Market sector industries— 1998–99 to 2003–04**



(a) Indexes of gross value added per hour worked in chain volume measures. Reference year is 2002–03 = 100.0.

Source: Australian System of National Accounts, 2003–04 (5204.0).



## **Bibliography**

### **ABS publications**

*Australian System of National Accounts, 2003–04* (5204.0)

*Employee Earnings and Hours, Australia, May 2004* (6306.0)

*Labour Force, Australia, Detailed – Electronic Delivery, June 2005* (6291.0.55.001)

## AGRICULTURE

Climate, soil type, topography and the availability of irrigation water, are the main factors which influence the type of land use undertaken by Australian farmers. These factors, together with access to markets and technological advances, all contribute to the continuing evolution of Australian agriculture. Australian agriculture is fundamentally based on extensive pastoral and cropping activities, however diversification into intensive livestock and horticultural industries is increasing. Improved farming practices and technology continue to increase farm productivity in response to external market signals.

While Australian agriculture no longer contributes a large share to gross domestic product – averaging around 3% in recent years – it utilises a large proportion of natural resources, accounting for 70% of stored water use and almost 60% of Australia's land area. In addition, the dependence of agriculture on Australia's unpredictable climate means it often significantly affects regional economies and the national economy on a scale far greater than most other industries of similar size. The widespread drought experienced in 2002–03 severely affected the production of crops and stock numbers.

Until the late-1950s, agricultural products accounted for more than 80% of the value of Australia's exports. Since then, despite increasing agricultural output, the proportion has declined markedly as the Australian economy has become more diverse. The quantity and value of production have expanded in the mining, manufacturing and, in recent years, the service industries. For the five years prior to June 2002, exports from the agriculture industry averaged 9% of the total trade. However, the 2002–03 drought severely reduced agricultural production and the amount of agricultural product available for international trade, resulting in Australian agricultural exports dropping to 7.4% of total exports in 2002–03. Improved climate conditions during 2003–04 saw agriculture exports rise slightly to 7.7% of total trade in 2003–04. Australian agriculture occupies a significant place in global rural trade, with wool, beef, wheat, cotton, dairy products and sugar being particularly important. Australia is also an important source of fruit, rice and flowers.

The major source of statistics on land use, commodity production and livestock numbers in this chapter is the annual Agricultural Survey, a large sample survey conducted by the Australian Bureau of Statistics (ABS). Every five years the survey is replaced by the Agricultural Census, with the last census having been conducted in 2001, coinciding with the 2001 Census of Population and Housing.

The chapter concludes with an article *The Australian wheat industry*.

## The agricultural environment

Australia's average elevation is the lowest of any continent, with a mean elevation just exceeding 200 metres. The dominant topographical feature of the continent is the Great Dividing Range, which spans the length of the eastern seaboard and has a profound influence on regional weather patterns and land use.

Australia's agricultural landscapes support a wide range of soils. Most are ancient, strongly weathered and infertile by world standards, with deficiencies in phosphorus and nitrogen. Those on floodplains are younger and more fertile. Very few are considered good quality soils for agriculture. To offset nutrient deficiencies, superphosphate and nitrogenous fertilisers are widely used, particularly on pasture and cereal crops. Fragile soil structure and a susceptibility to waterlogging are other common features of Australian soils, while large areas are naturally affected by salt or acidity. These soil characteristics restrict particular agricultural activities, sometimes ruling out agricultural activity altogether.

With the exception of Antarctica, Australia is the world's driest continent. More than a third of the continent is effectively desert; over two thirds of the continent is classified as arid or semi-arid. The wet summer conditions of northern Australia are suited to beef cattle grazing in inland areas and the growing of sugar and tropical fruits in coastal areas. The drier summer conditions of southern Australia favour wheat and other dryland cereal farming, sheep grazing and dairy cattle (in the higher rainfall areas), as well as beef cattle. Within regions there is also a high degree of rainfall variability from year-to-year, which is most pronounced in the arid and semi-arid regions. Rainfall variability is very high by global standards and often results in lengthy periods without rain. The seasonality and variability of rainfall in Australia requires that water be stored, and 70% of stored water use (including groundwater) is accounted for by the agricultural sector. Under normal seasonal conditions, the ability of primary producers to store water ensures that there are adequate supplies of water for those agricultural activities requiring a continuous supply. The development of large scale irrigation schemes has opened up areas of inland Australia to agricultural activities which otherwise would not have been possible.

Evaporation is another important element of Australia's environment affecting agricultural production. Hot summers are accompanied by an

abundance of sunlight. This combination of climatic variables leads to high rates of evaporation. Areas that have been cleared for crop and pasture production tend to coincide with areas that receive five to nine months of effective rainfall (where rainfall exceeds evaporation) each year. In areas of effective rainfall of more than nine months, generally only higher value crops or tropical crops and fruits are grown, while in areas with effective rainfall of less than five months, cropping is usually restricted to areas that are irrigated.

Since European settlement the vegetation of Australia has altered significantly. In particular, large areas of Australia's forest and woodland vegetation systems have been cleared, predominantly for agricultural activity. The areas that have been altered most are those which have been opened up to cultivation or intensive grazing. Other areas, particularly those semi-arid regions previously cleared of timber and scrub to allow extensive grazing of native grasses, now show signs of returning to their previous condition. In recent years various state and territory legislation has seen restrictions applied to the area of old growth and regrowth forest and woodland that can be cleared without a permit.

For more detail see the *Geography and climate* chapter.

## Land used for agriculture

In spite of Australia's harsh environment, agriculture is the most extensive form of land use. At 30 June 2004, the estimated total area of establishments with agricultural activity was 440.1 million hectares (ha), representing about 57% of the total land area (tables 14.1 and 14.2). The remainder of the land area consists of unoccupied land (mainly desert in western and central Australia), Aboriginal land reserves (mainly located in the Northern Territory and Western Australia), forests, mining leases, national parks and urban areas.

There has been a small decline in the overall area of establishments with agricultural activity in recent years. The reasons for this are varied. They include the resumption of some private land for national parks; the splitting up of farms, some to smaller farms (urban sprawl is a part of this process); the conversion of agricultural land to other business activities, such as forestry; and the transfer of land to Aboriginal ownership, some of which is no longer used for agricultural purposes.

Livestock grazing accounts for the largest area of land use in agriculture, with approximately 368 million ha, or in excess of 80% of all agricultural land, being used for this activity. In the higher rainfall and irrigated areas, livestock grazing has led to the replacement of large areas of native vegetation with more productive introduced pastures and grasses, many of which have now become naturalised.

For the year ended June 2004 approximately 6% of total agricultural land had been cropped.

## Irrigation

The high variability in river flow and annual rainfall, which are features of the Australian environment, means that successful ongoing production of many crops and pastures is dependent on irrigation. With such variation in rainfall it is not surprising that nearly one third of agriculture establishments (43,800) reported irrigation activity in 2002–03. In total 10,400

gigalitres of irrigation water was applied in 2002–03, an average application rate of 4.4 megalitres per irrigated hectare.

Rice is only grown in areas that can guarantee an adequate supply of irrigation water. Cotton, grapes, vegetables, fruit (including nuts) and sugar cane are the other most intensively irrigated crops, with 96%, 96%, 93%, 74% and 42% respectively of their total growing areas being irrigated in 2002–03.

The total area of land irrigated, about 2.4 million ha in 2002–03 (table 14.3), represents less than 1% of the total land used for agriculture.

Most irrigated land is located within the confines of the Murray–Darling Basin, which covers parts of New South Wales, Victoria, Queensland and South Australia.

More information on the use of water by the agriculture sector is provided in the *Environment* chapter.

### 14.1 AGRICULTURAL LAND USE — Year ended 30 June

	Area cropped during year mill. ha	Area of grazing land at 30 June mill. ha	Area of establishments with agricultural activity mill. ha	Proportion of Australian land area %
1999(a)	23.3	n.a.	453.7	59.0
2000	23.8	n.a.	455.5	59.2
2001	24.5	n.a.	455.7	59.2
2002	24.1	n.a.	447.0	58.1
2003	23.6	341.3	439.5	57.1
2004	26.1	367.6	440.1	57.2

(a) Year ended 31 March.

Source: *Agricultural Commodities, Australia* (7121.0).

### 14.2 AREA OF ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY — 30 June

	NSW mill. ha	Vic. mill. ha	Qld mill. ha	SA mill. ha	WA mill. ha	Tas. mill. ha	NT mill. ha	Aust.(a) mill. ha
1999(b)	59.3	12.8	140.3	59.4	113.1	1.9	66.9	453.7
2000	62.1	13.3	145.4	59.9	105.6	1.8	67.5	455.5
2001	61.0	13.2	146.0	57.3	109.2	1.9	67.1	455.7
2002	63.4	12.8	141.4	53.5	109.0	1.8	65.2	447.0
2003	65.1	13.4	139.0	54.1	102.7	1.8	63.3	439.5
2004	63.6	13.6	144.3	52.5	101.2	1.7	63.1	440.1

(a) Includes ACT. (b) At 31 March.

Source: *Agricultural Commodities, Australia* (7121.0).

### 14.3 AREA OF CROPS AND PASTURES IRRIGATED — 2002–03

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
Pastures (native or sown)								
For grazing	208	368	^44	^42	n.p.	36	n.p.	710
For seed production	n.p.	n.p.	*2	^14	n.p.	^2	—	^32
For hay and silage	^59	^57	^25	^16	^—	^4	—	162
Cereal crops								
Cut for hay	^37	*13	*13	*2	n.p.	^—	n.p.	^66
For grain or seed(b)	282	^27	^48	^4	n.p.	^4	n.p.	365
Not for grain or seed	^23	*5	^11	*2	n.p.	^2	n.p.	42
Rice	n.p.	n.p.	—	—	—	—	—	44
Sugar cane	—	—	235	—	4	—	—	238
Cotton	^173	—	61	—	—	—	—	234
Other broadacre crops(c)	^29	^8	^11	*3	n.p.	16	n.p.	68
Fruit trees, nut trees, plantations or berry fruits(d)	30	^39	35	18	^10	^4	2	138
Vegetables								
For human consumption	15	25	34	13	9	17	—	112
<b>Total(e)</b>	<b>939</b>	<b>593</b>	<b>525</b>	<b>183</b>	<b>48</b>	<b>87</b>	<b>3</b>	<b>2 378</b>

(a) Includes ACT. (b) Excludes rice. (c) Excludes sugar cane and cotton. (d) Excludes grapevines. (e) Totals include other pastures or crops not elsewhere classified.

Source: *Water Use on Australian Farms, 2002–03 (4618.0)*.

## Characteristics of Australian farms

At 30 June 2004 there were about 130,500 establishments undertaking agricultural activity with an annual value of agricultural operations of \$5,000 or more. For the majority of these establishments (129,154) their primary activity was agriculture. While the remainder were undertaking some form of agricultural activity, their main activity was not in agriculture. The majority of agricultural establishments were mainly engaged in either beef cattle farming (35,501), mixed grain/sheep/beef farming (16,308), grain growing (14,614), sheep farming (12,018) or dairy cattle farming (10,359) (table 14.4).

## Employment in agriculture

The agriculture sector is an important source of employment in regional and rural Australia. The number of people employed in agriculture and related services decreased again in 2005 to 336,700, following a significant drop in 2003 (table 14.5). The significant reduction in 2003 was largely the result of the drought experienced over most of Australia during that period, which

severely affected the agriculture sector. The majority of people employed in agriculture in 2005 were male (67%).

## Gross value of agricultural commodities produced

The contribution of agriculture to the Australian economy can be measured in a number of ways. The most direct measurement available is the gross value of agricultural production for the year ending 30 June. In 2003–04 the estimate of gross value of agricultural production in current prices was \$36.9 billion (b).

Table 14.6 shows the gross value of agricultural commodities produced for the years 1998–99 to 2003–04. The values shown are the values of recorded production at the wholesale prices realised in the principal marketplace. Also shown are chain volume indexes of the value of production, which provide an indication of the change in value after the direct effects of price changes are eliminated. Chain volume measures are discussed in *Chain volume or 'real' GDP* in the *National accounts* chapter.

#### 14.4 ESTABLISHMENTS UNDERTAKING AGRICULTURAL ACTIVITY — 30 June 2004

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
<b>Agriculture</b>									
Horticulture and fruit growing									
Plant nurseries	629	287	446	99	^135	^31	17	4	1 648
Cut flower and flower seed growing	^220	^169	^142	^52	^73	^24	5	—	685
Vegetable growing	761	920	1 247	406	445	509	8	—	4 297
Grape growing	1 240	2 058	^134	2 423	^563	^110	5	2	6 535
Apple and pear growing	^173	^368	*45	*95	^155	133	—	2	971
Stone fruit growing	435	301	*100	^206	^160	^42	—	—	1 244
Kiwi fruit growing	*23	3	**3	—	*4	—	—	—	*33
Fruit growing n.e.c.	1 700	^452	1 853	416	304	^39	111	—	4 875
Grain, sheep and beef cattle farming									
Grain growing	3 717	3 143	1 530	3 528	2 673	^21	2	—	14 614
Grain-sheep/beef cattle farming	6 983	2 796	1 409	2 271	2 783	^64	—	2	16 308
Sheep-beef cattle farming	3 719	2 368	745	910	^460	318	—	22	8 541
Sheep farming	5 084	3 402	^274	1 406	1 241	583	—	28	12 018
Beef cattle farming	11 626	7 809	11 505	1 248	1 930	1 154	205	23	35 501
Dairy cattle farming	1 439	6 412	1 120	503	342	542	1	—	10 359
Poultry farming									
Poultry farming (meat)	309	^217	122	60	59	^14	1	—	781
Poultry farming (eggs)	*174	*118	^63	^36	^59	^19	3	1	^474
Other livestock farming									
Pig farming	238	^168	^258	^123	^57	^25	2	—	870
Horse farming	^615	^379	^541	*65	^89	*65	1	2	1 757
Livestock farming n.e.c.	^222	*279	*156	*64	*67	*14	3	1	^807
Other crop growing									
Sugar cane growing	^514	—	4 039	—	*7	—	—	—	4 560
Cotton growing	^229	—	337	—	—	—	—	—	566
Crop and plant growing n.e.c.	^242	^575	^560	^165	*87	^73	9	—	1 710
<b>Total agriculture industries</b>	<b>40 292</b>	<b>32 224</b>	<b>26 627</b>	<b>14 077</b>	<b>11 692</b>	<b>3 781</b>	<b>373</b>	<b>87</b>	<b>129 154</b>
Other industries	^535	^239	^157	*160	^185	*85	9	1	1 372
<b>Total</b>	<b>40 827</b>	<b>32 463</b>	<b>26 785</b>	<b>14 238</b>	<b>11 876</b>	<b>3 866</b>	<b>382</b>	<b>88</b>	<b>130 526</b>

Source: *Agricultural Commodities, Australia, 2003–04 (7121.0)*.

#### 14.5 EMPLOYED PERSONS(a) IN AGRICULTURE AND RELATED SERVICES TO AGRICULTURE(b)

	Males	Females	Persons
	'000	'000	'000
1999	267.8	125.8	393.6
2000	284.8	130.8	415.6
2001	269.0	132.4	401.4
2002	278.6	133.6	412.2
2003	239.8	110.0	349.8
2004	236.5	109.2	345.7
2005	227.0	109.7	336.7

(a) The estimates of employed persons include persons who worked without pay for at least one hour per week in a family business or on a farm (i.e. unpaid family helpers). Persons who worked in another industry and in agriculture are classified to the industry of predominant activity. (b) Annual average of quarterly data.

Source: *Labour Force, Australia (6291.0.55.001)*.

### 14.6 AGRICULTURAL COMMODITIES PRODUCED, Gross value and chain volume index(a)

	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
GROSS VALUE OF COMMODITIES PRODUCED (Current prices) (\$m)						
Crops						
Barley for grain	835.5	864.8	1 343.5	1 724.8	984.2	1 750.1
Oats for grain	156.6	118.4	138.4	251.3	209.7	278.7
Wheat for grain	4 011.0	4 831.2	5 130.4	6 356.3	2 691.9	5 635.8
Other cereal grains	810.9	750.4	881.2	989.0	723.6	823.2
Sugar cane cut for crushing	1 044.1	881.9	656.7	989.1	1 018.9	854.1
Fruit and nuts	1 763.0	1 761.1	2 041.5	2 129.7	2 216.1	2 183.8
Grapes	1 200.1	1 118.2	1 517.5	1 577.7	1 370.8	1 688.8
Vegetables	1 864.4	1 861.9	2 182.6	2 268.5	2 125.6	2 355.5
All other crops(b)	4 540.7	4 735.1	4 642.3	5 116.3	4 134.1	4 920.7
<i>Total</i>	16 226.3	16 923.0	18 534.2	21 402.7	15 474.9	20 490.7
Livestock slaughterings and other disposals						
Cattle and calves	4 476.6	5 048.7	6 430.6	7 142.4	6 411.1	6 658.8
Sheep and lambs	1 053.5	1 053.5	1 401.8	2 117.6	2 036.9	2 038.8
Pigs	689.7	791.7	822.3	967.7	911.3	878.9
Poultry	1 018.5	1 030.8	1 060.2	1 174.9	1 280.5	1 280.8
<i>Total(c)</i>	7 255.8	7 944.2	9 737.8	11 434.5	10 676.0	10 896.0
Livestock products						
Wool	2 141.0	2 149.2	2 541.2	2 713.2	3 317.8	2 396.5
Milk(d)	2 899.6	2 845.2	3 053.3	3 717.1	2 795.2	2 808.7
Eggs(d)	337.1	321.4	332.7	320.4	294.0	335.5
<i>Total(e)</i>	5 411.8	5 353.7	5 964.7	6 750.7	6 412.1	5 540.7
<b>Total value(e)</b>	<b>28 893.9</b>	<b>30 220.9</b>	<b>34 236.7</b>	<b>39 587.9</b>	<b>32 563.0</b>	<b>36 927.4</b>
CHAIN VOLUME INDEX OF GROSS VALUE OF COMMODITIES PRODUCED (Index number)						
Crops						
Barley for grain	57.7	48.5	64.9	79.7	37.2	100.0
Oats for grain	89.1	55.4	52.0	71.1	47.4	100.0
Wheat for grain	82.1	94.7	84.6	93.0	38.8	100.0
Other cereal grain	102.2	99.8	113.4	91.3	60.7	100.0
Legumes for grain	108.6	108.2	59.2	62.5	52.9	100.0
Oilseeds	110.3	145.6	106.3	104.4	48.9	100.0
Sugar cane cut for crushing	103.6	111.8	84.0	85.0	100.0	100.0
Cotton	197.6	204.4	202.5	205.5	110.8	100.0
Nursery production	91.0	111.9	114.7	116.3	103.2	100.0
Fruit and nuts	81.8	93.3	104.0	99.9	100.5	100.0
Grapes	60.8	62.4	77.1	84.9	74.5	100.0
Vegetables	83.6	94.1	100.6	98.3	89.5	100.0
All other crops(b)	83.5	72.0	78.8	78.7	67.9	100.0
<i>Total</i>	83.5	90.5	89.4	93.1	64.1	100.0
Livestock slaughterings and other disposals						
Cattle and calves	101.5	102.0	106.3	101.9	105.5	100.0
Sheep and lambs	106.1	114.3	125.2	118.8	110.2	100.0
Pigs	89.0	89.4	89.8	97.3	103.4	100.0
Poultry	89.6	93.9	89.2	96.2	99.4	100.0
<i>Total(c)</i>	100.0	102.2	105.6	103.6	105.4	100.0
Livestock products						
Wool	135.6	138.2	126.2	114.7	107.6	100.0
Milk(d)	101.0	107.7	104.7	111.9	102.5	100.0
Eggs(d)	97.9	94.3	102.5	96.9	98.9	100.0
<i>Total(e)</i>	113.9	118.6	113.3	112.6	104.8	100.0
<b>Total(e)</b>	<b>91.3</b>	<b>96.8</b>	<b>96.2</b>	<b>97.8</b>	<b>80.7</b>	<b>100.0</b>

(a) Chain volume indexes reflect the change in volume of production between two periods, enabling a comparison of the value of production between the periods without it being affected by any change in price between the periods. To obtain a measure of the value of production at 2003-04 prices for a commodity in this table for an earlier period, multiply the reference year (2003-04) value of the commodity by the chain volume index value of that commodity for the earlier period, and divide by 100. (b) Includes pastures and grasses. Excludes crops for green feed and silage. (c) Includes other livestock. (d) Excludes NT in 2002-03. (e) Includes milk and eggs for NT for 2002-03, and honey and beeswax prior to 2001-02.

Source: *Agricultural Commodities, Australia (7121.0); Value of Agricultural Commodities Produced, Australia (7503.0).*

## Financial statistics of farm businesses

Estimates of selected financial aggregates of farm businesses in this section are based on data collected in the annual Australian Agricultural and Grazing Industries Survey conducted by the Australian Bureau of Agricultural and Resource Economics. This collection covers farm businesses engaged in the 'broadacre' industries of grain growing, sheep and beef farming, and beef cattle feedlot operations (Australian and New Zealand Standard Industrial Classification (Group 012)).

### Financial performance

Selected financial performance measures – expressed as annual averages per farm – for all broadacre farm businesses for the years 1999–2000 to 2003–04 are shown in table 14.7 and for the years 1997–98 to 2003–04 in graphs 14.8, 14.9 and 14.10.

In 2002–03 Australia experienced a severe and widespread drought. As a result, the production of most crops was substantially reduced. Drought also affected pasture and water availability resulting in higher than usual turn-off of unfinished livestock. The need for increased supplementary feeding of livestock, coupled with higher grain prices, resulted in an increase in cash costs for livestock farms. Following a large

increase in receipts in the previous year, average total cash receipts for broadacre farms are estimated to have decreased by 18% in 2002–03. Average total cash costs for broadacre farms decreased by around 4% in 2002–03. Improved climate conditions over much of Australia in 2003–04 resulted in an increase in farm financial performance measures.

Farm cash income is a measure of the cash funds available for farm investment and consumption after paying all costs incurred in production, including interest payments, but excluding capital payments and payments to family workers. It is a short-term measure of farm income because it takes no account of depreciation on assets. Average cash income for the broadacre farms as a group increased 29% in 2003–04 to \$67,000, still a long way short of the high cash income year of 2001–02 with \$100,800 (graph 14.8).

Average farm business profit increased in 2003–04 to \$7,000 from a negative \$27,400 the previous year (graph 14.9). Farm business profit is a longer-term measure of the profitability of farms because it takes account of depreciation and inventory changes.

For the broadacre industries as a group, rate of return averaged 1.5% in 2003–04 (graph 14.10), up from the negative 0.3% in 2002–03.

**14.7 BROADACRE FARM BUSINESSES, Selected financial performance measures**

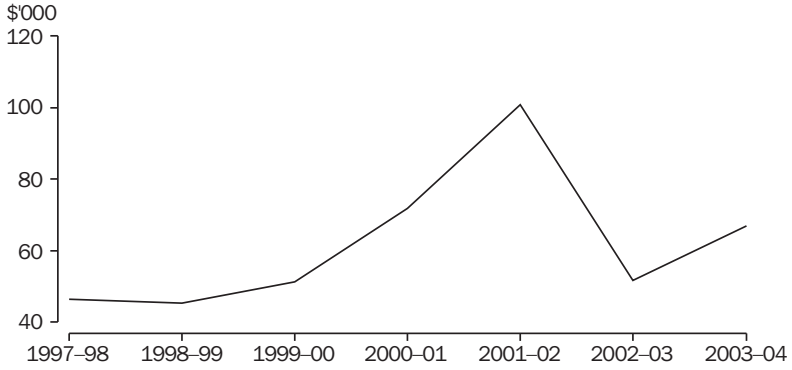
Annual average per farm	Units	1999–2000	2000–01	2001–02	2002–03	2003–04
Total cash receipts	\$000	221.0	254.5	314.3	257.6	280.7
less Total cash costs	\$000	169.6	182.7	213.5	205.8	213.7
Farm cash income	\$000	51.3	71.9	100.8	51.8	67.0
plus Build-up in trading stocks	\$000	-1.2	-1.7	6.4	-11.9	9.5
less Depreciation	\$000	21.2	22.3	25.1	26.2	26.7
less Operator and family labour	\$000	36.4	38.4	39.7	41.1	42.9
Farm business profit	\$000	-7.5	9.4	42.4	-27.4	7.0
Profit at full equity(a)	\$000	8.8	27.9	63.0	-6.6	31.9
plus Capital appreciation	\$000	22.7	90.6	77.6	150.4	202.9
Profit at full equity (incl. capital appreciation)	\$000	31.4	118.5	140.6	143.8	234.9
Farm capital at 1 July	\$000	1 317.4	1 432.3	1 699.6	1 917.7	2 123.6
Rate of return (excl. capital appreciation)(b)	%	0.7	1.9	3.7	-0.3	1.5
Rate of return (incl. capital appreciation)(b)	%	2.4	8.3	8.3	7.5	11.1
Off-farm income(c)	\$000	21.1	23.6	25.3	29.0	27.0

(a) Farm business profit, plus rent, interest and finance lease payments less depreciation on leased items. (b) Computed by expressing profit at full equity as a percentage of total opening capital. (c) Collected for owner manager and spouse only. Includes income from wages, other businesses, investment and social welfare payments. Average for those responding farms for which details of off-farm income are available for both owner manager and spouse.

Source: Australian Bureau of Agricultural and Resource Economics.

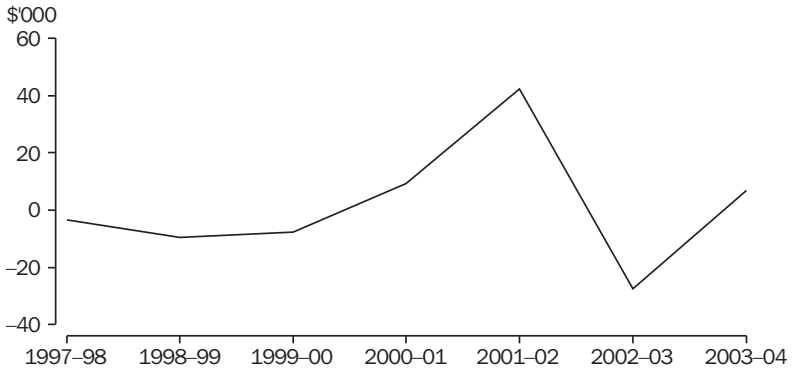


**14.8 BROADACRE FARM BUSINESSES, Farm cash income**



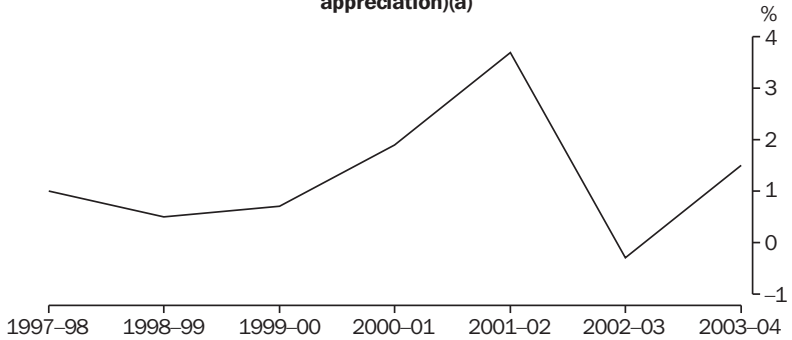
Source: Australian Bureau of Agricultural and Resource Economics.

**14.9 BROADACRE FARM BUSINESSES, Farm business profit**



Source: Australian Bureau of Agricultural and Resource Economics.

**14.10 BROADACRE FARM BUSINESSES, Rate of return (excluding capital appreciation)(a)**



(a) Computed by expressing profit at full equity as a percentage of total opening capital.

Source: Australian Bureau of Agricultural and Resource Economics.

## Crops

The area of land sown to crops has more than doubled in the past 40 years, reflecting improved plant genetics, greater variety in plant species, increased mechanisation and fertiliser use, as well as better control of pests and diseases in Australia. Table 14.11 shows the area of crops in the states and territories of Australia since 1880–81, and table 14.12 is a summary of the area, production and gross value of the principal crops in the most recent years.

## Cereal grains

In Australia, cereals are divided into autumn–winter–spring growing (winter cereals) and spring–summer–autumn growing (summer cereals). In temperate regions winter cereals such as wheat, oats, barley and rye are often grown in rotation with pastures, such as subterranean clover, medics or lucerne, and with other winter crops such as canola, field peas and lupins. Rice, maize and sorghum are summer cereals, often being grown in rotation with winter cereals in some areas.

## Wheat

Wheat is Australia's largest crop. It is produced in all states but primarily on the mainland in a narrow crescent known as the wheat belt. Inland of the Great Dividing Range, the wheat belt stretches in a curve from central Queensland through New South Wales, Victoria and southern South Australia. In Western Australia, the wheat belt continues around the south west of the state and some way north, along the western side of the continent (see map S14.1).

Most of Australia's wheat is exported for human consumption. A small proportion of production is used domestically for human consumption, with lower quality grain being used for domestic stock feed.

New varieties of wheat have enabled it to be grown in more marginal areas in recent years. In particular the development of dual purpose winter wheat varieties which, like oats, allow grazing of the plant up to a few months prior to harvest, have become very popular in some areas.

**14.11 AREA OF CROPS**

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
1880–81	245	627	46	846	26	57	—	—	1 846
1890–91	345	822	91	847	28	64	—	—	2 197
1900–01	990	1 260	185	959	81	91	—	—	3 567
1910–11	1 370	1 599	270	1 112	346	116	—	—	4 813
1920–21	1 807	1 817	316	1 308	730	120	—	1	6 099
1930–31	2 756	2 718	463	2 196	1 939	108	1	2	10 184
1940–41	2 580	1 808	702	1 722	1 630	103	—	2	8 546
1949–50	2 295	1 881	832	1 518	1 780	114	—	4	8 424
1959–60	2 888	1 949	1 184	1 780	2 628	130	1	3	10 564
1969–70	4 999	2 212	2 208	2 290	3 912	98	6	2	15 728
1979–80	5 243	2 243	2 334	2 771	5 281	79	2	1	17 954
1990–91	4 073	2 063	2 872	2 933	5 359	75	6	—	17 382
1991–92	3 846	2 039	2 302	2 920	5 216	76	5	—	16 404
1992–93	3 906	2 258	2 316	3 073	5 668	73	4	1	17 297
1993–94	4 209	2 317	2 394	2 940	6 100	78	5	—	18 043
1994–95	3 432	2 296	2 056	2 991	6 182	77	4	—	17 040
1995–96	4 757	2 439	2 495	3 219	6 419	75	4	—	19 409
1996–97	5 589	2 552	2 685	3 279	6 950	73	5	—	21 133
1997–98	5 648	2 565	2 682	3 290	7 328	78	4	—	21 595
1998–99	6 173	2 749	3 014	3 648	7 597	76	7	—	23 264
1999–2000	6 114	3 081	3 130	3 670	7 691	77	6	—	23 769
2000–01	6 723	3 044	2 955	3 982	7 731	79	6	1	24 520
2001–02	6 635	2 958	2 683	4 175	7 525	78	6	—	24 060
2002–03	6 040	3 283	2 263	4 337	7 556	74	7	2	23 562
2003–04	7 241	3 479	2 745	4 454	8 079	73	7	2	26 080

Source: *Agricultural Commodities, Australia (7121.0)*; Historical data available on request.

**14.12 SELECTED CROPS, Area, production and gross value**

	Area			Production			Gross value		
	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
	'000 ha	'000 ha	'000 ha	'000 tonnes	'000 tonnes	'000 tonnes	\$m	\$m	\$m
<b>Cereals for grain</b>									
Barley	3 707	3 864	4 477	8 280	3 865	10 382	1 725	984	1 750
Grain sorghum	823	667	734	2 021	1 465	2 009	349	300	319
Maize	83	50	70	454	310	^395	90	72	^88
Oats	784	911	1 089	1 434	957	2 018	251	210	279
Rice	144	46	66	1 192	438	553	327	153	180
Wheat	11 529	11 170	13 067	24 299	10 132	26 132	6 356	2 692	5 636
Lupins for grain	1 139	1 025	851	1 215	726	1 180	304	212	278
<b>Crops cut for hay</b>									
Cereal crops	434	505	603	1 717	1 581	2 964	204	332	552
Non-cereal crops	^41	^54	^37	124	^166	122	19	32	21
<b>Other crops</b>									
Sugar cane cut for crushing	426	448	448	31 424	36 995	36 993	989	1 019	854
Tobacco	^2	2	^2	6	6	^4	37	41	^25
Cotton lint	458	245	227	675	^364	317	(a)1 327	(a)^853	(a)751
Peanuts (in shell)	^15	^10	^14	^29	^28	^44	^21	^22	^30
Soybean	32	^6	^27	63	^9	^60	^22	^3	^28
Canola	1 332	1 298	1 211	1 756	871	1 703	675	389	^686
Sunflower	79	^47	^72	70	^26	^57	^27	^19	28
<b>Orchard fruit</b>									
Oranges	n.a.	n.a.	n.a.	451	599	395	281	337	236
Apples	n.a.	n.a.	n.a.	321	326	255	348	381	367
Pears (excl. Nashi)	n.a.	n.a.	n.a.	145	136	139	99	80	105
Peaches	n.a.	n.a.	n.a.	89	^97	^74	76	^84	^87
<b>Other fruit</b>									
Bananas	13	11	11	313	265	257	415	322	286
Pineapples	3	3	3	119	105	110	40	33	37
Grapes (bearing)	143	143	151	1 754	1 497	2 015	1 578	1 371	1 689
<b>Vegetables</b>									
Carrots	8	7	7	331	306	303	199	162	150
Potatoes	38	36	36	1 333	1 247	1 310	485	485	481
Tomatoes	8	7	8	425	364	474	^230	^226	^280
<b>All crops (excl. pastures and grasses)</b>	<b>24 060</b>	<b>23 562</b>	<b>26 080</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>20 625</b>	<b>14 527</b>	<b>18 743</b>

(a) Includes value of cotton seed.

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

While severe drought conditions across Australia more than halved wheat production in 2002-03, increased plantings and an improved season resulted in a record production of 26.1 million tonnes in 2003-04 (table 14.13). The largest increases occurred in Western Australia where production rose just over 7 million tonnes to 11.1 million tonnes and New South Wales where production almost tripled to 7.3 million tonnes. Graph 14.14 shows that variability in wheat yields

is a part of life for wheat growers, with dry periods, and less commonly, floods, resulting in significant falls in production approximately every ten years over the past 100 years.

The article *The Australian wheat industry* traces the development of the industry since European settlement and provides details relating to its recent performance.

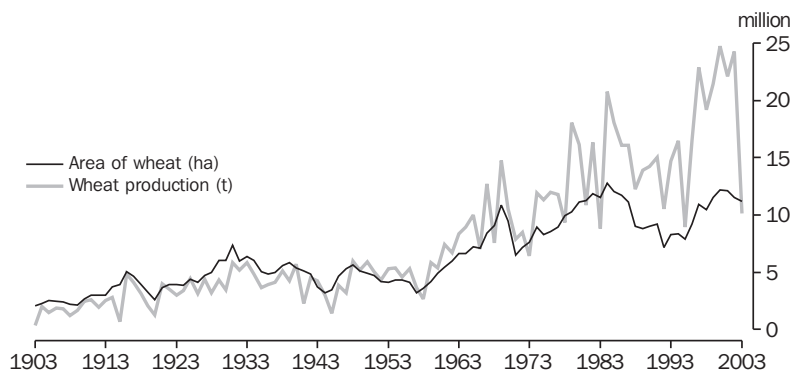
### 14.13 WHEAT FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
1998–99	3 174	949	1 139	1 762	4 515	4	11 543
1999–2000	3 425	1 235	1 096	1 850	4 556	6	12 168
2000–01	3 671	1 143	885	1 976	4 460	7	12 141
2001–02	3 446	1 136	604	1 987	4 350	6	11 529
2002–03	2 995	1 239	514	1 957	4 458	7	11 170
2003–04	3 983	1 409	790	1 960	4 917	8	13 067
PRODUCTION ('000 tonnes)							
1998–99	6 563	1 462	1 941	3 310	8 170	18	21 465
1999–2000	8 602	2 642	1 904	2 586	9 004	20	24 757
2000–01	7 867	3 080	1 157	4 162	5 814	26	22 108
2001–02	8 043	2 791	901	4 778	7 760	25	24 299
2002–03	2 495	890	601	2 072	4 047	25	10 132
2003–04	7 288	3 145	1 110	3 490	11 070	26	26 132

(a) Includes ACT.

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.14 WHEAT PRODUCTION — 1903 – 2003



Source: *Agricultural Commodities, Australia (7121.0)*; Historical data available on request.

### Oats

Oats are traditionally grown in moist, temperate regions. However, in recent years improved varieties and management practices have enabled oats to be grown over a wider range of soil and climatic conditions. Oats have a high fodder feed value and, with the exception of recently developed dual purpose varieties of wheat, produce a greater bulk of growth than other winter cereals. They need less cultivation, and respond well to superphosphates and nitrogen. Oats have two main uses – as a grain crop, and as a fodder crop. Fodder crops can either be grazed in the initial stages of growth and then locked up for a period prior to harvesting for grain, or else mown and baled for hay or cut for chaff.

The majority of Australian oats harvested for grain is used domestically for stock feed purposes. A small proportion of high quality grain is used for human consumption. A small proportion of grain production is exported for human consumption.

In 2003–04 the total area of oats planted increased by 20% to 1.1 million hectares (table 14.15). This was the fourth year of increased planting. Production more than doubled to 2.0 million tonnes following the drought conditions of 2002–03. The largest producers were Western Australia, up 58% to 752,000 tonnes, New South Wales where production quadrupled to 610,000 tonnes and Victoria where production doubled to 507,000 tonnes.

### 14.15 OATS FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
1998-99	354	188	18	112	228	8	909
1999-2000	160	138	10	70	199	6	584
2000-01	168	140	13	75	248	7	650
2001-02	231	142	^11	^108	287	6	784
2002-03	308	188	*9	88	314	4	911
2003-04	449	194	*9	89	344	4	1 089
PRODUCTION ('000 tonnes)							
1998-99	669	458	15	178	463	14	1 798
1999-2000	284	296	12	78	439	10	1 118
2000-01	246	351	6	117	317	13	1 050
2001-02	320	334	^7	^203	557	12	1 434
2002-03	149	250	^4	70	477	7	957
2003-04	610	507	*5	137	752	7	2 018

(a) Includes ACT.

Source: *Agricultural Commodities, Australia (7121.0)*.

#### Barley

This cereal contains two main groups of varieties, 2-row and 6-row (the number of rows referring to the number of rows of seed on each stalk). The former is generally, but not exclusively, preferred for malting purposes. Barley is grown principally as a grain crop, although in some areas it is used as a fodder crop for grazing, with grain being subsequently harvested if conditions are suitable. It is often grown as a rotation crop with wheat, oats and pasture. As barley has a short growing period, it may provide quick grazing or timely fodder supplies when other sources are not available. Barley grain may be crushed to meal for stock feed or sold for malting.

The total area of barley planted increased by 16% to 4.5 million hectares in 2003-04 (table 14.16). The largest areas planted were in Western Australia (1.3 million hectares) and South Australia (1.2 million hectares). Improved yields, combined with the increase in area planted, saw total production reach a record level of 10.4 million tonnes. The largest producers were Western Australia, more than doubling to 3.2 million tonnes, South Australia, up 87% to 2.7 million tonnes, and Victoria, increasing almost five times to 2.3 million tonnes.

#### Grain sorghum

The sorghums are summer growing crops which are used in a number of ways: grain sorghum for grain; sweet or fodder sorghum, Sudan grass and Columbus grass for silage, green feed and grazing; and broom millet for brooms and brushware.

However, the grain is used primarily as stockfeed and is an important source for supplementing other coarse grains for this purpose.

In 2003-04 grain sorghum was the fourth biggest cereal crop (in terms of production) despite it only being grown in significant quantities in Queensland and New South Wales (table 14.17). Queensland produced 65% of the total harvest of 2,009,000 tonnes in 2003-04.

#### Maize

Maize is a summer cereal requiring specific soil and climatic conditions. The majority of maize used for grain is grown in the south-east and Atherton Tablelands regions of Queensland, and the north coast, northern slopes and tablelands, and the Murrumbidgee Irrigation Area regions in New South Wales. Small amounts are grown for green feed and silage in association with the dairy industry.

In 2003-04 maize grain production increased by 27% to 395,000 tonnes (table 14.18).

#### Rice

Almost all of Australia's rice is grown in New South Wales, with production centred in the Murrumbidgee Irrigation Area. Rice production is dependent on supplies of irrigation water and, therefore, is significantly affected by reductions in irrigation water allocations available to farmers.

In 2003-04, rice production increased by 26% to 553,000 tonnes but this new level is still less than half the pre-drought production of 2001-02 (table 14.19).

#### 14.16 BARLEY FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1998-99	638	568	163	975	811	11	3 167
1999-2000	476	585	130	845	550	9	2 596
2000-01	615	693	112	1 041	983	10	3 454
2001-02	665	700	96	1 151	1 088	7	3 707
2002-03	636	778	108	1 194	1 140	8	3 864
2003-04	951	872	151	1 216	1 278	9	4 477
PRODUCTION ('000 tonnes)							
1998-99	1 247	870	320	2 051	1 469	30	5 987
1999-2000	1 040	1 189	254	1 409	1 117	22	5 032
2000-01	1 253	1 670	115	2 320	1 358	26	6 743
2001-02	1 382	1 656	171	2 782	2 263	26	8 280
2002-03	428	478	148	1 440	1 349	21	3 865
2003-04	1 955	2 275	263	2 691	3 170	28	10 382

Source: *Agricultural Commodities, Australia (7121.0)*.

#### 14.17 GRAIN SORGHUM, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1998-99	216	**	367	—	*2	—	587
1999-2000	200	*1	419	(a)	*2	(a)	622
2000-01	258	2	494	(a)	2	(a)	758
2001-02	258	**	562	(a)	**	(a)	823
2002-03	255	**	405	(a)	**	(a)	667
2003-04	212	**	519	(a)	*1	(a)	734
PRODUCTION ('000 tonnes)							
1998-99	822	**	1 059	—	*6	—	1 891
1999-2000	804	**	1 308	(a)	*2	(a)	2 116
2000-01	770	4	1 156	(a)	4	(a)	1 935
2001-02	767	*4	1 247	(a)	**	(a)	2 021
2002-03	^ 531	**	930	(a)	**	(a)	1 465
2003-04	709	**	1 296	(a)	*1	(a)	2 009

(a) Data not collected.

Source: *Agricultural Commodities, Australia (7121.0)*.

#### 14.18 MAIZE FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
1998-99	27	1	37	**	*—	—	64
1999-2000	22	1	59	(b)	*—	(b)	82
2000-01	26	1	47	(b)	*—	(b)	74
2001-02	28	*1	53	(b)	**	(b)	83
2002-03	^ 21	*1	^ 28	(b)	—	(b)	50
2003-04	22	**	^ 48	(b)	—	(b)	70
PRODUCTION ('000 tonnes)							
1998-99	186	3	145	**	*4	—	338
1999-2000	178	4	224	(b)	*—	(b)	406
2000-01	178	8	159	(b)	*—	(b)	345
2001-02	246	*9	198	(b)	*—	(b)	454
2002-03	^ 163	*15	^ 131	(b)	—	(b)	310
2003-04	178	**	^ 211	(b)	—	(b)	^ 395

(a) Includes NT. (b) Data not collected.

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.19 RICE FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1998-99	148	1	—	—	—	—	148
1999-2000	131	(a)	(a)	(a)	**	(a)	131
2000-01	175	2	(a)	(a)	*—	(a)	177
2001-02	143	^2	(a)	(a)	—	(a)	144
2002-03	45	**	(a)	(a)	—	(a)	46
2003-04	66	**	(a)	(a)	—	(a)	66
PRODUCTION ('000 tonnes)							
1998-99	1 357	5	—	—	—	—	1 362
1999-2000	1 084	(a)	(a)	(a)	**	(a)	1 084
2000-01	1 625	18	(a)	(a)	*—	(a)	1 643
2001-02	1 179	*14	(a)	(a)	—	(a)	1 192
2002-03	435	**	(a)	(a)	—	(a)	438
2003-04	550	*3	(a)	(a)	—	(a)	553

(a) Data not collected.

Source: *Agricultural Commodities, Australia (7121.0)*.

## Vegetables and fruit

### Vegetables

Australia produces an extremely wide variety of vegetables, partly as a result of the varied tastes of the cosmopolitan population. Many vegetables, such as spring onions, mushrooms and fresh tomatoes are grown close to major capital cities, taking advantage of proximity to markets and low transport costs. However, the majority of vegetables are produced in the major irrigation areas of each state and territory, where access to land and water are the key drivers of investment.

In 2003-04 the area sown to vegetables was 125,500 ha, an increase of 4% from the previous year. Potatoes were by far the largest vegetable crop in terms of area and production, accounting for 29% of the total area of vegetables planted in 2003-04 (tables 14.20 and 14.21). Victoria, South Australia and Tasmania together produced three

quarters of the national potato crop in 2003-04. Tasmania accounted for almost all green pea production, producing 96% of the national crop, or 28,500 tonnes in 2003-04.

### Fruit (excluding grapes)

A wide variety of fruit is grown in Australia, ranging from pineapples, mangoes and pawpaws in the tropics to pome, stone and berry fruits in temperate regions. Table 14.22 shows the number of trees for the main types of orchard fruit, and the area under cultivation for bananas and pineapples.

The most significant crops in terms of gross value of production are apples, bananas and oranges. Production of bananas, which occurs mainly in coastal Queensland, fell 3% in 2003-04 to 257,200 tonnes. In 2003-04 the gross value of the apple crop decreased 3% to \$367 million (m) (table 14.23).

### 14.20 SELECTED VEGETABLES, Area

	French and runner beans	Carrots	Onions	Green peas	Lettuces	Potatoes	Pumpkins	Tomatoes	All vegetables
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
1998-99	5.9	6.5	5.4	6.2	6.2	41.3	7.5	8.5	130.2
1999-2000	6.6	7.0	5.3	5.5	5.2	36.8	9.0	8.3	127.4
2000-01	6.6	8.0	5.0	5.8	5.8	39.6	8.3	9.6	137.1
2001-02	6.6	7.7	5.5	6.0	6.0	37.9	6.5	8.5	131.7
2002-03	^7.0	7.4	5.3	5.5	6.1	35.9	6.6	7.3	121.2
2003-04	7.1	7.2	5.6	5.7	6.1	36.1	5.9	8.5	125.5

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.21 SELECTED VEGETABLES, Production

	French and runner beans	Carrots	Onions	Green peas (shelled weight)	Lettuces	Potatoes	Pumpkins	Tomatoes
	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes
1998-99	30.4	256.6	224.0	29.9	131.1	1 326.8	87.6	394.4
1999-2000	34.5	283.3	247.1	30.4	151.9	1 199.6	108.8	413.6
2000-01	32.8	320.9	221.9	26.2	152.7	1 302.1	109.4	556.2
2001-02	33.7	331.1	282.5	28.4	135.0	1 333.2	96.3	425.0
2002-03	34.6	305.7	228.6	27.4	121.5	1 247.3	93.2	364.4
2003-04	31.1	302.6	233.4	29.7	127.2	1 310.4	94.6	474.2

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.22 SELECTED FRUIT, Number of trees(a) and area

	Orchard fruit					Area of tropical fruit		All area of fruit and nuts (excluding grapes)	
	Apples	Apricots	Oranges	Peaches	Pears	Plums and prunes	Bananas		Pineapples
	'000 trees	'000 trees	'000 trees	'000 trees	'000 trees	'000 trees	ha		ha
1998-99	5 969	565	6 400	1 509	1 401	1 024	11 405	2 821	145 265
1999-2000	6 115	520	6 945	1 972	1 401	1 420	11 730	2 817	154 049
2000-01	6 455	498	6 669	1 674	1 373	1 328	11 737	2 733	170 545
2001-02	8 070	^ 411	6 767	1 587	1 312	1 325	12 583	2 963	161 439
2002-03	8 391	^ 440	7 129	^ 2 150	1 306	1 470	10 659	2 616	174 123
2003-04	8 885	^ 478	6 814	1 877	1 386	1 450	10 861	2 664	172 507

(a) Refers to trees of bearing age (i.e. four years and over for apples, six years and over for other fruit).

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.23 SELECTED FRUIT, Quantity and value of production

	Apples	Apricots	Oranges	Peaches	Pears	Plums and prunes	Bananas	Pineapples
QUANTITY OF PRODUCTION ('000 tonnes)								
1998-99	334.4	21.5	445.8	66.0	156.7	22.7	225.2	131.4
1999-2000	319.7	19.9	510.0	86.0	156.4	24.2	256.9	139.3
2000-01	324.6	20.6	550.2	74.1	168.9	31.3	358.4	119.6
2001-02	320.5	^ 12.4	450.6	88.7	144.9	25.5	313.3	119.3
2002-03	326.1	^ 19.7	599.5	^ 97.2	135.9	^ 33.2	264.8	104.7
2003-04	254.9	^ 10.7	395.2	^ 74.5	138.5	24.4	257.2	110.4
GROSS VALUE OF PRODUCTION (\$m)								
1998-99	321.1	27.9	296.2	65.5	112.4	42.4	266.3	39.4
1999-2000	273.7	^ 31.8	276.4	74.3	72.1	43.4	283.8	43.7
2000-01	282.0	29.5	276.8	72.7	90.2	58.5	408.6	44.0
2001-02	348.0	18.1	280.8	75.7	99.4	52.7	415.3	40.1
2002-03	380.6	^ 24.7	336.7	^ 84.3	80.3	^ 64.3	321.6	32.5
2003-04	367.5	^ 24.1	236.0	^ 86.8	105.0	55.2	285.6	37.1

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.



## Grapes

Grapes are a temperate crop requiring predominantly winter rainfall and warm to hot summer conditions for ripening. Almost all grape production in Australia depends on irrigation water as a supplement to rainfall. An absence of late-spring frosts is essential if the loss of the developing fruit is to be prevented. Grapes are grown for winemaking, drying, and to a lesser extent, for table use. Some of the better known grape producing areas are the Adelaide Hills, Barossa Valley, Clare Valley, Riverland, McLaren Vale and Coonawarra in South Australia; Sunraysia and the Yarra Valley in Victoria; the Hunter and Riverina in New South Wales; the Swan Valley and Margaret River in Western Australia; and the Tamar Valley and Coal River Valley in Tasmania.

The gross value of grape production for 2003–04 increased by 23% from the previous year, to \$1,689m. Tables 14.24 and 14.25 show the area of vines and the quantity of grapes produced.

## Selected other crops

### Oilseeds

The oilseeds industry is a relatively young industry by Australian agricultural standards. The specialist oilseed crops grown include sunflower, soybeans, canola and safflower. Sunflower and soybeans are summer crops while the others are winter crops. In Australia, oilseeds are crushed for their oil, which is used for edible and industrial purposes, and for protein meals for livestock feeds.

The 1990s saw the emergence of canola as the main oilseed crop, with production increasing from around 70,000 tonnes in 1990–91 to a high of 2.8 million tonnes in 1999–2000. With canola accounting for 93% of the crop, oilseeds production in 2003–04 of 1.8 million tonnes was double the previous year's drought affected harvest (table 14.26). Before the emergence of canola, the main specialist oilseed crop was sunflower seed. Peanuts and cotton are also major sources of oil as a by-product to their main outputs, which are food and fibre respectively.

**14.24 VITICULTURE, Area, production and value**

	Area		Production of grapes for		Total production(a)	
	Bearing	Total	Winemaking	Drying	Quantity	Gross value
	'000 ha	'000 ha	'000 tonnes fresh weight	'000 tonnes fresh weight	'000 tonnes fresh weight	\$m
1998–99	95	123	1 076	119	1 266	1 200.1
1999–2000	111	140	1 111	133	1 311	1 118.2
2000–01	131	148	1 391	90	1 546	1 517.5
2001–02	143	159	1 515	153	1 754	1 577.7
2002–03	143	157	1 330	92	1 497	1 370.8
2003–04	151	164	1 817	129	2 015	1 688.8

(a) Includes grapes used for table and other purposes.

Source: *Agricultural Commodities, Australia* (7121.0); *Australian Wine and Grape Industry* (1329.0); *Value of Agricultural Commodities Produced, Australia* (7503.0).

**14.25 VITICULTURE, Area and production — 2003–04**

	Area of vines at harvest			Production of grapes used for			
	Bearing	Not yet bearing	All vines	Winemaking	Drying	Table and other	Total
	ha	ha	ha	tonnes fresh weight	tonnes fresh weight	tonnes fresh weight	tonnes fresh weight
Red grapes	92 892	5 397	98 290	1 063 075	8 643	25 076	1 096 794
White grapes	57 669	8 222	65 891	753 482	120 845	43 844	918 171
<b>Total</b>	<b>150 561</b>	<b>13 619</b>	<b>164 181</b>	<b>1 816 556</b>	<b>129 489</b>	<b>68 920</b>	<b>2 014 965</b>

Source: *Australian Wine and Grape Industry, 2004* (1329.0).

### 14.26 OILSEEDS, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
1998–99	496	222	145	136	537	1	1 538
1999–2000	613	319	143	216	879	*1	2 172
2000–01	569	266	79	157	517	—	1 589
2001–02	585	241	^60	165	394	^1	1 447
2002–03	514	248	^28	214	349	^—	1 355
2003–04	411	242	^58	250	358	—	1 321
PRODUCTION ('000 tonnes)							
1998–99	793	268	166	196	615	1	2 039
1999–2000	968	438	151	249	963	*2	2 770
2000–01	894	383	73	206	353	—	1 910
2001–02	796	349	^52	273	419	^1	1 890
2002–03	201	177	^17	211	299	—	907
2003–04	507	386	^51	355	527	—	1 827

(a) Includes ACT.

Source: *Agricultural Commodities, Australia (7121.0)*.

### Cotton

Cotton is grown mainly in inland areas of northern New South Wales and southern Queensland, primarily for its fibre (lint), and relies heavily on irrigation water to produce profitable yields. When the cotton is mature, seed cotton is taken to a gin where it is separated (ginned) into cotton lint and cotton seed. The lint is used for yarn while the cotton seed is further processed at an oil mill, where the short fibres (linters) remaining on the cotton seed after ginning are removed. These fibres are too short to make into cloth, but are used for wadding, upholstery and paper. The seeds are then separated into kernels and hulls. The hulls are used for stock feed and as fertiliser, while the kernels are crushed to extract oil. The oilcake residue (crushed kernels) is ground into meal, which is a protein roughage, and is used as a stock feed.

The estimated gross value of cotton lint and cotton seed in 2003–04 was \$751m a 12% decrease from the previous year (table 14.27).

### 14.27 COTTON LINT, Area, production and value

	Area	Quantity	Gross value(a)
	'000 ha	'000 tonnes	\$m
1998–99	446	634	1 353
1999–2000	435	698	1 416
2000–01	536	666	1 305
2001–02	458	675	1 327
2002–03	245	^364	^853
2003–04	227	317	751

(a) Includes value of cotton seed.

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

### Crops and pastures cut for hay or silage

To counter Australia's seasonal conditions and unreliable rainfall, many farmers use hay and silage as methods of fodder conservation to supplement pasture and other natural sources of stockfeed.

Considerable areas are devoted to fodder crops and sown pastures, which are either used for grazing (as green feed) or harvested and conserved as hay or silage (table 14.28).

### 14.28 CROPS AND PASTURES CUT FOR HAY OR SILAGE, Area and production

	Hay		Silage made
	Area '000 ha	Production '000 tonnes	Production '000 tonnes
1998–99	1 568	6 245	2 770
1999–2000	1 373	5 331	2 981
2000–01	1 521	6 433	2 960
2001–02	1 416	5 864	2 966
2002–03	1 299	4 913	2 549
2003–04	1 688	7 663	3 757

Source: *Agricultural Commodities, Australia (7121.0)*.

### Sugar

Sugar cane is grown commercially in Australia along the east coast over a distance of some 2,100 kilometres in a number of areas from Maclean in northern New South Wales to Mossman in Queensland. More recently, it has also been grown in Western Australia.

About 90% of production occurs in Queensland (table 14.29), with 75% of the crop grown north of the Tropic of Capricorn.

## 14.29 SUGAR CANE CUT FOR CRUSHING, Area, production and yield

	New South Wales			Queensland			Western Australia		
	Area harvested	Production	Yield	Area harvested	Production	Yield	Area harvested	Production	Yield
	'000 ha	'000 tonnes	tonnes/ha	'000 ha	'000 tonnes	tonnes/ha	'000 ha	'000 tonnes	tonnes/ha
1998–99	20	2 555	126.0	379	35 587	93.9	3	392	135.5
1999–2000	20	2 493	123.8	405	35 316	87.2	3	355	123.2
2000–01	18	1 826	102.5	382	25 867	67.7	3	423	122.2
2001–02	^25	^2,886	114.4	398	28 250	70.9	3	288	105.9
2002–03	21	2 362	110.6	423	34 231	80.9	3	401	116.4
2003–04	*30	*2,988	^99.5	414	33 553	81.1	4	453	112.0

Source: *Agricultural Commodities, Australia (7121.0)*.

## Livestock

Cattle, sheep and pigs are the main livestock grown in Australia and have been present since the earliest days of European settlement. Table 14.30 provides details of livestock numbers from 1861.

### 14.30 LIVESTOCK

	Cattle	Sheep and lambs	Pigs
	'000	'000	'000
1861	3 958	20 135	351
1871	4 276	41 594	543
1881	7 527	62 184	816
1891	10 086	97 880	891
1901	8 383	70 613	950
1911	11 232	98 044	1 026
1921	12 833	81 611	674
1931	10 996	110 369	1 072
1941	12 327	122 379	1 797
1951	14 222	115 301	1 134
1961	16 164	152 384	1 615
1971	23 209	177 533	2 590
1981	23 479	134 408	2 430
1991	23 662	163 238	2 531
1992	23 880	148 203	2 570
1993	24 062	138 099	2 646
1994	25 758	132 569	2 775
1995	25 731	120 862	2 653
1996	26 377	121 116	2 526
1997	26 695	120 228	2 555
1998	26 851	117 491	2 768
1999	26 578	115 456	2 626
2000	27 588	118 552	2 511
2001	27 722	110 928	2 748
2002	27 870	106 166	2 940
2003	26 664	99 252	2 658
2004	27 465	101 287	2 548

Source: *Agricultural Commodities, Australia (7121.0)*;  
Historical data available on request.

## Cattle

Cattle farming occurs in all states and territories. While dairy cattle are restricted mainly to southern and coastal districts, beef cattle are concentrated in Queensland and New South Wales.

Cattle numbers in Australia increased slowly during the 1960s and 1970s, despite seasonal changes and heavy slaughterings, to a peak of 31.8 million in 1976. Beef cattle production is often combined with cropping, dairying and sheep. In the northern half of Australia, cattle properties and herd sizes are very large, pastures are generally unimproved, fodder crops are rare and beef is usually the only product. The industry is more intensive in the south, with higher stocking rates per hectare, improved pastures and use of fodder crops, use of rotational grazing practices and increased inputs such as fertiliser and animal health products.

Drought conditions in the early-1980s led to a decline in the beef herd until 1984. For the next five years the size of the herd remained relatively stable. Between 1989 and 1998 cattle numbers increased gradually, despite unfavourable weather conditions continuing in many parts of Australia. After a slight decline in 1999, cattle numbers increased to a high of 27.9 million in 2002. Dry conditions over much of the country in 2002–03 saw cattle numbers fall by 4% to 26.7 million. However, improved conditions in some regions resulted in numbers increasing by 3% to 27.5 million in 2003–04.

### 14.31 CATTLE, By purpose — 30 June

	1999(a)	2000	2001	2002	2003	2004
	'000	'000	'000	'000	'000	'000
<b>Milk cattle</b>						
Cows (in milk and dry)	2 155	2 171	2 176	2 123	2 050	2 038
Other milk cattle	1 065	969	1 041	1 008	999	1 016
<b>Total</b>	<b>3 220</b>	<b>3 140</b>	<b>3 217</b>	<b>3 131</b>	<b>3 049</b>	<b>3 055</b>
<b>Meat cattle</b>						
Bulls and bull calves used or intended for service	528	518	591	620	570	617
Other calves under one year	5 740	5 872	6 083	5 679	5 292	5 260
Cows and heifers one year and over	11 621	12 282	12 007	12 652	12 245	12 570
Other cattle one year and over	5 469	5 774	5 823	5 788	5 508	5 964
<b>Total</b>	<b>23 358</b>	<b>24 448</b>	<b>24 504</b>	<b>24 739</b>	<b>23 615</b>	<b>24 410</b>
<b>Total</b>	<b>26 578</b>	<b>27 588</b>	<b>27 722</b>	<b>27 870</b>	<b>26 664</b>	<b>27 465</b>

(a) At 31 March.

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.32 CATTLE, By state and territory — 30 June

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Aust.(a)
	'000	'000	'000	'000	'000	'000	'000	'000
1999(b)	6 291	4 125	10 748	1 183	1 931	724	1 567	26 578
2000	5 970	4 264	11 808	1 184	2 165	617	1 571	27 588
2001	6 215	4 405	11 376	1 242	2 128	636	(c)1,707	27 722
2002	6 021	4 412	11 544	1 381	2 104	619	(c)1,777	27 870
2003	5 817	4 388	10 740	1 401	1 945	682	(c)1,683	26 664
2004	5 816	4 281	11 500	1 352	2 095	684	(d)1,730	27 465

(a) Includes ACT. (b) At 31 March. (c) Excludes dairy cattle. (d) No dairy cattle were recorded in NT.

Source: *Agricultural Commodities, Australia (7121.0)*.

Table 14.31 shows the number of cattle by age, sex and purpose, and table 14.32 shows the number of cattle by state and territory. Map 14.33 shows the distribution of beef cattle in Australia at 30 June 2001.

The article 'Australia's beef cattle industry' at the conclusion of the *Agriculture* chapter of *Year Book Australia 2005* provides more information on the industry.

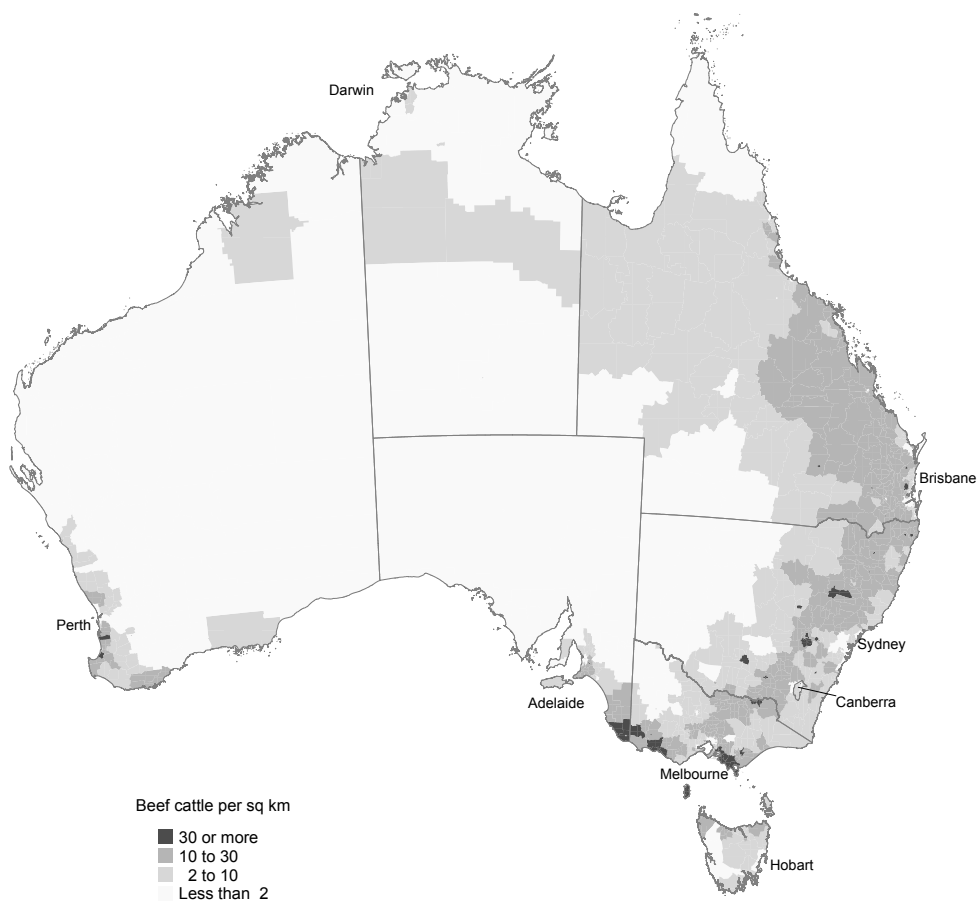
## Dairying

Dairying is a major Australian agricultural industry. The estimated gross value of dairy production at farm gate prices in 2003–04 was \$2,809m (table 14.34). This represented 8% of the gross value of agricultural production. The number of milk cattle in 2004, 3 million, changed little from the previous year (table 14.31).

Most dairy production occurs in high rainfall coastal fringe areas where climate and natural resources allow production to be based on year-round pasture grazing. This enables efficient, low-cost milk production. With the exception of several inland river schemes, pasture growth generally depends on natural rainfall. Feedlot-based dairying is expanding, although it remains uncommon.

Milk production rose steadily until 1999–2000. Less favourable seasonal conditions and farm exits associated with deregulation of the milk industry saw production decrease by 3% to 10,545 million litres in 2000–01, before recovering to 11,271 million litres in 2001–02. Dry seasonal conditions, limiting the growth of pastures and the availability of fodder crops in 2002–03, saw milk production drop to 10,328 million litres. Australian milk production fell a further 3% in 2003–04 reflecting the continued impact of the previous year's drought (table 14.34).

### 14.33 BEEF CATTLE, Distribution — 30 June 2001(a)



(a) This map has been generated using Agricultural Census data at the Statistical Local Area level for 2000–01.  
Source: AgStats on GSP (7117.0.30.001) CD-ROM product 1996–97 to 2000–01.

### 14.34 WHOLE MILK INTAKE BY FACTORIES, Production, use and value

	Market milk sales by factories	Milk used in the manufacture of dairy products	Total milk production	Gross value
	million litres	million litres	million litres	\$m
1998–99	1 859	8 319	10 178	2 900
1999–2000	1 842	9 005	10 847	2 845
2000–01	1 920	8 625	10 545	3 053
2001–02	1 909	9 362	11 271	3 717
2002–03	1 925	8 403	10 328	(a)2 795
2003–04	1 961	8 114	10 075	2 809

(a) Excludes NT.

Source: Agricultural Commodities, Australia (7121.0); Dairy Australia; Value of Agricultural Commodities Produced, Australia (7503.0).

Average annual per person milk consumption has stabilised at around 100 litres since the mid-1980s. According to Dairy Australia data for 2003–04, Australians consumed 98 litres of milk, 11.7 kilograms of cheese and 5.9 kilograms of yoghurt per person.

In 2004–05 Australia exported dairy products valued at \$2.3b (1.8% of total merchandise exports). Milk and cream and milk products (excluding butter and cheese) contributed \$1.3b, while cheese and curd, and butter and other fats and oils derived from milk brought in \$877m and \$189m respectively.

The article ‘The Australian dairy industry’ at the conclusion of the *Agriculture* chapter of *Year Book Australia 2004* provides more information on the industry.

### Sheep

Sheep numbers reached a peak of 180 million in Australia in 1970 (graph 14.39). In general, numbers have fallen since then. Poor market prospects for wool after 1990 had a marked impact on the flock size with sheep numbers falling rapidly until 1995, after which there was a gradual decline until 1999. By 30 June 2003, sheep and lambs had fallen to 99.3 million with numbers

being severely affected by drought conditions throughout much of the country. Improved conditions in the last 12 months in much of Australia have resulted in this number increasing by 2% to 101.3 million at 30 June 2004 (tables 14.35 and 14.36).

Map 14.37 shows the distribution of sheep and lambs in Australia at 30 June 2001.

### Pigs

Pig farming is a highly intensive industry. The majority of pigs are grown in specially designed sheds which provide a controlled environment conducive to the efficient production of large numbers of animals. The number of pigs decreased by 4% to 2.5 million at 30 June 2004 with the industry largely affected by the increased feed grain costs due to shortages caused by the recent drought. The number of establishments reporting pigs fell by 12% to 2,505 at 30 June 2004. Recent changes in the Australian pig industry have seen many smaller producers leave the industry and existing producers increase their size of operations in an attempt to remain viable.

Table 14.38 shows the distribution of pig numbers across Australia.

**14.35 SHEEP, By state — 30 June(a)**

	NSW mill.	Vic. mill.	Qld mill.	SA mill.	WA mill.	Tas. mill.	Aust.(b) mill.
1999(c)	40.6	21.0	10.6	13.1	26.4	3.8	115.5
2000	43.4	22.7	9.2	13.8	26.1	3.3	118.6
2001	40.9	22.3	8.7	12.6	23.1	3.2	110.9
2002	38.5	21.4	6.8	13.0	23.1	3.4	106.2
2003	33.7	20.4	4.8	13.1	23.9	3.3	99.3
2004	35.2	20.0	4.8	12.9	25.1	3.2	101.3

(a) Includes lambs. (b) Includes ACT and NT. (c) At 31 March.

Source: *Agricultural Commodities, Australia (7121.0)*.

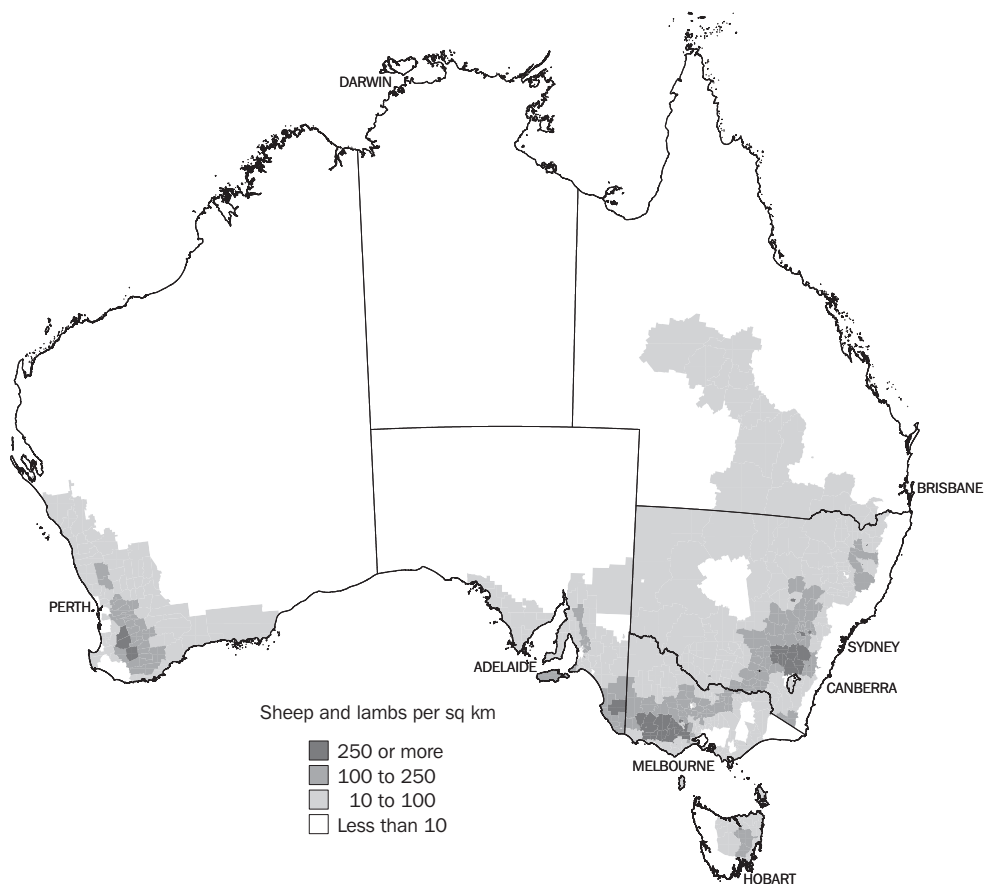
**14.36 SHEEP AND LAMBS — 30 June**

	1999(a) mill.	2000 mill.	2001 mill.	2002 mill.	2003 mill.	2004 mill.
Sheep	86.0	87.9	83.0	77.8	73.4	72.4
Lambs (under 1 year old)	29.5	30.7	28.0	28.4	25.9	28.9
<b>Total</b>	<b>115.5</b>	<b>118.6</b>	<b>110.9</b>	<b>106.2</b>	<b>99.3</b>	<b>101.3</b>

(a) At 31 March.

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.37 SHEEP AND LAMBS, Distribution — 30 June 2001(a)



(a) This map has been generated using Agricultural Census data at the Statistical Local Area level for 2000–01.

Source: AgStats on GSP (7117.0.30.001) CD-ROM product 1996–97 to 2000–01.

### 14.38 PIGS — 30 June

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
	'000	'000	'000	'000	'000	'000	'000
1999(b)	778	521	621	406	277	22	2 626
2000	710	523	544	438	276	18	2 511
2001	845	557	597	438	286	22	2 748
2002	833	673	643	410	361	18	2 940
2003	729	555	663	381	309	^ 19	2 658
2004	^ 624	^ 547	691	^ 378	^ 291	^ 14	2 548

(a) Includes NT. (b) At 31 March.

Source: Agricultural Commodities, Australia (7121.0).

### 14.39 POULTRY — 30 June

	Chickens(a)			Other poultry			Total all poultry '000
	Chickens for egg production	Meat chickens (broilers)	Total chickens	Ducks	Turkeys	Other poultry	
	'000	'000	'000	'000	'000	'000	
1999(b)	13 912	77 863	91 775	370	1 331	448	93 924
2000	12 016	72 912	84 928	517	1 360	224	87 029
2001	14 276	76 697	90 973	770	717	437	92 897
2002	12 858	72 739	85 597	567	584	*160	86 313
2003	12 913	70 913	83 826	^694	*772	**	85 535
2004	12 669	70 735	83 404	^953	*681	**	85 432

(a) Includes breeding stock. (b) At 31 March.

Source: *Livestock Products, Australia (7215.0)* and information on request.

## Poultry

Poultry farming is a highly intensive industry, with the majority of poultry raised in large sheds which provide the birds with a stable environment protected from the elements. The poultry farming industry consists of two streams – meat production and egg production – both being major users of feed grains. Although the industry grew through the 1990's, there has been an 8% decline (to 85.4 million) in the number of birds over the three years to 30 June 2004 (table 14.39).

## Meat production and slaughtering

Tables 14.40 and 14.41 show details of slaughtering and meat production from abattoirs, and from commercial poultry and other slaughtering establishments. They include estimates of animals slaughtered on farms and by country butchers. The data relate only to slaughtering for human consumption and do not include animals condemned or those killed for boiling down.

Production of beef for 2004–05 increased by 7% to 2,133,000 tonnes.

Changing patterns in both consumer demand, and sheep and lamb supply have seen production of lamb meat exceed production of mutton for each of the past six years. In 2004–05 mutton production increased by 8% to 237,000 tonnes and lamb production increased by 4% to 354,000 tonnes.

Significant changes have taken place in the pig meat producing industry in recent years. Capital investment and corporate takeovers have seen the emergence of a few large companies producing a significant proportion of all pig meat sold in Australia. These moves, and the trend to more intensive and efficient production techniques, have seen pig meat production rise steadily since the mid-1970s when production dipped to a low of 174,000 tonnes. In 2004–05 pig meat production decreased 4% to 388,000 tonnes.

Table 14.42 shows the gross value of livestock slaughtering over recent years. Following five years of increases, the value of slaughtering and other disposals decreased by 7% in 2002–03 before increasing in 2003–04 by 2%.

### 14.40 PRODUCTION OF MEAT

	Carcass weight					Dressed weight		
	Beef	Veal	Mutton	Lamb	Pig meat	Total red meat	Chicken meat(a)	Total poultry(a)(b)
	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes
1999–2000	1 952	36	333	347	363	3 031	598	638
2000–01	2 086	33	348	367	365	3 200	619	657
2001–02	1 996	31	296	348	396	3 067	667	705
2002–03	2 035	38	268	329	420	3 090	690	726
2003–04	1 998	35	220	341	406	3 000	694	721
2004–05	2 133	29	237	354	388	3 142	750	791

(a) Excludes NT and Tas. (b) Includes other fowls, turkeys, ducks and drakes.

Source: *Livestock Products, Australia (7215.0)*.



#### 14.41 LIVESTOCK AND POULTRY SLAUGHTERED FOR HUMAN CONSUMPTION

	Cattle mill. head	Calves mill. head	Sheep mill. head	Lambs mill. head	Pigs mill. head	Chickens(a) mill. head	Other fowls(b) and turkeys mill. head	Ducks and drakes mill. head
1999–2000	7.5	1.1	15.9	17.6	5.0	394.0	9.5	4.1
2000–01	7.9	1.0	16.6	18.6	5.0	398.9	8.4	4.0
2001–02	7.6	1.0	14.4	17.4	5.4	415.6	8.6	4.0
2002–03	8.1	1.1	13.7	16.9	5.7	419.2	9.2	4.1
2003–04	7.8	1.0	10.4	16.6	5.6	423.7	9.6	4.5
2004–05	8.0	0.9	11.4	17.3	5.3	437.6	10.2	4.7

(a) Excludes NT and Tas. (b) Comprises hens, roosters, etc.

Source: *Livestock Products, Australia (7215.0)*.

#### 14.42 GROSS VALUE OF LIVESTOCK SLAUGHTERINGS AND OTHER DISPOSALS

	Cattle and calves \$m	Sheep and lambs(a) \$m	Pigs \$m	Poultry \$m	Total(b) \$m
1998–99	4 476.6	1 053.5	689.7	1 018.5	7 255.8
1999–2000	5 048.7	1 053.5	791.7	1 030.8	7 944.2
2000–01	6 430.6	1 401.8	822.3	1 060.2	9 737.8
2001–02	7 142.4	2 117.6	967.7	1 174.9	11 434.5
2002–03	6 411.1	2 036.9	911.3	1 280.5	10 676.0
2003–04	6 658.8	2 038.8	878.9	1 280.8	10 896.0

(a) Excludes the value of wool on skins. (b) Includes value of other livestock.

Source: *Value of Agricultural Commodities Produced, Australia (7503.0)*.

The largest customers for Australian beef in recent years have been the United States of America, Japan and the Republic of (South) Korea. In 2004–05 Japan was the main customer for Australian beef with 438,500 tonnes purchased, 32% more than the previous year's shipment. The United States of America was Australia's second largest customer with 369,400 tonnes purchased, up 1% on the previous year. The Republic of (South) Korea was the third largest importer of Australian beef, purchasing 111,500 tonnes.

Table 14.43 shows the volume of exports of fresh, chilled or frozen meat. In 2004–05, beef was again Australia's major meat export with shipments of bone-out beef being the major component at 960,000 tonnes, 13% more than the previous year and surpassing the previous record of 939,500 set in 2000–01. Exports of bone-in mutton in 2004–05 increased by 18% to 102,200 tonnes, halting a

three-year downward trend. Bone-in lamb exports increased 6% over the previous year to a record high level of 106,800 tonnes.

Table 14.44 shows the number, gross weight, gross value and unit value of live sheep and cattle exported for slaughter. The number of live sheep exported for slaughter in 2004–05 decreased, for the third year in succession, by 16% to 3,233,200 head which is the lowest level in over a decade. The number of live cattle exported for slaughter in 2004–05 fell 1% to 574,300 head, the lowest level since 1994–95.

The number of live, pure-bred breeding sheep exported increased from 1,700 in 2003–04 to 3,200 in 2004–05. During the same period the number of live, pure bred breeding cattle exported decreased from 100,400 head in 2003–04 to 49,900 head in 2004–05.

#### 14.43 EXPORTS OF FRESH, CHILLED OR FROZEN MEAT

	Beef		Veal(a)		Mutton		Lamb		Pork
	Bone-in	Bone-out	Bone-in	Bone-out	Bone-in	Bone-out	Bone-in	Bone-out	Meat
	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes
1999–2000	44.0	818.4	1.6	7.4	120.9	55.5	86.6	11.1	39.2
2000–01	39.9	939.5	2.1	6.4	127.8	63.8	103.7	12.3	43.9
2001–02	34.1	892.3	2.4	7.1	113.9	52.1	104.6	13.8	59.0
2002–03	37.5	894.4	3.6	6.5	109.3	52.3	87.9	14.1	62.9
2003–04	32.1	852.4	2.9	6.3	86.5	42.7	100.5	18.3	50.7
2004–05	44.7	960.0	3.3	6.5	102.2	41.8	106.8	21.7	43.6

(a) Includes buffalo meat.

Source: *Livestock Products, Australia (7215.0)*.

#### 14.44 LIVE SHEEP AND CATTLE EXPORTS(a)

	Live sheep exports				Live cattle exports			
	Number	Gross weight	Gross value	Unit value	Number	Gross weight	Gross value	Unit value
	'000	'000 tonnes	\$'000	\$	'000	'000 tonnes	\$'000	\$
1999–2000	4 858.6	243.3	180 345	37.12	845.7	317.1	432 645	511.60
2000–01	5 936.0	283.6	257 661	43.41	845.8	314.3	481 827	569.66
2001–02	6 443.2	318.0	391 705	60.79	797.0	293.5	525 535	659.41
2002–03	5 843.2	273.0	408 235	69.87	976.6	362.5	569 288	582.95
2003–04	3 842.7	188.2	266 457	69.34	581.5	192.0	317 850	546.65
2004–05	3 233.2	166.1	206 678	63.92	574.3	191.5	374 395	651.92

(a) Number of live animals exported, other than pure bred breeding animals.

Source: *Livestock Products, Australia (7215.0)*.

## The wool industry

Australia is the world's largest wool producing country, accounting for about one quarter of total production. Wool production has been declining in Australia and the world for the past ten years, and is expected to continue to do so in the medium term. Since 1990 Australian wool production has halved, to around 509,600 tonnes in 2003–04. Almost all of Australia's wool is exported, the major markets being China, Italy, India and Taiwan.

### Wool production

Shorn greasy wool contains an appreciable amount of grease, dirt, vegetable matter and other material. The exact quantities of these impurities in the fleece vary with climatic and pastoral conditions, seasonal fluctuations and the breed and condition of the sheep. It is, however, the clean wool fibre that is ultimately consumed by

the textile industry, and the term 'clean yield' is used to express the net wool fibre content present in greasy wool.

The gross value of wool produced in 2003–04 decreased to \$2,397m (table 14.45), less than half the value recorded in 1988–89 (\$5.9b), the peak year in the wool boom of the 1980s.

### Wool receivals

The total amounts of taxable wool received by brokers and purchased by dealers in recent years are shown in table 14.46. They exclude wool received by brokers on which tax had already been paid by other dealers (private buyers) or brokers.

The article 'The wool industry – looking back and forward' at the conclusion of the *Agriculture* chapter of the *Year Book Australia 2003* provides more information on the industry.

#### 14.45 WOOL, Production and value

	Shorn wool	Other wool(a)	Total	Gross value
	'000 tonnes	'000 tonnes	'000 tonnes	\$m
1997-98	640.7	48.9	689.6	2 753.9
1998-99	638.8	48.8	687.6	2 141.0
1999-2000	642.3	52.5	694.8	2 149.2
2000-01	589.9	55.3	645.1	2 541.2
2001-02	536.9	50.4	587.3	2 713.2
2002-03	503.0	48.1	551.1	3 317.8
2003-04	467.6	42.0	509.6	2 396.5

(a) Comprises dead and fellmongered wool, and wool exported on skins.

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

#### 14.46 TAXABLE WOOL RECEIVALS

	Receivals			Brokers as proportion of total receivals
	Brokers	Dealers	Total	
	'000 tonnes	'000 tonnes	'000 tonnes	%
1997-98	524.0	116.7	640.7	81.8
1998-99	526.9	111.8	638.8	82.5
1999-2000	517.5	124.8	642.3	80.6
2000-01	487.2	102.6	589.8	82.6
2001-02	436.8	99.7	536.5	81.4
2002-03	390.6	112.5	503.0	77.7
2003-04	384.2	83.3	467.6	82.2
2004-05	383.7	91.5	475.2	80.7

Source: *Livestock Products, Australia (7215.0)*.

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# The Australian wheat industry

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Wheat is the staple food of almost half the world's population and is one of the most important commodities produced by the Australian agriculture industry. In 2003–04, almost 30,000 farmers in Australia grew wheat, using half of the agricultural land dedicated to cropping. Along with harvest contractors, transport operators, storage handlers, marketers, millers, etc., these people were responsible for the production, sale and distribution of Australia's largest and most valuable crop.

The gross value of production of wheat in 2003–04 was \$5.6 billion (b) which represented 15% of the total value of farm production. With overseas sales in 2003–04 of over \$3.4b, wheat is one of Australia's most valuable exports, making it a significant player in the world wheat market.

This article traces the development of the wheat industry in Australia since European settlement. It looks at the industry structure; supporting industries, such as storage and milling; and marketing arrangements.

## The beginning

The industry had its beginnings over 200 years ago when Governor Phillip, realising the need to make the colony self sufficient in food, instigated farming operations on nine acres of land at Farm Cove. However, it very soon became apparent that the land at this site was too sandy to support crops so in November 1788 he established a 40 acre government farm at Parramatta. Governor Phillip also enabled ex-convicts to own their own farms. With his farm at Parramatta, called 'Experiment Farm', James Ruse was the first and best known of these ex-convict farmers.

By the end of 1790, 200 bushels (approximately 5.4 tonnes) of wheat had been harvested, all of which was saved for seed. With the opening up of Liberty Plains (now two of Sydney's western suburbs, Homebush and Strathfield) by free settlers, the colony had 6,000 acres under wheat by 1799.

However, there were many obstacles to preparing the land and achieving acceptable yields. Problems farmers faced included inappropriate wheat varieties, labour shortages, lack of appropriate tools and agricultural knowledge, infertile soil, poor rainfall, and plant diseases.

## Growth of the wheat industry

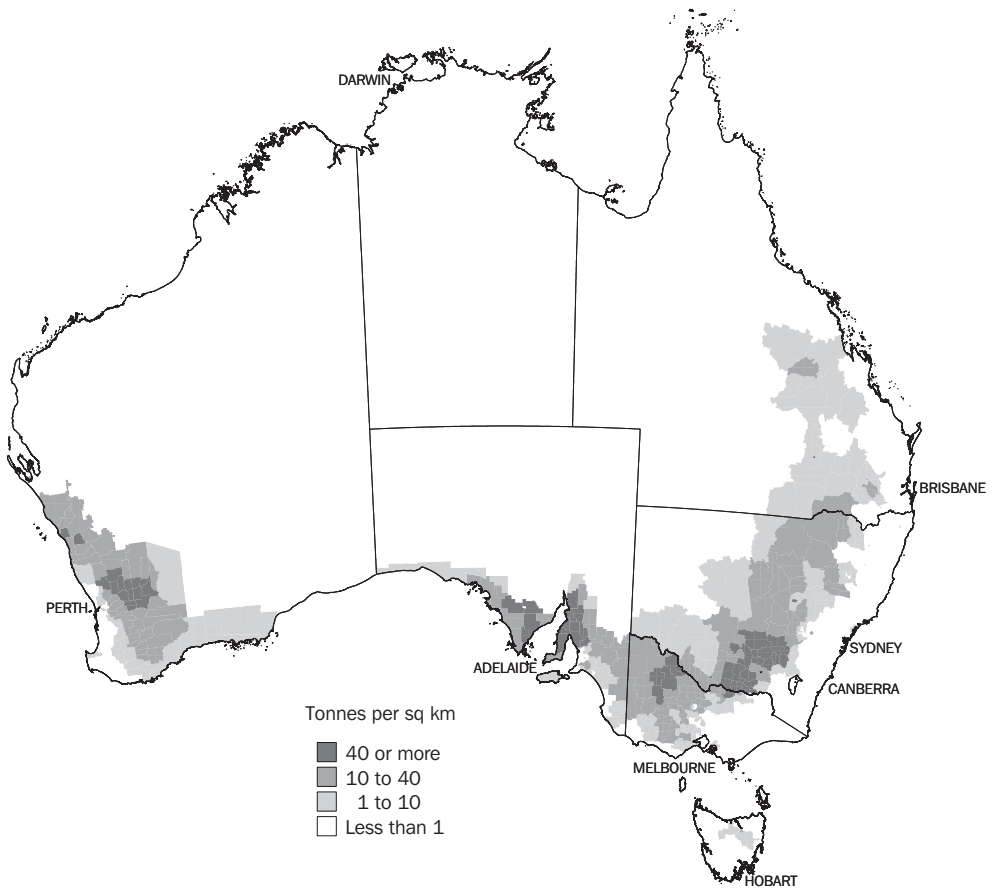
With the settlement of Victoria, South Australia and Western Australia during the 1830s and 1840s, cultivation of wheat expanded rapidly. For example, in South Australia, the area cultivated for wheat grew from eight hectares in 1838 to 7,592 hectares in 1844.

Assisting the expansion of the wheat industry into large scale operations were the inventions of the scrub roller, the 'stump jump' plough and the header harvester. Between them, these machines allowed for the clearing and preparation of large tracts of land and harvesting of the bigger crop. The opening up of the inland country railway network in the 1880s greatly improved the efficiency of crop transportation.

Complementing these mechanical advancements was research into new wheat varieties more suitable to the Australian environment and mechanical harvesting, and more resistant to disease. One of the pioneers in this field was William Farrer who, in the late-1800s, bred a number of new wheat varieties. The most notable of these was an early-maturing wheat strain named 'Federation' which was drought and disease resistant.

In later stages, growth of the Australian wheat industry was supported by changes in many farm management activities, including the introduction of mixed farming, crop rotation, application of fertilisers, improvements in cultivation techniques, and, since the 1940s, the use of tractors. The improvement of bulk grain handling systems, development of chemicals to combat diseases, pests and weeds, and the further development of higher yielding disease resistant wheat strains are some of the off-farm activities that continue to make important contributions to the industry.

### S14.1 WHEAT, Distribution — 2000–01(a)



(a) This map has been generated using Agricultural Census data at the Statistical Local Area level for 2000–01.  
Source: AgStats on GSP (7117.0.30.001) CD-ROM product 1996–97 to 2000–01.

## Wheat breeding

Wheat breeding, as described above, has been a major contributor to establishing a viable wheat industry in Australia. Research has mainly been undertaken through public sector programs and has been instrumental in developing varieties suited to Australia's dry environment.

A major objective of these programs was to develop a variety which would be resistant to stem rust and leaf rust, both of which prevailed at epidemic levels in the early 20th-century. Research in this area prevented the ruin of the wheat industry in Australia.

Another important aim of these programs was to breed white grained, medium to high protein wheat varieties suitable for the Australian climate. Recent water efficient varieties use less water at the growing stage leaving more water in the ground for use later at the grain forming stage. These new breeds have not only reduced water usage but have also achieved major improvements to yields by diverting water usage from vegetation growth to ear production and grain filling.

Since the loss of the United Kingdom market in the 1960s, researchers have sought to create wheat varieties which meet the end-use requirements of Middle Eastern and Asian customers. Australian wheat enjoys an excellent

reputation for quality in international markets and the hard white varieties are particularly suited to the production of food products in East Asia, such as instant and fresh noodles.

While tailoring these products for the Australian and international end-markets, researchers had to also ensure that the wheat was high yielding and suitable for the differing environmental conditions experienced across the wheat belt from Queensland to Western Australia.

Initially, wheat breeding and research was limited by the available genetic material. However, from the early-1970s to mid-1980s there was a rapid increase in the availability of new, high yielding varieties to Australian growers. This increase is largely credited to the availability, for Australian researchers, of genetic material collected by international research organisations (particularly Centro Internazionale de Mejoramiento de Maiz y Trigo) around 1960.

Australian wheat breeders now use overseas data including weather, soil and geographical data to determine how wheat with particular traits are likely to perform in locations across Australia, prior to importing the grains for trials.

Today, much of Australia's wheat and other grain variety breeding is managed by the Grains Research and Development Corporation (GRDC), which is a statutory authority funded by a levy on grain growers and contributions from the Australian Government.

## Characteristics of the wheat industry

Wheat growing areas are determined by soil type, soil fertility, topography and rainfall. Rain should predominantly fall during the winter and spring months and needs to be of an annual average between 400 and 600 millimetres per year at a minimum. Suitable conditions prevail on mainland Australia in an area west of the Great Dividing Range known as the wheat belt which stretches from Central Queensland through New South Wales and Victoria and on to South Australia in the form of a narrow crescent, continuing into the south west of Western Australia. In addition, a small area of land in Tasmania is used for growing wheat (see map S14.1).

In 2003–04, Western Australia had the most area under wheat and the biggest crop (table S14.2). Yield rates vary from state to state, mainly due to varying soil fertility and rainfall conditions in different regions rather than due to farming practices.

Since the beginning of the 20th century, wheat yields have steadily been improving. In the early-1940s, average yield broke through the 1 tonne per hectare (tonne/ha) barrier. This was due to the introduction of new varieties better suited to the Australian environment and improved farming practices. In the 1950s, average yield generally remained above the 1 tonne/ha level and 1.5 tonnes/ha was achieved for the first time in 1979 (with 1.77 tonnes/ha). Since 1989, yield has remained consistently above 1.5 tonnes/ha except in a few years of adverse weather conditions. The record national average yield of 2.11 tonnes/ha was set in 2002.

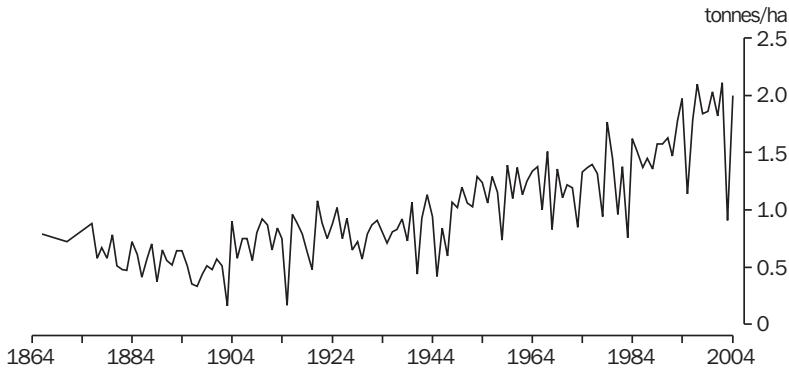
**S14.2 WHEAT PRODUCTION — 2003–04**

	Number of farms reporting wheat	Area under wheat	Share of total area under wheat	Average farm area under wheat	Total production	Share of total crop	Yield
	no.	'000 ha	%	ha	'000 tonnes	%	tonnes/ha
NSW	10 859	3 983	30	367	7 288	28	1.8
Vic	5 743	1 409	11	245	3 145	12	2.2
Qld	2 035	790	6	388	1 110	4	1.4
SA	5 542	1 960	15	354	3 490	13	1.8
WA	5 053	4 917	38	973	11 070	42	2.3
Tas	289	8	—	27	26	—	3.4
<b>Aust.(a)</b>	<b>29 524</b>	<b>13 067</b>	<b>100</b>	<b>443</b>	<b>26 132</b>	<b>100</b>	<b>2.0</b>

(a) Includes ACT.

Source: *Agricultural Commodities, Australia, 2003–04 (7121.0)*.

### S14.3 WHEAT YIELDS



Source: *Agricultural Commodities, Australia (7121.0)*; Historical data available on request.

Over the last century, major fluctuations in the price of wheat have been caused by wars, the Depression, unreliable climate and volatile market forces. However the long-term trend for price levels is downwards, driven mainly by supply and demand factors with the end result being a fall over time in the unit value (price) of wheat expressed in prices prevailing in 2004 (graph S14.4). In this period, while production costs have also declined due to increasing efficiency and adoption of technology, this has not been enough to prevent a decline in net returns (or 'profits') to wheat farmers over time.

In most cases, wheat farms are family businesses owned by either a sole proprietor or family partnership. The growing of wheat is usually combined with other farming activities such as raising sheep, beef cattle or growing other crops.

This combination with other crops is a significant feature in Australian agriculture. Continued growing of one crop type on land leads to deterioration in soil conditions and to rising pest and disease cycles. Crop rotation can help overcome these problems.

Since the 1970s, crops such as lupins, rapeseed/canola and field peas have been used in rotations by wheat farmers. Where the farmer runs livestock, wheat also has to compete with pasture rotations. The length of all these rotations is determined by the relative prices of livestock and grains, together with climatic conditions.

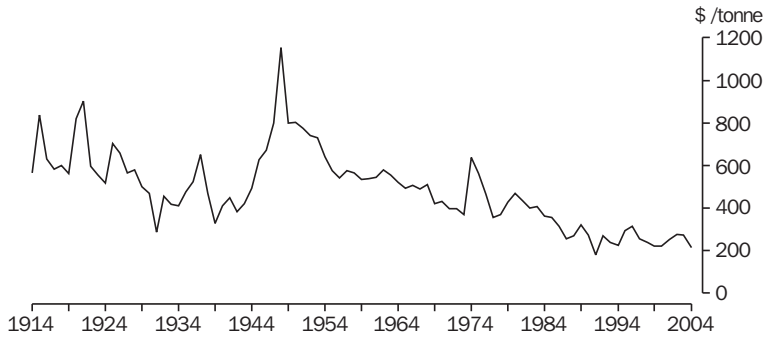
In Australia, most wheat is planted during April, May and June as the seed requires the colder weather to germinate. This allows harvesting before the onset of harsh summer weather conditions. The harvest begins in Queensland during September and October and ends in Western Australia during January. Much of the harvest is undertaken by specialist contractors who commence harvesting in Queensland and follow the ripening grain crops down to Victoria.

Australia predominantly grows the white grained wheat varieties which have a higher rate of flour extraction, and generally does not grow the red grained wheats produced, for example, in North America.

Two important species of wheat grown in Australia are *Triticum aestivum* and *Triticum durum*. The former is known as common milling wheat and the latter is known as durum wheat. The products produced from milling wheat, such as bread and noodles require a wheat variety with hard grain (important in the milling process) and with a high level of good quality protein for better volume, softer crumb and better keeping qualities. Durum is noted for its extreme hardness and is used mainly for making pasta and couscous. Durum production is only suited to certain areas of Australia (northern New South Wales and eastern South Australia) and accounts for less than 3% of the total Australian wheat crop.



#### S14.4 WHEAT: UNIT VALUE AT 2004 PRICES



Source: Value of Agricultural Commodities Produced, Australia (7503.0); ABS data available on request.

### Wheat storage and handling

Initially, storage and handling of wheat relied on the humble sack – millions of them! This style of operation was first phased out in New South Wales during the 1920–21 season in favour of a bulk handling system which meant wheat grain was no longer required to be bagged before transport and storage. It took until 1952, however, before all mainland states had implemented their own version of bulk handling.

Bulk handling led to considerable saving of time and money. Further benefits were gained from reduction in the deterioration of long-standing stacks of bagged wheat and from the protection of wheat from mice, weevils, climatic conditions and leakage. However, the New South Wales and Victoria systems, which generally employ vertical concrete and steel silos, had high initial capital costs. These facilities were unable to handle the entire stock in ‘bumper’ years and also had high operating costs in lean years. The Western Australian system, using a horizontal shed, minimised these costs by being flexible with lower capital cost.

The high capital costs associated with supply chain infrastructure meant that, historically, state governments have been heavily involved in this sector of the industry, through both regulation and the provision of capital. Today, handling and storage of over 80% of Australia’s grain crop is managed by three major bulk handlers – GrainCorp in New South Wales, Queensland and Victoria; ABB Grain in South Australia; and Co-operative Bulk Handling in Western Australia. Smaller commercial and on-farm facilities account for the remainder.

The large bulk handling companies provide a network of storage facilities which connect by road and rail to seaboard grain export terminals which they also own. In many regions these companies are the sole providers of storage and handling services to wheat growers. These storage facilities take on several different forms, especially between states, but are typically constructed of steel or reinforced concrete. The four most common types used are:

- the horizontal shed with storage capacity ranging from 10,000 to 40,000 tonnes
- the squat bin with storage capacity between 5,000 to 15,000 tonnes
- vertical storages consisting of individual cells with capacity ranging from 1,500 to 4,000 tonnes
- temporary bunker storages with capacity from 10,000 to 100,000 tonnes to handle overflow during ‘bumper’ seasons.

### Domestic consumption of wheat

Australia consumes around 5 million tonnes of wheat annually, with the remainder of production being exported. Approximately 2.5 million tonnes are used annually in the production of flour, whole grain products, beer etc., for human consumption, and in the production of gluten and starch etc., for industrial uses. A further 2 to 2.5 million tonnes is used annually as stock feed. While this sector of the market is very sensitive to price movements, it is a rapidly growing market in response to an expanding intensive livestock feeding industry.



In addition, around 500,000 tonnes of wheat is used for seed each year.

## Flour milling industry in Australia

In the 1870s there were more than 500 flour mills in Australia using steam, water or wind as the power source, with most large country towns having their own flour mill. With improved technology, larger mills, and less overseas demand for the milled product (as developing countries established their own facilities), the number of mills in Australia has now declined to less than 40. However, with the growth in Australia's population, demand for flour products at home has increased steadily. Currently, annual domestic human consumption of flour (table S14.5) is about 1.5 million tonnes and a further 440 thousand tonnes of flour is used for industrial purposes such as starch and gluten. Of the flour sold for human consumption, just over 60% is used by specialised commercial bread bakers.

## Government involvement in the wheat industry

In the past, Commonwealth and state governments provided the wheat industry with financial assistance (in the form of guaranteed minimum prices to growers and investment in storage and handling) and regulatory control (in the form of restrictions on the sale of wheat). They still have a regulatory role in the marketing of export wheat, but no longer provide subsidies to growers and have divested their involvement in the storage, handling and transport of wheat. Governments at both levels have also contributed significantly to agricultural research through state-based

government research organisations, universities, and through the GRDC and the Commonwealth Scientific and Industrial Research Organisation.

## Wheat marketing

In 1915 the Commonwealth Government set up a wheat pooling scheme to assist wheat growers and to ensure appropriate management of this vital foodstuff during World War I. It was administered by an Australian Wheat Board, comprising the Prime Minister and a Minister from each wheat growing state. Under the scheme, returns from each season's wheat crop were pooled (over time and across markets) and shared fairly among all growers for the duration of World War I.

After the first Australian Wheat Board ceased operations in 1921, regional wheat pools continued, often managed by farmer cooperatives.

At the beginning of World War II, the Australian Wheat Board was established as a statutory authority under National Security (Wheat Acquisition) Regulations to handle all matters connected with wheat disposal during World War II. Following the war, legislation was passed to establish the peacetime Wheat Board in 1948. The purpose of the board was to ensure that the wheat industry operated in an environment of price stability and orderly marketing and was responsible for the receipt and sale of virtually all wheat produced in Australia. The passing of subsequent Acts saw the life of the board extended five years at a time until 1999.

### S14.5 SALES OF WHEAT FLOUR, Within Australia(a)(b)

	For human consumption in							For industrial use(e)	Total domestic use
	Bread	Pastry(c)	Biscuits	Packet flour and mixes	Pasta	Other(d)	Total		
	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes
1999–2000	789	71	96	107	97	127	1 287	504	1 791
2000–01	829	64	89	98	96	127	1 303	533	1 836
2001–02	859	71	104	67	87	147	1 334	538	1 872
2002–03	927	66	106	120	89	146	1 453	428	1 881
2003–04	994	73	110	128	88	119	1 512	440	1 952

(a) By flour millers. (b) Comprises all products derived from grinding wheat, including durum. (c) Factories and shops whose main line of production is cakes, pastries, pies, muffins etc. (d) Includes flour sold to be part processed into frozen dough; sales to fish shops, butchers and similar users. (e) Starch and gluten manufacturers and other industrial users.

Source: ABS data available on request; Manufacturing Production Survey.

In 1984 the domestic feed market for wheat was effectively deregulated and growers could sell, under a permit system, to anyone they chose. This was the first step in the deregulation of the Australian domestic wheat market and was designed to benefit the industry by injecting greater flexibility and competition.

In 1989, the domestic wheat market was completely deregulated and since that time has operated without any specific government regulation. At the same time, the Commonwealth government established the Wheat Industry Fund, a compulsory levy on wheat sales, to create a sufficient capital base for the privatisation of the Australian Wheat Board.

In July 1999, the Wheat Board ceased to operate as a government controlled statutory authority and became AWB Limited, a grower-owned and controlled corporation with a dual-class share structure. At this time, all government financial assistance for the Wheat Board, such as underwriting its borrowings, ended. AWB Limited became a public company in 2001, when B-class shares (issued to holders of the units in the Wheat Industry Fund) were listed on the Australian Stock Exchange and today it is one of Australia's top-100 largest public companies.

Through a subsidiary company, AWB (International) Limited, AWB Limited continues to be the sole exporter of bulk wheat from Australia (under the Single Desk system). Using the Single Desk system – established under the *Wheat Marketing Act 1989* (Cwlth) – AWB Limited has a formal obligation to maximise returns to wheat growers from the national pool through being the only exporter of Australian wheat. The Single Desk system aims to capture value through price premiums, reducing supply chain costs, risk management and giving growers access to buyers in over 40 countries.

A government regulator, the Wheat Export Authority, has been established by the Commonwealth Government to monitor and report on AWB (International) Limited and to manage the system that allows exports of wheat in containers and bags outside the Single Desk.

Commodity boards and single desks exist domestically and internationally for other agricultural products. For example, in Australia there are state-based single desks for sugar, rice and barley.

The Single Desk for wheat exports has at times been criticised in international trade negotiations, especially by Australia's largest international competitor, the United States of America. However, to date, the Australian Government has been able to maintain Single Desk arrangements as part of all trade agreements, such as the World Trade Organisation and the recently completed Free Trade Agreement with the United States of America, on the grounds that it is a non-trade distorting, transparent, commercial operation. However, it should be noted that neither the former Wheat Board nor the current AWB Limited has ever exported wheat to the United States of America.

## Global context

In 2003–04, 102 million tonnes of wheat were traded on the international market. The United States of America exported the most wheat, while Canada and Australia each sold about the same amount to overseas buyers (table S14.6). The European Union (which includes the major wheat producing countries of France and Germany) collectively was the biggest producer (106 million tonnes) but ranked only fourth as an exporter with 10 million tonnes. China, India and Russia are also major producers but are relatively minor players in the export business.

While Australia produces only about 3% of the world's wheat output, it exports to more than 40 countries. Australia's total wheat exports represent around 15% of the world wheat trade annually.

Australia's main wheat export markets are concentrated in Asia and the Middle East with Indonesia, Egypt, Iraq and Japan leading the importers over the past three years. In recent years the market for Australian wheat exports to China has grown strongly.

**S14.6 WHEAT PRODUCTION AND EXPORTS(a) — Major producers**

	2001-02	2002-03	2003-04
	mill. tonnes	mill. tonnes	mill. tonnes
European Union(b)			
Production	90.5	103.2	106.1
Exports(c)	11.5	15.5	10.0
China (excl. SARS and Taiwan Prov.)			
Production	93.9	90.3	86.5
Exports	1.3	1.4	1.0
India			
Production	69.7	71.8	65.1
Exports	3.1	5.4	1.0
United States of America			
Production	53.0	43.7	63.8
Exports	26.2	23.1	31.6
Russian Federation			
Production	46.9	50.6	34.0
Exports	4.6	13.0	3.2
Australia			
Production	24.3	10.1	26.1
Exports	16.5	10.9	15.2
Canada			
Production	20.6	16.2	23.6
Exports	16.3	9.4	15.8
Argentina			
Production	15.3	12.3	14.5
Exports	10.1	6.8	8.0
Ukraine			
Production	21.0	20.0	3.6
Exports	5.5	6.7	3.0

(a) Exports include wheat equivalent of flour and other wheat products. (b) Regarded as 25 countries from 2003-04 including major producers, France and Germany. (c) Intra-EU trade excluded from exports.

Source: Australian Bureau of Agricultural and Resource Economics; Agricultural Commodities, Australia (7121.0).

**S14.7 AUSTRALIAN WHEAT EXPORTS — Major destinations(a)**

	2002-03	2003-04	2004-05
	'000 tonnes	'000 tonnes	'000 tonnes
Iran	1 064	—	—
Egypt	602	2 534	752
Japan	1 123	1 239	1 171
Korea, Republic of (South)	1 014	1 065	1 208
Iraq	1 037	1 111	1 550
China	38	750	1 883
Indonesia	1 578	2 492	2 501
Other	4 145	5 394	6 191
<b>Total</b>	<b>10 601</b>	<b>14 585</b>	<b>15 256</b>

(a) Exports of wheat and meslin only.

Source: ABS data available on request, International Trade.

## The future of the wheat industry

The successful long-term future of the Australian wheat industry will be subject to many challenges, including resource sustainability and infrastructure development, climate change, international price distortion and disease risks. Based on previous performance, the wheat industry should be able to overcome these

challenges and continue to make an important contribution to the Australian economy and world food markets.

There are also some bright lights on the horizon for wheat producers, such as the expanding intensive livestock feeding industry and the possibility of increasing use being made of grain-based fuel in Australian vehicles.

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## FORESTRY AND FISHING

This chapter outlines the main features of two important primary industries in Australia – forestry and commercial fishing.

The forests and wood products industries, based on native and plantation forests, employed approximately 91,400 people in 2003–04. The value of both exports and imports of forest products was substantial at \$2.1 billion (b) and \$3.9b respectively in 2003–04, making Australia a net importer of forest products.

Australia's fisheries resources are diverse. Over 3,000 species of marine and freshwater fish, and at least an equal number of crustacean and mollusc species, occur in waters in and around Australia. Less than 600 of these are commercially fished. However, almost all the major known fish, crustacean and mollusc resources are fully fished. Aquaculture, or 'fish farming', is an alternative to harvesting the naturally occurring fish stocks and has considerable potential as a way to ensure the sustainability of harvesting yields.

The gross value of Australian fisheries production, at the point of landing, was about \$2.2b in 2003–04, of which aquaculture accounted for 34%. The value of exports and imports of fisheries products stood at \$1.6b and \$1.1b respectively in 2003–04, making Australia a net exporter of these products.

## Forestry

Australia's native and plantation forests are an important natural resource providing a wide range of products and benefits to the community.

Forests are a reservoir of biological diversity and are functioning ecosystems. They provide protection for soils and water resources, and are increasingly being recognised for their potential as carbon sinks through their ability to absorb carbon from the atmosphere. They are the foundation for a broad range of cultural and spiritual experiences for diverse groups of people and a major tourist attraction for Australians and overseas visitors, providing for a vast array of recreational and educational activities.

Forests and plantations provide the basis for Australia's forest industries. Employment and wealth flow directly from the wood products derived from the forests, such as sawn timber, fibreboard, plywood and paper. These forests and plantations also support a variety of other products and services, such as honey, wildflowers, natural oils, gums, resins, medicines, firewood and craft wood.

The Australian Government, and state and territory governments share a vision of ecologically sustainable management of the forest estate that integrates environmental, commercial and community values and uses. These values are embodied in regional forest agreements negotiated in New South Wales, Victoria, Western Australia and Tasmania.

Australia is engaged with the global community in measuring, monitoring and reporting indicators for sustainable forest management. As a member of the international forest initiative – the Montreal Process (1994) – Australia has contributed to the development of the seven national criteria and 67 national indicators for the sustainable management of temperate and boreal forests. Australia has adopted the internationally agreed criteria and indicators, and revised them and added others to reflect its own unique forests, providing a consistent framework for monitoring and reporting on the status of its forests.

### Forest estate

#### Native forest

A forest is defined by Australia's National Forest Inventory as an area incorporating all living and non-living components, dominated by trees

having usually a single stem and a mature or potentially mature stand height exceeding two metres, and with an existing or potential crown cover of over-storey strata about equal to or greater than 20%. This definition includes Australia's diverse native forests, regardless of age. It is also sufficiently broad to encompass areas of trees that are sometimes described as woodlands.

Based on this definition, the total area of native forest (parts of which are 'old growth') as at December 2003 is estimated at 162.7 million hectares (ha), which is about 21% of Australia's land area (table 15.1). Some 121.6 million ha (75%) of native forest were on public land, and 38.9 million ha (24%) were on private land with the remaining 1% on land of unresolved tenure. The 121.6 million ha of forests growing on public land, consisted of 75.6 million ha (62%) on leasehold tenure, 21.5 million ha (18%) in Nature Conservation Reserves, 13.1 million ha (11%) on other Crown land, and 11.4 million ha (9%) managed by state forest authorities for multiple uses including wood production, recreation and informal reserves. Taking forested leasehold land together with private freehold forest, some 114.5 million ha, or 70% of Australia's native forests, were under private management.

#### Plantations

The combined resource of standing planted forests in Australia was 1.7 million ha planted to December 2004 (table 15.2). Softwood plantations, which are dominated by the exotic species *Pinus radiata*, represented 58% (1,001,000 ha). Hardwood plantations, which are almost all native eucalyptus species, mainly Tasmanian blue gum (*Eucalyptus globulus*) represented 42% (716,000 ha). The proportion of the estate accounted for by hardwood plantations has increased significantly over the last decade (up from 15% in 1994 and 29% in 1999, to 42% in 2004 (graph 15.3).

A diverse range of ownership arrangements exists in the Australian plantation industry, including a variety of joint venture and annuity schemes between public and private parties. Private ownership of trees in plantation forests has increased from 46% in 1999, when it was equal to public ownership, to 58% in 2004. Private ownership of land under plantation forests has increased from 42% to 53% over the same period.

### 15.1 NATIVE FOREST AREAS — December 2003

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
<b>DOMINANT CANOPY SPECIES</b>									
Eucalypt									
Tall	3 820	2 465	1 189	1	170	1 130	—	28	8 803
Medium	18 190	3 407	36 022	596	12 399	1 281	11 268	81	83 244
Low	186	519	1 373	1 208	2 646	65	16 643	7	22 647
Mallee	22	1 171	122	6 044	4 969	—	—	—	12 328
Total	22 218	7 562	38 706	7 849	20 184	2 476	27 911	116	127 022
Acacia	1 251	63	6 984	1 939	4 563	74	1 613	—	16 487
Melaleuca	44	96	5 301	1	—	19	1 593	—	7 054
Rainforest	486	16	2 885	—	5	598	224	—	4 214
Casuarina	1 000	4	216	763	40	1	14	—	2 038
Mangrove	3	2	196	19	173	—	355	—	748
Callitris	1 240	56	387	261	—	1	386	—	2 330
Other	415	135	1 059	34	398	—	738	—	2 779
<b>Total</b>	<b>26 658</b>	<b>7 936</b>	<b>55 733</b>	<b>10 865</b>	<b>25 365</b>	<b>3 169</b>	<b>32 836</b>	<b>117</b>	<b>162 680</b>
<b>TENURE</b>									
Public									
Multiple use forest(a)	2 496	3 312	2 925	—	1 600	1 062	—	—	11 395
Nature Conservation Reserve(b)	4 471	3 050	5 000	3 943	3 805	1 105	12	106	21 492
Other Crown land(c)	1 055	207	1 131	392	9 387	80	890	—	13 142
Leasehold(d)	9 470	46	35 581	5 255	8 920	—	16 313	11	75 596
Total	17 492	6 615	44 637	9 590	23 712	2 247	17 215	117	121 625
Private	8 523	1 298	10 213	822	1 639	922	15 511	—	38 928
Unresolved tenure	643	23	883	454	14	—	110	—	2 127
<b>Total</b>	<b>26 658</b>	<b>7 936</b>	<b>55 733</b>	<b>10 865</b>	<b>25 365</b>	<b>3 169</b>	<b>32 836</b>	<b>117</b>	<b>162 680</b>

(a) Publicly owned land managed for multiple use including wood production. (b) Public land on which wood production is excluded (national parks, etc.). (c) Reserved areas of educational, scientific and other public institutional land, including easements, defence land, and other minor tenure classifications. (d) Crown land where the right to harvest or clear land must be approved by state/territory governments. Often known as pastoral leases.

Source: Bureau of Rural Sciences, 'National Forest Inventory, 2003'.

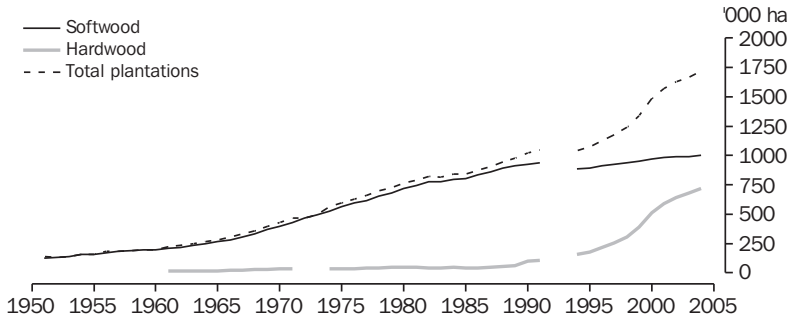
### 15.2 PLANTATION AREAS — December 2004

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
Species type									
Hardwood	54	168	35	40	259	151	8	—	716
Softwood	287	215	180	124	110	74	4	5	1 001
<b>Total</b>	<b>341</b>	<b>383</b>	<b>215</b>	<b>164</b>	<b>370</b>	<b>226</b>	<b>12</b>	<b>5</b>	<b>1 716</b>

Source: Bureau of Rural Sciences, 'National Plantation Inventory 2005'.



### 15.3 PLANTATION AREA BY SPECIES GROUP(a)



(a) Breaks in the series are due to use of different sources and their collection methods.

Source: Commonwealth Forest and Timber Bureau (pre 1975); ABARE (1976 to 1991); Bureau of Rural Sciences – National Plantation Inventory (since 1994).

#### Farm forestry

Farm forestry generally refers to the incorporation of commercial tree growing into farming systems. This may take the form of smaller-scaled plantations on farms, timber belts, wind breaks, alleys and wide-spaced plantings, and may also include management of native forest for commercial returns on farms.

Farm forestry is increasingly becoming adopted as part of farm management planning and integrated into existing land uses, not only to supply wood but also to provide a range of benefits such as environmental protection and increased agricultural production.

To date, plantation farm forestry has mostly occurred in higher rainfall regions (greater than 600 millimetres per year) where good growth rates can be achieved and there is an existing timber processing industry. Many farmers have also entered into farm forestry by leasing their land or forming joint venture agreements with large-scale forest management companies.

The area of plantations owned outright by individuals having total estates less than 1,000 ha (i.e. the small-grower sector) was just on 67,000 ha in 2000, or nearly 5% of Australia's total plantation estate. In addition, 20% of the larger industrial plantations form an overlap with farm forestry participation through leasehold and joint venture arrangements with farmers.

The management of private native forests is an important component of farm forestry, with 24% of Australia's total native forest area in private ownership and a further 46% on privately managed leasehold land.

#### Wood and paper products

Australia's wood and paper products industries are important components of Australia's primary and secondary industry sectors. They are particularly important in providing economic development and employment in many regions of rural Australia. The industries include hardwood and softwood sawmilling, plywood and panels manufacturing, woodchip production and export, and the pulp and paper industries.

In 2003–04 total roundwood removed from forests declined by 4% to 25.7 million cubic metres. The removal of broadleaved wood (primarily from native forests) fell 6% in 2003–04 to 11.0 million cubic metres, while 2% less coniferous wood (mainly from plantations) was removed (ABARE 2005b).

The value of exports of forest products in 2003–04 totalled \$2.1b, of which 39% were woodchips and 35% paper and paperboard products. The value of imports of forest products in 2003–04 was \$3.9b, of which 52% were paper and paperboard products and 13% sawnwood. This indicates a trade deficit in forest products of \$1.8b in 2003–04. Australia produced 86% of its sawn timber needs in 2003–04, of which native forests provide 23%, with 77% coming from softwood plantations. Imported sawn timber is mostly Radiata pine from New Zealand and Douglas fir (also known as Oregon) from North America.

The hardwood and softwood sawmilling industries comprise mills of various sizes which process wood into sawn timber and other products such as veneers, mouldings and floorings. The hardwood mills are generally small scale and scattered. The softwood mills are generally larger and more highly integrated with other wood

processing facilities. Australia's production of sawn timber in 2003–04 increased by 8% to 4,037,000 cubic metres (table 15.4).

Other value-added timber products include plywood, wood-based panels and reconstituted wood products. Australian wood-based panels include particleboard, medium density fibreboard, and hardboard made from softwood or hardwood pulp logs, sawmill residues or thinnings.

Pulp and paper mills use roundwood thinnings, low quality logs, harvesting residues and sawmill waste, recycled paper and paperboard to produce a broad range of pulp and paper products. Over the past five years there has been a substantial increase in the volume of wood for paper and paperboard sourced from eucalypt plantations as they have come into production. This production has more than doubled from 443,000 cubic metres in 1998–99 to 1,173,000 cubic metres in 2003–04.

Some 41% of the paper and paper products consumed domestically in 2003–04 were imported, with 70% of printing and writing paper

coming from overseas. The majority of paper products produced domestically were packaging and industrial paper (62%) along with newsprint, printing and writing papers, and tissue paper. Recycled paper now contributes 54% of the fibre used in the production of all paper and paperboard.

Woodchips are mainly used in the production of Australia's paper and paper products. The woodchip export industry uses sawmill residues and timber which is unsuitable for sawmilling and not required by the pulp, paper and reconstituted wood products industries. Before the advent of the woodchip export industry, much of this material was left in the forest after logging. Considerable quantities of sawmill waste material, which would otherwise be burnt, are also chipped for local pulpwood-using industries and for export. Up until 1990–91 at least 95% of woodchips exported from Australia had been eucalypt, but since then greater quantities of softwood woodchips have become available from pine plantations.

#### 15.4 PRODUCTION OF WOOD AND SELECTED WOOD PRODUCTS

Commodity	Units	1999–2000	2000–01	2001–02	2002–03	2003–04
Sawn Australian grown timber						
Coniferous	'000 m <sup>3</sup>	2 637	2 351	2 529	2 669	3 012
Broadleaved	'000 m <sup>3</sup>	1 346	1 174	1 108	1 063	1 026
Total	'000 m <sup>3</sup>	3 983	3 525	3 637	3 732	4 037
Hardwood woodchips(a)	'000 t	6 164	6 401	5 912	7 079	6 892
Railway sleepers	'000 m <sup>3</sup>	40	n.a.	n.a.	n.a.	n.a.
Plywood	'000 m <sup>3</sup>	192	157	192	219	239
Unlaminated particle board	'000 m <sup>3</sup>	978	904	965	1 025	1 048
Medium density fibreboard	'000 m <sup>3</sup>	621	712	732	786	795
Wood pulp(a)	'000 t	861	895	843	877	869
Paper and paperboard						
Newsprint(a)	'000 t	464	465	395	412	422
Printing and writing	'000 t	535	554	624	564	585
Household and sanitary	'000 t	232	204	198	194	200
Packaging and industrial	'000 t	1 605	1 449	1 679	1 892	1 956

(a) Excludes production of small establishments with fewer than four persons employed, and establishments engaged in non-manufacturing activities but which may carry on, in a minor way, some manufacturing.

Source: *Manufacturing Production, Australia* (8301.0); *ABARE 2005b, 'Australian Forest and Wood Products Statistics'*.

## Fishing

### Production, processing, and exports and imports of fisheries products

#### Value of fisheries production

Australia's major species of commercial fisheries products are prawns, rock lobster, abalone, tuna, other finfish, scallops, edible oysters and pearl oysters. Australian fishing operators concentrate their efforts on estuarine and coastal species, and pelagic (surface) and demersal (bottom living) species that occur on the continental shelf.

Table 15.5 shows the quantity of production and table 15.6 the gross value of production of the Australian commercial fishing industry in 2003–04. The gross value of Australian fisheries production (including aquaculture) in 2003–04 decreased by 5% to \$2.2b, the third consecutive decline (table 15.8). A number of the major species contributing to the total value of production showed significant falls during 2003–04. While the

value of prawns, other finfish and pearls remained virtually unchanged, the value of oysters and crabs increased (table 15.9). In quantity terms, Australian fisheries production increased by 5% during the year to 266,613 tonnes, with the catch of finfish other than tuna (up 8%) being the most significant contributor (table 15.7).

Australian fisheries production covers total production from both Commonwealth and state managed fisheries, including aquaculture. Commonwealth fisheries accounted for 15% of the total gross value of Australian fisheries production in 2003–04 (table 15.6). Commonwealth fisheries are those managed on behalf of the Australian Government by the Australian Fisheries Management Authority. State and Northern Territory governments manage inland fisheries and aquaculture, in addition to those salt water fisheries not managed by the Australian Government. The distribution of the management of fisheries between the Australian Government and state governments is determined following consultations held under the Offshore Constitutional Settlement Agreement.

#### 15.5 FISHERIES PRODUCTION, Quantity(a) — 2003–04

	NSW tonnes	Vic. tonnes	Qld tonnes	SA tonnes	WA tonnes	Tas. tonnes	NT tonnes	Cwth tonnes	Aust. tonnes
<b>Finfish</b>									
Tuna	24	—	—	9 290	15	—	8	10 084	(c)14 418
Other	14 405	4 284	15 102	36 818	17 260	15 554	5 264	(d)54 551	163 238
<i>Total</i>	14 429	4 284	15 102	46 108	17 275	15 554	5 272	64 635	177 656
<b>Crustaceans</b>									
Prawns	2 001	56	11 450	2 126	3 689	—	—	(e)7 783	27 106
Rock lobster	108	496	535	2 400	13 742	1 601	—	839	19 721
Crab	633	11	4 229	707	1 122	64	437	20	7 223
Other	114	46	105	49	108	—	—	79	501
<i>Total</i>	2 857	609	16 319	5 282	18 661	1 665	437	8 721	54 552
<b>Molluscs</b>									
Abalone	252	1 562	—	982	351	2 645	—	—	5 792
Scallops	—	261	1 999	—	2 287	3 542	—	1 118	9 207
Oysters(f)	—	—	—	4 382	—	3 243	—	—	7 625
Other	1 672	1 357	195	2 224	1 783	490	87	2 813	10 622
<i>Total</i>	1 924	3 180	2 194	7 588	4 421	9 920	87	3 931	33 245
Other fisheries production	16	—	73	894	87	75	—	15	1 160
<b>Total</b>	<b>19 226</b>	<b>8 073</b>	<b>33 688</b>	<b>59 872</b>	<b>40 444</b>	<b>27 214</b>	<b>5 796</b>	<b>(b)77 437</b>	<b>266 613</b>

(a) Includes estimates of aquaculture production (except NT); excludes hatchery and inland commercial fishery production. (b) Total includes all fisheries under federal jurisdiction. (c) Total has been adjusted so as not to double-count some Southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA. (d) Includes the finfish component of Commonwealth Fisheries, plus catch from Commonwealth Fisheries that cannot be disaggregated due to confidentiality. (e) Includes the Northern prawn, Torres Strait, South East and other fisheries. (f) Excludes pearl oyster production in Qld and WA and edible oysters in NSW.

Source: ABARE 2005a, 'Australian Fisheries Statistics, 2004'.

### 15.6 FISHERIES PRODUCTION, Gross value(a) — 2003–04

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Cwth	Aust.
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
<b>Finfish</b>									
Tuna	83	—	—	242 000	93	—	29	72 296	(b)276 148
Other	44 660	25 528	93 937	38 828	47 205	118 476	25 789	(c)155 874	550 296
<b>Total</b>	<b>44 743</b>	<b>25 528</b>	<b>93 937</b>	<b>280 828</b>	<b>47 298</b>	<b>118 476</b>	<b>25 818</b>	<b>228 170</b>	<b>826 444</b>
<b>Crustaceans</b>									
Prawns	27 737	730	150 107	43 423	44 782	—	—	(d)88 093	354 872
Rock lobster	4 196	13 730	6 230	61 365	261 398	44 921	—	13 725	405 565
Crab	6 005	241	29 729	4 020	7 153	1 643	4 473	91	53 354
Other	1 547	324	1 361	905	1 817	—	—	1 525	7 479
<b>Total</b>	<b>39 485</b>	<b>15 025</b>	<b>187 427</b>	<b>109 713</b>	<b>315 150</b>	<b>46 564</b>	<b>4 473</b>	<b>103 433</b>	<b>821 270</b>
<b>Molluscs</b>									
Abalone	8 668	49 927	—	34 663	14 209	88 655	—	—	196 122
Scallops	—	395	9 954	—	7 685	4 014	—	1 528	23 577
Oysters	37 921	—	750	21 152	(e)150 000	11 998	—	—	221 822
Other	6 825	4 502	974	6 402	18 057	2 161	848	4 195	43 963
<b>Total</b>	<b>53 414</b>	<b>54 824</b>	<b>11 679</b>	<b>62 217</b>	<b>189 951</b>	<b>106 828</b>	<b>848</b>	<b>5 724</b>	<b>485 484</b>
<b>Other fisheries production</b>	<b>1 718</b>	<b>—</b>	<b>1 701</b>	<b>7 534</b>	<b>801</b>	<b>6 513</b>	<b>(f)28 000</b>	<b>123</b>	<b>46 391</b>
<b>Total</b>	<b>139 360</b>	<b>95 377</b>	<b>294 743</b>	<b>460 292</b>	<b>553 200</b>	<b>278 381</b>	<b>59 139</b>	<b>(g)337 449</b>	<b>2 179 589</b>

(a) Includes estimates of the value of aquaculture production, but excludes the value of hatchery and inland commercial fishery production. (b) Total has been adjusted so as not to double-count the value of some Southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA. (c) Includes the finfish component of Commonwealth Fisheries, plus catch from Commonwealth Fisheries that cannot be disaggregated due to confidentiality. (d) Includes the value of Northern prawn, Torres Strait, South East and other fisheries. (e) Value of pearl production. (f) Includes value of NT pearl production. (g) Total includes the value of all fisheries under Commonwealth jurisdiction.

Source: ABARE 2005a, 'Australian Fisheries Statistics, 2004'.

### 15.7 FISHERIES PRODUCTION, Quantity(a)

	2001–02	2002–03	2003–04
	tonnes	tonnes	tonnes
<b>Finfish</b>			
Tuna	15 891	14 729	14 418
Other	137 315	150 836	163 238
<b>Total</b>	<b>153 206</b>	<b>165 566</b>	<b>177 656</b>
<b>Crustaceans</b>			
Prawns	29 419	26 252	27 106
Rock lobster	14 322	17 069	19 721
Crab	7 229	6 886	7 223
Other	919	1 083	501
<b>Total</b>	<b>51 890</b>	<b>51 289</b>	<b>54 552</b>
<b>Molluscs</b>			
Abalone	5 856	5 177	5 792
Scallops	5 607	8 401	9 207
Oysters	10 236	11 433	7 625
Other	8 739	9 398	10 622
<b>Total</b>	<b>30 438</b>	<b>34 409</b>	<b>33 245</b>
<b>Other fisheries production</b>	<b>1 611</b>	<b>1 710</b>	<b>1 160</b>
<b>Total</b>	<b>237 144</b>	<b>252 974</b>	<b>266 613</b>

(a) Includes estimates of aquaculture production (except in NT); excludes production of pearl oysters in Qld and WA and edible oysters in NSW, and hatchery and inland commercial fishery production.

Source: ABARE 2005a, 'Australian Fisheries Statistics, 2004'.

### 15.8 FISHERIES PRODUCTION, Gross value(a)

	\$m
1982–83	423
1987–88	828
1992–93	1 493
1997–98	1 883
1998–99	2 106
1999–2000	2 344
2000–01	2 439
2001–02	2 430
2002–03	2 305
2003–04	2 180

(a) Includes estimates of the value of pearl oyster production and aquaculture production, but excludes the value of hatchery and inland commercial fishery production.

Source: ABARE 2005a, 'Australian Fisheries Statistics, 2004'.

**15.9 SELECTED FISHERY PRODUCTS,  
Gross value(a)**

	2001-02	2002-03	2003-04
	\$m	\$m	\$m
Prawns	429	360	355
Rock lobster	502	460	406
Crab	54	50	53
Tuna	323	317	276
Other finfish	546	560	550
Abalone	247	216	196
Scallops	23	33	24
Oysters	57	62	72
Pearls(b)	175	150	150
Other n.e.i.(c)	74	98	98
<b>Total</b>	<b>2 430</b>	<b>2 305</b>	<b>2 180</b>

(a) Includes estimates of the value of aquaculture production, but excludes the value of hatchery and inland commercial fishery production. (b) Excludes NT. (c) Includes the value of pearl oysters and aquaculture for NT.

Source: ABARE 2005a, 'Australian Fisheries Statistics, 2004'.

**Processing of fish, crustaceans and molluscs**

In Australia very little processing of fish products is undertaken which adds value to the product. Processing establishments vary in size, scope of operations and sophistication of technologies employed. The majority of establishments undertake only the most basic cleaning, filleting, chilling, freezing and packaging processes, but some have the capacity for significant product transformation. Much of the value that is added to the catch is due to correct handling and quick delivery by air to local or overseas markets.

**Exports and imports**

Exports of fisheries products come under Commonwealth jurisdiction, while domestic market activity is the responsibility of the states and territories.

A significant proportion of Australian fisheries production (edible and non-edible) is exported. In 2003-04 the total value of exports (including live fish) declined by 10% to \$1.6b (table 15.10). However, Australia still remained a net exporter of fisheries product. Australia's highest earning fisheries export product is rock lobster, which accounted for 26% of total value of exports of

fisheries products in 2003-04. Exports of rock lobster fell by 8% to \$427 million (m) in 2003-04, continuing its decline of the previous three years. Exports of tuna, the second largest edible fisheries export product, declined 15% to \$272m while the next highest edible fisheries export product, abalone, increased by 10% to \$238m. The highest value non-edible export earner, pearl, recorded a 7% fall to \$310m in 2003-04. (For some fisheries categories, the value of exports exceeds the value of production because exports are valued on a free-on-board basis which includes the value of packaging and distribution services to the point of export.)

In 2003-04, Hong Kong overtook Japan as the major destination for Australian exports of fisheries products, accounting for 34% of total exports of fisheries products. This turn-around was due to the value of exports to Hong Kong rising 27% and the value of exports to Japan falling 20%. Value of shipments to the next four largest markets also fell, by a total of \$70m (or 4%).

South Australia remained the highest earning state from edible seafood exports in 2003-04, with income of \$400m accounting for 30% of the total value of Australia's seafood exports of \$1.3b. South Australia earned \$244m (61%) of this income from exporting whole fresh, chilled or frozen fish. Western Australia earned \$370m (28%), most of which (79%) came from sales of rock lobster worth \$293m. Prawns earned Queensland \$81m (35%) out of a total \$232m worth of seafood exported from that state.

The total value of Australian imports of fisheries products in 2003-04 declined 8% to an estimated \$1.1b (table 15.11). The major items of imports, in value terms, were frozen fish fillets (\$194m), prawns (\$184m) and canned fish (\$179m). The two main sources of imported fisheries products were Thailand and New Zealand which together accounted for more than a third of the value of imports. Pearls were again the leading non-edible import at \$145m down 11% from the previous year.

### 15.10 EXPORTS OF FISHERIES PRODUCTS(a)

Country of destination	2001-02		2002-03		2003-04	
	\$m	%	\$m	%	\$m	%
Hong Kong (SAR of China)	469	22.8	433	24.1	552	34.2
Japan	698	34.0	656	36.5	526	32.6
United States of America	172	8.4	199	11.1	155	9.6
Taiwan	147	7.1	93	5.2	76	4.7
China (excl. SARs & Taiwan Prov.)	73	3.6	74	4.1	70	4.4
Singapore	65	3.2	50	2.8	41	2.5
Spain	19	0.9	20	1.1	25	1.6
New Zealand	32	1.6	28	1.5	23	1.4
France	13	0.6	18	1.0	17	1.1
Greece	3	0.1	10	0.6	16	1.0
United Kingdom	8	0.4	7	0.4	12	0.7
Germany	8	0.4	6	0.3	10	0.6
Other	346	16.9	204	11.3	90	5.6
<b>Total</b>	<b>2 053</b>	<b>100.0</b>	<b>1 797</b>	<b>100.0</b>	<b>1 613</b>	<b>100.0</b>

(a) Includes non-edible products (e.g. marine fats and oils, fishmeal, pearls and ornamental fish). Excludes sea products landed abroad directly from the high seas.

Source: ABS data available on request, *International Trade Special Data Service*.

### 15.11 IMPORTS OF FISHERIES PRODUCTS(a)

Country of source	2001-02		2002-03		2003-04	
	\$m	%	\$m	%	\$m	%
Thailand	236	19.7	242	20.2	222	20.1
New Zealand	177	14.7	194	16.2	180	16.3
Vietnam	48	4.0	76	6.3	85	7.7
China (excl. SARs & Taiwan Prov.)	32	2.7	44	3.7	69	6.2
India	42	3.5	42	3.5	38	3.4
United States of America	61	5.1	52	4.3	34	3.1
South Africa	39	3.2	38	3.1	34	3.1
Indonesia	40	3.3	50	4.2	31	2.9
Malaysia	37	3.1	30	2.5	27	2.4
Taiwan	24	2.0	22	1.8	22	2.0
Canada	21	1.8	24	2.0	20	1.8
Japan	43	3.6	24	2.0	17	1.5
Other	400	33.3	363	30.2	326	29.5
<b>Total</b>	<b>1 200</b>	<b>100.0</b>	<b>1 202</b>	<b>100.0</b>	<b>1 106</b>	<b>100.0</b>

(a) Includes non-edible products (e.g. marine fats and oils, fishmeal, pearls and ornamental fish).

Source: ABS data available on request, *International Trade Special Data Service*.

## Fisheries resources

The Australian Fishing Zone (AFZ) covers offshore waters between 3 and 200 nautical miles seaward of the territorial sea baseline of Australia and its external territories. This area of 8.9 million square kilometres makes it an expanse 16% larger than the Australian land mass and the third largest fishing zone in the world. However, the catch is small by world standards as the waters of the AFZ lack nutrient rich currents, causing low productivity.

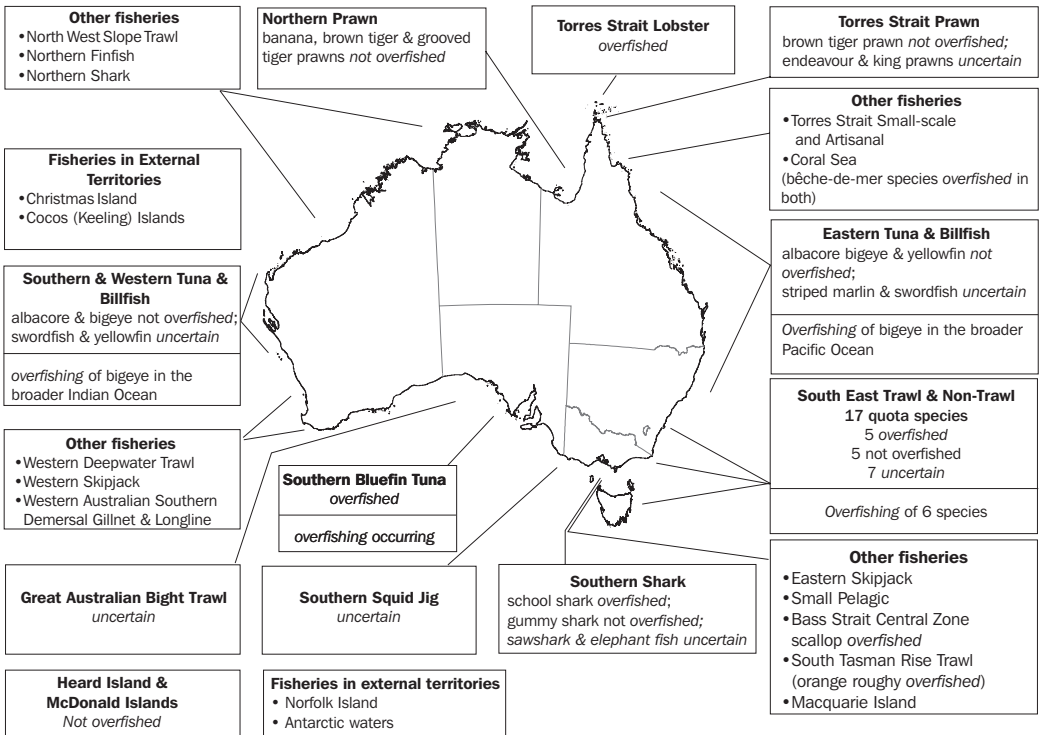
Map 15.12 shows the status of Australia's Commonwealth managed or jointly managed fisheries resources in 2004. Brief definitions of the

main status classifications can be seen below (or obtained in more detail from the Bureau of Rural Sciences, *Fishery Status Reports, 2004*):

- *Overfished*: stock biomass is below a prescribed level
- *Overfishing*: fishing is exceeding a prescribed level

While some species are considered to be overfished, there may be opportunities to further utilise some species such as albacore and southern whiting. While there are about 3,000 known species of fish, and at least as many species of crustaceans and mollusc inhabiting Australian waters, only about 600 species are fished commercially.

**15.12 STATUS OF COMMONWEALTH MANAGED OR JOINTLY MANAGED FISHERIES RESOURCES — 2004**



Source: Bureau of Rural Sciences.

The level of fishing activity has increased over the last decade to the point where almost all the major known fish, crustacean and mollusc resources are fully used. Some major species such as southern bluefin tuna, eastern gemfish and school shark have suffered serious biological depletion.

**Aquaculture**

Aquaculture is an alternative to harvesting the naturally occurring mature fish stocks. It involves the breeding and/or ‘growing out’ of aquatic organisms with intervention in the rearing process designed to enhance production e.g. regular stocking, feeding and protection from predators. It has potential as a means of reducing fishing pressure on wild capture fisheries.

Aquaculture commenced in Australia in the late-1800s with the successful introduction of trout from the northern hemisphere and cultivation of the native Sydney rock oyster. The industry remained centred on these two species

until the 1950s when the first cultured pearl farm was established in north-western Australia. A new wave of aquaculture development began in the 1980s with the beginning of the Atlantic salmon industry in Tasmania and commercial cultivation of native freshwater finfish, freshwater crayfish, prawns and Pacific oysters. The value of aquaculture production increased significantly in the 1990s based on increased production and processing of Pacific oysters, prawns, Atlantic salmon, pearls and southern bluefin tuna.

Aquacultural operations occur in diverse environmental areas including tropical, subtropical and temperate regions. The location of aquaculture is dependent on seasonal factors, the type of species being cultivated, the life-cycle stage of aquatic organisms and proximity to marine parks. The industry directly employs about 5,100 people, provides development opportunities in regional Australia and contributes to export growth.



There are many types of systems used in aquaculture employing a variety of management techniques. The main emphasis of the industry is on producing high value species in near-shore or land-based sites within the coastal zone – only about 10% of total production value is from freshwater species. Systems can be open or closed depending on the water flow. Open systems allow water to move through the cages such as in open seas or flowing rivers. In closed systems, the water flow is contained as in a lake or an aquarium.

In 2003–04 the gross value of Australian aquaculture production declined marginally to \$732m (table 15.13). Tuna remained the species contributing the most (\$242m) to total gross value, followed by pearl oysters (\$150m) and salmon (\$116m).

Table 15.14 shows the quantity of Australian aquacultural production for the three years 2001–02 to 2003–04, with the latest year showing a 5% decrease in total production. As in previous years, salmon was the major aquaculture product (14,828 tonnes) in 2003–04, while tuna (9,290 tonnes) surpassed edible oyster (7,625 tonnes) as the second most plentiful product.

### 15.13 AQUACULTURAL PRODUCTION, Gross value(a)

	2001–02	2002–03	2003–04
	\$m	\$m	\$m
<b>Finfish</b>			
Salmon	112.1	106.1	115.7
Tuna	260.5	266.9	242.0
Trout	12.9	12.6	12.9
Other(b)	20.2	27.5	23.7
<i>Total</i>	405.7	413.2	394.3
<b>Crustaceans</b>			
Prawn	65.4	56.1	55.9
Yabbies	2.1	1.7	1.0
Other(c)	2.4	2.8	2.6
<i>Total</i>	69.9	60.4	59.5
<b>Molluscs</b>			
Pearl oysters(d)	175.1	150.0	150.0
Edible oysters	56.9	62.1	71.8
Other(e)	9.6	11.3	13.8
<i>Total</i>	241.7	223.4	235.7
<b>Other fisheries production(f)</b>	13.9	37.5	42.3
<b>Total</b>	<b>731.2</b>	<b>734.5</b>	<b>731.8</b>

(a) Excludes hatcheries production, crocodiles, microalgae and aquarium worms. (b) Includes eels, aquarium fish and other native fish. (c) Includes marron and redclaw. (d) Excludes production in the NT. (e) Includes mussels, scallops, giant clams and abalone. (f) Includes all NT; includes value of species unable to be assigned to a specific category.

Source: ABARE 2005a, 'Australian Fisheries Statistics, 2004'.

### 15.14 AQUACULTURAL PRODUCTION, Quantity(a)

	2001–02	2002–03	2003–04
	tonnes	tonnes	tonnes
<b>Finfish</b>			
Salmon	14 356	13 603	14 828
Tuna	9 245	9 102	9 290
Trout	1 864	1 811	1 850
Other(b)	1 804	2 579	2 332
<i>Total</i>	27 269	27 095	28 301
<b>Crustaceans</b>			
Prawn	3 757	3 365	3 563
Yabbies	172	121	75
Other(c)	133	443	142
<i>Total</i>	4 062	3 930	3 781
<b>Molluscs</b>			
Edible oysters	10 236	11 433	7 625
Other(d)	2 836	2 351	2 815
<i>Total</i>	13 072	13 784	10 440
<b>Other fisheries production(e)</b>	342	1 134	954
<b>Total</b>	<b>44 746</b>	<b>45 943</b>	<b>43 475</b>

(a) Excludes NT; excludes pearl oysters, hatcheries production, crocodiles, microalgae and aquarium worms. (b) Includes eels, aquarium fish and other native fish. (c) Includes marron and redclaw. (d) Includes mussels, scallops, giant clams and abalone. (e) Includes production of species unable to be assigned to a specific category.

Source: ABARE 2005a, 'Australian Fisheries Statistics, 2004'.



## Bibliography

### ABS products

There are no ABS publications devoted to forestry and fishery statistics for Australia as a whole. Some related information can be obtained from:

*Manufacturing Production, Australia* (8301.0)

*Labour Force, Australia, Detailed – Electronic Delivery* (6291.0.55.001)

### Other references

ABARE (Australian Bureau of Agricultural and Resource Economics):

2005a, *Australian Fisheries Statistics 2004*, Canberra, February 2005

2005b, *Australian Forest and Wood Products Statistics*, September and December quarters 2004, Canberra, May 2005

DAFF (Australian Government Department of Agriculture, Fisheries and Forestry) National Aquaculture Development Committee, *Aquaculture Industry Action Agenda*, Discussion Paper, June 2001

BRS (Bureau of Rural Sciences):

Caton, A. and McLoughlin, K. (eds) (2004) *Fisbery Status Reports 2004: Status of Fish Stocks Managed by the Australian Government*, Bureau of Rural Sciences, Canberra

*National Forest Inventory 2003*

*National Plantation Inventory 2005*

### Web sites

Australian Government Department of Agriculture, Fisheries and Forestry, last viewed July 2005  
<<http://www.daff.gov.au>>

Australian Fisheries Management Authority, last viewed July 2005 <<http://www.afma.gov.au>>

Bureau of Rural Sciences, last viewed July 2005 <<http://www.daff.gov.au/brs>>

Commonwealth Scientific and Industrial Research Organisation, Forestry and Forest Products, last viewed July 2005 <<http://www.ffp.csiro.au>>

Department of the Environment and Heritage, last viewed July 2005 <<http://www.deh.gov.au>>

FISHBASE, last viewed July 2005 <<http://www.fishbase.org>>

## MINING

Mining broadly relates to the extraction of minerals occurring naturally as solids such as coal and ores, liquids such as crude petroleum, or gases such as natural gas. Activities carried out at or near mine sites as an integral part of mining operations, such as dressing or beneficiation of ores or other minerals, are included. Natural gas absorption and purifying plants are also included. However, the first stage processing of minerals and mineral extracts, while closely related to the mining industry, is included as part of the manufacturing industry.

Australia continues to rank as one of the world's leading mining nations with substantial identified resources of major minerals and fuel close to the surface. In 2004 it had the world's largest economic demonstrated resources of brown coal, lead, mineral sands (rutile and zircon), nickel, tantalum, uranium and zinc.

Australia was the largest producer of bauxite, rutile and tantalum in 2004. It was also one of the largest producers of uranium, iron ore, zinc and nickel.

The contribution of the mining industry to Australia's gross domestic product has remained around 4–5% over the past ten years. The mining industry is Australia's second largest export earner (after manufacturing), accounting for a third of the total value of exports in 2004–05, principally from the coal, and oil and gas extraction industries.

## Economic contribution of the mining industry

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry Structure and Performance* chapter.

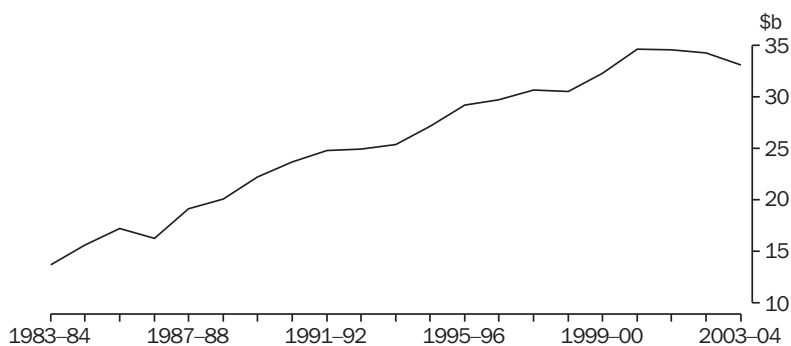
Total production of the mining industry measured by industry GVA (in chain volume terms), that is, output adjusted for changes in prices, decreased by 3% between 2002–03 and 2003–04, but more than doubled between 1983–84 and 2003–04 (graph 16.1).

During the period 1983–84 and 2003–04, the largest annual decrease (6%) in production was in 1986–87 while the largest annual increase (18%) was in 1987–88.

Table 16.2 shows that mining's contribution to GDP was in the range 4–5% during the period 1999–2000 to 2003–04. Its contribution was the lowest in 2003–04 after falling each year from 2000–01.

Production in the services to mining industry accounts for a small proportion (less than 9%) of total mining production (table 16.2). However, the total value of services to mining may be larger than these figures indicate as some services may have been provided by businesses classified to other industries such as construction or business services.

16.1 MINING PRODUCTION(a), Chain volume measures(b)



(a) Industry gross value added. (b) Reference year for chain volume measures is 2002–03.

Source: Australian System of National Accounts, 2003–04 (5204.0).

16.2 MINING GROSS VALUE ADDED AND CONTRIBUTION TO GDP

	Units	1999–2000	2000–01	2001–02	2002–03	2003–04	Percentage change from 1999–2000 to 2003–04
Industry gross value added(a)							
Mining (excl. services to mining)	\$m	29 943	31 894	31 757	31 270	30 313	1.2
Services to mining	\$m	2 345	2 769	2 800	3 002	2 825	20.5
<b>Mining(b)</b>	<b>\$m</b>	<b>32 269</b>	<b>34 670</b>	<b>34 561</b>	<b>34 272</b>	<b>33 139</b>	<b>2.7</b>
Contribution to GDP(c)	%	4.3	5.1	4.7	4.5	4.1	..

(a) Chain volume measures, reference year is 2002–03. (b) Chain volume measures for years other than 2002–03 and 2003–04 are not additive. (c) In current prices.

Source: Australian System of National Accounts, 2003–04 (5204.0).

The importance of the mining industry in terms of production as measured by total factor income varies across the states and territories. Total factor income is a measure of state production. It is the total payments received by labour and owners of capital used in the production of the goods and services.

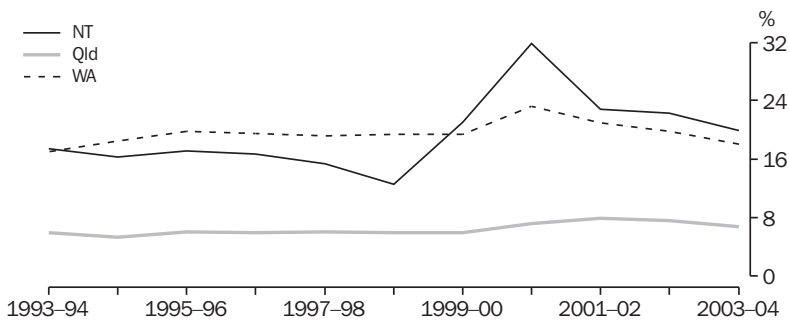
Mining production was the largest component of total 2003–04 production in Western Australia and the Northern Territory. It was the fifth largest in Queensland. In other states, manufacturing, and property and business services industries were much larger than mining, and mining was ranked twelfth or lower in terms of production.

During the period 1993–94 to 2003–04, the Northern Territory experienced significant changes in the contribution of the mining industry to total state production, varying from 13% in 1998–99 to 32% in 2000–01 (graph 16.3). In 2003–04 the mining industry accounted for 20% of total production in the Northern Territory. The main mining industry is crude oil production which contributed 31% (or \$715 million (m)) of the total value of production in the territory (see the Department of Primary Industry, Fisheries and Mines, Northern Territory, <<http://www.minerals.nt.gov.au>>, Information and Services, Industry/Mining statistics, 2003–04 Production, table ‘Northern Territory Mining Production 2003–04’, last viewed 13 October

2005). The value of crude oil production in 2003–04 (\$715m) was 45% lower than in 2002–03 (\$1,293m).

In Western Australia, the contribution of the mining industry increased from 17% in 1993–94 to 23% in 2000–01, before falling each year to 18% in 2003–04 (graph 16.3). In the period 1993–94 to 2003–04 the contribution of the mining industry to total state production was significantly higher than the production shares of manufacturing, or property and business services industries, the next largest industries. The oil and gas industry was the main contributor to mining production. In 2003–04, the combined value of production for oil and gas accounted for 35% (\$9,222m) of the total value of production (\$26,351m) in the state including some manufactured and semi-manufactured products like alumina (see the Western Australia Department of Industry and Resources <<http://www.doir.wa.gov.au/statistics>>, publication *Western Australia Mineral and Petroleum Statistics Digest, 2003–04*, last viewed 5 August 2005). Most crude oil and condensate and liquefied natural gas (LNG) are produced in the Carnarvon basin where the North West Shelf Project is located. In 2003–04 Western Australia contributed 70% of the crude oil and condensate and 100% of LNG in terms of quantity produced in Australia. The state also produced 98% of the iron ore and almost all of the diamonds produced in Australia.

**16.3 MINING INDUSTRY CONTRIBUTION TO STATE PRODUCTION(a), Selected states**



(a) State production as measured by total factor income at current prices.

Source: Australian National Accounts: State Accounts (5220.0).

The mining industry's share of Queensland total production varied between 5–8% in the period from 1993–94 to 2003–04 (graph 16.3). This was two to six percentage points lower than manufacturing industry's share of state production. In 2003–04, the mining industry's contribution to state production was 7%. Industries with a greater share of state production than mining in this year included manufacturing (10%), property and business services (9%), construction (8%) and retail trade (7%). Figures released by the Queensland Department of Natural Resources and Mines indicate that the value of production of fuel minerals was \$7,068m in 2003–04 with black coal accounting for 91% (\$6,454m) of this value (see <<http://www.nrm.qld.gov.au/mines>>, table 'Quantity and Value of Minerals Produced in Queensland 2003–04', last viewed 8 August 2005). Queensland is the largest producer of black coal in the country. In 2003–04, it also produced copper, lead and zinc valued at \$4,118m.

## Exports

Table 16.4 shows the proportion of exports contributed by the mining industry based on exports by industry of origin.

Between 1994–95 and 2004–05 the value of exports from the mining industry has more than doubled. By comparison, the value of exports from the manufacturing industry has grown by 54%. As a consequence, mining's contribution to total goods exported from Australia increased from 22% in 1994–95 to 32% in 2004–05, while manufacturing's share fell from 65% to 53%.

## Natural resource royalties

Natural resource royalties paid by mining businesses are collected by state and Northern Territory governments for mining onshore and up to three nautical miles offshore, and by the Australian Government outside that area. The basis of the mineral royalties varies between states. Some royalties are based on the value of production at mine site, others on sales value, gross proceeds or profit. The rates imposed also vary between commodities.

Onshore and within coastal waters royalties are levied on mineral and petroleum production. State petroleum royalties and Commonwealth crude oil excise apply onshore and in coastal waters. Petroleum produced in offshore areas of Australia (but not including the North West Shelf) is generally subject to an offshore Petroleum Resource Rent Tax levied by the Australian Government. Petroleum royalties and crude oil excise apply to production from the North West Shelf project.

Natural resource royalties expenses include payments under mineral lease arrangements, and resource rent taxes and royalties. In 2002–03 businesses in the oil and gas extraction industry paid a considerably higher proportion of natural resource royalties to sales and service income (15%) compared with those in the coal (6%) or metal ore mining (4%) industries. Natural resource royalties expenses for the oil and gas extraction industry were \$2,651m, and for the coal mining and the metal ore mining industry were \$1,026m and \$722m respectively.

**16.4 VALUE OF EXPORTS(a), By industry of origin**

	Mining \$m	Manufacturing \$m	All industries \$m	Share of total exports	
				Mining %	Manufacturing %
1994–95	14 922	43 795	67 052	22.3	65.3
1995–96	16 476	48 787	76 005	21.7	64.2
1996–97	17 937	48 494	78 932	22.7	61.4
1997–98	21 458	53 301	87 768	24.4	60.7
1998–99	20 171	52 073	85 991	23.5	60.6
1999–2000	23 578	57 982	97 286	24.2	59.6
2000–01	31 912	69 128	119 539	26.7	57.8
2001–02	32 507	69 111	121 108	26.8	57.1
2002–03	31 261	65 810	115 479	27.1	57.0
2003–04	28 565	62 442	109 049	26.2	57.3
2004–05	40 824	67 475	126 483	32.3	53.3

(a) On a 'free-on-board' basis.

Source: ABS data available on request, *International trade*.

## Structure and performance of the mining industry

The source for the statistics in this section is the annual Economic Activity Survey (EAS) of businesses conducted by the Australian Bureau of Statistics. Businesses in this collection are classified on the basis of their predominant activity, using the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0). The industry subdivision 'Other mining' refers to construction material mining and mining n.e.c. as described in ANZSIC.

From 2001–02, estimates from the EAS have been compiled using new statistical infrastructure. This new infrastructure makes better use of data available from the taxation system. As a consequence of this new infrastructure, a new statistical series has commenced from 2001–02, covering non-employing as well as employing businesses. More details are provided in *Mining Operations, Australia, 2001–02 and 2002–03* (8415.0).

In 2002–03 mining businesses paid \$6,694m in wages and salaries and generated \$63,473m in sales and service income and \$37,644m industry value added (table 16.5). The net worth of the mining industry was \$60,938m.

Table 16.5 shows that in 2002–03, the Oil and gas extraction industry contributed the largest proportion (41%) of total mining production measured in terms of industry value added, followed by Metal ore mining (26%) and Coal mining (22%). The Oil and gas extraction industry also accounted for the largest share of net worth (45%) valued at \$27,173m, and generated the most profit (52%, \$8,658m) in 2002–03.

Industry value added (IVA) represents the value added by an industry to the intermediate inputs used by the industry. It measures production in much the same way as industry GVA. However, unlike industry GVA (the national accounts concept of production), IVA is not adjusted for a number of national accounting conventions, as the information to make these adjustments cannot be collected in the EAS. The advantage of IVA, however, is the availability of more detailed industry and state estimates.

In terms of wages and salaries, the largest contributors were the metal ore (29%) and coal (29%) mining industries. The wages and salaries paid were \$1,945m from the Metal ore mining industries and \$1,929m from the Coal mining industry.

Within the Metal ore mining industry, the Gold mining industry contributed the largest share of wages and salaries (34%) and sales of goods and services (31%).

### 16.5 SUMMARY OF OPERATIONS — 2002–03

Mining industry subdivision	Wages and salaries(a)	Sales of goods and services	Operating profit before tax	Inventories		Purchases and selected expenses	Industry value added	Net worth
				Opening	Closing			
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Coal mining	1 929.1	16 868.2	3 660.8	1 151.4	1 197.9	9 262.4	8 253.7	11 822.2
Oil and gas extraction	778.7	17 225.0	8 657.9	480.7	506.7	2 708.3	15 263.3	27 172.7
<b>Metal ore mining</b>								
Iron ore mining	499.6	5 306.5	2 140.5	469.7	475.2	1 929.6	3 778.9	6 953.4
Copper ore mining	210.8	2 223.2	185.2	332.9	326.7	1 465.8	824.6	2 619.9
Gold ore mining	670.1	5 931.9	561.0	498.1	527.9	3 814.3	2 717.9	5 749.8
Mineral sand mining	108.1	868.8	96.0	208.1	163.0	487.4	369.4	659.7
Silver-lead-zinc ore mining	216.2	1 774.9	-161.6	137.4	115.6	1 159.4	678.7	852.6
Bauxite mining, nickel ore mining and metal ore mining n.e.c.	239.7	2 749.8	926.4	389.0	406.6	1 606.1	1 366.7	243.3
<b>Total</b>	<b>1 944.5</b>	<b>18 855.1</b>	<b>3 747.5</b>	<b>2 035.2</b>	<b>2 015.0</b>	<b>10 462.7</b>	<b>9 736.2</b>	<b>17 078.6</b>
Other mining	479.4	3 995.5	751.6	377.8	394.9	2 203.6	1 940.5	2 624.3
Services to mining	1 562.4	6 529.5	-81.6	253.0	255.3	4 668.9	2 450.7	2 239.8
<b>Total mining</b>	<b>6 694.1</b>	<b>63 473.3</b>	<b>16 736.2</b>	<b>4 298.1</b>	<b>4 369.7</b>	<b>29 305.9</b>	<b>37 644.4</b>	<b>60 937.6</b>

(a) Excludes the drawings of working proprietors.

Source: *Mining Operations, Australia, 2001–02 and 2002–03* (8415.0).

Table 16.6 shows that capital expenditure in 2002–03 was the largest in the Metal ore mining industry (38%) followed by the Oil and gas extraction industry (31%). Most of the capital expenditure on acquisitions was spent on plant, machinery and equipment (54%). A significant proportion (45%) was also spent on dwellings, other buildings and structures. The Metal ore mining industry accounted for the largest share of the expenditure in plant, machinery and equipment, while the Oil and gas extraction mining industry accounted for the largest share of the expenditure in dwellings, other buildings and structures.

The Metal ore mining and Oil and gas extraction industries contributed most of the net capital expenditure i.e. capital expenditure after

deducting disposals of assets. Combined these industries accounted for 75% of total net capital expenditure made in 2002–03.

Operating profit before tax (OPBT) is a measure of profit before extraordinary items are brought to account and prior to the deduction of income tax and appropriations to owners (e.g. dividends paid).

From 2001–02 to 2002–03, OPBT for the mining industry increased by 27% (up \$3,586m). The Metal ore mining industry was the main contributor to this rise (up \$4,181m). In the Metal ore mining industry, OPBT for the combined industry, bauxite mining, nickel ore mining and metal ore mining n.e.c. increased by \$3,796m, the largest recorded during this period. This was a major turnaround from 2001–02 when the industry suffered a loss of \$2,870m.

### 16.6 FIXED CAPITAL EXPENDITURE AND DISPOSALS — 2002–03

	Capital expenditure on					
	Land	Dwelling, other buildings and structures	Plant, machinery and equipment	Total acquisitions	Disposal of assets	Net capital expenditure
	\$m	\$m	\$m	\$m	\$m	\$m
Mining industry subdivision						
Coal mining	46.9	615.6	1 598.7	2 261.2	514.9	1 746.2
Oil and gas extraction	2.9	2 567.1	503.5	3 073.4	282.8	2 790.7
Metal ore mining						
Iron ore mining	3.0	63.2	1 781.9	1 848.1	18.9	1 829.2
Copper ore mining	—	132.6	226.1	358.7	3.4	355.3
Gold ore mining	7.8	718.2	289.3	1 015.3	43.9	971.4
Mineral sand mining	3.5	16.5	60.7	80.7	6.4	74.3
Silver-lead-zinc ore mining	—	154.4	64.3	218.8	2.0	216.7
Other(a)	3.1	147.4	144.0	294.5	13.1	281.5
Total	17.3	1 232.4	2 566.4	3 816.1	87.7	3 728.3
Other mining	8.1	24.6	189.0	221.7	125.0	96.7
Services to mining	5.6	25.5	541.0	572.1	295.6	276.6
<b>Total mining</b>	<b>80.9</b>	<b>4 465.2</b>	<b>5 398.5</b>	<b>9 944.5</b>	<b>1 306.0</b>	<b>8 638.5</b>

(a) Comprises bauxite mining, nickel ore mining and metal ore mining n.e.c.

Source: *Mining Operations, Australia, 2001–02 and 2002–03 (8415.0)*.

### 16.7 OPERATING PROFIT BEFORE TAX

	2001–02	2002–03	Change from 2001–02 to 2002–03
	\$m	\$m	%
Mining industry subdivision			
Coal mining	3 942.4	3 660.8	-7.1
Oil and gas extraction	8 938.3	8 657.9	-3.1
Metal ore mining	-433.9	3 747.5	963.7
Other mining	724.7	751.6	3.7
Services to mining	-21.3	-81.6	-283.1
<b>Total mining</b>	<b>13 150.2</b>	<b>16 736.2</b>	<b>27.3</b>

Source: *Mining Operations, Australia, 2001–02 and 2002–03 (8415.0)*.

OPBT for most other industries was lower in 2002–03 compared with 2001–02 with the Coal mining industry down 7% (\$282m), Oil and gas extraction down 3% (\$280m) and Services to mining down by \$60m to be the only subdivision within mining to record a loss.

## Mineral, oil and gas resources

The statistics of available mineral resources provided in table 16.8 are obtained from the annual publication *Australia's Identified Mineral Resources* produced by Geoscience Australia. They provide an indication of the extent of

mineral resources available for extraction with the main focus being on economic demonstrated resources (EDR).

EDR is a measure of the resources that are established, analytically demonstrated or assumed with reasonable certainty to be profitable for extraction or production under defined investment assumptions. Classifying a mineral resource as EDR reflects a high degree of certainty as to the size and quality of the resource and its economic viability.

### 16.8 ECONOMIC DEMONSTRATED RESOURCES OF MAJOR MINERALS — December 2004

Mineral	Quantity	Australia	World	Australia's percentage of world EDR	Australia's ranking in world holdings of EDR
Bauxite	Gt	5.7	23	25	2nd
Black coal					
In situ	Gt	57.4	n.a.	n.a.	n.a.
Recoverable	Gt	40.4	(a)743	5	6th
Brown coal					
In situ	Gt	41.7	n.a.	n.a.	n.a.
Recoverable	Gt	37.5	(a)156	24	1st
Copper(b)	Mt Cu	42.1	490	9	2nd
Diamond					
Gem and near gem(c)	Mc	53.4	n.a.	n.a.	n.a.
Industrial	Mc	55.6	580	10	4th
Gold(b)	t Au	5 589	42 000	13	2nd
Iron ore	Gt	14.6	160	9	5th
Lead(b)	Mt Pb	22.9	70	33	1st
Lithium(b)	kt Li	170	4 110	4	(d)
Manganese ore	Mt	133	1 175	11	4th
Mineral sands					
Ilmenite	Mt	217.2	1 088	20	2nd
Rutile	Mt	20.2	52	39	1st
Zircon	Mt	30	74	41	1st
Nickel(b)	Mt Ni	22.6	61.8	37	1st
Silver(b)	kt Ag	41.4	280	15	2nd
Tantalum(b)	kt Ta	53	56	95	1st
Uranium(b)(e)	kt U	701	(f)1 743	40	1st
Zinc(b)	Mt Zn	41.0	222	18	1st

(a) Geoscience Australia estimate. (b) Quantity measured in contained metal. (c) Detailed data are not available on world resources of gem/near gem diamond but Australia has one of the largest stocks for this category. (d) According to United States Geological Survey estimates, Chile holds about 73% of the world's lithium resources, followed by China 13%, Brazil 4.5% and Australia with just over 4%. However, resource data are not available for some important producing countries including Argentina and Russia. Lithium brine resources, now the dominant feedstock for lithium carbonate production, are produced dominantly by Chile. Canada and Australia have the most significant hard-rock resources of lithium. (e) Refer to Australia's Identified Mineral Resources 2005 for comparison of resource categories in the national scheme with those of the international scheme for classifying uranium resources. (f) Source: OECD/NEA & IAEA (2004). Compiled from the most recent data for resources recoverable at <US\$40/kg U. Data for USA is not available for this category.

Source: Geoscience Australia, 'Australia's Identified Mineral Resources 2005'.



Australia has the world's largest EDR of brown coal (recoverable), lead, rutile, zircon, nickel, tantalum, uranium and zinc, and ranks second in the world for bauxite, copper, gold, ilmenite and silver. In addition, Australia's EDR for industrial diamonds and manganese ore are rated the fourth largest in the world. Table 16.8 shows the importance, in a global sense, of the main mineral resources in Australia.

During the 12-month period ended December 2004 significant increases in Australia's EDR were recorded for tantalum (29%), lead (19%), zinc (18%) and iron ore (18%) (table 16.9). The increase in Australia's tantalum EDR is due to a reclassification of the Brockman rare earth resource in Western Australia. The main factor contributing to the increase in Australia's lead EDR was additional resource definition and reclassification at Mt Isa in Queensland. Reclassification of resources and improved grades at Mt Isa and George Fisher, both in Queensland, were the main reasons for the increase in EDR for zinc. A reclassification of several magnetite deposits from subeconomic to economic due to increasing prices was the main factor behind the increase in iron ore EDR.

The significant decrease (26%) for Australian diamond EDR was due to Argyle mine production and the introduction of a new resource model and revised mine plan, which resulted in some ore reserve being classified as mineral resource.

Australia's oil and gas resources encompass crude oil, condensate, naturally occurring liquefied petroleum gas (LPG) and natural gas. EDR for oil and gas are resources which are judged to be economically extractable and for which the quantity and quality are computed partly from specific measurements, and partly from extrapolation for a reasonable distance on geological evidence. Subeconomic demonstrated resources (SDR) are similar to EDR in terms of certainty of occurrence but are considered to be potentially economic only in the foreseeable future.

The information presented in table 16.10 is obtained from the annual publication, *Oil and Gas Resources of Australia*, produced by Geoscience Australia. The table shows over 2000 to 2004, EDR for crude oil reserves fell by 15% while reserves for sales gas increased (EDR by 17%, SDR by 24%) due mainly to discoveries of major gas resources off north western Australia. Discoveries of crude oil reserves had not been sufficient to offset the reduction in crude oil reserves through production. The increase in crude oil reserves from 1 January 2003 to 1 January 2004 was predominantly due to heavy oil discoveries in the Carnarvon Basin. Production has been the main contributor to the decline in the EDR for condensate reserves.

### 16.9 ECONOMIC DEMONSTRATED RESOURCES OF SELECTED MINERALS

Mineral	Quantity	Australia			World		
		2003	2004	% change	2003	2004	% change
Bauxite	Gt	5.5	5.7	3.6	23.0	23.0	—
Coal(a)	Gt	75.8	77.9	2.8	962.0	899.0	-6.5
Copper(b)	Mt Cu	40.1	42.1	5.0	490.0	490.0	—
Diamond(c)	Mc	75.1	55.6	-26.0	580.0	580.0	—
Gold(b)	t Au	5 382.0	5 589.0	3.8	43 000.0	42 000.0	-2.3
Iron ore	Gt	12.4	14.6	17.7	143.0	160.0	11.9
Lead(b)	Mt Pb	19.3	22.9	18.7	71.0	70.0	-1.4
Lithium(b)	kt Li	167.0	170.0	1.8	4 107.0	4 110.0	0.1
Manganese ore	Mt	124.0	133.0	7.3	967.0	1 175.0	21.5
Mineral sands(d)	Mt	262.3	267.4	1.9	753.0	1 214.0	61.2
Nickel(b)	Mt Ni	22.8	22.6	-0.9	62.8	61.8	-1.6
Silver(b)	kt Ag	42.9	41.4	-3.5	284.0	280.0	-1.4
Tantalum(b)	kt Ta	41.0	53.0	29.3	43.6	56.0	28.4
Uranium(b)	kt U	675.0	701.0	3.9	1 716.0	1 743.0	1.6
Zinc(b)	Mt Zn	34.8	41.0	17.8	222.0	222.0	—

(a) Includes recoverable black and brown coal. (b) Quantity measured in contained metal. (c) Industrial diamond only. Data are not available on world resources of gem/near gem diamond but Australia has stocks amongst the largest for this category. (d) Includes ilmenite, rutile and zircon.

Source: Geoscience Australia, 'Australia's Identified Mineral Resources', 2004 and 2005 issues.

## 16.10 OIL AND GAS RESOURCES — 1 January

	Crude oil		Condensate		LPG		Sales gas	
	gigalitres	million barrels	gigalitres	million barrels	gigalitres	million barrels	billion cubic metres	trillion cubic feet
<b>Economic demonstrated resources</b>								
2000	219	1 378	283	1 780	274	1 726	2 105	74
2001	194	1 222	300	1 889	292	1 835	2 203	78
2002	206	1 295	289	1 821	293	1 845	2 667	94
2003	176	1 108	276	1 737	274	1 726	2 528	89
2004	186	1 168	247	1 554	210	1 323	2 462	87
<b>Subeconomic demonstrated resources</b>								
2000	55	345	61	384	75	471	1 173	41
2001	87	546	119	749	86	540	1 618	57
2002	68	427	115	724	79	499	1 499	53
2003	68	426	109	683	79	498	1 518	54
2004	65	409	112	707	78	493	1 459	52

Source: Geoscience Australia, 'Oil and Gas Resources of Australia', 2001, 2002 and 2003 issues.

## Expenditure on mineral and petroleum exploration

Exploration involves the search for new ore occurrences or undiscovered oil or gas, and/or appraisal intended to delineate or greatly extend the limits of known deposits of minerals, oil or gas reservoirs by geological, geophysical, geochemical, drilling or other methods. This includes construction of shafts and adits primarily for exploration purposes, but excludes activity of a developmental or production nature.

Expenditure during the past five years on mineral exploration other than for petroleum and water is summarised in table 16.11.

Mineral exploration expenditure in 2003–04 was \$787m. This was \$110m (16%) higher than in 1999–2000 and \$54m (7%) higher than in 2002–03. Exploration expenditure in South Australia

increased by 85% (\$19m) between 1999–2000 and 2003–04, the highest rate of increase for this period. Western Australia continued to account for the majority (58–62%) of the exploration expenditure over this period, followed by Queensland (12–16%).

Most of the expenditure between 1999–2000 and 2003–04 was related to exploration for gold (table 16.12). In this period, gold exploration expenditure accounted for 50–55% of total mineral exploration expenditure. The greatest increase recorded for this period was for coal exploration, up \$46m (130%), which was the main contributor to the increase in total exploration in the same period.

In 2003–04, mineral exploration expenditure was 7% higher than in 2002–03, mainly due to increases in iron ore, gold and nickel and cobalt exploration.

### 16.11 MINERAL EXPLORATION EXPENDITURE, By state and territory

	1999–2000	2000–01	2001–02	2002–03	2003–04	Change from 1999–2000 to 2003–04
	\$m	\$m	\$m	\$m	\$m	%
New South Wales	56.1	57.2	48.2	58.8	50.5	-10.0
Victoria	33.8	32.7	33.9	46.2	53.5	58.3
Queensland	82.5	83.1	92.6	114.2	125.2	51.8
South Australia	22.6	29.6	32.1	36.7	41.7	84.5
Western Australia	415.0	424.1	381.1	423.6	465.8	12.2
Tasmania	8.7	9.1	4.0	4.3	7.5	-13.8
Northern Territory	57.5	47.6	48.5	49.0	42.5	-26.1
<b>Australia</b>	<b>676.4</b>	<b>683.3</b>	<b>640.6</b>	<b>732.8</b>	<b>786.7</b>	<b>16.3</b>

Source: Mineral and Petroleum Exploration, Australia (8412.0).

### 16.12 MINERAL EXPLORATION EXPENDITURE, By mineral sought

	1999–2000	2000–01	2001–02	2002–03	2003–04	Change from 1999–2000 to 2003–04
	\$m	\$m	\$m	\$m	\$m	%
Selected base metals	156.8	165.4	132.9	142.3	151.8	-3.2
Copper	28.4	32.8	41.6	39.7	37.8	33.1
Silver, lead-zinc	55.4	59.8	37.6	36.6	29.7	-46.4
Nickel, cobalt	73.0	72.8	53.7	65.9	84.2	15.3
Gold	374.8	370.2	331.3	378.4	397.1	5.9
Iron ore	n.p.	23.4	25.2	44.4	63.7	n.a.
Mineral sands	21.5	23.6	33.2	27.3	23.8	10.7
Uranium	n.p.	n.p.	8.8	6.9	10.5	n.a.
Coal	35.4	41.3	50.3	77.9	81.5	130.2
Diamonds	29.8	31.8	35.4	29.8	25.8	-13.4
Other(a)	n.p.	n.p.	23.4	25.8	32.5	n.a.
<b>Total</b>	<b>676.4</b>	<b>683.3</b>	<b>640.6</b>	<b>732.8</b>	<b>786.7</b>	<b>16.3</b>

(a) Includes tin, tungsten, scheelite, wolfram and construction materials.

Source: *Mineral and Petroleum Exploration, Australia (8412.0)*.

Table 16.13 shows the overseas exploration expenditure reported in the Minerals Industry Surveys undertaken by the Minerals Council of Australia for 1999–2000 to 2003–04. The surveys cover Australian mining companies, and some overseas controlled companies. Findings from these surveys indicate total overseas exploration expenditure by Australian businesses had been falling after reaching its peak in 1997–98 when \$450m was spent. Between 1999–2000 and 2003–04, expenditure fell by 63%.

In 2003–04 exploration expenditure for gold and platinum more than doubled to \$69m (up \$41m) from the level achieved in 2002–03, while base metals fell by 78% (down \$61m) in the same period.

Between 1999–2000 and 2003–04, expenditure on oil and gas exploration rose by 35% (\$243m) (table 16.14) due to increases in both offshore and onshore expenditure of 21% (\$123m) and 109% (\$120m) respectively. These increases have resulted in onshore oil and gas exploration increasing its share of total oil and gas exploration expenditure from 16% to 24% over this period with a corresponding decrease in offshore from 84% to 76%.

In 2003–04, offshore oil and gas exploration expenditure was lower by 11% (\$90m) compared with the previous year while onshore exploration was 20% (\$39m) higher.

### 16.13 OVERSEAS MINERAL EXPLORATION EXPENDITURE, By mineral sought

	1999–2000	2000–01	2001–02	2002–03	2003–04	Change from 1999–2000 to 2003–04
	\$m	\$m	\$m	\$m	\$m	%
Gold and platinum	117.3	77.2	45.3	28.0	69.1	-41.1
Base metals	82.8	61.8	51.5	78.5	17.5	-78.9
Mineral sands	1.8	2.4	2.4	1.0	0.2	-88.9
Diamonds	26.3	33.1	31.1	—	—	-100.0
Coal	11.8	—	—	—	—	-100.0
Other	10.0	6.1	3.0	4.2	6.3	-37.0
<b>Total</b>	<b>250.0</b>	<b>180.7</b>	<b>133.3</b>	<b>111.6</b>	<b>93.1</b>	<b>-62.8</b>

Source: *Minerals Council of Australia, Minerals Industry Survey Reports, 2000 to 2004*.

## 16.14 OIL AND GAS EXPLORATION EXPENDITURE

	1999–2000	2000–01	2001–02	2002–03	2003–04	Change from 1999–2000 to 2003–04
	\$m	\$m	\$m	\$m	\$m	%
Onshore	110.1	176.9	164.5	191.3	230.5	109.4
Offshore	590.6	847.8	718.1	803.7	713.5	20.8
<b>Total</b>	<b>700.7</b>	<b>1 024.7</b>	<b>882.6</b>	<b>995.0</b>	<b>944.0</b>	<b>34.7</b>

Source: Mineral and Petroleum Exploration, Australia (8412.0).

## Research and development expenditure

Research and experimental development (R&D) activity, in the business context, is defined as systematic investigation or experimentation involving innovation or technical risk, the outcome of which is new knowledge, with or without a specific practical application or new or improved products, processes, materials, devices or services. R&D activity also extends to modifications to existing products and processes.

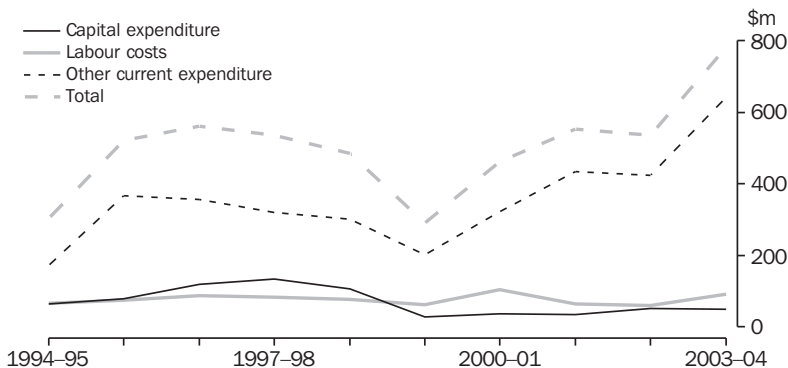
Over the period 1994–95 to 2003–04, R&D expenditure by the mining industry more than doubled from \$303m in 1994–95 to \$783m in 2003–04. As a result, the mining industry's contribution to all industries R&D expenditure rose from 9% in 1994–95 to 11% in 2003–04. The manufacturing industry's share of total R&D expenditure continued to be the highest, accounting for 46% in 2003–04.

Graph 16.15 shows the type of R&D expenditure by the mining industry. For the period 1994–95 to 2003–04 current expenditure other than labour costs is the major component of R&D expenditure for the mining industry, accounting for 82% of

mining R&D expenditure in 2003–04. This category includes: expenses on materials, fuels and other inputs; rent, leasing and hiring; repairs and maintenance; payments to outside organisations for use of specialised testing facilities or for analytical work, engineering or other specialised services in support of R&D projects carried out by the business; commission and consultant expenses for research projects carried out by the business (except direct labour costs); software for own account produced as part of R&D; and the proportion of expenses on general services and overheads attributable to R&D activity. In the mining industry, these expenses increased by \$469m (271%) from \$173m in 1994–95 to \$641m in 2003–04. The amount spent on labour increased by \$27m (41%) while capital expenditure fell by \$16m (24%). As a result, labour costs and capital expenditure as a proportion of total R&D expenditure fell to 12% and 6% respectively in 2003–04. These proportions were significantly lower than the 22% for labour costs and 21% for capital expenditure recorded in 1994–95.

In 2003–04 the mining industry funded most of its R&D expenditure with \$720m (92%) sourced from money owned by the mining business (own funds).

16.15 MINING INDUSTRY EXPENDITURE ON R&D, By type



Source: Research and Experimental Development, Businesses, Australia (8104.0).

## Production and trade of major minerals, oil, gas and petroleum

### Mineral, oil and gas production

Table 16.16 shows the quantity produced for selected minerals, oil and gas. Between 1999–2000 and 2003–04 the most significant increases in production were for manganese ore and concentrate (75%), iron ore (38%) and nickel in mine products (29%). The steady increase in iron ore and concentrate production over this period was driven by increased production in Western Australia, which accounts for 97% of Australian production.

Production of diamonds, gold, lead, ilmenite, rutile, crude oil and LPG decreased between 1999–2000 and 2003–04 with the largest falls recorded for crude oil and diamonds, 26% and 18% respectively. Diamond production changed significantly during the period with increases of 36% in 2001–02 and 4% in 2002–03; and decreases of 24% in both 2000–01 and 2003–04.

### Mineral and oil processing and treatment

As few minerals, oil and gas can be directly used in the form in which they are mined, most of these undergo processing and treatment before use.

Table 16.17 shows the production of the main manufactured products of mineral and oil origin.

**16.16 VOLUME OF MINERAL, OIL AND GAS PRODUCTION, Selected minerals, oil and gas**

	Units	1999–2000	2000–01	2001–02	2002–03	2003–04	Percentage change from 1999–2000 to 2003–04
<b>Metallic minerals</b>							
Bauxite	Mt	51	55	54	54	56	9.8
Copper ore and concentrate	'000 t	2 340	2 577	2 590	2 555	2 340	0.0
Gold in mine products(a)	t	299	296	265	278	267	-10.7
Iron ore and concentrate	Mt	160	176	185	198	221	38.1
Lead ore and concentrate	'000 t	974	1 000	1 020	970	960	-1.4
Manganese ore and concentrate	'000 t	1 755	1 948	1 850	2 472	3 062	74.5
Nickel in mine products(a)	'000 t	144	195	193	183	185	28.5
Ilmenite	'000 t	2 134	2 092	1 843	2 069	1 910	-10.5
Rutile	'000 t	185	209	207	208	154	-16.8
Synthetic rutile	'000 t	566	650	612	673	696	23.0
Titanium dioxide pigment	'000 t	172	181	186	189	196	14.0
Uranium	t	8 217	9 549	7 964	9 263	9 538	16.1
Zinc ore and concentrates	'000 t	2 343	2 697	2 715	2 806	2 536	8.2
Zircon	'000 t	372	377	389	458	448	20.4
<b>Coal</b>							
Black coal (saleable)	Mt	239	258	273	275	286	19.7
Brown coal	Mt	67	65	68	67	67	0.0
<b>Other minerals</b>							
Diamonds	'000 ct	29 672	22 475	30 676	32 006	24 310	-18.1
Salt	'000 t	9 610	9 492	9 233	10 438	10 705	11.4
<b>Oil and gas</b>							
Crude oil and condensate	ML	37 447	38 705	36 100	33 321	27 716	-26.0
Natural gas	Mm <sup>3</sup>	31 180	31 524	32 136	33 162	33 279	6.7
LPG (naturally occurring)	ML	4 832	4 056	4 647	4 681	4 639	-4.0

(a) 'In mine products' relates to the metal content of the mineral.

Source: ABARE, 'Australian Mineral Statistics'; ABARE, 'Australian Commodity Statistics, 2004'.

## 16.17 PRODUCTION OF PRINCIPAL MANUFACTURED PRODUCTS OF MINERAL AND OIL ORIGIN

	Units	1999–2000	2000–01	2001–02	2002–03	2003–04
<b>METALS</b>						
<b>Non-ferrous</b>						
Alumina	'000 t	15 037	16 098	16 417	16 413	16 796
Refined aluminium	'000 t	1 742	1 788	1 809	1 855	1 877
Refined copper	'000 t	477	517	561	537	458
Lead bullion	'000 t	165	153	201	181	143
Refined lead	'000 t	233	215	275	267	247
Refined zinc	'000 t	405	534	572	570	502
Refined tin	t	602	1 039	829	708	553
<b>Ferrous</b>						
Raw steel	'000 t	8 053	8 003	8 311	9 399	9 445
<b>Precious</b>						
Refined gold	t	383	361	346	386	397
Refined silver	t	543	532	616	672	619
<b>PETROLEUM</b>						
<b>Petroleum products</b>						
Diesel automotive oil	ML	12 737	13 212	13 064	13 335	12 544
Industrial and marine diesel fuel	ML	60	98	105	117	84
Fuel oil	ML	1 839	1 951	1 684	1 441	1 105
Automotive gasoline	ML	18 652	17 887	18 000	17 984	17 375
<b>BUILDING MATERIALS</b>						
Clay bricks	m	1 710	1 441	1 516	1 639	1 685
Portland cement	'000 t	7 937	6 821	7 236	7 731	8 460
<b>CHEMICALS</b>						
Single superphosphates	'000 t	1 670	1 837	2 052	1 423	1 446

Source: *Manufacturing Production, Australia (8301.0)*; ABARE, 'Australian Mineral Statistics', various issues and 'Australian Commodity Statistics 2004', Department of Industry, Tourism and Resources, 'Australian Petroleum Statistics'.

### Exports of major minerals, oil and gas

Export earnings of minerals, oil and gas from the Australian resources sector fell to \$52 billion (b) in 2003–04, a decrease of \$3b on the previous year. The resources sector covering minerals and energy production includes some commodities which are processed outside the mining industry (as defined by ANZSIC).

Table 16.18 provides details of the quantity and value of the main minerals, oil and gas commodities exported from Australia. In 2003–04, black coal (including coking and steaming) was the largest export earner (\$11b), followed by refined gold (\$6b), iron ore and pellets (\$5b), crude oil and other refinery feedstock (\$5b), alumina (\$4b) and aluminium (\$3b).

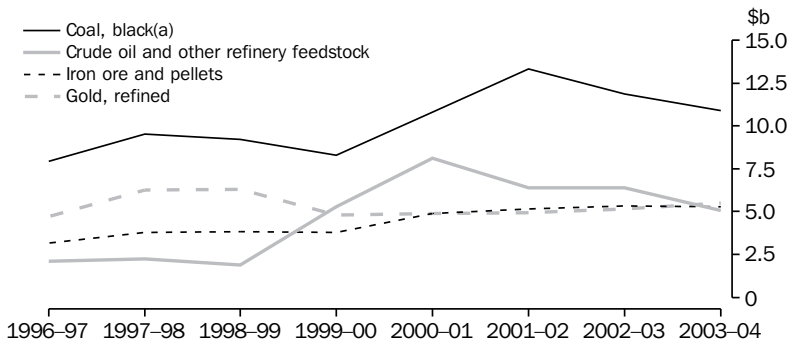
Graph 16.19 shows the value of Australia's four largest mineral and oil exports during the period 1996–97 to 2003–04. Exports of black coal, crude oil and other refinery feedstock, and iron ore and pellets have been growing, with crude oil and other refinery feedstock recording the largest increase (139%) followed by iron ore and pellets (67%) and black coal (37%). Black coal exports peaked in 2001–02 mainly as a result of an increase in unit values of coking and steaming coal exports. A similar peak was observed for the export of crude oil and other refinery feedstock although it occurred in 2000–01. Over the three years following this peak the export value of crude oil and other refinery feedstock dropped \$3b.

### 16.18 EXPORTS OF MAJOR MINERALS, OIL AND GAS, Value and quantity

	Units	2000-01		2001-02		2002-03		2003-04	
		Quantity	\$m	Quantity	\$m	Quantity	\$m	Quantity	\$m
Alumina	kt	12 721	4 507	13 091	4 114	13 168	3 660	13 572	3 781
Aluminium (ingot metal)	kt	1 471	4 229	1 490	3 965	1 551	3 696	1 546	3 440
Coal, black									
Coking	Mt	106	6 597	106	8 038	108	7 448	112	6 510
Steaming	Mt	88	4 204	92	5 294	100	4 448	107	4 372
Copper	kt	694	2 286	749	2 159	687	2 005	652	2 172
Diamonds	'000 ct	25 513	634	25 811	512	32 274	789	26 667	531
Gold, refined	t	302	4 887	280	4 950	282	5 133	315	5 510
Iron and steel									
Iron ore and pellets	Mt	157	4 903	156	5 160	181	5 342	195	5 272
Iron and steel	kt	2 931	1 484	3 297	1 484	3 589	1 855	3 793	1 682
Lead	kt	672	637	731	729	735	657	688	726
Magnesia	t	161 236	53	151 760	56	143 372	52	154 620	51
Manganese ore and concentrate	kt	1 522	261	1 660	299	2 014	313	2 603	383
Oil and gas									
Crude oil and other refinery feedstock	ML	24 044	8 137	23 936	6 390	20 950	6 402	17 526	5 055
LNG	Mt	8	2 671	8	2 613	8	2 607	8	2 174
LPG	ML	2 785	830	3 211	721	3 194	855	2 916	647
Salt	kt	8 636	253	8 912	267	10 172	233	10 285	186
Tin	t	9 660	76	8 026	49	5 963	38	143	1
Titanium minerals									
Ilmenite concentrate	kt	1 012	154	914	138	1 020	135	783	82
Rutile concentrate	kt	190	161	190	167	195	149	146	95
Uranium oxide	t	9 722	497	7 367	361	9 593	427	9 099	364
Zinc	kt	1 456	1 882	1 488	1 529	1 548	1 427	1 369	1 235
Zircon concentrate	kt	375	228	388	272	445	281	426	240

Source: ABARE, 'Australian Commodity Statistics, 2004'.

### 16.19 EXPORTS OF SELECTED MINERALS AND OIL



(a) Includes coking and steaming coal.

Source: ABARE, 'Australian Commodity Statistics, 2004'.

The major markets for Australian mineral and oil exports were Japan, Republic of (South) Korea, United Kingdom, Singapore and Taiwan for the period 1989–90 to 2003–04 (graph 16.20).

Japan was consistently the main destination among the Asian countries for Australian minerals and oil, receiving 21% (\$10b) of total exports in 2003–04. The main minerals and oil exported to Japan were coal, crude oil and other refinery feedstock, LPG, iron ore and pellets. Of this, coal was the most significant. In 2003–04, 59 megatonnes (Mt) of steaming coal and 41 Mt of coking coal were exported to Japan (55% and 37% respectively of total Australian exports for these commodities). In the same year, 2,079 megalitres (ML) of crude oil and other refinery feedstock, 2,109 ML of LPG and 75,353 kt of iron ore and pellets were also exported to this country. These exports respectively accounted for 12%, 72% and 39% of Australia’s total exports of crude oil and other refinery feedstock, LPG and iron ore and pellets.

The Republic of (South) Korea, Singapore and Taiwan were the other main export destinations. After Japan, the Republic of (South) Korea and Taiwan were the main markets for Australia’s black coal. The steaming coal sent to these destinations amounted to 16 Mt (15% of total exported steaming coal) and 10 Mt (9%) respectively in

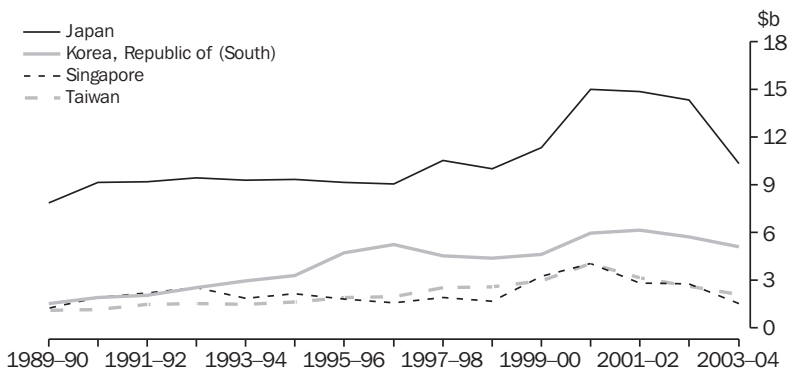
2003–04. Iron ore and pellets, and crude oil and other refinery feedstock were also exported to the Republic of (South) Korea. Singapore was a major market for Australian crude oil and other refinery feedstock, importing 3,948 ML from Australia in 2003–04, 23% of the total volume exported.

In the period 1989–90 to 2003–04 exports to the United Kingdom had more than doubled. In 2003–04, the exports to this country were valued at \$2b. Gold was the most significant mineral exported and amounted to 71 tonnes, 23% of Australia’s total gold exports.

### Imports of major minerals and petroleum

Many imported mineral and petroleum commodities have had a certain amount of manufacturing applied to their raw forms. Table 16.21 provides details of the major commodities imported in the period 2000–01 to 2003–04. In terms of value, the largest imports for 2003–04 were for crude oil and other refinery feedstock (\$6.6b), followed by other refinery products (\$3.4b). The major sources of Australian imports of crude oil and other refinery feedstock were Indonesia, Malaysia and Vietnam with a combined value of \$3.9b (59.5% of the total import value for this commodity).

**16.20 EXPORTS OF MINERALS AND OIL, By country of destination**



Source: ABARE, 'Australian Commodity Statistics, 2004.



Graph 16.22 shows imports of selected major minerals and petroleum during the period 1997–98 to 2003–04. The imports of crude oil and other refinery feedstock were significantly larger than the imports of other minerals particularly in 2000–01.

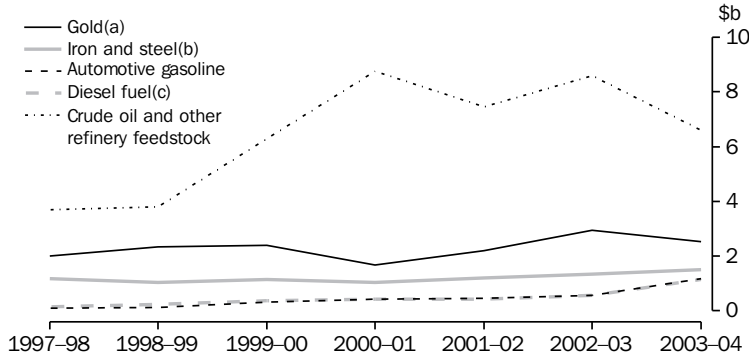
While the volumes of imports of crude oil and other refinery feedstock fluctuated over the period 1997–98 to 2003–04, the large changes in the value of imports between 1998–99 and 2002–03 were mainly due to significant unit value rises in 1999–2000 (up 84%) and 2000–01 (up 42%).

**16.21 IMPORTS OF MAJOR MINERALS AND PETROLEUM, Value and quantity**

	Units	2000–01		2001–02		2002–03		2003–04	
		Quantity	\$m	Quantity	\$m	Quantity	\$m	Quantity	\$m
Diamonds	'000 ct	2 598	249	2 431	255	3 218	302	2 229	309
Gold	n.a.	n.a.	1 686	n.a.	2 207	n.a.	2 957	n.a.	2 541
Iron and steel									
Iron ore and pellets	kt	4 658	122	3 880	104	4 667	114	5 417	140
Iron and steel	kt	896	923	1 354	1 099	1 306	1 226	1 583	1 353
Petroleum									
Crude oil and other refinery feedstock	ML	26 343	8 753	27 308	7 458	27 958	8 610	23 498	6 594
LPG	ML	633	160	588	116	299	76	785	166
Automotive gasoline	ML	1 189	432	1 436	448	1 673	569	3 242	1 168
Diesel fuel	ML	1 129	438	1 280	414	1 627	561	3 374	1 133
Other refinery products	ML	902	463	2 327	953	5 194	1 971	9 762	3 427
Phosphate rock	kt	823	62	933	72	711	50	723	41
Platinum and platinum group metals	kg	2 158	30	1 652	42	2 319	64	2 984	86

Source: ABARE, 'Australian Commodity Statistics, 2004'.

**16.22 IMPORTS OF SELECTED MINERALS AND PETROLEUM**



(a) Refined and unrefined bullion. (b) Includes iron ore and pellets, and iron and steel.  
(c) Includes automotive diesel oil, and industrial and marine fuel.

Source: ABARE, 'Australian Commodity Statistics, 2004'.

## Profile of major minerals, oil and gas

*This section is based on information contributed by Geoscience Australia and the Australian Bureau of Agricultural and Resource Economics (ABARE) (September 2005).*

*Note: Values are given in Australian currency unless otherwise stated.*

### Minerals

Maps 16.23, 16.24 and 16.25 show selected mines and deposits – map 16.23 covers gold and diamonds; map 16.24 covers bauxite, coal, iron ore, manganese ore and uranium; map 16.25 covers base metals and mineral sands.

### Bauxite, alumina and aluminium

Bauxite is a heterogeneous naturally occurring material from which alumina and aluminium are produced. The principal minerals in bauxite are gibbsite, boehmite and diasporite (which has the same composition as boehmite but is denser and harder). Bauxite is the ore from which alumina (aluminium oxide) is extracted while aluminium is produced from smelting alumina.

Australia's aluminium industry is a large integrated industry of mining, refining, smelting and semi-fabrication, which is of major economic importance nationally and globally. Its EDR of bauxite (5.7 Gt) provide a world class resource base for the industry, which comprises five bauxite mines, seven alumina refineries, six primary aluminium smelters, twelve extrusion and two rolled product (sheet, plate and foil) mills. In 2004 Australia was the largest producer of bauxite and alumina. The Australian aluminium industry directly employs over 16,000 people.

Production in 2004 totalled 56.6 Mt of bauxite, 16.5 Mt of alumina and 1.9 Mt of aluminium (ingot metal). Compared with 2003 these represented an increase of 1.8% for bauxite with no change for alumina and aluminium.

In 2004 strong markets for aluminium in North America, with growth in demand of around 10%, together with increased demand from China, resulted in a supply shortage in the primary aluminium market for the first time since 2000. In 2004 the annual average price of aluminium increased to 78 US cents per pound, an increase of 20% against the 2003 average. Expansion of the Weipa bauxite mine in Queensland was completed, resulting in an increase in production

capacity to 16.5 Mt per year. This supports the new alumina refinery at Gladstone, the first stage of which was completed in late-2004. The Queensland government's Aurukun bauxite project moved ahead during 2004 following investigations indicating sufficient resources at the Aurukun site (some 90 kilometres south of Weipa) to warrant further exploration to fully delineate the deposit and investigate establishment of a mine and alumina refinery. Plans are underway for the Gove alumina refinery in the Northern Territory to undergo a \$US1.3b expansion. Lifting the refinery's capacity from 2.1 Mt to around 3.8 Mt per year, the project will significantly improve operating efficiency and enhance environmental performance. The strong international demand for mineral resources has resulted in renewed interest in bauxite deposits in northern Western Australia.

### Coal

Black coal is a solid rock formed from brown coal after greater heat and pressure have been applied. Black coals are distinguished by rank and may be sub-bituminous, bituminous or anthracite. Black coal is primarily used for electricity generation and the production of coke, which is integral to the production of iron and steel. Black coal is also used as a source of heat in the manufacture of cement and food processing. Brown coal is a less matured form of coal. It has a high 'in situ' moisture content (up to 60%) with a correspondingly low heating value. It is highly susceptible to spontaneous combustion. Brown coal is used widely for power generation, is made into briquettes, and can be converted to liquid or gaseous fuels.

Although coal mining occurred in all states in 2004, New South Wales and Queensland produced over 96% of all black coal (anthracite, bituminous and sub-bituminous coals) and Victoria produced all the brown coal (lignite). Australia's EDR of recoverable black coal is 40.4 Gt, which is about 5% of total world EDR making Australia's holdings the sixth largest in the world. EDR of recoverable brown coal is 37.5 Gt, which gives Australia the largest holding in the world and accounts for 24% of world EDR.

Australia's coal production and exports have risen strongly over the past two decades. Production of black coal increased in 2004. Output of saleable black coal at 298.0 Mt was 6.2% higher than in 2003 and was 7% of world output, making Australia the world's fourth largest producer. Brown coal production reached 68 Mt in 2003, 8% of total world output. Australia was the world's fifth largest producer of brown coal.

**16.23 SELECTED MINES AND DEPOSITS OF GOLD AND DIAMONDS — 2005**



05-205-1

Source: Geoscience Australia.

Black coal exports in 2004 of 116.8 Mt of coking coal (valued at \$7.8b) and 106.9 Mt of steaming coal (valued at \$5.5b), made black coal Australia's leading mineral export.

**Copper**

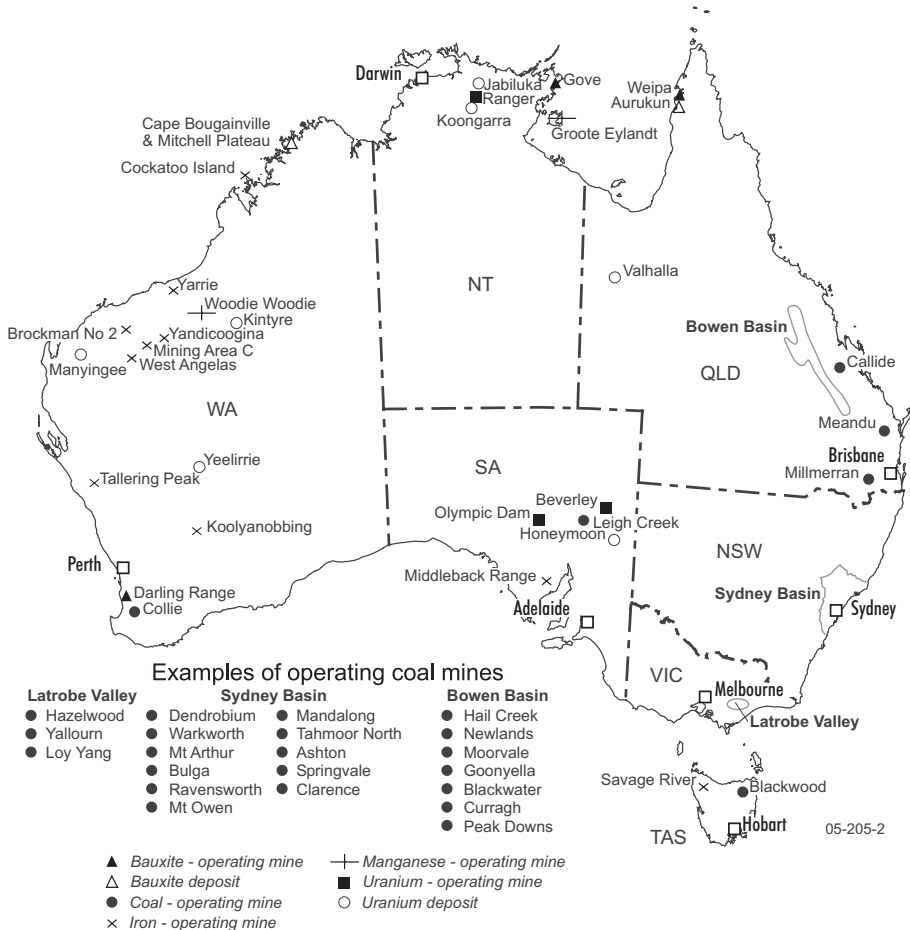
Copper occurs in various forms. It can occur naturally in its pure state (native copper) but is principally mined as chalcopyrite. Copper is one of the most important and widely used metals of modern society due to its properties of:

- high electrical and heat conductivity
- ductile and malleable
- resistant to corrosion
- ability to form alloys with other metals.

These properties enable copper to be used in a wide range of applications. The largest use of copper is in the electrical industry where copper wire and cable account for about half of the world's copper production. Other major markets are the motor vehicle and construction sectors. Copper is also an integral part of the expanding information technology sector and is used in the manufacture of computers, mobile phones, fax machines and televisions.

Major Australian copper mining and smelting operations are at Olympic Dam (South Australia) and Mt Isa (Queensland), with smaller projects in New South Wales, Queensland, Western Australia and Tasmania. Australia's EDR of copper is 42.1 Mt giving it the world's second largest holding of copper EDR with 9% of the total.

16.24 SELECTED MINES AND DEPOSITS OF BAUXITE, COAL, IRON ORE, MANGANESE AND URANIUM — 2005



Source: Geoscience Australia.

Mine production of copper in 2004 was 860 kilotonne (kt) of contained copper, 4% higher than in 2003 (829 kt). Queensland dominates Australian production with 399 kt (largely from Mt Isa) followed by South Australia with 225 kt (all from Olympic Dam). The remaining production occurred in New South Wales (166 kt), Western Australia (38 kt) and Tasmania (32 kt). As a producer, Australia ranks fourth, with 6% of world output, after Chile (35%), the United States of America (8%) and Peru (7%), with Indonesia also at 6%.

Australia's exports of copper concentrates and refined copper were valued at \$2.57b in 2004, 1.7% of the value of total merchandise exports.

**Diamond**

Diamond is composed of carbon, and is the hardest known natural substance, but a sharp blow can shatter it. Diamonds occur naturally but are extremely rare compared with other minerals. Diamonds are thought to form deep in the earth at high temperatures and pressures and are carried to the surface or near surface by volcanic rocks in narrow cylinder-like bodies called 'pipes'. A large proportion of industrial diamonds are manufactured, and it is also possible to produce synthetic diamonds of gem quality. Uses for diamond include jewellery, computer chip manufacture, drill bit facing, and stone cutting and polishing.

16.25 SELECTED MINES AND DEPOSITS OF BASE METALS AND MINERAL SANDS — 2005



Source: Geoscience Australia.

Australia produced 20.7 million carats (Mc) of diamond in 2004, making it the world's fourth largest producer of diamond by weight after Botswana, Russia and Congo (Kinshasa). It is the third largest producer of industrial-grade diamond and the fourth largest producer of gem/near gem diamond after Botswana, Russia and Canada.

Australia's EDR of gem/near gem diamonds is 53.4 Mc and industrial diamonds 55.6 Mc. Australia's EDR of industrial diamond is ranked fourth in the world, with 10% of world EDR.

The majority of Australian production was from the Argyle mine in the Kimberley region of Western Australia which produced 20.62 Mc of mostly industrial and near gem diamonds in 2004. Argyle production was down 33% on 2003 as a

consequence of difficult near-base-of-pit mining conditions, which resulted in mining of lower grade ore. The average grade mined for the year was 2.15 carats (ct) per tonne well down on the 2003 average of 3.16 ct per tonne.

**Gold**

Gold has a range of uses but the two principal applications are as an investment instrument and in the manufacture of jewellery. Secondary uses, in terms of the amount of gold consumed, are in electronic and dental applications.

Gold resources occur and are mined in all Australian states and the Northern Territory. Australia's EDR of gold is 5,589 tonnes, the second largest in the world after South Africa.

Australian gold production reported by ABARE for 2004 was 259 tonnes. This level of production makes Australia the third largest producer in the world after South Africa and the United States of America, with about 14% and 11% of world output respectively. The Super Pit at Kalgoorlie in Western Australia was the largest producer with an output of nearly 0.9 million ounces.

### **Iron ore**

Iron ore is the source of primary iron for the world's steel industries. Over 97% of iron ore production occurs in the Hamersley Basin of Western Australia. Small production also comes from elsewhere in Western Australia, Tasmania, South Australia and New South Wales. Australia's EDR of iron ore is 14.6 Gt which is about 9% of world EDR. Western Australia has almost all of Australia's EDR with about 92% occurring in the Pilbara district. Australia has the fifth largest iron ore holding in the world.

According to ABARE Australia's production of iron ore in 2004 was 231.0 Mt, which was 18% of world output, making Australia the world's third largest producer.

Iron ore was a major contributor to Australia's export income in 2004 with 210.3 Mt valued at \$6.1b exported.

### **Manganese ore**

Over 90% of the world's production of manganese is used in the desulphurisation and strengthening of steel. Other uses include the manufacture of dry batteries, as a colorant, and as an ingredient in plant fertilisers and animal feed. Manganese ore was mined in the Northern Territory and Western Australia in 2004. Production reached 2.73 Mt, 14% of world output, making Australia the third largest producer in the world. Australian production is from two mines – Groote Eylandt in the Northern Territory and Woodie Woodie in Western Australia. A third mine is under construction at Bootu Creek in the Northern Territory. Australia's EDR of manganese ore, at 133 Mt, is 11% of world EDR and Australia has the fourth largest EDR in the world.

In 2004 Australian exports of manganese ore totalled 2.82 Mt valued at \$402m.

### **Mineral sands**

The three main minerals mined from Australian mineral sands deposits are the titanium-bearing minerals rutile and ilmenite and the zirconium-bearing mineral zircon. Rutile and

ilmenite are used mainly in the production of titanium dioxide pigment. A small portion, less than 4% of total titanium mineral production and typically rutile, is used in making titanium sponge metal. Zircon is used as an opacifier for glazes on ceramic tiles, and is used in refractories and the foundry industry. Production in 2004 was from Western Australia, Queensland and Victoria.

Australia's EDR of ilmenite is 217.2 Mt of which 62% is in Western Australia, 24% in Queensland and the rest in New South Wales, Victoria and South Australia. Australia accounts for 20% (the second largest holding behind China at 35%) of the world's EDR of ilmenite. Queensland and Western Australia together hold over 57% of Australia's 20.2 Mt EDR of rutile, which, at 39% of world EDR, is the world's largest.

EDR of zircon is 30.0 Mt, with Western Australia and Queensland holding just over 76%. In world terms, Australia's EDR is 41% of the total and is the largest holding by any country.

Although Australia has substantial EDR of mineral sands, Geoscience Australia estimates that some 17% of ilmenite, 28% of rutile and 27% of zircon EDR is unavailable for mining. They are in areas quarantined from mining that are largely incorporated into national parks. Deposits in this category include Moreton Island, Bribie Island and Fraser Island, Cooloola sand mass, Byfield sand mass and Shoalwater Bay area, all in Queensland, and Yuraygir, Bundjalung, Hat Head and Myall Lakes National Parks in New South Wales.

In 2004 Australia produced 1.93 Mt of ilmenite, 162,000 tonnes of rutile, 44,000 tonnes of leucosene and 441,000 tonnes of zircon. The bulk of Australia's rutile and zircon production is exported compared with about 39% for ilmenite. The remaining ilmenite is upgraded to synthetic rutile. Australia was the world's largest producer of rutile (41%) and the second largest producer of ilmenite and zircon (with 22% and 41% of world output respectively) in 2004.

### **Nickel**

Australia's total resources of nickel are 26.7 Mt of which EDR is 22.6 Mt. Western Australia has the largest nickel resources, with 90% of total Australian EDR. Australia holds the largest share of the world's EDR, with 36.6%.

Australian mine production of nickel in 2004 decreased by 2.6% to 187,000 tonnes, all from Western Australia. Production of intermediate nickel products (matte and speiss) totalled



106,000 tonnes in 2004 and refined nickel was 122,000 tonnes. The value of all nickel products exported was \$3.3b. Australia was the world's second largest producer, accounting for 13.4% of estimated world nickel output.

## Tantalum

Australia is the world's largest producer of tantalum in the form of tantalum concentrates. Australia also has the world's largest stock of tantalum resources, principally in its deposits at Greenbushes and Wodgina in Western Australia.

Australia has the world's largest EDR of tantalum at 53,000 tonnes, all of which is accessible for mining. This is approximately 95% of world EDR.

Although Australian production of 640 tonnes is incomplete for the calendar year 2004, it dominated world production with 57% of world output.

## Uranium

Australia has 701,000 tonnes of uranium in Reasonably Assured Resources recoverable at costs of less than US\$40 kilogram of uranium – this is the world's largest resource and represents 40% of world resources in this category (OECD Nuclear Energy Agency & International Atomic Energy Agency, 2004). Almost all of Australia's total resources are in six deposits:

- Olympic Dam in South Australia, which is the world's largest uranium deposit
- Ranger, Jabiluka and Koongarra in the Alligator River region in the Northern Territory
- Kintyre and Yeelirrie in Western Australia.

Three uranium mines operated in 2004 – Ranger open cut, Olympic Dam underground mine, and the Beverley (South Australia) in situ leach operations. In 2004 Ranger produced 5,138 tonnes of uranium oxide, Olympic Dam 4,370 tonnes and Beverley 1,084 tonnes for a total of 10,592 tonnes, 19% higher than for 2003. Australia, with approximately 22% of world uranium production in 2004, is the world's second largest producer after Canada (29%).

Exports of uranium oxide in 2004 were 9,648 tonnes, valued at \$411m. All of Australia's uranium production is exported. Exports are controlled by Australian Government bilateral safeguards agreements, which are designed to ensure that Australia's uranium is used only for electricity generation and is not diverted to any military purposes. Importing countries must be

signatories to the International Atomic Energy Agency's safeguards arrangements and have entered into an agreement with the Australian Government to adhere to safeguard obligations for exporting uranium. In addition, the Australian Government recently announced the requirement for countries purchasing Australian uranium to have ratified the Additional Protocol under the Nuclear Non-Proliferation Treaty. This is to strengthen current safeguards arrangements covering exports of uranium.

## Zinc, lead, silver

Zinc is the 23rd most abundant element in the earth's crust. The construction, appliance and vehicle manufacturing industries use large amounts of zinc, mainly as coatings on steel beams, sheet steel and vehicle panels in the automotive industry.

The widespread occurrence, relatively simple extraction, and combination of desirable properties have made lead useful to humans since at least 5000 BC. In deposits mined today, lead (in the form of galena) is usually associated with zinc, silver and sometimes copper, and is extracted as a co-product of these metals. More than half of the lead used comes from recycling, rather than mining. The largest use is in batteries for vehicles and communications.

The relative scarcity, attractive appearance and malleability of silver has made it suitable for use in jewellery, ornaments and silverware since before Roman times. Its extensive use in coins throughout history has declined over the past 40 years. Silver is mined and produced mainly as a co-product of copper, lead, zinc, and to a lesser extent, gold. Today, photographic paper and film, followed by the electronics and jewellery/tableware industries are the most important users of silver.

Australian EDR of zinc is 41Mt, with Queensland holding 65%. The Northern Territory, New South Wales, Western Australia and Tasmania also have zinc EDR.

Australia's EDR of 23 Mt of lead is 33% of world EDR. Queensland has over 60% of total EDR, mainly at Cannington and Mt Isa. Other holdings are in the Northern Territory, New South Wales, Western Australia and Tasmania.

EDR for silver in 2004 was 41.4 Kt, with Queensland having the largest share at 73%, mainly in the Mt Isa, Cannington, Century and Hilton deposits. Other holdings occur in the

Northern Territory (11%), South Australia (6%), New South Wales (6%), and Western Australia (3%) with the remainder in Tasmania and Victoria.

Australia has the world's largest EDR of zinc (18% of the world) and lead (33%), and the second largest EDR of silver (15%).

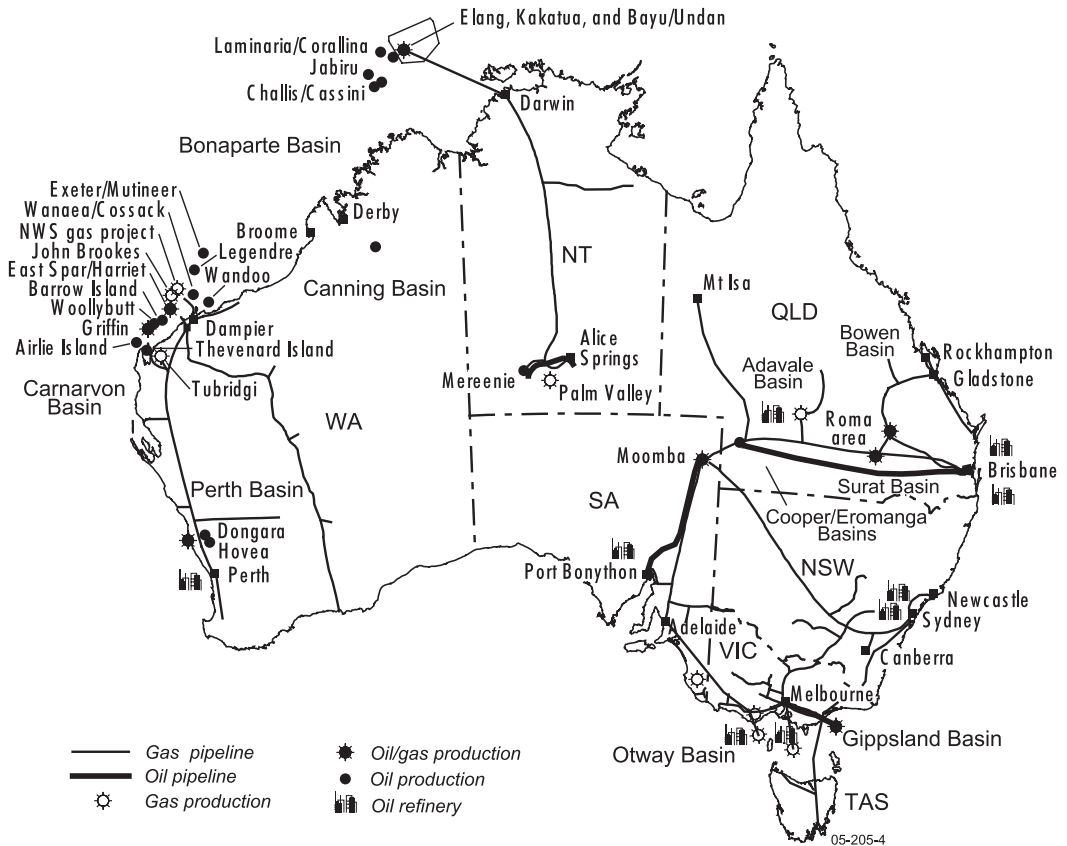
Mine production of zinc, lead and silver in 2004 was 1.34 Mt, 700,000 tonnes and 2,237 tonnes respectively. This is a slight decrease for zinc (down 1,000 tonnes), no change for lead and an increase for silver (up 367 tonnes) compared with 2003. In production, Australia ranks first for lead,

third for zinc after China and Peru and fourth for silver after Mexico, Peru and China. Cannington is the world's largest and lowest cost silver and lead operation and produced almost 272,000 tonnes of lead and 41.7 million ounces of silver in 2004. Century had the largest zinc output at 517,000 tonnes.

### Oil and gas

Map 16.26 shows significant locations of oil and gas production and includes oil and gas production locations, oil and gas pipelines and oil refineries.

**16.26 LOCATIONS OF OIL AND GAS PRODUCTION AND PIPELINES — 2005**



Source: Geoscience Australia.



## Crude oil and condensate

In 2004–05 production of total crude oil and condensate from the North West Shelf and the Gippsland Basin accounted for 37% and 24% respectively of total Australian crude oil and condensate production. The North West Shelf was the major producer of condensate during 2004–05 with 77% of total Australian production sourced from that region.

## Liquefied natural gas (LNG)

All LNG production comes from the North West Shelf Venture and all is exported. LNG production in 2004–05 was 10.69 Mt. Export earnings from LNG in 2004–05 were \$3.2b, an increase of \$1b on 2003–04.

## Liquefied petroleum gas (LPG)

LPG is a valuable co-product of oil and gas production and petroleum refining. The major constituents of LPG are propane and iso- and normal-butane, which are gaseous at normal temperatures and pressures, and are easily liquefied at moderate pressures or reduced temperatures. Operations involving LPG are expensive in relation to other liquid fuels because LPG has to be refrigerated or pressurised when transported and stored. LPG is an alternative transport fuel for high mileage vehicles in urban areas, as well as a petrochemical feedstock and domestic fuel.

In 2004–05 the major producers were the Gippsland Basin and the North West Shelf accounting for 43% and 42% of total production respectively.

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## ENERGY

Energy is a vital input to all sectors of the economy. As well as supplying the power on which industry and households depend, the production and supply of energy provides employment, investment and export opportunities, all of which contribute substantially to our welfare and standard of living. Australia has an abundance of fossil fuel, such as black and brown coal, and mineral energy resources, such as uranium, which is reflected in trends in energy production, supply and use.

The supply and use of energy in Australia is summarised in the initial section. Subsequent sections describe Australia's energy resources, the production of these resources, foreign trade in energy products, and an analysis of energy use.

## Energy supply and use

An overview of energy supply and use in Australia in 2003–04 is presented in diagram 17.1.

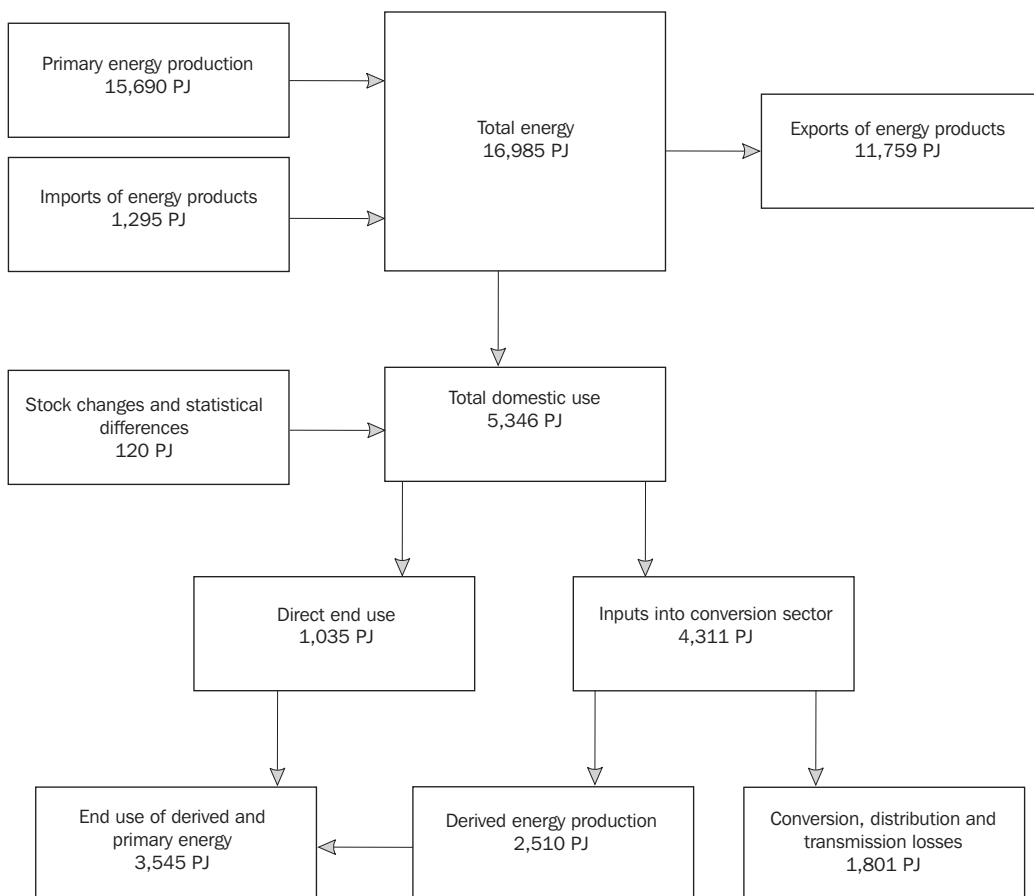
Australia's total energy supply comprises primary energy production, plus imports of energy, less stock changes and discrepancies. In 2003–04 Australia produced 15,690 petajoules (PJ) of primary energy products and imported 1,295 PJ of energy products, mainly crude oil.

Australia's supply of primary energy products can be exported, converted into other energy products, used by Australian households and industry, or stockpiled for future consumption. Most of the energy produced in Australia in

2003–04 was exported (11,759 PJ), the bulk of which was black coal (6,208 PJ) and uranium (4,277 PJ). More information on imports and exports of Australia's energy is provided in *International trade in energy products*.

In 2003–04, 5,346 PJ of energy was available for domestic use, of which, 4,311 PJ of primary energy was transformed into 2,510 PJ of derived energy. Conversion, distribution and transmission losses accounted for 1,801 PJ of energy use. Australia's end users of energy, comprising household and industry (excluding the conversion sectors), used 3,546 PJ of energy, about one-fifth of the total energy supply.

**17.1 ENERGY SUPPLY AND USE — 2003–04**



Source: ABARE 2005b, Table A and J.

## Energy resources

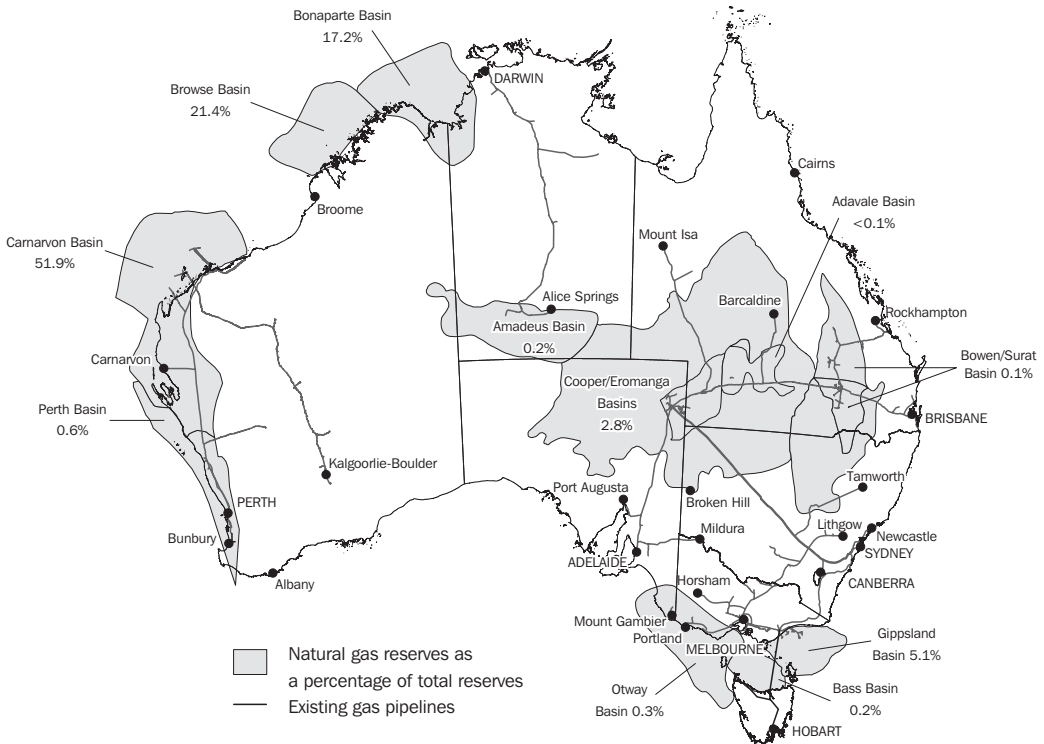
Australia has large resources of fossil fuels and uranium. It is ranked in the top six countries in the world for economic demonstrated resources (EDR) of black and brown coal, and has the world's largest EDR of uranium (Geoscience Australia 2003). Australia also has significant reserves of natural gas and crude oil. For a more detailed outline on Australia's energy and mineral resources, see the *Mining* chapter.

Australia has substantial resources of high quality black coal. Most of these resources are located in New South Wales and Queensland. Small but

locally important coal resources occur in Western Australia, South Australia and Tasmania. Brown coal occurs mainly in Victoria with other deposits in Western Australia, South Australia and Tasmania (Geoscience Australia 2003).

Map 17.2 shows the extent of access to gas resources and major transmission pipelines in Australia. At June 2003, EDR of natural gas totalled 101,120 PJ, with the Carnarvon Basin accounting for over 50% of total reserves (Geoscience Australia 2005). The total length of Australia's transmission pipeline system has increased from 9,000 kilometres (km) in 1989 to over 20,000 km in 2001 (APIA 2001).

**17.2 GAS RESERVES AND PIPELINES — July 2002**



Source: The Australian Gas Association.

Between 1993 and 2003 the EDR of black coal, brown coal, and crude oil have decreased, while the EDR of liquified petroleum gas (LPG), condensate, natural gas and uranium have increased in the same period (table 17.3). Changes in EDRs can be due to production activity and discoveries and reclassification of resources due to reassessments (such as with black and brown coal in 1999, when some resources previously considered economic were reclassified as subeconomic).

### 17.3 ECONOMIC DEMONSTRATED RESOURCES OF PRIMARY ENERGY PRODUCTS(a) — 30 June

Fuel	1993		2003		Change from 1993 to 2003 %
	PJ		PJ		
Black coal	1 333 800	1 071 900			-19.6
Brown coal	400 610	364 720			-9.0
Crude oil	9 213	6 512			-29.3
Condensate	4 588	10 249			123.4
LPG	3 472	7 261			109.2
Natural gas	38 000	101 120			166.1
Uranium	296 570	323 830			9.2

(a) Non-renewable resources only.

Source: Australian System of National Accounts (5204.0).

The net present value (NPV) of an energy resource is the expected value of the resource based on current market value, with some modifications based on depletion and economic forces. At June 2003, the NPV of Australian energy and mineral resources was \$245 billion (table 17.4). The two most significant energy resources were black coal and natural gas, accounting for 36% and 37% of the total NPV of energy resources respectively. The increase in the value of energy resources between 1993 and 2003 was primarily due to increases in the NPV of black coal and natural gas over this period – the NPV of black coal alone increased more than ten-fold.

### 17.4 NET PRESENT VALUE OF PRIMARY ENERGY RESOURCES — 30 June

Fuel	1993	2003	Change from 1993 to 2003	
	\$m	\$m		%
Black coal	7 942	88 386		1 012.9
Brown coal	280	1 308		270.7
Crude oil	15 491	26 667		72.1
Condensate	3 119	22 868		633.2
LPG(a)	891	11 205		1 157.6
Natural gas	18 114	90 169		397.8
Uranium	1 909	4 727		147.6
<b>Total</b>	<b>47 746</b>	<b>245 330</b>		<b>413.8</b>

(a) Naturally occurring.

Source: Australian System of National Accounts (5204.0).

## Energy production

In examining Australia's energy production, it is important to distinguish between primary and derived (or secondary) energy. Primary energy products are forms of energy obtained directly from nature, including non-renewable fuels such as coal, natural gas and crude oil, and renewable fuels such as wood, hydro-electricity and wind. Derived energy products are fuels produced from another fuel, commonly a primary energy product. Derived energy products include electricity, petroleum products such as petrol and diesel, and coke (Bush et al. 1999).

### Primary energy production

In 2003–04 Australia produced 15,690 PJ of primary energy, an increase of 27% since 1998–99 (table 17.5). Although primary energy is produced from a range of renewable and non-renewable sources, it is the non-renewable sources that dominate production. Commodities such as black coal accounted for nearly half (49%) of total energy production in 2003–04, followed by uranium (29%), natural gas (9%) and crude oil (7%).

Renewable primary energy products produced include wood, bagasse, biofuel, hydro-electricity and solar thermal energy. In 2003–04 these products accounted for 2% (265 PJ) of total production.

### 17.5 PRODUCTION OF PRIMARY ENERGY

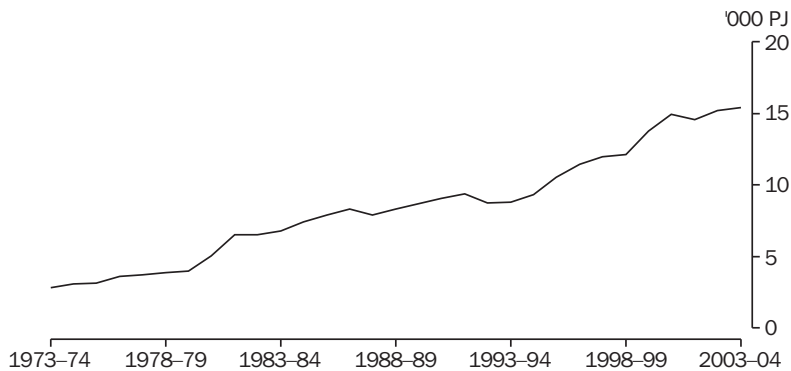
Fuel	1998–99 PJ	2002–03 PJ	2003–04 PJ
Black coal	5 993.9	7 331.0	7 614.5
Brown coal	669.0	654.0	658.5
Crude oil and ORF(a)	1 032.2	1 232.8	1 031.4
LPG(b)	103.5	124.1	122.9
Natural gas	1 313.7	1 444.3	1 468.0
Uranium	3 002.1	4 398.8	4 529.4
Wood	109.1	98.5	95.9
Bagasse and biofuel	109.6	106.5	108.5
Hydro-electricity	60.4	58.7	58.0
Solar thermal	3.9	2.8	2.6
<b>Total</b>	<b>12 397.4</b>	<b>15 451.5</b>	<b>15 689.7</b>

(a) Other refinery feedstock. (b) Naturally occurring.

Source: ABARE 2004b, 2005b, Table A.

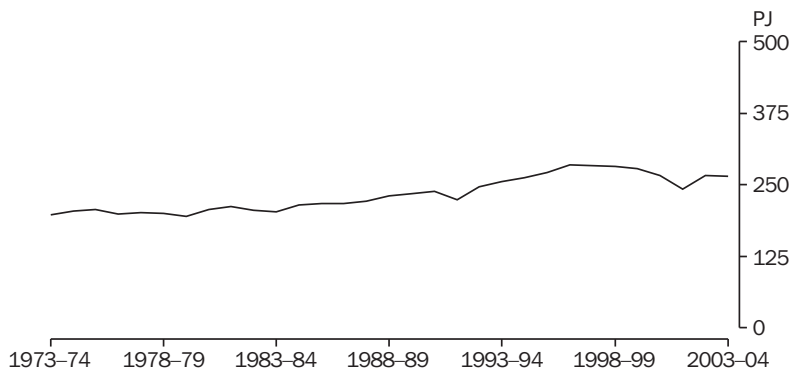
Graphs 17.6 and 17.7 show the production of non-renewable and renewable energy sources from 1973–74 to 2003–04. During this period, the production of non-renewable fuels has shown an upward trend, increasing from 3,009 PJ in 1973–74 to 15,425 PJ in 2003–04 (up by 413%). In contrast, there has been little growth in the combined production of primary renewable energy sources, which increased from 198 PJ in 1973–74 to 265 PJ in 2003–04.

### 17.6 PRODUCTION OF PRIMARY FUELS , Non-renewables



Source: ABARE 2004b, 2005b, Table A.

### 17.7 PRODUCTION OF PRIMARY FUELS, Renewables



Source: ABARE 2004b, 2005b, Table A.



## Derived energy production

Australia produces a variety of derived (or secondary) energy products. Derived energy produced in 2003–04 totalled 2,510 PJ (diagram 17.1). Petroleum fuels make up a large proportion of derived energy produced, including automotive gasoline (592 PJ in 2003–04), diesel (485 PJ) and aviation turbine fuel (182 PJ) (table 17.8).

## Economic activity of the electricity and gas supply industries

The electricity supply industry has undergone substantial structural change over the last decade. The emergence of a national electricity market has resulted in the replacement of the traditional state-owned vertically integrated monopolies with businesses that compete within the same marketplace. There is also an increasing diversification of energy businesses as they aim to provide customers with a wider range of energy services. Electricity businesses are entering the gas market and, conversely, gas businesses are entering the electricity market as opportunities within these markets expand.

Tables 17.9 and 17.10 present selected economic activity figures for the electricity and gas supply industries. From 2000–01 to 2002–03, sales and service income of the electricity supply industry increased by 22% to \$31,433 million (m). Over the same period, sales and service income of the gas supply industry increased by 15% to \$6,122m. The gross wages and salaries of employees in the electricity supply industry increased by 11% from \$2,319m in 2000–01 to \$2,565m in 2002–03. Over the same period, gross wages and salaries of employees in the gas supply industry increased by 11% to \$130m in 2002–03. In 2002–03, the industry value added of the electricity and gas supply industries was \$12,265m and \$1,250m respectively.

## 17.8 PRODUCTION OF DERIVED ENERGY(a)

Fuel	1998–99	2002–03	2003–04
	PJ	PJ	PJ
<b>Coal products</b>			
Coke	116.0	97.0	104.0
Coal by products	80.9	61.0	64.0
Briquettes	8.6	5.4	3.7
<b>Petroleum products</b>			
Automotive gasoline	636.0	613.1	592.2
Aviation turbine fuel	192.6	188.6	182.1
Fuel oil	66.3	57.7	44.0
Diesel(b)	501.8	515.2	484.7
Thermal electricity	674.9	778.2	800.0

(a) Selected fuels only. (b) Includes automotive diesel oil and industrial and marine diesel fuel.

Source: ABARE 2005b, Table F1.

## 17.9 SUMMARY OF OPERATIONS, Electricity industry

	2000–01	2001–02	2002–03
	\$m	\$m	\$m
<b>Sales and service income(a)</b>	25 746	25 454	31 433
<b>Wages and salaries(b)</b>	2 319	2 433	2 565
<b>Industry value added</b>	10 676	11 063	12 265

(a) Includes sales of goods, income from services and rent, leasing and hiring income. (b) Excludes the drawings of working proprietors.

Source: Electricity, Gas, Water and Sewerage Operations, Australia, 2001–02 and 2002–03 (8226.0).

## 17.10 SUMMARY OF OPERATIONS, Gas industry

	2000–01	2001–02	2002–03
	\$m	\$m	\$m
<b>Sales and service income(a)</b>	5 329	5 737	6 122
<b>Wages and salaries(b)</b>	117	113	130
<b>Industry value added</b>	1 373	1 378	1 250

(a) Includes sales of goods, income from services and rent, leasing and hiring income. (b) Excludes the drawings of working proprietors.

Source: Electricity, Gas, Water and Sewerage Operations, Australia, 2001–02 and 2002–03 (8226.0).

## International trade in energy products

Australia is a net exporter of coal, LPG, liquified natural gas (LNG) and uranium. In 2003–04 a total of 11,759 PJ of Australian energy products were exported, comprising 11,669 PJ of primary energy and 90 PJ of derived energy (table 17.11). In terms of energy content, the largest commodities exported were black coal (53% of total energy exports) and uranium (36%), followed by crude oil (6%) and LNG (4%). Total energy exports (primary plus derived) increased by 34% from 1998–99 to 2003–04. This increase stems almost entirely from growth during the period of exports of primary energy products, particularly uranium (up 52%) and black coal (up 29%). The major derived energy products exported in 2003–04 were aviation turbine fuel (19.5 PJ), automotive gasoline (24.8 PJ) and diesel (32.0 PJ).

In contrast, total imports of energy products are relatively small (1,295 PJ in 2003–04) (table 17.11). The majority of Australia's energy imports are the primary energy products crude oil and LPG. Together, these two commodities made up 87% of total energy imports in 2003–04. Imports of primary energy products have remained relatively constant over recent times. Derived energy imports, however, have increased substantially from 138 PJ in 1998–99 to 365 PJ in 2003–04 (up 165%).

Graph 17.12 shows the comparison between energy exports and imports over the past 30 years. The decrease in total exports of energy products between 2000–01 and 2001–02 is largely due to a fall in uranium exports.

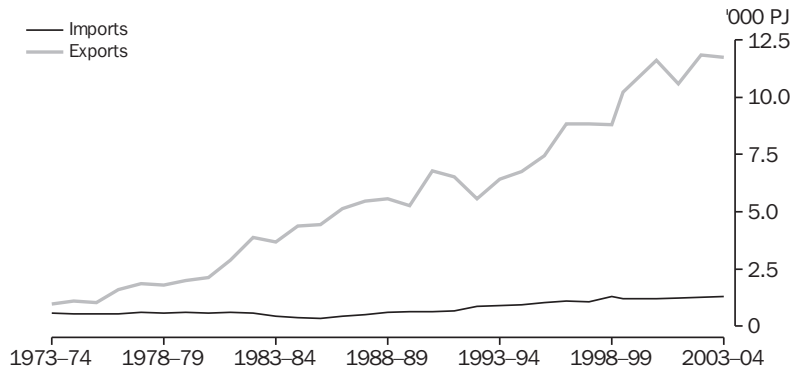
**17.11 ENERGY PRODUCTS, Volume of exports and imports**

	Exports			Imports		
	1998–99 PJ	2002–03 PJ	2003–04 PJ	1998–99 PJ	2002–03 PJ	2003–04 PJ
<b>Primary energy products</b>						
Black coal	4 805.8	5 908.6	6 208.0	—	—	—
Crude oil and ORF(a)	528.8	810.7	679.0	1 150.5	1 082.0	909.4
LPG	63.9	82.0	75.4	12.8	7.7	20.2
LNG	425.4	425.8	430.5	—	—	—
Uranium	2 814.8	4 508.7	4 276.5	—	—	—
<i>Total</i>	8 638.7	11 735.8	11 669.4	1 163.3	1 089.7	929.6
<b>Derived energy products</b>						
Automotive gasoline	52.4	36.1	24.8	30.4	57.2	110.9
Aviation gasoline	2.4	1.6	1.0	1.4	2.1	7.2
Aviation turbine fuel	20.1	23.7	19.5	5.2	15.8	24.8
ADO and IDF(b)	47.5	40.2	32.0	55.4	62.8	129.3
Fuel oil and kerosene	11.1	3.9	3.1	24.5	25.1	53.4
Other petroleum products(c)	21.1	9.0	9.3	20.8	31.9	39.7
Briquettes	1.8	7.0	—	—	—	—
Coke	—	—	—	—	—	—
<i>Total</i>	156.4	121.5	89.7	137.7	194.9	365.3
<b>Total</b>	<b>8 795.1</b>	<b>11 857.3</b>	<b>11 759.1</b>	<b>1 301.0</b>	<b>1 284.6</b>	<b>1 294.9</b>

(a) Other refinery feedstock (ORF). (b) Automotive diesel oil (ADO) and industrial diesel fuel (IDF). (c) Also includes lubricants and greases, bitumen and other bituminous products, solvents, waste oils and diesel.

Source: ABARE 2005b, Table J.

### 17.12 EXPORTS AND IMPORTS OF ENERGY PRODUCTS



Source: ABARE 2005b, Table J.

Table 17.13 shows energy products contributed significantly to Australia's export earnings. In 2003–04 the export of energy products contributed about 18% towards Australia's total merchandise export earnings, up from 16% in 1998–99. Black coal accounts for the largest share of the total value of energy exports (54% in 2003–04), followed by crude oil (25%) and LNG (11%). While accounting for a third of all exports by energy content, the value of uranium exports contributed only 2% of the total value of energy exports in 2003–04. Imports of energy products (mainly crude oil) accounted for 8% of the total value of imports in 2003–04. Although the quantity of energy exports (by energy content) has increased by 34% from 1998–99 to 2003–04, the

value of energy exports increased by 43%, partly due to the decline of the Australian dollar relative to the US dollar in that period.

## Energy use

### Total energy use

In 2003–04 total energy use in Australia, comprising both primary and derived energy, was 5,346 PJ, of which around two-thirds (3,545 PJ) was delivered to end-users and the remaining third (1,801 PJ) was lost in conversion processes, transmission and distribution (diagram 17.1). Graph 17.14 shows the growth in total energy use since 1973–74.

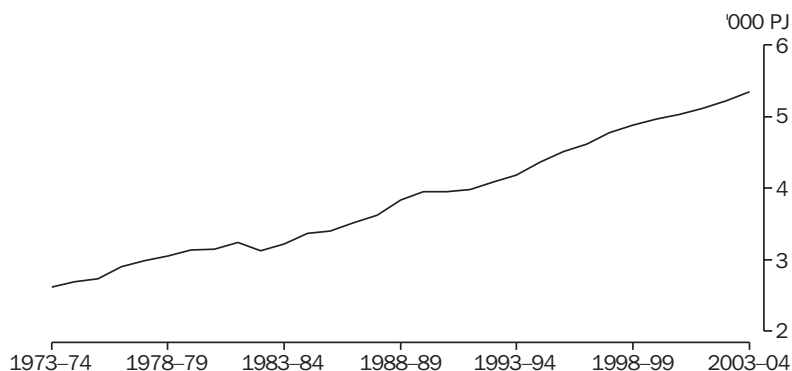
17.13 ENERGY PRODUCTS, Value of exports and imports

	Exports			Imports		
	1998–99 \$m	2002–03 \$m	2003–04 \$m	1998–99 \$m	2002–03 \$m	2003–04 \$m
Fuel						
Black coal(a)	9 239	11 896	10 882	—	—	—
Crude oil and ORF(b)	1 881	6 402	5 055	3 794	8 610	6 594
LPG	297	855	647	64	76	166
LNG	1 425	2 607	2 174	—	—	—
Uranium oxide	288	427	365	—	—	—
Refinery products	866	1 198	918	804	1 974	3 428
Total of energy products	13 996	23 385	20 041	4 662	10 660	10 188
Total merchandise trade	86 000	115 479	108 848	97 623	133 129	131 012

(a) Coking plus steaming. (b) Other refinery feedstock (ORF).

Source: *International Merchandise Trade, Australia* (5422.0); *International Trade in Goods and Services, Australia* (5368.0); ABARE 2004a.

## 17.14 TOTAL ENERGY USE



Source: ABARE 2005b, Table F1.

### Energy conversion and supply losses

The energy conversion sectors represent an intermediate stage in the energy supply chain. These sectors transform primary energy products into more useful, higher value-added secondary (derived) energy products. Petroleum refiners, for example, transform crude oil into petroleum products such as petrol and diesel.

The main energy conversion sectors, comprising electricity generators, gas manufacturers, petroleum refiners, and operators of coke ovens and blast furnaces, are significant users of primary energy products. Of the conversion sectors, the petroleum refining and electricity generation sectors are the two main users of energy. In 2003–04 these two conversion sectors used 1,511 PJ and 2,334 PJ respectively (table 17.15). Since 1998–99 energy use by the petroleum refining sector has declined by 10% and energy use by the electricity generation sector has increased by 15% since 1998–99.

### Energy end-use by sector

In 2003–04, Australia's end-users of energy, comprising household and industry (excluding the conversion sectors), used 3,545 PJ of energy (table 17.16). This is an increase of 8.7% compared with energy end-use in 1998–99.

The transport sector (including household transport) is the largest end-user of energy, using 1,251 PJ in 2003–04. In 2003–04, road transport accounted for 80% (1,004 PJ) of the transport sectors energy use, with the remaining contributors being air transport (162 PJ), water transport (54 PJ) and rail transport (32 PJ).

The manufacturing sector is also a large energy end-user, using 1,138 PJ of energy in 2003–04. Together with the transport sector, these two sectors account for 67% of total energy end-use.

### 17.15 ENERGY USED IN CONVERSION, By sector

	1998-99	2002-03	2003-04
	PJ	PJ	PJ
Coke oven operation	169	127	133
Briquetting	9	13	13
Petroleum refining	1 683	1 678	1 511
Electricity generation	2 025	2 235	2 334
Gas manufacturing	2	2	2
Other conversion(a)	104	72	78
Fuel used in conversion	213	263	239
<b>Total</b>	<b>4 205</b>	<b>4 390</b>	<b>4 310</b>

(a) Includes: return streams to refineries from the petrochemical industry; consumption of coke in blast furnaces; blast furnace gas manufacture; electricity produced through cogeneration; brown coal tar produced in tar manufacture.

Source: ABARE 2004b, 2005b, Table A.

Energy end-use in the commercial sector and residential sector has grown by 11% and 9% respectively since 1998–99.

### Residential energy use

Australia has a very high level of car ownership and use, and a high level of total personal travel. Table 17.17 shows, of people who work or study aged 18 years and over, the proportion driving to work or study has remained unchanged between 1996 (70.1%) and 2003 (70.3%).

The 1970s and 1980s saw an increase in the variety of energy-using home appliances available for purposes such as heating, cooling and cooking. Natural gas and electricity continue to be the key energy sources of space heating, water heating and cooking (table 17.18). In 2002, 81% of Australian residences had room heating, with the main energy source being natural gas for 34% of these residences (up from 31% in 1994), followed by electricity (31%) and wood (14%). Electricity is the major source of energy for both heating water (about 61% in 2002) and cooking (about 57% in 2002).

#### 17.16 ENERGY END-USE, By sector

	1998–99	2002–03	2003–04
	PJ	PJ	PJ
Agriculture	68	106	95
Mining	267	296	314
Manufacturing	1 004	1 122	1 138
Construction	49	28	28
Transport(a)	1 217	1 207	1 251
Commercial(b)	212	236	235
Residential(c)	386	413	421
Other(d)	58	60	63
<b>Total</b>	<b>3 261</b>	<b>3 467</b>	<b>3 545</b>

(a) Includes all transport use, including household motor vehicle use. (b) Includes wholesale and retail trade, communications, finance and insurance, property and business services, government administration and defence, education, health and community services, cultural and recreational services, and personal and other services, along with water, sewerage and drainage. (c) Transport use by households is included in transport. (d) Includes lubricants and greases, bitumen and solvents, as well as energy consumption in the gas production and distribution industries.

Source: ABARE 2004b, 2005b, Table A.

#### 17.17 TRANSPORT USED TO TRAVEL TO WORK OR STUDY, By persons travelling

	1996	2000	2003
	%	%	%
Car/truck/van as driver	70.1	72.2	70.3
Car/truck/van as passenger	5.0	5.1	4.2
Motorbike/motorscooter	1.0	0.7	0.6
Train	6.3	6.9	6.7
Bus	4.3	4.0	4.3
Tram/light rail	0.4	0.6	0.8
Ferry/boat	0.2	0.2	0.2
Taxi	0.2	0.1	*0.1
Bicycle	1.8	1.1	1.2
Walk	4.3	4.2	3.9
Other	0.3	0.3	0.1
Do not travel (work/study at home)	6.2	4.8	7.5

Source: *Environmental Issues: People's Views and Practices, March 2003* (4602.0).

### 17.18 PRINCIPAL FUEL TYPES USED IN DWELLINGS, Number of dwellings by purpose

	Room heating			Water heating			Cooking(a)	
	1994	1999	2002	1994	1999	2002	1999	2002
	'000	'000	'000	'000	'000	'000	'000	'000
Electricity	1 906.4	1 997.3	2 309.2	3 999.3	4 253.8	4 588.0	4 181.1	4 270.0
Gas	2 044.3	2 349.6	2 555.0	2 153.8	2 526.7	2 810.1	2 887.0	3 169.1
Wood	1 130.4	1 118.3	1 024.2	(b)	73.9	44.9	51.4	34.6
Solar	3.8	*0.8	*1.0	317.1	344.7	322.4	—	—
Oil	200.0	156.3	92.6	(b)	2.2	*1.9	0.9	—
Coal/coke	(b)	*2.7	*1.3	(b)	—	*0.6	—	—
Other	90.6	44.5	31.6	141.9	12.4	15.3	14.8	—
Don't know	(b)	*7.5	—	(b)	36.9	117.6	—	—
None	1 039.1	1 458.1	1 458.7	—	—	—	—	—
<b>Total dwellings</b>	<b>6 414.5</b>	<b>7 135.2</b>	<b>7 473.7</b>	<b>6 414.5</b>	<b>7 135.2</b>	<b>7 473.7</b>	<b>7 135.2</b>	<b>7 473.7</b>

(a) Not collected in 1994. (b) Included in Other.

Source: *Environmental Issues: People's Views and Practices, March 2002 (4602.0)*.

### Indicators of energy use

Australia's total energy consumption increased by 9% from 1998–99 to 2003–04. In this period the population increased by 6%, and gross domestic product (GDP) in chain volume terms increased by almost 18%. Consequently, there has been a

continuing decline in Australia's aggregate energy intensity, that is, energy consumed per unit of GDP over the five-year period. While electricity use (up 19% in 2003–04 compared to 1998–99) marginally outgrew population growth over the period, it broadly matched growth in GDP (table 17.19).

### 17.19 SELECTED ENERGY INDICATORS

	Energy consumption(a)	Electricity generation(b)	GDP(c)	Energy consumption per person	Electricity generation per person	Energy consumption/GDP	Electricity generation/GDP
	PJ	PJ	\$m	GJ/person(d)	GJ/person(d)	GJ/\$m	GJ/\$m
1998–99	4 884.7	674.9	667 780	258.1	35.7	7 315	1 011
1999–2000	4 971.0	703.9	692 889	259.5	36.8	7 174	1 016
2000–01	5 034.1	739.9	707 140	259.3	38.1	7 119	1 046
2001–02	5 110.8	752.7	734 575	260.2	38.3	6 957	1 025
2002–03	5 145.1	778.2	758 147	262.4	39.2	6 879	1 026
2003–04	5 345.7	800.0	786 754	265.8	39.8	6 795	1 017

(a) Primary plus derived energy. (b) Thermal electricity. (c) Chain volume measures, reference year is 2002–03. (d) Estimated residential population at 30 June.

Source: *Australian Demographic Statistics (3101.0)*; *Australian System of National Accounts, 2003–04 (5204.0)*; *ABARE 2004b, Table A, 2005b, Tables A and F*.

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## MANUFACTURING

Manufacturing broadly relates to the physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machinery or by hand. Manufacturing covers a range of production techniques ranging from computer-assisted production using robots to production of fine jewellery by hand.

The manufacturing industry contributed almost 11% to Australia's gross domestic product in 2003–04. Although the value of the manufacturing industry's gross value added has grown by 25% over the past 10 years, the industry's share of the total production of goods and services in the economy has fallen from 13% to its current level over the period.

In May 2005 there were a million people working in the manufacturing industry (including both full-time and part-time workers). This represented 11% of total people employed. The majority of those employed within the manufacturing industry were full-time workers (88%) and male (73%).

The manufacturing industry also dominates Australia's merchandise exports, accounting for 53% of the value of exports by industry of origin in 2004–05.



## Economic contribution of the manufacturing industry

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry Structure and Performance* chapter.

Total production of the manufacturing industry, as measured by industry GVA (in chain volume terms), increased in most years from 1983–84 to 2003–04 (graph 18.1). During this period, production increased by 53%. It has been steadily increasing since 1991–92.

Table 18.2 shows the industry GVA of the subdivisions (components) within the Manufacturing Division as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0). The table also shows the contribution of the manufacturing industry to Australia's GDP in the period 1999–2000 to 2003–04.

In this period, the manufacturing industry GVA (in chain volume terms) rose by 10%, while its contribution to GDP (in current prices) declined marginally from 11.4% in 1999–2000 to 10.9% in 2003–04.

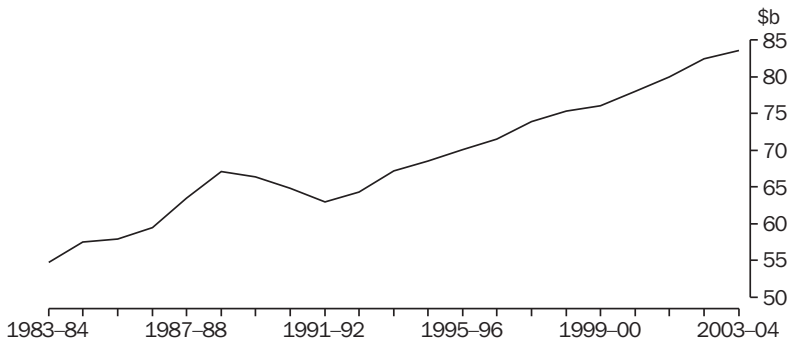
The largest increase in production in the period was for Other manufacturing (33%), followed by Non-metallic mineral product manufacturing (22%) and Machinery and equipment manufacturing (17%). Production for these industries had been growing progressively each year from 1999–2000.

Production for Textile, clothing, footwear and leather manufacturing fell by 26%. It was the only industry subdivision that recorded a fall over this period. Its production has been declining each year except for 2003–04 when an increase of 2.3% was recorded.

Between 2002–03 and 2003–04, production increased for all manufacturing subdivisions except for Petroleum, coal, chemical and associated product manufacturing (–2.2%) and Food, beverage and tobacco manufacturing (–0.3%). The largest increase was for Other manufacturing (5.4%).

The manufacturing industry is the largest contributor to Australia's export earnings. Its value of exports based on industry of origin accounted for 53% of total exports in 2004–05.

**18.1 MANUFACTURING PRODUCTION(a), Chain volume measures(b)**



(a) Industry gross value added. (b) Reference year for chain volume measures is 2002–03.

Source: *Australian System of National Accounts, 2003–04* (5204.0).

## 18.2 MANUFACTURING GROSS VALUE ADDED AND CONTRIBUTION TO GDP

Industry subdivision	Units	1999–2000	2000–01	2001–02	2002–03	2003–04	Percentage change from 1999–2000 to 2003–04
Industry gross value added(a)							
Food, beverage and tobacco manufacturing	\$m	15 279	15 954	15 813	15 892	15 844	3.7
Textile, clothing, footwear and leather manufacturing	\$m	3 521	3 250	2 838	2 551	2 610	-25.9
Wood and paper product manufacturing	\$m	5 065	4 939	5 224	5 333	5 476	8.1
Printing, publishing and recorded media	\$m	8 636	9 099	9 237	9 170	9 363	8.4
Petroleum, coal, chemical and associated product manufacturing	\$m	12 726	13 023	13 426	14 579	14 252	12.0
Non-metallic mineral product manufacturing	\$m	3 536	3 627	3 902	4 190	4 322	22.2
Metal product manufacturing	\$m	10 031	9 986	10 592	10 653	10 946	9.1
Machinery and equipment manufacturing	\$m	14 577	15 307	15 630	16 495	17 015	16.7
Other manufacturing	\$m	2 856	2 971	3 396	3 599	3 793	32.8
<b>Manufacturing(b)</b>	<b>\$m</b>	<b>76 009</b>	<b>77 991</b>	<b>80 022</b>	<b>82 462</b>	<b>83 622</b>	<b>10.0</b>
Contribution to GDP(c)	%	11.4	10.9	10.8	10.9	10.9	..

(a) Chain volume measures, reference year is 2002–03. (b) Chain volume measures for years other than 2002–03 and 2003–04 are not additive. (c) In current prices.

Source: Australian System of National Accounts, 2003–04 (5204.0).

### Structure and performance of the manufacturing industry

The major source for the statistics in this section is the annual Economic Activity Survey (EAS) of businesses conducted by the Australian Bureau of Statistics (ABS). Businesses in this collection are classified on the basis of their predominant activity, using the ANZSIC (1993 edition).

From 2001–02, estimates from EAS have been compiled using new statistical infrastructure. This new infrastructure makes better use of data available from the taxation system. As a consequence of this new infrastructure, a new statistical series has commenced from 2001–02, covering non-employing as well as employing businesses. More details are provided in *Manufacturing Industry, Australia, 2001–02 and 2002–03* (8221.0).

Production of an industry can be measured in terms of industry value added (IVA), in much the same way as industry GVA. However, unlike industry GVA (the national accounts concept of production), IVA is not adjusted for a number of national accounting conventions, as the information to make these adjustments cannot be collected in the EAS. The advantage of IVA, however, is the availability of more detailed (component) industry and state estimates of manufacturing production.

### Summary of operations in 2002–03

In 2002–03 manufacturing businesses paid \$54 billion (b) in labour costs, and generated \$309b of sales of goods and services income, and \$89b of IVA (table 18.3).

Food, beverage and tobacco manufacturing was the largest contributor to total manufacturing sales and service income and total manufacturing IVA. This industry's sales and service income of \$68b was 22% of the total for manufacturing, and its IVA of \$18b accounted for 20%. Other industry subdivisions making major contributions were: Machinery and equipment manufacturing (19% of sales and service income and 19% of IVA); Metal product manufacturing (18% for both measures); and Petroleum, coal, chemical and associated product manufacturing (17% and 13%).

### Contribution to state production

Table 18.4 shows the manufacturing industry's contribution to state production (in current prices). The trend for the manufacturing industry's share of total production in all states has generally been decreasing, even though Australian manufacturing production grew by 35% (in current prices) between 1996–97 and 2003–04. This is because the growth in manufacturing production has been at a slightly slower rate than the growth in other industries.

### 18.3 SUMMARY OF OPERATIONS — 2002–03

Manufacturing industry subdivision	Labour costs(a)	Sales of goods and service income(b)	Industry value added
	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	10 114.0	67 899.5	17 535.5
Textile, clothing, footwear and leather manufacturing	2 290.0	11 057.8	3 207.4
Wood and paper product manufacturing	3 297.0	18 104.8	6 346.3
Printing, publishing and recorded media	5 438.0	21 218.5	9 111.8
Petroleum, coal, chemical and associated product manufacturing	6 192.0	51 510.1	11 290.2
Non-metallic mineral product manufacturing	2 407.0	12 662.2	4 528.4
Metal product manufacturing	9 095.0	55 302.0	16 132.8
Machinery and equipment manufacturing	12 372.0	60 113.1	16 695.0
Other manufacturing	2 733.0	12 415.0	3 841.0
<b>Total manufacturing</b>	<b>53 938.0</b>	<b>309 283.1</b>	<b>88 688.3</b>

(a) Includes wages and salaries, payroll tax, fringe benefits taxes, workers compensation costs and employers contributions to superannuation. (b) Includes rent, leasing and hiring income.

Source: *Manufacturing Industry, Australia, 2001–02 and 2002–03* (8221.0).

### 18.4 MANUFACTURING INDUSTRY'S CONTRIBUTION TO STATE PRODUCTION(a)

	1996–97	1997–98	1998–99	1999–2000	2000–01	2001–02	2002–03	2003–04
	%	%	%	%	%	%	%	%
New South Wales	13.7	13.9	13.4	12.9	12.2	12.0	12.1	12.1
Victoria	17.3	17.2	16.1	15.5	14.9	14.6	14.8	14.9
Queensland	11.0	11.3	10.8	10.0	10.1	10.0	9.9	9.9
South Australia	16.6	17.0	15.4	14.8	14.0	14.0	14.4	14.2
Western Australia	9.3	9.4	8.9	8.3	8.6	8.3	9.1	9.0
Tasmania	14.6	14.7	15.0	14.7	14.4	14.1	14.0	13.7
Northern Territory	4.3	4.5	3.8	3.8	3.3	3.8	3.8	3.6
Australian Capital Territory	2.2	1.9	1.7	1.8	1.8	1.8	1.7	1.6

(a) State production as measured by total factor income (in current prices).

Source: *Australian National Accounts: State Accounts, 2003–04* (5220.0).

### State distribution of activity

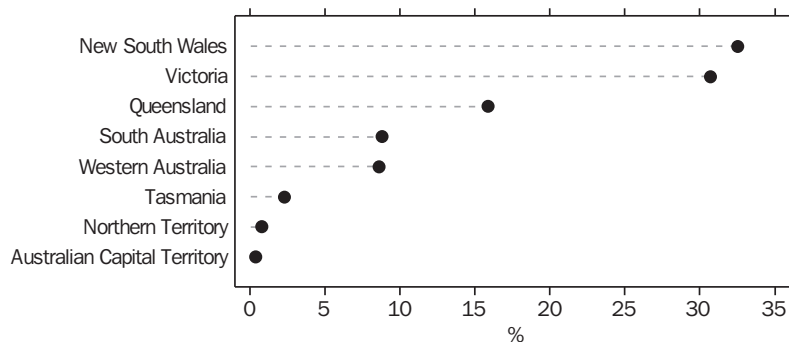
Graph 18.5 shows the relative contributions to overall manufacturing production by states and territories in 2002–03. New South Wales and Victoria continued to be the largest contributors to manufacturing production, accounting for 33% (\$29b) and 31% (\$27b) respectively. Together they contributed 63% of total manufacturing production. Of the other states, Queensland accounted for 16%, South Australia 8.8%, Western Australia 8.6% and Tasmania 2% of total manufacturing production. The Northern Territory and Australian Capital Territory both contributed less than 1% to total manufacturing production.

Table 18.6 shows the production by manufacturing industry subdivision by state and territory. In 2002–03, New South Wales

contributed 43% of the total IVA of the Printing, publishing and recorded media industry (\$9.1b) and between 30% and 34% of the total IVA of the remaining manufacturing industries. Victoria contributed 49% of the total IVA of the Textile, clothing, footwear and leather manufacturing industry (\$3.2b), 37% of the total IVA of the Petroleum, coal, chemical and associated product manufacturing industry (\$11.3b), and between 23% and 35% of the total IVA of the remaining manufacturing industries.

Food, beverage and tobacco manufacturing, and Machinery and equipment manufacturing were the largest manufacturing industries in New South Wales and Victoria, accounting for 21% and 17% respectively of the manufacturing IVA for New South Wales, and 19% and 22% for Victoria.

### 18.5 MANUFACTURING PRODUCTION(a), By state and territory — 2002–03



(a) Production is measured by industry value added.

Source: *Manufacturing Industry, Australia, 2001–02 and 2002–03 (8221.0)*.

### 18.6 INDUSTRY VALUE ADDED — 2002–03

Manufacturing industry subdivision	NSW \$m	Vic. \$m	Qld \$m	SA \$m	WA \$m	Tas. \$m	NT \$m	ACT \$m	Aust. \$m
Food, beverage and tobacco manufacturing	6 042.7	5 155.4	2 926.4	1 747.3	1 100.8	501.4	30.2	31.2	17 535.5
Textile, clothing, footwear and leather manufacturing	946.9	1 566.2	295.6	147.1	169.1	68.9	n.p.	n.p.	3 207.4
Wood and paper product manufacturing	1 963.5	1 661.7	1 066.5	678.0	386.1	546.4	4.5	39.6	6 346.3
Printing, publishing and recorded media	3 886.6	2 657.4	1 107.5	589.3	599.1	102.0	33.6	136.1	9 111.8
Petroleum, coal, chemical and associated product manufacturing	3 426.0	4 195.8	1 380.3	766.7	1 298.2	167.7	39.5	16.1	11 290.2
Non-metallic mineral product manufacturing	1 482.8	1 212.6	717.9	359.6	560.7	126.9	39.6	28.2	4 528.4
Metal product manufacturing	4 883.0	3 694.9	3 773.9	982.9	1 978.9	315.8	n.p.	n.p.	16 132.8
Machinery and equipment manufacturing	4 942.5	5 900.6	2 095.6	2 269.4	1 190.7	194.4	42.3	59.4	16 695.0
Other manufacturing	1 252.3	1 211.7	709.4	259.9	334.2	36.0	n.p.	n.p.	3 841.0
<b>Total manufacturing</b>	<b>28 826.5</b>	<b>27 256.3</b>	<b>14 073.0</b>	<b>7 800.3</b>	<b>7 617.9</b>	<b>2 059.6</b>	<b>687.8</b>	<b>366.8</b>	<b>88 688.3</b>

Source: *Manufacturing Industry, Australia, 2001–02 and 2002–03 (8221.0)*.

Queensland contributed 23% of the total IVA for Metal product manufacturing which was also the largest manufacturing industry (27%) in this state. The contributions of South Australia and Western Australia to total manufacturing IVA were \$7.8b and \$7.6b respectively, although the structure of the manufacturing industry was very different. Machinery and equipment manufacturing was the largest manufacturing industry in South Australia, accounting for 29% of state production and 14% of the total IVA for the industry. South Australia also contributed between 5% and 11% of the total IVA of the remaining manufacturing industries. Western Australia contributed more than 12% of

both Non-metallic mineral product manufacturing and of total IVA for Metal product manufacturing. Metal product manufacturing was the largest manufacturing industry in the state, accounting for 26% of state production.

Manufacturing was not as significant for the remaining state and territories. Tasmania, which accounted for \$2.1b of total manufacturing IVA, contributed 9% of total IVA for Wood and paper product manufacturing. The total production for the Northern Territory and the Australian Capital Territory were \$0.7b and \$0.4b respectively.

## Employment

The number of full-time and part-time workers in each manufacturing subdivision is provided in table 18.7. The table includes directors who are not paid a salary and self-employed people (such as contractors, owner/drivers, consultants and people paid solely by commission without a retainer).

In May 2005 the manufacturing industry employed 11% of total people employed in Australia (9,969,700). Males outnumbered females by a ratio of almost 3 to 1 (73% males and 27% females). The majority of people employed in the manufacturing industry were employed full time (94% of males and 70% of females), which is higher than the proportion of people employed full time in all industries (85% of males and 54% of females).

The largest employers of males were Machinery and equipment manufacturing (173,100) and Metal product manufacturing (130,000). The largest employers of females were Food, beverage and tobacco manufacturing (69,200) and Printing, publishing and recorded media (46,000).

Further information on employed wage and salary earners and the characteristics of the manufacturing labour force is provided in the *Labour* chapter.

Table 18.8 presents information on average weekly earnings (i.e. ordinary time earnings plus overtime earnings) of employees in the manufacturing industry and all industries. Between May 1985 and May 2005 the average earnings of all employees (male and female) increased by \$564 (156%) in the manufacturing industry, which was higher than the increase of \$446 (129%) for all industries. The average earnings of full-time employees experienced similar changes between May 1985 and May 2005, increasing by \$637 (164%) in the manufacturing industry and \$652 (160%) for all industries.

In the manufacturing industry, the earnings of both male and female full-time employees increased but the increase for female employees was 20 percentage points more than the increase for male employees, although female earnings came from a lower base and were still well below average male earnings. The difference between the earnings of males and females had decreased between May 1985 and May 2005. The average weekly earnings for male full-time employees at May 2005 was higher by \$231 (27%) than for female full-time employees. In May 1985 male full-time employees were earning \$113 (38%) more than female full-time employees.

### 18.7 PERSONS EMPLOYED IN MANUFACTURING INDUSTRY — May 2005

Manufacturing industry subdivision	Males			Females			Persons		
	Full time	Part time	Total	Full time	Part time	Total	Full time	Part time	Total
	'000	'000	'000	'000	'000	'000	'000	'000	'000
Food, beverage and tobacco manufacturing	117.2	10.3	127.5	46.6	22.6	69.2	163.8	32.9	196.6
Textile, clothing, footwear and leather manufacturing	17.7	1.6	19.3	24.2	9.0	33.2	41.9	10.5	52.5
Wood and paper product manufacturing	56.6	2.5	59.1	7.5	3.5	11.0	64.1	6.0	70.1
Printing, publishing and recorded media	57.2	6.1	63.3	31.4	14.7	46.0	88.5	20.8	109.3
Petroleum, coal, chemical and associated product manufacturing	59.8	3.5	63.3	20.5	7.6	28.1	80.3	11.2	91.4
Non-metallic mineral product manufacturing	32.4	1.3	33.7	3.9	1.8	5.7	36.4	3.1	39.4
Metal product manufacturing	126.1	3.9	130.0	13.1	6.9	19.9	139.1	10.8	149.9
Machinery and equipment manufacturing	167.3	5.8	173.1	27.5	10.6	38.1	194.8	16.4	211.2
Other manufacturing	51.6	5.3	56.9	10.3	4.5	14.7	61.9	9.7	71.6
<b>Total manufacturing(a)</b>	<b>741.5</b>	<b>43.8</b>	<b>785.3</b>	<b>201.7</b>	<b>86.8</b>	<b>288.5</b>	<b>943.2</b>	<b>130.6</b>	<b>1 073.9</b>

(a) Includes 72,500 persons employed full time and 9,300 persons employed part time not classified to an industry subdivision.

Source: *Labour Force Australia, Detailed – Electronic Delivery* (6291.0.55.001); *Australian Labour Statistics, July 2005* (6105.0).

## 18.8 AVERAGE WEEKLY EARNINGS(a)(b)

	All employees			Full-time employees		
	May 1985	May 2005	Change from May 1985 to May 2005	May 1985	May 2005	Change from May 1985 to May 2005
	\$	\$	%	\$	\$	%
<b>Males</b>						
Manufacturing	392.60	1 004.60	155.9	414.60	1 073.00	158.8
All industries	397.20	942.70	137.3	435.50	1 136.90	161.1
<b>Females</b>						
Manufacturing	272.40	700.30	157.1	301.50	841.90	179.2
All industries	263.40	620.20	135.5	343.10	917.50	167.4
<b>Persons</b>						
Manufacturing	362.00	926.00	155.8	388.70	1 025.50	163.8
All industries	344.10	789.70	129.5	406.90	1 058.50	160.1

(a) Derived by dividing estimates of weekly total earnings (including overtime) by estimates of number of employees. Changes in average weekly earnings may be affected not only by changes in the level of earnings of employees but also by changes in the overall composition of the wage and salary earner segment of the labour force. (b) The actual reference period is the last pay period ending on or before the third Friday of the middle month of the quarter.

Source: *Average Weekly Earnings, Australia* (6302.0).

### Operating profit before tax (OPBT)

The OPBT shows profits earned by all manufacturing businesses before extraordinary items are brought into account, and the deduction of tax and dividends paid.

Profits for eight industry subdivisions were higher in 2002–03 than they were for 2001–02 (table 18.9). Only the Food, beverage and tobacco manufacturing subdivision had lower profits in 2002–03 (down 15% or \$0.7b). The Petroleum, coal, chemical and associated product manufacturing subdivision experienced the greatest increase in profits between 2001–02 and 2002–03 (53% or \$1.0b). Other subdivisions that experienced substantial profit growth in the last financial year include: Non-metallic mineral product manufacturing (39% or \$0.4b); Wood and paper product manufacturing (32% or \$0.4b); and Textile, clothing, footwear and leather manufacturing (29% or \$0.1b). All the OPBT for total manufacturing increased by 14% or \$2.7b between 2001–02 and 2002–03.

Industry subdivisions contributing most to manufacturing industry profits for 2002–03 were: Metal product manufacturing (23% of total manufacturing OPBT); Food, beverage and tobacco manufacturing (19%); Petroleum, coal,

chemical and associated product manufacturing (13%); and Machinery and equipment manufacturing (12%).

### Capital expenditure

Capital expenditure by the manufacturing industry increased by \$1,361 million (m) (12%) from 2001–02 to 2002–03 (table 18.10).

A majority of manufacturing industry subdivisions recorded increases in capital expenditure in this period. The largest increases in percentage terms were in Food, beverage and tobacco manufacturing (32% or \$813m); Non-metallic mineral product manufacturing (27% or \$173m); and Printing, publishing and recorded media (26% or \$229m). These increases were partly offset by decreases in expenditure in Other manufacturing (20% or \$74m) and Metal product manufacturing (15% or \$379m).

The manufacturing industry subdivisions with largest capital expenditure were: Food, beverage and tobacco manufacturing (26% of total manufacturing capital expenditure); Machinery and equipment manufacturing (18%); Metal product manufacturing (17%); and Petroleum, coal, chemical and associated product manufacturing (13%).

## 18.9 OPERATING PROFIT BEFORE TAX

Manufacturing industry subdivision	2001-02	2002-03	Change from 2001-02 to 2002-03	Sub-division contribution to total, 2002-03
	\$m	\$m	%	%
Food, beverage and tobacco manufacturing	4 819.5	4 093.2	-15.1	19.1
Textile, clothing, footwear and leather manufacturing	438.9	564.3	28.6	2.6
Wood and paper product manufacturing	1 313.6	1 737.2	32.2	8.1
Printing, publishing and recorded media	2 005.6	2 521.9	25.7	11.8
Petroleum, coal, chemical and associated product manufacturing	1 877.7	2 882.2	53.5	13.5
Non-metallic mineral product manufacturing	994.2	1 383.8	39.2	6.5
Metal product manufacturing	4 169.4	4 843.9	16.2	22.6
Machinery and equipment manufacturing	2 432.6	2 644.3	8.7	12.3
Other manufacturing	692.4	750.6	8.4	3.5
<b>Total manufacturing</b>	<b>18 743.9</b>	<b>21 421.4</b>	<b>14.3</b>	<b>100.0</b>

Source: *Manufacturing Industry, Australia, 2001-02 and 2002-03 – Data cube (8221.0).*

## 18.10 CAPITAL EXPENDITURE

Manufacturing industry subdivision	2001-02	2002-03	Change from 2001-02 to 2002-03	Sub-division contribution to total, 2002-03
	\$m	\$m	%	%
Food, beverage and tobacco manufacturing	2 573.8	3 387.1	31.6	26.1
Textile, clothing, footwear and leather manufacturing	278.3	309.4	11.2	2.4
Wood and paper product manufacturing	650.0	760.7	17.0	5.9
Printing, publishing and recorded media	891.1	1 120.4	25.7	8.6
Petroleum, coal, chemical and associated product manufacturing	1 451.0	1 737.0	19.7	13.4
Non-metallic mineral product manufacturing	650.8	823.9	26.6	6.3
Metal product manufacturing	2 570.8	2 191.6	-14.8	16.9
Machinery and equipment manufacturing	2 174.1	2 344.1	7.8	18.1
Other manufacturing	374.3	300.8	-19.6	2.3
<b>Total manufacturing</b>	<b>11 614.2</b>	<b>12 974.9</b>	<b>11.7</b>	<b>100.0</b>

Source: *Manufacturing Industry, Australia, 2001-02 and 2002-03 (8221.0).*

## International trade by industry of origin

### Exports by industry of origin

The manufacturing industry dominates Australia's value of exports by industry of origin, accounting for 53% of total exports in 2004-05 (table 18.11). The value of manufacturing exports was 38% higher in 2004-05 than in 1995-96. However, the manufacturing industry share of total value of exports has been trending down each year since the high of 64% in 1995-96.

Graph 18.12 shows the five main destinations for manufacturing commodities exported from Australia, during the period 1998-99 to 2004-05. Of these, the key destinations were Japan, New Zealand (NZ) and the United States of America (USA). Japan was the destination where most exports were directed to before it was overtaken by exports to the USA in 2000-01. In 2004-05, exports

to the USA fell below the exports to Japan and NZ. The value of exports to the USA was \$7.4b, compared with \$8.1b to Japan and \$7.5b to NZ.

### Imports by industry of origin

The manufacturing industry accounted for more than 90% of Australia's value of imports by industry of origin during the period 1995-96 to 2004-05 (table 18.13). The value of Australia's imports of manufactured goods was 88% more in 2004-05 than in 1995-96.

Graph 18.14 shows the value of manufacturing commodities imported from five main countries to Australia, in the period 1998-99 to 2004-05. In each year of this period, Australia imported more manufactured goods from the USA than from any other country. In 2004-05 China overtook Japan as the country providing the second largest amount of imports. The value of imports from China grew more than three times from \$6b in 1998-99 to \$19b in 2004-05.



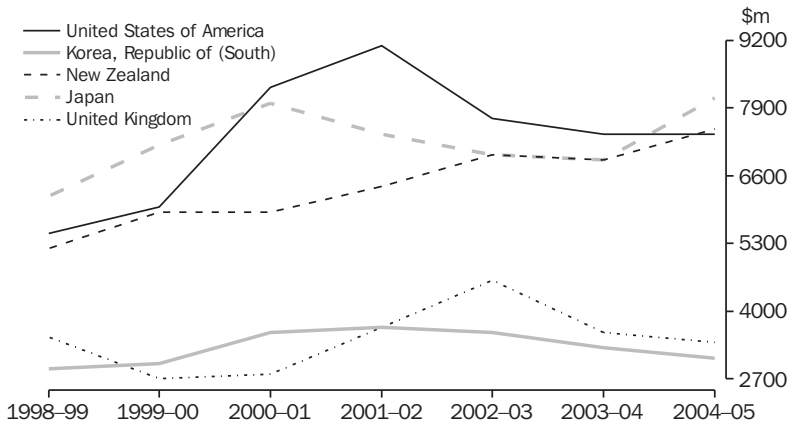
### 18.11 VALUE OF MERCHANDISE EXPORTS OF GOODS, By industry of origin(a)

	Manufacturing	All industries	Manufacturing share of total exports
	\$m	\$m	%
1995-96	48 787	76 005	64.2
1996-97	48 494	78 932	61.4
1997-98	53 301	87 768	60.7
1998-99	52 073	85 991	60.6
1999-2000	57 982	97 286	59.6
2000-01	69 128	119 539	57.8
2001-02	69 111	121 108	57.1
2002-03	65 810	115 479	57.0
2003-04	62 442	108 906	57.3
2004-05	67 475	126 483	53.3

(a) On a free-on-board basis.

Source: ABS data available on request, *International Trade*.

### 18.12 MANUFACTURING EXPORTS, Main destinations



Source: ABS data available on request, *International Trade*.

### 18.13 VALUE OF MERCHANDISE IMPORTS OF GOODS, By industry of origin(a)

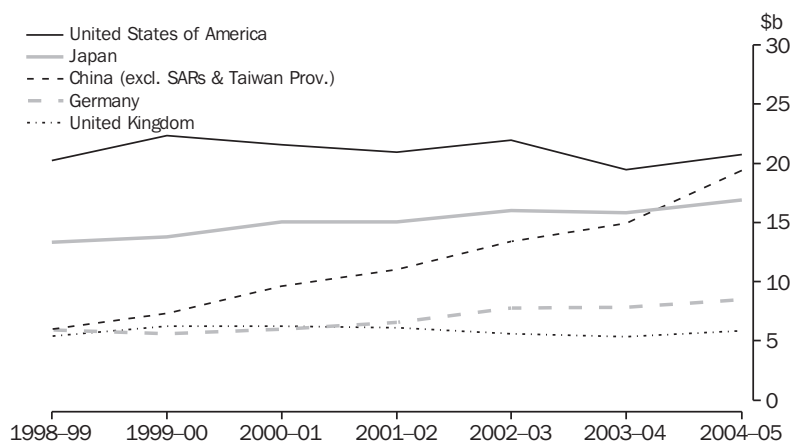
	Manufacturing	All industries	Manufacturing share of total imports
	\$m	\$m	%
1995-96	73 545	77 792	94.5
1996-97	73 747	78 998	93.4
1997-98	85 746	90 684	94.6
1998-99	92 437	97 611	94.7
1999-2000	102 382	110 078	93.0
2000-01	108 331	118 317	91.6
2001-02	111 162	119 649	92.9
2002-03	123 041	133 129	92.4
2003-04	122 844	130 997	93.8
2004-05	138 042	149 522	92.3

(a) Customs value.

Source: ABS data available on request, *International Trade*.



### 18.14 MANUFACTURING IMPORTS(a), Selected countries



(a) Customs value.

Source: ABS data available on request, *International Trade*.

## Manufactured commodities

Table 18.15 shows the quantities produced of selected manufactured commodities for the period 2000-01 to 2003-04.

The largest increases in production between 2000-01 and 2003-04 were experienced in the unfortified wines (including red, white and rose wines) and ready mixed concrete. Production of these commodities increased by 36% and 30% respectively.

In the same period, declines in production were recorded for most of the other selected food products and beverages; the largest was for brandy spirit (27%) and butter (24%). These decreases in production were the result of the drought which began to be felt in the manufacturing industry in 2002-03 and continued in 2003-04. The volume of butter and cheese produced which depended on fresh produce fell in both these years. Similarly red meat and chicken meat production fell in 2003-04 after a small increase in 2002-03. Production of brandy and unfortified wine increased by 54% and 35% respectively in 2003-04 after experiencing a fall in 2002-03.

Production levels of major textiles commodities have decreased substantially between 2000-01 to 2003-04. Production of cotton yarns, and wool and man-made fibre tops were respectively 66% and 65% lower in 2003-04 than in 2000-01. The largest decreases in percentage terms for these commodities occurred in 2003-04.

Most petroleum products decreased during 2000-01 to 2003-04, fuel oil production with a decrease of 43% leading this trend. Production of automotive gasoline fell by 0.1% and 3.4% in 2002-03 and 2003-04 after rising by 0.6% in 2001-02. Among the metal products, the largest increase in production was for raw steel (18%).

Production of selected building materials, including portland cement and clay bricks, steadily rose over the 2000-01 to 2003-04 period.

## International trade in manufactured commodities

### Principal commodities exported

Table 18.16 provides details of the 20 main manufacturing commodities exported from Australia, in the period 2000-01 to 2004-05. These commodities contributed 41% in total of the value of all merchandise exports in 2004-05. Manufactured commodities made up 53% of the value of all merchandise exports.

The individual contributions to the total value of exports for most of these selected commodities had fallen to a level where only two commodities in 2004-05 contributed 5% or more of the total merchandise exports – petroleum, petroleum products and related materials (5.4%), and non-ferrous metals (5.3%).

### 18.15 MANUFACTURING PRODUCTION, Selected commodities

	Units	2000-01	2001-02	2002-03	2003-04	Percentage change from 2000-01 to 2003-04
<b>Selected vehicles</b>						
Cars and station wagons for fewer than ten persons	no.	340 099	318 951	358 286	413 655	21.6
<b>Selected food products and beverages</b>						
Brandy spirit	'000 L	640	417	302	466	-27.2
Grape spirit	'000 L	4 456	6 731	n.p.	n.p.	n.p.
Unfortified wine	'000 L	1 016 306	1 150 854	1 019 393	1 381 064	35.9
Red meat	'000 t	3 200	3 067	3 090	3 000	-6.3
Chicken meat	'000 t	620	667	689	684	10.3
Milk	ML	10 545	11 271	10 326	10 065	-4.6
Cheese	'000 t	376	431	368	364	-3.2
Butter	'000 t	172	178	149	130	-24.4
Beer	ML	1 745	1 744	1 727	1 736	-0.5
Sugar(a)	'000 t	4 162	4 987	5 461	4 994	20.0
Tobacco and cigarettes	t	19 124	18 367	19 561	18 785	-1.8
<b>Selected textiles</b>						
Scoured and carbonised wool	t	124 679	99 924	88 663	79 213	-36.5
Wool and man-made fibre tops	t	61 315	53 828	38 903	21 263	-65.3
Wool yarn	t	14 894	15 815	14 546	12 925	-13.2
Cotton yarn	t	33 203	26 926	17 902	11 235	-66.2
<b>Selected petroleum and metal products</b>						
Automotive gasoline	ML	17 887	18 000	17 984	17 375	-2.9
Fuel oil	ML	1 951	1 684	1 441	1 105	-43.4
Automotive diesel oil	ML	13 212	13 064	13 335	12 544	-5.1
Aviation turbine fuel	ML	5 836	5 390	5 149	4 964	-14.9
Alumina	'000 t	16 098	16 417	16 413	16 796	4.3
Pig iron	'000 t	6 096	6 169	6 634	6 624	8.7
Raw steel	'000 t	8 003	8 311	9 399	9 445	18.0
<b>Selected paper and wood products</b>						
Newsprint	'000 t	391	398	407	421	7.7
Wood pulp	'000 t	895	843	877	869	-2.9
Sawnwood(b)(c)	'000 m <sup>3</sup>	3 525	3 637	3 732	4 037	14.5
Hardwood woodchips	'000 t	6 401	5 912	7 079	6 892	7.7
<b>Selected building materials</b>						
Portland cement	'000 t	6 821	7 236	7 517	8 460	24.0
Clay bricks	m	1 436	1 516	1 639	1 685	17.3
Ready mixed concrete	'000 m <sup>3</sup>	17 251	19 447	21 003	22 468	30.2

(a) Raw tonnes actual. (b) Includes Broadleaved and Coniferous. (c) From July 2000, includes railway sleeper production that can no longer be separately identified.

Source: Australian Wine and Grape Industry, (1329.0); Manufacturing Production, Australia, (8301.0); ABS data available on request, Manufacturing Production Survey; ABARE, Australian Commodity Statistics, 2004; ABARE, Australian Forest and Wood Product Statistics, September and December quarters, 2004.

## 18.16 EXPORTS OF SELECTED MANUFACTURED COMMODITIES

Commodities as defined by the Standard International Trade Classification (SITC)	2000-01	2003-04	2004-05	Change from 2000-01 to 2004-05	Change from 2003-04 to 2004-05	Share of total exports 2004-05
	\$m	\$m	\$m	%	%	%
Petroleum, petroleum products and related materials	10 857.8	6 648.5	8 073.0	-25.6	21.4	5.4
Non-ferrous metals	9 403.7	6 815.5	7 950.2	-15.5	16.6	5.3
Meat and meat preparations	5 796.4	5 756.8	6 943.6	19.8	20.6	4.6
Gold, non-monetary (excl. gold ores and concentrates)	5 110.3	5 651.5	5 641.6	10.4	-0.2	3.8
Cereals and cereal preparations	5 936.4	5 094.0	5 159.0	-13.1	1.3	3.5
Road vehicles (incl. air-cushion vehicles)	3 840.5	4 156.8	3 920.2	2.1	-5.7	2.6
Textile fibres and their wastes (not manufactured into yarn or fabric)	5 600.1	3 504.0	3 297.0	-41.1	-5.9	2.2
Medicinal and pharmaceutical products	2 230.5	2 435.0	2 859.6	28.2	17.4	1.9
Beverages	1 931.5	2 636.6	2 836.3	46.8	7.6	1.9
Dairy products and birds' eggs	2 970.9	2 164.9	2 370.0	-20.2	9.5	1.6
Electrical machinery, apparatus, appliances, parts (incl. non-elec. counterparts of electrical domestic equipment)	1 719.7	1 463.9	1 572.8	-8.5	7.4	1.1
General industrial machinery and equipment, nes and machine parts, n.e.s.	1 220.6	1 229.0	1 436.4	17.7	16.9	1.0
Professional, scientific and controlling instruments and apparatus, n.e.s.	1 253.5	1 221.1	1 394.3	11.2	14.2	0.9
Machinery specialised for particular industries	1 344.5	1 144.2	1 254.6	-6.7	9.6	0.8
Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof	1 718.3	1 320.7	1 236.8	-28.0	-6.4	0.8
Office machines and automatic data processing machines	1 563.7	1 213.0	1 144.4	-26.8	-5.7	0.8
Cork and wood	886.4	991.5	1 050.0	18.5	5.9	0.7
Transport equipment (excl. road vehicles)	1 199.8	998.8	1 022.4	-14.8	2.4	0.7
Telecommunications and sound recording and reproducing apparatus and equipment	1 454.5	761.7	914.4	-37.1	20.0	0.6
Non-metallic mineral manufactures, n.e.s.	1 025.0	840.6	844.0	-17.7	0.4	0.6

Source: ABS data available on request, *International Trade*.

### Principal commodities imported

Table 18.17 provides details of the 20 main manufactured commodities imported into Australia during the period 2000-01 to 2004-05. These commodities contributed 78% in total of the value of all merchandise imports in 2004-05. Manufactured commodities comprised 92% of the value of all merchandise imports.

In comparing the main commodities Australia exported with the main commodities imported in terms of value, it is apparent many of Australia's manufactured exports are simply transformed manufactured commodities such as food products and metals, while the majority of manufactured imports are elaborately transformed commodities such as machinery and equipment.

The major commodity imported into Australia between 2000-01 and 2004-05 was road vehicles, which represented 13% of the total value of imports in 2004-05. Petroleum, petroleum products and related materials made up 10% of imports.

This has been a period of growth for imports of most of the main manufactured commodities. The value of imports of road vehicles (including air-cushion vehicles), and petroleum, petroleum products and related materials increased by 36% (\$5.2b) and 44% (\$4.6b), while the value of imports of iron and steel more than doubled over the period.

In 2004-05, the largest increase in the value of imports in percentage terms was for iron and steel (57%, \$1.2b), though in value terms, the largest increase was for petroleum, petroleum products and related materials (\$5.0b).

### 18.17 IMPORTS OF SELECTED MANUFACTURED COMMODITIES(a)

	2000–01	2003–04	2004–05	Change	Change	Share of total imports 2004–05
				from 2000–01 to 2004–05	from 2003–04 to 2004–05	
Commodities as defined by the Standard International Trade Classification (SITC)	\$m	\$m	\$m	%	%	%
Road vehicles (incl. air-cushion vehicles)	14 346.0	17 831.3	19 567.5	36.4	9.7	13.1
Petroleum, petroleum products and related materials	10 369.1	9 919.5	14 954.9	44.2	50.8	10.0
Office machines and automatic data processing machines	8 318.7	7 739.0	8 523.1	2.5	10.1	5.7
Telecommunications and sound recording and reproducing apparatus and equipment	7 929.9	7 480.4	8 568.7	8.1	14.5	5.7
General industrial machinery and equipment, n.e.s. and machine parts, n.e.s.	5 726.1	7 033.0	8 113.0	41.7	15.4	5.4
Electrical machinery, apparatus, appliances, parts (incl. non-elec. counterparts of electrical domestic equipment)	6 791.2	7 018.0	7 748.5	14.1	10.4	5.2
Medicinal and pharmaceutical products	4 370.0	5 906.2	6 917.2	58.3	17.1	4.6
Machinery specialised for particular industries	3 834.6	5 038.2	5 947.7	55.1	18.1	4.0
Transport equipment (excl. road vehicles)	3 409.2	4 629.2	4 364.2	28.0	-5.7	2.9
Articles of apparel and clothing accessories	3 187.0	3 366.3	3 882.0	21.8	15.3	2.6
Professional, scientific and controlling instruments and apparatus, n.e.s.	2 741.9	3 213.5	3 598.9	31.3	12.0	2.4
Manufactures of metals, n.e.s.	2 710.0	3 189.6	3 734.3	37.8	17.1	2.5
Power generating machinery and equipment	2 700.2	2 959.7	3 519.3	30.3	18.9	2.4
Gold, non-monetary (excl. gold ores and concentrates)	1 688.3	2 562.3	2 465.6	46.0	-3.8	1.6
Textile yarn, fabrics, made-up articles, n.e.s., and related products	2 606.9	2 457.4	2 425.2	-7.0	-1.3	1.6
Paper, paperboard, and articles of paper pulp, of paper or of paperboard	2 444.1	2 450.0	2 549.8	4.3	4.1	1.7
Organic chemicals	2 854.2	2 363.1	2 741.7	-3.9	16.0	1.8
Non-metallic mineral manufactures, n.e.s.	1 871.2	2 099.1	2 133.2	14.0	1.6	1.4
Iron and steel	1 429.7	2 026.2	3 186.3	122.9	57.3	2.1
Rubber manufactures, n.e.s.	1 412.0	1 711.6	1 896.2	34.3	10.8	1.3

(a) Customs value.

Source: ABS data available on request, *International Trade*.

## Price indexes

The ABS compiles two price indexes relating to the manufacturing industry – the Price Index of Materials Used in Manufacturing Industries, and the Price Index of Articles Produced by Manufacturing Industries. These indexes measure movements in the prices of materials used, and articles produced, by establishments classified to the Manufacturing Division of ANZSIC (1993 edition). The Price Index of Materials Used in Manufacturing Industries consists of two broad components, materials used in manufacturing that are sourced domestically and materials used in manufacturing that are imported and these contribute approximately 65% and 35%,

respectively, to the total index. More information on the concepts underlying these indexes and other price indexes compiled by the ABS is provided in the *Prices* chapter.

Tables 18.18 and 18.19 provide index numbers for selected components of the two price indexes.

The price of materials used in manufacturing increased by more than 18% between 1999–2000 and 2004–05, driven mainly by increases in the price of domestic materials. In 2004–05, the price of domestic materials was 31% higher than the price in 1999–2000, while the price of imported materials was only 2% higher.

In 2004–05, the price of materials used in manufacturing increased by almost 9%. Increases occurred for the materials used in most manufacturing industries. The largest increase in price was for the materials used in petroleum and coal products manufacturing (32%), followed by the materials used for rubber and plastics (14%), basic metal products (14%) and fabricated metal products (12%) industries.

The price of articles produced by manufacturing increased by almost 16% between 1999–2000 and 2004–05.

In 2004–05, the largest increase in the price of articles produced was in the petroleum and coal products industry at 31%, followed by increases in the price of basic metal products manufacturing (21%).

### 18.18 PRICE INDEXES(a)(b), Materials used in manufacturing industries

Industry	1999–2000	2003–04	2004–05	Change from 1999–2000 to 2004–05	Change from 2003–04 to 2004–05
	Index	Index	Index	%	%
Food, beverages and tobacco	110.8	136.5	141.8	27.9	3.9
Textiles and textile products	91.6	100.5	101.0	10.3	0.5
Knitting mills and clothing	102.6	103.2	104.4	1.7	1.1
Footwear	107.4	124.1	122.2	13.8	-1.6
Leather and leather products	97.8	86.0	87.6	-10.4	1.9
Log sawmilling and other wood products	123.0	125.2	126.6	2.9	1.1
Paper and paper products	99.8	103.1	103.1	3.4	0.0
Printing, publishing and recorded media	107.7	110.3	108.0	0.3	-2.1
Petroleum and coal products	157.8	164.0	216.9	37.5	32.2
Chemicals	114.0	116.9	121.3	6.4	3.7
Rubber and plastics	110.8	117.5	134.4	21.3	14.4
Non-metallic mineral products	110.7	128.8	135.9	22.7	5.5
Basic metal products	92.5	102.0	116.0	25.4	13.7
Fabricated metal products	106.1	114.0	127.4	20.0	11.8
Transport equipment and parts	120.5	120.4	126.2	4.7	4.8
Electronic equipment and other machinery	103.4	107.1	117.1	13.2	9.4
Other manufacturing	118.8	120.9	132.5	11.6	9.6
<b>All materials</b>	<b>115.8</b>	<b>125.9</b>	<b>137.1</b>	<b>18.4</b>	<b>8.9</b>

(a) Reference base of index: 1989–90 = 100.0. (b) The index is on a net basis and relates in concept only to transactions in materials used in the industry that are produced from other industries or from overseas.

Source: *Producer Price Indexes, Australia, various issues (6427.0)*.

### 18.19 PRICE INDEXES(a)(b), Articles produced in manufacturing industries

Industry	1999–2000	2003–04	2004–05	Change from 1999–2000 to 2004–05	Change from 2003–04 to 2004–05
	Index	Index	Index	%	%
Food, beverages and tobacco	125.1	139.9	146.2	16.9	4.5
Textiles and textile products	103.8	116.7	116.3	12.0	-0.4
Knitting mills, clothing, footwear and leather	119.5	124.2	123.9	3.6	-0.2
Log sawmilling and other wood products	126.0	139.1	140.5	11.5	1.0
Paper and paper products	111.3	117.8	117.4	5.4	-0.4
Printing, publishing and recorded media	148.9	155.7	157.3	5.6	1.1
Petroleum and coal products	137.5	173.3	226.8	64.9	30.9
Chemicals	111.8	114.5	120.8	8.1	5.4
Rubber and plastics	114.9	124.7	130.8	13.8	4.9
Non-metallic mineral products	117.5	129.2	131.2	11.6	1.5
Basic metal products	104.8	106.7	129.4	23.4	21.3
Fabricated metal products	115.2	125.3	133.6	16.0	6.6
Transport equipment and parts	119.6	127.0	126.1	5.4	-0.8
Electronic equipment and other machinery	109.9	113.1	115.9	5.5	2.5
Other manufacturing	123.9	127.8	131.6	6.2	3.0
<b>All articles</b>	<b>120.6</b>	<b>130.4</b>	<b>139.3</b>	<b>15.6</b>	<b>6.8</b>

(a) Reference base of index: 1989–90 = 100.0. (b) The index is on a net basis and relates in concept only to transactions in articles produced that are sold outside the Australian manufacturing industry.

Source: *Producer Price Indexes, Australia, various issues (6427.0)*.

## Research and development expenditure

Research and experimental development (R&D) activity, in the business context, is defined as systematic investigation or experimentation involving innovation or technical risk, the outcome of which is new knowledge, with or without a specific practical application or new or improved products, processes, materials, devices or services. R&D activity also extends to modifications to existing products and processes. ABS surveys of R&D are based on a complete enumeration of businesses identified by the ABS as likely R&D performers. Businesses mainly engaged in agriculture, forestry and fishing are excluded.

Total R&D expenditure by the manufacturing industry increased by \$386m (13%) in 2003–04 (table 18.20). Industries contributing the most to manufacturing R&D expenditure in 2003–04 were:

Motor vehicle and part and other transport equipment manufacturing (26%); Petroleum, coal, chemical and associated product manufacturing (18%); Electronic and electrical equipment and appliance manufacturing (12%); and Metal product manufacturing (10%). Together, these industries accounted for 66% of total R&D expenditure by the manufacturing industry and 30% of the total R&D expenditure by all industries.

Of manufacturing industry total R&D expenditure in 2003–04, 8% was on capital expenditure, 43% on labour costs and 49% on other current expenditure (table 18.21). The Motor vehicle and part and other transport equipment manufacturing industry contributed the largest expenditure on R&D by the manufacturing industry for each of capital expenditure (30%), labour costs (26%), and other current expenditure (26%). Manufacturing accounted for 51% of the capital expenditure, 45% of the labour costs, and 45% of other current expenditure on R&D by all industries.

### 18.20 EXPENDITURE ON RESEARCH AND DEVELOPMENT

	2001–02	2002–03	2003–04
Manufacturing industry subdivision	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	231	237	260
Textile, clothing, footwear and leather manufacturing	22	28	41
Wood and paper product manufacturing	84	98	126
Printing, publishing and recorded media	18	17	26
Petroleum, coal, chemical and associated product manufacturing	430	517	584
Non-metallic mineral product manufacturing	74	87	97
Metal product manufacturing	256	342	345
Motor vehicle and part and other transport equipment manufacturing	555	731	868
Photographic and scientific equipment manufacturing	279	305	333
Electronic and electrical equipment and appliance manufacturing	429	362	389
Industrial machinery and equipment manufacturing	134	165	201
Other manufacturing	24	21	24
<b>Total manufacturing</b>	<b>2 537</b>	<b>2 908</b>	<b>3 294</b>

Source: Research and Experimental Development, Businesses, Australia (8104.0).

## 18.21 TYPE OF EXPENDITURE ON RESEARCH AND DEVELOPMENT — 2003–04

	Capital expenditure	Labour costs	Other current expenditure	Total
	\$m	\$m	\$m	\$m
Manufacturing industry subdivision				
Food, beverage and tobacco manufacturing	31	117	113	260
Textile, clothing, footwear and leather manufacturing	7	16	18	41
Wood and paper product manufacturing	5	34	88	126
Printing, publishing and recorded media	n.p.	12	n.p.	26
Petroleum, coal, chemical and associated product manufacturing	40	240	304	584
Non-metallic mineral product manufacturing	12	29	56	97
Metal product manufacturing	22	92	231	345
Motor vehicle and part and other transport equipment manufacturing	76	369	423	868
Photographic and scientific equipment manufacturing	21	178	134	333
Electronic and electrical equipment and appliance manufacturing	19	226	144	389
Industrial machinery and equipment manufacturing	12	97	92	201
Other manufacturing	n.p.	13	n.p.	24
<b>Total manufacturing</b>	<b>251</b>	<b>1 421</b>	<b>1 622</b>	<b>3 294</b>

Source: Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0).

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## CONSTRUCTION

The construction industry has a major influence on every Australian. Construction provides homes, places for people to work, and recreation facilities. It provides essential facilities and infrastructure such as schools, hospitals, roads, water and electricity supply and telecommunications. The construction industry plays a significant role in the Australian economy. The demand for, and supply of construction is influenced by a variety of factors including interest rates, tax reforms and changes in populations.

The construction industry, and its activities, is strongly linked to other parts of the Australian economy such as manufacturing, wholesale trade, retail trade, and finance and insurance industries. In addition, architectural and engineering professions are closely linked with the industry.

In 2003–04 the construction industry's share of the total production of goods and services in the Australian economy (gross domestic product) was 6.2%.

The construction industry engages in three broad areas of activity:

- residential building (e.g. houses, flats, etc.)
- non-residential building (e.g. offices, shops, hotels, etc.)
- engineering construction (e.g. roads, bridges, water, sewerage, etc.).

Both the private and public sectors undertake construction activity within Australia. The private sector operates in all three areas of activity, with a major role in residential and non-residential building activity. The public sector has a major role in initiating and undertaking engineering construction. In addition it has a role in non-residential building activity, in particular for the health and education industries, building hospitals and schools.



## Economic contribution of the construction industry

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry Structure and Performance* chapter.

Total production of the construction industry, as measured by GVA (in chain volume terms), generally increased from 1991–92 to 1999–2000. The peak in 1999–2000 was followed by a sharp decline, coinciding with the introduction of The New Tax System in July 2000. Construction industry GVA (in chain volume terms) has increased steadily in each of the three years following 2000–01, and in 2003–04 reached \$48,556 million (m) (graph 19.1).

### Employment in the construction industry

Average annual employment in the construction industry has been increasing since 2000–01 and in 2004–05 the construction industry employed an average of 819,600 people (table 19.2). This was 6% higher than average employment in 2003–04 and 23% higher than in 2000–01. Although the number of own account workers has only

increased slightly since 2003–04, the number of employers has increased by 12%, and the number of employees by 8%.

In 2004–05 the majority of those employed in the construction industry were employed in construction trade services (70%) (table 19.2). Construction trade services include those engaged in services such as earthmoving, concreting, bricklaying, roofing, plumbing, electrical, carpentry, painting, glazing and landscaping. Average annual employment in construction trade services has continued to increase since 2000–01, with 572,300 people employed in 2004–05. Employment in general construction, which includes the construction of houses, buildings and structures, can be more volatile. In 2004–05 average annual employment increased by 1% to 247,300 people after a 5% increase in 2003–04.

### Trends in construction activity

Construction activity is carried out by both private and public sectors. Over the past 10 years, public sector construction has remained relatively constant, maintaining an annual value of work done of around \$16,000m (graph 19.3). Private sector construction on the other hand has been more volatile, experiencing a sharp decline in 2000–01 after the introduction of The New Tax System in July 2000. In 2002–03 it exceeded 1999–2000 levels for the first time, and between 2003–04 and 2004–05 increased by 3% to \$67,011m.

**19.1 CONSTRUCTION PRODUCTION(a), Chain volume measures(b)**



(a) Industry gross value added. (b) Reference year for chain volume measures is 2002–03.

Source: Australian System of National Accounts, (5204.0).

### 19.2 CONSTRUCTION INDUSTRY EMPLOYMENT(a)

	2000-01	2001-02	2002-03	2003-04	2004-05
Employment status	'000	'000	'000	'000	'000
<b>General construction(a)</b>					
Employee	180.7	199.5	180.7	194.5	202.1
Employer	11.5	11.3	6.9	10.9	9.9
Own account worker(b)	42.5	48.0	44.7	38.2	35.4
Total(c)	237.4	259.9	233.4	244.3	247.3
<b>Construction trade services</b>					
Employee	245.9	249.8	281.4	316.5	349.6
Employer	34.7	34.4	37.7	35.9	42.3
Own account worker(b)	145.9	145.0	159.8	169.7	180.4
Total(c)	431.3	432.6	481.9	525.4	572.3
<b>Total construction(d)</b>					
Employee	426.6	449.3	462.1	510.9	551.7
Employer	46.2	45.7	44.5	46.8	52.2
Own account worker(b)	188.4	192.9	204.5	207.8	215.8
Total(c)	667.7	692.5	715.3	769.7	819.6

(a) Annual average of quarterly data. (b) A worker that hires no employees (this category was formerly titled Self employed). (c) Total includes contributing family worker. (d) Includes categories General construction and Construction trade services.

Source: *Labour Force, Australia, Detailed – Electronic Delivery* (6291.0.55.001).

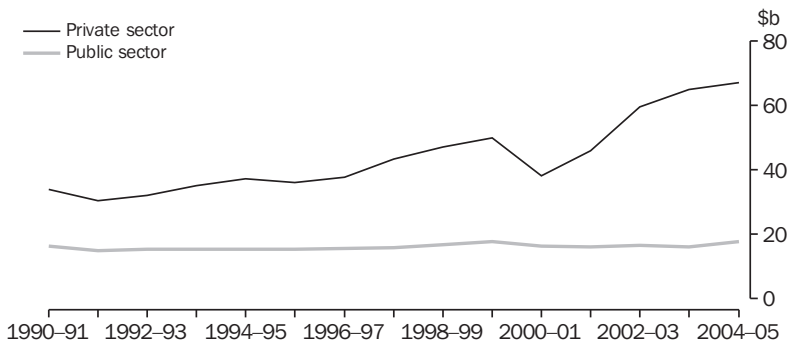
In the three broad areas of construction activity – residential building, non-residential building, and engineering construction – the pattern of construction activity by area of activity has changed substantially over time (graph 19.4). Before 1991–92 the value of non-residential building activity was greater than engineering construction activity. However, since 1991–92, engineering construction activity has consistently exceeded non-residential building activity.

Graph 19.4 also shows the acceleration in residential building activity to record levels prior to the introduction of The New Tax System in July 2000 followed by a substantial downturn in

2000–01. All three areas of construction industry activity surpassed 1999–2000 levels for the first time in 2002–03.

Table 19.5 shows in 2004–05 residential building construction work done (in chain volume terms) accounted for 43% of the value of total construction work done, engineering construction accounted for 36% and non-residential building accounted for 21%. Between 2003–04 and 2004–05 the value of total construction work done (in chain volume terms) increased by 4% to \$84,548m. Engineering construction had the largest increase (12%), followed by non-residential construction (4%). Residential building decreased, by less than 1%.

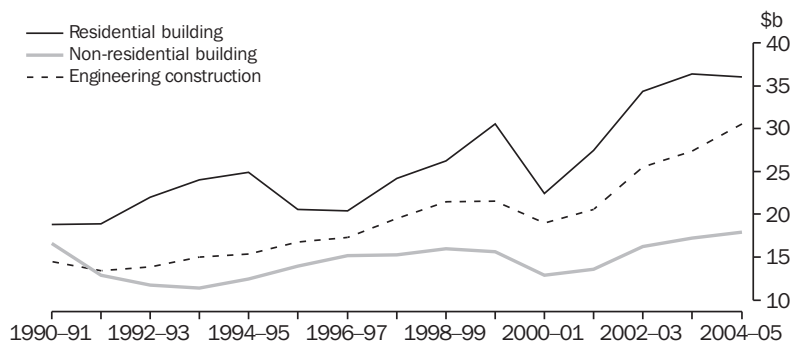
### 19.3 CONSTRUCTION ACTIVITY(a), By sector



(a) Chain volume measures, reference year is 2003–04.

Source: *Construction Work Done, Australia, Preliminary* (8755.0).

### 19.4 CONSTRUCTION ACTIVITY(a), By type of activity



(a) Chain volume measures, reference year is 2003-04.

Source: *Construction Work Done, Australia, Preliminary (8755.0)*.

### 19.5 VALUE OF CONSTRUCTION WORK DONE(a), By type of activity

	Residential building \$m	Non-residential building \$m	Engineering construction \$m	Total construction(b) \$m
1997-98	24 197	15 229	19 485	59 009
1998-99	26 219	15 980	21 459	63 759
1999-2000	30 596	15 590	21 571	67 515
2000-01	22 428	12 900	19 009	54 358
2001-02	27 480	13 582	20 610	61 670
2002-03	34 339	16 223	25 493	76 045
2003-04	36 359	17 215	27 408	80 982
2004-05	36 027	17 943	30 578	84 548

(a) Chain volume measures, reference year is 2003-04. (b) Chain volume measures for years other than 2003-04 and 2004-05 are not additive.

Source: *Construction Work Done, Australia, Preliminary (8755.0)*.

## Residential building

Residential building involves the construction of dwelling units, including new houses, other new residential buildings (flats, apartments, villa units, townhouses, duplexes, etc.), and dwellings created as part of alterations and additions to existing buildings (including conversions to dwelling units). Building approvals are used as a key indicator of future activity, as nearly all building activity must be approved by local and/or other authorities.

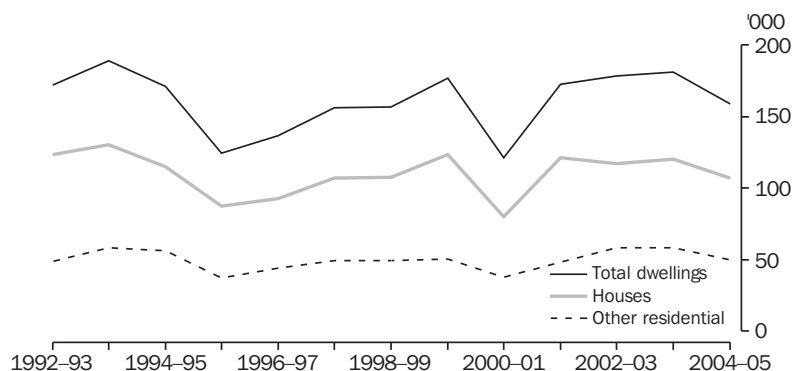
### Residential building approvals

Graph 19.6 shows that total dwelling unit approvals between 1995-96 and 1998-99 experienced relatively stable growth. Activity

brought forward ahead of the introduction of The New Tax System in July 2000 contributed to the increase and decrease between early-1999 and late-2000. In 2004-05 the total number of dwelling unit approvals decreased to 159,102.

The major component of dwelling unit approvals is new houses (table 19.7). New house approvals accounted for 67% of total dwelling unit approvals in 2004-05, up from 66% in 2003-04. New houses and new other residential dwelling units experienced a decrease in the number of approvals in 2004-05, of 11% and 14% respectively, compared with 2003-04, while the number of conversion approvals increased by 10%. Overall, total dwelling units approved decreased by 13% compared with 2003-04.

## 19.6 DWELLING UNITS APPROVED



Source: *Building Approvals, Australia (8731.0)*.

## 19.7 DWELLING UNITS APPROVED

	New houses	New other residential dwelling units	Conversions	Total dwelling units(a)
1999-2000	123 191	50 244	1 911	176 758
2000-01	80 095	37 959	2 225	121 304
2001-02	121 516	48 533	1 909	172 818
2002-03	116 895	58 515	1 841	178 463
2003-04	120 407	58 340	1 490	181 372
2004-05	106 841	49 893	1 639	159 102

(a) The total includes non-residential buildings and alterations and additions to residential buildings.

Source: *Building Approvals, Australia (8731.0)*.

### New other residential building approvals

Other residential building refers to structures other than houses, which are built for accommodation purposes. This includes buildings such as blocks of flats, units and apartments, and semi-detached houses and townhouses.

Prior to 1996-97 approvals for semi-detached houses, row or terrace houses and townhouses were greater than for flats, units and apartments. From 1996-97 the number of approvals for flats, units and apartments has consistently exceeded approvals for semi-detached houses, row or terrace houses and townhouses.

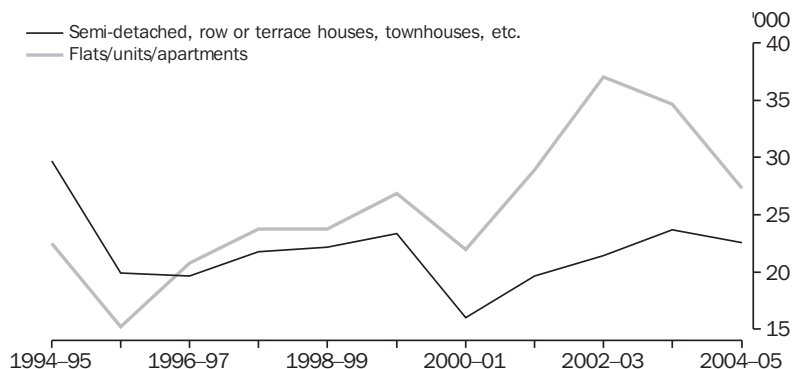
While they are still the major component of new other residential approvals (contributing 55% of all approvals), in 2004-05 the number of approvals for flats, units and apartments decreased. Since 2002-03 the gap between the two dwelling types has converged, with approvals for semi-detached houses, row or terrace houses and townhouses decreasing at a much slower rate than approvals for flats, units and apartments in 2004-05 (graph 19.8).

Table 19.9 provides additional details of the types of other residential dwelling units approved. In 2004-05 new semi-detached, row or terrace houses and townhouses showed decreases in both one storey (1%) and two or more storeys (7%) approvals. All types of new flats, units or apartments building approvals decreased in 2004-05 compared with 2003-04, with four or more storeys decreasing the most (24%). Approvals for new flats, units or apartments with four storeys or more, accounted for 38% of new other residential building approvals in 2004-05, down from 43% in 2003-04.

### New residential building work done

Between 2003-04 and 2004-05 the value of total building work done (in chain volume terms) increased by \$397m (less than 1%) to \$53,970m (table 19.10). However, total new residential building decreased by \$321m (1%), with new residential building for houses decreasing by \$304m.

### 19.8 NEW OTHER RESIDENTIAL DWELLING UNITS APPROVED



Source: Building Approvals, Australia (8731.0).

### 19.9 NEW OTHER RESIDENTIAL DWELLING UNITS APPROVED

	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05
<b>New semi-detached, row or terrace houses, townhouses, etc.</b>						
One storey	10 455	7 420	9 063	9 500	10 653	10 497
Two or more storeys	12 916	8 578	10 567	11 938	13 011	12 049
<b>Total</b>	<b>23 371</b>	<b>15 998</b>	<b>19 630</b>	<b>21 438</b>	<b>23 664</b>	<b>22 546</b>
<b>New flats, units or apartments in a building</b>						
One or two storeys	5 400	2 876	3 455	3 662	4 389	3 710
Three storeys	4 846	4 188	5 000	5 555	5 389	4 774
Four or more storeys	16 627	14 897	20 448	27 860	24 898	18 863
<b>Total</b>	<b>26 873</b>	<b>21 961</b>	<b>28 903</b>	<b>37 077</b>	<b>34 676</b>	<b>27 347</b>
<b>Total</b>	<b>50 244</b>	<b>37 959</b>	<b>48 533</b>	<b>58 515</b>	<b>58 340</b>	<b>49 893</b>

Source: Building Approvals, Australia (8731.0).

### 19.10 VALUE OF BUILDING WORK DONE(a), By type of activity

	New residential building			Alterations and additions	Non-residential building	Total building(b)
	Houses	Other residential buildings	Total(b)			
	\$m	\$m	\$m			
1997-98	14 517	5 774	20 283	3 915	15 229	39 587
1998-99	15 416	6 653	22 067	4 152	15 980	42 331
1999-2000	18 501	7 408	25 893	4 702	15 590	46 061
2000-01	12 853	5 973	18 831	3 597	12 900	35 352
2001-02	16 161	7 038	23 202	4 278	13 582	41 065
2002-03	19 670	9 622	29 299	5 044	16 223	50 562
2003-04	20 272	10 472	30 743	5 615	17 215	53 573
2004-05	19 968	10 453	30 422	5 605	17 943	53 970

(a) Chain volume measures, reference year is 2003-04. (b) Chain volume measures for years other than 2003-04 and 2004-05 are not additive.

Source: Construction Work Done, Australia, Preliminary (8755.0).

During 2004–05 new residential buildings generated 56% of the value of total building work done (in chain volume terms). A further 33% of the value was generated by non-residential building, while alterations and additions accounted for the remaining 10%. Estimates of alterations and additions to residential buildings include all approved building activity carried out on existing residential buildings, valued at \$10,000 or more.

## Non-residential building

The value of non-residential building work approved in 2003–04 fell 2% to \$16,830m (table 19.11). Over the same period the types of non-residential buildings which experienced the largest relative increases in approvals were other

industrial n.e.c. (73%), transport (30%), and industrial factories (17%). Those that experienced a decline in approvals were other commercial n.e.c. (39%), entertainment and recreation (31%), industrial agricultural/aquacultural building work (28%) and other non-residential n.e.c. (19%).

The total value of non-residential building work done rose 14% to \$17,215m in 2003–04. The largest percentage increases in value of non-residential work done were experienced by aged care facilities (32%), commercial offices (31%) and industrial factories (29%). Declines in work done for non-residential building work occurred in other commercial n.e.c. (33%), industrial agricultural/aquacultural building work (32%), entertainment and recreation (10%), and health (8%).

### 19.11 VALUE OF NON-RESIDENTIAL BUILDING WORK(a)

	Approved		Work done	
	2002–03 \$m	2003–04 \$m	2002–03 \$m	2003–04 \$m
<b>Commercial</b>				
Retail/wholesale trade	3 213	3 183	2 975	3 321
Transport	398	517	313	365
Offices	3 660	3 340	2 877	3 759
Other commercial n.e.c.	159	97	204	136
<i>Total commercial</i>	<i>7 429</i>	<i>7 136</i>	<i>6 369</i>	<i>7 581</i>
<b>Industrial</b>				
Factories	930	1 087	835	1 080
Warehouses	1 473	1 451	1 289	1 404
Agricultural/aquacultural	157	113	167	114
Other industrial n.e.c.	139	241	167	180
<i>Total industrial</i>	<i>2 700</i>	<i>2 893</i>	<i>2 459</i>	<i>2 778</i>
<b>Other non-residential</b>				
Educational	1 977	2 314	1 907	2 177
Religious	77	86	89	105
Aged care facilities	828	892	663	874
Health	812	873	980	901
Entertainment and recreation	1 597	1 097	1 315	1 190
Accommodation	855	864	694	857
Other non-residential n.e.c.	831	674	622	752
<i>Total other non-residential</i>	<i>6 978</i>	<i>6 800</i>	<i>6 271</i>	<i>6 855</i>
<b>Total non-residential building work</b>	<b>17 107</b>	<b>16 830</b>	<b>15 098</b>	<b>17 215</b>

(a) Valued at \$50,000 or more.

Source: *Building Activity, Australia (8752.0)*; *Building Approvals, Australia (8731.0)*.

## Engineering construction

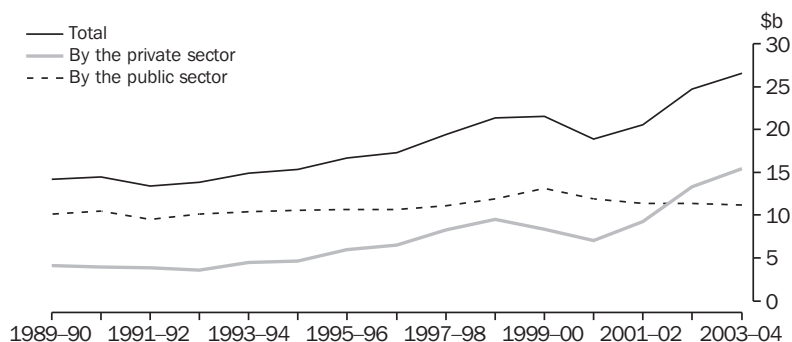
The total value of engineering construction work done across the different sectors between 1989–90 and 2003–04 is shown in graph 19.12. The value of public sector engineering construction work done (in chain volume terms) has shown a very slight increase over the past three years. Since 2001–02 the value of engineering construction work done by the private sector has increased substantially and by 2002–03 was of greater value than work done by the public sector.

Table 19.13 shows in more detail the contribution of public and private sectors to engineering construction work done. The private sector

increased its share of the total engineering construction work done from 54% in 2002–03 to 58% in 2003–04.

Roads, highways and subdivisions accounted for 28% of the total value of engineering construction work done in 2003–04. Traditionally a public sector activity, the private sector has increased its share of construction work done of roads, highways and subdivisions to 52% in 2003–04, up from 39% in 2002–03. Total oil, gas, coal and other minerals engineering construction, a mainly private sector activity, decreased slightly to \$5,385m and accounted for 20% of the total value of engineering construction work done in 2003–04.

**19.12 TOTAL ENGINEERING CONSTRUCTION WORK DONE(a), By sector**



(a) Chain volume measures, reference year is 2002–03.

Source: *Engineering Construction Activity, Australia (8762.0)*.

**19.13 VALUE OF ENGINEERING CONSTRUCTION WORK DONE**

	2002–03			2003–04		
	By the private sector	By the public sector	Total	By the private sector	By the public sector	Total
	\$m	\$m	\$m	\$m	\$m	\$m
Roads, highways and subdivisions	2 457	3 867	6 324	3 942	3 694	7 636
Bridges	74	238	312	43	215	258
Railways	524	763	1 287	271	1 237	1 508
Harbours	138	161	299	285	168	453
Water storage and supply	163	470	633	293	619	912
Sewerage and drainage	280	694	974	479	844	1 323
Electricity generation, transmission and distribution	1 317	1 977	3 294	1 472	2 095	3 567
Pipelines	907	32	939	1 385	29	1 414
Recreation	1 007	374	1 381	1 027	376	1 403
Telecommunications	354	2 808	3 161	767	2 229	2 996
Oil, gas, coal and other minerals	5 610	25	5 635	5 374	11	5 385
Other heavy industry	225	6	230	268	25	293
Other	227	33	260	231	28	259
<b>Total</b>	<b>13 283</b>	<b>11 446</b>	<b>24 729</b>	<b>15 837</b>	<b>11 570</b>	<b>27 407</b>

Source: *Engineering Construction Activity, Australia (8762.0)*.

## Price indexes for construction

Price indexes provide summary measures of the movements in various categories of prices, and are used extensively to analyse and monitor price behaviour. A more detailed explanation of price indexes is contained in the *Prices* chapter.

### Output of the general construction industry

From 2003–04 to 2004–05 the price indexes for output of the building construction and the non-building construction components of the general construction industry have increased by

8% and 4% respectively (table 19.14). The rate of increase during the 12 months ended June 2005 for the building construction component (8%) was the same as the rate of increase for the 12 months ended June 2004.

### Price index of materials used in house building

The price index of materials used in house building rose 3% in 2004–05. Table 19.15 shows there were rises in 2004–05 in all capital cities, with Hobart experiencing the largest increase (6%).

**19.14 PRICE INDEX OF THE OUTPUT OF THE GENERAL CONSTRUCTION INDUSTRY(a)(b)**

	1998–99	1999–2000	2000–01	2001–02	2002–03	2003–04	2004–05
Building construction	100.0	105.0	106.0	107.8	112.4	121.2	130.6
House construction	100.0	107.2	109.1	112.0	116.5	123.7	130.6
Residential building construction n.e.c.	100.0	104.7	104.2	105.1	110.4	121.0	132.1
Non-residential building construction	100.0	103.3	103.9	105.1	109.6	119.5	131.3
Non-building construction(c)	100.0	103.7	107.9	109.7	116.0	120.8	125.8
<b>Output of the general construction industry</b>	<b>100.0</b>	<b>104.9</b>	<b>106.1</b>	<b>107.9</b>	<b>112.7</b>	<b>121.1</b>	<b>130.2</b>

(a) Reference base of each index is 1998–99 = 100.0. (b) Excludes ANZSIC subdivision Construction Trade Services. (c) Road and bridge construction is the sole contributor to the Non-building construction.

Source: *Producer Price Indexes, Australia* (6427.0).

**19.15 PRICE INDEX OF MATERIALS USED IN HOUSE BUILDING(a)(b)**

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Weighted average of six state capital cities
1998–99	121.6	118.0	118.2	125.0	116.1	122.2	119.5
1999–2000	126.8	121.7	120.8	127.2	117.7	123.8	122.8
2000–01	130.0	123.1	120.6	129.6	118.8	126.0	124.4
2001–02	132.0	125.0	122.0	130.6	119.4	128.4	126.0
2002–03	137.2	128.4	127.6	135.7	123.0	133.7	130.5
2003–04	142.3	131.1	132.1	138.4	125.8	139.4	134.3
2004–05	146.6	134.6	137.3	143.4	131.1	148.0	138.8

(a) Reference base year is 1989–90 = 100.0. (b) The separate city indexes measure price movements within each city individually. They do not compare price levels between cities.

Source: *Producer Price Indexes, Australia* (6427.0).



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## SERVICE INDUSTRIES

This chapter presents an overview of service industries and provides a range of statistical information for a selection of service industries, with a focus on those that have recently been surveyed as part of the Australian Bureau of Statistics (ABS) rotating program of service industries collections.

For the purposes of this chapter, service industries have been defined as all industries other than goods-producing industries (agriculture, forestry and fishing; mining; manufacturing; electricity, gas and water; and construction). As such, service industries encompasses the following industries: wholesale trade; retail trade; accommodation, cafes and restaurants; transport and storage; communication services; finance and insurance; property and business services; government administration and defence; education; health and community services; cultural and recreational services; and personal and other services.

In 2003–04 the service industries' share of the total production of goods and services in the Australian economy (gross domestic product) was 56%.

## Economic contribution of the service industries sector

Service industries are the largest component of the Australian economy in terms of number of businesses, employment and gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry Structure and Performance* chapter.

In 2003–04 the largest service industry, in terms of industry GVA (in current prices) was the property and business services industry, which accounted for 10.5% of GDP, followed by the finance and insurance services industry (7.6%).

The property and business services industry recorded the largest percentage increase in GVA over the period 1998–99 to 2003–04 (27%), or an average annual growth rate of 4.9% (using chain volume measures). The next largest growth rate over the period was recorded by the retail trade, and the transport and storage industries, both increasing by 25% over the 5-year period, or an average annual growth rate of 4.6%. The smallest growth in industry GVA was that of the education industry, with an increase of 7% (table 20.1).

## Employment in service industries

Average annual total employment in the service industries in 2004–05 was 7,327,500 people (table 20.2), which represented 75% of all employment.

The largest employing service industry was retail trade, with average annual employment in 2004–05 of 1,489,400 people, accounting for 20% of total services employment. Other large employing industries were property and business services (1,130,300 people), health and community services (996,000 people), and education (676,800 people).

In the period 2000–01 to 2004–05, average annual employment in the service industries increased by 673,300 people or 10%, representing an average annual growth rate of 2%. The strongest employment growth in the 5-year period since 2000–01 occurred in government administration and defence, with a 22% increase from 367,400 to 449,300 people. The largest increase in employed people occurred in retail trade (174,700), followed by health and community services (120,900). Cultural and recreational services increased by 16% over the period, while personal and other services increased by 14%. Communication services employment was stable.

### 20.1 INDUSTRY GROSS VALUE ADDED(a), Chain volume measures(b)

	1998–99	2003–04	Average annual growth from 1998–99 to 2003–04
	\$m	\$m	%
Wholesale trade	34 872	42 164	3.9
Retail trade	33 784	42 321	4.6
Accommodation, cafes and restaurants	13 848	16 468	3.5
Transport and storage	31 346	39 164	4.6
Communication services	17 564	20 986	3.6
Finance and insurance services	49 435	60 445	4.1
Property and business services(c)	64 649	82 149	4.9
Government administration and defence	26 540	30 125	2.6
Education	31 296	33 547	1.4
Health and community services	36 821	45 398	4.3
Cultural and recreational services	11 802	13 585	2.9
Personal and other services	15 501	17 716	2.7

(a) At basic prices, which include subsidies, but are before any taxes on products. (b) Reference year for chain volume measures is 2002–03. (c) Excludes ownership of dwellings.

Source: Australian System of National Accounts (5204.0).

## 20.2 EMPLOYED PERSONS(a)

Industry	2000–01	2004–05	Average annual growth from 2000–01 to 2004–05
	'000	'000	%
Wholesale trade	434.1	440.2	0.3
Retail trade	1 314.7	1 489.4	2.5
Accommodation, cafes and restaurants	466.8	502.8	1.5
Transport and storage	418.5	454.5	1.7
Communication services	181.0	180.6	—
Finance and insurance	335.2	357.9	1.3
Property and business services	1 075.5	1 130.3	1.0
Government administration and defence	367.4	449.3	4.1
Education	621.4	676.8	1.7
Health and community services	875.1	996.0	2.6
Cultural and recreational services	224.4	260.9	3.1
Personal and other services	340.0	388.8	2.7
<b>Total</b>	<b>6 654.1</b>	<b>7 327.5</b>	<b>1.9</b>

(a) Annual average of quarterly data.

Source: Labour Force, Australia, Detailed – Electronic delivery (6291.0.55.001).

### Selected service industries

The remainder of the chapter presents statistics from retail trade and wholesale trade (with information drawn from monthly and quarterly surveys of businesses), and the 2003–04 surveys of public libraries, museums, cafes and restaurants, and accommodation services (which are part of a rotating program of service collections conducted by the ABS). This rotating program of service collections includes specific surveys each year, with the main focus being the size and structure of individual services in terms of detailed financial information and employment.

#### Retail trade

The retail trade industry comprises businesses primarily engaged in the sale of new or used goods to final consumers for personal or household consumption, or in selected repair activities such as repair of household equipment or motor vehicles.

The estimate of retail turnover includes the value of turnover from businesses such as supermarkets, clothing and department stores, as well as hospitality and selected service businesses such as

cafes and restaurants, hotels and licensed clubs. It excludes motor vehicle retailing and services. In order to measure the actual expenditure of consumers, retail turnover is recorded from 1 July 2000 inclusive of the Goods and Services Tax.

Table 20.3 presents annual chain volume measures of retail turnover for the period 1993–94 to 2004–05. Total retail turnover (in chain volume terms) increased by 58% between 1993–94 and 2004–05, representing an average annual growth rate of 4%.

The group representing the largest component of retail turnover (in current prices) in 2004–05 was food retailing with 40% of total turnover. The next largest groups were hospitality and services, and household good retailing with a 14% share of total turnover.

Between 2003–04 and 2004–05 the turnover (in chain volume terms) of household good retailing increased by 10%, clothing and soft good retailing by 8%, and recreational good retailing by 5%. Department store retailing turnover also increased by 5%, and food retailing by 3%. Retail turnover for hospitality and services fell by 1%.

### 20.3 RETAIL TURNOVER, Chain volume measures(a)

	Industry group								Retail turnover(b)
	Food retailing	Department stores	Clothing and soft good retailing	Household good retailing	Recreational good retailing	Other retailing	Hospitality and services		
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	
1993–94	57 382	11 607	8 497	10 478	6 582	11 164	23 376	126 396	
1994–95	60 483	11 972	8 737	11 399	6 941	11 749	25 144	133 689	
1995–96	63 359	12 296	8 908	12 317	7 304	12 364	25 409	139 399	
1996–97	63 913	12 222	8 782	13 653	6 948	12 895	23 932	140 603	
1997–98	66 377	12 573	8 988	14 246	7 099	14 053	24 170	145 818	
1998–99	67 882	12 974	10 049	14 713	7 188	14 613	26 154	151 821	
1999–2000	69 056	13 746	10 778	17 456	7 273	15 678	27 462	160 383	
2000–01	69 566	13 171	10 233	18 581	6 987	16 684	27 485	161 844	
2001–02	71 713	13 795	11 035	21 671	7 015	18 158	28 221	171 198	
2002–03	74 073	14 634	11 707	24 158	7 188	19 007	29 203	179 783	
2003–04	77 101	15 690	12 487	28 128	7 902	20 972	31 239	193 520	
2004–05	79 080	16 401	13 482	30 973	8 287	21 261	30 802	200 286	

(a) Based on quarterly data. Reference year is 2003–04. (b) Chain volume measures are not additive for years other than 2003–04 and 2004–05.

Source: Retail Trade, Australia (8501.0).

Graph 20.4 shows annual growth rates for total retail turnover (in chain volume terms) from 1994–95 to 2004–05. During this period the four years with the strongest annual growth were 2003–04 (8%) and 1994–95, 2001–02 and 1999–2000 (6%). The two years of weakest growth occurred in 1996–97 and 2000–01 (1%). Growth in 2000–01 was affected by the unusual increase in the volume of goods sold in the June quarter 2000 prior to the introduction of The New Tax System on 1 July 2000.

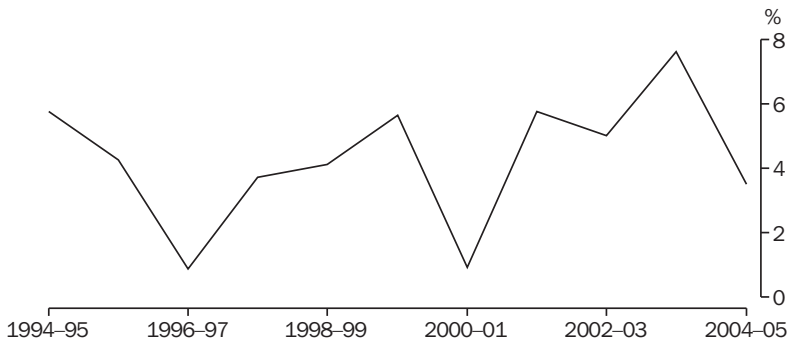
In 2003–04 retail trade industry GVA (in current prices) was \$42,585 million (m) or 5.2% of GDP.

### Wholesale trade

The wholesale trade industry covers those businesses involved in the sale of new or used goods to businesses or to institutional (including government) users.

Table 20.5 presents annual chain volume measures of total wholesale trade sales for the period 1993–94 to 2004–05. Total wholesale sales (in chain volume terms) more than doubled between 1993–94 and 2004–05, and increased by 4% between 2003–04 and 2004–05.

### 20.4 CHANGE IN ANNUAL RETAIL TURNOVER, Chain volume measures(a) — June



(a) Reference year for chain volume measures is 2003–04.

Source: Retail Trade, Australia (8501.0).

## 20.5 WHOLESALE SALES, Chain volume measures(a)

	\$m
1993–94	130 350
1994–95	148 788
1995–96	151 190
1996–97	157 525
1997–98	174 380
1998–99	189 520
1999–2000(b)	212 782
2000–01	215 126
2001–02	229 966
2002–03	244 930
2003–04	266 527
2004–05	275 928

(a) Based on quarterly data. Reference year for chain volume measures is 2003–04. (b) A break in series occurred between June and September 1999 quarters.

Source: *Business Indicators, Australia* (5676.0).

In 2003–04 wholesale trade industry GVA (in current prices) was \$41,840m, or 5.1% of GDP.

### Public libraries

The ABS conducted a survey of public library operations in respect of 2003–04. The survey included local government libraries, national, state and territory libraries and archival service organisations. Excluded were libraries with restricted access such as those operated by educational institutions (universities and

schools), and libraries operated privately by businesses and organisations for internal reference purposes.

At 30 June 2004, there were 532 local government library organisations with 1,716 library locations, 8 national and state library organisations with 17 locations, and 8 national and state archive organisations with 21 locations. During 2003–04, there were 105 million visits to local government, national and state libraries, with visits to local government libraries accounting for 95% of this figure (100 million visits) (table 20.6).

The total library holding stock of these organisations was 53 million books and other library materials at the end of June 2004, of which 39 million were available as lending stock and 14 million as non-lending stock.

In total, 13,282 employees worked for public libraries and archive organisations at the end of June 2004, with 10,606 people (80%) employed by local government libraries. These organisations also had a total of 6,853 people working as volunteers during the month of June 2004.

Total income of the industry in 2003–04 was \$948m. The great majority of income was from government funding, which accounted for \$879m or 93% of total income. Expenses incurred by the industry totalled \$960m, with labour costs of \$494m accounting for 51% of all expenses.

## 20.6 PUBLIC LIBRARIES — 2003–04

	Units	Local government libraries	National and state libraries	National and state archives	Total
Organisations at 30 June	no.	532	8	8	548
Locations at 30 June	no.	1 716	17	21	1 754
Employees at 30 June	no.	10 606	1 865	811	13 282
Volunteers during June	no.	6 315	416	122	6 853
Volunteer hours during June	no.	55 749	3 307	1 886	60 942
Visits to library locations(a)	'000	99 622	5 048	—	104 670
Library holdings at 30 June					
Lending stock	'000	38 984.5	—	—	38 984.5
Non-lending stock	'000	2 511.8	11 276.3	—	13 788.2
Total	'000	41 496.3	11 276.3	—	52 772.7
Income					
Government funding(b)	\$m	521.9	259.4	97.9	879.2
Income from services to clients	\$m	18.3	12.0	10.4	40.8
Other income	\$m	5.0	22.4	0.7	28.1
Total	\$m	545.2	293.7	109.1	948.0
Expenses					
Labour costs	\$m	340.8	106.9	46.3	494.0
Other expenses	\$m	204.4	200.7	60.7	465.8
Total	\$m	545.2	307.6	107.0	959.8

(a) During year ended 30 June. (b) Excludes capital funding.

Source: *Public Libraries, Australia, 2003–04* (8561.0).

## Museums

The ABS conducted a survey of organisations engaged in operating museums and art galleries in respect of 2003–04. These organisations were only included if they were open to the general public during 2003–04.

At the end of June 2004, there were 1,329 museum locations operating in Australia, comprising: 160 museums/art galleries; 381 historic properties/sites; 673 social history museums; and 116 other types of museums (table 20.7).

The 1,329 museums contained a total of 55 million artefacts, artworks and museum objects at 30 June 2004, and were visited by 31 million visitors during 2003–04. The majority of admissions were free of charge (66%). A total of \$35m was spent on purchases of museum objects and artworks, and 3,405 special exhibitions were held.

At 30 June 2004, there were 7,624 people employed in museums, while during the month of June 2004 there were a large number of volunteers (20,443) assisting with museum operations.

During 2003–04, museums accrued a total of \$919m in income. Most of this income was sourced from government funding (\$628m or 68%). Fundraising operations provided \$89m (10%) and admissions \$56m (6%).

Of the \$810m incurred in expenses by museums during 2003–04, labour costs were the most significant at \$320m (40% of total expenses).

In 2003–04, Victoria and New South Wales had similar proportions of total admissions for Australia to museums (31%). The Australian Capital Territory had the next highest proportion, with 11% (graph 20.8).

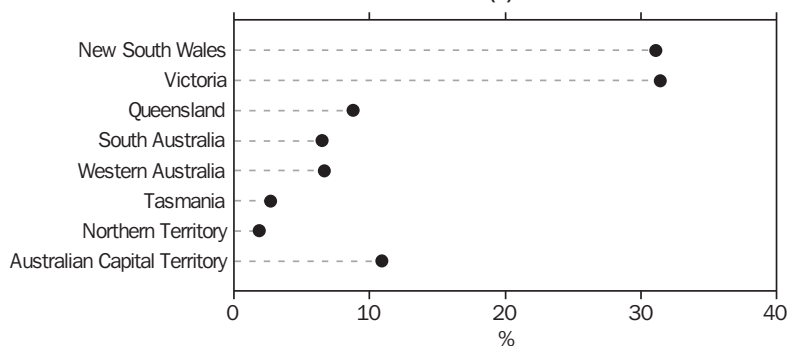
### 20.7 MUSEUMS — 2003–04

	Units	Museums/ art galleries	Historic properties/ sites	Social history museums	Other museums	Total
Museum/gallery locations at 30 June	no.	*160	381	673	*116	1 329
Artefacts/art works/museum objects at 30 June	'000	*2 915.5	1 609.8	10 057.2	40 333.0	54 915.5
Special exhibitions held(a)	no.	*1 612	*279	*1 346	*168	3 405
Purchases of museum objects/artworks(a)(b)	\$m	28.7	0.5	*4.3	1.1	34.6
Admissions(a)						
Paid	'000	*1 546.3	*2 798.9	*4 025.5	2 188.9	10 559.5
Free	'000	*9 934.6	*1 988.3	5 801.0	*2 906.7	*20 630.6
Total	'000	*11 480.9	*4 787.1	9 826.5	*5 095.6	*31 190.1
Employment at 30 June	persons	2 081	1 298	2 434	1 811	7 624
Volunteers during the month of June	persons	*3 125	*4 814	*11 185	*1 318	20 443
Income						
Government funding(c)	\$m	200.4	47.9	193	186.7	628
Fundraising	\$m	62.0	6.8	12.5	7.7	89.0
Admissions	\$m	8.8	18.1	*20.2	8.9	55.9
Other	\$m	53.7	24.6	33.7	*34.3	146.5
Total	\$m	324.9	97.5	259.4	237.6	919.4
Expenses						
Labour costs	\$m	99.1	39.6	91.5	90.1	320.4
Other	\$m	166.4	41.0	138.3	144.2	489.9
Total	\$m	265.5	80.6	229.7	234.4	810.3

(a) During year ended 30 June. (b) Includes current and capital expenditure. (c) Includes current and capital funding and funding for one-off projects.

Source: *Museums, Australia, 2003–04* (8560.0).

## 20.8 ADMISSIONS TO MUSEUMS(a) — 2003–04



(a) As a proportion of total admissions.

Source: *Museums, Australia, 2003–04* (8560.0).

## Cafes and restaurants

An important component of hospitality services is cafes and restaurants. This includes businesses mainly engaged in operating cafes and restaurants for consumption of meals on the premises, and businesses mainly engaged in catering services. Businesses mainly engaged in takeaway food retailing are excluded.

At 30 June 2004 there were 15,083 businesses in cafes and restaurants services (table 20.9), comprising 5,151 licensed cafes and restaurants; 2,493 licensed and BYO cafes and restaurants; 2,476 BYO cafes and restaurants; and 3,167 unlicensed cafes and restaurants. In addition, there were 1,796 catering businesses.

During 2003–04 cafe and restaurant businesses generated \$10,130m in income. Just over half of this income (51%) was generated from sales of meals consumed on the premises. Catering services generated \$2,356m (23%) of total income, while sales of beverages accounted for a further \$1,666m (16%). Between 1998–99 and 2003–04 income from the sale of liquor and other beverages grew at a higher rate (8% per year) than takings from meals consumed on the premises (5% per year).

Total expenses of businesses during 2003–04 were \$9,733m. The two largest expense items were purchases (\$3,801m) and labour costs (\$3,479m), which represented 39% and 36% respectively of total expenses. Rent of land, buildings and other structures had the highest growth rate of all selected expenses, rising by 11% per year.

Income grew by 7% per year between 1998–99 and 2003–04, while expenditure grew at just over 7% per year for this same period.

During 2003–04, cafes and restaurants services recorded an operating profit before tax of \$404m, representing an operating profit margin of 4%. Between 1998–99 and 2003–04 the operating profit before tax grew at an average annual rate of 4% per year. However, the operating profit margin decreased from 5% to 4%.

At 30 June 2004 total employment in cafes and restaurants was 188,103 people, of whom 76,030 (40%) were waiters and waitresses, 41,053 (22%) were qualified and other chefs and cooks, and 33,144 (18%) were kitchen hands. Employment increased by 4% per year between 1998–99 and 2003–04.



## 20.9 CAFES AND RESTAURANTS

	Units	1998–99	2003–04
<b>Businesses at 30 June</b>			
Licensed cafes and restaurants	no.	4 197	5 151
Licensed and BYO cafes and restaurants	no.	1 801	2 493
BYO cafes and restaurants	no.	2 668	2 476
Unlicensed cafes and restaurants	no.	2 861	3 167
Catering businesses	no.	1 318	1 796
<i>Total</i>	<i>no.</i>	<i>12 845</i>	<i>15 083</i>
<b>Employment at 30 June</b>			
Waiters/waitresses	persons	63 093	76 030
Bar attendants	persons	6 628	8 615
Kitchen hands	persons	25 655	33 144
Managers/supervisors	persons	18 025	22 004
Qualified chefs/cooks	persons	12 204	21 466
Other chefs/cooks	persons	16 689	19 587
Other	persons	9 813	7 257
<i>Total</i>	<i>persons</i>	<i>152 107</i>	<i>188 103</i>
<b>Income</b>			
Takings from meals consumed on the premises	\$m	3 947.7	5 131.4
Takings from take-away food	\$m	444.6	393.6
Takings from beverages	\$m	1 117.2	1 666.2
Takings from catering services	\$m	1 264.7	2 356.4
Other income	\$m	400.0	582.1
<i>Total</i>	<i>\$m</i>	<i>7 174.3</i>	<i>10 129.6</i>
<b>Expenses</b>			
Labour costs	\$m	2 109.4	3 479.1
Purchases	\$m	2 917.2	3 800.6
Rent of land, buildings and other structures	\$m	504.0	853.7
Other expenses	\$m	1 274.6	1 599.8
<i>Total</i>	<i>\$m</i>	<i>6 805.2</i>	<i>9 733.2</i>
Operating profit before tax	\$m	334.2	*404.4
Operating profit margin	%	4.8	*4.0

Source: *Cafes and Restaurants, Australia (8655.0)*.

### Accommodation services

The scope of the 2003–04 Accommodation Survey included businesses providing short-term accommodation services such as licensed hotels, motels, serviced apartments, visitor hostels, bed and breakfast establishments, guest houses and holiday homes/flats. It also included businesses providing both short-term and long-term accommodation in holiday parks/caravan parks/camping grounds and student residences (excluding boarding schools).

At 30 June 2004, there were 5,682 accommodation businesses operating in Australia (table 20.10). These businesses had employment of 91,399

people, a decrease of 9% from 30 June 2001 (100,401). This represents an average decline of 3% per year over the period 2000–01 to 2003–04.

During 2003–04, accommodation businesses generated \$8,096m in income. Just under two thirds of this income (\$5,346m or 66%) was from takings for accommodation. Takings from meals generated \$1,224m (15%) of total income, while the sale of liquor and other beverages accounted for a further \$524m (6%). Total income of accommodation businesses increased by 2%, or an average 0.7% per year, between 2000–01 and 2003–04. Takings from accommodation increased by 12%, while income from all other activities decreased.

## 20.10 ACCOMMODATION SERVICES

	Units	2000–01	2003–04
Businesses at 30 June	no.	5 870	5 682
Employment at 30 June	persons	100 401	91 399
Industry value added	\$m	3 616.2	4 165.9
<b>Income</b>			
Takings from accommodation	\$m	4 791.6	5 346.4
Takings from meals	\$m	1 305.1	1 223.8
Sale of liquor and other beverages	\$m	591.1	524.0
Other income	\$m	1 247.0	1 001.7
<i>Total</i>	<i>\$m</i>	<i>7 934.8</i>	<i>8 095.9</i>
<b>Expenses</b>			
Labour costs	\$m	2 580.1	2 565.9
Purchases of foodstuffs for use in preparing meals	\$m	459.8	423.8
Purchases of liquor and other beverages	\$m	234.5	195.9
Other expenses	\$m	3 983.8	4 136.8
<i>Total</i>	<i>\$m</i>	<i>7 258.1</i>	<i>7 322.3</i>
Operating profit before tax	\$m	688.2	776.7
Operating profit margin	%	8.3	9.7

Source: *Accommodation Services, Australia* (8695.0).

Accommodation businesses incurred expenses of \$7,322m during 2003–04. Labour costs (\$2,566m) were the highest single expense item, accounting for 35% of total expenses. Purchases of foodstuffs for use in preparing meals accounted for \$424m (6%), while purchases of liquor and other

beverages totalled \$196m (3%). Total expenses increased by 1% over the period 2000–01 to 2003–04.

In 2003–04, the operating profit before tax for accommodation services businesses was \$777m, resulting in an operating profit margin of 10%.

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*Accommodation Services, Australia* (8695.0)

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*Labour Force, Australia, Detailed – Electronic delivery* (6291.0.55.001)

*Museums, Australia, 2003–04* (8560.0)

*Public Libraries, Australia, 2003–04* (8561.0)

*Retail Trade, Australia* (8501.0)



## TOURISM

Tourism comprises the activities of people (visitors) travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited.

The term 'tourism' is not restricted to holiday or leisure travel. It also includes short-term travel for business or other reasons such as education, provided the destination is outside the person's usual environment. Travel is a broader concept which includes commuting to a place of work, long-term travel and migration.

Tourism is not an industry in the conventional sense. In the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0), industries are defined on the basis of the primary goods and services which they produce. Tourism, however, is defined according to the status of the consumer. That is, it is the characteristics of the consumer that determine whether the production is included within the scope of tourism. For example, expenditure on a restaurant meal by a visitor contributes to tourism's share of the economy, whereas expenditure by a local resident does not.

Visitors, in purchasing products outside of their usual environment, have a positive economic impact on their destination by generating additional consumption at the destination over and above that generated by the resident consumers. This additional consumption provides the basis for the economic activity generated by tourism.

Visitors can be classified into national (domestic) and international visitors. National visitors consist of Australian residents who travel outside their usual environment within Australia. They include both overnight visitors (staying one or more nights at a location) and same day visitors. International visitors are people who travel to a country other than that in which they have their usual residence.

This chapter outlines the value of tourism production, tourism consumption, international trade in tourism, and tourism employment. International visitor arrivals and Australian resident departures are covered, along with a range of data on visitor travel and tourist accommodation in Australia.

In 2003–04 tourism's share of the total production of goods and services in the economy was almost 4% of Australia's gross domestic product. More than three quarters of this was generated by domestic visitors as distinct from international visitors.

The tourism industry employed 536,600 people in 2003–04.

In 2003–04, international visitors consumed more than \$17 billion worth of goods and services produced by the Australian economy. This represented 12% of Australia's exports of goods and services.

## Economic contribution of the tourism industry

### The value of tourism production

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and Gross Domestic Product (GDP) is provided in the *Industry Structure and Performance* chapter.

A Tourism Satellite Account (TSA) is recognised internationally as the best method for measuring the economic contribution of tourism. Tourism GVA and GDP are the major economic aggregates derived in the TSA.

The tourism industry share of total GVA in 2003–04 was 3.5% (table 21.1). This represents the lowest point in the six-year time series, having declined from its peak of 4.3% in 1998–99. The tourism industry share for 2003–04 declined because tourism GVA grew at a much slower rate (0.3%) than the very strong growth in GVA for the whole economy (7.3%).

The high tourism share of GDP in 2000–01 was largely due to price increases in tourism services resulting from the introduction of the Goods and

Services Tax (GST) and the impact of the 2000 Olympic Games. During 2001–02 and 2002–03 external events such as terrorism and the Severe Acute Respiratory Syndrome 'SARS' scare caused a decline in both international visitors to Australia and the willingness of Australians to travel overseas.

### Tourism employment

The tourism industry employed 536,600 people in 2003–04 (table 21.2). The number of tourism employed people grew 4.6% between 1998–99 and 2003–04, slower than the growth in total employed people (10%) over that period. Consequently, the tourism share of total people employed fell from 5.9% in 1998–99 to 5.6% in 2003–04.

### Tourism consumption

Tourism consumption is defined as:

'...the total consumption made by a visitor or on behalf of a visitor for and during his/her trip and stay at the destination' (Explanatory Notes, *Australian National Accounts: Tourism Satellite Account* (5249.0)).

In 2003–04 tourism consumption was largest for long distance passenger transportation (16.5%), followed by shopping (including gifts and souvenirs) (16.0%), takeaway and restaurant meals (14.8%) and accommodation services (9.9%) (table 21.3).

#### 21.1 TOURISM SHARE OF GROSS VALUE ADDED AND GROSS DOMESTIC PRODUCT

	Units	1998–99	1999–2000	2000–01	2001–02	2002–03	2003–04
Tourism characteristic industries GVA(a)							
Travel agency and tour operator services	\$m	869	895	992	966	975	962
Taxi transport	\$m	195	197	218	207	210	214
Air and water transport	\$m	3 309	3 430	3 727	3 592	3 557	3 521
Motor vehicle hiring	\$m	259	280	284	287	298	293
Accommodation	\$m	2 551	2 644	2 775	2 855	2 917	2 941
Cafes, restaurants and food outlets	\$m	2 362	2 454	2 501	2 601	2 689	2 599
Total GVA of tourism characteristic industries(a)	\$m	9 546	9 901	10 498	10 509	10 646	10 531
GVA of tourism connected industries(b)	\$m	10 795	11 139	11 572	11 769	12 152	12 360
GVA of all other industries(c)	\$m	2 714	2 955	2 974	2 973	3 140	3 125
Tourism GVA	\$m	23 054	23 994	25 044	25 250	25 939	26 016
Tourism share of GVA	%	4.3	4.2	4.1	3.9	3.8	3.5
Net taxes on tourism products	\$m	3 213	3 321	5 817	5 637	6 041	5 935
Tourism GDP	\$m	26 267	27 316	30 861	30 887	31 980	31 952
Tourism share of GDP	%	4.5	4.4	4.6	4.3	4.2	3.9

(a) Tourism characteristic industries have at least 25% of their output consumed by visitors. (b) Tourism connected industries are those industries not classified as characteristic that have products which are consumed by visitors in volumes which are significant. (c) The share of GVA of all industries that provide outputs to visitors not included in characteristic or connected industries.

Source: *Australian National Accounts: Tourism Satellite Account* (5249.0).

## 21.2 TOURISM INDUSTRY EMPLOYMENT

	Units	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04
Tourism characteristic and connected industries(a)	'000	470.4	480.7	497.8	493.3	499.3	494.2
All other industries(b)	'000	42.5	44.0	39.9	40.5	41.5	42.4
Total tourism industry	'000	512.9	524.7	537.7	533.7	540.7	536.6
Total employed persons	'000	8 638.4	8 886.6	9 074.3	9 207.4	9 441.4	9 528.0
Tourism share of total employment	%	5.9	5.9	5.9	5.8	5.7	5.6

(a) Tourism characteristic and connected industries are those industries that have products which are consumed by visitors in volumes which are significant. (b) The share of GVA of all industries that provide outputs to visitors not included in characteristic or connected industries.

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

## 21.3 SHARE OF TOURISM CONSUMPTION ON SELECTED TOURISM PRODUCTS, By type of visitor — 2003–04

	Households	Business/ government	International	All visitors
	%	%	%	%
Long distance passenger transportation	8.6	40.8	26.2	16.5
Shopping (including gifts and souvenirs)	19.8	0.3	13.2	16.0
Takeaway and restaurant meals	19.0	6.2	7.5	14.8
Accommodation services	6.7	20.6	13.6	9.9
Food products	9.6	0.6	7.0	8.0
Fuel (petrol, diesel)	7.0	15.7	1.2	6.6
Taxi products	0.4	3.1	0.7	0.8
All other tourism products	28.9	12.6	30.5	27.4
Total	100.0	100.0	100.0	100.0

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

However, there are some marked differences in consumption patterns by type of visitor. Long distance passenger transportation is the dominant tourism product consumed by domestic business and government (41%) and international visitors (26%). In contrast, domestic household visitor consumption is dominated by shopping (including gifts and souvenirs) (20%), and takeaway and restaurant meals (19%).

Total tourism consumption declined by 0.4% in 2003–04 after a rise of 3.0% in 2002–03. This reflects a decline in domestic travel consumption, despite an increase in consumption by international visitors. Tourism consumption by domestic households fell from \$48 billion (b) to \$47b in 2003–04, a decline of 1.8%. Similarly, consumption by business and government fell from \$8.4b to \$8.3b in 2003–04, a decrease of 1.0%. International visitor consumption rose by 4.0% to \$17.3b in 2003–04.

During 2000–01 tourism consumption recorded its strongest growth of 11%. This growth mainly reflects the introduction of the GST and the impact of the 2000 Olympic Games.

### International trade in tourism

Tourism contributes significantly to Australia's export earnings. In 2003–04, international visitors consumed more than \$17b worth of goods and services produced by the Australian economy (table 21.4). This represented 12% of the total exports of goods and services. While tourism exports, also described as international visitor consumption, grew quite strongly between 1998–99 and 2000–01, so did exports of other goods and services between 1999–2000 to 2000–01. However, in 2003–04 tourism exports increased by 4.0% while total exports declined by 3.3%, thus leading to an increase in the tourism share of exports.

## 21.4 EXPORTS OF TOURISM GOODS AND SERVICES

	Units	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
International visitor consumption	\$m	13 445	14 610	17 140	17 107	16 656	17 317
Total exports	\$m	112 025	126 222	153 763	153 200	148 293	143 366
Tourism share of exports	%	12.0	11.6	11.1	11.2	11.2	12.1
Growth in international visitor consumption	%	5.1	8.7	17.3	-0.2	-2.6	4.0
Growth in total exports	%	-1.5	12.7	21.8	-0.4	-3.2	-3.3

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

## International visitor arrivals

There were 5.2 million short-term international visitor arrivals in 2004, up 10% from 2003 (table 21.5). This is the highest number of arrivals ever recorded for a calendar year.

The level of arrivals to Australia increased by 1.9 million (55%) between 1994 and 2004. It is likely that the Asian economic crisis impacted on the decrease in arrivals in 1998. Between 2003 and 2004 the number of international visitors increased by 10%.

The top source countries for short-term international visitor arrivals to Australia during 2004 were New Zealand (over one million visitor arrivals), followed by Japan (710,300), the United Kingdom (676,200) and the United States of America (433,500) (table 21.6).

Between 2003 and 2004 the number of short-term international visitor arrivals from China increased by 43%; from New Zealand by 23%; and from Japan by 13%.

December accounted for the highest number of visitor arrivals (11.4% of total arrivals) in 2004, while May accounted for the lowest (6.5% of total

arrivals) (table 21.7). These months also had the highest and lowest number of 'holiday' short-term international visitor arrivals, respectively. November had the highest number of 'business' visitor arrivals (67,600) while January had the lowest (36,800).

## 21.5 SHORT-TERM INTERNATIONAL VISITOR ARRIVALS

	Visitors '000	Change(a) %
1994	3 361.6	12.2
1995	3 725.9	10.8
1996	4 164.9	11.8
1997	4 318.0	3.7
1998	4 167.3	-3.5
1999	4 459.6	7.0
2000	4 931.3	10.6
2001	4 855.8	-1.5
2002	4 841.2	-0.3
2003	4 745.8	-2.0
2004	5 215.0	9.9

(a) From previous year.

Source: Overseas Arrivals and Departures, Australia (3401.0).

## 21.6 SHORT-TERM INTERNATIONAL VISITOR ARRIVALS, By major source countries

	1999	2000	2001	2002	2003	2004	Change(a)
	'000	'000	'000	'000	'000	'000	%
New Zealand	728.7	817.0	814.8	790.2	839.1	1 032.8	23.1
Japan	707.4	721.1	673.6	715.4	627.8	710.3	13.1
United Kingdom	528.4	580.5	617.3	642.7	673.0	676.2	0.5
United States of America	417.1	488.1	446.5	434.4	422.2	433.5	2.7
China (excl. SARs and Taiwan Prov.)	92.6	120.3	158.0	190.1	176.1	251.2	42.6
Singapore	267.0	285.6	296.1	286.9	253.4	251.1	-0.9
Korea	108.6	157.2	175.6	189.7	207.2	211.8	2.2
Malaysia	139.9	152.1	149.5	159.0	155.6	166.9	7.3
Germany	144.6	143.2	147.7	134.7	137.8	140.5	2.0
Hong Kong (SAR of China)	139.6	154.3	154.3	151.0	129.1	137.2	6.3

(a) From 2003 to 2004.

Source: Overseas Arrivals and Departures, Australia (3401.0).

People whose main purpose for their trip was a holiday accounted for the highest number of short-term international visitor arrivals to Australia in 2004 (3,721,200).

International visitor nights refers to the number of nights all visitors aged 15 years and over spent in Australia.

In 2004, New South Wales had the largest share of visitor nights with 36%, followed by Victoria (22%) and Queensland (21%) (table 21.8).

Holidays accounted for 39% of short-term international visitor nights in 2004; 19% were by people visiting friends and relatives; and 5.2% were for mainly business purposes.

### 21.7 SHORT-TERM INTERNATIONAL VISITOR ARRIVALS, By month and main purpose of trip — 2004

	Business(a)	Holiday(b)	Employment	Education	Other and not stated	Total visitors	Proportion of total
	'000	'000	'000	'000	'000	'000	%
January	36.8	293.3	12.1	34.9	43.0	420.2	8.1
February	60.3	291.8	10.4	52.0	40.4	454.8	8.7
March	62.1	305.9	8.4	17.3	38.6	432.3	8.3
April	45.9	291.9	8.8	16.4	39.8	402.8	7.7
May	57.4	231.0	9.0	10.1	33.7	341.3	6.5
June	48.0	257.3	9.0	16.4	36.5	367.3	7.0
July	52.9	313.6	7.1	49.5	48.8	472.0	9.1
August	59.4	290.2	6.2	14.0	36.0	405.8	7.8
September	56.5	283.4	6.2	10.9	38.7	395.6	7.6
October	60.4	323.1	7.7	14.1	44.5	449.9	8.6
November	67.6	350.9	7.8	9.0	44.6	479.9	9.2
December	38.2	488.8	7.4	8.8	49.9	593.1	11.4
<b>Total</b>	<b>645.5</b>	<b>3 721.2</b>	<b>100.1</b>	<b>253.4</b>	<b>494.5</b>	<b>5 215.0</b>	<b>100.0</b>

(a) Includes visitors who attended a convention or conference. (b) Includes visitors whose main purpose was visiting friends and relatives.

Source: *Overseas Arrivals and Departures, Australia (3401.0)*.

### 21.8 SHORT-TERM INTERNATIONAL VISITOR NIGHTS(a), By state/territory and main purpose of trip — 2004

	Business	Visiting friends/ relatives	Holiday	All other reasons	Total	Proportion of total
	'000	'000	'000	'000	'000	%
New South Wales	3 085	9 468	16 860	17 897	47 309	36.1
Victoria	1 506	5 540	7 197	14 437	28 680	21.9
Queensland	1 168	4 636	16 457	5 635	27 896	21.3
South Australia	266	1 169	1 895	2 564	5 895	4.5
Western Australia	573	3 569	5 742	4 656	14 540	11.1
Tasmania	45	484	654	879	2 061	1.6
Northern Territory	103	277	2 107	281	2 767	2.1
Australian Capital Territory	120	160	355	1 140	1 774	1.4
<b>Australia(b)</b>	<b>6 869</b>	<b>25 303</b>	<b>51 266</b>	<b>47 502</b>	<b>130 940</b>	<b>100.0</b>

(a) All visitors aged 15 years and over. Includes backpackers. (b) Total nights are less than visitor nights in Australia because nights spent in transit are excluded.

Source: *Tourism Research Australia, 'International Visitors in Australia', December quarter 2004*.



## Australian resident departures

In 2004 there were 4.4 million short-term resident departures, which was 846,300 less than the number of short-term visitor arrivals (table 21.9). Between 1994 and 2004 the number of Australians travelling abroad increased by 86%.

of America (376,000), the United Kingdom (375,100), Indonesia (335,200) and Thailand (188,000) (table 21.10).

Between 2003 and 2004 the number of short-term resident departures increased by 80% to Indonesia; 59% to China; 47% to Thailand; and 43% to Malaysia.

### 21.9 SHORT-TERM RESIDENT DEPARTURES

	Departures	Change(a)
	'000	%
1994	2 354.5	3.8
1995	2 518.6	7.0
1996	2 732.0	8.5
1997	2 932.8	7.3
1998	3 161.2	7.8
1999	3 210.0	1.5
2000	3 498.2	9.0
2001	3 442.6	-1.6
2002	3 460.9	0.5
2003	3 388.0	-2.1
2004	4 368.7	28.9

(a) From previous year.

Source: *Overseas Arrivals and Departures, Australia (3401.0)*.

The 4.4 million short-term resident departures from Australia in the year ended December 2004 is the highest number of resident departures ever recorded for a calendar year. In 2003 there were 3.4 million resident departures.

The top destinations for Australian residents departing short-term during 2004 were New Zealand (815,800 departures), the United States

## Visitor travel in Australia

### Day visitors

Day visitors (or same-day visitors) are those who travel for a round trip distance of at least 50 kilometres, are away from home for at least four hours, and who do not spend a night away from home as part of their travel. Same-day travel as part of overnight travel is excluded, as is routine travel such as commuting between work/school and home.

During the year ended 31 December 2004, there were 129.6 million same-day trips taken in Australia by Australian residents aged 15 years and over, down 6.8% from the 139.1 million day trips recorded for the corresponding period in 2003 (table 21.11).

New South Wales received the most day visitors (31%), followed by Victoria and Queensland (each with 24%). The Northern Territory and the Australian Capital Territory each accounted for 1% of day visitors (table 21.12).

Holiday/leisure accounted for 52% of same-day trips, while 29% involved visiting friends and/or relatives and 9% involved travel mainly for business.

### 21.10 SHORT-TERM RESIDENT DEPARTURES, By major destinations

	1999	2000	2001	2002	2003	2004	Change(a)
	'000	'000	'000	'000	'000	'000	%
New Zealand	489.0	527.6	599.6	597.4	662.8	815.8	23.1
United States of America	347.1	395.1	293.4	298.9	296.2	376.0	26.9
United Kingdom	312.7	338.8	300.8	318.4	312.9	375.1	19.9
Indonesia	280.5	279.9	288.8	241.8	186.7	335.2	79.5
Thailand	137.0	151.5	166.1	169.0	128.3	188.0	46.5
China (excl. SARs and Taiwan Prov.)	83.4	92.8	109.4	136.9	114.2	182.0	59.4
Fiji	115.3	75.1	94.2	128.2	145.1	175.2	20.7
Singapore	140.8	153.4	160.3	148.9	124.4	158.9	27.7
Hong Kong (SAR of China)	143.9	154.9	149.5	140.6	115.1	152.6	32.6
Malaysia	119.9	135.4	116.4	109.5	100.8	144.3	43.2

(a) From 2003 to 2004.

Source: *Overseas Arrivals and Departures, Australia (3401.0)*.

### 21.11 DAY VISITORS(a), By state/territory visited

	Destination								
	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	ACT '000	Aust.(b) '000
2001	50 676	38 582	25 735	11 177	12 288	4 863	768	1 920	146 008
2002	50 410	35 945	24 707	10 519	12 902	4 514	1 027	2 108	142 133
2003	44 988	36 499	27 250	10 546	12 135	4 705	1 049	1 888	139 060
2004	40 505	30 655	30 938	9 735	11 448	3 958	908	1 422	129 568

(a) Australian residents aged 15 years and over. (b) Components may not add to total as total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: Tourism Research Australia, 'Travel by Australians', December quarter 2004.

### 21.12 DAY VISITORS(a), By state/territory visited and main purpose of visit — 2004

	Holiday/leisure		Visiting friends/relatives		Business		Other		Total	
	'000	%	'000	%	'000	%	'000	%	'000	%
	New South Wales	20 913	31	11 647	31	3 524	30	4 421	33	40 505
Victoria	15 307	23	9 498	25	2 727	23	3 122	23	30 655	24
Queensland	16 606	25	8 245	22	2 924	25	3 164	24	30 938	24
South Australia	5 299	8	2 884	8	708	6	844	6	9 735	8
Western Australia	5 428	8	3 867	10	1 093	9	1 061	8	11 448	9
Tasmania	2 084	3	987	3	362	3	525	4	3 958	3
Northern Territory	584	1	*132	*0	*84	*1	*108	*1	908	1
Australian Capital Territory	694	1	256	1	255	2	217	2	1 422	1
<b>Australia(b)</b>	<b>66 915</b>	<b>100</b>	<b>37 516</b>	<b>100</b>	<b>11 677</b>	<b>100</b>	<b>13 460</b>	<b>100</b>	<b>129 568</b>	<b>100</b>

\* Subject to sampling variability too high for practical purposes. (a) Australian residents aged 15 years and over. (b) Components may not add to total as total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: Tourism Research Australia, 'Travel by Australians', December quarter 2004.

## Visitor nights

Overnight travel involves a stay away from home for at least one night, at a place at least 40 kilometres from home. A person is an overnight visitor to a location if they stay one or more nights in the location while travelling.

Domestic visitor nights refers to the number of nights Australian residents aged 15 years and over spent away from home in association with individual visits.

Australian residents aged 15 years and over spent 296.9 million nights away from home during the year ended 31 December 2004 (table 21.13). This was 1% higher than the 294.1 million nights away recorded for the corresponding period in 2003.

New South Wales, South Australia, Western Australia, Tasmania and the Northern Territory all recorded increases in the number of domestic visitor nights in 2004, while the number of domestic visitor nights declined in Victoria, Queensland and the Australian Capital Territory.

In 2004, New South Wales received the most visitor nights with 30%, followed by Queensland (26%) and Victoria (18%) (table 21.14). The Northern Territory and the Australian Capital Territory each accounted for 2% of visitor nights. Overnight travellers who had holiday or leisure as their main purpose of visit contributed 45% of domestic visitor nights, followed by those visiting friends and/or relatives (34%) and business (14%).

### 21.13 VISITOR NIGHTS(a), By state/territory visited

	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	ACT '000	Aust.(b) '000
2001	89 447	55 747	75 002	19 508	28 068	7 970	7 174	5 749	289 644
2002	93 269	56 684	76 342	20 424	29 748	8 775	7 518	5 382	298 658
2003	88 188	54 892	78 839	21 146	29 997	9 647	6 141	5 235	294 112
2004	89 179	54 872	78 196	21 680	31 002	10 263	6 522	5 107	296 877

(a) Australian residents aged 15 years and over. (b) Total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: Tourism Research Australia, 'Travel by Australians', December quarter 2004.

### 21.14 VISITOR NIGHTS(a), By state/territory visited and main purpose of visit — 2004

	Holiday/leisure		Visiting friends/relatives		Business		Other		Total(b)	
	'000	%	'000	%	'000	%	'000	%	'000	%
New South Wales	38 574	29	34 022	33	11 572	28	4 212	33	89 179	30
Victoria	25 284	19	19 803	19	7 120	17	2 241	18	54 872	18
Queensland	39 110	29	24 758	24	9 706	23	2 895	23	78 196	26
South Australia	8 882	7	7 337	7	3 638	9	1 139	9	21 680	7
Western Australia	13 534	10	8 195	8	6 001	14	1 440	11	31 002	10
Tasmania	5 029	4	3 474	3	1 286	3	*264	*2	10 263	3
Northern Territory	2 612	2	1 780	2	1 410	3	*121	*1	6 522	2
Australian Capital Territory	1 188	1	2 529	2	1 045	3	*340	*3	5 107	2
<b>Australia(c)</b>	<b>134 257</b>	<b>100</b>	<b>101 898</b>	<b>100</b>	<b>41 790</b>	<b>100</b>	<b>12 652</b>	<b>100</b>	<b>296 877</b>	<b>100</b>

\* Subject to sampling variability too high for practical purposes. (a) Australian residents aged 15 years and over. (b) Includes visitor nights where purpose of visit was not stated. (c) Components may not add to total as total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: Tourism Research Australia, 'Travel by Australians', December quarter 2004.

## Tourist accommodation

At 31 December 2004 there were nearly 205,500 guest rooms available in hotels, motels, guest houses and serviced apartments (table 21.15), representing an increase of 0.5% in total available accommodation compared with 31 December 2003. Between 2003 and 2004 the number of guest rooms available in serviced apartments increased

by 3.4%, while the number of guest rooms in licensed hotels, and motels and guest houses, both decreased by 0.2%.

The room occupancy rate for licensed hotels with facilities, motels, guest houses and serviced apartments combined increased from 60% in 2003 to 62% in 2004. In 2000 the room occupancy rate was 58%.

**21.15 HOTELS, MOTELS AND SERVICED APARTMENTS(a)(b)**

	Units	2000	2001	2002	2003	2004
<b>LICENSED HOTELS WITH FACILITIES(c)</b>						
Establishments(d)	no.	780	781	777	796	786
Guest rooms(d)	no.	76 783	78 574	77 516	78 720	78 574
Bed spaces(d)	no.	204 109	206 592	203 238	202 962	205 304
Room occupancy rates(e)	%	63.5	61.6	62.6	64.6	67.4
Bed occupancy rates(e)	%	38.8	38.8	39.7	40.7	42.7
Takings from accommodation(e)	\$m	2 459.1	2 446.9	2 442.9	2 599.4	2 790.4
<b>MOTELS AND GUEST HOUSES WITH FACILITIES(c)</b>						
Establishments(d)	no.	2 402	2 400	2 382	2 415	2 390
Guest rooms(d)	no.	84 722	84 430	83 565	85 390	85 185
Bed spaces(d)	no.	250 170	247 776	244 156	246 107	246 227
Room occupancy rates(e)	%	53.0	52.0	52.8	53.7	54.6
Bed occupancy rates(e)	%	31.4	31.2	31.8	32.6	33.4
Takings from accommodation(e)	\$m	1 424.5	1 403.4	1 433.2	1 514.0	1 585.7
<b>SERVICED APARTMENTS(c)</b>						
Establishments(d)	no.	646	657	675	781	797
Guest rooms(d)	no.	33 421	35 129	35 350	40 351	41 736
Bed spaces(d)	no.	113 267	117 192	116 385	131 183	134 686
Room occupancy rates(e)	%	59.3	60.7	63.9	65.3	66.7
Bed occupancy rates(e)	%	37.8	39.9	42.2	44.3	45.6
Takings from accommodation(e)	\$m	841.4	915.2	988.9	1 163.6	1 298.7
<b>TOTAL HOTELS, MOTELS AND SERVICED APARTMENTS(c)</b>						
Establishments(d)	no.	3 828	3 838	3 834	3 992	3 973
Guest rooms(d)	no.	194 926	198 133	196 431	204 461	205 495
Bed spaces(d)	no.	567 546	571 560	563 779	580 252	586 217
Room occupancy rates(e)	%	58.1	57.3	58.7	60.1	62.0
Bed occupancy rates(e)	%	35.3	35.7	36.8	38.0	39.5
Room nights occupied(e)	'000	41 079.6	41 176.2	42 148.5	44 244.0	46 306.5
Takings from accommodation(e)	\$m	4 725.0	4 765.5	4 865.0	5 277.0	5 674.8

(a) Comprising establishments with 15 or more rooms or units. (b) Break in time series between the March and June quarters 2003. See 'Tourist Accommodation, Australia' (8635.0) December Quarter 2003 Appendix 1 for details. (c) For definitions see the source below. (d) At 31 December. (e) 12 months ended December.

Source: *Tourist Accommodation, Australia* (8635.0).

## **Bibliography**

### **ABS products**

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## TRANSPORT

Transport activity involves the movement of goods or people from an origin to a destination.

Transport is a fundamental element of developed economies, connecting businesses to markets and to supplies of inputs. For example, building construction is reliant on transport to get materials and labour to sites. Retailers rely on transport to bring items from suppliers, and to bring customers to their shops. Complex and specialised transport services, such as those used for perishable foods, may cross several countries and include corridors of road, rail, sea and air journeys. A substantial part of people's time and income is used for travel to work, school, recreation, and other activities.

Transport has considerable economic, social and environmental impacts. Effective transport systems contribute to economic prosperity, as well as to the social achievements of the community that arise through access to an enlarged range of employment and residential options, and to an increased range of holiday and entertainment options. Information about numerous aspects of transport activity is used by governments, local authorities and industry, to support planning and investment decisions.

In 2003–04 the transport and storage industry's share of the total production of goods and services in the Australian economy (gross domestic product) was 5.1%.

This chapter provides information on Australia's domestic and international transportation system, including statistics on transport activity and the incidence of transport-related accidents, injuries and fatalities. Data are drawn from Australian Bureau of Statistics (ABS) collections and other sources.

## Economic contribution of the transport and storage industry

Transport and storage is vital to the Australian economy, underpinning a diverse range of industries and activities. These range from transporting and storing freight, to the movement of people by private and public transport, to vehicle hire and even the use of pipelines.

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry Structure and Performance* chapter.

Total production of the transport and storage industry, as measured by industry GVA (in chain volume terms), doubled between 1985–86 and 2003–04 (graph 22.1).

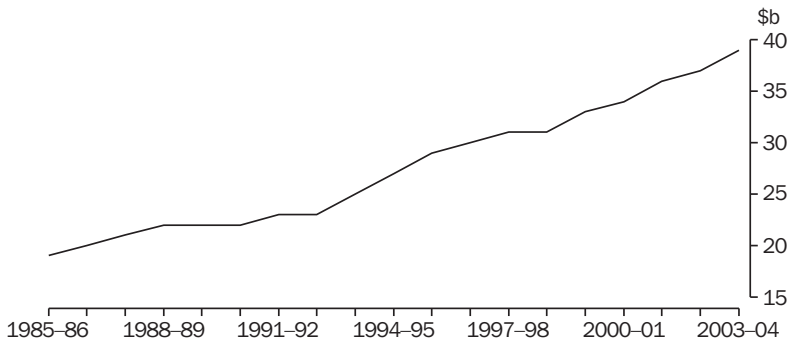
Table 22.2 shows the GVA of each of the sectors (or industry subdivisions) which the ABS uses to describe the transport and storage industry. During the period 1999–2000 to 2003–04, total transport and storage industry GVA rose by 20%. This was greater than the overall growth rate of the economy (14%).

All sectors within the transport and storage industry had larger increases in GVA (in chain volume terms) between 1999–2000 and 2003–04 than the increase in GDP over the same period. Within the industry, the road transport sector had the greatest increase in GVA (29%), followed by rail, pipeline and other transport (20%), and air and space transport (15%). The smallest increase in GVA in the period was in the transport services and storage (which includes water transport) sector of the industry (14%).

Average annual employment in the transport and storage industry decreased from 418,500 people in 2000–01 to 408,000 in 2002–03. Between 2002–03 and 2004–05 employment rose by 46,400 people, or 11%, to 454,400 (table 22.3).

Between 2003–04 and 2004–05 employment in the storage sector rose by 13,900 people, or 47%, while services to transport employment rose by 7,800 people or 11%. Over the same period, employment in road transport decreased by 7% to 214,800 people, and rail transport employment fell by 4% to 37,200 people.

**22.1 TRANSPORT AND STORAGE PRODUCTION(a), Chain volume measures**



(a) Industry gross value added. Reference year for chain volume measures is 2002-03.

Source: Australian System of National Accounts, 2003-04 (5204.0).

## 22.2 TRANSPORT AND STORAGE GROSS VALUE ADDED, Chain volume measures(a)

Industry subdivision	Units	1999–2000	2000–01	2001–02	2002–03	2003–04	Percentage change from 1999–2000 to 2003–04
Industry gross value added							
Road transport	\$m	10 595	11 052	11 789	12 662	13 694	29.2
Air and space transport	\$m	5 125	5 542	5 228	5 420	5 885	14.8
Rail, pipeline and other transport	\$m	3 938	3 997	4 256	4 560	4 710	19.6
Transport services and storage(b)	\$m	13 005	13 705	14 301	14 747	14 874	14.4
<b>Transport and storage(c)</b>	<b>\$m</b>	<b>32 623</b>	<b>34 261</b>	<b>35 568</b>	<b>37 389</b>	<b>39 164</b>	<b>20.1</b>

(a) Reference year for chain volume measures is 2002–03. (b) Includes water transport. (c) Chain volume measures for years other than 2002–03 and 2003–04 are not additive.

Source: Australian System of National Accounts, 2003–04 (5204.0).

## 22.3 TRANSPORT AND STORAGE INDUSTRY EMPLOYMENT(a)

Industry subdivision	2000–01	2001–02	2002–03	2003–04	2004–05
	'000	'000	'000	'000	'000
Road transport	213.2	221.3	218.1	230.9	214.8
Rail transport	37.3	31.8	36.3	38.9	37.2
Water transport	13.4	13.6	12.6	13.3	13.6
Air and space transport	53.4	50.7	46.4	45.3	46.7
Other transport	*0.6	*0.6	*0.5	*0.5	*0.7
Services to transport	67.6	68.6	65.5	69.3	77.1
Storage	29.7	24.0	26.8	29.6	43.5
Transport and storage nfd(b)	*3.4	*2.4	*1.9	4.7	20.8
<b>Total</b>	<b>418.5</b>	<b>413.0</b>	<b>408.0</b>	<b>432.5</b>	<b>454.4</b>

(a) Annual average of quarterly data. (b) Not further defined. Insufficient detail collected from survey respondent to allocate them to a specific industry code.

Source: Labour Force, Australia, Detailed – Electronic delivery (6291.0.55.001).

## Structure and performance of the transport and storage industry

In 2002–03 the transport and storage industry had 34,275 employing operating businesses (table 22.4). These businesses generated \$65,813 million (m) in goods and services sales, and had a net worth of \$37,040m. Capital expenditure for the period was \$6,966m. Road transport had the highest number of employing operating businesses (25,074).

Wages and salaries for the transport and storage industry in 2002–03 were \$15,444m. Total income was \$81,203m, total expenses \$76,655m, while operating profit before tax was \$4,551m (table 22.5). Road transport was the largest component, with 35% of the industry's total income, 35% of wages and salaries in the industry, and 50% of operating profit before tax.

## Transport activity

### Domestic airline activity

The total hours flown and the number of aircraft departures by the major domestic and regional airlines are shown in table 22.6. Hours flown in 2004 were 13% more than in 2003, while aircraft departures were 9% higher than in 2003.

In addition to the scheduled services of domestic and regional airlines, the range of activities undertaken by the general aviation industry includes business flying, aerial agriculture, charter, training and private flying (table 22.7). Charter and private/business activity accounted for 53% of general aviation hours flown in 2004.



## 22.4 TRANSPORT AND STORAGE INDUSTRY, Selected indicators(a) — 2002–03

Industry subdivision	Number of operating businesses	Sales of goods and services	Net worth	Capital expenditure
	no.	\$m	\$m	\$m
Road transport	25 074	21 486	4 349	1 586
Rail transport	73	n.p.	n.p.	n.p.
Water transport	1 019	2 763	833	203
Air and space transport	632	n.p.	n.p.	n.p.
Other transport	546	n.p.	n.p.	n.p.
Services to transport	6 041	19 537	17 238	1 270
Storage	890	3 719	2 832	296
<b>Total</b>	<b>34 275</b>	<b>65 813</b>	<b>37 040</b>	<b>6 966</b>

(a) Excludes non-employed businesses.

Source: Australian Industry: Summary of Industry Performance, Australia (8155.0.55.002).

## 22.5 TRANSPORT AND STORAGE INDUSTRY, Industry performance — 2002–03

Selected indicators	Units	Industry subdivision							
		Road transport	Rail transport	Water transport	Air and space transport	Other transport	Services to transport	Storage	Total
Wages and salaries(a)	\$m	5 477	2 116	421	2 566	135	3 937	792	15 444
Total income	\$m	28 236	7 542	3 396	13 352	1 677	23 022	3 979	81 203
Total expenses	\$m	25 985	7 214	3 227	12 705	1 458	22 365	3 702	76 655
Operating profit before tax	\$m	2 276	307	*163	704	*220	*653	*228	4 551

(a) Includes capitalised wages and salaries; excludes the drawings of working proprietors.

Source: Australian Industry, 2001–02 and 2002–03 (8155.0).

## 22.6 DOMESTIC AIRLINE ACTIVITY, Major and regional airlines

	1998	1999	2000	2001	2002	2003	2004
	'000	'000	'000	'000	'000	'000	'000
Hours flown	749	751	788	759	667	693	783
Aircraft departures	585	588	606	564	479	477	522

Source: Department of Transport and Regional Services.

## 22.7 GENERAL AVIATION ACTIVITY, Hours flown

	1997	1998	1999	2000	2001	2002	2003	2004(a)
	'000	'000	'000	'000	'000	'000	'000	'000
Charter	487	498	508	480	469	446	429	478
Agricultural	137	147	135	124	114	71	70	88
Flying training	455	484	454	419	411	411	420	356
Other aerial work	315	319	314	304	300	327	344	341
Private/business	446	430	432	388	409	412	383	406
<b>Total</b>	<b>1 839</b>	<b>1 878</b>	<b>1 842</b>	<b>1 715</b>	<b>1 703</b>	<b>1 667</b>	<b>1 646</b>	<b>1 669</b>

(a) Provisional data.

Source: Department of Transport and Regional Services.

## Road transport activity

Motor vehicles travelled an estimated total distance of 201,497 million kilometres (km) in the year ended 31 October 2003, at an average of 15,900 km per vehicle (table 22.8). Business use accounted for an estimated 35% of aggregate distance travelled, and private use 65%. Of total private use travel, 33% consisted of travel to and from work, and 67% for personal and other use travel.

The localities in which motor vehicles travelled are described in table 22.9. Only 5% of total distance travelled represented interstate trips, while 54% of trips were within the capital city of the state or territory in which the vehicle was registered.

## Transport passenger activity

Personal travel occurs for many reasons, including school, business, recreation and travel to and from work. While road transport accounts for the majority of domestic passenger trips undertaken, rail services are used by a considerable number of urban commuters. Air services provide for a large proportion of long distance passenger travel.

## Road passenger vehicle activity

In the year ended 31 October 2003 Australia's ten million passenger vehicles travelled an estimated 152 billion km (table 22.10), each averaging just under 14,600 km per year. Just under 378,500 motor cycles travelled 1.4 billion km, while the fleet of just over 60,000 buses travelled 1.9 billion km.

## Rail passenger activity

The passenger operations of rail operators are shown in table 22.11. The number of total urban passengers increased by 28% over the period 1992–93 to 2001–02. Between 2001–02 and 2002–03 urban heavy rail and tram/light rail passenger numbers decreased by 6% and 16% respectively, while non-urban passenger numbers fell by 25%. Between 2002–03 and 2003–04 the number of urban passengers using heavy rail rose marginally, while tram/light urban rail and non-urban rail numbers were unchanged. Heavy rail has consistently accounted for more than three-quarters of urban rail passenger operations.

### 22.8 BUSINESS AND PRIVATE VEHICLE USE — Year ended 31 October 2003

Type of vehicle	Business			Private		Total
	Laden	Unladen	Total(a)	To and from work	Personal and other use	
<b>TOTAL KILOMETRES TRAVELLED (million)</b>						
Passenger vehicles	..	..	33 951	37 846	79 946	151 743
Motor cycles	..	..	*156	*362	*858	1 376
Light commercial vehicles	15 346	5 470	20 817	5 201	6 653	32 671
Rigid trucks	5 425	2 116	7 541	*137	*89	7 768
Articulated trucks	4 399	1 437	5 836	*5	*1	5 841
Non-freight carrying trucks	..	..	201	**2	—	203
Buses	..	..	1 805	*22	*66	1 893
<b>Total</b>	<b>25 171</b>	<b>9 023</b>	<b>70 307</b>	<b>43 575</b>	<b>87 615</b>	<b>201 497</b>
<b>AVERAGE KILOMETRES TRAVELLED(b) ('000)</b>						
Passenger vehicles	..	..	11.1	7.2	8.9	15.1
Motor cycles	..	..	*3.1	*3.7	3.5	4.6
Light commercial vehicles	14.9	8.8	18.7	8.2	7.0	18.0
Rigid trucks	17.6	9.0	24.4	*6.2	*3.6	23.9
Articulated trucks	75.9	29.5	99.8	*4.4	*1.8	99.4
Non-freight carrying trucks	..	..	12.3	*7.0	*0.9	12.2
Buses	..	..	33.6	*5.9	*9.2	32.4
<b>Total</b>	<b>18.0</b>	<b>9.9</b>	<b>15.1</b>	<b>7.2</b>	<b>8.6</b>	<b>15.9</b>

(a) Includes business travel of non-freight carrying vehicles. (b) Average distance travelled for registered vehicles which were used.

Source: Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2003 (9208.0).

## 22.9 AREA OF OPERATION — Year ended 31 October 2003

Type of vehicle	Within state/territory of registration					
	Capital city	Provincial urban	Other areas of state/territory	Total	Interstate	Australia
<b>TOTAL KILOMETRES TRAVELLED (million)</b>						
Passenger vehicles	87 951	21 381	35 301	144 633	*7,110	151 743
Motor cycles	*559	*251	*521	1 331	*45	1 376
Light commercial vehicles	14 470	5 134	12 143	31 747	*924	32 671
Rigid trucks	3 809	972	2 587	7 369	*399	7 768
Articulated trucks	1 067	389	2 705	4 162	1 680	5 841
Non-freight carrying trucks	*101	*33	*62	196	*8	203
Buses	887	364	570	1 821	*72	1 893
<b>Total</b>	<b>108 844</b>	<b>28 524</b>	<b>53 890</b>	<b>191 258</b>	<b>10 238</b>	<b>201 497</b>
<b>AVERAGE KILOMETRES TRAVELLED(a) ('000)</b>						
Passenger vehicles	11.7	7.4	9.9	14.5	*6.8	15.1
Motor cycles	*3.6	*2.7	*4.0	4.4	*2.1	4.6
Light commercial vehicles	15.7	10.1	13.8	17.6	*6.4	18.0
Rigid trucks	24.4	13.4	15.7	22.8	*21.7	23.9
Articulated trucks	30.0	21.5	63.0	72.5	89.1	99.4
Non-freight carrying trucks	14.7	*9.3	*7.6	11.9	**10.6	12.2
Buses	28.7	22.7	23.1	31.4	*19.8	32.4
<b>Total</b>	<b>12.3</b>	<b>7.9</b>	<b>11.2</b>	<b>15.2</b>	<b>8.2</b>	<b>15.9</b>

(a) Average distance travelled for registered vehicles which were used.

Source: Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2003 (9208.0).

## 22.10 MOTOR VEHICLE USE, By state/territory of registration — 2003

	Passenger vehicles		Motor cycles	Buses
	TOTAL KILOMETRES TRAVELLED (million)			
New South Wales	47 556		*306	538
Victoria	42 664		*340	345
Queensland	27 588		*473	465
South Australia	11 543		*65	136
Western Australia	15 435		*120	262
Tasmania	3 297		*38	40
Northern Territory	938		*9	74
Australian Capital Territory	2 723		*25	34
<b>Australia</b>	<b>151 743</b>		<b>1 376</b>	<b>1 893</b>
<b>NUMBER OF VEHICLES(a)</b>				
New South Wales	3 179 234		99 252	16 608
Victoria	2 832 324		103 451	13 115
Queensland	1 911 224		81 912	14 029
South Australia	870 544		27 942	3 805
Western Australia	1 118 998		46 855	8 116
Tasmania	251 784		8 884	1 621
Northern Territory	67 624		3 296	1 911
Australian Capital Territory	183 433		6 884	828
<b>Australia</b>	<b>10 415 165</b>		<b>378 475</b>	<b>60 033</b>

(a) The average number of vehicles registered for the 12 months. Includes registered vehicles that did not travel during the reference period.

Source: Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2003 (9208.0).

## 22.11 RAIL PASSENGER OPERATIONS(a)

	Urban			Non-urban million persons	Total million persons
	Heavy rail million persons	Tram and light rail million persons	Total million persons		
1992–93	396	103	498	7	505
1993–94	402	106	507	8	516
1994–95	420	111	530	9	539
1995–96	441	116	556	9	566
1996–97	456	118	574	10	584
1997–98	457	121	578	10	588
1998–99	463	123	585	10	595
1999–2000	482	137	619	11	629
2000–01	498	137	634	12	646
2001–02	493	143	636	12	648
2002–03	466	120	586	9	595
2003–04	469	120	589	9	598

(a) Excludes tourist services.

Source: Australasian Railway Association Inc.

### Domestic air passenger activity

At 30 June 2004 there were three major domestic airlines operating in Australia – Qantas, Virgin Blue and Jetstar – providing scheduled services to the major airports. Regional airlines provided connecting services to the regional airports. There are 256 regulated airports in Australia and its external territories.

Passenger departures were 14% higher in 2004, compared with 2003 (table 22.12), while the percentage of vacant seat kilometres increased from 20% to 21%. In 2004 domestic airlines accounted for 88% of total Australian domestic passenger departures, and regional airlines 12%.

The number of domestic passengers boarding airlines at the principal airports is shown in table 22.13. In 2004 all principal airports recorded increases in passenger movements compared with 2003. The strongest growth was recorded in Hobart and Coolangatta (25%), followed by Launceston (22%), Canberra (17%), and Darwin and Cairns (15%). Sydney recorded the lowest level of growth (10%).

### International air passenger activity

Passengers arriving, or departing, Australia, primarily travel by air.

Of total international passengers (19.4 million) carried to and from Australia in 2004 (table 22.14), 4.7 million travelled between Australia and New Zealand and 3.3 million travelled between Australia and Singapore.

Table 22.15 shows the number of international passengers who travelled through each of Australia's international airports. Sydney's share of total international passenger traffic was 46% in 2004, followed by Melbourne with 20%, and Brisbane with 17%. In 2004 Adelaide's international passenger numbers were 38% higher than in the previous year. International passenger numbers at the Gold Coast/Coolangatta airport were marginally lower (2%) in 2004 compared with 2003.

## 22.12 DOMESTIC AIRLINE ACTIVITY

	Units	1998	1999	2000(a)	2001(a)	2002(a)	2003(a)	2004(a)
Passenger departures(b)								
Domestic airlines	'000	23 575	24 392	25 660	26 152	25 808	28 949	33 133
Regional airlines	'000	4 851	5 039	5 929	5 668	4 354	4 165	4 701
Total	'000	28 426	29 431	31 590	31 820	30 162	33 114	37 834
Other activity (domestic airlines only)								
Passenger kilometres performed(c)	million	26 774	27 853	29 601	30 410	30 565	34 643	40 099
Seat kilometres available(d)	million	35 467	36 119	38 232	39 739	38 640	43 202	50 843
Percentage of vacant seat kilometres	%	24.5	22.9	22.6	23.5	20.9	19.8	21.1

(a) Includes estimates for regional airlines data. (b) The unit of measurement is traffic on board (which includes transit traffic). Includes revenue passengers only. (c) The sum for all flights of the number of passengers on each flight multiplied by the distance travelled. (d) The sum for all flights of the number of seats on a flight multiplied by distance travelled.

Source: Department of Transport and Regional Services.

## 22.13 DOMESTIC PASSENGER MOVEMENTS(a)

Principal airport	1998	1999	2000	2001	2002	2003	2004
	'000	'000	'000	'000	'000	'000	'000
Sydney	(b)14 276	(b)14 882	16 241	(b)16 565	(b)15 188	(b)16 536	(b)18 233
Melbourne	11 429	(b)11 901	12 934	(b)13 266	(b)12 883	(b)14 021	(b)15 815
Brisbane	(b)7 438	(b)7 833	8 811	(b)9 946	(b)9 164	(b)10 105	(b)11 519
Adelaide	(b)3 789	(b)3 861	3 963	(b)4 182	(b)3 994	(b)4 384	(b)4 844
Perth	3 236	3 258	3 463	3 342	3 371	3 893	4 425
Canberra	1 805	1 901	2 041	(b)1 973	(b)1 885	(b)2 074	(b)2 434
Hobart	(b)856	(b)878	928	(b)996	(b)948	(b)1 102	(b)1 381
Darwin	854	(b)879	907	(b)848	(b)894	(b)924	(b)1 062
Cairns	1 916	(b)2 023	2 133	(b)2 025	(b)2 088	(b)2 247	(b)2 583
Coolangatta	1 889	(b)1 938	1 918	(b)1 832	(b)1 912	(b)2 143	(b)2 678
Townsville	(b)704	(b)740	772	(b)806	(b)781	(b)889	(b)1 004
Launceston	536	(b)545	532	(b)509	(b)570	(b)608	(b)743

(a) The number of passengers on board arriving at or departing from each airport. Includes passengers in transit, who are counted as both arrivals and departures at airports through which they transit. (b) Includes estimates for unreported data.

Source: Department of Transport and Regional Services.

## 22.14 SCHEDULED INTERNATIONAL PASSENGER TRAFFIC TO AND FROM AUSTRALIA — 2004

Country to/from	Inbound '000 passengers	Outbound '000 passengers	Total '000 passengers
Argentina	16.1	16.1	32.2
Austria	91.1	91.9	183.0
Bahrain	49.3	52.0	101.3
Brunei	49.5	52.6	102.1
Canada	50.5	54.2	104.7
Chile	19.7	20.4	40.1
China (excl. SARs & Taiwan)	180.4	172.6	353.0
Fiji	219.4	223.2	442.6
France	7.9	7.5	15.4
Germany	39.5	39.0	78.5
Greece	0.3	—	0.3
Guam	13.4	14.0	27.4
Hong Kong (SAR of China)	692.3	665.9	1 358.2
India	13.3	14.3	27.5
Indonesia	393.0	396.8	789.8
Japan	849.6	838.5	1 688.1
Korea, Republic of (South)	212.2	204.6	416.8
Malaysia	529.0	518.3	1 047.3
Mauritius	19.2	18.5	37.7
Nauru	4.9	4.5	9.4
New Caledonia	62.5	60.9	123.3
New Zealand	2 312.8	2 352.4	4 665.2
Papua New Guinea	65.6	67.4	133.0
Philippines	80.9	78.4	159.3
Singapore	1 677.3	1 614.6	3 291.9
Solomon Islands	12.6	13.0	25.5
South Africa	111.7	100.2	212.0
Taiwan	101.9	102.3	204.1
Thailand	431.6	433.6	865.2
Tonga	2.8	2.4	5.2
United Kingdom	305.1	308.8	614.0
United Arab Emirates	288.5	282.1	570.6
United States of America	724.2	726.8	1 451.0
Vanuatu	34.4	34.2	68.6
Vietnam	39.3	74.6	114.0
Western Samoa	5.9	6.8	12.6
<b>Total</b>	<b>9 707.6</b>	<b>9 663.5</b>	<b>19 371.1</b>

Source: Department of Transport and Regional Services.

## 22.15 INTERNATIONAL PASSENGER TRAFFIC THROUGH AUSTRALIAN INTERNATIONAL AIRPORTS

Airport	2002 '000 passengers	2003 '000 passengers	2004 '000 passengers
Sydney	8 006.8	7 929.8	8 951.8
Melbourne	3 313.8	3 199.5	3 936.4
Brisbane	2 493.1	2 549.4	3 266.5
Perth	1 636.4	1 586.6	1 827.4
Cairns	766.3	746.6	846.8
Adelaide	224.4	206.8	286.1
Darwin	103.2	77.7	98.4
Gold Coast/Coolangatta	113.1	138.9	136.4
Norfolk Island	15.9	15.3	19.2
Newcastle(a)	9.5	—	—
Canberra(b)	—	—	2.0
<b>Total</b>	<b>16 682.4</b>	<b>16 450.7</b>	<b>19 371.1</b>

(a) International operations commenced December 2001 and ceased September 2002. (b) International operations commenced July 2004 and ceased September 2004.

Source: Department of Transport and Regional Services.

# Accidents, injuries and fatalities

## Transport accident deaths

Accident costs include loss of life or injury to people, and the destruction of, and damage to equipment and infrastructure. Table 22.16 shows the number of transport-related deaths for each of the transport modes in the period 1997 to 2003. Transport-related deaths fell from 2,038 in 1997 to 1,811 in 2003. The majority of deaths (69% in 2003) were associated with motor vehicles driven on public roads. Pedestrian deaths fell from 307 in 2002 to 257 in 2003, while the number of pedal cyclist deaths fell from 39 to 27 over the same period.

## Road traffic crashes

### Crashes involving fatalities

The number of road traffic crashes involving deaths in 2004 (1,458) rose by 13 crashes compared with 2003 (table 22.17). Between 2003 and 2004 fatal crashes in Tasmania rose by 33%, fell by 23% in the Northern Territory, and remained the same for the Australian Capital Territory. All other states recorded either relatively small decreases or increases.

The number of people killed was lower in 2004 (1,596) compared with 2003, declining by 2%. The number of people killed in the Northern Territory fell from 52 to 35, a fall of 33%. However, the number of people killed in Tasmania rose from 41 in 2003 to 58 in 2004, an increase of 41%.

### Road traffic fatalities

The number of deaths from road traffic crashes per 100,000 persons fell from 8.2 in 2003 to 7.9 in 2004, continuing the decline since 1970, when the rate was 30.4. Road deaths per 100,000 persons in the Northern Territory in 2004 (17.5) was significantly higher than the national rate (table 22.18). The Australian Capital Territory had the lowest rate of road deaths (3.1 per 100,000 persons) in 2004. The Northern Territory recorded the greatest drop in road deaths per 100,000 persons, from 26.2 in 2003 to 17.5 in 2004 (a fall of 33%), while Tasmania recorded an increase in road deaths per 100,000 persons of almost 40%, from 8.6 in 2003 to 12.0 in 2004.

The Northern Territory had the highest number of fatalities per 10,000 registered vehicles (3.3) in 2004, although this was a fall of 34% compared with 2003 (5.0). Fatalities per 10,000 registered vehicles rose in Tasmania by 42% between 2003 and 2004.

**22.16 DEATHS(a) FROM TRANSPORT ACCIDENTS**

Mode(b)	1997	1998	1999	2000	2001	2002	2003
Motor vehicles(c)	1 296	1 287	1 319	1 427	1 382	1 346	1 257
Pedestrians	388	369	373	359	352	307	257
Pedal cyclists	56	44	44	27	45	39	27
Rail	3	8	10	4	5	5	9
Water	50	39	57	51	49	49	51
Air	48	63	50	43	61	32	58
Other(d)	197	176	158	104	110	129	152
<b>Total</b>	<b>2 038</b>	<b>1 986</b>	<b>2 011</b>	<b>2 015</b>	<b>2 004</b>	<b>1 907</b>	<b>1 811</b>

(a) Based on the International Classification of Deaths, Edition 10 (ICD-10). Data in this table relate to year of registration of death and are based on death occurring up to one year following a transport accident. Data will, therefore, differ from the traffic fatalities shown in tables 22.17, 22.18 and 22.23 and graph 22.19 as data in these tables and graph are based on year of occurrence of transport-related deaths which occur within 30 days of an incident. (b) Mode of transport of deceased persons. (c) Involving motor vehicles driven on public roads. (d) Includes riders of animals, agricultural equipment, all-terrain vehicles, industrial and construction vehicles, and unspecified transport accidents.

Source: ABS data available on request, Causes of Death collection.

## 22.17 ROAD TRAFFIC CRASHES INVOLVING FATALITIES

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
CRASHES INVOLVING FATALITIES									
1994	552	345	364	143	195	52	36	15	1 702
1995	563	371	408	163	194	53	56	14	1 822
1996	538	382	338	162	220	53	58	17	1 768
1997	525	346	322	123	184	29	56	17	1 602
1998	491	348	257	152	199	47	59	20	1 573
1999	506	345	273	132	188	47	44	17	1 552
2000	543	373	275	151	184	38	48	16	1 628
2001	486	404	296	137	151	52	43	15	1 584
2002	501	361	283	138	159	34	40	8	1 524
2003	483	294	284	136	155	39	44	10	1 445
2004	471	313	288	128	162	52	34	10	1 458
PEOPLE KILLED									
1994	646	377	418	159	211	59	41	17	1 928
1995	620	418	456	181	209	57	61	15	2 017
1996	581	417	385	181	247	64	72	23	1 970
1997	576	377	361	148	197	32	60	17	1 768
1998	556	390	279	168	223	48	69	22	1 755
1999	577	383	314	151	217	53	49	19	1 763
2000	603	407	317	166	212	43	51	18	1 817
2001	524	444	324	153	165	61	50	16	1 737
2002	561	397	322	154	179	37	55	10	1 715
2003	539	330	310	157	180	41	53	11	1 621
2004	522	343	311	139	178	58	35	10	1 596

Source: Australian Transport Safety Bureau.

## 22.18 ROAD TRAFFIC FATALITIES

	2003			2004		
	no.	per 100,000 persons(a)	per 10,000 motor vehicles registered(b)	no.	per 100,000 persons(a)	per 10,000 motor vehicles registered(b)
New South Wales	539	8.3	1.4	522	7.8	1.3
Victoria	330	6.7	0.9	343	6.9	1.0
Queensland	310	8.2	1.2	311	8.0	1.2
South Australia	157	10.2	1.5	139	9.1	1.3
Western Australia	180	9.2	1.3	178	9.0	1.2
Tasmania	41	8.6	1.2	58	12.0	1.7
Northern Territory	53	26.2	5.1	35	17.5	3.3
Australian Capital Territory	11	3.4	0.5	10	3.1	0.5
<b>Australia</b>	<b>1 621</b>	<b>8.2</b>	<b>1.2</b>	<b>1 596</b>	<b>7.9</b>	<b>1.2</b>

(a) Estimated resident population at 30 June. (b) Number of registered motor vehicles and motor cycles (excludes tractors, caravans, plant and equipment) at 31 March.

Source: Motor Vehicle Census, Australia, 31 March 2004 (9309.0); Population by Age and Sex, Australian States and Territories, June 2004 (3201.0); Australian Transport Safety Bureau.



## Road fatalities and fatality rates – 1926 to 2004

Australian road fatalities in the period 1926 to 2004 are shown in graph 22.19. Road fatalities per 10,000 registered vehicles and 100,000 persons for the same period are shown in graph 22.20.

Until 1970, each year other than during the Depression and World War II had seen a steady growth in motor vehicle ownership and a corresponding increase in road deaths. By 1970 the number of vehicles had increased twelve-fold over the number in 1926 and the road toll had increased about four times to reach its highest mark of 3,798 deaths. The number of fatalities per 100,000 people also peaked in 1970 at 30.4. The road toll in 2004 of 1,596 was less than half the 1970 figure, while the number of fatalities per 100,000 people (7.9) for 2004 was less than a third of that of 1970. Also, while there were 8.0 road fatalities per 10,000 registered vehicles in 1970, this rate has decreased to 1.2 in 2004.

## Characteristics of fatal crashes

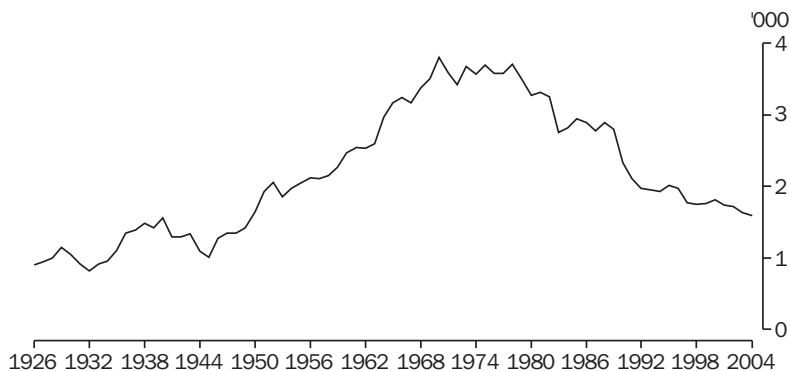
Some characteristics of fatal crashes for 1999 and 2004 are shown in table 22.21.

In both 1999 and 2004 the majority of fatal crashes occurred on roads where the posted speed limit was 100 km/h and above (45%), followed by roads with a speed limit of up to 60 km/h (33%). A further 22% of fatal crashes occurred on roads with speed zones of between 65 km/h and 95 km/h.

In 1999 the highest proportion of fatal crashes was multiple vehicle crashes (43%), while in 2004 the highest proportion of such crashes was single vehicle crashes (44%). Pedestrian crashes accounted for 19% of crash types in 1999 and 15% in 2004.

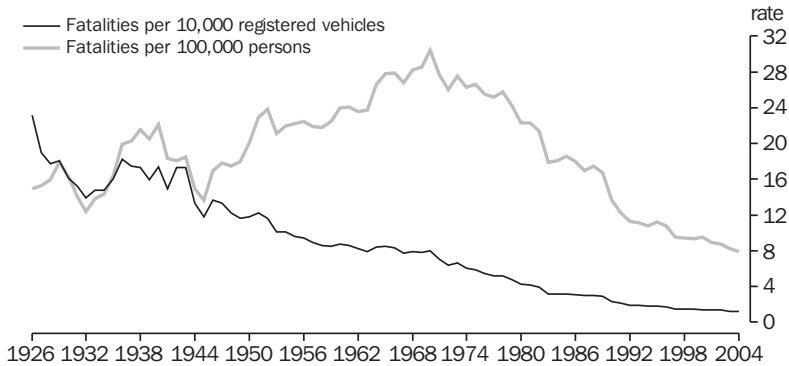
The highest number of fatal crashes occurred during the day time in both 1999 and 2004.

**22.19 ROAD FATALITIES — 1926 to 2004**



Source: Australian Transport Safety Bureau.

## 22.20 ROAD FATALITIES



Source: Australian Transport Safety Bureau.

## 22.21 CHARACTERISTICS OF FATAL CRASHES

	Units	Speed limit at crash site			Pedestrian	Type of crash		Time of day		Time of week	
		Up to 60 km/h	65–95 km/h	100 km/h and above(a)		Single vehicle	Multiple vehicle	Day	Night(b)	Week day	Weekend(c)
1999	no.	510	334	687	298	584	671	849	702	908	645
1999	%	33.3	21.8	44.9	19.2	37.6	43.2	54.7	45.3	58.5	41.5
2004	no.	479	314	641	221	645	592	794	662	850	608
2004	%	33.4	21.9	44.7	15.2	44.2	40.6	54.5	45.5	58.3	41.7

(a) Includes zones of unrestricted speed. (b) 6:00 pm to 5:59am all days. (c) 6:00 pm Friday to 5:59 am Monday.

Source: Australian Transport Safety Bureau.

### Serious injury due to road crashes

In 2002 there were 22,248 people seriously injured in road crashes (table 22.22), a slight decrease compared with 2001. The highest number of people seriously injured were occupants of cars (51%), followed by motorcyclists (20%), bicyclists (11%) and pedestrians (11%).

There were a higher number of males than females with serious injuries due to road crashes in 2002 (nearly twice the number of males to females). This was also the case for all the modes of transport, except buses, where the number of females with serious injuries was higher (153 females compared with 67 males). The number of males with serious

injuries was much greater than females for heavy vehicle transport (96%), motorcycles (92%), bicycles and utility trucks and vans (82%), pedestrians (62%) and other vehicles (65%).

The number of males with serious injuries involving motorcycle road crashes was almost twelve times that of females in 2002 (4,167 versus 356). There were also four and a half times the number of males with serious injuries involving bicycle road crashes compared with females (2,094 versus 463). Conversely, there were just over two and a quarter times the number of females seriously injured in road crashes involving buses compared with males in 2002 (153 versus 67).

## 22.22 PERSONS SERIOUSLY INJURED IN ROAD CRASHES, By mode of transport(a)

	Car	Pedestrian	Motorcycle	Heavy transport vehicle	Bicycle	Utility truck or van	Bus	Other(b)	Total
MALES									
2000	6 192	1 760	3 744	327	2 101	193	65	261	14 643
2001	6 391	1 601	3 987	322	1 936	166	82	235	14 720
2002	6 142	1 550	4 167	345	2 094	207	67	244	14 816
FEMALES									
2000	5 562	1 107	324	20	498	35	150	136	7 832
2001	5 459	1 053	361	23	453	32	151	143	7 675
2002	5 314	953	356	15	463	45	153	133	7 432
PERSONS									
2000	11 754	2 867	4 068	347	2 599	228	215	397	22 475
2001	11 850	2 654	4 348	345	2 389	198	233	378	22 395
2002	11 456	2 503	4 523	360	2 557	252	220	377	22 248

(a) Serious injury is defined as accident victims admitted to hospital as in-patients and who remain there for at least 24 hours, excluding those who die. (b) Includes three-wheeled motor vehicle, special agricultural/industrial/construction/all-terrain/off-road vehicle, tram, animal or animal-drawn vehicle, train and unknown vehicle.

Source: Australian Transport Safety Bureau.

### International comparisons of road traffic deaths

Australian road traffic deaths are compared with those for other selected OECD nations in table 22.23. Australia's rate of 8.7 road deaths per 100,000 persons in 2002 is considerably lower than the rates of Portugal (16.1), Poland (15.2), the Republic of (South) Korea (14.9), the United States of America (14.8), Spain (13.2), and France (12.9). Australia's rate is, however, markedly higher than Sweden and the United Kingdom (6.0).

Australia's rate of road deaths per 10,000 registered vehicles (1.3) was below the OECD median (1.8). For the countries listed, the Republic of (South) Korea has the highest death rate per 10,000 registered vehicles (4.9) deaths.

The number of fatalities per 100 million vehicle kilometres travelled in Australia in 2002 (0.9) was less than the OECD median (1.1).

### Rail and water transport accidents

There were 51 deaths associated with water transport accidents in 2003, an increase of two deaths compared with 2002 (table 22.16). There were nine rail transport accident-related deaths recorded in 2003, compared with five deaths in the preceding year.

### Air accidents

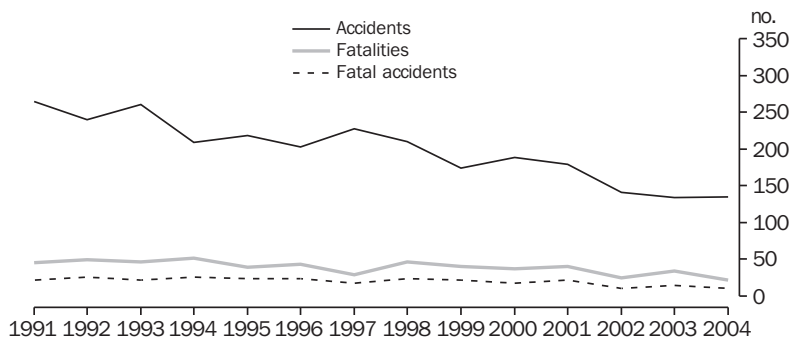
Since 1991 the number of aircraft accidents has declined by 49%, from 265 in 1991 to 135 in 2004 (graph 22.24). The number of fatal accidents fell from 21 to 10 (52%) over the same period. In 2004 there were 21 fatalities involving registered civil aircrafts, or just under half the fatalities that occurred in 1991, and a fall of 38% compared with 2003. In 2004 there were 135 accidents of which 10 were fatal, compared with 134 accidents of which 14 were fatal in 2003.

## 22.23 ROAD TRAFFIC FATALITIES, International comparisons — 2002

Country	no.	per 100,000 persons	per 10,000 registered vehicles	People killed		Total population millions
				per 100 million vehicle km travelled		
<b>Australia</b>	<b>1 715</b>	<b>8.7</b>	<b>1.3</b>	<b>0.9</b>		<b>19.6</b>
France	7 655	12.9	2.2	1.4		59.3
Germany	6 842	8.3	1.3	1.1		82.4
Japan	9 575	7.5	1.2	n.a.		127.4
Korea, Republic of (South)	7 090	14.9	4.9	2.3		47.6
New Zealand	404	10.3	1.5	n.a.		3.9
Poland	5 827	15.2	3.8	n.a.		38.2
Portugal	1 675	16.1	1.9	n.a.		10.4
Spain	5 347	13.2	2.1	n.a.		40.4
Sweden	532	6.0	1.1	n.a.		8.9
Switzerland	513	7.1	1.1	0.8		7.3
United Kingdom	3 581	6.0	n.a.	n.a.		59.2
United States of America	42 815	14.8	1.9	n.a.		288.4
OECD median	n.a.	10.3	1.8	1.1		n.a.

Source: Australian Transport Safety Bureau.

## 22.24 AIR ACCIDENTS, FATALITIES AND FATAL ACCIDENTS(a)



(a) Involving registered civil aircrafts.

Source: Australian Transport Safety Bureau.

## Transport equipment

### Registered motor vehicles

There were 13.1 million motor vehicles (excluding motor cycles, tractors, plant and equipment, caravans and trailers) registered at 31 March 2004 (table 22.25). This represents an increase of 3% since 31 March 2003. Approximately eight out of every ten vehicles are passenger vehicles. Table 22.26 shows registered motor vehicles by state or territory of registration. New South Wales, Victoria and Queensland are the states with the largest numbers of vehicles with 30%, 26% and 20% of the total vehicle fleet respectively.

The average age of the Australian motor vehicle fleet at 31 March 2004 was 10 years (table 22.27). Tasmania recorded the highest average age (12 years) while New South Wales and the Northern Territory recorded the lowest average age (9 years). Of the different vehicle types, campervans had the oldest average age (19 years), while motorcycles recorded the lowest (10 years).

The number of motor vehicles registered per person has increased from 606 vehicles per 1,000 persons in 1995 to 675 per 1,000 persons in 2004 (table 22.28). Western Australia had the most registered vehicles per person in 2004, at 749 per 1,000 persons, being 11% above the Australian average.

## 22.25 REGISTERED MOTOR VEHICLES

Motor vehicle census years(c)	Passenger vehicles(a) '000	Light commercial vehicles '000	Trucks				Total(b) '000	Motor cycles '000
			Rigid	Articulated	Non-freight carrying	Buses		
			'000	'000	'000	'000		
1996	9 022	1 602	341	58	16	59	11 097	304
1997	9 240	1 632	342	59	17	61	11 351	313
1998	9 561	1 686	347	62	18	64	11 738	329
1999	9 720	1 721	347	63	18	66	11 935	334
2001	9 870	1 770	338	63	18	68	12 126	351
2002	10 137	1 820	342	64	19	70	12 451	371
2003	10 404	1 880	349	64	19	70	12 786	377
2004	10 669	1 952	358	66	20	71	13 137	396

(a) Includes campervans. (b) Excludes motor cycles, tractors, plant and equipment, caravans and trailers. (c) At 31 March for 2004, 2003, 2002 and 2001; at 31 October for all previous years shown.

Source: Motor Vehicle Census, 31 March 2004 (9309.0).

## 22.26 REGISTERED MOTOR VEHICLES — 31 March 2004

	Passenger vehicles(a) '000	Light commercial vehicles '000	Trucks				Total(b) '000	Motor cycles '000
			Rigid	Articulated	Non-freight carrying	Buses		
			'000	'000	'000	'000		
New South Wales	3 258	552	108	15	4	20	3 957	106
Victoria	2 882	452	87	20	6	16	3 463	102
Queensland	1 994	464	75	14	4	15	2 567	89
South Australia	891	137	26	6	2	4	1 067	29
Western Australia	1 129	233	46	8	3	10	1 431	49
Tasmania	259	68	10	1	1	2	341	9
Northern Territory	69	26	3	1	—	3	103	3
Australian Capital Territory	186	19	2	—	—	1	209	7
<b>Australia</b>	<b>10 669</b>	<b>1 952</b>	<b>358</b>	<b>66</b>	<b>20</b>	<b>71</b>	<b>13 137</b>	<b>396</b>

(a) Includes campervans. (b) Excludes motor cycles, tractors, plant and equipment, caravans and trailers.

Source: Motor Vehicle Census, Australia, 31 March 2004 (9309.0).

## 22.27 ESTIMATED AVERAGE AGE OF THE VEHICLE FLEET(a) — 31 March 2004

Type of vehicle	State/territory of registration								
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Passenger vehicles	9.0	10.3	10.0	11.4	10.4	11.7	8.9	9.6	10.0
Campervans	17.0	19.8	16.3	20.5	21.2	20.2	20.5	19.8	18.9
Light commercial vehicles	10.2	11.9	11.0	12.1	11.9	13.2	9.9	10.2	11.2
Light rigid trucks	11.0	12.9	11.5	12.9	13.3	16.1	9.1	11.3	12.0
Heavy rigid trucks	14.1	17.6	15.1	17.8	18.2	17.3	13.3	11.5	16.1
Articulated trucks	10.6	11.8	11.4	11.4	13.4	10.5	12.5	8.4	11.6
Non-freight carrying trucks	12.6	15.0	11.4	14.9	16.8	16.9	13.1	12.0	14.2
Buses	10.3	10.8	10.5	11.8	10.1	14.7	8.1	10.6	10.6
Motor cycles	9.0	9.5	10.2	(b)8.5	12.0	10.5	8.2	9.0	9.8
<b>Total</b>	<b>9.3</b>	<b>10.7</b>	<b>10.3</b>	<b>11.6</b>	<b>11.0</b>	<b>12.3</b>	<b>9.3</b>	<b>9.7</b>	<b>10.3</b>

(a) Excludes plant and equipment, caravans and trailers. (b) Year of manufacture is frequently not reported for SA motor cycles. In 2004 it was not reported for 20% of motor cycles registered in South Australia.

Source: Motor Vehicle Census, 31 March 2004 (9309.0).

## 22.28 MOTOR VEHICLES(a)(b) ON REGISTER PER 1,000 OF POPULATION

	1995	1996	1997	1998	1999	2001(c)	2002	2003	2004
New South Wales	545	556	546	581	572	568	578	590	605
Victoria	637	669	661	682	695	690	701	709	718
Queensland	614	624	605	645	659	651	663	676	687
South Australia	653	667	661	693	686	694	699	705	715
Western Australia	679	694	682	725	724	722	731	737	749
Tasmania	676	686	688	684	699	700	708	711	727
Northern Territory	520	529	508	538	533	516	520	529	532
Australian Capital Territory	604	613	637	627	630	634	643	659	666
<b>Australia</b>	<b>606</b>	<b>614</b>	<b>630</b>	<b>612</b>	<b>646</b>	<b>642</b>	<b>652</b>	<b>662</b>	<b>675</b>

(a) Excludes tractors, plant and equipment, caravans and trailers. (b) At 31 March for 2004, 2003, 2002 and 2001; at 31 October for all previous years shown.

Source: *Motor Vehicle Census, 31 March 2004 (9309.0)*.

### Shipping fleet

The Australian merchant trading fleet has decreased in size, from 82 ships in 1996 to 74 ships in 2003 (table 22.29). Deadweight tonnes has fallen from 3.3 million tonnes in 1996 to 2.1 million tonnes in 2003, while gross tonnage fell from 2.3 million tonnes to 1.6 million tonnes over the same period.

### Aircraft fleet

There were 12,273 aircraft in the Australian Civil Aircraft Register at 31 December 2004 (table 22.30). This included 9,621 aeroplanes and 1,196 helicopters. Between 1996 and 2004, the number of aeroplanes has increased by 933, helicopters by 512, gliders by 121, and balloons by 88.

## 22.29 AUSTRALIAN TRADING FLEET — 30 JUNE(a)

	Units	1996	1997	1999	2000	2001	2002	2003
Ships	no.	82	76	77	77	81	77	74
Deadweight(b)	tonnes	3 303 294	3 164 568	2 505 369	2 283 336	2 323 983	2 028 637	2 135 982
Gross tonnage(c)	tonnes	2 267 719	2 238 141	1 864 976	1 729 770	1 764 298	1 587 743	1 628 203

(a) Data for 1998 was not collected. (b) Weight that a vessel can carry, including cargo, bunkers, water and stores. (c) Measure of the internal capacity of a ship (in tonnes) that is available within the hull and enclosed spaces for cargo, stores, passenger and crew.

Source: *Bureau of Transport and Regional Economics*.

## 22.30 REGISTERED AIRCRAFT(a) — 31 December

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Aeroplanes									
Single engine	6 738	6 890	7 024	7 196	7 280	7 350	7 403	7 543	7 679
Multi engine	1 950	1 950	1 918	1 930	1 971	1 969	1 932	1 927	1 942
Total	8 688	8 840	8 942	9 126	9 251	9 319	9 335	9 470	9 621
Helicopters	684	717	751	851	926	967	1 034	1 123	1 196
Gliders(b)	985	1 062	1 069	1 068	1 071	1 082	1 082	1 102	1 106
Balloons	262	282	296	309	322	334	337	339	350
<b>Total</b>	<b>10 619</b>	<b>10 901</b>	<b>11 058</b>	<b>11 354</b>	<b>11 570</b>	<b>11 702</b>	<b>11 788</b>	<b>12 034</b>	<b>12 273</b>

(a) Includes amateur built aircraft. (b) Includes powered and non-powered gliders.

Source: *Civil Aviation Safety Authority, Aircraft Register*.

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## INFORMATION AND COMMUNICATION TECHNOLOGY

This chapter presents information on the characteristics and performance of industries involved in the production of information and communication technology goods and services. It also provides statistics on Internet activity in Australia and the use of information technology by businesses, farms, households and government organisations.

In 2003–04 the communication services industry contributed 2.7% to Australia's gross domestic product.



## Economic contribution of the communication services industry

The communication services industry encompasses telecommunication services, and postal and courier services. This industry comprises the Communication Services Division of the *Australian and New Zealand Standard Industrial Classification* (ANZSIC).

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry Structure and Performance* chapter. The chain volume measure of GVA by the communication services industry increased by 3% from 2002–03 to 2003–04,

following an increase of 6% for the year to 2002–03 (table 23.1). This annual growth is in line with the increase of 3% in 2001–02 but well below the annual growth experienced in the late-1990s, which was generally around 10%.

Total factor income is that part of the cost of producing the GDP which consists of gross payments to factors of production (labour and capital) and is equal to the sum of compensation of employees, gross operating surplus and gross mixed income. Examination of the total factor income for the communication services industry shows changes in the share of income accruing to labour (i.e. compensation of employees) compared with the share attributed as accruing to capital (i.e. gross operating surplus and gross mixed income). Graph 23.2 shows how the shares accruing to labour and capital for the communication services industry have changed since 1997–98.

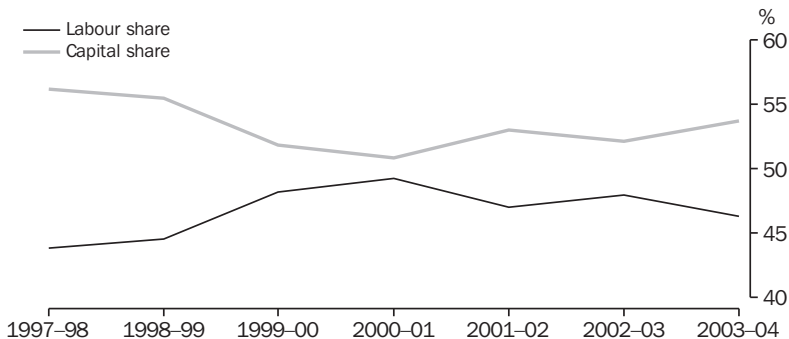
**23.1 COMMUNICATION SERVICES INDUSTRY, Gross value added**

	Units	1998–99	1999–2000	2000–01	2001–02	2002–03	2003–04
At current prices							
Value	\$m	18 087	18 159	18 799	19 163	20 351	21 943
Change from previous period	%	5.4	0.4	3.5	1.9	6.2	7.8
Chain volume measures(a)							
Value	\$m	17 564	18 439	18 587	19 142	20 351	20 986
Change from previous period	%	10.9	5.0	0.8	3.0	6.3	3.1

(a) The reference year for chain volume measures is 2002–03.

Source: *Australian System of National Accounts, 2003–04 (5204.0)*.

**23.2 COMMUNICATION SERVICES INDUSTRY TOTAL FACTOR INCOME(a)**



(a) Current prices.

Source: *Australian System of National Accounts, 2003–04 (5204.0)*.

## Telecommunication services industry

The telecommunication services industry is made up of businesses mainly providing telecommunication services to the public by wire, cable or radio. The primary activities of the industry include cable and communication channel services, network communication services, operation of radio relay stations, satellite communication services, telecommunications, telephone services, teleprinter and telex services, and operation of television relay stations. The Australian Bureau of Statistics (ABS) classifies the provision of radio and television services (as distinct from the operation of radio and television relay stations) as part of the Cultural and Recreational Services Division of ANZSIC.

The *Telecommunications Act 1997* (Cwlth) allows any person to provide a range of telecommunication services, provided they comply with the provisions of the Act. Providers may use telecommunications capacity acquired from a licensed carrier or, in defined circumstances, from non-carrier infrastructure, to supply a range of local or national telecommunication services to consumer and commercial markets. Service providers typically purchase network capacity from carriers at

discounted rates. In theory this allows them to provide either similar services at competitive prices or a variety of value-adding services. These services include basic telephony services, mobile phone services, data and value-adding services, Internet services and other telecommunication services.

Table 23.3 shows performance indicators by size of businesses for the telecommunication services industry. Total income for the telecommunication services industry was \$31,796 million (m) in 2002–03. The largest income sources for telecommunication services were the provision of basic telephony services (\$10,946m or 34%), mobile and paging services (\$8,154m or 26%), data and text services (\$2,655m or 8%) and Internet services (\$2,183m or 7%). The telecommunication services industry operating profit before tax was \$4,766m and represented an operating profit margin of 15%.

There were 39 telecommunications businesses with employment of 100 persons or more, accounting for 4% of all telecommunications businesses. These large businesses accounted for 90% of employment and 94% of total income. The operating profit margin for these large businesses was 16%, well above that for smaller-sized businesses.

**23.3 TELECOMMUNICATION SERVICES INDUSTRY(a), Performance indicators — 2002–03**

Indicator	Units	Employment size				Total
		0–4 persons	5–19 persons	20–99 persons	100 or more persons	
Businesses at 30 June	no.	563	^ 270	^ 84	39	956
Employment at 30 June	no.	1 158	^ 2 657	^ 3 132	60 803	67 750
Total income	\$m	^ 338.8	^ 766.4	923.2	29 767.4	31 795.8
Total expenses	\$m	^ 329.6	^ 820	^ 921	24 884	26 955
Operating profit before tax	\$m	(b)n.p.	(b)n.p.	(b)n.p.	(b)n.p.	4 766.0
Labour costs	\$m	^ 52.0	^ 192.5	^ 192.0	4 038.1	4 474.5
Income per person employed	\$'000	^ 292.7	^ 288.5	^ 294.7	489.6	469.3
Labour costs per employee	\$'000	45.0	^ 72.4	61.3	66.4	66.0
Operating profit margin	%	*2.8	**–6.7	**—	16.2	15.0

(a) Excludes businesses for which telecommunication service provision was a minor part of their business operation, businesses which manufacture telecommunications equipment, businesses engaged in cable laying and transmission line construction, and those providing secretarial services such as answering or message delivery services. (b) Not published separately, included in total.

Source: *Information and Communication Technology, Australia, 2002–03* (8126.0).

## Internet activity

In the September quarter 2000, the ABS commenced a quarterly survey of all businesses in Australia identified as providing Internet connectivity services, with the exception of libraries, Internet kiosks and Internet cafes. The survey includes businesses for which telecommunication service provision was a minor part of their business operation. The collection frequency of the survey was changed from quarterly to biannual from the March quarter 2002, and to annual following the March quarter 2005. Table 23.4 shows summary indicators of Internet activity for the March quarters 2003, 2004 and 2005:

- There were 689 Internet service providers (ISPs) supplying Internet access to 5.98 million active subscribers in Australia at the end of March 2005. While the number of ISPs decreased slightly from 694 at the end of March 2004, the number of subscribers increased by 15% from the end of March 2004.
- The growth in subscriber numbers was driven by the adoption of broadband access technology, as increasing numbers of subscribers are accessing the Internet using non dial-up connections. While non dial-up subscribers represented 16% (861,000) of total subscribers at the end of March 2004, this had increased to 30% (1.8 million) a year later.
- While the majority of subscribers continue to utilise dial-up access technologies (70% of total subscribers at the end of March 2005), this represented the lowest proportion recorded since the survey began. Dial-up subscribers numbered 4.6 million at the end of March 2003, 4.4 million at the end of March 2004 and 4.2 million at the end of March 2005 (a decrease of 9.3% for the two year period).
- Digital subscriber lines (DSL) continued to be the most popular broadband technology. The number of subscribers using DSL increased from 512,000 to almost 1.3 million during the year ending March 2005, with 550 ISPs offering this service during the same period.
- The number of access lines rose from 1.5 million at the end of March 2004 to 2.4 million a year later (an increase of 64%). This large increase in access lines is largely attributable to the increase in non dial-up connection subscribers, where there is a 1:1 ratio of subscriber to access line.
- Data downloaded by subscribers during the March quarter 2005 totalled 14,124 million megabytes (MBs). This represented an increase of 120% since the March quarter 2004 when 6,409 million MBs of data were downloaded. On average, each subscriber downloaded 2,435 MBs during the March quarter 2005.

**23.4 INTERNET ACTIVITY, Summary indicators**

	Units	March quarter		
		2003	2004	2005
Total number of Internet service providers(a)	no.	554	694	689
Internet service providers providing DSL services(a)(b)	no.	310	526	550
Internet access lines(a)	'000	857.5	1 474.3	2 416.5
Total number of subscribers(a)	'000	5 076	5 220	5 980
Subscribers using dial-up(a)	'000	4 607	4 359	4 177
Subscribers using non dial-up(a)	'000	470	861	1 802
Subscribers using DSL(a)(b)	'000	209	512	1 256
Data downloaded(c)	million MBs	3 046	6 409	14 124
Average data downloaded per subscriber(d)	MBs	616	1 228	2 435

(a) As at the end of the reference quarter. (b) Digital Subscriber Line. (c) During the three months of the reference quarter.

(d) Calculated by dividing data downloaded with an estimate of the number of subscribers at the midpoint of the reference quarter.

Source: *Internet Activity, Australia (8153.0)*.

## Postal communications

### Australian Postal Corporation

The Australian Postal Corporation (trading as Australia Post) is a government business enterprise owned by the Commonwealth of Australia. It operates under the *Australian Postal Corporation Act 1989* (Cwlth). Australia Post is independent of government funding, achieves a substantial profit from its activities, and pays a full range of taxes and charges. In 2003–04, Australia Post paid \$526m in taxes and government charges, an increase of 8% from 2002–03 (\$485m).

Australia Post offers letter and parcel delivery services within Australia and internationally. It also provides a range of related services including electronic bulk mail handling, advertising mail, bill

payment, money order and banking services, express delivery services and philatelic products and services.

Australia Post's legal obligations require it to:

- provide Australians with a universal letter service
- carry standard letters within Australia at a uniform price
- ensure that the letter service meets the social, industrial and commercial needs of the community
- perform its functions according to sound business practice
- perform its functions consistent with the Commonwealth's general policies.

Financial and other operating statistics for Australia Post are shown in tables 23.5, 23.6 and 23.7.

#### 23.5 AUSTRALIAN POSTAL CORPORATION, Consolidated financial statement

	Units	2000–01	2001–02	2002–03	2003–04
Revenue	\$m	3 766	3 807	3 972	4 161
Expenditure	\$m	3 364	3 399	3 510	3 640
Operating profit before income tax	\$m	402	407	462	521
Dividends	\$m	275	292	304	221
Total taxes and government charges(a)	\$m	459	455	485	526
Cost of Universal Service Obligation(b)	\$m	86	88	91	79
Total assets(c)	\$m	3 199	3 229	3 365	3 472
Return on assets(d)	%	13.4	12.9	14.0	15.4

(a) Includes sales tax and customs duty, payroll tax, local government taxes and charges, federal excise duty, and fringe benefits tax. (b) The Universal Service Obligation ensures that all Australians have reasonable access to the letter service; this includes the delivery of standard letters by ordinary post at a uniform price even when the delivery cost is higher. (c) At 30 June of the financial years shown. (d) Operating profit before net interest and income tax divided by average total assets.

Source: Australian Postal Corporation.

#### 23.6 AUSTRALIAN POSTAL CORPORATION, Mail delivery network and post outlets

	2000–01	2001–02	2002–03	2003–04
Households receiving mail	8 110 865	8 264 191	8 483 422	8 671 568
Businesses receiving mail	901 482	933 107	959 805	1 010 408
<i>Total delivery points</i>	<i>9 012 347</i>	<i>9 197 298</i>	<i>9 443 227</i>	<i>9 681 976</i>
Corporate outlets and licensed post offices	3 872	3 861	3 853	3 844

Source: Australian Postal Corporation.

#### 23.7 AUSTRALIAN POSTAL CORPORATION, Total postal articles handled

	2000–01	2001–02	2002–03	2003–04
	million	million	million	million
Posted in Australia for delivery in Australia	4 929	4 962	4 950	5 016
Posted in Australia for delivery overseas	180	173	165	169
Posted overseas for delivery in Australia	150	147	147	122
<i>Total articles through mail network</i>	<i>5 258</i>	<i>5 282</i>	<i>5 262</i>	<i>5 308</i>

Source: Australian Postal Corporation.

## The information and communication technology (ICT) sector

The ICT sector is that part of the economy which produces information and communication technology goods and services. It includes businesses involved in telecommunication services, computer services, and selected manufacturing and wholesale trade industries.

Table 23.8 provides statistics for a selection of industries considered to be the prominent contributors to the production and distribution of ICT goods and services. At June 2003 there were 23,950 ICT specialist businesses in the industries surveyed, with 18,524 (77%) of these in the computer consultancy services industry. ICT specialists are those businesses for which the income from the sale, distribution and provision of ICT goods and services forms the greater part of the total income of the business.

There were 235,696 persons working in ICT specialist businesses at the end of June 2003, with 99,574 (42%) working in the computer

consultancy services industry and 67,750 (29%) working in the telecommunication services industry.

During 2002–03 total income of ICT specialist businesses was \$79,894m, with the telecommunication services industry contributing \$31,796m (40%), the computer wholesaling industry contributing \$17,338m (22%) and the computer consultancy services industry contributing \$15,935m (20%).

ICT specialist businesses generated a total operating profit before tax of \$6,393m during 2002–03, with 75% (\$4,766m) coming from the telecommunication services industry.

Total income from the domestic production of selected ICT goods and services was \$48.8 billion (b) in 2002–03 (table 23.9), and mainly comprised telecommunication services (60%) and computer services (33%). Imports of selected ICT goods and services totalled \$15.1b during 2002–03, and mainly comprised computer and communications hardware, equipment, cables and other computer parts, and consumables (81%).

### 23.8 INDUSTRIES IN THE ICT SECTOR(a), Summary of operations — 2002–03

Industry	Businesses at end June no.	Employment at end June no.	ICT income \$m	Total income \$m	Total expenses \$m	Operating profit before tax \$m
<b>Manufacturing</b>						
Computer and business machines	233	2 210	808.1	825.6	759.3	45.6
Telecommunication, broadcasting and transceiving equipment	^89	4 526	891.2	936.8	876.6	(b)n.p.
Electronic equipment n.e.c.	252	3 403	627.3	658.2	624.7	^33.1
Electric cable and wire	^27	699	198.8	221.7	216.0	(b)n.p.
<i>Total</i>	602	10 838	2 525.3	2 642.2	2 476.6	107.6
<b>Wholesale trade</b>						
Computers	1 831	29 016	16 625.2	17 338.1	16 918.8	553.0
Business machines	447	6 749	1 625.0	2 282.7	2 181.9	95.9
Electrical and electronic equipment n.e.c.	807	14 249	7 937.5	8 842.4	8 545.8	^250.4
<i>Total</i>	3 085	50 013	26 187.7	28 463.2	27 646.5	899.4
<b>Telecommunication services</b>	956	67 750	29 862.1	31 795.8	26 955.4	4 766.0
<b>Computer services</b>						
Data processing	^204	^1 619	^167.8	^174.9	^164.7	*10.0
Information storage and retrieval	^58	932	210.3	212.1	206.7	(b)n.p.
Computer maintenance	521	4 970	639.3	671.0	662.4	(b)n.p.
Computer consultancy	18 524	99 574	15 099.0	15 934.5	15 308.7	^585.6
<i>Total</i>	19 307	107 094	16 116.4	16 992.5	16 342.5	^619.8
<b>Total</b>	<b>23 950</b>	<b>235 696</b>	<b>74 691.6</b>	<b>79 893.7</b>	<b>73 421.0</b>	<b>6 392.7</b>

(a) The data relates to ICT specialist businesses within the industries in the ICT sector. (b) Not published separately, included in total.

Source: *Information and Communication Technology, Australia, 2002–03 (8126.0)*.

### 23.9 ICT GOODS AND SERVICES, Production, imports and exports — 2002–03

Commodity	Income from domestic production \$m	Imports (custom value) \$m	Exports (f.o.b.)(a) \$m	Re-exports (f.o.b.) \$m
Computer and communications hardware, equipment and cables	2 933.8	12 293.0	2 329.4	1 373.4
Packaged software and associated licensing	537.8	506.8	162.9	5.2
Computer services	15 974.7	929.0	1 071.0	n.a.
Telecommunication services	29 332.3	1 407.0	1 083.0	n.a.
<b>Total</b>	<b>48 778.5</b>	<b>15 135.9</b>	<b>4 646.3</b>	<b>1 378.6</b>

(a) Exports include exports of Australian commodities and re-exports of goods of foreign origin.

Source: *Information and Communication Technology, Australia, 2002–03 (8126.0)*.

## ICT-related Research and Experimental Development (R&D)

During 2003–04 expenditure on ICT-related R&D was \$2,296m, 32% of total business sector R&D expenditure (\$7,220m). In current price terms this expenditure was 2% greater than the level recorded in 2002–03 (table 23.10).

Major ICT research fields where R&D expenditure occurred were Computer software (\$815m) and Information systems (\$707m), 35% and 31% respectively of the total.

The bulk of the ICT-related R&D expenditure was in the Computer services industry grouping (\$684m or 30%), followed by the Manufacturing industry grouping (\$287m or 13%) and the Telecommunications service industry grouping (\$242m or 11%).

A more detailed range of R&D statistics collected by the ABS is presented in the *Science and innovation* chapter.

## Government technology

The ABS has conducted a number of surveys of government expenditure on ICT over the past decade. The most recent survey was conducted in respect of 2002–03 and a summary of results is shown in table 23.11.

Of the 30,733 ICT employees in all levels of government, Australian (Commonwealth) Government (including higher education) accounted for 49%, state and territory governments 43%, and local government 8%. ICT employees accounted for 5% of Australian Government's total employment which compares with 2% for all levels of government.

Total selected ICT operating expenses for all levels of government was \$6.7b. Of this, wages and salaries of ICT employees was 25%, payments to contractors and consultants for ICT services was 25%, telecommunication services was 23% and ICT hardware operating expenses represented 18%.

Total ICT capital expenditure for all levels of government was \$2.3b, with ICT hardware making up 58% and software 42%.

### 23.10 R&D EXPENDITURE, By ICT-related research fields, and industry grouping

ICT-related research field	Manufacturing	Wholesale trade	Telecommunication services	Computer services	Other n.e.c.	Total
	\$m	\$m	\$m	\$m	\$m	\$m
2002-03						
Artificial intelligence and signal and image processing	8	1	—	16	25	50
Communication technologies	88	n.p.	251	n.p.	49	462
Computation theory and mathematics	4	n.p.	—	3	n.p.	54
Computer hardware	6	—	n.p.	n.p.	9	22
Computer software	99	80	6	379	156	720
Data format	2	1	—	10	14	27
Information systems	16	9	58	117	511	711
Other information, computing and communication sciences	46	38	n.p.	38	n.p.	210
<b>Total</b>	<b>270</b>	<b>183</b>	<b>377</b>	<b>590</b>	<b>837</b>	<b>2 257</b>
2003-04						
Artificial intelligence and signal and image processing	5	1	—	19	33	58
Communication technologies	91	57	147	20	53	368
Computation theory and mathematics	3	—	—	3	42	48
Computer hardware	9	3	—	7	9	28
Computer software	90	77	9	481	158	815
Data format	2	2	—	13	45	62
Information systems	25	n.p.	n.p.	123	522	707
Other information, computing and communication sciences	61	n.p.	n.p.	18	45	210
<b>Total</b>	<b>287</b>	<b>176</b>	<b>242</b>	<b>684</b>	<b>907</b>	<b>2 296</b>

Source: ABS data available on request, Survey of Research and Experimental Development — Business Sector.

### 23.11 GOVERNMENT ICT EMPLOYMENT AND ICT EXPENDITURE — 2002-03

Indicator	Units	Commonwealth Government(a)	State/territory government(b)	Local government(c)	Total
ICT employees	no.	15 016	13 180	2 536	30 733
ICT employees as a percentage of total employment	%	4.5	1.4	1.6	2.2
Selected ICT operating expenses:					
Wages and salaries of ICT employees	\$m	836	710	143	1 689
Hardware	\$m	515	611	84	1 209
Software	\$m	269	291	71	631
Telecommunication services	\$m	676	755	111	1 542
Contractors and consultants for ICT services	\$m	811	766	101	1 678
<i>Total</i>	<i>\$m</i>	<i>3 106</i>	<i>3 135</i>	<i>509</i>	<i>6 749</i>
Total selected ICT operating expenses as a percentage of total operating expenses	%	7	4	3	5
ICT capital expenditure:					
Hardware	\$m	616	633	100	1 349
Software(d)	\$m	485	430	69	985
<i>Total</i>	<i>\$m</i>	<i>1 101</i>	<i>1 063</i>	<i>169</i>	<i>2 333</i>

(a) Includes higher education. (b) Includes state/territory general government, vocational and school education. (c) Includes local government authorities and other administrative bodies such as regional councils. (d) Includes computer software developed in-house.

Source: Government Technology, Australia, 2002-03 (8119.0).



## Business use of information technology (IT)

### Adoption of IT by businesses

For the year ended 30 June 2004, 85% of Australian businesses used a computer, 74% used the Internet and 25% had a web presence.

A strong relationship exists between the employment size of a business and the likelihood that the business is using IT (table 23.12). As employment size increases, so does the proportion of businesses making use of IT. For example, for the year ended June 2004 all businesses with 100 or more people employed used computers, 99% used the Internet and 83% had a web presence. A much lower level of IT adoption existed for businesses with 0–4 people employed: 80% used computers; 67% used the Internet; and only 16% had a web presence.

## Business use of the Internet

Data were collected on the main type of connection used to access the Internet as at the end of June 2004. A higher proportion of businesses using the Internet were mainly using non-broadband connections (58%) than broadband connections (41%). Broadband is defined by the ABS as an 'always on' Internet connection with an access speed equal to or greater than 256 kilobits per second. Dial-up (analog) was the most common main type of Internet connection for businesses with Internet use (50%), while Integrated Services Digital Network (ISDN) was the least common (8%).

Broadband connections were the most prevalent main Internet connection type for businesses which employed 100 or more people (78%) and 20–99 people (54%). In contrast, dial-up (analog) was the most common main Internet connection type for businesses which employed 0–4 people and 5–19 people at 54% and 49% respectively.

**23.12 BUSINESS USE OF SELECTED INFORMATION TECHNOLOGIES(a) — 2003–04**

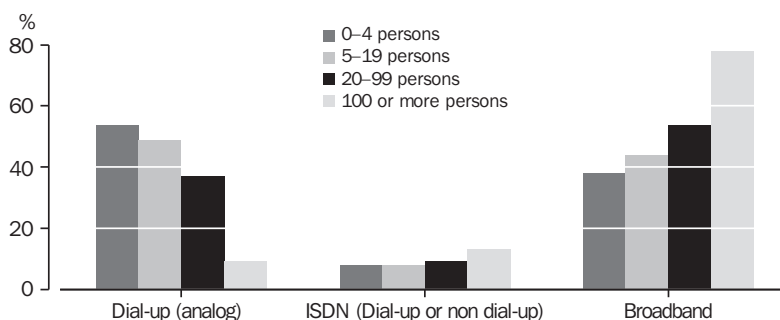
	Businesses with(a)		
	Computer use %	Internet use %	Web presence %
<b>Total businesses</b>	<b>85</b>	<b>74</b>	<b>25</b>
Employment size			
0–4 persons	80	67	16
5–19 persons	94	85	38
20–99 persons	98	94	58
100 or more persons	100	99	83
Industry			
Mining	88	82	36
Manufacturing	88	76	36
Electricity, gas and water supply	95	84	39
Construction	78	63	11
Wholesale trade	91	86	40
Retail trade	81	69	23
Accommodation, cafes and restaurants	72	58	29
Transport and storage	83	66	^17
Communication services	74	55	^17
Finance and insurance	83	78	^27
Property and business services	94	89	29
Health and community services	91	76	17
Cultural and recreational services	90	81	41
Personal and other services	76	60	28

(a) Proportions are of all businesses in each category.

Source: *Business Use of Information Technology, 2003–04 (8129.0)*.



**23.13 MAIN TYPE OF INTERNET ACCESS CONNECTION, By employment size(a) — 30 June 2004**



(a) Proportions are of all businesses in each employment size category with Internet use.

Source: *Business Use of Information Technology, 2003-04 (8129.0)*.

For businesses using broadband, the most common main type of broadband connection used at the end of June 2004 was Digital Subscriber Line (DSL) at 67%. Cable was the next most common broadband connection type (28%). Cable includes fibre optic, coaxial and hybrid fibre coaxial cable.

For businesses with non-broadband Internet connection types, the most commonly reported reason for not using a broadband connection was a lack of perceived benefit (32%). This was followed by ongoing connection and usage costs being too high (26%), start up connection costs being too high (24%) and unavailability of broadband in the business location (23%).

### Business use of web sites

As at the end of June 2004, approximately 25% of Australian businesses reported having a web presence, either with their own web site or a presence on another entity's web site. As web features became more sophisticated, differences in these features across employment sizes of

businesses were more significant. While approximately 7% of all businesses with a web presence reported the capability for secure access or transactions, this proportion was 17% for businesses employing 100 or more people. Similarly, while integration with back-end systems was reported as a web feature by 13% of all businesses with a web presence, the proportion of businesses with 100 or more people employed which reported this feature was 21% compared with 9% of businesses with 0-4 people employed.

### Internet commerce in Australia

The ABS defines Internet commerce as placing or receiving orders for goods and services via the Internet or web, including email, with or without associated online payments.

The proportion of businesses that reported placing orders for goods and services via the Internet or web during 2003-04 was 42%. For this same period, 16% of businesses indicated they had received orders via the Internet or web.

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<<http://www.abs.gov.au>>

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<<http://www.accc.gov.au>>. The ACCC administers the *Trades Practices Act 1974* (Cwlth) and other acts. Its telecommunications group has prime responsibility for administering the Commission's functions for competition and economic regulation of telecommunications.

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## ENVIRONMENT

The Australian environment is complex and varied with many unique components, and it underpins many ecological, social and economic systems. Due to human pressures, environmental problems have arisen. The recent drought conditions experienced in what is already the driest inhabited continent has highlighted the importance and value of water and water resources. Accordingly, there has been an increased emphasis on how water resources are used and managed. This chapter provides information on some of the practices and consequences of water supply and use; water stocks; household water conservation; greenhouse gas emissions; waste management; and environmental assets.

The chapter starts with a description of the supply and use of water in the Australian economy. Water consumption varies between states and territories as well as by industry group. Particular focus is given to water consumption in the agriculture industry, being the largest consumer of water. The section also looks at water stocks, focussing specifically on surface water stocks, sustainable yield groundwater, and large dams.

Since 2001 there has been a significant reduction in water storage levels of reservoirs across Australia which led to imposition of water restrictions in most capital cities. How Australians cope with water restrictions and drought is also explored in this chapter.

There is widespread national and international concern that human activities are increasing atmospheric concentrations of existing greenhouse gases and that these gases are linked to global warming and climate change. The section on greenhouse gas emissions provides estimates of Australia's greenhouse gas emissions per person, by sector, and by state and territories.

A section on waste management provides information on household waste management issues and waste minimisation strategies. Information is provided for recycling of waste, items recycled, and waste recycling methods.

Under the environmental assets section, information on Australia's total assets and environmental assets are provided, along with measures of depletion of subsoil assets and land degradation. Adjustments to production, income, and growth figures for the Australian national accounts are also given.

The article *Australia's deserts* include a discussion of desert flora and fauna.

# Water

Water is a critical resource supporting Australia's environmental, social and economic systems. By world standards Australia is a dry continent with few freshwater resources. In some regions, the biological condition of the river, wetlands and groundwater dependent ecosystems has been degraded by the extraction of water for agriculture, household and industrial use.

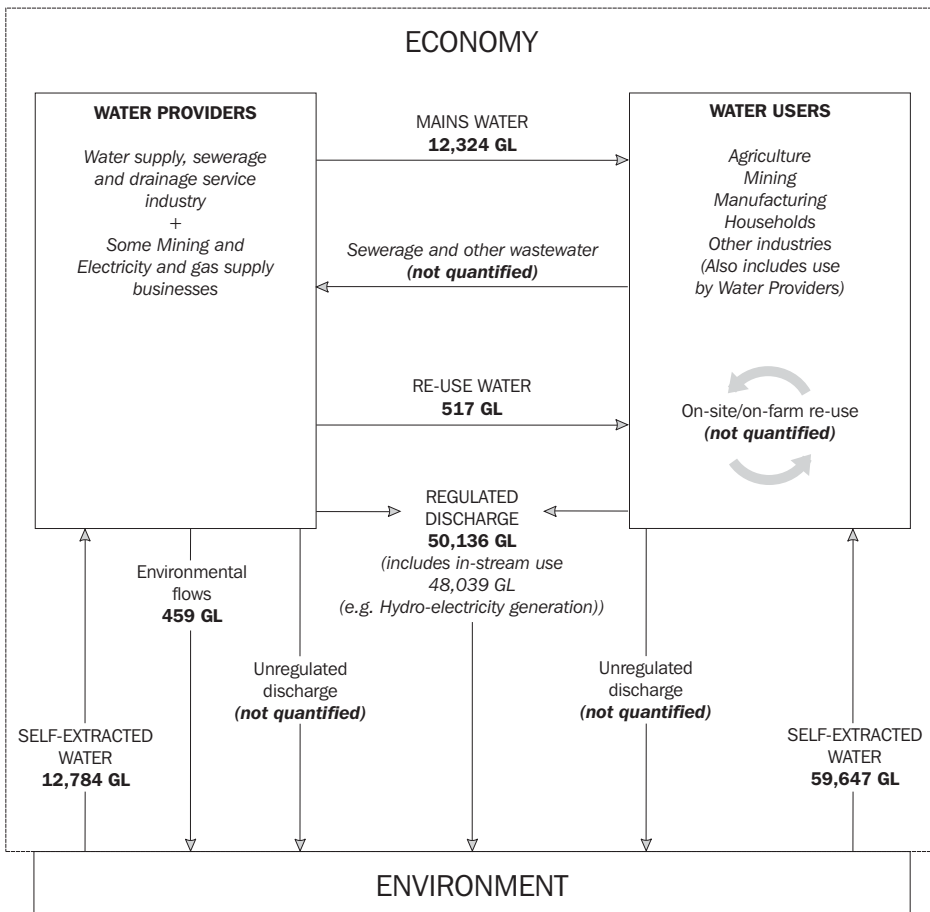
## Water supply and use

Diagram 24.1 shows the supply and use of water in Australia for 2000–01 which is the latest data available, but it precedes the onset of the recent drought. (Information on the drought is provided in the *Geography and climate* chapter). In total 72,431 giganlitres (GL) of water was extracted from

the environment and used within the Australian economy. Of this amount, water providers accounted for 12,784 GL of water extracted, mostly by the water supply, sewerage and drainage services industry (12,765 GL), while water users directly accounted for 59,647 GL. Of the volume extracted by water providers, 12,324 GL was supplied as mains water to water users and 459 GL was returned to the environment as environmental flows.

Of the 72,431 GL of water extracted from the environment in 2000–01, most was used in-stream (mainly for hydro-electricity generation) and is available almost immediately for use further downstream. Excluding this 'non-consumptive' use of water, Australian industries and households used 24,909 GL of water in 2000–01.

**24.1 WATER SUPPLY AND USE IN THE AUSTRALIAN ECONOMY — 2000–01**



Source: *Water Account, Australia, 2000–01 (4610.0)*.

## Water consumption by industry

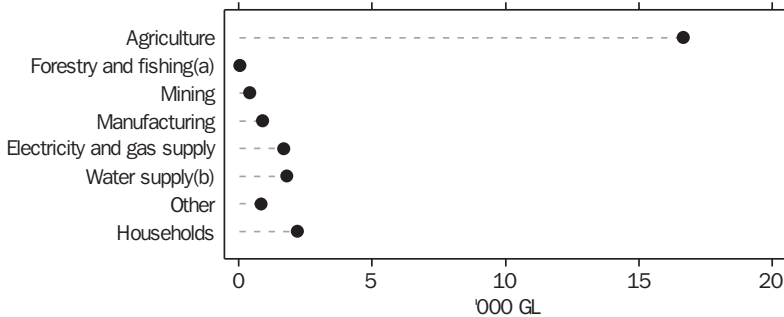
Agriculture was by far the largest consumer of water in 2000–01, accounting for 67% (16,660 GL) of total water use in Australia (graph 24.2, table 24.3). Households were the next highest consumers of water, accounting for 8.8% (2,181 GL) of water use. Total water use in households increased 19% between 1996–97 and 2000–01. The average household water use was 115 kilolitres/person in 2000–01. The water supply, sewerage and drainage services industry was also a significant consumer of water, accounting for 7.2% (1,794 GL) of water use, followed by the electricity and gas supply industry which consumed 6.8% (1,688 GL), excluding in-stream water use for hydro-electricity generation. Mining accounted for 1.6% (401 GL) of water use, while manufacturing accounted for 3.5% (866 GL) of the total water consumption in 2000–01.

New South Wales and the Australian Capital Territory combined used the most water – 9,425 GL (or 38% of the total) – and 78% of this was used in agriculture. In Victoria, agriculture accounted for 52% of the total, however, the electricity and gas supply industry also contributed a high proportion (22%) compared with that contributed by other states and territories.

## Water use by agriculture

Water used by agriculture includes water applied through irrigation to crops, pastures, or fed to livestock, that has been directly extracted from the environment by farmers (e.g. from bores, on-farm dams, rivers) or supplied by water providers (e.g. irrigation authorities). It excludes the use of rainwater.

**24.2 WATER CONSUMPTION, By industry — 2000–01**



(a) Includes services to agriculture; hunting and trapping. (b) Includes sewerage and drainage services.

Source: *Water Account, Australia, 2000–01 (4610.0)*.

**24.3 INDUSTRY AND HOUSEHOLD WATER CONSUMPTION — 2000–01**

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	Aust.
	GL	GL	GL	GL	GL	GL	GL	GL
Agriculture	7 322	3 725	3 454	1 302	565	222	70	16 660
Forestry and fishing(b)	4	4	2	1	13	2	0	27
Mining	52	7	109	12	195	21	5	401
Manufacturing	179	249	181	86	83	79	9	866
Electricity and gas supply	59	1 536	71	2	19	0	1	1 688
Water supply(c)	676	745	216	24	114	10	9	1 794
Other	254	148	172	38	175	24	22	833
Households	679	472	501	181	245	59	45	2 181
Environment	201	253	4	1	—	—	—	459
<b>Total</b>	<b>9 425</b>	<b>7 140</b>	<b>4 711</b>	<b>1 646</b>	<b>1 409</b>	<b>417</b>	<b>161</b>	<b>24 909</b>

(a) Includes ACT. (b) Includes services to agriculture; hunting and trapping. (c) Includes sewerage and drainage services.

Source: *Water Account, Australia, 2000–01 (4610.0)*.

While 2000–01 is the latest year for which information on water use is available for the entire economy, information on agricultural water use is available for 2002–03. The estimates of water use by agriculture for 2000–01 and 2002–03 are not strictly comparable, but a lower level of water use by the sector is apparent and may be attributed to the drought.

Australian agricultural establishments applied 10,404 GL of irrigation water to 2.4 million hectares (ha) of crops and pastures in 2002–03 (table 24.4). Agricultural establishments in New South Wales applied the largest volume of irrigation water (4,273 GL) to the largest area (939,000 ha) of the states and territories. Western Australian agricultural establishments reported the

highest irrigation application rate (6.5 megalitres (ML)/ha) and Tasmanian establishments reported the lowest (2.4 ML/ha).

In Australia during 2002–03, 10,404 GL of irrigation water was used on agricultural establishments (table 24.5). The largest volume of irrigation water that was applied on pastures for grazing purposes (2,827 GL), followed by cotton (1,526 GL), sugar cane (1,293 GL) and cereal crops for grains or seed (1,002 GL). The smallest volume of irrigation water was used for vegetables for seed (8 GL) followed by nurseries, cut flowers or cultivated turf (78 GL). Rice required the highest application rate of irrigation water (14.1 ML/ha), followed by cotton (6.5 ML/ha). Vegetables for seed have the lowest application rate (2.3 ML/ha).

#### 24.4 IRRIGATION WATER USE — 2002–03

	Agricultural establishments irrigating no.	Area irrigated '000 ha	Volume applied '000 ML	Application rate ML/ha(a)
NSW(b)	11 230	939	4 272.7	4.6
Vic.	12 005	593	2 464.4	4.2
Qld	10 278	525	2 229.0	4.3
SA	5 471	183	899.5	4.9
WA	2 731	48	313.2	6.5
Tas.	1 923	87	209.0	2.4
NT	136	3	16.0	4.7
<b>Aust.</b>	<b>43 774</b>	<b>2 378</b>	<b>10 403.8</b>	<b>4.4</b>

(a) Averaged across all irrigated pastures and crops. (b) Includes ACT.

Note: The number of irrigating establishments differs from the number of customers serviced by water authorities. This is because not all customers fall within the scope of the survey and because an agricultural establishment may be more than one customer of a water authority.

Source: *Water Use on Australian Farms, 2002–03 (4618.0)*.

#### 24.5 PASTURES AND CROPS IRRIGATED — 2002–03

	Agricultural establishments irrigating no.	Area irrigated '000 ha	Volume applied '000 ML	Application rate ML/ha(a)
Pasture for grazing	14 419	710	2 826.9	4.0
Pasture for seed production	^ 572	^ 32	^ 138.8	4.4
Pasture for hay and silage	6 206	162	682.7	4.2
Cereal crops cut for hay	2 215	^ 66	^ 245.6	3.7
Cereal crops for grain or seed(b)	3 569	365	1 001.6	2.8
Cereal crops not for grain or seed	^ 1 764	42	^ 127.1	3.0
Rice	631	44	615.4	14.1
Sugar cane	2 710	238	1 293.1	5.4
Cotton	647	234	1 525.5	6.5
Other broadacre crops(c)	1 879	68	172.2	2.5
Fruit trees, nut trees, plantation or berry fruits(d)	8 604	138	659.9	4.8
Vegetables for human consumption	5 225	112	439.2	3.9
Vegetables for seed	341	4	8.4	2.3
Nurseries, cutflowers or cultivated turf	2 956	13	77.9	5.8
Grapevines	8 114	150	588.8	3.9
<b>Total(e)</b>	<b>(f)43 774</b>	<b>2 378</b>	<b>10 403.8</b>	<b>4.4</b>

(a) Averaged across all states and territories. (b) Excludes rice. (c) Excludes sugar cane and cotton. (d) Excludes grapevines.

(e) Totals include other pastures and crops not elsewhere classified. (f) Total does not equal the sum of agricultural establishments as many establishments grow or irrigate more than one crop.

Source: *Water Use on Australian Farms, 2002–03 (4618.0)*.

## Household water use

Water use by households (also referred to as domestic water use) includes water that is used for human consumption (such as for drinking and cooking) as well as water used by households for cleaning or outdoors (such as water for gardens and swimming pools).

In 2000–01 the total water used by households was 2,181 GL, increasing from 1,829 GL in 1996–97 and 1,704 GL in 1993–94. This rise can be attributed in part to an increase of population (6% nationally from 1993–94 to 2000–01) and improved metering, coverage and reporting of water use in 2000–01. The majority of household water was used for outdoor purposes (44%), followed by indoor uses, including bathrooms (20%) and toilets (15%) (graph 24.6).

## Reuse water

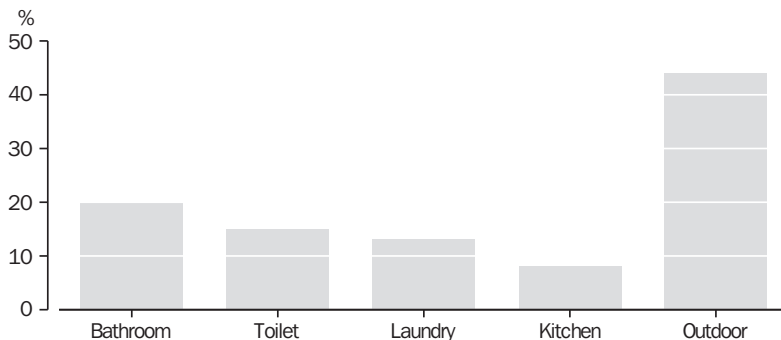
Reuse water is defined as wastewater that may have been treated to some extent and then used again without first being discharged to the environment. Reuse water is supplied mainly by

the water supply industry, but may also be supplied by other industries (such as mining and manufacturing). Reuse water supplied by irrigation/rural water providers through regional reuse schemes has also been included.

The use of reuse water has increased almost threefold since 1996–97, although the volume is still relatively small. In 1996–97 there were 134 GL of reuse water used in Australia, which made up less than 1% of total water use in that year. By 2000–01 this volume had increased to 516 GL. However, this use still accounted for less than 1% of total water use. A large proportion of reuse water use is sourced from rural/irrigation regional reuse schemes.

The agriculture industry was the largest user of reuse water in 2000–01, accounting for 423 GL or 82% of all reuse water used in Australia (graph 24.7). The majority of reuse water used by the agriculture industry was for application to pastures (45%), although rice crops were also significant users (29%).

**24.6 HOUSEHOLD WATER USE(a), By location of use — 2000–01**

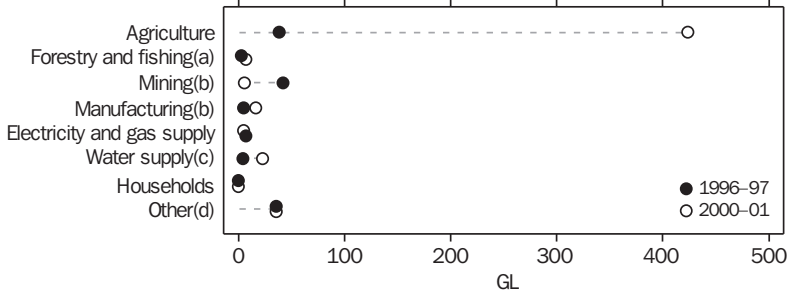


(a) Excludes Tasmania and Northern Territory.

Source: *Water Account Australia, 2000–01* (4610.0).



### 24.7 REUSE WATER USE, By industry



(a) Includes services to agriculture; hunting and trapping. (b) On-site reuse was included in this industry in 1996-97 and not in 2000-01. (c) Includes sewerage and drainage services. (d) Includes mainly services and administrative industries.

Source: *Water Account, Australia, 2000-01* (4610.0).

## Water stocks

Rainfall, or the lack of it, is the single most important factor determining land use and rural production in Australia. The relative scarcity of both surface water and groundwater resources, together with low rates of precipitation, has led to programs to regulate water supply by construction of dams, reservoirs, large tanks and other storages.

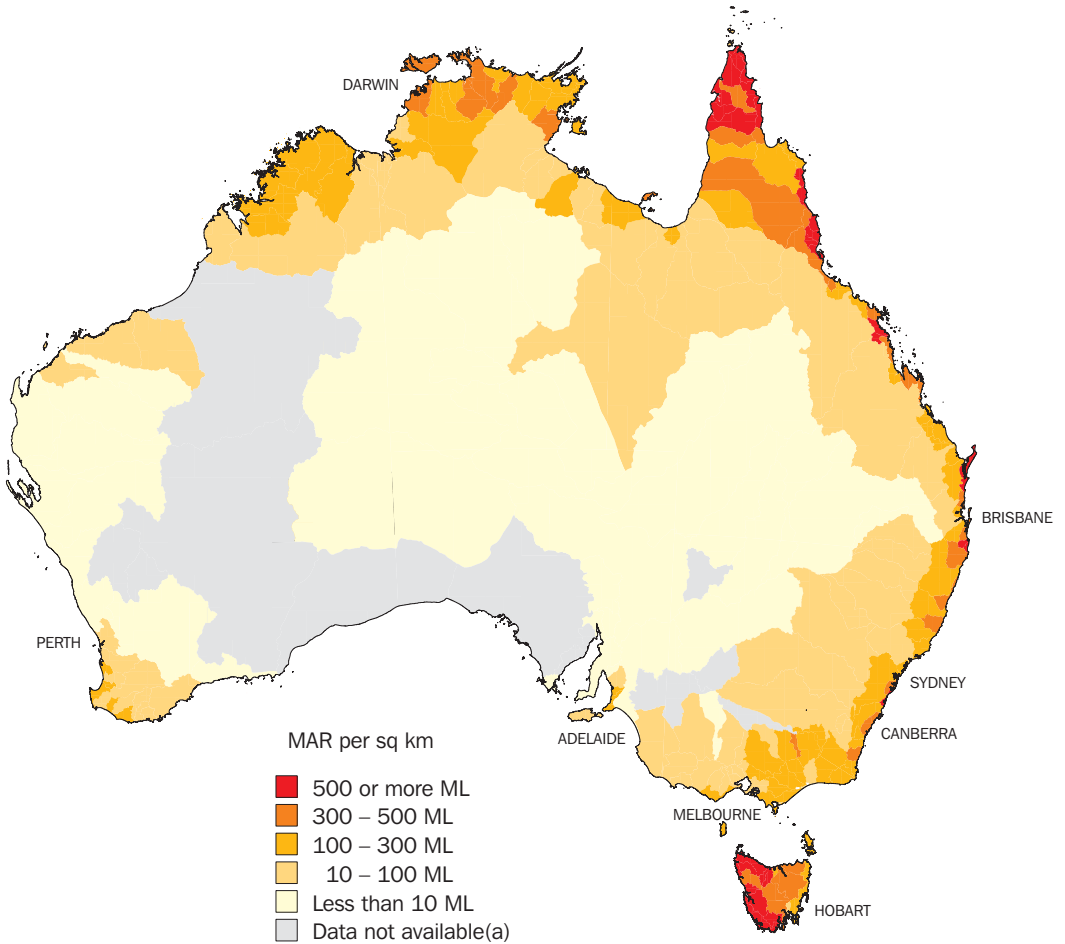
### Surface water stocks

Water stocks are usually divided into surface water and groundwater resources. Surface water resources are often represented by Mean Annual

Run-off (MAR). MAR is the average annual streamflow passing a specified point (NLWRA 2001) or the maximum average annual flow observed in a river basin (AWRC 1987). In 2000, the total MAR for Australia was 387,184 GL, but the distribution was geographically uneven (map 24.8).

Table 24.9 summarises Australia's surface water stocks by drainage division. The drainage division with the highest intensity (GL/km<sup>2</sup>) of run-off is Tasmania with 0.67 GL/km<sup>2</sup>. Conversely, the vast area of the Western Plateau, almost a third of Australia's total land area, has no significant run-off.

24.8 SURFACE WATER, MEAN ANNUAL RUN-OFF, By river basin — 2000



(a) Data not available for a number of reasons. Refer to <<http://audit.ea.gov.au/>> for more information.

Source: Adapted from AWRC; NLWRA 2001.

## 24.9 SURFACE WATER STOCKS — 2000

Drainage division	Area km <sup>2</sup>	Mean annual run-off intensity	
		Total GL	Intensity GL/km <sup>2</sup>
North-East Coast	451 000	73 411	0.16
South-East Coast(a)	274 000	42 390	0.15
Tasmania(b)	68 200	45 582	0.67
Murray-Darling Basin(a)	1 060 000	23 850	0.02
South Australian Gulf(c)	82 300	952	0.01
South-West Coast	315 000	6 785	0.02
Indian Ocean	519 000	4 609	0.01
Timor Sea	547 000	83 320	0.15
Gulf of Carpentaria	641 000	95 615	0.15
Lake Eyre	1 170 000	8 638	0.01
Bulloo-Bancannia	101 000	546	0.01
Western Plateau	2 450 000	1 486	0.00
<b>Total</b>	<b>7 680 000</b>	<b>387 184</b>	<b>0.05</b>

(a) South-East Coast and Murray-Darling Division. The volume diverted represents the sum of available data (NSW has not reported water use for unregulated surface water management areas). (b) Tasmanian Division. Volume diverted does not include the hydro-electric scheme diversions. (c) South Australian Gulf Division. Mean annual outflow includes the flow from surface water management areas Willochra Creek and Lake Torrens, which do not flow to the sea, but flow into the terminal lake, Lake Torrens.

Source: NLWRA 2001.

Developed yield (also referred to as Economic Allocated volumes) is the average annual volume of water that can be diverted for use with the existing infrastructure (NLWRA 2001). Map 24.10 shows the developed yield as a percentage of MAR in 2000. The highest proportions are located in the south east and north east areas of Australia.

### Groundwater stocks

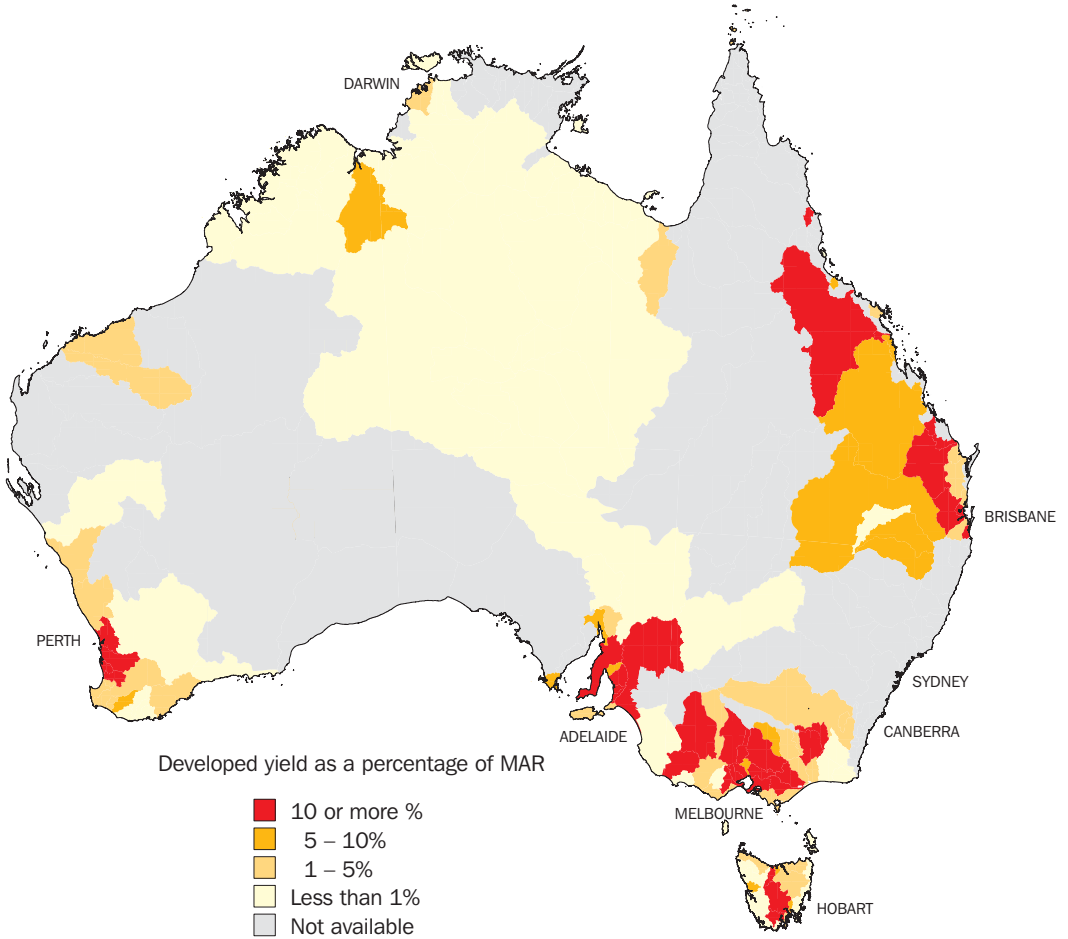
The volume of groundwater that exists in Australia is not known with certainty. The volume changes as water percolates through the ground to aquifers (underground water resources) and through water being extracted (e.g. from bores). Instead of an absolute measure of groundwater stock, a proxy is used. This is the amount of water that can be sustainably extracted, referred to as sustainable yield.

Sustainable yield is defined as:

Level of extraction measured over a specified planning time frame that should not be exceeded to protect the higher value social, environmental and economic uses associated with the aquifer (NLWRA 2001).

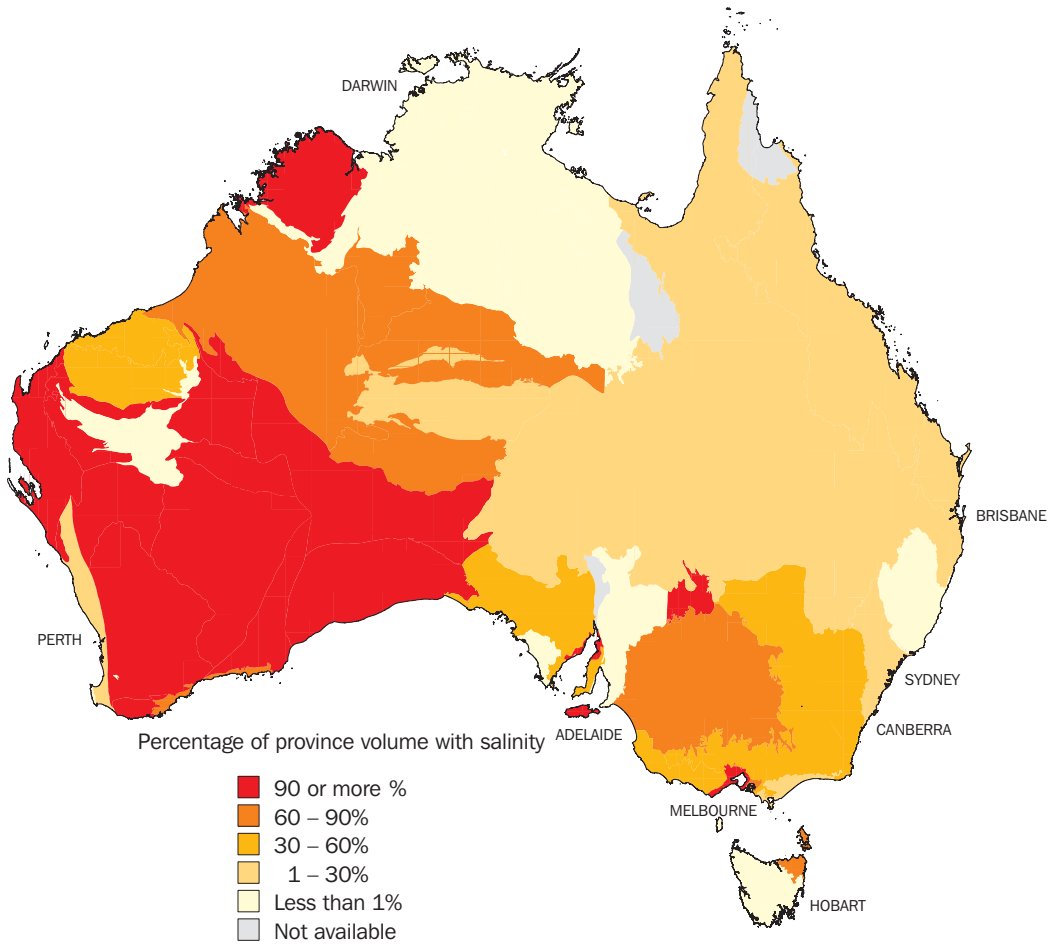
The 2001 National Land and Water Resources Audit (NLWRA) estimated the sustainable yield of groundwater in Australia to be 29,173 GL. Groundwater is not all of equal quality. In particular, the concentration of salt dissolved in water varies (map 24.11). The level of dissolved salt determines the potential uses of the water. The higher the salt level the less suitable the water is for human consumption or agriculture. Typically, a salinity level of more than 1,500 milligrams/litre (mg/L) restricts the use of water for irrigation. Map 24.11 shows the percentage of groundwater resource in each province with salinity over 1,500 (mg/L) in 2000. Salt occurs naturally in Australian soils but through irrigation and land clearing the levels of salt can increase in soils and water. Table 24.12 shows, proportionally, Northern Territory, Tasmania and Queensland have groundwater with the lowest salinity levels (less than 1,500 mg/L), while Victoria, South Australia and Western Australia have the highest (1,500 mg/L and over).

24.10 SURFACE WATER, DEVELOPED YIELD, By river basin — 2000



Source: Adapted from AWRC; NLWRA 2001.

**24.11 GROUNDWATER, Salinity levels over 1,500 mg/L — 2000**



Source: Data based on NLWRA 2001. Australian Groundwater Provinces are based on data provided in 2000 with the permission of the Queensland Department of Natural Resources and Mines, Environment ACT, NSW Department of Land and Water Conservation, NT Department of Lands, Planning and Environment, SA Department of Water Resources, Tasmanian Department of Primary Industries, Water and Environment, Victorian Department of Natural Resources and the Environment, WA Water and Rivers Commission, and the Australian Surveying and Land Information Group.

### 24.12 SUSTAINABLE YIELD GROUNDWATER, By level of salinity — 2000

	NSW GL	Vic. GL	Qld GL	SA GL	WA GL	Tas. GL	NT GL	Aust. GL
Less than 1,500 mg/L								
Less than 500 mg/L	698	194	1 373	56	1 899	1 585	4 412	10 217
500–1,000 mg/L	3 928	827	995	229	1 061	767	287	8 093
1,000–1,500 mg/L	34	386	119	679	995	—	455	2 670
Total	4 660	1 407	2 487	964	3 955	2 353	5 154	20 980
1,500 mg/L and over								
1,500–3,000 mg/L	812	244	113	253	1 468	178	139	3 208
3,000–5,000 mg/L	2	707	30	—	588	—	183	1 510
5,000–14,000 mg/L	440	201	63	762	841	—	—	2 307
More than 14,000 mg/L	—	797	—	—	371	—	—	1 168
Total	1 254	1 949	206	1 015	3 268	178	322	8 193
<b>Total sustainable yield</b>	<b>5 914</b>	<b>3 356</b>	<b>2 693</b>	<b>1 979</b>	<b>7 223</b>	<b>2 531</b>	<b>5 476</b>	<b>29 173</b>
Proportion (%)								
Less than 1,500 mg/L	79	42	92	49	55	93	94	72
1,500 mg/L and over	21	58	8	51	45	7	6	28

Source: Water Account, Australia, 2000–01 (4610.0).

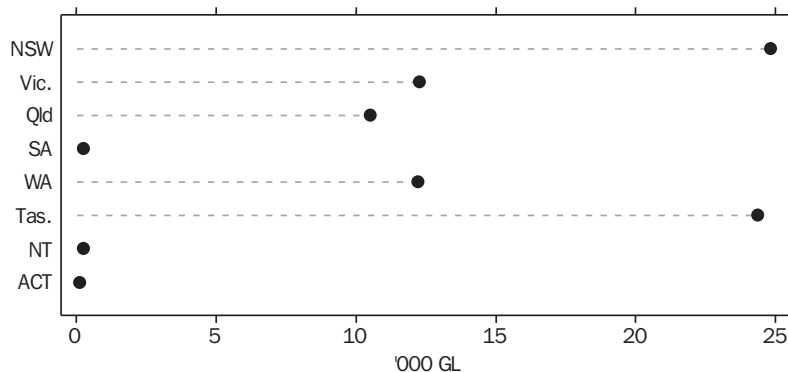
### Water assets

There are several dimensions to water assets including the physical availability of water or water stocks, the administrative (e.g. licences and entitlements) and the physical infrastructure (dams, pipes, etc.) that are used to store and deliver water.

Information on the storage capacity of large dams in each state and territory (except the Australian Capital Territory) is available from the *Register of*

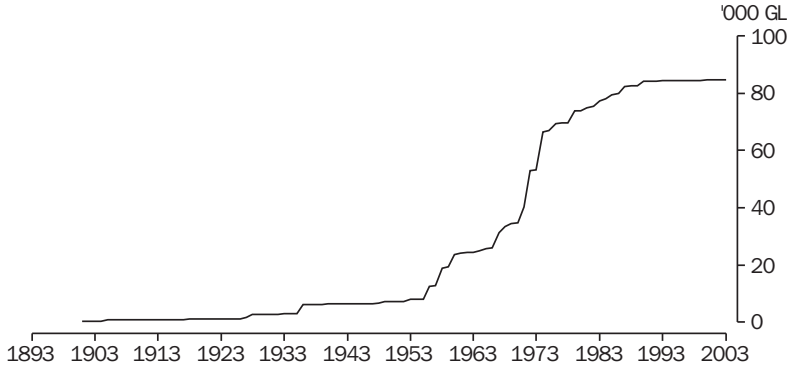
*Large Dams* (Australian National Committee on Large Dams 2002). There are approximately 500 large dams in Australia with a storage capacity of 84,793 GL. Tasmania (24,340 GL) and New South Wales (24,814 GL) have the largest storage capacity, while the Australian Capital Territory (124 GL) and South Australia (261 GL) have the least (graph 24.13). Most of Australia's dam capacity has been built since 1970 (graph 24.14).

24.13 WATER STORAGE CAPACITY OF LARGE DAMS — 2001



Source: Water Account, Australia, 2000–01 (4610.0).

## 24.14 TOTAL WATER STORAGE CAPACITY OF LARGE DAMS



Source: *Water Account, Australia, 2000-01 (4610.0)*.

### Drinking water

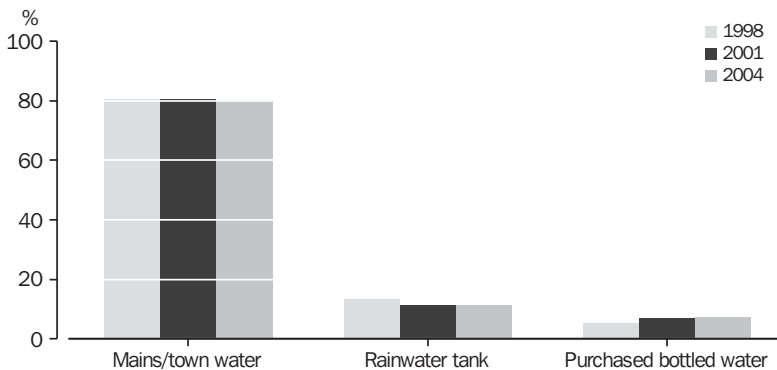
The majority of Australians (80%) rely on mains or town water for drinking (graph 24.15). This reliance on mains or town water for drinking is more pronounced in the capital cities (89% of households in 2004) than outside capital cities (67% of households). South Australians are least reliant on mains as their main source of water for drinking although this has increased significantly from 50% in 2001 to 60% in 2004.

The use of water filters in drinking water in Australian households has also increased from 21% in 2001 to 26% of households in 2004 (graph 24.16). This increase in the use of water filters was greatest in South Australia (from 23% in 2001 to 30% in 2004), and Western Australia (from 24% in 2001 to 29% in 2004).

There was a general increase in the satisfaction with the quality of mains/town water for drinking, with 70% of people satisfied in 2004 compared with 66% in 2001 (graph 24.17). The level of satisfaction varied between states and territories. The Northern Territory (89%) and the Australian Capital Territory (87%) had the highest rates of satisfaction, while South Australia (52%) had the lowest levels of satisfaction.

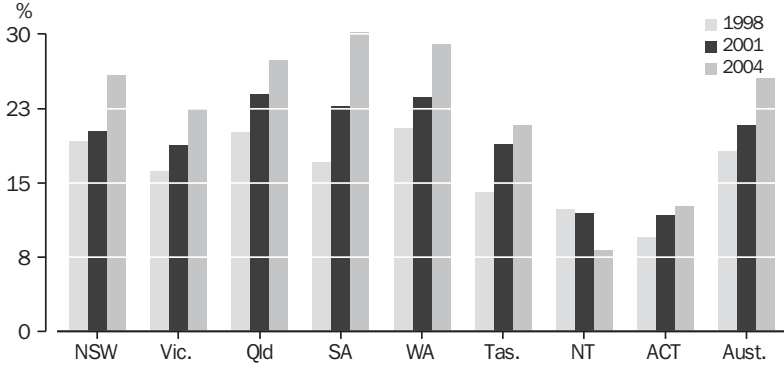
New South Wales, Victoria, Queensland, South Australia and Tasmania all reported increased satisfaction with the quality of their mains drinking water since 2001. Generally, there has been an increase in the levels of satisfaction across Australia (from 64% in 1994 to 70% in 2004).

## 24.15 MAIN SOURCE OF DRINKING WATER



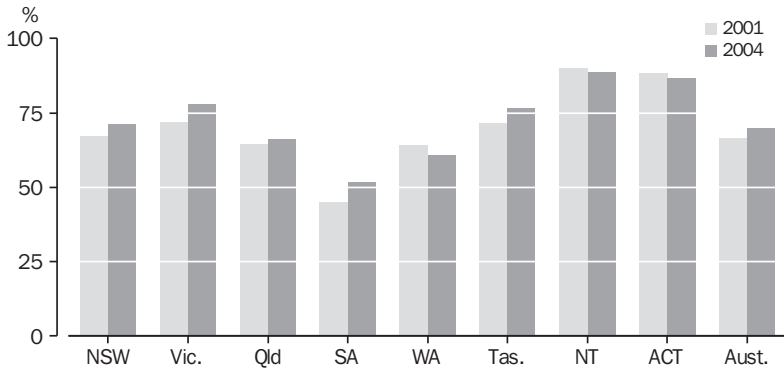
Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

### 24.16 USE OF WATER FILTERS



Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

### 24.17 SATISFACTION WITH QUALITY OF TAP WATER FOR DRINKING



Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

### Water conservation practices

During the three years to mid-2004, the majority of Australia experienced drought conditions. This led to the introduction of water restrictions in most capital cities around Australia during 2002–03. Water restrictions varied from voluntary reductions of water use to mandatory restrictions. Sydney, Melbourne, Perth, Hobart and Canberra all experienced water restrictions during 2002–03. Brisbane had permanent restrictions on the times residents were able to use sprinklers. The only capital city not affected by water restrictions during 2002–03 was Darwin.

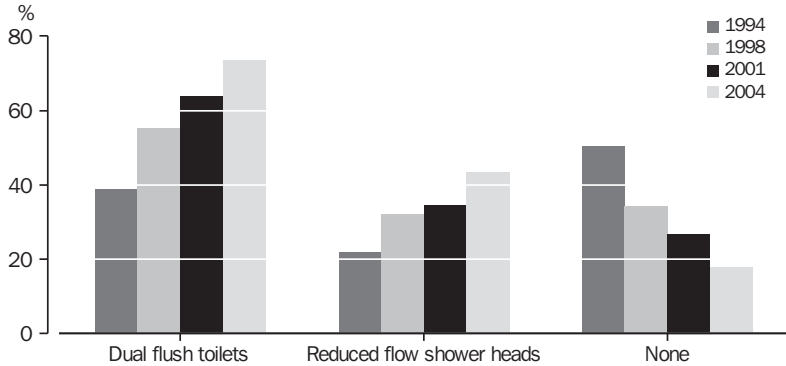
For households, these restrictions limited the use of water outside the house, primarily in the garden. The following data reflect the impact of

the drought and subsequent water restrictions in many regions of Australia in recent times. For example, 32% of households in 2004 nominated supply restrictions as a problem compared with 7% in 2001.

The use of both reduced flow shower heads and dual flush toilets in Australian households continues to grow. Nearly three-quarters of households (74%) had dual flush toilets in 2004, up from 64% in 2001 (graph 24.18). Reduced flow shower heads were installed in 44% of households (up from 35% in 2001). Nearly one in five (18%) Australian households have neither a dual flush toilet nor a reduced flow shower head, down from 27% in 2001.



### 24.18 WATER CONSERVATION DEVICES USED



Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

Less than half of all Australian households (46%) reported using one or more water conservation practices in 2004.

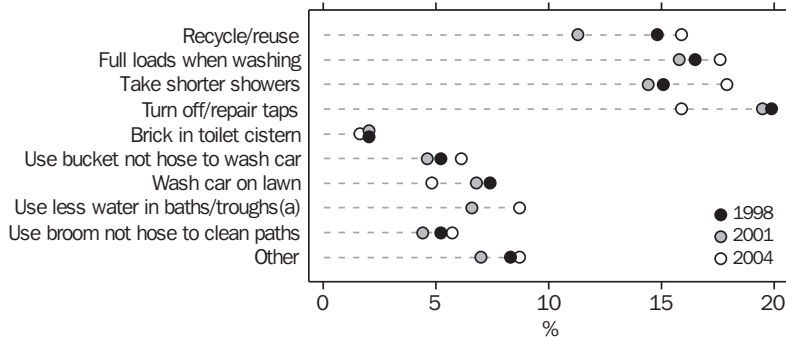
The most popular measures adopted included using full loads when washing dishes and clothes, and taking shorter showers (18% of all households reported doing each of these) (graph 24.19). These measures were particularly popular in Victoria, where over one-quarter of households undertook these activities.

Recycling and/or reusing water was reported by 16% of all households, up from 11% in 2001. Of Australian Capital Territory households 28% recycled or reused water (up from 10% in 2001).

These were also popular activities in Victoria and Western Australia (21%, up from 14% in both states). Turning off or repairing dripping taps to conserve water was also reported by 16% of households (down from 20% in 2001).

Since 1994, the proportion of Australian households with gardens has steadily declined (from 87% in 1994 to 83% in 2004). More than 90% of households with gardens reported taking measures in the garden to conserve water. States and territories that reported an overall increase in measures to conserve water in the garden since 2001 included New South Wales (86% to 90% of households), Victoria (90% to 93%) and South Australia (90% to 93%).

### 24.19 WATER CONSERVATION PRACTICES TAKEN IN HOME



(a) Not collected in 1998.

Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

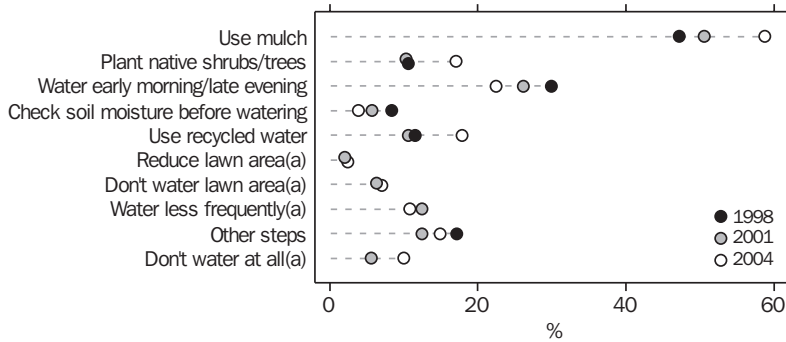
The measure reported most often by households to conserve water in the garden was using mulch (58% in 2004, up from 51% in 2001) (graph 24.20). Watering early in the morning or late in the evening was the next most popular water conservation measure for the garden, (23%). Almost one in five households (18%) used recycled water on the garden, a significant increase from 11% in 2001.

In 2004, 17% of households reported planting native trees or shrubs as a water conservation measure, up from 10% in 2001. Over one-quarter

of households in South Australia and Western Australia reported this (26% and 28%, respectively).

Hand watering of the garden was used more often in 2004 than in previous years (graph 24.21). In 2004, 71% of Australian households hand watered their garden compared with 66% in 2001. There was a corresponding decrease in the use of fixed and movable sprinklers (from 28% in 2001 to 15% in 2004 for movable sprinklers, and from 31% to 22% for fixed sprinkler systems). Just over three quarters of households in New South Wales, Victoria and the Australian Capital Territory used hand watering.

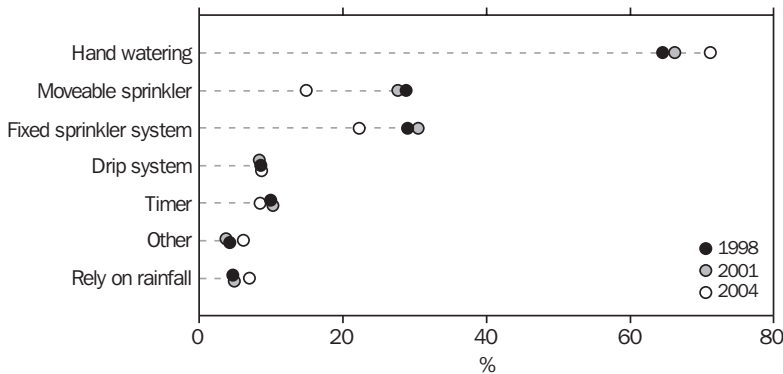
**24.20 WATER CONSERVATION MEASURES APPLIED IN GARDEN**



(a) Not collected in 1998.

Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

**24.21 WATERING METHODS USED IN GARDEN**



Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

## Australia's greenhouse gas emissions

On 16 February 2005 the Kyoto Protocol, an international treaty designed to slow down global warming by lowering greenhouse gas emissions (GHG) came into effect. Although the Australian Government has not ratified the Kyoto Protocol, it had previously committed (December 1997, Kyoto Conference of the Parties) to limiting Australia's greenhouse gas emissions growth to 108% of its 1990 baseline. Effectively, this equates to a 30% target reduction of emissions from the 'business as usual' projection (Parliament of Australia 2002).

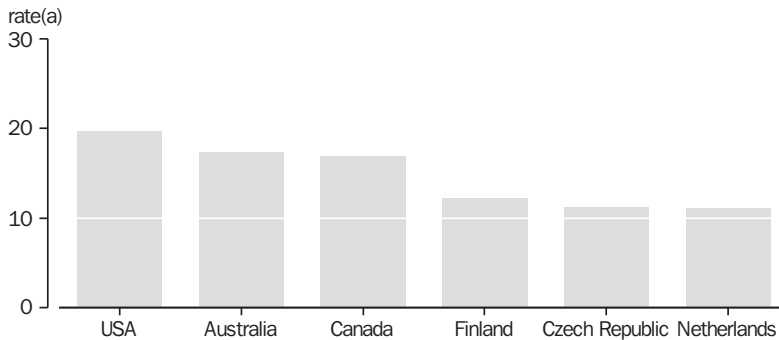
To give effect to the Kyoto commitment the Australian Government, in November 1997, released the policy statement – *Safeguarding the Future: Australia's Response to Climate Change*. A package of measures was introduced in the statement including the establishment of the Australian Greenhouse Office (AGO), renewable energy initiatives, energy market reforms, tree planting and revegetation. It also led to the establishment of the Greenhouse Challenge Program, a voluntary industry/government program designed to reduce GHG. This was

followed by the release in November 1998 of the Australian Government's *National Greenhouse Response Strategy* which set out abatement strategies for the key sectors and provided the framework for advancing Australia's domestic greenhouse response into the next (21st) century. More information can be obtained from the web site <<http://www.greenhouse.gov.au>>.

While Australia is a relatively small overall contributor to global GHG, accounting for around 1.4% of global emissions, its emissions of carbon dioxide (CO<sub>2</sub>), the main greenhouse gas per person, are among the highest in the world. In 2002 about 17.36 tonnes of CO<sub>2</sub> were emitted for every Australian. Only the United States of America (USA), among the members of the Organisation for Economic Co-operation and Development (OECD), had a higher rate of emissions of CO<sub>2</sub> per person (graph 24.22) (International Energy Agency 2004).

Australia's large emissions per person can be attributed to three factors: the high usage of coal in electricity generation; the high dependence on car travel for urban transport, and road freight for haulage; and the aluminium smelting sector.

**24.22 CARBON DIOXIDE EMISSIONS PER PERSON, Selected countries — 2002**



(a) Carbon dioxide emissions per person.  
Source: International Energy Agency 2004.

Table 24.23 shows the change in GHG on a sectoral basis over the period 1990 to 2003. In 2003, Australia's total greenhouse emissions were estimated at 550.1 megatonne (Mt) of carbon dioxide equivalent (CO<sub>2</sub>-e). This represented an increase of 25.6 Mt of CO<sub>2</sub>-e (4.9%) between 1990 and 2003. The major source of emissions was the energy sector which accounted for 68% of total national emissions in 2003. Energy industries (including power stations) were the largest contributor, accounting for 38% of total national emissions with transport contributing a further 14.5%. Over the period 1990–2003 emissions from the energy sector increased by 31%. This trend is likely to continue with emissions expected to grow by over 39% (119 Mt CO<sub>2</sub>-e) between 1990 and 2010 (AGO 2005a).

Emissions from the land use and forestry sector declined by 67% from 106.6 Mt CO<sub>2</sub>-e in 1993 to 34.9 Mt CO<sub>2</sub>-e in 2003. This decline reflects the greenhouse sink offset of mainly the forestry subsector.

Graph 24.24 shows state and territory shares of national emissions in 2002. New South Wales (28%), Queensland (27%) and Victoria (22%) accounted for nearly 80% of Australia's net emissions. Western Australia contributed 13%, South Australia 6%, the Northern Territory 3% and Tasmania 1%. The Australian Capital Territory contributed less than one per cent but this was only a partial inventory (AGO 2005b).

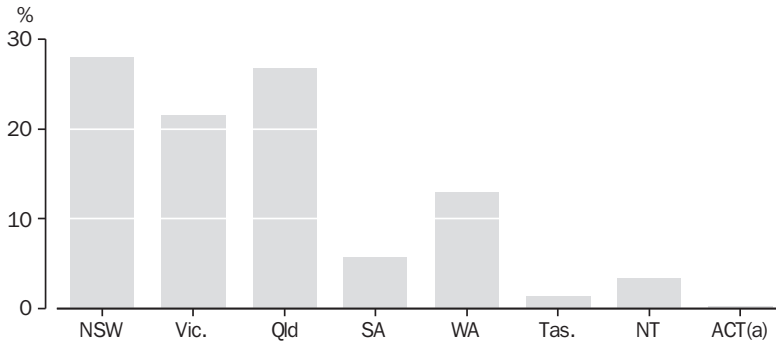
Table 24.25 provides details of state and territory greenhouse gas emissions in 2002 classified by sector.

### 24.23 GREENHOUSE GAS EMISSIONS, By sector

	Emissions (CO <sub>2</sub> -e)					
	1990		2003		Change from 1990 to 2003	
	Amount	Contribution to national emissions	Amount	Contribution to national emissions		
	Mt	%	Mt	%	Mt	%
Energy	286.0	54.5	374.3	68.0	88.3	30.9
Fuel combustion (sectoral approach)	257.3	49.1	347.9	63.2	90.6	35.2
Energy industries	142.3	27.1	209.2	38.0	66.9	47.0
Manufacturing industries and construction	37.6	7.2	39.4	7.2	1.8	4.8
Transport	61.9	11.8	79.8	14.5	17.9	28.9
Other sectors	15.5	3.0	19.5	3.5	4.0	25.8
Fugitive emissions from fuels	28.8	5.5	26.4	4.8	-2.4	8.3
Solid fuel	15.8	3.0	16.5	3.0	0.7	4.4
Oil and natural gas	12.9	2.5	9.9	1.8	-3.0	23.3
Industrial processes	28.0	5.3	32.3	5.9	4.3	15.4
Mineral products	4.8	0.9	5.4	1.0	0.6	12.5
Metal production	18.7	3.6	15.4	2.8	-3.3	17.6
Other	4.5	0.9	11.5	2.1	7.0	155.6
Agriculture	93.5	17.8	97.3	17.7	3.8	4.1
Land-use change and forestry	106.6	20.3	34.9	6.3	-71.7	67.3
Waste	10.3	2.0	11.4	2.1	1.1	10.7
<b>Total emissions/removals</b>	<b>524.5</b>	<b>100.0</b>	<b>550.1</b>	<b>100.0</b>	<b>25.6</b>	<b>4.9</b>

Source: AGO 2005a.

## 24.24 GREENHOUSE GAS EMISSIONS, State and territory shares — 2002



(a) Partial inventory only.

Source: AGO 2005b.

## 24.25 GREENHOUSE GAS EMISSIONS(a) — 2002

Sectors/key subsectors	NSW	Vic.	Qld	SA	Tas.	NT	ACT	Aust.
	Mt	Mt	Mt	Mt	Mt	Mt	Mt	Mt
<b>Energy</b>	107.1	99.0	80.9	24.8	3.9	5.8	1.1	370.1
Stationary	71.2	77.2	58.8	13.8	2.2	4.0	(b)	262.4
Energy industries	59.5	64.2	46.9	10.2	0.1	1.5	(b)	203.4
Electricity generation	56.4	60.3	44.1	8.1	0.1	1.5	(b)	185.0
Other energy industries	3.1	3.9	2.9	2.2	—	—	(b)	18.5
Manufacturing and construction	7.2	5.0	9.8	2.2	1.8	2.1	(b)	39.6
Transport	22.6	19.3	16.8	5.8	1.6	1.4	1.1	77.5
Other sectors	4.5	8.0	2.1	1.3	0.4	0.4	(b)	19.3
Fugitive emissions from fuels	13.4	2.5	5.3	5.2	—	0.3	—	30.2
<b>Industrial processes</b>	12.5	2.2	4.4	2.2	1.0	—	—	26.4
Agriculture	22.0	15.8	30.0	6.2	2.0	10.8	(b)	105.6
Livestock	15.7	12.2	24.9	4.1	1.6	2.7	(b)	67.6
Other agriculture	6.2	3.6	5.1	2.1	0.4	8.1	(b)	38.0
Land-use change and forestry	6.4	-2.4	27.7	-3.2	—	0.5	-0.1	29.2
Afforestation and reforestation	-1.0	-4.5	-0.2	-1.8	-1.4	-0.1	-0.1	-13.0
Land-use change (deforestation)	7.5	2.0	27.9	-1.5	1.4	0.6	—	42.1
<b>Waste</b>	3.5	2.4	2.1	0.5	0.3	0.1	0.1	10.5
Other	..	..	..	0.4	..	0.4	..	..
<b>Total net emissions</b>	<b>151.5</b>	<b>117.0</b>	<b>145.1</b>	<b>30.9</b>	<b>7.2</b>	<b>17.7</b>	<b>1.3</b>	<b>541.8</b>

(a) Emission estimates are made on Kyoto accounting basis. State and territory estimates do not sum to national estimates because military transport emissions are included in national estimates and not in states and territories. (b) The NSW emissions includes ACT emissions from the stationary energy and agriculture sectors. The ACT inventory includes emissions from the transport, fugitive emissions, industrial processes, forestry (afforestation and reforestation) and waste sectors.

Source: AGO 2005b.

## Residential waste management in Australia

Resource consumption and outputs of waste are features of Australian society. The volume of waste generated is growing with the nation's growing population and increasingly high standard of living. Without changes to consumption patterns these trends will continue.

In Australia, the majority (95%) of solid wastes, including hazardous waste, end up in landfills. Landfill sites have negative environmental impacts including: contamination of groundwater and soil from toxic waste leaching; methane release from organic waste decomposition; greenhouse gas emissions resulting from the transportation of waste to landfills; and foul smells and vermin (particularly if the landfill site is poorly managed). The utilisation of the waste minimisation hierarchy (i.e. reduce, re-use and recycle) reduces the need for landfill sites and lowers the environmental impact of these sites.

In 1992 a national target of 50% waste reduction by the year 2000 was adopted by the *Australian and New Zealand Environment Conservation Council*. Concurrently all state and territory governments set waste minimisation goals to meet or exceed national targets.

The proportion of households in Australia that recycle and/or re-use waste has increased from 91% in 1996 to 98% in 2003. In March 2003 about 95% of Australian households recycled waste, 83% re-used waste, while only 2% did not recycle or re-use at all (table 24.26). Households in Victoria, the Australian Capital Territory, and South Australia had the highest rates (99%) of recycling and/or re-using waste. The Northern Territory had the lowest rate of recycling and re-use at 93%.

The most common items recycled and/or re-used by households in Australia in 2003 were: paper/cardboard (88.4%); plastic bottles (87.3%); plastic bags (86.5%); glass (85.2%); and old clothing or rags (82.4%). The results vary between states and territories (see table 24.27).

Household waste recycling occurred mostly through a regular kerbside collection service (87% of households)(table 24.28). This method was practised across Australia with the highest use of this method made in the Australian Capital Territory (97%) and Victoria (95%). Two-thirds (66%) of households in Australia recycled by taking some of their waste to central collection points. South Australian households (81%) practised this recycling method more than households in other states or territories, while households in the Northern Territory practised this method the least (52%).

### 24.26 RECYCLING/RE-USE OF WASTE IN HOUSEHOLDS

	NSW	Vic.	Qld	SA	WA	Tas.	NT(a)	ACT	Aust.
	%	%	%	%	%	%	%	%	%
MARCH 2003									
Households that recycle waste	94.5	98.7	94.5	96.8	91.1	95.4	86.8	98.4	95.4
Households that re-use waste	79.5	81.2	87.9	86.6	83.3	86.8	76.4	88.2	82.8
Households not recycling and/or re-using waste	3.7	0.8	2.1	1.4	3.4	2.9	^ 7.3	^ 1.3	2.4
MARCH 2000									
Households that recycle waste	93.6	97.3	94.0	93.7	89.4	91.9	86.0	99.3	94.2
Households that re-use waste	75.8	81.9	86.3	79.6	80.8	83.7	85.3	82.6	80.5
Households not recycling and/or re-using waste	4.1	1.4	2.3	3.2	5.6	4.7	8.8	0.5	3.2
MARCH 1996									
Households that recycle waste	88.5	89.4	89.3	88.8	83.6	86.3	71.8	98.9	88.4
Households that re-use waste	32.3	32.0	45.2	42.6	36.8	41.9	54.9	40.9	36.5
Households not recycling and/or re-using waste	10.1	8.7	7.9	8.2	12.6	10.0	20.4	1.0	9.4

(a) Northern Territory data refers to main urban areas only.

Source: *Environmental Issues: People's Views and Practices, 2003 (4602.0)*.

## 24.27 ITEMS RECYCLED AND/OR RE-USED IN HOUSEHOLDS — March 2003

	NSW	Vic.	Qld	SA	WA	Tas.	NT(a)	ACT	Aust.
	%	%	%	%	%	%	%	%	%
Paper/cardboard	90.0	93.8	85.1	82.5	81.7	84.0	74.0	97.3	88.4
Glass	85.6	92.5	82.0	81.8	75.3	84.3	65.3	95.7	85.2
Aluminium cans	72.9	86.2	74.8	79.9	70.7	75.7	60.0	83.8	77.0
Steel cans	60.8	78.5	62.8	61.1	54.9	67.6	45.6	77.2	65.3
Plastic bottles	87.5	94.6	84.0	87.5	75.5	84.9	66.6	96.2	87.3
Plastic bags	83.9	87.2	89.0	88.9	85.6	87.5	78.1	92.4	86.5
Motor oil	11.0	9.5	16.2	11.7	10.7	14.1	12.1	18.0	11.8
Kitchen or food waste	41.2	50.9	48.3	46.8	46.5	61.3	40.6	55.3	46.7
Garden waste	60.3	66.3	60.8	65.7	50.3	65.2	51.6	71.7	61.6
Old clothing or rags	80.7	81.3	86.0	84.3	82.2	83.3	68.9	87.9	82.4

(a) Northern Territory data refers to main urban areas only.

Source: *Environmental Issues: People's Views and Practices, 2003 (4602.0)*.

## 24.28 METHODS USED TO RECYCLE AND/OR RE-USE WASTE — March 2003

	NSW	Vic.	Qld	SA	WA	Tas.	NT(a)	ACT	Aust.
	%	%	%	%	%	%	%	%	%
Collection from the house	88.8	94.7	83.1	74.4	76.3	82.1	69.3	97.3	86.6
Special area/s at dump/waste transfer station	8.7	9.5	11.9	11.1	7.9	24.2	19.5	26.2	10.4
Central collection points(b)	67.2	58.2	67.1	80.5	66.1	61.4	52.8	75.1	65.8
Compost or mulch	45.0	51.9	56.2	48.3	43.2	58.5	49.6	60.4	49.6
Re-use within household	82.6	81.8	89.8	87.8	86.2	89.4	82.5	89.4	84.9
Other methods	12.3	13.1	11.6	13.1	11.6	17.3	15.5	12.7	12.5

(a) Northern Territory data refers to main urban areas only. (b) Other than dump/waste transfer station.

Source: *Environmental Issues: People's Views and Practices, 2003 (4602.0)*.

## Environmental assets

The economy has a complex relationship with the environment. It provides the raw materials and energy for the production of goods and services that support people's lifestyles, and the environment also sustains damage through the activities of households and businesses. The systematic summary of economic activity provided by the national accounts for a country are sometimes criticised for including the value of goods and services produced and the income generated through the use of environmental assets, but not reflecting the economic cost of depleting environmental assets or the damage that arises from economic activity. Thus,

... a country could exhaust its mineral resources, cut down its forests, erode its soil, pollute its aquifers, and hunt its wildlife to extinction, but measured income would not be affected as these assets disappeared (Repetto et al. 1989).

This section discusses how the environment is currently treated in the Australian national accounts (*Australian System of National Accounts, 2003–04 (5204.0)*), and gives a broad overview of the work being done by the Australian

Bureau of Statistics (ABS) to extend the core national accounts in what could be called a satellite account for the environment.

## Environmental assets in the Australian national accounts

For an asset to be included in the Australian national accounts it must have an identifiable owner, and the owner must be able to derive an economic benefit from holding or using the asset. Economic environmental assets can include subsoil assets, land, forests, water, and fish stocks in open seas that are under the control of an economic agent (often the government).

Environmental assets such as the atmosphere are outside the scope of economic assets, as they do not have an identifiable owner who can derive an economic benefit from their use. This is not to suggest that these assets are of no value. On the contrary, many environmental assets are essential to life itself. However, even if they fell within the definition of an economic asset, the valuation techniques available to measure such assets tend to be arbitrary and controversial.

The environmental assets in the Australian national and sector balance sheets are land, significant subsoil assets, plantation timber, and native standing timber available for exploitation. Land valuations are available through administrative sources, and net present value techniques (which take into account current production rates, prices, costs, and discount rates) are used to value both subsoil and native forest assets. Plantation standing timber is also considered an environmental asset and plantations are included in the balance sheet as inventories because timber growth is controlled. Water and fish stocks have not been included on the Australian national balance sheet due to a lack of available data.

The Australian national balance sheet recorded \$4,961 billion (b) worth of assets at 30 June 2004, of which \$2,149b (43%) were economic environmental assets (table 24.29).

#### 24.29 AUSTRALIA'S TOTAL ASSETS — 30 June

	1996	2000	2004
	\$b	\$b	\$b
Financial	193	426	583
Buildings and structures	1 046	1 296	1 705
Machinery and equipment	275	325	355
Other produced	112	139	161
Other non-produced	—	3	7
Environmental	752	1 116	2 149
<b>Total assets</b>	<b>2 379</b>	<b>3 305</b>	<b>4 961</b>

Source: Australian System of National Accounts, 2003–04 (5204.0).

While land accounts for 82% of the value of Australia's economic environmental assets, the value of rural land accounts for only 10% of the total value of land (table 24.30). Subsoil assets account for 17% and timber (native and plantation) account for 1% of Australia's economic environmental assets. No values are included for other environmental assets. The value of environmental assets grew strongly over the period covered, almost tripling between 30 June 1996 and 30 June 2004. Much of this growth was due to rising prices. Environmental assets only grew by 15% in chain volume terms, that is, after adjustment for changes in prices during the period.

#### 24.30 AUSTRALIA'S ENVIRONMENTAL ASSETS — 30 June

	1996	2000	2004
	\$b	\$b	\$b
Rural land	86	110	175
Other land	557	797	1 585
Oil and gas	62	99	159
Other subsoil	39	102	217
Native standing timber	2	2	3
Plantation standing timber	6	7	8
<b>Total assets</b>	<b>752</b>	<b>1 116</b>	<b>2 149</b>

Source: Australian System of National Accounts, 2002–03 (5204.0).

### Measuring depletion

Depletion is defined in the international *System of National Accounts 1993* (SNA93) (OECD 1993) as the:

... reduction in the value of deposits of subsoil assets as a result of the physical removal and using up of the assets, ... the depletion of water resources, and the depletion of natural forests, fish stocks in the open seas and other non-cultivated biological resources as a result of harvesting, forest clearance, or other use (SNA93, 12.29 and 12.30).

Depletion in an economic sense results because the value of the resource stock has been lowered through its use in a productive activity, and the use has reduced the asset's ability to produce an income stream in the future. In this sense, depletion is analogous to depreciation of produced assets whereby the current value of the stock of fixed assets declines through normal use, wear and tear and foreseen obsolescence.

Physical depletion may not necessarily equate to economic depletion in cases where asset values are low or the resource life is long. While the physical dimension of depletion can be fairly readily observed in practice, its value cannot. This is because the mineral or other natural resource product is not what is being valued – rather it is the decline in the value of the mineral asset below the ground and the standing timber in the forest. Generally, one has to resort to capital theory to undertake this valuation. (See *Environment by Numbers: Selected Articles on Australia's Environment, 2003* (4617.0)).

### Subsoil assets

The depletion of minerals and fossil fuels in any one year, is the change in the value of the asset between the beginning and end of the year, arising purely from the extraction of these natural resources. An addition occurs, when previously unknown stocks of minerals are discovered and



### 24.31 SUBSOIL ADDITIONS AND DEPLETION



Source: ABS data available on request, Australian National Accounts.

delineated or previously subeconomic stocks become economic because of changes in prices or mineral extraction techniques. An 'addition' can also be negative. For example, if mineral prices fall and previously economic stocks become subeconomic, the owner can no longer derive an economic benefit from the asset so it is excluded from asset values. In the Australian national accounts the value of a new discovery is not in itself considered as production or income because it is a 'gift of nature'. Similarly, reclassification of the economic status of known stocks is considered to be an 'other change in volume', not production or income. Graph 24.31 shows that depletions are increasing at a relatively constant rate, whereas additions are erratic. The end result is that in some years more subsoil resources are added than are depleted, while in other years the reverse is true and in some years depletions and additions are more or less equal in value. The main contribution to the negative 'additions' in 2000-01 and 2002-03 was reclassification of some crude oil resources from economic to subeconomic. Conversely, crude oil additions were the major contribution to total additions in 2001-02 and 2003-04.

#### Land

If land is used sustainably, it has an infinite life and, therefore, no adjustment for depletion is required. However, where land is being degraded due to economic activity, an adjustment to income for land degradation is applicable. In the context of economic depletion used here, land degradation represents the year-to-year decline in the capital value of land resulting from economic activity (after deducting price rises due to inflation).

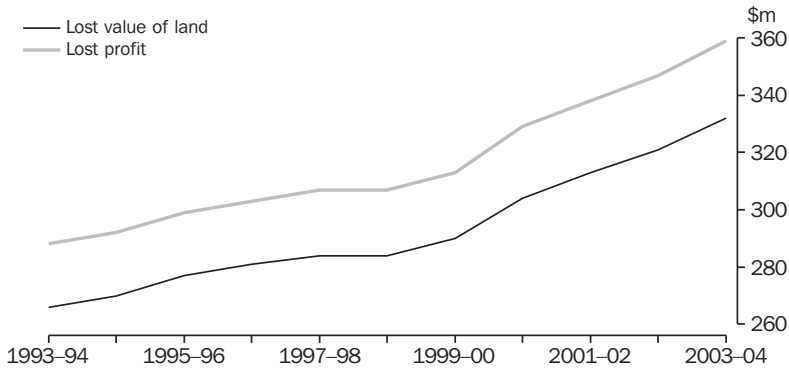
Changes in the value of agricultural land can be determined from data on market values or land rates data. However, data for land values are affected by a host of factors other than changes in productive capacity from the impact of land degradation, including inflation, technological advances and changes in land use due to re-zoning, subdivision and 'lifestyle' considerations (Roberts 1997).

Two recent national studies used different approaches to measuring economic losses due to land degradation.

- Kemp and Connell (2001) used a farm survey to estimate the extent of land degradation on farms. Combining data from the survey with land value data, regression techniques were used to estimate that the difference in the capital value of farms with and without degradation was approximately \$14.2b in 1999. This represents the total accumulated value of losses in land value due to degradation.
- The National Land and Water Resources Audit (NLWRA 2002) used models to estimate the 'yield gap', that is, the difference between profits with and without soil degradation. Lost profit at full equity due to salinity, sodicity and acidity was estimated as \$2.6b in 1996-97.

In concept, these two approaches can be reconciled because the net present value of future lost profits should be equal to the decline in the capital value of land due to degradation. The ABS has used the data from these studies to produce estimates of the incremental effect of land degradation on the value of land and the lost profits from agricultural production each year. The results of this are presented in graph 24.32.

## 24.32 LAND DEGRADATION



Source: ABS data available on request, Australian National Accounts.

### Forest assets

Forests are renewable biological resources. In the national balance sheet, forests are depicted as two types: old growth native forests and plantations. The valuation of the depletion of renewable assets presents a different set of issues to valuation of non-renewable assets as it may be possible to replace (over time) the part of the asset that is used in the current period. Where a forest is harvested sustainably, no depletion adjustment is required.

Estimates for depletion of native forests are not available. However, given the value of native forests on the national balance sheet is \$3b compared with \$377b for subsoil assets, it is expected that depletion will have a relatively insignificant effect on the overall value of natural resources. This is premised on a narrow economic view that does not account for damage to intrinsic non-monetary values such as ecosystem services, biodiversity and aesthetic/recreational values.

### Adjusting the Australian national accounts

There is currently an asymmetry in the Australian national accounts between the treatment of produced assets such as buildings, and plant and natural (non-produced) assets. Depreciation of produced assets (termed consumption of fixed capital (COFC) in the national accounts) is deducted to derive the various 'net' income measures in the national accounts such as net domestic product (NDP), net operating surplus

(NOS), net national income and net saving. No such deduction is made for natural assets when they are used up or degraded as a result of economic activity. The net measures thus fall short of being sustainable concepts of income, although they are superior to the various 'gross' measures in the Australian national accounts in this respect.

The experimental estimates derived for the value of depletions and discoveries of subsoil assets and the degradation of agricultural land are indicative of adjustments that could be made to the national accounts in the context of a satellite account and are shown in table 24.33. Depletion adjustments unambiguously lower the net values. If the value of discoveries is included in income in place of the value of mineral exploration, the net effect of that adjustment can be positive or negative.

The net saving levels are changed by the same amount as for NOS, but the nation's net lending position is left unchanged.

Adjusting the Australian national accounts for depletion and additions of subsoil assets also affects growth rates, which may increase or decrease. As table 24.34 shows, the adjustments have the biggest impact on both NDP and NOS in 2001-02 and 2002-03, due to the high value of subsoil asset additions in 2001-02, followed by the low (negative) value of subsoil additions in 2002-03.

### 24.33 PRODUCTION AND CAPITAL INCOME ADJUSTED FOR DEPLETION AND ADDITIONS

	1997-98	2000-01	2003-04
	\$m	\$m	\$m
Subsoil depletion	1 327	2 299	4 309
Land degradation	284	304	332
<i>less</i>			
Subsoil additions	1 411	-402	5 661
<i>plus</i>			
Cost of mineral exploration	2 049	1 727	1 731
<i>less</i>			
COFC on mineral exploration	1 395	1 582	1 727
<i>equals</i>			
<b>Net depletion adjustment</b>	<b>854</b>	<b>3 150</b>	<b>-1 016</b>
GDP	559 139	668 426	813 225
<i>less</i>			
Consumption of fixed capital	85 812	105 085	125 982
<i>equals</i>			
NDP	473 327	563 341	687 243
<i>less</i>			
Net depletion adjustment	854	3 150	-1 016
<i>equals</i>			
<b>Depletion adjusted NDP</b>	<b>472 473</b>	<b>560 191</b>	<b>688 259</b>
GOS and GMI(a)	225 674	265 038	334 452
<i>less</i>			
Consumption of fixed capital	85 812	105 085	125 982
<i>equals</i>			
NOS	139 862	159 953	208 470
<i>less</i>			
Net depletion adjustment	854	3 150	-1 016
<i>equals</i>			
<b>Depletion adjusted NOS</b>	<b>139 008</b>	<b>156 803</b>	<b>209 486</b>
Net saving	20 920	23 230	33 198
<i>less</i>			
Net depletion adjustment	854	3 150	-1 016
<b>Depletion adjusted saving</b>	<b>20 066</b>	<b>20 080</b>	<b>34 214</b>

(a) Gross operating surplus and gross mixed income.

Source: ABS data available on request, Australian National Accounts.

### 24.34 CHANGES IN PRODUCTION AND CAPITAL INCOME GROWTH AFTER ADJUSTMENT FOR DEPLETION AND ADDITIONS

	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
	%	%	%	%	%	%
GDP	5.4	5.7	7.2	6.7	6.3	7.3
NDP	5.4	5.5	7.1	6.4	6.5	7.6
Depletion adjusted NDP	6.0	4.9	6.7	7.7	5.2	8.4
<b>Net change in NDP growth</b>	<b>0.6</b>	<b>-0.6</b>	<b>-0.4</b>	<b>1.3</b>	<b>-1.3</b>	<b>0.8</b>
GOS and GMI(a)	3.3	6.4	6.8	9.5	5.4	9.3
NOS	1.8	5.9	6.1	10.5	5.6	11.8
Depletion adjusted NOS	3.9	3.8	4.7	15.1	1.1	14.8
<b>Net change in NOS growth</b>	<b>2.0</b>	<b>-2.1</b>	<b>-1.4</b>	<b>4.6</b>	<b>-4.4</b>	<b>3.0</b>

(a) Gross operating surplus and gross mixed income.

Source: ABS data available on request, Australian National Accounts.

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## SCIENCE AND INNOVATION

The application of science and innovation to business processes influences the strength and competitiveness of industry by providing a basis for innovative change and encouraging economic growth and development.

Australia has a range of statistics relating to science and innovation, many of which are compiled by the Australian Bureau of Statistics (ABS). The ABS has released a range of statistics on business innovation in respect of the period January 2001 to December 2003. Statistics on the amount of expenditure and human resources devoted to research and development (R&D) effort in the business sector are collected annually by the ABS, in a survey of all likely R&D performers. Comparable statistics on the higher education, government and private non-profit sectors are collected biennially.

The ABS surveys of R&D effort and innovation are based on standards developed by the Organisation for Economic Co-operation and Development which enables international comparisons to be made.

A number of additional indicators on science and innovation, not included in this chapter, are compiled by the Australian Government Department of Industry, Tourism and Resources, and the Department of Education, Science and Training.

## Innovation

The ABS conducted a survey of businesses in the private sector to gauge innovation undertaken during the period January 2001 to December 2003. For the purposes of the survey, innovation is defined as the process of introducing new or significantly improved goods or services and/or implementing new or significantly improved processes. New goods or services or processes may involve the development of new technology,

an adaptation of existing technology to a new use, or may be non-technological in nature (e.g. organisational and managerial change). These categories are defined as:

- a new good or service means any new good or service or combination of these which is new to a business; its characteristics or intended uses differ significantly from those previously produced

### 25.1 SUMMARY OF INNOVATION, Selected business characteristics — 2001–2003(a)

Indicator	Businesses			Proportion of businesses which introduced/ implemented new or significantly improved			
	As at December 2003 no.	Innovating(b)		Goods or services(b) %	Operational processes(b) %	Organisational/ managerial processes(b) %	
		no.	%			%	%
<b>Employment size</b>							
5–19 persons	102 009	31 036	30.4	14.3	19.8	17.7	
20–99 persons	28 583	13 061	45.7	20.6	29.9	31.3	
100 or more persons	5 244	3 186	60.8	38.4	44.8	39.5	
<b>Income size</b>							
Less than \$100,000	9 160	^ 1 251	13.7	**3.8	*10.1	*9.7	
\$100,000 – less than \$1m	51 902	12 749	^ 24.6	^ 10.6	^ 15.1	^ 12.8	
\$1m – less than \$5m	52 257	21 686	41.5	20.5	28.3	27.1	
\$5m or more	22 517	11 596	51.5	26.3	33.7	32.9	
<b>States and territories</b>							
New South Wales	48 279	17 586	36.4	^ 17.8	^ 23.0	^ 20.9	
Victoria	34 807	12 070	34.7	^ 17.1	^ 22.8	^ 21.1	
Queensland	24 519	7 519	30.7	^ 14.0	^ 21.7	^ 20.6	
South Australia	8 802	4 038	45.9	^ 23.8	^ 30.2	^ 29.8	
Western Australia	13 416	4 399	32.8	^ 13.6	^ 22.2	^ 21.3	
Tasmania	2 553	676	^ 26.5	*10.1	*17.5	^ 17.0	
Northern Territory	1 121	315	^ 28.1	*11.5	^ 15.4	*17.9	
Australian Capital Territory	2 339	680	^ 29.0	*9.2	*22.1	^ 20.6	
<b>Region</b>							
Capital cities	95 426	33 540	35.1	17.6	^ 21.9	^ 22.2	
Other areas	40 409	13 742	34.0	14.1	25.3	19.4	
<b>Industry</b>							
Mining	722	223	^ 30.9	^ 10.6	^ 18.5	^ 17.9	
Manufacturing	18 940	8 621	45.5	27.1	29.7	24.2	
Electricity, gas and water supply	191	97	50.8	21.2	33.5	34.9	
Construction	12 554	3 860	^ 30.7	^ 9.8	^ 20.0	^ 22.4	
Wholesale trade	13 231	5 670	42.9	^ 26.1	^ 25.2	^ 27.1	
Retail trade	30 163	9 471	^ 31.4	^ 10.2	^ 21.6	^ 18.4	
Accommodation, cafes and restaurants	11 980	3 175	^ 26.5	^ 10.6	^ 17.8	^ 16.1	
Transport and storage	5 008	1 748	34.9	^ 15.4	^ 25.8	^ 21.3	
Communication services	428	219	^ 51.1	^ 29.2	^ 40.0	^ 30.4	
Finance and insurance	3 821	1 694	^ 44.3	^ 22.2	^ 26.4	^ 31.7	
Property and business services	34 368	10 880	^ 31.7	^ 16.6	^ 21.6	^ 20.1	
Cultural and recreational services	4 429	1 625	36.7	^ 17.9	^ 20.2	^ 25.4	
<b>Total</b>	<b>135 836</b>	<b>47 283</b>	<b>34.8</b>	<b>16.6</b>	<b>22.9</b>	<b>21.4</b>	

(a) The scope of the survey excluded all businesses employing less than five employees and those classified to the following industry Divisions of ANZSIC: Agriculture, forestry and fishing; Government administration and defence; Education; Health and community services; and Personal and other services. (b) Proportions are of businesses reporting innovation in each category.

Source: *Innovation in Australian Business, 2003 (8158.0)*.

- a new operational process means a significant change for a business in its methods of producing or delivering goods or services
- a new organisational/managerial process means a significant change to the strategies, structures or routines of the business which aim to improve performance.

During the three years ended December 2003, innovation was undertaken by 35% of businesses in scope of the survey. Of those businesses innovating, a higher proportion (23%) implemented new or significantly improved operational processes than introduced new or significantly improved goods or services (17%) (table 25.1).

## Expenditure and human resources devoted to R&D

The ABS defines R&D as systematic investigation or experimentation involving innovation or technical risk, the outcome of which is new knowledge, with or without a specific practical application, or new or improved products, processes, materials, devices or services.

Tables 25.2 and 25.3 summarise the latest R&D statistics available. The data show after increasing by 17% in the period 1998–99 to 2000–01, gross expenditure on R&D increased by 18% from \$10.4 billion (b) in 2000–01 to \$12.8b in 2002–03. With the exception of the state and territories government component which remained the same, all sectors showed an increase in R&D expenditure in 2002–03 compared with 2000–01.

## International comparisons

The most commonly used indicator for international comparison purposes is the ratio of expenditure on R&D to gross domestic product (GDP). As table 25.4 shows, in 2002–03 Australia's R&D expenditure was 1.69% of its GDP, ranking it below Sweden (4.27%), Finland (3.46%), Japan (3.12%), Iceland (3.09%), Republic of (South) Korea (2.91%), United States of America (2.67%), Denmark (2.52%), Germany (2.52%), France (2.20%), Belgium (2.17%), Austria (1.93%), Canada (1.91%), the Netherlands (1.89%) and the United Kingdom (1.88%).

In terms of business enterprise R&D, Australia's ratio of R&D expenditure to GDP in 2002–03 (0.87%) is also below the ratios for the industrialised countries referred to earlier.

For government sector R&D as a percentage of GDP, Australia ranks higher. A R&D to GDP ratio of 0.33% places it eighth in the group of Organisation for Economic Co-operation and Development (OECD) member countries, behind Iceland (0.76%), Republic of (South) Korea (0.39%), New Zealand (0.39%), France (0.37%), Finland (0.36%), Germany (0.35%) and Hungary (0.34%). Government sector R&D as a percentage of GDP is much higher for Australia than for the United States of America, Canada or the United Kingdom.

For the higher education sector, Australia ranks seventh. With a R&D to GDP ratio of 0.45%, Australia ranks behind Sweden (0.83%), Finland (0.66%), Canada (0.63%), Denmark (0.58%), the Netherlands (0.51%) and Iceland (0.50%).

### 25.2 EXPENDITURE ON R&D

	1998–99	1999–2000	2000–01	2001–02	2002–03	2003–04
Sector	\$m	\$m	\$m	\$m	\$m	\$m
Business	4 094.7	4 136.7	4 982.6	6 191.9	6 571.4	7220.2
Government						
Commonwealth	1 179.4	n.a.	1 404.8	n.a.	1 531.3	n.a.
State/territory	863.6	n.a.	951.0	n.a.	950.9	n.a.
Total	2 043.0	n.a.	2 355.8	n.a.	2 482.2	n.a.
Higher education(a)	2 555.1	n.a.	2 789.8	n.a.	3 429.6	n.a.
Private non-profit	225.3	n.a.	289.0	n.a.	359.5	n.a.
<b>Total</b>	<b>8 918.1</b>	<b>n.a.</b>	<b>10 417.1</b>	<b>n.a.</b>	<b>12 842.7</b>	<b>n.a.</b>

(a) Data for the calendar year ending within the financial year shown.

Source: Research and Experimental Development, All Sector Summary, Australia (8112.0); Research and Experimental Development, Businesses, Australia (8104.0).



### 25.3 HUMAN RESOURCES DEVOTED TO R&D

Sector	1998–99 '000 person years	1999–2000 '000 person years	2000–01 '000 person years	2001–02 '000 person years	2002–03 '000 person years	2003–04 '000 person years
Business	25.1	26.5	28.4	32.2	35.6	38.1
Government						
Commonwealth	9.4	n.a.	9.6	n.a.	10.2	n.a.
State/territory	9.1	n.a.	8.6	n.a.	8.4	n.a.
Total	18.4	n.a.	18.2	n.a.	18.5	n.a.
Higher education(a)	45.5	n.a.	46.3	n.a.	49.6	n.a.
Private non-profit	2.6	n.a.	2.8	n.a.	3.1	n.a.
<b>Total</b>	<b>91.6</b>	<b>n.a.</b>	<b>95.6</b>	<b>n.a.</b>	<b>106.8</b>	<b>n.a.</b>

(a) Data for the calendar year ending within the financial year shown.

Source: Research and Experimental Development, All Sector Summary, Australia (8112.0); Research and Experimental Development, Businesses, Australia (8104.0).

### 25.4 EXPENDITURE ON R&D AS A PERCENTAGE OF GDP, OECD countries — 2002–03

Country	Business	Government	Higher education	All sectors(a)
	%	%	%	%
Sweden(b)	3.32	0.12	0.83	4.27
Finland	2.41	0.36	0.66	3.46
Japan	2.32	0.30	0.43	3.12
Iceland	1.77	0.76	0.50	3.09
Korea	2.18	0.39	0.30	2.91
United States of America	1.87	0.24	0.42	2.67
Denmark(b)	1.75	0.18	0.58	2.52
Germany	1.75	0.35	0.43	2.52
France	1.37	0.37	0.43	2.20
Belgium(b)	1.60	0.13	0.42	2.17
Austria	n.a.	n.a.	n.a.	1.93
Canada	1.05	0.22	0.63	1.91
Netherlands(b)	1.10	0.27	0.51	1.89
United Kingdom	1.26	0.17	0.42	1.88
<b>Australia</b>	<b>0.87</b>	<b>0.33</b>	<b>0.45</b>	<b>1.69</b>
Norway	0.96	0.26	0.45	1.67
Czech Republic	0.79	0.30	0.20	1.30
New Zealand(b)	0.43	0.39	0.36	1.18
Ireland(b)	0.80	0.09	0.26	1.15
Italy(b)	0.55	0.20	0.36	1.11
Spain	0.56	0.16	0.31	1.03
Hungary	0.36	0.34	0.26	1.02
Portugal	0.32	0.18	0.33	0.93
Greece(b)	0.21	0.14	0.29	0.65
Poland	0.13	0.26	0.20	0.59
Slovak Republic	0.37	0.15	0.05	0.58
Mexico(b)	0.12	0.15	0.12	0.39

(a) Includes private non-profit. (b) Data for 2001–02.

Source: OECD 2004.

## Source of funds for expenditure on R&D

In 2002–03 the business sector funded 49% of all Australian expenditure on R&D. This compares with 44% recorded in 1992–93. The Australian (Commonwealth) Government funded 36% of R&D in 2002–03 (down from 41% in 1992–93) and the state and territory governments funded 6% (down from 9% in 1992–93).

In 2002–03, 90% of funding for R&D carried out by businesses came from the business sector (down from 94% in 1992–93). Commonwealth Government organisations provided 4% of funding for business R&D expenditure in 2002–03.

About 82% of Commonwealth Government sector R&D was funded by Commonwealth Government organisations in 2002–03. The Commonwealth Government proportion of self-funding has fallen from 86% in 1992–93.

About 66% of state government expenditure on R&D was funded by state government organisations in 2002–03. This is significantly lower than a decade earlier, when the proportion was 76%.

About 86% of higher education R&D funding in 2002–03 came from the Commonwealth Government (compared with 91% in 1992–93). Business enterprises provided 5% of the funding in 2002–03, up from 3% a in 1992–93.

Commonwealth Government organisations funded 29% of the R&D of the private non-profit sector in 2002–03, while the contribution by state governments was 11%.

Tables 25.5 and 25.6 show the data for 2002–03 and 1992–93 respectively.

### 25.5 EXPENDITURE ON R&D, Source of funds — 2002–03

Sector	Commonwealth Government		State government		Businesses		Other Australian(a)		Overseas		Total
	\$m	% of total	\$m	% of total	\$m	% of total	\$m	% of total	\$m	% of total	\$m
Business	248.1	3.8	12.0	0.2	5 937.0	90.4	50.4	0.8	324.0	4.9	6 571.0
Government											
Commonwealth	1 255.9	82.0	39.6	2.6	78.0	5.1	123.7	8.1	34.0	2.2	1 531.3
State/territory	67.4	7.1	630.3	66.3	50.3	5.3	189.3	19.9	13.7	1.4	950.9
Total	1 323.3	53.3	669.9	27.0	128.3	5.2	313.0	12.6	47.7	1.9	2 482.2
Higher education(b)	(c)2 937.9	85.7	104.5	3.0	174.1	5.1	98.5	2.9	114.6	3.3	3 429.6
Private non-profit	103.9	28.9	39.8	11.1	31.6	8.8	147.3	41.0	36.9	10.3	359.5
<b>Total</b>	<b>4 613.2</b>	<b>35.9</b>	<b>826.2</b>	<b>6.4</b>	<b>6271.0</b>	<b>48.8</b>	<b>609.2</b>	<b>4.7</b>	<b>523.2</b>	<b>4.1</b>	<b>12 842.7</b>

(a) Includes funds provided via government levies. (b) Data for year 2002. (c) Includes \$2,033m of General University funds, the majority of which is funding from the Commonwealth Government.

Source: *Research and Experimental Development, All Sector Summary, Australia, 2002–03 (8112.0)*.

## 25.6 EXPENDITURE ON R&D, Source of funds — 1992–93

Sector	Commonwealth Government		State government		Businesses		Other Australian(a)		Overseas		Total
	\$m	% of total	\$m	% of total	\$m	% of total	\$m	% of total	\$m	% of total	
Business	54.0	1.9	8.5	0.3	2 690.8	94.3	15.3	0.5	85.8	3.0	2 854.5
Government											
Commonwealth	988.0	85.8	11.7	1.0	74.7	6.5	62.8	5.5	14.0	1.2	1 151.1
State/territory	56.5	8.5	509.3	76.3	29.0	4.3	69.1	10.4	3.8	0.6	667.6
Total	1 044.5	57.4	521.0	28.6	103.7	5.7	131.0	7.2	17.7	1.0	1 818.8
Higher education(b)	1 544.8	91.1	34.8	2.1	41.7	2.5	63.5	3.7	10.5	0.6	1 695.2
Private non-profit	33.9	33.5	12.8	12.6	6.9	6.8	44.3	43.8	3.3	3.3	101.2
<b>Total</b>	<b>2 677.2</b>	<b>41.4</b>	<b>577.1</b>	<b>8.9</b>	<b>2 843.1</b>	<b>43.9</b>	<b>255.0</b>	<b>3.9</b>	<b>117.4</b>	<b>1.8</b>	<b>6 469.7</b>

(a) Includes funds provided via government levies. (b) Data for year 1992.

Source: Research and Experimental Development, All Sector Summary, Australia, 1994–95 (8112.0).

## Resources devoted to R&D

### Business sector

Business expenditure on R&D (BERD) in 2003–04 was \$7,220 million (m) or 10% higher than that recorded in 2002–03 (table 25.2). This is the highest level recorded and is the fifth successive year of increase following the declines from 1995–96 to 1998–99 and the levelling off between 1998–99 and 1999–2000. In volume terms, with the effect of changes in prices and wages and salaries removed, BERD increased by 7% compared with 2002–03.

Human resources devoted to R&D in 2003–04 totalled 38,093 person years, 7% higher than in 2002–03 (table 25.3).

In 2003–04 Australia's BERD was 0.89% of GDP, subsequent to a levelling off in 2002–03. Table 25.7 shows Australia's BERD/GDP ratio compared with those of other OECD countries for which comparable data is available.

The manufacturing industry was the largest contributor (46%) to total BERD. The property and business services, mining and finance and insurance industries were the next largest contributors to BERD at 23%, 11% and 9% respectively. The net increase in BERD between 2002–03 and 2003–04 was attributable to a 28% increase by the mining industry, and a 13% increase by the manufacturing industry. It should be noted that mineral exploration is excluded from the definition of R&D (table 25.8).

The manufacturing, and property and business services industries contributed the highest levels of human resources to R&D at 49% and 30% of total effort respectively. In 2003–04 the mining and manufacturing industries recorded increases in human resources devoted to R&D from 2002–03, of 43% and 6% respectively. The finance and insurance, and property and business services industries also showed increases of 17% and 18% respectively. Wholesale trade recorded a decrease of 13%. (table 25.8).

## 25.7 BUSINESS EXPENDITURE ON R&D AS A PERCENTAGE OF GDP, OECD countries

Country	2000-01	2001-02	2002-03	2003-04
	%	%	%	%
Sweden	n.a.	3.31	n.a.	2.95
Finland	2.41	2.42	2.41	2.46
Japan	2.12	2.26	2.32	2.36
Korea	1.77	1.97	1.90	2.01
United States of America	2.04	2.00	1.87	1.79
Denmark	n.a.	1.65	1.75	n.a.
Germany	1.75	1.75	1.75	1.73
Belgium	1.48	1.60	1.63	1.71
Iceland	1.55	1.80	1.77	1.67
France	1.36	1.41	1.43	1.36
United Kingdom	1.21	1.24	1.26	1.24
Canada	1.15	1.27	1.09	1.03
Norway	n.a.	0.96	0.96	1.00
Netherlands	1.11	1.10	1.02	0.99
<b>Australia</b>	<b>0.74</b>	<b>0.87</b>	<b>0.87</b>	<b>0.89</b>
Ireland	0.82	0.78	0.77	0.80
Czech Republic	0.74	0.74	0.75	0.77
Spain	0.50	0.50	0.56	0.60
Italy	0.53	0.55	0.56	0.55
New Zealand	n.a.	0.42	n.a.	0.47
Slovak Republic	0.43	0.43	0.37	0.32
Hungary	0.35	0.38	0.36	0.35
Portugal	0.22	0.27	0.30	n.a.
Turkey	0.21	0.24	0.19	n.a.
Poland	0.24	0.23	0.12	0.15

Source: OECD 2004.

## 25.8 BUSINESS R&D RESOURCES, By industry

	Businesses		Expenditure on R&D		Human resources devoted to R&D	
	2002-03	2003-04	2002-03	2003-04	2002-03	2003-04
	no.	no.	\$m	\$m	'000 person years	'000 person years
Mining (incl. services to mining)	142	168	612	783	0.7	1.0
Manufacturing	1 929	2 287	2 908	3 294	17.8	18.8
Electricity, gas and water supply	45	42	64	75	0.2	0.2
Construction	96	112	147	128	0.5	0.4
Wholesale trade	298	292	342	290	2.4	2.1
Retail trade	64	74	22	31	0.2	0.2
Accommodation, cafes and restaurants	n.p.	—	n.p.	—	n.p.	—
Transport and storage	28	26	36	38	0.2	0.2
Communication services	39	51	394	247	1.0	0.6
Finance and insurance	56	67	603	625	2.4	2.8
Property and business services	1 498	1 895	1 375	1 650	9.8	11.6
Education	n.p.	13	n.p.	4	n.p.	—
Health and community services	46	52	21	20	0.1	0.2
Cultural and recreational services	17	19	24	21	0.2	0.1
Personal and other services	12	18	18	15	0.1	—
<b>Total</b>	<b>4 279</b>	<b>5 116</b>	<b>6 571</b>	<b>7 220</b>	<b>35.6</b>	<b>38.1</b>

Source: Research and Experimental Development, Businesses, Australia, 2003-04 (8104.0).

Engineering and technology, and information, computing and communication sciences were the research divisions with the highest R&D expenditure, at 54% and 26% respectively (table 25.9).

The engineering and technology, and information, computing and communication sciences research fields recorded the highest proportion of total human resources effort on R&D, contributing 49% and 33% respectively (table 25.9).

In terms of socioeconomic objectives, business directed 90% of R&D expenditure into economic development (\$6,532m). About 6% was directed towards society, 3% towards defence and 1%

towards environment. Within economic development, manufacturing was the subdivision with the highest expenditure (\$2,929m) followed by information and communication services (\$1,125m) (table 25.10).

The same pattern applied to human resources devoted to R&D, with 88% (33,700 person years of effort) directed towards economic development, 7% directed towards society, 4% towards defence and 1% towards environment. Within economic development the subdivisions with the highest proportion of total human resources devoted to R&D were manufacturing (44%) and information and communication services (20%) (table 25.10).

## 25.9 BUSINESS R&D RESOURCES, By research field(a) — 2003–04

	Expenditure on R&D				Human resources devoted to R&D '000 person years
	Capital expenditure	Labour costs	Other current expenditure	Total	
	\$'m	\$m	\$m	\$m	
Mathematical sciences	0.6	14.7	7.3	22.6	0.2
Physical sciences	1.9	26.6	17.9	46.5	0.3
Chemical sciences	13.2	86.4	110.0	209.6	1.2
Earth sciences	15.1	26.8	100.0	141.9	0.3
Biological sciences	16.1	110.4	100.1	226.6	1.3
Information, computing and communication sciences	73.7	1 168.7	658.1	1 900.4	12.6
Engineering and technology	311.0	1 422.3	2 185.5	3 918.8	18.6
Agricultural, veterinary and environmental sciences	25.8	83.6	125.8	235.3	1.2
Architecture, urban environment and building	1.9	9.6	21.6	33.1	0.1
Medical and health sciences	30.8	192.5	231.8	455.1	2.1
Education	0.1	2.3	2.7	5.1	—
Economics	0.1	3.2	2.2	5.6	—
Commerce, management, tourism and services	0.8	8.1	6.9	15.8	0.1
Studies in human society	—	0.1	0.1	0.2	—
Behavioural and cognitive sciences	—	0.5	0.3	0.9	—
Law, justice and law enforcement	n.p.	0.1	n.p.	0.5	—
Journalism, librarianship and curatorial studies	n.p.	n.p.	n.p.	n.p.	n.p.
The Arts	—	1.2	0.9	2.2	—
Language and culture	n.p.	n.p.	n.p.	n.p.	n.p.
History and archaeology	n.p.	n.p.	n.p.	n.p.	n.p.
<b>Total</b>	<b>491.3</b>	<b>3 157.2</b>	<b>3 571.7</b>	<b>7 220.2</b>	<b>38.1</b>

(a) Data were subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0)*.

## 25.10 BUSINESS R&D RESOURCES, By socioeconomic objective(a) — 2003–04

	Expenditure on R&D				Human resources devoted to R&D '000 person years
	Capital expenditure	Labour costs	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	
Defence	4.8	104.0	68.6	177.4	1.4
Economic development					
Plant – production and primary products	10.0	42.5	47.3	99.9	0.6
Animal – production and primary products	8.2	22.6	37.5	68.3	0.3
Mineral resources (excl. energy)	37.6	102.2	511.3	651.1	1.2
Energy resources	23.3	53.9	190.9	268.1	0.6
Energy supply	40.7	49.5	80.5	170.8	0.7
Manufacturing	208.1	1 280.1	1 441.3	2 929.5	16.7
Construction	17.3	85.3	165.0	267.6	1.0
Transport	16.5	56.2	55.0	127.7	0.8
Information and communication services	53.4	648.1	423.4	1 124.9	7.7
Commercial services and tourism	25.9	459.8	323.7	809.4	4.0
Economic framework	0.6	9.8	4.6	15.0	0.1
Total	441.7	2 810.1	3 280.6	6 532.4	33.7
Society					
Health	34.4	184.1	172.0	390.5	2.1
Education and training	0.9	10.1	5.5	16.5	0.2
Social development and community services	2.3	19.8	10.1	32.1	0.3
Total	37.5	214.0	187.6	439.1	2.6
Environment					
Environmental policy frameworks and other aspects	1.0	9.1	8.5	18.6	0.1
Environmental management	6.1	18.4	25.4	49.9	0.3
Total	7.1	27.5	34.0	68.5	0.4
Non-oriented research	0.2	1.5	1.0	2.7	—
<b>Total</b>	<b>491.3</b>	<b>3 157.2</b>	<b>3 571.7</b>	<b>7 220.2</b>	<b>38.1</b>

(a) Data were subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0)*.

### Biotechnology-related R&D

Information was collected by the ABS in 2003–04 on biotechnology related R&D. Biotechnology is the application of science and engineering principles to living organisms as well as parts, products or models thereof, to alter living or non-living materials for the production of knowledge, goods and services.

In 2003–04, 304 businesses performed and/or paid another to perform biotechnology related R&D, totalling \$378m in expenditure. As businesses could both perform and pay another to perform their R&D, the sum of businesses in table 25.11 is

higher than the actual count of businesses (304). There was \$271m (4% of BERD) of biotechnology related R&D expenditure, which was performed by 227 businesses. There were 155 businesses which paid \$107m to others to perform biotechnology related R&D (table 25.11).

Property and business services reported the highest number of biotechnology R&D active businesses and the highest level of expenditure on both biotechnology related R&D performed by the business (\$187m) and paid to another (\$81m) (table 25.11).

## 25.11 EXPENDITURE ON BIOTECHNOLOGY RELATED R&D, By industry — 2003–04

	Industry					Total
	Units	Manufacturing	Wholesale trade	Property and business services	Other industries n.e.c.	
<b>Businesses that</b>						
Performed biotechnology related R&D	no.	60	13	138	16	227
Paid another to perform biotechnology related R&D	no.	38	11	101	5	155
<b>Expenditure on biotechnology related R&amp;D</b>						
Performed by this business						
For own purposes	\$m	n.p.	n.p.	141.5	8.1	223.4
For another	\$m	n.p.	n.p.	45.5	—	47.5
<i>Total</i>	<i>\$m</i>	<i>72.4</i>	<i>3.2</i>	<i>187.1</i>	<i>8.1</i>	<i>270.8</i>
<b>Paid to another organisation to perform who were</b>						
Located within Australia	\$m	n.p.	n.p.	54.0	0.6	76.2
Located overseas	\$m	n.p.	n.p.	27.2	—	30.8
<i>Total</i>	<i>\$m</i>	<i>20.5</i>	<i>4.8</i>	<i>81.2</i>	<i>0.6</i>	<i>107.0</i>
<b>Total</b>	<b>\$m</b>	<b>92.9</b>	<b>8.0</b>	<b>268.3</b>	<b>8.7</b>	<b>377.8</b>

Source: Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0).

Most businesses classified their biotechnology related R&D to human health which represented \$263m or 70% of total biotechnology related R&D. Agricultural biotechnology had the next highest expenditure of \$43m or 11% of total biotechnology related R&D expenditure.

Of the 304 biotechnology R&D active businesses, approximately half (155) paid others to perform biotechnology related R&D. There were 145 businesses which paid one or more Australian organisations to perform biotechnology related R&D on their behalf. Of these 66% paid a university or other higher education institution, 13% paid the Commonwealth Scientific and Industrial Research Organisation, 30% paid another government or private non-profit research institute, 27% paid a contract research organisation and 15% paid another business.

There were 36 businesses which paid overseas organisations to perform biotechnology related R&D. The locations most frequently reported were the United States of America, England and Canada.

The most common reason cited for outsourcing biotechnology related R&D was a lack of technical skill/expertise.

### General government sector

Expenditure on R&D carried out by Commonwealth, and state and territory government organisations in 2002–03 was \$2,482m, a 5% increase on expenditure in 2000–01 (table 25.2).

The research fields in which most government R&D expenditure took place were: Agricultural, veterinary and environmental sciences (\$761m, or 31%); Engineering and technology (\$424m, or 17%); Biological sciences (\$263m, or 11%); Earth sciences (\$242m, or 10%); and Medical and health sciences (\$198m, or 8%) (table 25.12).

A slightly different pattern applied to human resources devoted to R&D, with Agricultural, veterinary and environmental sciences accounting for 32%; Engineering and technology 17%; Medical and health sciences 12%; Biological sciences 11%; and Earth sciences 7% (table 25.12).

## 25.12 GOVERNMENT R&D RESOURCES, By research field(a) — 2002–03

	Expenditure on R&D					Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Labour costs	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Mathematical sciences	1.4	1.2	22.0	11.5	36.1	0.3
Physical sciences	5.5	9.5	66.5	38.2	119.6	0.8
Chemical sciences	5.4	10.9	64.1	41.3	121.8	0.8
Earth sciences	13.7	16.5	102.1	110.2	242.5	1.3
Biological sciences	19.6	14.9	132.1	96.8	263.4	2.0
Information, computing and communication sciences	3.9	6.0	88.2	83.6	181.7	1.1
Engineering and technology	18.8	24.3	235.2	146.1	424.4	3.1
Agricultural, veterinary and environmental sciences	26.3	21.3	371.4	342.3	761.3	5.9
Medical and health sciences	3.2	9.1	125.9	60.2	198.4	2.2
Economics	0.4	1.0	33.7	22.7	57.7	0.5
Law, justice and law enforcement	0.3	0.3	9.6	5.9	16.1	0.1
Other research fields	1.7	2.6	36.5	18.3	59.1	0.5
<b>Total</b>	<b>100.1</b>	<b>117.5</b>	<b>1 287.3</b>	<b>977.2</b>	<b>2 482.2</b>	<b>18.5</b>
Commonwealth	88.2	92.5	785.5	565.1	1 531.3	10.2
State/territory	11.9	25.0	501.8	412.1	950.9	8.4

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

In terms of socioeconomic objectives, most government sector R&D expenditure (\$1,341m or 54%) was directed towards economic development (table 25.13). About 20% was directed towards environment, 12% towards society, 11% towards defence, and 2% to non-oriented research. Of the amount directed towards economic development, \$377m (28%) was directed towards Plant production and primary products; \$278m (21%) towards Animal production and primary products; and \$233m (17%) towards Manufacturing (table 25.13).

A slightly different pattern applied to human resources devoted to R&D, with 51% directed towards economic development, 18% towards environment, 17% towards society, 13% towards defence, and 2% to non-oriented research (table 25.13).

### Higher education sector

Estimated expenditure on R&D carried out by the higher education sector in 2002 was \$3,430m, an increase of 23% over expenditure in 2000, and 34% over expenditure in 1998 (table 25.2).

The major fields of research in which higher education R&D expenditure took place in 2002 were: Medical and health sciences (\$864m, or 25% of total expenditure); Biological sciences (\$410m, or 12%); Engineering and technology (\$375m, or 11%); and Agricultural, veterinary and environmental sciences (\$235m, or 7%). Direct labour costs accounted for 42% of total R&D expenditure (table 25.14).

A slightly different pattern applied to human resources devoted to R&D, with 19% on Medical and health sciences, 10% on Engineering and technology, 10% on Biological sciences and 6% on Agricultural, veterinary and environmental sciences (table 25.14).



**25.13 GOVERNMENT R&D RESOURCES, By socioeconomic objective(a) — 2002–03**

	Expenditure on R&D					Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Labour costs	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Defence	0.3	12.2	194.2	77.2	283.9	2.4
Economic development						
Plant – production and primary products	11.1	9.4	185.2	171.7	377.4	2.9
Animal – production and primary products	9.1	7.3	133.1	128.0	277.6	2.2
Mineral resources (excl. energy)	5.4	5.5	44.9	41.9	97.7	0.5
Energy resources	2.9	1.9	27.6	26.5	59.0	0.3
Energy supply	2.1	1.0	13.9	9.4	26.4	0.2
Manufacturing	15.1	20.6	109.6	88.1	233.4	1.6
Construction	2.6	1.6	21.4	12.8	38.4	0.2
Transport	0.3	0.4	6.4	8.1	15.3	0.1
Information and communication services	4.9	2.5	31.0	14.4	52.9	0.4
Commercial services and tourism	0.7	2.1	17.1	7.1	27.1	0.2
Economic framework	1.4	1.7	57.9	74.7	135.7	0.7
<i>Total</i>	55.6	54.1	648.1	582.9	1 340.7	9.4
Society						
Health	3.4	10.3	140.6	73.6	228.0	2.5
Education and training	0.2	0.1	8.4	3.0	11.7	0.1
Social development and community services	2.3	2.0	35.2	20.5	59.9	0.5
<i>Total</i>	5.9	12.5	184.3	97.0	299.6	3.1
Environment						
Environmental policy frameworks and other aspects	1.3	1.2	19.2	13.9	35.7	0.3
Environmental management	34.4	32.5	217.7	188.5	473.1	3.0
<i>Total</i>	35.8	33.7	236.9	202.4	508.7	3.3
Non-oriented research	2.7	5.1	23.8	17.7	49.2	0.4
<b>Total</b>	<b>100.1</b>	<b>117.5</b>	<b>1 287.3</b>	<b>977.2</b>	<b>2 482.2</b>	<b>18.5</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Government and Private Non-profit Organisations, Australia, 2002–03 (8109.0)*.

## 25.14 HIGHER EDUCATION R&D RESOURCES, By research field(a) — 2002

	Expenditure on R&D						Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Direct labour costs	Scholarships	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	\$m	
Mathematical sciences	0.9	2.5	30.4	4.1	26.1	64.0	0.8
Physical sciences	1.0	11.1	57.4	6.6	53.3	129.4	1.4
Chemical sciences	18.5	11.1	57.3	12.3	56.1	155.2	1.9
Earth sciences	1.1	11.2	47.4	7.7	46.7	114.1	1.5
Biological sciences	56.2	21.5	146.4	26.1	160.0	410.2	4.8
Information, computing and communication sciences	2.0	11.2	62.3	11.1	57.5	144.1	2.2
Engineering and technology	6.6	28.7	150.3	30.7	158.2	374.5	5.2
Agricultural, veterinary and environmental sciences	3.7	11.0	99.9	18.0	102.6	235.2	3.1
Medical and health sciences	16.0	44.0	353.1	41.2	409.6	863.8	9.4
Education	3.0	3.3	58.0	11.2	52.9	128.4	3.1
Economics	1.7	1.7	38.8	4.3	37.4	83.8	1.2
Commerce, management, tourism and services	3.3	4.0	65.4	7.3	57.2	137.2	2.5
Studies in human society	1.9	2.6	48.9	9.9	48.1	111.4	2.3
Behavioural and cognitive sciences	2.7	4.4	51.2	10.5	44.5	113.3	2.2
Other research fields	12.7	8.5	170.0	36.2	137.7	365.0	8.1
<b>Total</b>	<b>131.2</b>	<b>176.7</b>	<b>1 436.8</b>	<b>237.3</b>	<b>1 447.6</b>	<b>3 429.6</b>	<b>49.6</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Higher Education Organisations, Australia, 2002 (8111.0)*.

In terms of socioeconomic objectives, most higher education R&D expenditure (\$1,474m or 43%) was directed towards society. About 29% was directed towards economic development, 21% towards non-oriented research and 6% towards environment. The major subdivision within society was health with 28% of total R&D expenditure (table 25.15).

A similar pattern applied to human resources devoted to R&D, with 44% directed towards society, 29% towards economic development, 20% towards non-oriented research and 7% to environment (table 25.15).

## 25.15 HIGHER EDUCATION R&D RESOURCES, By socioeconomic objective(a) — 2002

	Expenditure on R&D						Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Direct labour costs	Scholarships	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	\$m	
Defence	—	1.5	4.3	0.6	4.5	10.9	0.1
Economic development							
Plant – production and primary products	1.1	5.5	47.9	8.2	53.0	115.8	1.5
Animal – production and primary products	1.5	4.2	32.7	6.0	32.3	76.6	1.0
Mineral resources (excl. energy)	0.4	3.7	24.0	3.5	27.3	58.8	0.7
Energy resources	0.8	3.6	14.0	2.2	14.4	35.0	0.5
Energy supply	0.7	3.5	15.8	3.5	17.0	40.6	0.5
Manufacturing	6.7	17.6	78.8	17.3	80.2	200.6	2.7
Construction	1.4	4.8	24.8	5.9	25.3	62.1	1.1
Transport	0.5	1.3	11.9	1.9	12.8	28.5	0.3
Information and communication services	2.1	11.1	70.9	11.9	65.8	161.8	2.4
Commercial services and tourism	1.0	1.5	21.3	2.3	16.5	42.6	0.7
Economic framework	3.2	4.4	79.3	9.2	73.2	169.3	2.8
<i>Total</i>	<i>19.5</i>	<i>61.2</i>	<i>421.4</i>	<i>72.0</i>	<i>417.8</i>	<i>991.8</i>	<i>14.3</i>
Society							
Health	27.0	42.1	398.5	49.2	453.6	970.4	11.2
Education and training	3.4	4.5	71.1	15.4	66.5	160.8	3.5
Social development and community services	11.9	8.2	159.7	32.3	130.9	343.0	7.3
<i>Total</i>	<i>42.3</i>	<i>54.8</i>	<i>629.2</i>	<i>96.9</i>	<i>651.0</i>	<i>1 474.2</i>	<i>22.0</i>
Environment							
Environmental policy frameworks and other aspects	0.6	1.4	15.1	3.2	13.9	34.3	0.5
Environmental management	4.2	10.7	77.1	15.5	79.2	186.7	2.9
<i>Total</i>	<i>4.9</i>	<i>12.1</i>	<i>92.2</i>	<i>18.7</i>	<i>93.1</i>	<i>221.1</i>	<i>3.4</i>
Non-oriented research	64.5	47.1	289.7	49.1	281.2	731.5	9.8
<b>Total</b>	<b>131.2</b>	<b>176.7</b>	<b>1 436.8</b>	<b>237.3</b>	<b>1 447.6</b>	<b>3 429.6</b>	<b>49.6</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Higher Education Organisations, Australia, 2002 (8111.0)*.

### Private non-profit sector

Expenditure on R&D carried out by private non-profit organisations in 2002–03 was \$360m, an increase of 24% on expenditure in 2000–01 (table 25.2).

Medical and health sciences comprised the major research field for R&D expenditure in the private non-profit sector, accounting for \$221m (61%) of the sector's total R&D expenditure in 2002–03. Labour costs continued to be the main component of R&D expenditure (50%) (table 25.16).

Medical and health sciences also comprised the leading research field in terms of human resource use (table 25.16).

In the private non-profit sector, health was the main socioeconomic objective, accounting for 90% or \$324m of total R&D expenditure. Education and training accounted for \$20m (6%), while \$11m (3%) was directed towards economic development (table 25.17).

A similar pattern applied to human resources devoted to R&D, with 92% directed towards health, 4% towards education and training, and 2% towards economic development (table 25.17).

**25.16 PRIVATE NON-PROFIT R&D RESOURCES, By research field(a) — 2002–03**

	Type of expenditure					Human resources Person years
	Land and buildings	Other capital expenditure	Labour costs	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Mathematical sciences	0.1	(b)n.p.	(b)n.p.	(b)n.p.	(b)n.p.	(b)n.p.
Physical sciences	(b)n.p.	0.1	(b)n.p.	0.1	(b)n.p.	(b)n.p.
Chemical sciences	0.2	0.7	0.9	2.3	4.0	15
Earth sciences	—	—	—	—	—	—
Biological sciences	3.5	8.1	55.4	37.5	104.6	966
Information, computing and communication sciences	0.1	0.7	1.9	2.1	4.8	32
Engineering and technology	(b)n.p.	(b)n.p.	0.7	0.6	1.5	12
Agricultural, veterinary and environmental sciences	(b)n.p.	(b)n.p.	1.0	0.9	2.1	18
Medical and health sciences	9.2	16.9	108.8	85.9	220.8	1 945
Other research fields	n.p.	0.5	9.1	(b)n.p.	19.4	116
<b>Total</b>	<b>13.7</b>	<b>27.5</b>	<b>178.8</b>	<b>139.6</b>	<b>359.5</b>	<b>3 117</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information. (b) Not available for publication but included in totals where applicable, unless otherwise indicated.

Source: *Research and Experimental Development, Government and Private Non-profit Organisations, Australia, 2002–03 (8109.0)*.

**25.17 PRIVATE NON-PROFIT R&D RESOURCES, By socioeconomic objective(a) — 2002–03**

	Type of expenditure					Human resources Person years
	Land and buildings	Other capital expenditure	Labour costs	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Defence	—	—	—	—	—	—
Economic development	(b)n.p.	1.4	3.6	(b)n.p.	11.2	65
Society						
Health	12.6	25.3	163.1	123.0	324.0	2 882
Education and training	(b)n.p.	0.6	9.4	(b)n.p.	20.1	119
Social development and community services	(b)n.p.	0.1	1.3	(b)n.p.	1.9	20
Total	13.0	26.0	173.7	133.2	345.9	3 021
Environment	—	(b)n.p.	1.0	(b)n.p.	1.7	21
Non-oriented research	(b)n.p.	(b)n.p.	0.5	0.2	0.8	10
<b>Total</b>	<b>13.7</b>	<b>27.5</b>	<b>178.8</b>	<b>139.6</b>	<b>359.5</b>	<b>3 117</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information. (b) Not available for publication but included in totals where applicable, unless otherwise indicated.

Source: *Research and Experimental Development, Government and Private Non-profit Organisations, Australia, 2002–03 (8109.0)*.

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Additional information on topics presented in this chapter may be found in the Australian Government's annual report on innovation and in the annual reports and other publications of the organisations mentioned, particularly the Department of Education, Science and Training, the Department of Industry, Tourism and Resources and the CSIRO. See also the innovation statement of May 2004, *Backing Australia's Ability – Building Our Future Through Science and Innovation*.

Additional information on some technology-related issues, particularly on the use of information technology, can be found in *Chapter 23, Information and Communication Technology*.

### Web sites

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Australian Government Department of Industry, Tourism and Resources, last viewed September 2005  
<<http://www.industry.gov.au>>

Commonwealth Scientific and Industrial Research Organisation, last viewed September 2005  
<<http://www.csiro.au>>. Also the CSIRO biotechnology portal <<http://www.bio.csiro.au>>

Information about Australian Government policies and programs relating to science and innovation can be found through the portal, last viewed September 2005 <<http://www.scienceandindustry.gov.au>>

Organisation for Economic Co-operation and Development (OECD), last viewed September 2005  
<<http://www.oecd.org>>. A summary of the *Frascati Manual*, the basic international source of methodology for collecting and using research and development statistics, last viewed September 2005  
<<http://www.oecd.org/dsti/sti/stat-ana/prod>>

## FINANCIAL SYSTEM

The financial system in Australia can be thought of as having three overlapping components. The first consists of financial enterprises (such as banks) and regulatory authorities, the Reserve Bank (the central bank) and the Australian Prudential Regulation Authority. The second consists of financial markets (e.g. the bond market) and their participants (issuers such as governments, and investors such as superannuation funds). The third is the payments system - that is, the cash, cheque and electronic means by which payments are effected - and its participants (e.g. banks). The interaction of these components enables funds for investment or consumption to be made available from savings in other parts of the national or international economy.

This chapter provides a summary of the structure and activities of the three components of the Australian financial system.

## Regulatory framework

From 1 July 1998 a new financial regulatory framework came into effect, in response to the recommendations of the Financial System Inquiry (the Wallis Committee). Under the new structure a single prudential supervisor, the Australian Prudential Regulation Authority (APRA), was established to take responsibility for the supervision of banks, life and general insurance companies and superannuation funds. The Australian Securities and Investments Commission assumed responsibility for market integrity and consumer protection across the financial system. The Reserve Bank retained responsibility for monetary policy and the maintenance of financial stability, including stability of the payments system.

From 1 July 1999 building societies and credit unions have been supervised by APRA. APRA supervises benefit funds of friendly societies under the *Life Insurance Act 1995* (Cwlth), while health benefit funds of friendly societies are regulated by the Private Health Insurance Administration Council under the *National Health Act 1959* (Cwlth). Prior to 1 July 1999, building societies, credit unions and friendly societies were regulated under state legislation.

On 1 July 2000 regulation of self-managed superannuation funds was transferred to the Australian Taxation Office (ATO). From September 2001 the *Financial Sector (Collection of Statistics) Act 2001* (Cwlth) provided APRA with powers to collect information previously collected under the range of legislation for which it was responsible, and under the Financial Corporations Act administered by the Reserve Bank. The new legislation enables harmonised and consistent data collection from financial institutions. APRA commenced data collection from registered financial corporations from March 2003.

## Inter-sectoral financial flows

The data collected by APRA are combined with data from other sources by the Australian Bureau of Statistics (ABS) to compile a set of financial accounts according to the international standard, the *System of National Accounts 1993*. Diagram 26.1 provides an overview of the flows of capital through the financial system and summarises the end result of applying the current statistical framework. It illustrates the net financial flows between sectors during the year 2004–05. The arrows show the net flow from lenders to borrowers. For example, there is a \$24.6 billion (b)

net flow from the financial corporations sector to households. There is also an \$20.4b net flow from financial corporations to non-financial corporations.

## Financial enterprises

Financial enterprises are institutions which engage in acquiring financial assets and incurring liabilities, for example, by taking deposits, borrowing and lending, providing superannuation, supplying all types of insurance cover, leasing, and investing in financial assets.

For national accounting purposes, financial enterprises are grouped into six sectors: Depository corporations; Life insurance corporations; Pension funds; Other insurance corporations; Central borrowing authorities; and Financial intermediaries n.e.c.

*Depository corporations* – are those included in the Reserve Bank of Australia's *broad money* measure (see *Money supply measures*). The Reserve Bank itself is a depository corporation; authorised depository institutions are those supervised by APRA and include banks, building societies and credit unions; non-supervised depository corporations registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth) include merchant banks, pastoral finance companies, finance companies and general financiers; finally cash management trusts are also included in depository corporations.

*Life insurance corporations* – cover the statutory and shareholders' funds of life insurance companies and similar businesses undertaken by friendly societies and long-service-leave boards.

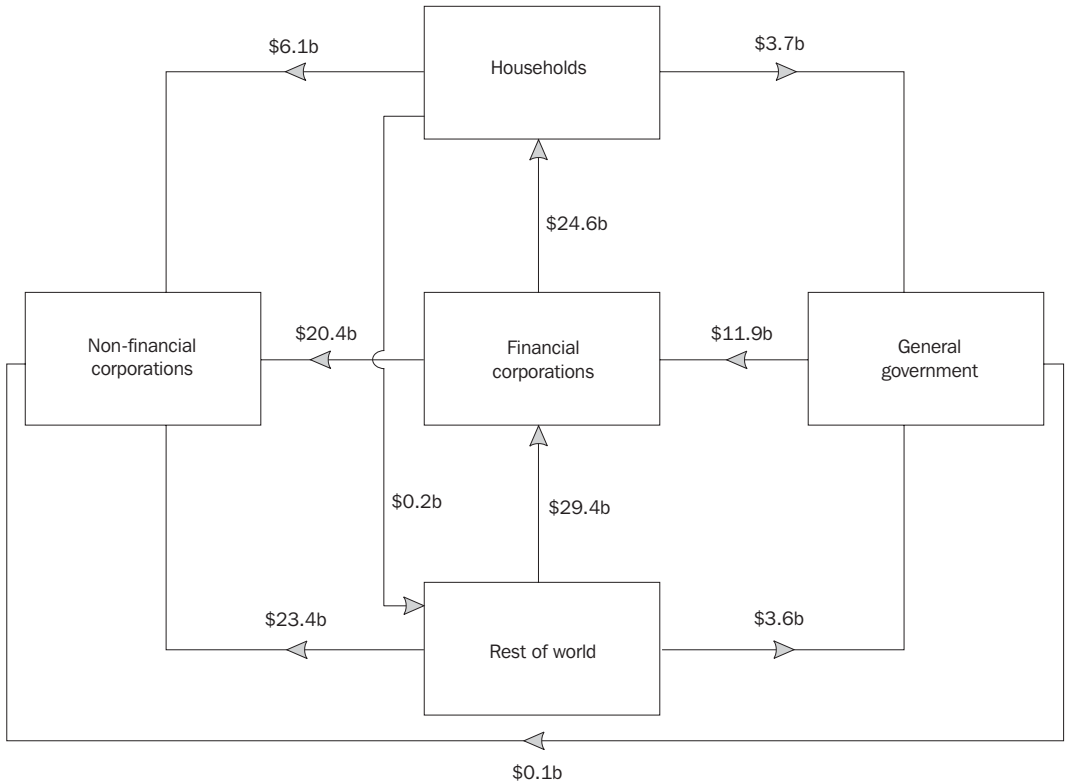
*Pension funds* – cover separately constituted superannuation funds.

*Other insurance corporations* – cover health, export and general insurance companies.

*Central borrowing authorities* – are corporations set up by state and territory governments to provide liability and asset management services for those governments.

*Financial intermediaries n.e.c.* – cover common funds, mortgage, fixed interest and equity unit trusts, issuers of asset-backed securities, economic development corporations and cooperative housing societies.

## 26.1 INTER-SECTORAL FINANCIAL FLOWS — 2004-05



Source: Australian National Accounts: Financial Accounts, June 2005 (5232.0).

## 26.2 FINANCIAL INSTITUTIONS, Financial assets — 30 June

	Depository corporations									
	Reserve Bank	Banks	Other	Life insurance corporations	Pension funds	Other insurance corporations	Central borrowing authorities	Financial intermediaries n.e.c.	Consolidated financial sector total	
	\$b	\$b	\$b	\$b	\$b	\$b	\$b	\$b	\$b	\$b
2000	51.1	728.6	197.0	185.7	423.9	72.9	91.3	214.3	1 400.3	
2001	55.1	805.7	228.2	188.8	451.1	78.0	91.8	220.0	1 506.5	
2002	54.7	875.6	245.3	190.5	470.1	78.8	93.9	237.6	1 610.8	
2003	55.3	978.8	243.6	182.9	500.9	87.8	103.6	249.1	1 711.4	
2004	62.6	1 111.6	232.4	192.4	608.9	92.1	101.7	313.3	1 961.3	
2005	70.5	1 214.9	258.3	211.8	715.1	96.6	111.6	404.1	2 209.5	

Source: Australian National Accounts: Financial Accounts (5232.0).

Table 26.2 shows the relative size of these groups of financial enterprises in terms of their financial assets. This table has been compiled on a consolidated basis, that is, financial claims between institutions in the same grouping have been eliminated. The total is also consolidated, that is, financial claims between the groupings

have been eliminated. For this reason, and because there are a number of less significant adjustments made for national accounting purposes, the statistics in the summary table will differ from those presented later in this chapter and published elsewhere.



## Banks

Between 1940 and 1959, central banking business was the responsibility of the Commonwealth Bank. The *Reserve Bank Act 1959* (Cwlth) established the Reserve Bank of Australia as the central bank, and from 1959 to 1998 the Reserve Bank was responsible for the supervision of commercial banks. From 1 July 1998, APRA assumed responsibility for bank supervision while the Reserve Bank retained responsibility for monetary policy and the maintenance of financial stability, including stability of the payments system.

Banks are the largest deposit-taking and financial institutions in Australia. At the end of June 2005 there were 51 banks operating in Australia. All are authorised to operate by the *Banking Act 1959* (Cwlth). Four major banks: the Australia and New Zealand Banking Group, Commonwealth Bank of Australia, National Australia Bank, and the Westpac Banking Corporation, account for over half the total assets of all banks. These four banks provide widespread banking services and an extensive retail branch network throughout Australia. The remaining banks provide similar banking services through limited branch networks often located in particular regions. At 30 June 2005, banking services were provided at 3,191 giroPost locations and 24,173 Automatic Teller Machines (ATMs) throughout Australia (table 26.36).

The liabilities and financial assets of the Reserve Bank are set out in table 26.3. The liabilities and financial assets of the banks operating in Australia are shown in table 26.4.

## Other depository corporations

In addition to banks, financial institutions such as building societies, credit unions and merchant banks play an important part in the Australian financial system. In the Australian financial accounts, other depository corporations are defined as those, apart from banks, with liabilities included in the Reserve Bank's definition of *broad money*. Non-bank institutions included in broad money are other authorised depository institutions (building societies and credit cooperatives), cash management trusts, and corporations registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth) which include money market corporations and finance companies.

*The Financial Corporations Act 1974* (Cwlth) ceased on 1 July 2002. Corporations previously subject to the *Financial Corporations Act 1974* (Cwlth) were then required to report to APRA as Registered Financial Corporations. From 31 March 2003 the number of categories of other depository corporations reduced to five following changes to the *Financial Statistics (Collection of Data) Act 2001* (Cwlth).

### 26.3 RESERVE BANK OF AUSTRALIA, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2003 \$m	2004 \$m	2005 \$m
<b>FINANCIAL ASSETS</b>			
Monetary gold and SDRs(a)	1 555	1 729	1 719
Currency and deposits	11 093	24 043	33 472
One name paper	548	2 614	2 831
Bonds	41 749	32 251	30 290
Derivatives	8	2	31
Loans and placements	91	23	21
Other accounts receivable	221	261	290
<b>Total</b>	<b>55 265</b>	<b>60 923</b>	<b>68 654</b>
<b>LIABILITIES</b>			
Currency and deposits	34 484	36 769	38 759
Unlisted shares and other equity(b)	11 678	12 514	11 241
Other	6 783	5 363	3 231
<b>Total</b>	<b>52 945</b>	<b>54 646</b>	<b>53 231</b>

(a) Special Drawing Rights. (b) Estimates based on net asset values.

Source: *Australian National Accounts: Financial Accounts (5232.0)*.

## 26.4 BANKS(a), Financial assets and liabilities

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	30 879	34 595	40 526
Acceptance of bills of exchange	76 680	83 398	91 697
One name paper	12 020	15 558	16 272
Bonds	28 668	32 842	36 245
Derivatives	57 276	58 180	53 827
Loans and placements	693 628	802 545	887 348
Equities	75 517	78 968	83 812
Prepayments of premiums and reserves	1 616	1 745	1 837
Other accounts receivable	2 484	3 815	3 329
<b>Total</b>	<b>978 768</b>	<b>1 111 646</b>	<b>1 214 893</b>
<b>LIABILITIES</b>			
Currency and deposits	502 622	561 423	596 978
Acceptance of bills of exchange	39 000	42 398	49 924
One name paper	78 832	94 878	97 729
Bonds	17 217	24 311	37 816
Derivatives	63 337	52 969	58 444
Loans and placements	45 898	39 789	45 200
Equity	171 712	179 996	216 272
Other accounts payable	4 512	2 532	4 188
<b>Total</b>	<b>923 130</b>	<b>998 296</b>	<b>1 106 551</b>

(a) Does not include the Reserve Bank of Australia.

Source: Australian National Accounts: Financial Accounts (5232.0).

*Permanent building societies* are usually organised as financial cooperatives. They are authorised to accept money on deposit. They provide finance principally in the form of housing loans to their members.

*Credit cooperatives*, also known as credit unions, are similar to building societies. As their name implies, they are organised as financial cooperatives which borrow from and provide finance to their members.

*Money market corporations* are similar to wholesale banks and for this reason they are often referred to as merchant or investment banks. They have substantial short-term borrowings which they use to fund business loans and investments in debt securities.

*Other registered financial corporations*. This category covers what were pastoral finance companies, finance companies and general financiers categories. These corporations engage in a variety of borrowing and lending activity.

*Cash management trusts* are investment funds which are open to the public. They invest the pooled monies of their unit holders mainly in money-market securities such as bills of exchange and bank certificates of deposit. As with other public unit trusts their operations are governed by a trust deed and their units are redeemable by the trustee on demand or within a short time. They are not subject to supervision by APRA or registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth).

Table 26.5 shows the total assets of each category of non-bank deposit-taking institution.

## 26.5 OTHER DEPOSITORY CORPORATIONS, Total assets

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
Permanent building societies	12 987	14 563	16 053
Credit cooperatives	28 498	31 086	33 096
Money market corporations	98 994	(a)67 869	80 130
Other registered financial corporations	80 204	76 243	86 535
Cash management trusts	30 031	32 452	36 520
<b>Total</b>	<b>250 714</b>	<b>222 213</b>	<b>252 334</b>

(a) A large MMC became a bank during 2003–04

Source: *Managed Funds, Australia (5655.0)*; APRA; Reserve Bank of Australia.

### Life insurance corporations

Life insurance corporations offer termination insurance and investment policies. Termination insurance includes the payment of a sum of money on the death of the insured or on the insured receiving a permanent disability. Investment products include annuities and superannuation plans. The life insurance industry in Australia consists of 37 direct insurers, including six reinsurers. As with the banking industry, the life insurance industry is dominated by a few very large companies holding a majority of the industry's assets.

Life insurance companies are supervised by the APRA under the *Life Insurance Act 1995* (Cwlth). APRA also regulates friendly societies which offer services similar to life insurance corporations.

Table 26.6 shows the financial assets and liabilities arising from both policyholder and shareholder investment in life insurance corporations and APRA regulated friendly societies.

### Pension funds

Pension funds have been established to provide retirement benefits for their members. Members make contributions during their employment and receive the benefits of this form of saving in retirement. There are two basic types of contribution – employer contributions in the form of the superannuation guarantee and voluntary contributions. In order to receive concessional taxation treatment, a pension fund must elect to be regulated under the *Superannuation Industry (Supervision) Act 1993* (Cwlth) (SIS Act). These funds are supervised by either APRA or the ATO. Public sector funds, being funds sponsored by a

government employer or government controlled business enterprise, are exempt from direct APRA supervision.

The largest number of pension funds comprise self-managed superannuation funds. From 1 July 2000 the ATO assumed responsibility for regulating self-managed superannuation funds.

*Self-managed superannuation funds* are superannuation funds that have less than five members and for which:

- each individual trustee of the fund is a fund member
- each member of the fund is a trustee
- no member of the fund is an employee of another member of a fund, unless they are related
- if the trustee of the fund is a body corporate each director of the body corporate is a member of the fund.

*Corporate funds* are funds sponsored by a single non-government employer, or group of employers. *Industry funds* generally have closed memberships restricted to the employees of a particular industry and are established under an agreement between the parties to an industrial award.

*Public sector funds* are those funds sponsored by a public sector employer. *Retail funds* are pooled superannuation products sold through an intermediary to the general public. Funds with less than five members, but which do not qualify as self-managed superannuation funds, are known as small APRA funds.

## 26.6 LIFE INSURANCE CORPORATIONS, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	11 036	10 782	12 216
Bills of exchange	3 299	3 390	3 425
One name paper	14 631	15 260	15 470
Bonds	42 311	40 760	47 383
Derivatives	309	—	155
Loans and placements	4 505	3 261	2 805
Equities	101 109	113 858	124 260
Other accounts receivable	5 738	5 099	6 078
<b>Total</b>	<b>182 938</b>	<b>192 410</b>	<b>211 792</b>
<b>LIABILITIES</b>			
Bills of exchange	4	49	3
One name paper issued in Australia	—	—	—
One name paper issued offshore	—	967	805
Bonds etc. issued in Australia	1 009	240	—
Bonds etc. issued offshore	633	289	240
Derivatives	—	123	50
Loans and placements	3 328	3 405	5 017
Listed and unlisted equity	24 444	30 417	33 870
Net equity in reserves	38 536	37 359	47 154
Net equity of pension funds	120 618	134 254	147 635
Other accounts payable	5 661	6 056	4 349
<b>Total</b>	<b>194 233</b>	<b>213 159</b>	<b>239 123</b>

Source: Australian National Accounts: Financial Accounts (5232.0).

In addition to separately constituted funds, the SIS Act also provides for special accounts operated by financial institutions earmarked for superannuation contributions, known as *Retirement Savings Accounts*, that also qualify for concessional taxation under the supervision of APRA. The liabilities represented by these accounts are liabilities of the institutions concerned and are included with the relevant institution in this chapter (e.g. retirement savings accounts operated by banks are included in bank deposits in table 26.4).

The number of pension funds is shown in table 26.7. The assets of pension funds are shown in table 26.8 and include unfunded pension claims by pension funds on the Australian Government where these have been formally recognised in accounting systems. The assets in the table do not include any provision for the pension liabilities of governments to public sector employees in respect of unfunded retirement benefits. At

30 June 2005 the ABS estimate for claims by households on governments for these outstanding liabilities was \$147.7b.

## 26.7 PENSION FUNDS(a) — 30 June

Type of fund	2004	2005
Corporate	1 404	973
Industry	107	84
Public sector	39	41
Retail	235	226
Small funds(a)	289 367	310 901
<b>Total</b>	<b>291 152</b>	<b>312 225</b>

(a) Small funds include small APRA funds, single member approved deposit funds and self managed superannuation funds.

Source: APRA

## 26.8 PENSION FUNDS(a), Financial assets

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
Currency and deposits	34 646	41 820	54 070
Bills of exchange	12 459	17 738	16 823
One name paper	13 617	17 381	17 047
Bonds	55 983	67 003	73 434
Loans and placements	16 038	20 434	22 170
Equities	231 156	294 010	364 073
Unfunded superannuation claims	4 891	1 546	4
Net equity of pension funds in life office reserves	120 618	134 254	147 635
Other accounts receivable	11 468	14 704	19 796
<b>Total</b>	<b>500 876</b>	<b>608 890</b>	<b>715 052</b>

Source: Australian National Accounts: Financial Accounts (5232.0).

### Other insurance corporations

This sector includes all corporations that provide insurance other than life insurance. Included are general, fire, accident, employer liability, household, health and consumer credit insurers.

Private health insurers are regulated by the Private Health Insurance Administration Council under the *National Health Act 1959* (Cwlth). At 30 June 2005 there were 40 private health insurers, including health benefit funds of friendly societies. Other private insurers are supervised by APRA under the *Insurance Act 1973* (Cwlth). At 30 June 2004 there were 106 insurers authorised to conduct new or renewal general insurance supervised by APRA. There are ten separately constituted public sector insurance corporations with significant assets. Table 26.9 sets out the financial assets and liabilities of other insurance corporations at 30 June 2005 and the preceding two years.

### Central borrowing authorities

Central borrowing authorities are institutions established by the state governments and the Northern Territory Government primarily to provide finance for public corporations and quasi-corporations, and other units owned or controlled by those governments. They also arrange investment of the units' surplus funds. The central borrowing authorities borrow funds, mainly by issuing securities, and on-lend them to their public sector clientele. However, they also engage in other financial intermediation activity for investment purposes, and may engage in the financial management activities of the parent government.

Table 26.10 shows the financial assets and liabilities held by the central borrowing authorities at 30 June of the most recent three years.

## 26.9 OTHER INSURANCE CORPORATIONS, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	8 033	8 598	8 317
Bills of exchange	2 651	1 899	1 706
One name paper	4 446	4 961	6 918
Bonds	28 750	26 716	27 374
Loans and placements	9 462	10 154	10 142
Equities	21 288	24 911	28 624
Other accounts receivable	13 079	14 728	13 425
<b>Total</b>	<b>87 709</b>	<b>91 967</b>	<b>96 506</b>
<b>LIABILITIES</b>			
One name paper on issue	190	311	413
Bonds on issue	2 538	2 227	3 141
Loans and placements	2 272	2 561	2 057
Listed shares and other equity	14 796	22 081	28 072
Unlisted shares and other equity	15 442	18 297	21 731
Prepayment of premiums	53 815	58 115	61 158
Other accounts receivable	6 916	6 382	6 128
<b>Total</b>	<b>95 801</b>	<b>109 974</b>	<b>122 700</b>

Source: Australian National Accounts: Financial Accounts (5232.0); APRA; Private Health Insurance Administration Council.

## 26.10 CENTRAL BORROWING AUTHORITIES, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	6 352	3 560	2 273
Bills of exchange	5 495	6 388	7 864
One name paper	5 689	8 441	13 050
Bonds	4 461	5 471	5 472
Derivatives	7 688	6 386	7 026
Loans and placements	72 936	70 698	74 377
Other accounts receivable	633	756	1 522
<b>Total(a)</b>	<b>103 560</b>	<b>101 670</b>	<b>111 584</b>
<b>LIABILITIES</b>			
Drawings of bills of exchange	—	—	—
One name paper	8 016	6 807	6 610
Bonds	70 664	74 741	81 559
Derivatives	7 335	7 169	6 888
Loans and placements	17 291	14 285	13 290
Equity	30	30	30
Other accounts payable	923	729	707
<b>Total</b>	<b>104 259</b>	<b>103 761</b>	<b>109 084</b>

(a) Excludes non-financial assets (e.g. fixed assets, property, inventories, etc.).

Source: Australian National Accounts: Financial Accounts (5232.0).

## **Financial intermediaries not elsewhere classified (n.e.c.)**

This subsector comprises all institutions that meet the definition of a financial enterprise and have not been included elsewhere. It includes:

*Common funds* – are set up by trustee companies and are governed by state Trustee Acts. They allow the trustee companies to combine depositors' funds and other funds held in trust in an investment pool. They are categorised according to the main types of assets in the pool, for example, cash funds or equity funds. At 30 June 2005 eight trustee companies reported assets and liabilities data on behalf of a number of common funds included in this subsector.

*Public unit trusts* – are investment funds open to the Australian public. Their operations are governed by a trust deed which is administered by a management company. Under the *Managed Investments Act 1997* (Cwlth), the management company has become the single responsible entity for both investment strategy and custodial arrangements; the latter previously had been the responsibility of a trustee. These trusts allow their unit holders to dispose of their units relatively quickly. They may sell them back to the manager if the trust is unlisted, or sell them on the Australian Stock Exchange (ASX) if the trust is listed. Public unit trusts are categorised according to the main types of assets in the pool; for example, property or equity. Only those which invest primarily in financial assets – mortgages, fixed interest, futures or equity securities – are included here. At 30 June 2005 there were 612 unit trusts (of which 491 were equity trusts) included in this subsector. While public unit trusts are not subject to supervision by APRA or registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth), they are subject to the provisions of corporations law which includes having their prospectus registered with ASIC.

*Securitisers* – issue short- and/or long-term debt securities which are backed by specific assets. The most common assets bought by securitisation trusts/companies are residential mortgages. These mortgages are originated by financial institutions such as banks and building societies or specialist mortgage managers. Other assets can also be used to back these securities, such as credit card receivables and financial leases. Securitisers generally pool the assets and use the income on

them to pay interest to the holders of the asset-backed securities. At 30 June 2005 there were 144 securitisation vehicles included in this sub-sector.

*Cooperative housing societies* – are similar to permanent building societies. In the past they were wound up after a set period, but now they too are continuing bodies. They raise money through loans from members (rather than deposits) and provide finance to members in the form of housing loans. Over recent years many cooperative housing societies have originated mortgages on behalf of securitisers. At 30 June 2005 there were 253 cooperative housing societies.

*Investment companies* – are similar to equity trusts in that they invest in the shares of other companies. However, investors in investment companies hold share assets, not unit assets.

*Fund managers, insurance brokers and arrangers of bedding instruments* – are classified as financial auxiliaries as they engage primarily in activities closely related to financial intermediation, but they themselves do not perform an intermediation role. Auxiliaries primarily act as agents for their clients (usually other financial entities) on a fee-for-service basis, and as such the financial asset remains on the balance sheet of the client, not the auxiliary. However, a small portion of the activities of auxiliaries is brought to account on their own balance sheet, and these amounts are included in table 26.11. At 30 June 2005 there were 65 fee-for-service fund managers.

*Economic development corporations* – are owned by governments. As their name implies, these bodies are expected to finance infrastructure developments mainly in their home state or territory.

*Wholesale trusts* – are investment funds that are only open to institutional investors – life insurance corporations, superannuation funds, retail trusts, corporate clients, high net worth individuals – due to high entry levels (e.g. \$500,000 or above). They may issue a prospectus, but more commonly issue an information memorandum. Only those which invest in financial assets are included here.

## 26.11 FINANCIAL INTERMEDIARIES n.e.c., Financial assets

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
<i>Public unit trusts(a)</i>	99 024	<i>n.p.</i>	121 396
Equity unit trusts	78 056	<i>n.p.</i>	102 380
Other unit trusts	20 968	18 430	19 016
Common funds	8 929	9 687	9 954
Securitisers	128 986	159 863	185 463
Other(b)	12 117	32 331	87 254
<b>Total</b>	<b>249 056</b>	<b>313 257</b>	<b>404 067</b>

(a) Excludes property and trading trusts. (b) Includes investment companies, economic development corporations, fund managers, insurance brokers, hedging instrument arrangers, wholesale trusts, cooperative housing societies and state government housing schemes.

Source: *Assets and Liabilities of Australian Securitisers (5232.0.55.001)*; *Australian National Accounts: Financial Accounts (5232.0)*; *Managed Funds, Australia (5655.0)*.

## Financial markets

Financial markets are used by participants to either raise funds (e.g. by issuing securities) or invest savings (by buying securities and other financial assets). The major markets in the Australian financial system include the share market, bond market and money market. Descriptions and tables indicating prices and activity in various financial markets are provided in this section.

A significant influence in financial markets is the participation of institutional investors controlling large pools of investment funds. These pools are accumulated by collective investment institutions and are often managed on a fee-for-service basis by investment managers. A summary of the activities of these institutions is also provided.

## Credit market

Credit may be defined broadly as funds provided to those seeking to borrow. However, analytically useful measures of credit usually exclude

borrowings by financial enterprises because their main role is as an intermediary, that is, they borrow in order to lend. Also, lending and borrowing between enterprises which have a special relationship, such as between companies in the same group or between government agencies, are often excluded from credit measures because transactions between these bodies frequently are of a non-market nature. Similarly, some types of financial instrument, such as trade debts, are not considered to be part of an organised market. All of these types of transactions are omitted from table 26.12, which presents a summary of the demand for credit in Australia by the non-financial sectors. It includes raisings by the issue of both debt and equity securities.

The strong demand for credit by households is a result of borrowing for housing. Table 26.13 shows the components of household borrowings.

## 26.12 DEMAND FOR CREDIT(a)

	Net transactions during year		
	2002–03	2003–04	2004–05
	\$m	\$m	\$m
Funds (including equity) raised on conventional credit markets by			
Private non-financial corporations	50 890	55 510	(b)3 934
National public non-financial corporations	-3 356	-2 084	397
State and local public non-financial corporations	2 106	-764	5 048
National general government	-5 358	-3 953	-2 466
State and local general government	-350	-1 902	-621
Households	98 456	115 328	103 391
<b>Total</b>	<b>142 388</b>	<b>162 135</b>	<b>(b)109 683</b>

(a) Positive numbers indicate an increase in raisings. Negative numbers indicate repayment or redemption. (b) Aggregates impacted by large corporate restructuring transactions.

Source: *Australian National Accounts: Financial Accounts (5232.0)*.



### 26.13 HOUSEHOLD DEMAND FOR CREDIT

	Net transactions during year		
	2002-03	2003-04	2004-05
	\$m	\$m	\$m
<b>Households demand for credit</b>	<b>98 456</b>	<b>115 328</b>	<b>103 391</b>
<i>Housing</i>	78 313	96 365	82 139
Total Authorised Deposit-taking Institutions (ADIs)	62 580	66 071	54 523
Owner-occupied housing	35 533	36 556	38 135
Investment housing	27 047	29 515	16 388
Other lenders	15 733	30 294	27 616
Non-Housing Borrowing	20 143	18 963	21 252

Source: Australian National Accounts: Financial Accounts(5232.0); Housing Finance (5609.0).

### 26.14 AUSTRALIAN STOCK MARKET INDEXES(a)

	2002-3	2003-04	2004-05
All ordinaries			
Index(b)	2 999.7	3 530.3	4 229.9
High(c)	3 205.4	3 549.0	4 275.6
Low(c)	2 673.3	3 266.8	3 868.5
S&P/ASX 200	3 026.0	3 532.9	4 277.5
Banks	4 877.0	4 932.7	5 570.0
Industrials	5 159.0	5 829.3	6 824.7
Resources	1 439.0	2 016.3	2 861.1

(a) Base 31 December 1979 = 500. (b) Share prices on joint trading floors; June closing value. (c) Over a 12-month period.

Source: Australian Stock Exchange; Reserve Bank of Australia; Standard and Poor's.

## Stock market

The stock market is a mechanism for trading equities (shares), units in trusts, options, and some fixed-interest securities.

Operated nationally by the ASX, which is responsible for the day-to-day running and surveillance of trading, the Australian system is electronic and conducted using the Stock Exchange Automated Trading System, allowing buyers and sellers to be located anywhere in the country.

The ASX classifies listed companies according to their major activity and produces indexes based on these classifications. Table 26.14 summarises the performance of the major indexes over the last three financial years.

Table 26.15 shows the market value of Australian shares and units in trusts on issue – both listed and unlisted. It shows the amount on issue by sector of issuer and sector of holder of equities and units.

## Money market

Liquidity management by Australian corporations, financial institutions and governments is conducted through an informally arranged market for deposits, loans and placements and by issuance, purchase and sale of short-term debt securities. Rates in the market at end June of the last three financial years are shown in table 26.16.

## 26.15 EQUITY MARKET(a), Amounts on issue — 30 June

	2003		2004		2005	
	Listed	Unlisted	Listed	Unlisted	Listed	Unlisted
	\$m	\$m(b)	\$m	\$m(b)	\$m	\$m(b)
<b>Total equities and units in trusts</b>	<b>703 745</b>	<b>785 514</b>	<b>863 896</b>	<b>896 962</b>	<b>982 646</b>	<b>897 428</b>
ISSUED BY						
Private non-financial corporations	410 984	202 915	532 633	218 873	588 202	219 659
National public non-financial corporations(c)	56 615	4 908	63 522	5 152	62 964	5 629
State and local non-financial corporations(c)	—	92 062	—	100 307	—	94 936
Central bank(c)	—	11 678	—	12 514	—	11 241
Banks	174 075	6 792	182 703	6 400	216 970	8 433
Other depository corporations	311	33 900	321	36 776	415	38 644
Life insurance corporations	11 366	13 583	17 587	13 383	19 698	14 632
Other insurance corporations	14 894	16 120	22 234	19 108	28 279	22 592
Central borrowing authorities	—	30	—	30	—	30
Financial intermediaries	35 500	108 748	44 896	126 465	66 118	139 048
Rest of world	—	294 778	—	357 954	—	342 584
HELD BY						
Private non-financial corporations	7 198	191 774	12 749	222 907	18 288	173 672
National public non-financial corporations	—	4 906	—	3 663	—	3 452
State and local public non-financial corporations	—	279	—	282	—	280
Banks	10 466	74 206	10 064	78 011	10 791	82 152
Other depository corporations	353	15 954	123	15 579	92	15 925
Life insurance corporations	47 788	53 826	56 690	57 721	67 473	57 247
Pension funds	118 007	113 149	148 044	145 966	185 182	178 931
Other insurance corporations	3 562	18 502	4 851	21 024	7 406	22 286
Financial intermediaries	48 620	47 030	75 661	56 355	100 489	64 866
National general government	28 365	16 881	32 425	17 968	32,635	17 168
State and local general government	—	91 655	—	101 940	—	99 000
Households	145 398	87 580	177 889	87 180	224 710	88 604
Rest of world	293 988	71 067	345 400	88 366	335 620	93 827

(a) Includes units in trusts. (b) The unlisted estimated market values are considered to be of poor quality unless based on net asset values. They should be used with caution. (c) Net asset values.

Source: Australian National Accounts: Financial Accounts (5232.0).

Money market securities have an original term to maturity of less than one year, often 30, 90 or 180 days. They are issued by borrowers at a discount to face value and carry no income payment other than the repayment of face value at maturity. To enhance liquidity, money market securities conform to standardised attributes concerning risk and discount rates. Because of the standardisation, the securities of different issuers are often combined in the one parcel of securities for trading purposes. There are two types of securities: bills of exchange and one name paper (promissory notes, treasury notes, commercial paper and bank certificates of deposit), both of which are covered by the *Bills of Exchange Act 1909* (Cwlth). The risk of default of a bill of exchange is reduced by an acceptor or endorser adding their name to the security for a fee. Most bills of exchange traded in the market are bank-accepted bills. Promissory notes are issued by institutions whose credit worthiness is equal to or better than banks; they are not accepted by a

bank and unlike bills of exchange they are not endorsed by the parties which sell them in the market. The Australian Government issues treasury notes, state governments and large corporations issue commercial paper and banks issue negotiable certificates of deposit. Table 26.17 shows the amount on issue by sector of issuer and sector of holder of the various types of money market securities.

## 26.16 SHORT-TERM MONEY MARKET RATES — 30 June

	2003	2004	2005
	% p.a.	% p.a.	% p.a.
11 am call	4.75	5.25	5.50
Bank-accepted bills – 90 days	4.67	5.49	5.66

Source: Reserve Bank of Australia.

## 26.17 SHORT-TERM DEBT SECURITIES

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
<b>ISSUED BY</b>			
Private non-financial corporations	74 353	75 562	80 413
National public non-financial corporations	1 063	1 051	504
State and local public non-financial corporations	2	10	16
Banks	136 986	179 727	191 903
Other depository corporations	36 929	26 752	33 296
Life insurance corporations	4	1 016	808
Other insurance corporations	212	336	424
Central borrowing authorities	8 650	7 162	6 968
Financial intermediaries n.e.c.	23 771	25 985	29 874
National general government	246	221	270
Households	10 537	12 667	15 223
Rest of world	2 863	4 019	2547
<b>Total</b>	<b>295 616</b>	<b>334 508</b>	<b>362 246</b>
<b>HELD BY</b>			
Private non-financial corporations	27 823	30 447	26 407
National public non-financial corporations	495	183	215
State and local public non-financial corporations	36	7	1
Central bank	548	4 262	4 718
Banks	72 676	90 873	97 612
Other depository corporations	39 187	36 429	43 089
Life insurance corporations	17 930	18 650	18 895
Pension funds	26 076	35 119	33 870
Other insurance corporations	7 097	6 860	8 624
Central borrowing authorities	12 118	15 154	21 272
Financial intermediaries n.e.c.	17 177	19 007	26 015
State and local general government	209	208	335
Households	8 335	7 401	8 625
Rest of world	65 909	69 908	72 568
<b>Total</b>	<b>295 616</b>	<b>334 508</b>	<b>362 246</b>

Source: Australian National Accounts: Financial Accounts (5232.0).

### Bond market

Bonds are issued with original terms to maturity of one or more years. Usually the investors are paid a set periodic interest, called a coupon, for the life of the bond and receive their initial investment back at maturity. Some bonds have variable interest rates, some have principal repayments indexed, and there are small amounts of zero-coupon or deep discount securities which are issued at a discount to face value. Governments, trading enterprises and financial institutions issue bonds to finance long-term requirements. For these entities, the bond market generally provides a cheaper source of funds than borrowing from banks and other financial

institutions. Table 26.18 shows the market yields at the end of June of the last three financial years for a range of bonds.

Historically, the main issuers of bonds have been the Australian Government and state governments, the latter through their central borrowing authorities. Corporate bonds are issued only by very large private trading and financial enterprises. In recent years banks and asset-backed security trusts have issued increasing amounts as government issuance has decreased (see the article *Kangaroo bonds* in the *International accounts and trade* chapter for more information). The amounts outstanding on bonds at end June of the last three financial years are shown in table 26.19.

**26.18 BOND MARKET, Market yields — 30 June**

	2003	2004	2005
	% p.a.	% p.a.	% p.a.
Treasury bonds			
3 years	4.47	5.43	5.10
5 years	4.71	5.67	5.10
10 years	5.01	5.87	5.11
New South Wales T-corp bonds			
3 years	4.64	5.70	5.33
5 years	4.89	5.88	5.36
10 years	5.20	6.05	5.39
Finance company debentures			
2 years	4.10	5.55	5.35
3 years	4.20	5.65	5.40

Source: Reserve Bank of Australia.

**Foreign exchange market**

The foreign exchange market is the means whereby currencies of different countries can be bought and sold. In October 1983, the Australian Government decided to float the Australian dollar, allowing its value to be determined by market forces with few exchange controls and little Reserve Bank intervention. Prior to 1983, the Australian dollar was pegged to a basket of currencies. The currencies in the basket were weighted according to their trading significance to

Australia. Table 26.20 shows the value of the Australian dollar against major currencies at end June of the last three financial years.

Currencies are traded for many reasons: because of exporting or importing requirements, investing or borrowing overseas, arbitraging (i.e. taking advantage of short-term discrepancies in rates) or speculating on possible exchange rate movements with a view to making a profit. Table 26.21 shows daily averages of foreign exchange turnover against all currencies.

## 26.19 BONDS

	Amounts outstanding at 30 June		
	2003	2004	2005
	\$m	\$m	\$m
<b>ISSUED BY</b>			
Private non-financial corporations			
Issued in Australia	22 345	24 878	35 497
Issued offshore	39 071	41 324	44 321
National public non-financial corporations			
Issued in Australia	3 013	3 039	3 754
Issued offshore	9 972	9 231	9 658
State and local public non-financial corporations			
Issued in Australia	7	2	2
Issued offshore	—	—	—
Banks			
Issued in Australia	23 401	32 015	49 468
Issued offshore	90 507	125 092	146 674
Other depository corporations			
Issued in Australia	8 471	8 445	9 452
Issued offshore	24 201	24 634	22 226
Other insurance corporations			
Issued in Australia	1 256	273	—
Issued offshore	633	289	240
Life insurance corporations			
Issued in Australia	433	133	340
Issued offshore	2 380	2 227	3 141
Central borrowing authorities			
Issued in Australia	56 674	55 474	59 769
Issued offshore	18 924	23 363	25 409
Financial intermediaries n.e.c.			
Issued in Australia	51 645	62 959	75 663
Issued offshore	43 290	59 836	59 721
National general government			
Issued in Australia	65 121	59 923	57 878
Issued offshore	1 405	1 107	1 078
State and local general government			
Issued in Australia	303	299	285
Issued offshore	—	—	—
Rest of the world			
Issued in Australia	12 616	28 243	35 908
Issued offshore	64 653	70 993	69 890
<b>Total</b>	<b>540 321</b>	<b>633 779</b>	<b>710 374</b>
<b>HELD BY</b>			
Private non-financial corporations	5 817	5 754	6 107
National public non-financial corporations	124	122	20
State and local public non-financial corporations	44	45	51
Central bank	41 749	32 251	30 290
Banks	34 852	40 546	47 897
Other depository corporations	18 780	15 693	13 997
Life insurance corporations	42 558	40 793	47 383
Pension funds	55 983	67 003	73 553
Other insurance corporations	29 025	26 835	27 684
Central borrowing authorities	9 395	9 567	9 091
Financial intermediaries n.e.c.	21 296	28 462	38 229
National general government	22	3	—
State and local general government	575	655	704
Households	5 460	6 673	6 669
Rest of world	274 641	359 377	408 699
<b>Total</b>	<b>540 321</b>	<b>633 779</b>	<b>710 374</b>

Source: Australian National Accounts: Financial Accounts (5232.0).

**26.20 VALUE OF AUSTRALIAN DOLLAR, Against major currencies — At last trading day in June**

	2003	2004	2005
United States of America dollar	0.6700	0.6936	0.7659
United Kingdom pound	0.4047	0.3851	0.4254
Japanese yen	80.44	75.46	85.04
Euro	0.5907	0.5787	0.6379

Source: Australian Tax Office.

**26.21 FOREIGN EXCHANGE TURNOVER AGAINST ALL CURRENCIES, Daily averages(a)**

	2002–03	2003–04	2004–05
	\$m	\$m	\$m
Transactions by foreign exchange dealers(b)			
Outright spot(c)	30 384	39 440	36 648
Outright forward(d)	7 424	7 675	7 446
Swaps	68 014	78 190	85 578
Options	6 298	7 233	3 459
<b>Total</b>	<b>112 120</b>	<b>132 538</b>	<b>133 131</b>

(a) Figures given are the average daily turnover for the financial year. (b) Australian banks and non-bank financial intermediaries authorised to deal in foreign exchange. (c) An outright spot transaction is one for receipt or delivery within two business days. (d) An outright forward transaction is one for receipt or delivery in more than two business days.

Source: Reserve Bank of Australia.

**Managed funds**

The term ‘managed funds’ is used loosely in the financial community to embrace two broad types of institutions. The first are collective investment institutions (such as life insurance companies) which buy assets on their own account. The second are investment or fund managers which act as investment agents for the collective investment institutions as well as others with substantial funds to invest. Investment managers have relatively small balance sheets because most of the assets they acquire are purchased on behalf of clients. The significant growth in managed funds up to 2000 (graph 26.22) eased during the period 2001 to 2003 but then accelerated again during 2003 to 2005. The main influence on this growth pattern has been share market prices.

The managed funds industry is a difficult one to measure because of the large amounts of financial interaction between collective investment institutions and fund managers, and between fund managers themselves. Consequently, double counting of funds which are ‘churning’ through

the system is a difficulty which needs to be addressed in order to derive a true measure of the total funds management industry. One approach is to take the consolidated assets of collective investment institutions (as given in graph 26.22), add to it those funds managed on behalf of other clients such as governments, corporations, charities, overseas clients and ‘net-off’ funds sourced from other fund managers. Table 26.23 provides a measure of the total funds management industry as at 30 June for the past three years.

**Collective investment institutions**

As the name implies, collective investment institutions pool the funds of many small investors and use them to buy a particular type or mix of assets. The asset profile can be structured to satisfy individual investor requirements regarding, for example, the degree of risk, the mix of capital growth and income, and the degree of asset diversification. Collective investment institutions comprise the following:

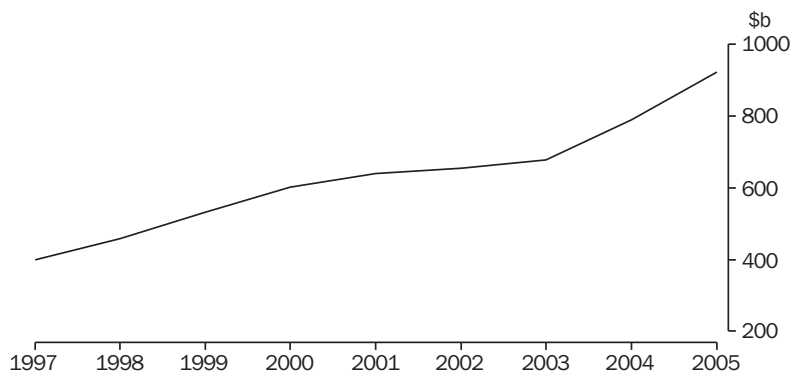
- life insurance corporations
- pension and approved deposit funds
- public unit trusts
- friendly societies
- common funds
- cash management trusts.

Funds of a speculative nature that do not offer redemption facilities – for example, agricultural and film trusts – are excluded.

To derive the total assets of collective investment institutions in Australia on a consolidated basis, it is necessary to eliminate the cross investment between the various types of institution. For example, investments by superannuation funds in public unit trusts are excluded from the assets of superannuation funds in a consolidated presentation.

Although statistics for each of these institutions were presented earlier in this chapter, the accompanying tables summarise their consolidated position (i.e. after the cross investment between the institutions has been eliminated). Table 26.24 shows their assets by type of institution.

## 26.22 MANAGED FUNDS, Consolidated assets — 30 June



Source: *Managed Funds, Australia* (5655.0).

## 26.23 MANAGED FUNDS INDUSTRY, Total funds under management

	As at 30 June		
	2003 \$m	2004 \$m	2005 \$m
Total consolidated assets of collective investment institutions	677 911	789 617	922 934
<i>plus</i> total FUM(a) of investment managers sourced from Australian entities other than collective investment	169 524	194 458	208 607
<i>plus</i> total FUM(a) of investment managers sourced from overseas	16 799	25 636	29 910
<i>less</i> total FUM(a) of investment managers sourced from other investment managers	42 145	38 014	24 553
<b>Total</b>	<b>822 089</b>	<b>971 697</b>	<b>1 136 898</b>

(a) Total funds under management.

Source: *Managed Funds, Australia* (5655.0).

## 26.24 ASSETS OF MANAGED FUNDS — 30 June 2005

Type of institution	Total \$m	Cross invested \$m	Consolidated \$m
Life insurance corporations(a)	220 348	31 469	188 879
Pension funds	587 541	83 523	504 018
Public unit trusts	205 481	26 189	179 292
Friendly societies	6 519	1 924	4 595
Common funds	9 954	324	9 630
Cash management trusts	36 520	—	36 520
<b>Total</b>	<b>1 066 363</b>	<b>143 429</b>	<b>922 934</b>

(a) Investments by pension funds which are held and administered by life insurance offices are included under life insurance offices.

Source: *Managed Funds, Australia* (5655.0).

## Investment managers

Specialist investment managers are employed on a fee-for-service basis to manage and invest in approved assets on their clients' behalf. They usually act for the smaller collective investment institutions such as public unit trusts. They are not accessible to the small investor. Investment managers provide a sophisticated level of service, matching assets and liabilities. They act in the main as the managers of pooled funds, but also manage clients' investments on an individual portfolio basis.

A considerable proportion of the assets of collective investment institutions, particularly the statutory funds of life insurance corporations and assets of pension funds, is channelled through investment managers. At 30 June 2005, \$598.4b (56.1% of the unconsolidated assets of collective investment institutions) were channelled through investment managers. Table 26.25 shows the total unconsolidated assets of each type of collective investment institution and the amount of these assets invested through investment managers.

Investment managers also accept money from investors other than collective investment institutions. At 30 June 2005, investment managers invested \$238.5b on behalf of government bodies, general insurers and other clients, including overseas clients.

### 26.25 ASSETS OF MANAGED FUNDS, Invested through investment managers — 30 June 2005

Type of fund	Unconsolidated assets of managed funds \$m	Assets invested with investment managers \$m
Life insurance corporations(a)	220 348	138 126
Pension and approved deposit funds	587 541	321 275
Public unit trusts	205 481	98 923
Friendly societies	6 519	2 329
Common funds	9 954	9 235
Cash management trusts	36 520	28 484
<b>Total</b>	<b>1 066 363</b>	<b>598 372</b>

(a) Includes both superannuation and ordinary business.

Source: *Managed Funds, Australia* (5655.0).

## Lending by financial institutions

The lending activities of financial institutions are grouped for statistical purposes into four major types of lending – housing, personal, commercial and leasing. Information regarding housing finance is presented in the *Housing* chapter. Table 26.26 shows the size of commitments by financial institutions for the four types of lending. It should be noted that, although commitments are firm offers of finance made by institutions that have been accepted by borrowers, not all commitments are taken up by borrowers.

### 26.26 FINANCIAL INSTITUTIONS, Lending commitments

Type of lending activity	2002–03 \$m	2003–04 \$m	2004–05 \$m
Housing finance	108 975	127 632	133 666
Personal finance	68 905	79 302	73 702
Commercial finance	262 139	292 467	307 991
Lease finance	6 312	6 371	6 308
<b>Total</b>	<b>446 331</b>	<b>505 772</b>	<b>521 667</b>

Source: *Lending Finance, Australia* (5671.0).

## Lease finance

The statistics in tables 26.27 and 26.28 measure lease finance commitments made by significant lenders (banks, money market corporations, finance companies, general financiers, etc.) to trading and financial enterprises, non-profit organisations, governments, public authorities and individuals.

### 26.27 LEASE FINANCE COMMITMENTS, By type of lessor

	2002–03 \$m	2003–04 \$m	2004–05 \$m
All banks	1 976	1 957	2 219
Finance companies	1 251	1 319	1 275
General financiers	1 706	1 962	1 706
Other(a)	1 379	1 133	1 108
<b>Total</b>	<b>6 312</b>	<b>6 371</b>	<b>6 308</b>

(a) Includes money market corporations.

Source: *Lending Finance, Australia* (5671.0).



**26.28 LEASE FINANCE COMMITMENTS, By type of good leased**

	2002-03	2003-04	2004-05
	\$m	\$m	\$m
Motor vehicles and other transport equipment	2 905	3 105	3 192
Construction and earth moving equipment	313	294	409
Agricultural machinery and equipment	174	174	157
Automatic data processing equipment and office machinery	1 956	1 865	1 532
Shop and office furniture, fittings and equipment	164	196	236
Other goods	802	736	781
<b>Total</b>	<b>6 314</b>	<b>6 370</b>	<b>6 307</b>

Source: Lending Finance, Australia (5671.0).

**26.29 PERSONAL FINANCE COMMITMENTS, By type of lender(a)**

	2002-03	2003-04	2004-05
	\$m	\$m	\$m
All banks	52 971	62 194	57 386
Finance companies	9 230	10 902	5 052
Credit cooperatives	3 540	3 374	3 283
Other lenders(b)	3 164	2 831	7 981
<b>Total</b>	<b>68 905</b>	<b>79 301</b>	<b>73 702</b>

(a) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities. (b) Includes permanent building societies, general financiers and retailers.

Source: Lending Finance, Australia (5671.0).

**26.30 PERSONAL FINANCE COMMITMENTS, By type of facility**

	2002-03	2003-04	2004-05
	\$m	\$m	\$m
Fixed loan commitments	30 478	33 968	33 435
Revolving credit commitments			
New and increased credit limits	38 427	45 334	40 268
Cancellations and reductions in credit limits	13 270	16 873	18 004
Credit limits at 30 June			
Total	153 506	184 851	206 499
Used	75 142	88 998	100 784

Source: Lending Finance, Australia (5671.0).

**Personal finance**

Tables 26.29 and 26.30 present statistics of commitments made by significant lenders (banks, credit cooperatives, finance companies, etc.) to lend to individuals for their own personal (non-business) use. The revolving credit commitments provided in table 26.30 include commitments for overdrafts, credit cards and other personal revolving lines of credit.

**Commercial finance**

The statistics in tables 26.31 and 26.32 measure commitments, made by significant lenders (banks, finance companies, money market corporations, etc.) to lend to government, private and public enterprises, non-profit organisations and individuals for investment and business purposes.

### 26.31 COMMERCIAL FINANCE COMMITMENTS(a)

	2002–03	2003–04	2004–05
	\$m	\$m	\$m
All banks	228 270	245 273	262 163
Finance companies	6 193	6 028	4 608
Money market corporations	5 798	8 934	4 096
Other lenders(b)	21 879	32 231	37 124
<b>Total</b>	<b>262 140</b>	<b>292 466</b>	<b>307 991</b>

(a) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities. (b) Includes permanent building societies, general financiers and pastoral finance companies.

Source: *Lending Finance, Australia (5671.0)*.

### 26.32 FIXED COMMERCIAL FINANCE COMMITMENTS

	2002–03	2003–04	2004–05
Purpose	\$m	\$m	\$m
Construction	18 568	16 014	17 836
Purchase of real property(a)	70 306	84 862	75 070
Purchase of plant and equipment	12 890	13 213	13 770
Refinancing	12 413	16 200	17 070
Other purposes	55 318	64 574	75 341
<b>Total</b>	<b>169 495</b>	<b>194 863</b>	<b>199 087</b>

(a) Purchase of real property includes those finance commitments to individuals for the purchase of dwellings for rental or resale.

Source: *Lending Finance, Australia (5671.0)*.

## Money and the payments system

The payments system supports trade and commerce in a market economy. Notes and coin are one means of payment. Liquid balances held at financial institutions are also available potentially for transactions needs, under cheque and other forms of transfer facilities, and thus add to the money supply.

From 1 July 1998 a new financial regulatory framework came into effect, in response to the recommendations of the Financial System Inquiry. Under these arrangements the Reserve Bank has stronger regulatory powers in the payments system in accordance with the Payments Systems (Regulations) Act 1998 (Cwth), to be exercised by a Payments System Board within the Bank.

### Money

Australia has a decimal system of currency, the unit being the dollar, which is divided into 100 cents. Australian notes are issued in the denominations of \$5, \$10, \$20, \$50 and \$100 and coins in the denominations of 5c, 10c, 20c, 50c, \$1 and \$2. \$1 and \$2 notes were replaced by coins in 1984 and 1988 respectively, and 1c and 2c coins ceased to be issued from 1 February 1992. Table 26.33 shows the value of notes on issue on the last

Wednesday of June in the last three financial years. Table 26.34 shows the value of coin on issue at the same time points.

### 26.33 VALUE OF AUSTRALIAN NOTES ON ISSUE — Last Wednesday in June

	2003	2004	2005
	\$m	\$m	\$m
\$2	45	—	—
\$5	515	533	539
\$10	762	791	837
\$20	2 514	2 533	2 584
\$50	14 918	15 941	16 740
\$100	13 406	14 224	14 924
<b>Total</b>	<b>32 161</b>	<b>34 022</b>	<b>35 624</b>

Note: \$2 notes on issue has been written off by the Reserve Bank of Australia.

Source: *Reserve Bank of Australia*.

### 26.34 VALUE OF AUSTRALIAN DECIMAL COIN ON ISSUE — Last Wednesday in June

	2003	2004	2005
	\$m	\$m	\$m
1c	22	22	22
2c	29	29	29
5c	148	154	163
10c	140	147	158
20c	203	210	226
50c	290	302	319
\$1	506	531	557
\$2	796	832	893
<b>Total</b>	<b>2 134</b>	<b>2 227</b>	<b>2 368</b>

Source: *Reserve Bank of Australia*.

## Money supply measures

The money supply, as measured and published by the Reserve Bank, refers to the amount of cash held by the public plus deposits with specified financial institutions. The measures range from the narrowest category, money base, through to the widest category, broad money, with other measures in between. The measures mainly used are as follows:

*Money base* – comprises holdings of notes and coin by the private sector, deposits of banks with the Reserve Bank, and other Reserve Bank liabilities to the private sector.

*M3* – is defined as currency plus bank deposits of the private non-bank sector.

*Broad money* – is defined as M3 plus borrowings from the private sector by non-bank financial intermediaries (including cash management trusts) less their holdings of currency and bank deposits.

The money supply under each of these measures at 30 June for the last three years is shown in table 26.35.

	2003	2004	2005
	\$m	\$m	\$m
Money base	35 115	37 194	38 678
M3	531 780	584 956	636 200
Broad money	599 850	653 306	721 826

Source: Reserve Bank of Australia.

## Payments system

Following recommendations by the Financial System Inquiry, the Payments System Board was established within the Reserve Bank on 1 July 1998. The Payments System Board has responsibility for determining the Reserve Bank's payments system policy, under the powers set out in the *Payments Systems (Regulation) Act 1998* (Cwlth). The payments system has components for settling large amounts, and components for settling retail amounts.

The High Value Clearing System (HVCS) was implemented in August 1997. The HVCS allows all holders of Reserve Bank exchange settlement accounts to settle large value payments through a system designed to process a high volume of transactions. On 1 March 1999 the Payments System Board announced easing of restrictions on eligibility for holding exchange settlement accounts. APRA-supervised institutions and some institutions not supervised by APRA potentially now have access.

Initially, the settlement of payments was on a net deferred basis, where settlement of interbank obligations was not completed until 9 am on the day following the sending of payment instructions. This was changed to a real-time gross settlement basis on 22 June 1998. This new settlement basis, where payments are settled immediately, contributes substantially to the reduction of settlement risk and systemic risk in the Australian payments system.

About 75% of the value exchanged in the payments system is cleared via the HVCS.

Table 26.36 shows the number of points of access to the payments system. Branches are access points staffed by employees of financial institutions. Agencies are staffed by other than employees of financial institutions such as postmasters or storekeepers, and exclude school agencies and giroPost agencies. giroPost provides a limited range of services at Australia Post offices on behalf of participating financial institutions. Electronic points of access include ATM and electronic funds transfer at point of sale (EFTPOS) terminals.

	2003	2004	2005
Branches			
Banks	4 858	4 888	n.y.a.
Building societies and credit unions	1 247	1 239	n.y.a.
giroPost	2 990	3 048	3 191
ATMs	20 339	21 550	24 173
EFTPOS terminals	433 640	465 754	n.y.a.

Source: APRA; Australian Payments Clearing Association Limited.

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## GOVERNMENT FINANCE

The main functions of government are the provision of non-market services, the regulation of economic and social conditions, and the redistribution of income between sections of the community. These activities are primarily financed by taxation and are carried out by entities in the general government sector. In addition to this core activity, governments can also own or control enterprises that sell goods or services to the public and which operate largely on a market basis (public non-financial corporations) or engage in financial intermediation (public financial corporations).

The term 'government finance statistics' refers to statistics that measure the financial activities of governments of all levels and reflect the impact of those activities on other sectors of the economy. The Australian System of Government Finance Statistics (GFS), which is used to derive the statistics presented in this chapter, is designed to provide statistical information on public sector entities in Australia classified in a uniform and systematic way.

The public sector comprises general government entities and public financial and public non-financial corporations. These entities are described in the next section. This is followed by an outline of the roles of the different levels of government and a description of the GFS classifications.

GFS enables policy makers and users to analyse the financial operations and financial position of the public sector at either the level of a specific government, institutional sector or set of transactions.

The GFS system is based on international standards set out in the *System of National Accounts 1993* and the International Monetary Fund's *Government Finance Statistics Manual 2001 (GFSM 2001)*.

GFS is consistent in scope with the Australian accounting standard for whole of government reporting – Australian Accounting Standard (AAS) 31 *Financial Reporting by Governments*. There are, however, differences in the way activities are treated and presented in GFS and AAS31.

## Public sector

### Levels of government

The public sector comprises all organisations owned or controlled by any of the three levels of government within the Australian political system – national, state/territory and local.

### Australian Government

The Australian (Commonwealth) Government, the national government, has exclusive responsibility under the Constitution for the administration of a wide range of functions including defence, foreign affairs and trade, and immigration. A distinctive feature of the Australian federal system is that the Australian Government levies and collects all income tax, from individuals as well as from enterprises. It also collects a significant portion of other taxes, including taxes on the provision of goods and services such as the Goods and Services Tax (GST). The Australian Government distributes part of this revenue to other levels of government, principally the states and territories.

### State governments

State and territory governments (referred to as 'state' governments in tables in this chapter) perform the full range of government functions, other than those the Constitution deems the exclusive domain of the Australian Government. The functions mainly administered by state and territory governments include public order, health, education, administration, transport and maintenance of infrastructure. The revenue base of state and territory governments consists of taxes on property, on employers' payrolls, and on the provision and use of goods and services. This revenue base is supplemented by grants from the Australian Government, which includes the allocation of GST revenue.

### Local governments

Local government authorities govern areas typically described as cities, towns, shires, boroughs, municipalities and district councils. Although the range of functions undertaken by local governments varies between the different jurisdictions, their powers and responsibilities are generally similar and cover such matters as:

- the construction and maintenance of roads, streets and bridges
- water, sewerage and drainage systems
- health and sanitary services

- the regulation of building standards
- the administration of regulations relating to items such as slaughtering, weights and measures, and registration of dogs.

Local governments also provide transport facilities, hospitals, charitable institutions, recreation grounds, parks, swimming pools, libraries, museums and other business undertakings. Local governments' own-source revenue is derived mainly from property taxes. They also rely on grants from the Australian Government and their parent state governments. The Australian Capital Territory has no separate local government.

### Multi-jurisdictional

The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into this category are the public universities.

### Institutional sectors

The public sector can be divided into the institutional sectors described below, based on the characteristics of the organisations it comprises.

*General government* – The principal function of general government entities is to provide non-market goods and services (e.g. roads, hospitals, libraries) primarily financed by taxes, to regulate and influence economic activity, to maintain law and order, and to redistribute income by means of transfer payments.

This institutional sector covers the departments of the Australian Government, state governments and local government municipalities. It also includes agencies and government authorities under departmental administration which are engaged in the provision of public administration, defence, law enforcement, welfare, public education, and health. Also included are non-departmental bodies which independently perform the government functions of regulation (e.g. Nurses Registration Boards and the Maritime Safety Authority), provision of non-market services (e.g. the Australian Broadcasting Corporation), and redistribution of income. Some of these bodies may be corporations, but they are still considered part of the general government sector if they perform general government functions.

Unincorporated government enterprises which provide goods and services to their governments and to the public at prices that are not economically significant are also included in this sector. In addition, government quasi-corporations which sell their output exclusively to other government units, while not in open competition with other producers, are classified as general government units.

*Public non-financial corporations (PNFCs)* – The main function of PNFCs is to provide goods and services which are predominantly market, non-regulatory and non-financial in nature, and financed through sales to consumers of these goods and services.

Enterprises in the PNFC sector differ from those in the general government sector in that all or most of their production costs are recovered from consumers, rather than being financed from the general taxation revenue of government. Some enterprises, however, do receive subsidies to make up for shortfalls incurred as a result of government policy, for example, in the provision of ‘community service obligations’ at concessional rates.

PNFCs vary in their degree of ‘commercialism’, from those which are quite heavily reliant on parent governments for subsidies, such as rail and bus transport undertakings, to those which are net contributors to government revenue. Governments may exercise control over PNFCs by either owning more than 50% of the voting stock or otherwise controlling more than half the shareholders’ voting power, or through legislation, decree or regulation which empowers the government to determine corporate policy or to appoint the directors.

*Public financial corporations (PFCs)* – PFCs are government-owned or controlled enterprises which engage in financial intermediation (i.e. trade in financial assets and liabilities), such as central borrowing authorities, government banks and insurance offices, or home lending schemes.

## Understanding the GFS financial statements

The GFS conceptual framework is divided into a number of separate statements, each of which is designed to draw out analytical aggregates or balances of particular economic significance and which, taken together, provide for a thorough understanding of the financial positions of jurisdictions individually and collectively. These published statements are the Operating Statement, the Cash Flow Statement, and the Balance Sheet.

The Operating Statement presents details of transactions in GFS revenues, GFS expenses and the net acquisition of non-financial assets for an accounting period. GFS revenues are broadly defined as transactions that increase net worth and GFS expenses as transactions that decrease net worth. Net acquisition of non-financial assets equals gross fixed capital formation, less depreciation, plus changes in inventories plus other transactions in non-financial assets. Two key GFS analytical balances in the operating statement are GFS Net Operating Balance (NOB) and GFS Net Lending(+)/Borrowing(-).

GFS NOB is the difference between GFS revenues and GFS expenses. It reflects the sustainability of government operations. GFS Net Lending(+)/Borrowing(-) is equal to NOB minus the total net acquisition of non-financial assets. A positive result reflects a net lending position while a negative result reflects a net borrowing position.

The Cash Flow Statement identifies how cash is generated and applied in a single accounting period. ‘Cash’ means cash on hand (notes and coins held and deposits held at call with a bank or other financial institution) and cash equivalents (highly liquid investments which are readily convertible to cash on hand at the investor’s option, and overdrafts considered integral to the cash management function).

The Cash Flow Statement reflects a cash basis of recording (the other statements are on an accruals accounting basis) where the information has been derived indirectly from underlying accrued transactions and movements in balances. In effect, this means that transactions are captured when cash is received or when cash payments are made. Cash transactions are specially identified because they allow the compilation of the cash-based Surplus(+)/Deficit(-) measure and because the management of cash is often considered an integral function of accrual accounting.

The Surplus(+)/Deficit(-) is a broad indicator of a sector’s cash flow requirements. When it is positive (i.e. in surplus), it reflects the extent to which cash is available to government to either increase its financial assets or decrease its liabilities (assuming that no revaluations and other changes occur). When it is negative (i.e. in deficit), it is a measure of the extent to which government requires cash, either by running down its financial assets or by drawing on the cash reserves of the domestic economy, or from overseas.



The Balance Sheet is the statement of an entity's financial position at a specific point in time. It shows the entity's stock of assets, liabilities and GFS Net Worth. GFS Net Worth is an economic measure of 'wealth' calculated as assets less liabilities for the general government sector and as assets less liabilities less shares and other contributed capital for the PNFCs and PFCs sectors.

## Total public sector, all levels of government combined

### Operating Statement

The GFS NOB for the total public sector for levels of all government combined was \$18,484 million (m) in 2003–04 and GFS Net Lending was \$9,222m (table 27.1).

### Cash Flow Statement

The total public sector surplus for all levels of government combined was \$14,871m in 2003–04 (table 27.2). The main contributors to this result were net cash flows from operating activities of \$43,559m and a net cash payment of \$26,279m for investments in non-financial assets.

## Balance Sheet

GFS Net Worth reflects the contribution of governments to the wealth of Australia. The consolidated net worth at 30 June 2004 for the total public sector for all levels of government combined was \$459,167m (table 27.3).

## General government, all levels of government combined

### Operating Statement

Table 27.4 presents an Operating Statement for the general government sector for 2003–04.

In 2003–04 the GFS NOB for the general government sector for all levels of government combined was \$15,639m, indicating that GFS operating revenue exceeded GFS operating expenses. The largest contributor to this result was the NOB for the Commonwealth Government of \$7,115m.

GFS Net Lending for the general government sector for all levels of government combined was \$10,223m. The Commonwealth Government and the state governments contributed \$6,389m and \$4,063m respectively to the aggregate result.

### 27.1 ALL LEVELS OF GOVERNMENT, Total public sector Operating Statement — 2003–04

	Commonwealth	Multi-jurisdictional(a)	State	Local	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
GFS Revenue	242 755	12 909	153 439	20 293	360 417
less					
GFS Expenses	234 940	12 163	114 809	18 250	341 933
equals					
<b>Net Operating Balance</b>	<b>7 815</b>	<b>746</b>	<b>8 630</b>	<b>2 043</b>	<b>18 484</b>
less					
Net acquisition of non-financial assets	606	219	6 581	1 855	9 262
equals					
<b>GFS Net Lending(+)/Borrowing(-)</b>	<b>7 209</b>	<b>527</b>	<b>2 049</b>	<b>188</b>	<b>9 222</b>

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classification of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into this category are the public universities. (b) The sum of individual levels of government may not agree with total All levels of government figure due to transfers between levels of government.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

## 27.2 ALL LEVELS OF GOVERNMENT, Total public sector Cash Flow Statement — 2003–04

	Commonwealth \$m	Multi- jurisdictional(a) \$m	State \$m	Local \$m	All levels of government(b) \$m
<b>CASH FLOW STATEMENT</b>					
Cash receipts from operating activities	240 111	12 906	158 973	19 211	363 391
Cash payments for operating activities	-224 355	-11 317	-136 447	-15 022	-319 811
Net cash flows from operating activities	15 756	1 588	22 525	4 189	43 559
Net cash flows from investments in non-financial assets	-4 842	-1 082	-15 851	-4 542	-26 279
Net cash flows from investments in financial assets for policy purposes	-218	3	1 473	-1	910
Net cash flows from investments in financial assets for liquidity purposes	-9 456	-286	-7 962	-145	-16 143
Net cash flows from financing activities	-2 444	1	-401	1 008	-146
<b>Net Increase(+)/Decrease(-) in Cash Held</b>	<b>-1 205</b>	<b>225</b>	<b>-215</b>	<b>509</b>	<b>1 902</b>
<b>SURPLUS(+)/DEFICIT(-)</b>					
<b>Surplus(+)/Deficit(-)</b>	<b>9 353</b>	<b>367</b>	<b>5 970</b>	<b>-357</b>	<b>14 871</b>

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into this category are the public universities.

(b) The sum of individual levels of government may not agree with total All levels of government figure due to transfers between levels of government.

Note: Negative figures denote outflows.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

## 27.3 ALL LEVELS OF GOVERNMENT, Total public sector Balance Sheet — 30 June 2004

	Commonwealth \$m	Multi- jurisdictional(a) \$m	State \$m	Local \$m	All levels of government(b) \$m
<b>Assets</b>					
Financial assets	146 422	9 596	113 429	11 005	264 014
Non-financial assets	68 698	22 172	446 046	172 122	709 028
<i>Total</i>	<i>215 120</i>	<i>31 769</i>	<i>559 475</i>	<i>183 127</i>	<i>937 042</i>
<b>Liabilities</b>					
Shares and other contributed capital	30 853	816	—	39	31 697
<b>GFS Net Worth</b>	<b>-79 477</b>	<b>23 629</b>	<b>342 330</b>	<b>172 685</b>	<b>459 167</b>
Net debt(c)	15 541	-4 773	-313	-2 767	7 688
Net financial worth(d)	-148 175	1 457	-103 716	563	-249 862

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into this category are the public universities.

(b) The sum of individual levels of government may not agree with total All levels of government figure due to transfers between levels of government. (c) Equals deposits held, advances received, Reserve Bank notes on issue and borrowing less cash and deposits, advances paid, and investments, loans and placements. (d) Equals total financial assets less total liabilities less shares and other contributed capital. While Net financial worth should add across levels of government, small discrepancies may remain due to the difficulties in accurately identifying the parties and counter-parties associated with financial assets and liabilities.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

## 27.4 ALL LEVELS OF GOVERNMENT, General government Operating Statement — 2003–04

	Commonwealth	Multi-jurisdictional(a)	State	Local	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
<b>GFS Revenue</b>					
Taxation revenue	209 195	—	40 394	7 663	256 767
Current grants and subsidies	—	5 230	55 483	2 427	990
Sales of goods and services	4 310	6 240	11 078	6 178	25 926
Interest	1 302	258	4 390	505	6 246
Dividend income	4 199	84	2 932	29	7 245
Other	2 538	667	9 691	3 482	13 082
<i>Total</i>	221 545	12 480	123 969	20 283	310 256
<i>less</i>					
<b>GFS Expenses</b>					
Gross operating expenses					
Depreciation	1 639	826	5 864	3 847	12 176
Employee expenses	16 200	6 542	50 900	6 604	80 238
Other operating expenses	39 915	4 408	30 429	7 287	79 680
<i>Total</i>	57 755	11 775	87 194	17 737	172 095
Nominal superannuation interest expenses	4 898	—	3 381	—	8 278
Other interest expenses	4 201	39	2 218	364	6 616
Other property expenses	—	—	1	—	1
Current transfers	144 543	55	20 758	128	103 843
Capital transfers	3 034	4	3 760	33	3 787
<i>Total</i>	214 430	11 873	117 312	18 265	294 617
<i>equals</i>					
<b>GFS Net Operating Balance</b>	<b>7 115</b>	<b>607</b>	<b>6 657</b>	<b>2 018</b>	<b>15 639</b>
<i>less</i>					
Net acquisition of non-financial assets					
Gross fixed capital formation	2 104	1 060	8 488	5 512	17 166
<i>less</i> Depreciation	1 639	826	5 864	3 847	12 176
<i>plus</i> Change in inventories	780	—	-1	4	783
<i>plus</i> Other transactions in non-financial assets	-519	4	-29	187	-357
<i>Total</i>	726	238	2 594	1 857	5 415
<i>equals</i>					
<b>GFS Net Lending(+)/Borrowing(-)</b>	<b>6 389</b>	<b>369</b>	<b>4 063</b>	<b>161</b>	<b>10 223</b>

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classification of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into this category are the public universities. (b) The sum of individual levels of government may not agree with total All levels of government figure due to transfers between levels of government.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

### Cash Flow Statement

The general government sector for all levels of government combined recorded a cash surplus of \$14,399m in 2003–04 (table 27.5). The Commonwealth Government recorded a surplus of \$7,971m while the state and territory governments collectively contributed \$6,981m to the overall surplus.

### Balance Sheet

The consolidated GFS Net Worth at 30 June 2004 for the general government sector for all levels of government combined was \$508,184m (table 27.6). The most significant assets held were land and fixed assets of \$474,824m followed by equity in financial assets of \$207,705m. The most significant liabilities were unfunded superannuation liability and other employee entitlements of \$173,407m, followed by borrowings of \$98,306m.

**27.5 ALL LEVELS OF GOVERNMENT, General government Cash Flow Statement — 2003–04**

	Commonwealth \$m	Multi- jurisdictional(a) \$m	State \$m	Local \$m	All levels of government(b) \$m
<b>CASH FLOW STATEMENT</b>					
Cash receipts from operating activities					
Taxes received	205 328	—	40 080	7 721	252 769
Receipts from sales of goods and services	4 199	5 483	11 549	6 246	25 691
Grants and subsidies received	—	5 228	57 944	2 684	1 074
Interest	1 054	169	4 372	526	5 911
Other receipts	5 809	1 543	11 944	2 026	21 221
<i>Total</i>	<i>216 391</i>	<i>12 424</i>	<i>125 889</i>	<i>19 203</i>	<i>306 665</i>
Cash payments for operating activities					
Payments for goods and services	-55 144	-9 386	-81 356	-13 004	-157 106
Grants and subsidies	-74 442	-1	-22 441	-134	-32 804
Interest paid	-4 050	-42	-2 220	-340	-6 442
Other payments	-72 930	-1 635	-4 334	-1 496	-79 926
<i>Total</i>	<i>-206 566</i>	<i>-11 064</i>	<i>-110 350</i>	<i>-14 974</i>	<i>-276 276</i>
Net cash flows from operating activities	9 825	1 360	15 538	4 229	30 389
Net cash flows from investments in non-financial assets					
Sales of non-financial assets	832	196	1 526	735	3 288
Purchases of new non-financial assets	-2 681	-1 258	-9 771	-5 249	-18 958
Purchases of secondhand non-financial assets	—	—	—	—	—
<i>Total</i>	<i>-1 849</i>	<i>-1 063</i>	<i>-8 245</i>	<i>-4 514</i>	<i>-15 670</i>
Net cash flows from investments in financial assets for policy purposes	-452	3	-533	18	-1 192
Net cash flows from investments in financial assets for liquidity purposes	-3 040	-286	-3 106	-137	-6 589
Net cash flows from financing activities					
Advances received (net)	—	-4	-264	14	-25
Borrowing (net)	-2 458	13	-1 801	31	-4 229
Deposits received (net)	98	3	3	22	146
Other financing (net)	-2 878	192	-74	844	-569
<i>Total</i>	<i>-5 238</i>	<i>204</i>	<i>-2 136</i>	<i>910</i>	<i>-4 678</i>
<b>Net Increase(+)/Decrease(-) in Cash Held</b>	<b>-754</b>	<b>219</b>	<b>1 519</b>	<b>506</b>	<b>2 260</b>
<b>SURPLUS(+)/DEFICIT(-)</b>					
Net cash flows from operating activities and net cash flows from investments in non-financial assets	7 976	297	7 293	-286	14 719
Acquisitions of assets under finance leases and similar arrangements	-5	—	-312	-3	-320
<b>Surplus(+)/Deficit(-)</b>	<b>7 971</b>	<b>297</b>	<b>6 981</b>	<b>-289</b>	<b>14 399</b>

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into this category are the public universities.

(b) The sum of individual levels of government may not agree with total All levels of government figure due to transfers between levels of government.

Note: Negative figures denote outflows.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

## 27.6 ALL LEVELS OF GOVERNMENT, General government Balance Sheet — 30 June 2004

	Commonwealth	Multi-jurisdictional(a)	State	Local	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
<b>Assets</b>					
Financial assets					
Cash and deposits	1 572	1 007	8 253	4 508	15 341
Advances paid	23 113	—	4 322	8	23 427
Investments, loans and placements	24 188	4 894	33 207	4 578	66 869
Other non-equity assets	20 571	3 485	14 086	1 763	37 433
Equity	49 560	91	157 409	645	207 705
<i>Total</i>	<i>119 004</i>	<i>9 478</i>	<i>217 277</i>	<i>11 501</i>	<i>350 775</i>
Non-financial assets					
Land and fixed assets	40 284	20 488	244 702	169 350	474 824
Other non-financial assets	197	125	3 087	1 802	5 202
<i>Total</i>	<i>40 481</i>	<i>20 613</i>	<i>247 788</i>	<i>171 152</i>	<i>480 026</i>
<i>Total</i>	<i>159 484</i>	<i>30 091</i>	<i>465 065</i>	<i>182 654</i>	<i>830 800</i>
<b>Liabilities</b>					
Deposits held	2 591	17	1 379	490	4 478
Advances received	—	16	4 027	397	—
Borrowing	65 892	645	26 175	5 178	98 316
Unfunded superannuation liability and other employee entitlements	96 617	4 562	70 503	1 725	173 407
Other provisions	3 768	32	8 789	262	12 851
Other non-equity liabilities	20 938	1 328	11 863	1 917	33 565
<i>Total</i>	<i>189 806</i>	<i>6 599</i>	<i>122 736</i>	<i>9 969</i>	<i>322 616</i>
<b>GFS Net Worth</b>	<b>-30 322</b>	<b>23 492</b>	<b>342 329</b>	<b>172 685</b>	<b>508 184</b>
Net debt(c)	19 610	-5 225	-14 200	-3 029	-2 844
Net financial worth(d)	-70 803	2 879	94 540	1 532	28 158

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into this category are the public universities.

(b) The sum of individual levels of government may not agree with total All levels of government figure due to transfers between levels of government. (c) Equals deposits held, advances received and borrowing less cash and deposits, advances paid and investments, loans and placements. (d) Equals total financial assets less total liabilities. While Net financial worth should add across levels of government, small discrepancies may remain due to the difficulties in accurately identifying the parties and counter-parties associated with financial assets and liabilities.

Source: *Government Finance Statistics, Australia, 2003-04 (5512.0)*.

## General government, state and territory governments

### Operating Statement

Table 27.7 summarises the net operating results for the general government sector for each state and territory government for 2003-04.

### Cash Flow Statement

Table 27.8 summarises the cash results for the general government sector for each state and territory government for 2003-04.

### Balance Sheet

Table 27.9 summarises the Balance Sheet results at 30 June 2004 for the general government sector for each state and territory government.

**27.7 STATE GOVERNMENTS, General government Operating Statement — 2003–04**

	NSW	Vic.	Qld	SA	WA	Tas	NT	ACT	Aust.(a)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>GFS Revenue</b>									
Taxation revenue	15 010	10 132	6 676	2 806	4 122	631	264	753	40 394
Current grants and subsidies	16 869	12 152	10 992	4 906	5 583	1 962	1 996	1033	55 483
Sales of goods and services	3 004	3 459	2 104	1 165	942	230	99	260	11 078
Interest income	853	374	2 723	172	128	33	19	99	4 390
Other	3 831	2 381	2 717	906	1 979	381	212	218	12 624
<i>Total</i>	<i>39 567</i>	<i>28 498</i>	<i>25 212</i>	<i>9 956</i>	<i>12 753</i>	<i>3 237</i>	<i>2 591</i>	<i>2 363</i>	<i>123 969</i>
<i>less</i>									
<b>GFS Expenses</b>									
Gross operating expenses									
Depreciation	1 924	1 068	1 460	435	538	166	139	134	5 864
Employee expenses	16 520	11 214	10 003	4 312	5 426	1 322	1 007	1 097	50 900
Other operating expenses	10 285	8 734	4 268	2 404	2 686	822	640	741	30 429
<i>Total</i>	<i>28 728</i>	<i>21 016</i>	<i>15 731</i>	<i>7 151</i>	<i>8 650</i>	<i>2 309</i>	<i>1 787</i>	<i>1 971</i>	<i>87 194</i>
Nominal superannuation interest expenses									
	860	916	750	354	283	112	85	20	3 381
Other interest expenses									
	788	537	211	253	165	67	144	54	2 218
Other property expenses									
	—	—	—	—	—	—	—	—	1
Current transfers									
Grant expenses	4 548	2 784	2 972	1 161	1 876	311	398	352	14 364
Subsidy expenses	1 665	900	1 395	535	391	93	73	130	5 181
Other current transfers	595	247	110	58	173	30	2	—	1 214
Capital transfers									
Grants to local governments	160	121	225	19	97	—	2	—	625
Other capital transfers	1 096	1 019	479	37	324	1	140	38	3 134
<i>Total</i>	<i>38 441</i>	<i>27 540</i>	<i>21 874</i>	<i>9 568</i>	<i>11 959</i>	<i>2 924</i>	<i>2 631</i>	<i>2 566</i>	<i>117 312</i>
<i>equals</i>									
<b>GFS Net Operating Balance</b>	<b>1 126</b>	<b>958</b>	<b>3 339</b>	<b>387</b>	<b>794</b>	<b>313</b>	<b>-40</b>	<b>-203</b>	<b>6 657</b>
<i>less</i>									
Net acquisition of non-financial assets									
Gross fixed capital formation	3 104	1 939	1 870	402	791	100	125	160	8 488
less Depreciation	1 924	1 068	1 460	435	538	166	139	134	5 864
plus Change in inventories	21	6	-13	-10	-4	—	-1	—	-1
plus Other transactions in non-financial assets	-80	162	105	5	-13	—	-4	-204	-29
<i>Total</i>	<i>1 121</i>	<i>1 039</i>	<i>501</i>	<i>-38</i>	<i>235</i>	<i>-66</i>	<i>-19</i>	<i>-178</i>	<i>2 594</i>
<i>equals</i>									
<b>GFS Net Lending(+)/Borrowing(-)</b>	<b>6</b>	<b>-81</b>	<b>2 838</b>	<b>425</b>	<b>559</b>	<b>379</b>	<b>-21</b>	<b>-25</b>	<b>4 063</b>

(a) The sum of individual jurisdictions may not agree with the total figure for all states due to transfers between jurisdictions.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

**27.8 STATE GOVERNMENTS, General government Cash Flow Statement — 2003–04**

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.(a)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>CASH FLOW STATEMENT</b>									
Cash receipts from operating activities									
Taxes received	14 980	9 962	6 635	2 802	4 047	630	262	763	40 080
Receipts from sales of goods and services	2 842	3 696	2 448	1 070	968	227	96	290	11 549
Grants and subsidies received	17 813	12 611	11 535	5 054	5 829	1 970	2 080	1 063	57 944
Other receipts	4 873	2 156	5 103	973	2 224	461	141	395	16 316
Total	40 509	28 424	25 720	9 899	13 068	3 288	2 579	2 511	125 889
Cash payments for operating activities									
Payments for goods and services	-25 618	-21 185	-14 306	-6 772	-8 238	-2 203	-1 685	-1 469	-81 356
Grants and subsidies paid	-7 507	-4 037	-4 954	-1 858	-2 685	-428	-546	-465	-22 441
Interest paid	-862	-429	-209	-258	-171	-93	-143	-54	-2 220
Other payments	-2 167	-296	-704	-107	-691	-101	-2	-267	-4 334
Total	-36 154	-25 947	-20 172	-8 994	-11 784	-2 825	-2 377	-2 255	-110 350
Net cash flows from operating activities	4 355	2 477	5 548	904	1 284	462	203	256	15 538
Net cash flows from investments in non-financial assets									
Sales of non-financial assets	448	127	356	124	166	70	29	208	1 526
Purchases of new non-financial assets	-3 046	-2 295	-2 413	-506	-991	-162	-196	-164	-9 771
Purchases of secondhand non-financial assets	—	—	—	—	—	—	—	—	—
Total	-2 599	-2 169	-2 057	-382	-825	-92	-167	44	-8 245
Net cash flows from investments in financial assets for policy purposes	183	-170	-631	31	-122	185	17	-26	-533
Net cash flows from investments in financial assets for liquidity purposes	-1 545	951	-2 398	-27	-80	39	49	-95	-3 106
Net cash flows from financing activities									
Advances received (net)	-140	-2	-14	-46	-8	-44	—	-11	-264
Borrowing (net)	374	-848	-331	-299	-158	-409	-75	-56	-1 801
Deposits received (net)	6	37	—	-22	-2	—	-16	—	3
Other financing (net)	114	-89	—	—	62	-142	—	-3	-74
Total	355	-902	-345	-368	-105	-594	-91	-70	-2 136
<b>Net Increase(+)/Decrease(-) in Cash Held</b>	<b>749</b>	<b>187</b>	<b>116</b>	<b>159</b>	<b>152</b>	<b>—</b>	<b>11</b>	<b>109</b>	<b>1 519</b>
<b>SURPLUS(+)/DEFICIT(-)</b>									
Net cash flows from operating activities and net cash flows from investments in non-financial assets	1 756	309	3 491	523	459	370	36	300	7 293
Acquisitions of assets under finance leases and similar arrangements	-312	—	—	—	—	—	—	—	-312
<b>Surplus(+)/Deficit(-)</b>	<b>1 444</b>	<b>309</b>	<b>3 491</b>	<b>523</b>	<b>459</b>	<b>370</b>	<b>36</b>	<b>300</b>	<b>6 981</b>

(a) The sum of individual jurisdictions may not agree with the total figure for all states due to transfers between jurisdictions.

Note: Negative figures denote outflows.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

## 27.9 STATE GOVERNMENTS, General government Balance Sheet — 30 June 2004

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust. (a)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>Assets</b>									
Financial assets									
Cash and deposits	1 820	1 301	1 729	2 178	414	685	63	64	8 253
Advances paid	1 352	205	173	1 133	853	65	39	502	4 322
Investments, loans and placements	9 578	3 043	16 157	155	1 702	13	458	2 254	33 207
Other non-equity assets	5 870	1 894	4 318	419	926	313	113	258	14 086
Equity	68 067	34 859	14 633	11 811	18 278	4 229	1 636	3 895	157 409
Total	86 687	41 302	37 011	15 696	22 174	5 304	2 309	6 972	217 277
Non-financial assets									
Land and fixed assets	80 384	43 321	61 981	11 835	31 629	6 343	3 553	5 656	244 702
Other non-financial assets	1 174	1 415	—	83	62	2	—	352	3 087
Total	81 558	44 736	61 981	11 918	31 691	6 345	3 553	6 008	247 788
<b>Total</b>	<b>168 245</b>	<b>86 037</b>	<b>98 991</b>	<b>27 613</b>	<b>53 864</b>	<b>11 649</b>	<b>5 862</b>	<b>12 980</b>	<b>465 065</b>
<b>Liabilities</b>									
Deposits held	69	446	—	309	309	—	191	56	1 379
Advances received	1 677	6	500	733	561	273	16	262	4 027
Borrowing	10 795	5 501	2 708	2 648	1 807	603	1 633	633	26 175
Unfunded superannuation liability and other employee entitlements	20 615	14 688	14 536	7 163	6 834	2 553	1 778	2 338	70 503
Other provisions	6 997	763	984	—	—	3	20	22	8 789
Other non-equity liabilities	3 809	3 402	2 539	968	606	215	59	289	11 863
<b>Total</b>	<b>43 962</b>	<b>24 804</b>	<b>21 267</b>	<b>11 820</b>	<b>10 117</b>	<b>3 647</b>	<b>3 696</b>	<b>3 600</b>	<b>122 736</b>
<b>GFS Net Worth</b>	<b>124 283</b>	<b>61 233</b>	<b>77 724</b>	<b>15 793</b>	<b>43 747</b>	<b>8 003</b>	<b>2 166</b>	<b>9 380</b>	<b>342 329</b>
Net debt(b)	-209	1 403	-14 851	224	-291	114	1 279	-1 869	-14 200
Net financial worth(c)	42 725	16 497	15 743	3 875	12 056	1 658	-1 387	3 372	94 540

(a) The sum of individual jurisdictions may not agree with the total figure for all states due to transfers between jurisdictions.

(b) Equals deposits held, advances received and borrowing less cash and deposits, advances paid, and investments, loans and placements. (c) Equals total financial assets less total liabilities.

Source: Government Finance Statistics, Australia, 2003–04 (5512.0).

## General government, local governments

### Operating Statement

Table 27.10 summarises the net operating results for the general government sector for local governments for 2003–04.

### Cash Flow Statement

Table 27.11 summarises the cash results for the general government sector for local governments for 2003–04.

### Balance Sheet

Table 27.12 summarises the Balance Sheet results at 30 June 2004 for the general government sector for local governments.



## 27.10 LOCAL GOVERNMENTS, General government Operating Statement — 2003–04

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT(a)	Aust.(b)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>GFS Revenue</b>									
Taxation revenue	2 427	2 002	1 515	680	801	184	54	..	7 663
Current grants and subsidies	672	639	468	164	293	74	116	..	2 427
Sales of goods and services	2 251	863	2 196	206	395	223	44	..	6 178
Interest income	251	60	107	20	51	12	5	..	505
Other	1 016	756	1 146	87	369	55	82	..	3 511
<i>Total</i>	6 615	4 319	5 432	1 158	1 909	548	301	..	20 283
<i>less</i>									
<b>GFS Expenses</b>									
Gross operating expenses									
Depreciation	1 141	716	1 101	273	418	135	62	..	3 847
Employee expenses	2 283	1 453	1 634	371	601	158	104	..	6 604
Other operating expenses	2 289	1 916	1 615	460	653	216	137	..	7 287
<i>Total</i>	5 714	4 085	4 350	1 105	1 672	509	303	..	17 737
Property expenses									
Other interest expenses	89	47	179	27	14	9	—	..	364
Current transfers									
Grant expenses	37	—	52	10	9	1	—	..	109
Subsidy expenses	3	—	1	—	4	—	—	..	8
Other current transfers	—	—	—	3	—	10	—	..	13
Capital transfers									
Grant expenses	—	—	14	—	3	—	2	..	19
Other capital transfers	6	—	3	—	2	1	1	..	14
<i>Total</i>	5 849	4 131	4 599	1 145	1 704	530	307	..	18 265
<i>equals</i>									
<b>GFS Net Operating Balance</b>	<b>767</b>	<b>188</b>	<b>833</b>	<b>13</b>	<b>204</b>	<b>18</b>	<b>-6</b>	<b>..</b>	<b>2 018</b>
<i>less</i>									
Net acquisition of non-financial assets									
Gross fixed capital formation	1 614	1 081	1 765	317	547	148	40	..	5 512
<i>less</i> Depreciation	1 141	716	1 101	273	418	135	62	..	3 847
<i>plus</i> Change in inventories	-2	-1	6	9	-8	—	-1	..	4
<i>plus</i> Other transactions in non-financial assets	196	-31	27	-7	4	-2	1	..	187
<i>Total</i>	668	334	697	45	124	10	-22	..	1 857
<i>equals</i>									
<b>GFS Net Lending(+)/Borrowing(-)</b>	<b>99</b>	<b>-145</b>	<b>135</b>	<b>-32</b>	<b>80</b>	<b>8</b>	<b>16</b>	<b>..</b>	<b>161</b>

(a) The ACT has no separate local government. (b) The sum of individual jurisdictions may not agree with the total figure for all states due to transfers between jurisdictions.

Source: ABS data available on request, Government Finance collection.

**27.11 LOCAL GOVERNMENTS, General government Cash Flow Statement — 2003–04**

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT(a)	Aust.(b)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>CASH FLOW STATEMENT</b>									
Cash receipts from operating activities									
Taxes received	2 387	2 099	1 516	676	800	190	54	..	7 721
Receipts from sales of goods and services	2 047	931	2 156	247	526	224	115	..	6 246
Grants and subsidies received	779	558	689	213	268	99	77	..	2 684
Other receipts	1 282	256	681	21	204	59	49	..	2 552
Total	6 495	3 844	5 042	1 156	1 798	572	295	..	19 203
Cash payments for operating activities									
Payments for goods and services	-3 866	-3 281	-3 355	-851	-1 055	-359	-236	..	-13 004
Grants and subsidies paid	-11	-36	-67	-10	-9	-1	-1	..	-135
Interest paid	-88	-43	-158	-28	-15	-9	—	..	-340
Other payments	-993	-125	-71	-2	-213	-46	-47	..	-1 496
Total	-4 958	-3 485	-3 650	-891	-1 291	-415	-285	..	-14 974
Net cash flows from operating activities	1 537	359	1 392	266	508	158	10	..	4 229
Net cash flows from investments in non-financial assets									
Sales of non-financial assets	348	129	98	62	84	13	2	..	735
Purchases of new non-financial assets	-1 906	-853	-1 421	-332	-545	-149	-42	..	-5 249
Purchases of secondhand non-financial assets	—	—	—	—	—	—	—	..	—
Total	-1 558	-724	-1 324	-271	-461	-136	-40	..	-4 514
Net cash flows from investments in financial assets for policy purposes	-1	—	—	1	18	—	—	..	18
Net cash flows from investments in financial assets for liquidity purposes	-124	13	-18	—	6	-6	-7	..	-137
Net cash flows from financing activities									
Advances received (net)	-1	—	2	—	10	—	3	..	14
Borrowing (net)	58	-24	-26	4	24	-3	—	..	31
Deposits received (net)	5	11	—	1	4	—	—	..	22
Other financing (net)	141	502	161	11	-11	—	41	..	844
Total	203	489	137	16	26	-3	44	..	910
<b>Net Increase(+)/Decrease(-) in Cash Held</b>	<b>56</b>	<b>137</b>	<b>187</b>	<b>12</b>	<b>96</b>	<b>12</b>	<b>6</b>	<b>..</b>	<b>506</b>
<b>SURPLUS(+)/DEFICIT(-)</b>									
Net cash flows from operating activities and net cash flows from investments in non-financial assets	-21	-365	68	-5	46	21	-30	..	-286
Acquisitions of assets under finance leases and similar arrangements	—	—	—	-4	—	—	—	..	-3
<b>Surplus(+)/Deficit(-)</b>	<b>-21</b>	<b>-365</b>	<b>68</b>	<b>-9</b>	<b>46</b>	<b>22</b>	<b>-30</b>	<b>..</b>	<b>-289</b>

(a) The ACT has no separate local government. (b) The sum of individual jurisdictions may not agree with the total figure for all states due to transfers between jurisdictions.

Note: Negative figures denote outflows.

Source: ABS data available on request, Government Finance collection.

## 27.12 LOCAL GOVERNMENTS, General Government Balance Sheet — 30 June 2004

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT(a)	Aust.(b)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>Assets</b>									
Financial assets									
Cash and deposits	1 490	654	1 819	28	361	83	73	..	4 508
Advances paid	2	1	1	—	1	4	—	..	8
Investments, loans and placements	3 180	635	124	20	444	111	63	..	4 578
Other non-equity assets	643	454	375	75	173	30	13	..	1 763
Equity	—	—	345	24	—	276	—	..	645
<b>Total</b>	<b>5 315</b>	<b>1 743</b>	<b>2 664</b>	<b>146</b>	<b>979</b>	<b>504</b>	<b>148</b>	<b>..</b>	<b>11 501</b>
Non-financial assets									
Land and fixed assets	67 422	37 298	38 325	9 496	11 629	4 286	895	..	169 350
Other non-financial assets	1 211	404	137	2	25	7	17	..	1 802
<b>Total</b>	<b>68 633</b>	<b>37 702</b>	<b>38 462</b>	<b>9 498</b>	<b>11 653</b>	<b>4 292</b>	<b>911</b>	<b>..</b>	<b>171 152</b>
<b>Total</b>	<b>73 948</b>	<b>39 446</b>	<b>41 127</b>	<b>9 644</b>	<b>12 633</b>	<b>4 796</b>	<b>1 060</b>	<b>..</b>	<b>182 654</b>
<b>Liabilities</b>									
Deposits held	145	79	3	241	19	4	—	..	490
Advances received	8	11	—	371	3	—	3	..	397
Borrowing	1 447	563	2 610	164	257	132	3	..	5 178
Unfunded superannuation liability and other employee entitlements	744	302	443	84	99	44	10	..	1 725
Other provisions	191	42	6	16	5	2	1	..	262
Other non-equity liabilities	660	440	451	103	197	38	29	..	1 917
<b>Total</b>	<b>3 195</b>	<b>1 436</b>	<b>3 512</b>	<b>980</b>	<b>580</b>	<b>220</b>	<b>46</b>	<b>..</b>	<b>9 969</b>
<b>GFS Net Worth</b>	<b>70 753</b>	<b>38 010</b>	<b>37 614</b>	<b>8 665</b>	<b>12 053</b>	<b>4 576</b>	<b>1 013</b>	<b>..</b>	<b>172 685</b>
Net debt(c)	-3 072	-637	669	729	-527	-61	-129	..	-3 029
Net financial worth(d)	2 121	308	-848	-833	399	284	102	..	1 532

(a) The ACT has no separate local government. (b) The sum of individual jurisdictions may not agree with the total figure for all states due to transfers between jurisdictions. (c) Equals deposits held, advances received and borrowing less cash and deposits, advances paid, and investments, loans and placements. (d) Equals total financial assets less total liabilities less shares and other contributed capital.

Source: ABS data available on request, Government Finance collection.

## Taxation revenue

A distinctive feature of the Australian federal system is that the Australian (Commonwealth) Government levies and collects all income tax, from individuals as well as from enterprises. It also collects a portion of other taxes, including taxes on the provision of goods and services. The revenue base of state and territory governments consists of taxes on property, on employers' payrolls, and on the provision and use of goods and services. The sole source of taxation revenue for local governments is taxes on property.

Total taxation revenue collected in Australia rose \$19,103m, 8.0%, between 2002–03 and 2003–04 (table 27.13). Taxes on income increased by \$10,789m and taxes on the provision of goods and

services increased by \$3,574m. Taxes on income totalled \$142,067m in 2003–04 and comprised 55.3% of total taxation revenue for all levels of government. Taxes on the provision of goods and services, including GST, totalled \$69,922m in 2003–04 and comprised 27.2% of total taxation revenue for all levels of government.

Commonwealth Government taxation revenue, including taxes from other levels of government and Commonwealth public corporations, rose 7.6% from \$194,504m in 2002–03 to \$209,195m in 2003–04. In 2003–04, Commonwealth Government taxation represented 81.5% of taxation revenue for all levels of government.

### 27.13 TOTAL TAXATION REVENUE

	1998–99	1999–2000	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m	\$m
<b>COMMONWEALTH GOVERNMENT</b>						
Taxes on income	104 060	114 520	120 861	119 032	131 278	142 067
Employer's payroll taxes	3 376	3 521	3 577	3 831	3 085	3 658
Taxes on property	5	10	12	12	13	13
Taxes on the provision of goods and services	33 246	34 365	50 186	53 883	59 371	62 646
Taxes on the use of goods and performance of activities	412	453	670	722	757	811
<b>Total taxation revenue</b>	<b>141 100</b>	<b>152 869</b>	<b>175 306</b>	<b>177 481</b>	<b>194 504</b>	<b>209 195</b>
<b>STATE GOVERNMENTS</b>						
Taxes on income	—	—	—	—	—	—
Employer's payroll taxes	8 447	8 951	9 503	9 675	10 158	10 839
Taxes on property	10 716	12 090	12 411	12 434	14 166	16 683
Taxes on the provision of goods and services	6 172	6 576	5 987	6 548	6 977	7 275
Taxes on the use of goods and performance of activities	10 100	10 276	4 776	4 685	5 105	5 597
<b>Total taxation revenue</b>	<b>35 435</b>	<b>37 893</b>	<b>32 677</b>	<b>33 342</b>	<b>36 406</b>	<b>40 394</b>
<b>LOCAL GOVERNMENTS</b>						
Taxes on income	—	—	—	—	—	—
Employer's payroll taxes	—	—	—	—	—	—
Taxes on property	5 725	6 017	6 394	6 758	7 215	7 663
Taxes on the provision of goods and services	—	—	—	—	—	—
Taxes on the use of goods and performance of activities	—	—	—	—	—	—
<b>Total taxation revenue</b>	<b>5 725</b>	<b>6 017</b>	<b>6 394</b>	<b>6 758</b>	<b>7 215</b>	<b>7 663</b>
<b>ALL LEVELS OF GOVERNMENT</b>						
Taxes on income	104 060	114 520	120 861	119 032	131 278	142 067
Employer's payroll taxes	11 444	12 107	12 702	13 097	12 796	14 027
Taxes on property	16 438	18 105	18 809	19 192	21 383	24 346
Taxes on the provision of goods and services	39 419	40 941	56 173	60 431	66 348	69 922
Taxes on the use of goods and performance of activities	10 511	10 727	5 445	5 407	5 859	6 405
<b>Total taxation revenue</b>	<b>181 873</b>	<b>196 400</b>	<b>213 990</b>	<b>217 160</b>	<b>237 664</b>	<b>256 767</b>

Source: *Taxation Revenue, Australia, 2003–04* (5506.0).

State government taxation revenue, including taxes from other levels of government and on public corporations, increased 11.0% from \$36,406m in 2002–03 to \$40,394m in 2003–04. Taxes on property were the single largest taxation revenue source (41.3%) for state governments in 2003–04, followed by employers' payroll taxes at 26.8%. The revenue base of state (and territory) governments is supplemented by grants from the Australian (Commonwealth) Government, which includes the allocation of GST revenue.

On average, Australian residents each paid \$12,841 in tax in 2003–04, up 6.8% on the previous year. The Commonwealth Government taxation per person rose by 6.3% from \$9,844 in 2002–03 to \$10,462 in 2003–04. State and territory governments and local councils charged residents an average of \$2,402 a year in property taxes, stamp duty, gambling taxes, payroll and other taxes in 2003–04. This was up from \$2,206 in 2002–03.

The amount of taxation per person, by jurisdiction, is shown in table 27.14 below.

**27.14 TAXATION PER PERSON(a), By level of government**

	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
	\$	\$	\$	\$	\$	\$
Commonwealth Government	7 498	8 028	9 091	9 088	9 844	10 462
State and local						
New South Wales	2 530	2 676	2 374	2 338	2 476	2 597
Victoria	2 270	2 379	2 123	2 176	2 285	2 455
Queensland	1 683	1 760	1 529	1 671	1 864	2 128
South Australia	1 952	2 144	1 818	1 836	2 018	2 278
Western Australia	2 097	2 174	1 886	1 908	2 139	2 503
Tasmania	1 711	1 781	1 508	1 475	1 558	1 698
Northern Territory	1 989	2 013	1 307	1 392	1 497	1 596
Australian Capital Territory	2 013	2 201	2 014	1 808	2 120	2 329
Average	2 186	2 305	2 025	2 052	2 206	2 402
<b>All levels of government</b>	<b>9 664</b>	<b>10 314</b>	<b>11 098</b>	<b>11 119</b>	<b>12 029</b>	<b>12 841</b>

(a) Average annual estimated resident population.

Source: *Taxation Revenue, Australia, 2003-04* (5506.0).

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## PRICES

Prices are a key factor in the operation of an economy. Price indexes, which provide summary measures of the movements in various categories of prices, are used extensively to analyse and monitor price behaviour and to adjust government payments such as pensions.

This chapter provides an outline of the consumer price index (a measure of price inflation for the household sector), living costs indexes for selected household types, the major producer price indexes and the international trade price indexes, their history and their underlying concepts and methodology.

Another major price index produced by the Australian Bureau of Statistics (ABS), the labour price index, is described in the *Labour* chapter, while established house and project home price indexes are described in the *Housing* chapter.

## Consumer price index (CPI)

The description of the CPI commonly adopted by users is in terms of its perceived uses; hence the frequent references to the CPI as a measure of inflation, a measure of changes in purchasing power, or a measure of changes in the cost of living. In practice, the CPI is a measure of changes, over time, in the prices of a basket of goods and services acquired by households in the eight capital cities in Australia. As such, the CPI has been designed as a general measure of price inflation for the household sector in Australia.

The simplest way of thinking about the CPI is to imagine a basket of goods and services of the kind typically acquired by Australian households. As prices vary, the total cost of this basket will also vary. The CPI is simply a measure of the changes in the cost of this basket as the prices of items in it change.

The price of the CPI basket in the reference base period is assigned a value of 100.0 and the prices in other periods are expressed as percentages of the price in the base period. For example, if the price of the basket had increased by 35% since the base year, then the index would read 135.0. Similarly, if the price had fallen by 5% since the base year, the index would stand at 95.0.

Households acquire a large number of different goods and services. It is not practical or necessary to price all the goods and services acquired by the CPI population group. Many related items are subject to similar price changes and households acquire more of some items than others. Rather, the items selected for pricing in the CPI are the more significant ones and are likely to have price movements that are representative of a wider range of goods and services.

From the September quarter 2005 onwards, the total basket is divided into the following eleven major commodity groups: food; alcohol and tobacco; clothing and footwear; housing; household contents and services; health; transportation; communication; recreation; education; and financial and insurance services. These groups are, in turn, divided into 33 subgroups and the subgroups into 90 expenditure classes.

In addition to the aggregate 'All groups' index, indexes are also compiled and published for each of the groups, subgroups and expenditure classes for each state capital city, Darwin and Canberra. National indexes are constructed as the weighted average of the indexes compiled for each of the eight capital cities.

The 15th Series CPI is the latest of a number of retail/consumer price indexes that have been constructed for various purposes by the ABS.

## Index population

The CPI measures price changes relating to the spending pattern of metropolitan private households. This group is termed 'the CPI population group' and includes a wide variety of subgroups such as wage and salary earners, the self-employed, age pensioners and social welfare beneficiaries. 'Metropolitan' is defined as the state capital cities, together with Darwin and Canberra. The current CPI population group represents about 64% of all Australian households.

This population group differs from that applying to CPIs calculated and published prior to the September quarter 1998. For more information see 'Outcomes of the 13th Series Australian Consumer Price Index Review', *Year Book Australia 1999*.

Ideally, the CPI population group should encompass all Australian households, but this is not possible due to the substantial additional resources that would be required to collect prices outside the capital cities. However, ABS research has shown that while price levels in regional and rural areas often differ from those in metropolitan areas (some higher and others lower), the factors influencing price movements generally tend to be similar. Therefore the CPI can be expected to provide a reasonable indication of the changes in prices in Australia as a whole in the longer term.

The composition of the CPI basket and the relative importance of items in the basket relate to the household sector as a whole and not to any particular type of household. Therefore, it is important to note that since no individual household is likely to have an expenditure pattern exactly matching the overall pattern of the CPI population group, changes in the CPI are unlikely to reflect exactly the price movements faced by particular households, or by narrower subgroups of the population.

## Conceptual basis

The CPI is a quarterly measure of the change in average price levels over time; it is not designed to measure price levels. It provides a method to compare the average price level for a quarter with the average price level for other periods such as the reference base year, or other quarters. Changes in the average price levels between periods can be calculated from their respective index levels.

The CPI aims to measure only pure price changes. In other words, it is concerned with isolating and measuring only that element of price change which is not caused by any change to either the quantity or the quality of the goods or services concerned (i.e. it aims to measure, each quarter, the change in the cost of acquiring an identical basket of goods and services). This involves evaluating any changes in the quality of goods and services included in the index and removing the effects of such changes from the prices used to construct the index.

The CPI measures changes in the prices actually paid by consumers for the goods and services they buy. It is not concerned with nominal, recommended or list prices (unless they are the prices that consumers actually pay).

The CPI basket includes goods and services ranging from steak to motor cars and from haircuts to restaurant meals. The items are chosen not only because they represent the spending habits of the CPI population group, but also because the items are those for which the prices can be associated with identifiable and specific commodities and services. While government taxes and charges that are associated with the use of specific goods and services (such as excise and customs duties, goods and services taxes, local government rates, etc.) are included, income taxes and the income-related Medicare levy are excluded because they cannot be clearly associated with the purchase or use of a specific quantity of any good or service.

Items are not excluded from the CPI basket on the basis of moral or social judgements. For example, some people may regard the use of tobacco and alcohol as socially undesirable, but these commodities are included in the CPI basket because they are significant items of household expenditure and their prices can be accurately measured. However, to assist in understanding the effect that major item groups have on the CPI, the ABS publishes a range of supplementary indexes which exclude, in turn, each of the eleven major commodity groups. These supplementary indexes can also be used in their own right for evaluating price changes or for indexation purposes.

## Periodic reviews of the CPI

Like any other long-standing and important statistical series, the CPI is reviewed from time to time to ensure that it continues to be relevant to current conditions. Over time, household

spending habits change, as does the range of available goods and services. The CPI needs to be updated to take account of these changes. Regular reviews also provide an opportunity to reassess the scope and coverage of the index and other methodological issues.

The CPI was first compiled in 1960, with index numbers backcast to 1948. Since its inception in its current form in 1960, reviews of the CPI have usually been carried out at about five-yearly intervals. Following each review, which involves revising the list of items and their weights, the new series are linked to the old to form continuous series. This linking is carried out in such a way that the resulting continuous series reflect only price changes and not differences in the composition of the old and new baskets.

The current (15th Series) CPI reflects expenditure patterns derived mainly from the 2003–04 Household Expenditure Survey (HES) conducted by the ABS and has a reference base of 1989–90. It was introduced in the September quarter 2005.

In addition to revising weights to reflect new expenditure patterns, the 15th Series CPI introduced financial services into the CPI in a new group for financial and insurance services. For more information see *Information Paper: Introduction of the 15th Series Australian Consumer Price Index (reissue)* (6462.0).

## Weighting pattern

The composition of the CPI basket is based on the pattern of household expenditure in the 'weighting base period', which is 2003–04 for the 15th Series CPI. Measures of expenditure are obtained primarily from the HES. The HES data, modified for known instances of under-reporting (the most notable being for alcohol and tobacco), are then used to derive a weight for each of 90 expenditure classes. The weights for the 15th Series groups and subgroups based on June quarter 2005 prices are shown in table 28.1.

## Price collection

Since the CPI is designed to measure the impact of changing prices on metropolitan private households, information about prices is collected in the kinds of retail outlets or other places where these households normally purchase goods and services. Prices are collected from many sources, including supermarkets, department stores, footwear stores, restaurants, motor vehicle dealers, house builders, dental surgeries, hotels



**28.1 WEIGHTING PATTERN FOR THE CPI(a)(b)**  
— 15th Series

Groups and subgroups	Weight in CPI basket
<b>Food</b>	
Dairy and related products	1.19
Bread and cereal products	1.72
Meat and seafoods	2.42
Fruit and vegetables	2.11
Non-alcoholic drinks and snack food	1.96
Meals out and take away foods	4.56
Other food	1.49
Total	15.44
<b>Alcohol and tobacco</b>	
Alcoholic drinks	4.38
Tobacco	2.41
Total	6.79
<b>Clothing and footwear</b>	
Men's clothing	0.75
Women's clothing	1.41
Children's and infants' clothing	0.40
Footwear	0.64
Accessories and clothing services	0.72
Total	3.91
<b>Housing</b>	
Rents	5.22
Utilities	3.10
Other housing	11.21
Total	19.53
<b>Household contents and services</b>	
Furniture and furnishings	3.13
Household appliances, utensils and tools	1.76
Household supplies	2.91
Household services	1.81
Total	9.61
<b>Health</b>	
Health services	3.56
Pharmaceuticals	1.14
Total	4.70
<b>Transportation</b>	
Private motoring	12.38
Urban transport fares	0.73
Total	13.11
<b>Communication</b>	
Communication	3.31
Total	3.31
<b>Recreation</b>	
Audio, visual and computing	2.92
Books, newspapers and magazines	0.85
Sport and other recreation	3.72
Holiday travel and accommodation	4.06
Total	11.55
<b>Education</b>	
Education	2.73
Total	2.73
<b>Financial and insurance services</b>	
Financial services	7.81
Insurance services	1.50
Total	9.31
<b>All groups</b>	<b>100.00</b>

(a) Percentages may not add due to rounding. (b) Weights shown are those applicable from the June quarter 2005 onwards for the average of the eight capital cities.

Source: Consumer Price Index: 15th Series Weighting Pattern (6430.0).

and clubs, schools, hairdressers, telephone carriers, travel agents and airlines, bus operators, electricians and plumbers. Items like rail fares, electricity, gas, water and sewerage charges and property rates and charges, are collected from the authorities concerned. Information on rents is obtained from property management companies and from government housing commissions. In total, around 100,000 separate price quotations are collected each quarter.

The collection of prices in each capital city is carried out by trained ABS field staff.

The prices used in the CPI are those that any member of the public would have to pay to purchase the specified good or service, including any taxes, excise and customs duties, etc., relating to goods and services. Sale prices, discount prices and 'specials' are reflected in the CPI so long as the items concerned are of normal quality (i.e. not damaged or shop-soiled) and are offered for sale in reasonable quantities. To ensure that the price movements reflect the buying experience of the bulk of the metropolitan population, the brands and the varieties of the items priced are generally those which sell in greatest volume.

### Price movements by city

Table 28.2 presents All groups index numbers for each of the eight capital cities and for the weighted average of the eight capital cities, together with percentage changes.

The capital city indexes measure price movements over time in each city individually. They cannot be used to compare price levels between capital cities. For example, the index for Adelaide in 2004–05 of 150.4, compared with the corresponding index for Perth of 144.0, does not mean that prices in Adelaide are higher than those in Perth. It simply means, since the reference base period (1989–90), prices in Adelaide have increased by a greater percentage than those in Perth (50.4% compared with 44.0%).

### Price movements by broad commodity group

Table 28.3 presents, for the weighted average of the eight capital cities, index numbers for each of the eleven major commodity groups of the 15th Series CPI and for All groups, together with percentage changes.

## 28.2 CONSUMER PRICE INDEX, Capital cities(a)(b)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER(c)									
1999–2000	125.4	124.1	125.0	126.3	122.9	124.8	124.2	124.2	124.7
2000–01(d)	133.2	131.6	132.4	133.5	129.6	132.0	130.9	131.9	132.2
2001–02	137.2	135.3	136.3	137.2	133.1	134.7	133.7	135.2	136.0
2002–03	141.1	139.7	140.7	142.7	136.8	139.1	136.8	139.7	140.2
2003–04	144.1	142.8	144.8	147.0	139.6	142.6	138.7	143.4	143.5
2004–05	147.7	145.7	148.5	150.4	144.0	147.1	141.8	146.7	147.0
CHANGE FROM PREVIOUS YEAR (%)									
1999–2000	2.4	2.6	1.7	2.5	2.3	1.9	1.5	2.2	2.4
2000–01(d)	6.2	6.0	5.9	5.7	5.5	5.8	5.4	6.2	6.0
2001–02	3.0	2.8	2.9	2.8	2.7	2.0	2.1	2.5	2.9
2002–03	2.8	3.3	3.2	4.0	2.8	3.3	2.3	3.3	3.1
2003–04	2.1	2.2	2.9	3.0	2.0	2.5	1.4	2.6	2.4
2004–05	2.5	2.0	2.6	2.3	3.2	3.2	2.2	2.3	2.4

(a) All group index numbers. Reference base year is 1989–90 = 100.0. (b) The separate city indexes measure price movements within each city individually. They do not compare price levels between cities. (c) Annual average of the quarterly index numbers. (d) The 2000–01 data were affected by the introduction of The New Tax System, in particular, the introduction of the Goods and Services Tax from 1 July 2000.

Source: *Consumer Price Index, Australia (6401.0)*.

## 28.3 CONSUMER PRICE INDEX, Major commodity groups(a)

	Food	Alcohol and tobacco	Clothing and footwear	Housing	Household contents and services	Health	Transportation	Communication	Recreation	Education	Financial and insurance services(b)	All groups
INDEX NUMBER(c)												
1999–2000	129.2	175.2	105.5	99.9	113.3	158.7	128.9	97.8	120.4	182.4	n.a.	124.7
2000–01(d)	135.6	194.7	112.5	107.9	117.3	164.3	137.0	104.7	124.6	191.4	n.a.	132.2
2001–02	142.7	203.1	112.4	111.1	119.7	169.9	137.3	105.2	128.6	200.0	n.a.	136.0
2002–03	147.9	208.9	113.3	115.1	121.0	181.5	140.6	108.5	131.9	210.0	n.a.	140.2
2003–04	152.3	217.8	112.7	120.2	121.1	193.9	142.0	110.0	130.0	223.3	n.a.	143.5
2004–05	154.8	225.4	110.8	124.8	120.7	204.3	146.8	111.1	130.7	238.7	n.a.	147.0
CHANGE FROM PREVIOUS YEAR (%)												
1999–2000	2.1	3.9	-1.1	4.3	-0.4	-2.9	5.6	-5.0	0.8	4.8	n.a.	2.4
2000–01(d)	5.0	11.1	6.6	8.0	3.5	3.5	6.3	7.1	3.5	4.9	n.a.	6.0
2001–02	5.2	4.3	-0.1	3.0	2.0	3.4	0.2	0.5	3.2	4.5	n.a.	2.9
2002–03	3.6	2.9	0.8	3.6	1.1	6.8	2.4	3.1	2.6	5.0	n.a.	3.1
2003–04	3.0	4.3	-0.5	4.4	0.1	6.8	1.0	1.4	-1.4	6.3	n.a.	2.4
2004–05	1.6	3.5	-1.7	3.8	-0.3	5.4	3.4	1.0	0.5	6.9	n.a.	2.4

(a) Weighted average of the eight capital cities. Reference base year is 1989–90 = 100.0. (b) The Financial and insurance services group was introduced in September quarter 2005. There is no historic data for this series. (c) Index numbers for financial years are calculated as the averages of the quarterly index numbers. (d) The 2000–01 data were affected by the introduction of The New Tax System, in particular, the introduction of the Goods and Services Tax from 1 July 2000.

Source: *Consumer Price Index, Australia (6401.0)*.

## Price movements for selected household types

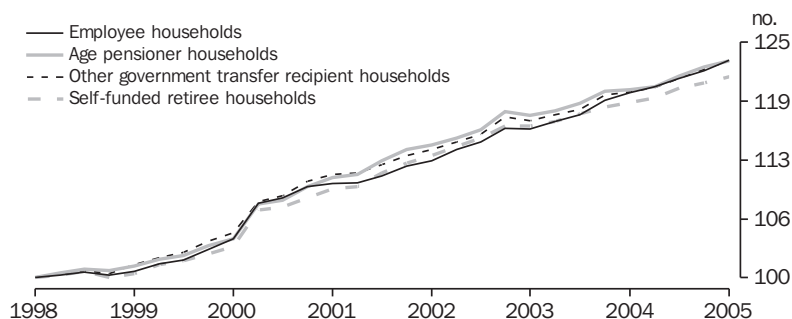
Graph 28.4 and table 28.5 present analytical indexes specifically designed to measure changes in living costs for four selected household types: Employee households; Age pensioner households; Other government transfer recipient households; and Self-funded retiree households.

These indexes represent the conceptually preferred measures for assessing the impact of changes in prices on the disposable incomes of households. In other words, these indexes are particularly suited for assessing whether or not the

disposable incomes of households, or living costs, have kept pace with price changes. The CPI, on the other hand, is designed specifically to measure price inflation for the household sector as a whole and, as such, is not the conceptually ideal measure for assessing the impact of price changes on the disposable incomes of households. The most notable differences are that living cost indexes include interest charges but do not include house purchases, while inflation indexes do not include interest charges but do include house purchases.

For more information about these indexes see 'Price impacts on the living costs of selected household types', *Year Book Australia 2005*.

**28.4 LIVING COST INDEXES(a) — 30 June**



(a) Reference base is June quarter 1998 = 100.0.

Source: ABS data available on request, derived from selected CPI expenditure weights and price movements.

**28.5 LIVING COST INDEXES(a), By selected household type**

	Employee	Age pensioner	Other government transfer recipient	Self-funded retiree	CPI(b)(c)
INDEX NUMBER					
1999–2000	102.6	103.0	103.4	102.2	103.1
2000–01(d)	109.0	109.1	109.5	108.1	109.3
2001–02	111.3	112.7	112.4	111.5	112.4
2002–03	114.9	116.3	115.9	115.2	115.9
2003–04	118.1	119.0	118.6	117.7	118.6
2004–05	121.7	121.8	121.6	120.3	121.5
CHANGE FROM PREVIOUS YEAR (%)					
1999–2000	2.1	2.1	2.5	1.8	2.4
2000–01(d)	6.2	5.9	5.9	5.8	6.0
2001–02	2.1	3.3	2.6	3.1	2.9
2002–03	3.2	3.2	3.1	3.3	3.1
2003–04	2.8	2.3	2.3	2.2	2.4
2004–05	3.0	2.4	2.5	2.2	2.4

(a) Reference base is June quarter 1998 = 100.0. (b) The CPI has been re-referenced from 1989–90 = 100.0 to June quarter 1998 = 100.0 for ease of comparison with the living cost indexes for household types. (c) The CPI is designed to measure price inflation for the household sector and not changes in living costs. (d) The 2000–01 data were affected by the introduction of The New Tax System, in particular, the introduction of the Goods and Services Tax from 1 July 2000.

Source: ABS data available on request, derived from selected CPI expenditure weights and price movements.

Over the period 2003–04 to 2004–05 changes in living costs ranged from a low of 2.2% for Self-funded retiree households to a high of 3.0% for Employee households. The CPI rose by 2.4% over the same period. Over the period from 1998–99 to 2004–05, the changes in living costs for all four household types are similar to the change in the CPI over the same period.

### Long-term price series

Although the CPI has only been compiled from 1948, an approximate long-term measure of retail price change has been constructed by linking together other selected retail price index series (table 28.6). The index numbers are expressed on a reference base 1945 = 100.0. The successive series are:

- from 1901 to 1914, the A series retail price index
- from 1914 to 1946–47, the C series retail price index
- from 1946–47 to 1948–49, a combination of the C series index (excluding rent) and the housing group of the CPI
- from 1948–49 onwards, the CPI.

For more information about these former retail price index series see 'History of retail/consumer price indexes in Australia', *Year Book Australia 2005*.

Graph 28.7 shows the annual percentage changes derived from this retail/consumer price index series for the period 1904–2004.

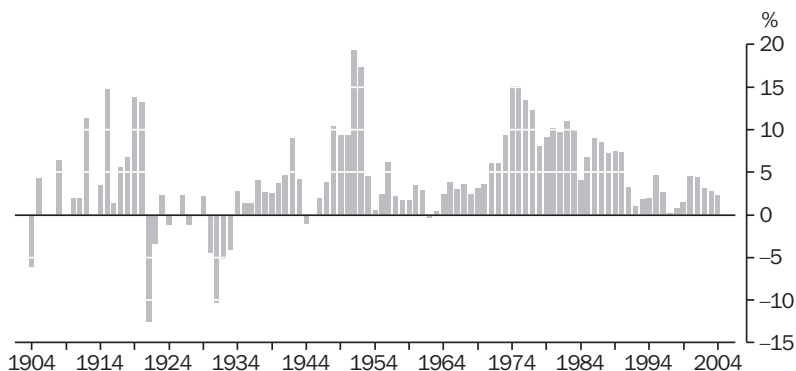
**28.6 RETAIL/CONSUMER PRICE INDEX NUMBERS(a)(b)**

Year	Index no.	Year	Index no.	Year	Index no.	Year	Index no.
1901	47	1931	78	1961	252	1991	1 898
1902	50	1932	74	1962	251	1992	1 917
1903	49	1933	71	1963	252	1993	1 952
1904	46	1934	73	1964	258	1994	1 989
1905	48	1935	74	1965	268	1995	2 082
1906	48	1936	75	1966	276	1996	2 136
1907	48	1937	78	1967	286	1997	2 141
1908	51	1938	80	1968	293	1998	2 159
1909	51	1939	82	1969	302	1999	2 191
1910	52	1940	85	1970	313	2000	2 289
1911	53	1941	89	1971	332	2001	2 389
1912	59	1942	97	1972	352	2002	2 462
1913	59	1943	101	1973	385	2003	2 530
1914	61	1944	100	1974	443	2004	2 588
1915	70	1945	100	1975	510		
1916	71	1946	102	1976	579		
1917	75	1947	106	1977	650		
1918	80	1948	117	1978	702		
1919	91	1949	128	1979	766		
1920	103	1950	140	1980	844		
1921	90	1951	167	1981	926		
1922	87	1952	196	1982	1 028		
1923	89	1953	205	1983	1 132		
1924	88	1954	206	1984	1 177		
1925	88	1955	211	1985	1 257		
1926	90	1956	224	1986	1 370		
1927	89	1957	229	1987	1 487		
1928	89	1958	233	1988	1 594		
1929	91	1959	237	1989	1 714		
1930	87	1960	245	1990	1 839		

(a) Reference base year is 1945 = 100.0. (b) The index numbers from 1901 to 1980 relate to the weighted average of six state capital cities; and from 1981 to the weighted average of eight capital cities. Index numbers are for calendar years.

Source: ABS data available on request, *Consumer Price Index*.

## 28.7 RETAIL/CONSUMER PRICE INDEX, Annual changes



Source: ABS data available on request, Consumer Price Index.

## 28.8 CONSUMER PRICE INDEX, International comparisons(a)(b)

	1999–2000	2000–01	2001–02	2002–03	2003–04	2004–05
INDEX NUMBER						
Australia(c)	129.8	136.7	140.4	144.6	147.3	150.3
New Zealand	118.7	123.5	127.0	129.5	130.2	132.6
Hong Kong (SAR of China)	166.6	164.8	162.5	159.2	158.7	161.3
Indonesia	367.1	402.6	458.3	495.8	524.4	560.2
Japan	111.6	111.0	107.7	106.4	106.1	106.2
Korea, Republic of (South)	172.1	179.2	185.0	190.9	197.4	204.9
Singapore	119.9	122.2	121.9	122.4	124.2	125.6
Taiwan	129.3	130.9	130.6	130.5	131.1	134.7
Canada	125.0	128.1	130.3	135.2	136.9	139.3
United States of America	130.9	135.3	136.4	138.9	141.8	146.2
Germany	122.2	123.7	126.0	127.4	128.9	131.1
United Kingdom	139.3	141.4	143.5	145.8	147.9	149.7
CHANGE FROM PREVIOUS YEAR (%)						
Australia(c)	1.8	5.3	2.7	3.0	1.9	2.0
New Zealand	1.5	4.0	2.8	2.0	0.5	1.8
Hong Kong (SAR of China)	-3.1	-1.1	-1.4	-2.0	-0.3	1.6
Indonesia	-0.3	9.7	13.8	8.2	5.8	6.8
Japan	-0.7	-0.5	-3.0	-1.2	-0.3	0.1
Korea, Republic of (South)	1.8	4.1	3.2	3.2	3.4	3.8
Singapore	1.3	1.9	-0.2	0.4	1.5	1.1
Taiwan	0.9	1.2	-0.2	-0.1	0.5	2.7
Canada	2.5	2.5	1.7	3.8	1.3	1.8
United States of America	2.9	3.4	0.8	1.8	2.1	3.1
Germany	0.6	1.2	1.9	1.1	1.2	1.7
United Kingdom	1.5	1.5	1.5	1.6	1.4	1.2

(a) Reference base year is 1989–90 = 100.0. (b) All groups excluding Housing, and Financial and insurance services. (c) The 2000–01 data for Australia were affected by the introduction of The New Tax System, in particular, the introduction of the Goods and Services Tax from 1 July 2000.

Source: Consumer Price Index, Australia (6401.0).

## International comparisons

In analysing price movements in Australia, an important consideration is Australia's performance relative to other countries. However, due to the many differences in the structure of the housing sector in different countries and in the way housing is treated in their CPIs, a simple comparison of All groups (or 'headline') CPIs is often inappropriate. In order to provide a better basis for international comparisons, the Seventeenth International Conference of Labour Statisticians (2003) adopted a resolution which called for countries, where possible, to compile and provide for dissemination to the international community an index that excludes housing and financial services.

Table 28.8 presents indexes for selected countries on a basis consistent with the resolution and broadly comparable with the Australian series 'All groups excluding Housing, and Financial and insurance services'.

## Producer price indexes

The producer price indexes measure changes in the prices received, or paid, by producers of commodities and providers of services. In Australia they generally relate to prices for goods and services as they affect businesses, for example, the price of goods used as input to or output from the manufacturing sector, the price of materials used as input to the building industry and, more recently, the price of services provided by the property and business services, and transport (freight) and storage industries. This contrasts with the CPI which measures changes in the retail prices paid by consumers, as explained earlier in this chapter.

### Stage of production producer price indexes

These indexes are compiled using the 'stage of production' concept. Under this concept, flows of commodities are categorised according to their economic destination on a sequential basis along the production chain. The basis for the categorisation is the 1996–97 Australian input-output tables (see the *National Accounts* chapter). The principal categorisation is between final commodities (i.e. commodities destined for final consumption, capital formation or export) and those commodities that will be processed further (referred to as 'non-final' commodities).

This initial breakdown of the commodity flows into final and non-final represents a useful economic dissection of producers' transactions.

However, the non-final commodities can flow into the production of either final or other non-final commodities. Therefore, to aid analysis, the non-final commodity flows have been divided on a sequential basis between stage 1 (or preliminary) commodities and stage 2 (or intermediate) commodities. This approach results in three separate stages of production.

In order to avoid multiple counting of transactions, the three stages are not aggregated.

Under this framework, preliminary (stage 1) commodities are used in the production of intermediate (stage 2) commodities which, in turn, flow into the production of final (stage 3) commodities.

The framework allows for analyses of price change as commodities flow through production processes. Price changes for earlier stages of production may be indicators of possible future price changes for later stages.

### Market transactions approach

The ABS has adopted a market transactions approach in disaggregating commodity supply into the various production stages. Under this approach, the individual transactions in a given commodity are assigned to the relevant stage, based on identification of the market(s) in which that commodity is transacted, which in turn is determined by the usage pattern of that commodity. A particular 'commodity', within the index classification system, can be assigned to more than one stage of production, on the basis of its usage pattern as identified in the input-output tables.

### Index coverage

In concept, the scope of the stage of production indexes is economy-wide, relating to the output of all the goods and services industries. However, there are limits on the availability of price indexes for service industries, and coverage is currently restricted to the output of the accommodation, transport (freight) and storage, and property and business services sectors. Similarly, coverage of the construction sector is confined to indexes for the output of the following industries: house construction, residential building construction not elsewhere classified (n.e.c.), non-residential building construction, and road and bridge construction. Coverage of the stage of production indexes will be progressively extended as additional service and construction industry collections are established. Table 28.9 shows stage of production producer price indexes.

## 28.9 STAGE OF PRODUCTION PRODUCER PRICE INDEXES(a), By stage and source

	Preliminary			Intermediate			Final (excl. exports)		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
1999–2000	104.1	107.1	104.5	103.4	104.4	103.6	104.3	95.7	102.6
2000–01	110.3	126.1	112.4	108.9	119.7	110.3	107.7	104.0	107.0
2001–02	111.8	120.3	112.9	111.3	115.9	111.9	110.0	103.7	108.8
2002–03	114.3	117.4	114.6	113.6	112.1	113.3	113.7	97.5	110.5
2003–04	115.3	105.6	113.8	114.9	99.9	112.7	118.5	86.7	112.0
2004–05	121.1	115.4	120.2	119.8	104.4	117.5	124.1	84.6	116.1

(a) Reference base year is 1998–99 = 100.0.

Source: *Producer Price Indexes, Australia (6427.0)*.

## Manufacturing price indexes

### Price indexes of articles produced by manufacturing industries

These indexes measure movements in the prices of articles produced by establishments classified to the Manufacturing Division of the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition (1292.0)*.

The indexes are constructed on a net sector basis. This approach means that the 'all manufacturing industry' index represents price movements of goods which are produced by establishments in the Manufacturing Division, for sale or transfer to establishments outside the Manufacturing Division, for export, or for use as capital equipment. Articles which are sold or transferred to other establishments within the manufacturing industry, for further processing or for use as inputs, are excluded.

The composition and weighting pattern of these indexes are based on the value of production in 1993–94 and they have a reference base of 1989–90 = 100.0.

The indexes were first published in June 1976 on a reference base of 1968–69 = 100.0, with indexes compiled retrospectively to July 1968. The composition and weighting patterns of the indexes were based on the value of production in 1971–72.

Table 28.10 sets out a summary index for articles produced. More detailed index numbers are contained in the *Manufacturing* chapter.

## 28.10 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES(a)(b)

	Manufacturing Division index
1999–2000	120.6
2000–01	128.5
2001–02	128.8
2002–03	130.3
2003–04	130.4
2004–05	139.3

(a) Reference base year is 1989–90 = 100.0. (b) For a full description of Division C, Manufacturing and the subdivisions within the Manufacturing Division, see the 'Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993' (1292.0).

Source: *Producer Price Indexes, Australia (6427.0)*.

### Price indexes of materials used in manufacturing industries

These indexes measure changes in the prices of materials used by establishments classified to the Manufacturing Division of ANZSIC, 1993 edition.

Indexes are published for materials used in the manufacturing industry as a whole (split into imported and domestic materials) and for each of 17 separate manufacturing sectors (defined in terms of ANZSIC Subdivisions or ANZSIC Groups). Indexes are also published for materials sourced domestically and those that are imported.

The indexes are compiled and published on a net sector basis. That is, each index includes only those materials which are used in the defined sector of Australian manufacturing industry and which have been produced by establishments outside that sector.



## 28.11 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES(a)

	Imported materials	Domestic materials	All materials
1999–2000	118.8	114.5	115.8
2000–01	134.0	131.9	132.4
2001–02	130.3	134.1	132.4
2002–03	125.4	136.7	131.9
2003–04	115.2	134.1	125.9
2004–05	120.8	149.7	137.1

(a) Reference base year is 1989–90 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

The current index series were introduced in July 1996 on a reference base of 1989–90 = 100.0. The items included in the indexes were allocated weights in accordance with the estimated value of manufacturing usage in 1989–90.

The indexes were first compiled on a reference base of 1968–69 = 100.0, using a weighting pattern derived from the estimated manufacturing usage in 1971–72. Index numbers for this first series are available for the period July 1968 to November 1985.

A rebased series was introduced in December 1985 on a reference base of 1984–85 = 100.0 using a weighting pattern based on estimated manufacturing usage in 1977–78.

Table 28.11 shows summary indexes for materials used. More detailed index numbers are contained in the *Manufacturing* chapter.

### Construction price indexes

#### Price indexes of the output of the construction industry

The price indexes of the output of the general construction industry (table 28.12) measure changes in prices of the output of ANZSIC Subdivision 41 – General construction and in the output of the constituent groups and classes of this subdivision. These include house construction (measured using the CPI project home series, excluding sponsored government home buyers' schemes), other residential building construction, non-residential building

construction and non-building construction. These indexes are used for the following purposes:

- as an important input into the Australian national accounts by providing deflators for current price expenditure on general construction to calculate chain volume estimates
- as an input into broader measures of price change, such as the economy-wide stage of production indexes
- to aid industry analysis.

Currently, road and bridge construction is the sole contributor to the index for ANZSIC Group 412 (Non-building construction).

#### Price indexes of materials used in house building

The price index of materials used in house building measures changes in the prices of selected materials used in the construction of houses in the Statistical Division containing each state capital city.

The current index series were introduced in December 1995 on a reference base of 1989–90 = 100.0 and were linked to previous series. The items and weights for the current series are based on estimated materials usage in a sample of representative houses constructed in the three years ending June 1993.

The index was first compiled on a reference base of 1966–67 = 100.0, using a weighting pattern derived from estimated materials usage in 1968–69.



## 28.12 PRICE INDEX OF THE OUTPUT OF THE GENERAL CONSTRUCTION INDUSTRY(a)

	1999–2000	2000–01	2001–02	2002–03	2003–04	2004–05
General construction Subdivision (41)	104.9	106.1	107.9	112.7	121.1	130.2
Building construction (411)	105.0	106.0	107.8	112.4	121.2	130.6
House construction (4111)	107.2	109.1	112.0	116.5	123.7	130.6
Residential building construction n.e.c. (4112)	104.7	104.2	105.1	110.4	121.0	132.1
Non-residential building construction (4113)	103.3	103.9	105.1	109.6	119.5	131.3
Non-building construction(b) (412)	103.7	107.9	109.7	116.0	120.8	125.8
Road and bridge construction (4121)	103.7	107.9	109.7	116.0	120.8	125.8

(a) Reference base year is 1998–99 = 100.0. (b) Road and bridge construction is the sole contributor to Non-building construction.

Source: *Producer Price Indexes, Australia* (6427.0).

A rebased series of indexes, linked to the previous series, were introduced in October 1986 on a reference base of 1985–86 = 100.0. The items in the rebased series were selected and allocated weights on the basis of the estimated values of each material used in a sample of representative houses constructed in 1985–86.

Table 28.13 shows price index series for each of the six state capital cities and for the weighted average of the six state capital cities. The movements in the index are discussed in the *Construction* chapter.

### Service industries price indexes

In recognition of the increasing contribution of service industries to the Australian economy, the ABS has progressively extended the scope of the producer price indexes into the service sectors of the economy. Service industry price indexes are an important part of a broader ABS plan to provide a range of statistics that will improve the measurement of various aspects of service industries in the Australian economy.

Since April 2000, the ABS has been publishing quarterly producer price indexes for the output of the Transport (freight) and Storage Division, and the Property and Business Services Division of ANZSIC. The Transport (freight) and storage index contains important freight transport industries such as road, rail, sea and air. The Property Services index contains services such as real estate agents and the hire and lease of machinery and equipment. The Business Services index contains

a diverse range of services including surveying, computer services, legal and accounting services, employment placement, pest control and security services. The index numbers are calculated on the reference base 1998–99 = 100.0 using weighting patterns derived from the 1996–97 input-output domestic production tables and are released quarterly in *Producer Price Indexes, Australia* (6427.0).

As part of an ongoing program to improve the coverage and quality of ABS price indexes, a price index for accommodation has been developed and research is currently under way to extend the coverage of the services price indexes to include Postal and courier services and Telecommunication services.

The services price indexes aim to:

- assist in improving the quality of the Australian national accounts by providing a wider range of deflators for deriving real (chain volume) measures of economic growth
- contribute to the development of new measures of inflation by expanding the coverage of the indexes compiled under the economy-wide stage of production price indexes (see *Stage of production producer price indexes*)
- be of use in their own right for industry analysis.

Tables 28.14, 28.15 and 28.16 provide broad level, summary index series.

### 28.13 PRICE INDEXES OF MATERIALS USED IN HOUSE BUILDING(a)(b)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Weighted average of six state capital cities
1999–2000	126.8	121.7	120.8	127.2	117.7	123.8	122.8
2000–01	130.0	123.1	120.6	129.6	118.8	126.0	124.4
2001–02	132.0	125.0	122.0	130.6	119.4	128.4	126.0
2002–03	137.2	128.4	127.6	135.7	123.0	133.7	130.5
2003–04	142.3	131.1	132.1	138.4	125.8	139.4	134.3
2004–05	146.6	134.6	137.3	143.4	131.1	148.0	138.8

(a) Reference base year is 1989–90 = 100.0. (b) The separate city indexes measure price movement within each city individually. They do not compare price levels between cities.

Source: *Producer Price Indexes, Australia* (6427.0).

### 28.14 PRODUCER PRICE INDEXES FOR SELECTED SERVICE INDUSTRIES, Transport (freight) and storage(a)

	Road transport	Rail transport	Water transport	Air and space transport	Other transport	Services to transport	Storage	Transport (freight) and storage Division
1999–2000	101.0	94.4	103.8	99.1	n.a.	97.2	100.9	100.2
2000–01	103.1	95.3	109.8	102.7	101.8	97.2	102.1	102.3
2001–02	105.0	94.9	109.4	103.5	102.9	97.0	102.2	103.2
2002–03	107.3	94.8	106.3	111.4	103.4	100.2	103.3	105.2
2003–04	110.2	95.7	105.2	114.4	101.7	101.4	104.9	107.1
2004–05	115.8	96.7	114.3	111.1	107.8	104.2	107.6	111.2

(a) Reference base year is 1998–99 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

### 28.15 PRODUCER PRICE INDEXES FOR SELECTED SERVICE INDUSTRIES, Property services(a)

	Property operators and developers	Real estate agents	Machinery equipment hiring and leasing	Property services Subdivision
1999–2000	102.8	109.9	101.3	103.2
2000–01	109.0	121.6	100.9	108.7
2001–02	111.8	133.9	98.8	111.5
2002–03	111.2	149.7	100.0	113.3
2003–04	111.6	169.0	104.0	116.9
2004–05	115.6	175.7	106.9	121.0

(a) Reference base year is 1998–99 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

### 28.16 PRODUCER PRICE INDEXES FOR SELECTED SERVICE INDUSTRIES, Business services(a)

	Scientific research	Technical services	Computer services	Legal and accounting services	Marketing and business management services	Other business services	Business services Subdivision
1999–2000	102.7	102.2	108.0	103.1	104.7	102.1	103.8
2000–01	104.7	103.6	111.2	107.7	109.5	103.7	106.9
2001–02	107.0	106.7	112.6	113.2	114.4	105.7	110.1
2002–03	113.5	113.4	114.7	117.7	117.0	108.9	113.6
2003–04	114.3	119.7	115.4	124.4	120.1	113.3	117.5
2004–05	117.4	124.2	115.1	129.0	120.6	116.8	119.9

(a) Reference base year is 1998–99 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

## International trade price indexes

### Import price index

The import price index measures changes in the prices of imports of merchandise landed in Australia, based on their free-on-board (f.o.b.) prices in the country of origin. The index numbers for each quarter relate to prices of imports landed in Australia during the period.

The main uses of the import price index are as deflators for the production of chain volume estimates, as a guide to future inflationary trends for macro-economic purposes and the indexation of business contracts.

The commodities represented cover about 95% of merchandise imports.

This series has a reference base of 1989–90 = 100.0. From the early-1990s until 2000, the weights were based on the average value of merchandise imports landed in Australia during 1988–89 and 1989–90. In 1999 a review of the index was undertaken with the findings published in *Information Paper: Review of the Import Price Index and Export Price Index, Australia, 1999* (6424.0). One of the results of the review was a move to an annually reweighted chain index. Each September quarter the weights of the index are updated to reflect the average value of merchandise imports landed in Australia in the previous financial year. These have been released in the publication *International Trade Price Indexes, Australia* (6457.0) from the June quarter 2001.

Table 28.17 provides All groups import price index numbers. Import price index numbers based on the Standard International Trade Classification Revision 3 (SITC Rev. 3) are contained in table 30.24 in the *International accounts and trade* chapter.

### Export price index

The index measures changes in the prices of all exports of merchandise from Australia, including re-exports (goods which are imported into Australia then exported without alteration). The index numbers for each quarter relate to the prices of exports actually shipped during that quarter.

This series has a reference base of 1989–90 = 100.0. Commencing with the September quarter 2000, it is reweighted annually and chained. Under the chaining process, new weights are introduced in each September quarter. An average of the export values for the latest two years is used each year to

derive the new weights. The indexes have been released in the publication *International Trade Price Indexes, Australia* (6457.0) from the June quarter 2001.

The commodities represented constitute approximately 95% of the total value of exports from Australia.

In general, prices are obtained from the major exporters of the selected commodities included in the index. The prices used in the index are the prices at which the goods physically leave Australia, that is, the prices are f.o.b. at the main Australian ports of export.

As the prices used in the index are expressed in Australian currency, changes in the relative value of the Australian dollar against overseas currencies (in particular, the major trading currencies such as the US dollar, Japanese yen, British pound sterling and the Euro) can have a direct and significant impact on the price movements of the many commodities that are sold in terms of prices expressed in overseas currencies. Forward exchange cover is excluded from the prices used in the index.

The prices collected and used in compiling the index relate to specified standards, grades, types, etc., of each commodity with the aim of incorporating in the index the price changes for exports of representative goods of constant quality. Wherever possible, prices to specific major export markets are used for each of the goods priced, in order to lessen the impact of price variations attributable solely to changes in market destinations. In most cases, prices are combined using fixed weights between markets. Weights between markets are reviewed from time to time and revised where necessary.

Table 28.17 provides All groups export price index numbers. Export price index numbers based on the Standard International Trade Classification Revision 3 (SITC Rev. 3) are contained in table 30.24 in the *International accounts and trade* chapter.

#### 28.17 INTERNATIONAL TRADE PRICE INDEXES(a)

	Import price index (All groups)	Export price index (All groups)
1999–2000	120.2	98.0
2000–01	134.3	114.8
2001–02	132.3	116.7
2002–03	126.0	111.7
2003–04	112.3	102.5
2004–05	112.8	116.4

(a) Reference base year is 1989–90 = 100.0.

Source: *International Trade Price Indexes, Australia* (6457.0).

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## NATIONAL ACCOUNTS

National accounts are designed to provide a systematic summary of national economic activity and have been developed to assist in the practical application of economic theory.

The system of Australian national accounts includes national income, expenditure and product accounts, financial accounts, the national balance sheet and input-output tables. At their summary level, the national income, expenditure and product accounts reflect key economic flows – production, the distribution of incomes, consumption, saving and investment. At their more detailed level, they are designed to present a statistical picture of the structure of the economy and the detailed processes that make up domestic production and its distribution. The financial accounts show the financial assets and liabilities of the nation and of each institutional sector, the market for financial instruments and inter-sectoral financial transactions. The balance sheet is a comprehensive statement of produced and non-produced assets, liabilities to the rest of the world and net worth. Input-output tables show which goods and services are produced by each industry and how they are used.

The national accounts include many detailed classifications (e.g. by industry, by purpose, by commodity, by state and territory, and by asset type) relating to major economic aggregates.

## Defining and measuring GDP

The main output from the national accounts is a measure of the overall value of economic production in Australia in a given period, but without any double counting of the goods and services being produced. Many goods and services are bought by businesses for use in their own productive activities (e.g. steel is bought by car manufacturers). If the value of all goods and services produced were simply added together there would be serious duplication because some goods and services would be added in several times at various stages of production. The overall measure of production, excluding double counting, is called 'gross domestic product', which is commonly referred to as GDP. It is formally defined as:

The total market value of goods and services produced in Australia after deducting the cost of goods and services used up (intermediate consumption) in the process of production, but before deducting allowances for the consumption of fixed capital (depreciation).

The performance of the economy is represented in the national accounts by such measures as growth in GDP. While movements in the chain volume measure of GDP (from which the direct effects of price changes have been removed) are an important indicator of economic growth, there is no single measure which can describe all aspects of the well-being of a country's citizens.

There are significant aspects of the quality of life which cannot be reflected in a system of economic accounts, just as there are significant aspects of an individual's well-being which are not measured in the conventional concept (or any other concept) of that individual's income.

Notwithstanding their limitations, especially in relation to uses for which they were never designed, the national accounts provide important information for a range of purposes. The system of national accounts also provides a framework or structure which can be, and has been, adapted and extended to facilitate the examination of many economic and social policy issues.

There are three ways of measuring GDP.

*Income approach* – which measures GDP by summing the incomes accruing from production: compensation of employees (wages and salaries, and employers' social contributions); gross operating surplus (profits); gross mixed income (income from unincorporated businesses,

including a return to the owners of these businesses for their labour); and taxes less subsidies on production and imports.

*Expenditure approach* – which involves summing all final expenditures on goods and services (i.e. those goods and services which are not processed any further), adding on the contributions of changes in inventories and the value of exports, and deducting the value of imports. Final expenditures consist of final consumption expenditure and gross fixed capital formation. Exports are included in GDP because they are part of Australian production even though they are sold to overseas purchasers. Imports are deducted because, although they are included in final expenditures (e.g. when someone buys an imported video recorder its value is included as part of household final consumption expenditure), they are not part of Australian production.

*Production approach* – which calculates GDP by taking the value of goods and services produced by an industry (its output at basic prices, which implicitly includes taxes less subsidies on production) and deducting the cost of goods and services used up by the industry in the productive process (intermediate consumption), which leaves the value added by the industry. GDP is then obtained by summing value added across all industries, and adding taxes less subsidies on products.

While each approach should, conceptually, deliver the same estimate of GDP, if the three measures are compiled independently using different data sources then different estimates of GDP result. However, the Australian national income, expenditure and product estimates have been integrated within annual balanced supply and use tables which are available for 1994–95 to 2002–03. Integration with balanced supply and use tables ensures that the same estimate of GDP is obtained from the three approaches, and thus annual estimates using the income, expenditure and production approaches are identical for the years for which supply and use tables are available.

Prior to 1994–95, and for the latest financial year, the estimates using each approach are based on independent sources, and there are differences between the income, expenditure and production estimates. Nevertheless, for these periods, a single estimate of GDP has been compiled. Table 29.1 shows time series of chain volume measures for GDP, and GDP per person, from 1977–78 to 2003–04. (For a discussion of chain volume measures, see *Chain volume or 'real' GDP*.)

## 29.1 GROSS DOMESTIC PRODUCT, Chain volume measures(a)

	GDP	GDP per person
	\$m	\$
1977–78	333 109	23 327
1978–79	347 324	24 059
1979–80	358 532	24 554
1980–81	370 237	24 999
1981–82	381 737	25 356
1982–83	372 755	24 377
1983–84	390 544	25 220
1984–85	411 206	26 222
1985–86	428 857	26 970
1986–87	438 932	27 196
1987–88	462 468	28 201
1988–89	481 169	28 837
1989–90	499 161	29 469
1990–91	498 578	29 026
1991–92	499 839	28 735
1992–93	518 082	29 458
1993–94	538 269	30 297
1994–95	560 931	31 230
1995–96	584 868	32 145
1996–97	607 035	32 955
1997–98	634 109	34 047
1998–99	667 780	35 453
1999–00	692 889	36 380
2000–01	707 140	36 674
2001–02	734 575	37 614
2002–03	758 147	38 374
2003–04	786 754	39 324

(a) Reference year is 2002–03.

Source: Australian System of National Accounts, 2003–04 (5204.0).

## 29.2 GDP AT CONSTANT PRICES, International comparison — 1995 to 2004(a)

	Average annual growth rate
	%
Australia	3.4
'G7' countries	
Canada	3.0
France	2.0
Germany	1.3
Italy	1.3
Japan	1.0
United Kingdom	2.6
United States of America	3.0
Total 'G7'	2.3
New Zealand	3.0

(a) Average annual growth.

Source: OECD, Quarterly National Accounts, Vol. 2005/2.

Compared with many developed economies, Australia has experienced relatively strong growth over the past 10 years. With an average annual growth rate of 3.4% for 'real' GDP from 1995 to 2004, it is higher than any of the 'G7' countries (table 29.2).

The chain volume measure of GDP increased by 3.8% in 2003–04, following an increase of 3.2% in 2002–03. For some analytical purposes, it is important to allow for the impact of population growth on movements in GDP. Annual growth in GDP per person has been about one to two percentage points lower than that for GDP since the mid-1970s and was negative in 1977–78, 1982–83, 1990–91 and 1991–92 (graph 29.3). In 2003–04, GDP per person increased by 2.5%.

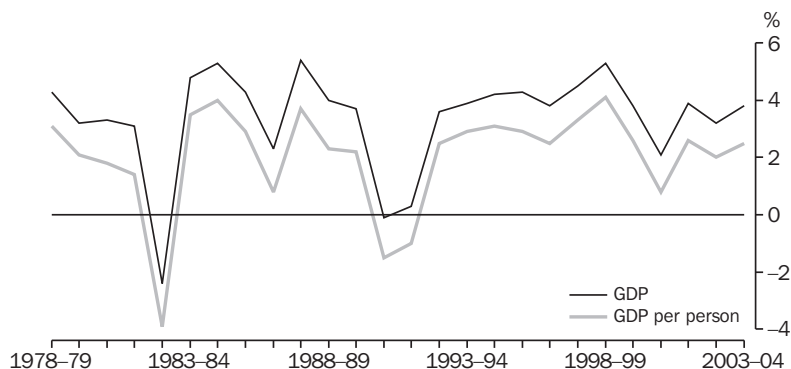
## Chain volume or 'real' GDP

Chain volume measures were introduced into the Australian national accounts in 1998. They were first presented as experimental measures for the expenditure components of GDP in the December quarter 1997 issue of *Australian National Accounts: National Income, Expenditure and Product* (5206.0) and were an addition to the longstanding constant price estimates which were still the 'official' volume estimates. Subsequently, in the September quarter 1998 issue of 5206.0, the constant price estimates of both the expenditure and production components of GDP were replaced with chain volume measures and they became the 'official' volume estimates of the Australian Bureau of Statistics (ABS).

The reason for having either chain volume or constant price estimates in the national accounts is to provide time series of expenditure and production aggregates which are free of the direct effects of price change. All the current price aggregates of expenditure and production appearing in the national accounts are estimates of the sums of the values of individual transactions. Each of these transactions has two components: a price and a quantity. From one period to another the quantities and prices comprising the transactions change. This means that when the current price value of an aggregate, such as GDP, in one period is compared with the current price value in another period, the difference between them usually reflects both changes in quantity and changes in price of the constituent transactions. In order to estimate by how much the 'volume' of GDP has changed between the two periods we need to measure the value of GDP in each period using the same unit prices.



## 29.3 GDP AND GDP PER PERSON



Source: Australian System of National Accounts, 2003-04 (5204.0).

For many years the ABS derived constant price estimates as a means of measuring changes in the volumes of aggregates. Constant price estimates are derived by fixing the unit prices of goods and services to those of some base year. These base year unit prices are effectively the weights used to combine the quantities of the different goods and services purchased or produced. The unit prices of different goods and services tend to grow at different rates – some at dramatically different rates. For example, the prices of computer equipment are estimated to have declined by about 92% between 1989-90 and 2003-04, while the prices of most other goods and services have increased. Therefore, over time, the price relativities of some goods and services change appreciably. This adversely affects the usefulness of constant price estimates for periods distant from the base year, and implies that the base year used to derive constant price estimates needs to be changed from time to time. It was ABS practice, in common with many other national statistical agencies, to change the base year every five years. However, it has been found that rebasing every five years is commonly insufficient, and hence the latest international standards recommend rebasing every year and linking the resulting indexes to form annually reweighted chain volume measures.

Chain volume estimates are not generally additive. In other words, component chain volume estimates do not usually sum to a total in the way original current price components do. In order to minimise the impact of this characteristic, the ABS is using the latest base year as the reference year (i.e. the year when the annual chain volume estimate equals the current price value). Re-referencing changes the level of the chain volume estimates, but does not of itself change

the growth rates. By adopting this approach, non-additivity does not apply to the reference year or the following year.

The decision to replace all ABS constant price estimates with chain volume measures was announced in March 1998 in *Information Paper: Introduction of Chain Volume Measures in the Australian National Accounts* (5248.0). That paper describes what chain volume measures are, their advantages and disadvantages with respect to constant price estimates, the advantages and disadvantages of different chain volume formulae, and the results of an empirical analysis.

### Chain price indexes and implicit price deflators

A by-product of the calculation of chain volume measures is the implicit price deflator (IPD). An IPD is the price index obtained when a current price estimate is divided by the corresponding chain volume measure. The ABS publishes a time series of IPDs for each of the expenditure components of GDP (excluding the changes in inventories).

Chain price indexes are also published for the major expenditure aggregates. They are the prices equivalent of chain volume estimates. Quarterly chain price indexes are generally superior to IPDs for measuring price change, because the quarter-to-quarter growth rates calculated from the IPDs reflect changes in composition of the expenditure aggregate as well as pure price change. For example, it is possible for an IPD to increase or decrease from one-quarter to another without there being any change in price. Changes in chain price indexes, on the other hand, only reflect pure price change.

## National income, expenditure and product accounts

The Australian national income, expenditure and product accounts are compiled and published in some detail every quarter, in *Australian National Accounts: National Income, Expenditure and Product* (5206.0), and in greater detail once a year, in *Australian System of National Accounts* (5204.0).

### GDP account

The GDP account indicates changes in Australian production over time. Tables 29.4 and 29.5 show the GDP account in current prices for a number of years between 1975–76 and 2003–04. Table 29.4

provides a series of snapshots at five-yearly intervals to 1995–96, while table 29.5 shows annual time series from 1999–2000 to 2003–04. Table 29.6 shows expenditure on GDP in real or chain volume terms.

In real terms (i.e. after the effects of price change are removed from the dollar value of Australia's production), there was a fall in production during 1990–91. Since the recession in 1990–91, GDP has grown each year. Although growth in 1991–92 was relatively low (0.3%), by 1995–96 it had accelerated to 4.3%, a growth rate which was generally maintained until 1999–2000. In 2000–01 GDP recorded a smaller growth rate of 2.1% and then increased by 3.9% the following year. In 2003–04 GDP increased by 3.8%.

**29.4 GDP ACCOUNT, Current prices — five-yearly intervals**

	1975–76	1980–81	1985–86	1990–91	1995–96
	\$m	\$m	\$m	\$m	\$m
Final consumption expenditure					
General government	14 699	27 093	49 713	74 545	92 860
Households	45 459	84 097	144 502	233 726	299 595
<i>Total final consumption expenditure</i>	<i>60 158</i>	<i>111 190</i>	<i>194 215</i>	<i>308 272</i>	<i>392 455</i>
Gross fixed capital formation					
Private	13 328	29 256	45 959	67 029	88 029
Public	6 582	9 926	19 182	23 238	23 571
<i>Total gross fixed capital formation</i>	<i>19 910</i>	<i>39 182</i>	<i>65 141</i>	<i>90 267</i>	<i>111 600</i>
Changes in inventories	180	446	870	-1 366	-813
Gross national expenditure	80 248	150 819	260 227	397 173	503 242
Exports of goods and services	11 225	22 604	38 948	66 259	99 095
less Imports of goods and services	11 163	25 530	47 199	66 948	101 078
Statistical discrepancy(a)	-714	-2 025	-3 393	1 320	—
<b>Gross domestic product</b>	<b>79 597</b>	<b>145 868</b>	<b>248 583</b>	<b>397 804</b>	<b>501 257</b>
Compensation of employees	43 919	75 044	123 434	192 723	241 100
Gross operating surplus	17 283	36 139	68 289	118 520	152 053
Gross mixed income	10 704	19 904	28 738	42 545	49 064
Total factor income	71 906	131 087	220 461	353 788	442 217
Taxes less subsidies on production and imports	7 895	14 753	27 805	43 407	59 041
Statistical discrepancy(b)	-204	29	317	609	—
<b>Gross domestic product</b>	<b>79 597</b>	<b>145 868</b>	<b>248 583</b>	<b>397 804</b>	<b>501 257</b>

(a) Expenditure-based. (b) Income-based.

Source: *Australian System of National Accounts, 2003–04* (5204.0).

## 29.5 GDP ACCOUNT, Current prices

	1999–2000	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
Final consumption expenditure					
General government	113 142	119 970	127 325	136 848	145 836
Households	372 509	401 472	424 829	453 202	484 935
<i>Total final consumption expenditure</i>	485 651	521 442	552 154	590 050	630 771
Gross fixed capital formation					
Private	125 711	120 246	134 623	156 671	169 681
Public	24 898	25 115	27 314	28 131	29 568
<i>Total gross fixed capital formation</i>	150 609	145 361	161 937	184 802	199 249
Changes in inventories	1 791	1 064	510	2 173	4 676
Gross national expenditure	638 051	667 867	714 601	777 026	834 695
Exports of goods and services	126 222	153 763	153 200	148 293	143 366
less Imports of goods and services	140 811	153 205	154 573	167 169	167 169
Statistical discrepancy(a)	—	—	—	—	2 333
<b>Gross domestic product</b>	<b>623 461</b>	<b>668 426</b>	<b>713 229</b>	<b>758 147</b>	<b>813 225</b>
Compensation of employees	302 116	321 023	337 398	359 189	379 344
Gross operating surplus	193 899	209 500	225 319	244 014	267 307
Gross mixed income	54 212	55 538	64 965	61 896	67 145
<i>Total factor income</i>	550 227	586 061	627 682	665 099	713 796
Taxes less subsidies on production and imports	73 227	82 365	85 547	93 048	99 485
Statistical discrepancy(b)	—	—	—	—	-56
<b>Gross domestic product</b>	<b>623 461</b>	<b>668 426</b>	<b>713 229</b>	<b>758 147</b>	<b>813 225</b>

(a) Expenditure-based. (b) Income-based.

Source: Australian System of National Accounts, 2003–04 (5204.0).

## 29.6 EXPENDITURE ON GDP, Chain volume measures(a)(b)

	1999–2000	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
Final consumption expenditure					
General government	126 921	129 027	131 724	136 848	140 252
Households	410 685	422 800	435 762	453 202	478 429
Total final consumption expenditure	537 565	551 806	567 485	590 050	618 681
Gross fixed capital formation					
Private	133 238	122 144	135 273	156 671	167 591
Public	25 111	25 103	27 280	28 131	29 662
Total gross fixed capital formation	157 231	147 401	163 022	184 801	197 254
Domestic final demand	695 891	698 464	729 783	774 853	815 934
Changes in inventories	3 773	1 396	1 696	2 173	5 887
Gross national expenditure	697 931	699 966	731 919	777 026	821 821
Exports of goods and services	140 633	151 058	149 226	148 293	150 560
less Imports of goods and services	146 762	145 126	147 855	167 169	187 895
Statistical discrepancy(c)	—	—	—	—	2 268
<b>Gross domestic product</b>	<b>692 889</b>	<b>707 140</b>	<b>734 575</b>	<b>758 147</b>	<b>786 754</b>

(a) Reference year is 2002–03. (b) Chain volume measures for years other than 2002–03 and 2003–04 are not additive.  
(c) Expenditure-based.

Source: Australian System of National Accounts, 2003–04 (5204.0).

The GDP account can also be used to show changes in the share of income accruing to labour (i.e. compensation of employees) compared with the share accruing to capital (i.e. profits, defined as the gross operating surplus of non-financial and financial corporations). Graphs 29.7 and 29.8 show how the shares of total factor income accruing to wages and to profits have changed since 1967–68. (Total factor income is equal to the sum of compensation of employees, gross operating surplus and gross mixed income.)

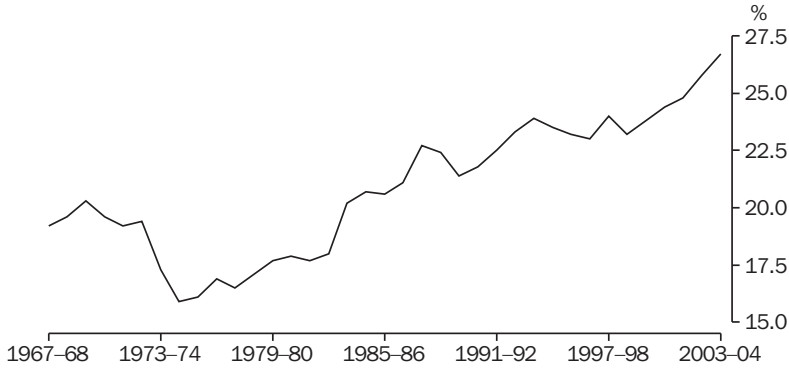
The highest recorded value of the wages share of total factor income was 61.5% in 1974–75. The wages share has recovered somewhat from its low value of 52.8% in 1988–89, but at 53.1% for 2003–04 it remains below the levels achieved during most of the 1970s and early-1980s. The wages share has remained stable during the 1990s, at levels similar to those during the 1960s. The profits share of total factor income of 26.7% in 2003–04 is the highest share recorded since 1959–60.

29.7 WAGES SHARE OF TOTAL FACTOR INCOME



Source: Australian System of National Accounts, 2003–04 (5204.0).

## 29.8 PROFITS SHARE OF TOTAL FACTOR INCOME



Source: Australian System of National Accounts, 2003-04 (5204.0).

### National income account

The national income account shows the sources of national income and how much of this income is spent on final consumption. That part of income which is not spent in this way is saving. Tables 29.9

and 29.10 show the income account for a number of years between 1975-76 and 2003-04. Table 29.9 provides a series of snapshots at five-yearly intervals to 1995-96, while table 29.10 shows annual time series from 1999-2000 to 2003-04.

#### 29.9 NATIONAL INCOME ACCOUNT, Current prices — five-yearly intervals

	1975-76	1980-81	1985-86	1990-91	1995-96
	\$m	\$m	\$m	\$m	\$m
<b>INCOME</b>					
Compensation of employees	43 919	75 044	123 434	192 723	241 100
Gross operating surplus	17 283	36 139	68 289	118 520	152 053
Gross mixed income	10 704	19 904	28 738	42 545	49 064
Taxes less subsidies on production and imports	7 895	14 753	27 805	43 407	59 041
Net primary income from non-residents	-1 202	-2 397	-6 853	-17 224	-19 533
<b>Gross national income</b>	<b>78 599</b>	<b>143 443</b>	<b>241 413</b>	<b>379 971</b>	<b>481 725</b>
Net secondary income from non-residents	-287	-441	-384	453	64
<b>Gross disposable income</b>	<b>78 312</b>	<b>143 002</b>	<b>241 029</b>	<b>380 424</b>	<b>481 789</b>
<b>USE OF DISPOSABLE INCOME</b>					
Final consumption expenditure					
General government	14 699	27 093	49 713	74 545	92 860
Households	45 459	84 097	144 502	233 726	299 595
<b>Total final consumption expenditure</b>	<b>60 158</b>	<b>111 190</b>	<b>194 215</b>	<b>308 272</b>	<b>392 455</b>
Net saving(a)	5 878	9 617	7 393	8 189	10 866
Consumption of fixed capital	12 276	22 195	39 421	63 963	78 468
<b>Total use of gross disposable income</b>	<b>78 312</b>	<b>143 002</b>	<b>241 029</b>	<b>380 424</b>	<b>481 789</b>

(a) Net saving is derived as a balancing item.

Source: Australian System of National Accounts, 2003-04 (5204.0).

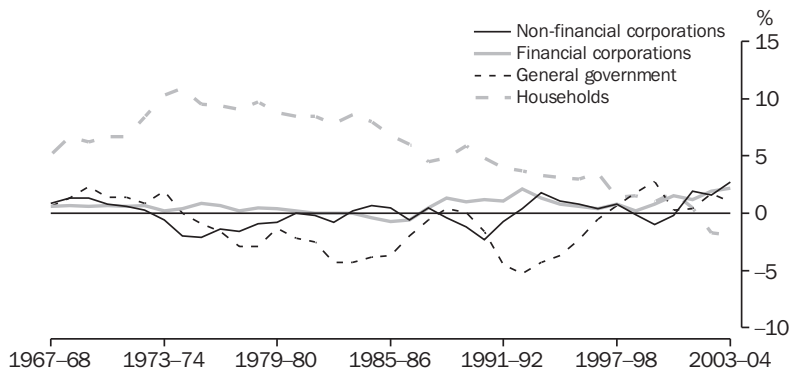
### 29.10 NATIONAL INCOME ACCOUNT, Current prices

	1999–00	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
<b>INCOME</b>					
Compensation of employees	302 116	321 023	337 398	359 189	379 344
Gross operating surplus	193 899	209 500	225 319	244 014	267 307
Gross mixed income	54 212	55 538	64 965	61 896	67 145
Taxes less subsidies on production and imports	73 227	82 365	85 547	93 048	99 485
Net primary income from non-residents	-18 249	-18 702	-19 300	-21 469	-23 301
<i>Gross national income</i>	605 205	649 724	693 929	736 678	789 980
Net secondary income from non-residents	218	32	-17	-214	-29
<b>Gross disposable income</b>	<b>605 423</b>	<b>649 756</b>	<b>693 912</b>	<b>736 464</b>	<b>789 951</b>
<b>USE OF DISPOSABLE INCOME</b>					
Final consumption expenditure					
General government	113 142	119 970	127 325	136 848	145 836
Households	372 509	401 472	424 829	453 202	484 935
<i>Total final consumption expenditure</i>	485 651	521 442	552 154	590 050	630 771
Net saving(a)	22 447	23 230	28 165	27 006	33 198
Consumption of fixed capital	97 325	105 085	113 593	119 407	125 982
<b>Total use of gross disposable income</b>	<b>605 423</b>	<b>649 756</b>	<b>693 912</b>	<b>736 464</b>	<b>789 951</b>

(a) Net saving is derived as a balancing item.

Source: Australian System of National Accounts, 2003–04 (5204.0).

### 29.11 NET SAVING, By sector — share of GDP



Source: Australian System of National Accounts, 2003–04 (5204.0).

Graph 29.11 shows net saving by institutional sector as a proportion of GDP for the years 1967–68 to 2003–04. Household net saving as a percentage of GDP generally rose between 1967–68 and 1974–75, but has fallen subsequently from its high of 9.8% in 1974–75 to a position in 2002–03 where consumption by households exceeded income and, consequently, household net saving was negative for the first time. In 2003–04, consumption further exceeded household income, by \$15.2 billion (b)

(table 29.13). General government net saving was negative from 1975–76 to 1996–97 (except for 1988–89 and 1989–90). In 2003–04 it was positive at 1.0% of GDP (\$8.5b). In 2003–04 net saving of non-financial corporations was 2.7% of GDP (\$22.1b). Net saving of financial corporations was negative from 1981–82 to 1986–87, the only period for which this sector has recorded negative net saving. In 2003–04 net saving of financial corporations was 2.2% of GDP (\$17.8b).

## National capital account

The national capital account shows how the saving from the national income account and consumption of fixed capital (depreciation) are used to finance gross fixed capital formation. If, as is currently the case for Australia, the nation's saving and consumption of fixed capital are not sufficient to pay for all the fixed capital needed for Australian production, the shortfall must be borrowed from overseas. The amount borrowed from overseas is shown in the national capital account as a negative entry for net lending to non-residents.

Tables 29.12 and 29.13 show the national capital account for a number of years between 1975–76 and 2003–04. Table 29.12 provides a series of snapshots at five-yearly intervals to 1995–96, while table 29.13 shows annual time series from 1999–2000 to 2003–04.

Graph 29.14 shows gross fixed capital formation (investment) by institutional sector as a proportion of GDP. For non-financial corporations this proportion generally fell during the 1970s, then rose to a peak of 13.1% in 1981–82. It has subsequently been above 10% except for the years 1991–92 to 1993–94. In 2003–04 investment by non-financial corporations was 10.7% of GDP. Household investment has generally remained at around 9% of GDP since the mid-1970s. In 2003–04 the ratio to GDP was 10.7%. General government investment as a proportion of GDP peaked at 4.6% in 1975–76. It has generally fallen since and was 2.3% of GDP in 2003–04. Financial corporations investment peaked in 1989–90 at 1.9% of GDP, and was 0.8% of GDP in 2003–04.

**29.12 NATIONAL CAPITAL ACCOUNT, Current prices — five-yearly intervals**

	1975–76	1980–81	1985–86	1990–91	1995–96
	\$m	\$m	\$m	\$m	\$m
<b>Net saving</b>					
Non-financial corporations	-1 681	43	1 367	-9 222	4 116
Financial corporations	747	341	-1 796	4 772	3 194
General government	-734	-3 144	-9 106	-6 269	-11 642
Households	7 547	12 377	16 928	18 909	15 198
<i>Total net saving</i>	5 878	9 617	7 393	8 189	10 866
Consumption of fixed capital	12 276	22 195	39 421	63 963	78 468
Net capital transfers receivable from non-residents	-27	167	830	2 071	1 045
<b>Gross saving and capital transfers</b>	<b>18 127</b>	<b>31 979</b>	<b>47 644</b>	<b>74 223</b>	<b>90 379</b>
<b>Gross fixed capital formation</b>					
Private	13 328	29 256	45 959	67 029	88 029
Public corporations	2 790	5 584	10 664	12 271	11 322
General government	3 792	4 342	8 518	10 967	12 249
<i>Total gross fixed capital formation</i>	19 910	39 182	65 141	90 267	111 600
<b>Changes in inventories</b>					
Private non-farm	91	115	882	-1 125	-487
Farm and public authorities	89	331	-12	-241	-326
<i>Total changes in inventories</i>	180	446	870	-1 366	-813
Acquisitions less disposals of non-produced non-financial assets	—	—	—	-7	-25
Statistical discrepancy(a)	-510	-2 053	-3 710	711	—
Net lending to non-residents	-1 454	-5 597	-14 658	-15 382	-20 382
<b>Total capital accumulation and net lending</b>	<b>18 127</b>	<b>31 979</b>	<b>47 644</b>	<b>74 223</b>	<b>90 379</b>

(a) Expenditure-based discrepancy less income-based discrepancy.

Source: Australian System of National Accounts, 2003–04 (5204.0).

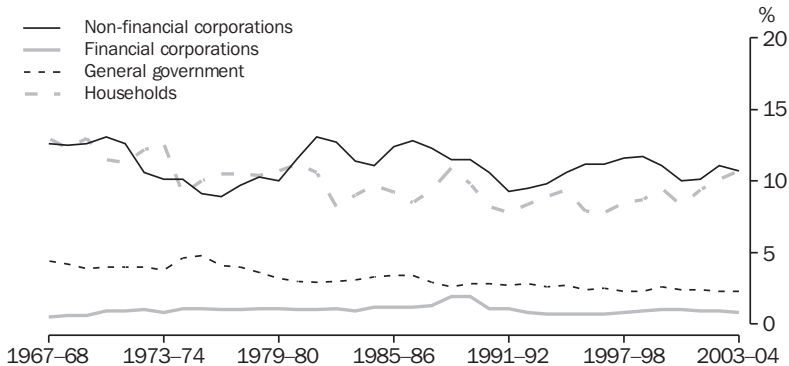
### 29.13 NATIONAL CAPITAL ACCOUNT, Current prices

	1999-00	2000-01	2001-02	2002-03	2003-04
	\$m	\$m	\$m	\$m	\$m
<b>Net saving</b>					
Non-financial corporations	-6 489	-1 186	13 242	12 382	22 120
Financial corporations	5 231	10 021	8 412	14 608	17 778
General government	17 530	2 307	3 191	12 600	8 527
Households	6 175	12 087	3 320	-12 584	-15 227
<i>Total net saving</i>	22 447	23 230	28 165	27 006	33 198
Consumption of fixed capital	97 325	105 085	113 593	119 407	125 982
Net capital transfers receivable from non-residents	1 136	1 182	1 186	1 103	1 230
<b>Gross saving and capital transfers</b>	<b>120 908</b>	<b>129 497</b>	<b>142 944</b>	<b>147 517</b>	<b>160 410</b>
<b>Gross fixed capital formation</b>					
Private	125 711	120 246	134 623	156 671	169 681
Public corporations	9 018	8 811	10 092	10 781	11 243
General government	15 879	16 304	17 222	17 350	18 325
<i>Total gross fixed capital formation</i>	150 609	145 361	161 937	184 802	199 249
<b>Changes in inventories</b>					
Private non-farm	1 864	1 601	284	2 691	5 240
Farm and public authorities	-73	-537	226	-518	-564
<i>Total changes in inventories</i>	1 791	1 064	510	2 173	4 676
Acquisitions less disposals of non-produced non-financial assets	83	73	170	112	31
Statistical discrepancy(a)	—	—	—	—	2 388
Net lending to non-residents	-31 567	-17 003	-19 674	-39 568	-45 934
<b>Total capital accumulation and net lending</b>	<b>120 908</b>	<b>129 497</b>	<b>142 944</b>	<b>147 517</b>	<b>160 410</b>

(a) Expenditure-based discrepancy less income-based discrepancy.

Source: Australian System of National Accounts, 2003-04 (5204.0).

### 29.14 GROSS FIXED CAPITAL FORMATION, By sector — share of GDP



Source: Australian System of National Accounts, 2003-04 (5204.0).



Graph 29.15 shows net lending by institutional sector as a proportion of GDP. A positive percentage for a sector indicates that it is a net lender to other sectors; a negative percentage indicates that it is a net borrower. The household sector has been a net lender for most years. As a proportion of GDP, net lending by households peaked in 1974–75 at 8.4%. Since then it has trended downwards, and in 2003–04 household lending was –6.3%. Non-financial corporations have been net borrowers over the whole period from 1967–68 to 2003–04, and the amounts borrowed have fluctuated significantly from year to year. As a proportion of GDP, their net borrowing was 1.4% in 2003–04. After being a net borrower throughout the 1980s, the financial corporations sector returned to being a net lender in 1990–91 and has remained so in all years since except for 1998–99. In 2003–04 financial corporations net lending represented 2.0% of GDP. After recording a record level of borrowing as a proportion of GDP in 1992–93 (6.4%), general government borrowing steadily declined. From 1997–98 to 1999–2000 the sector was a net lender

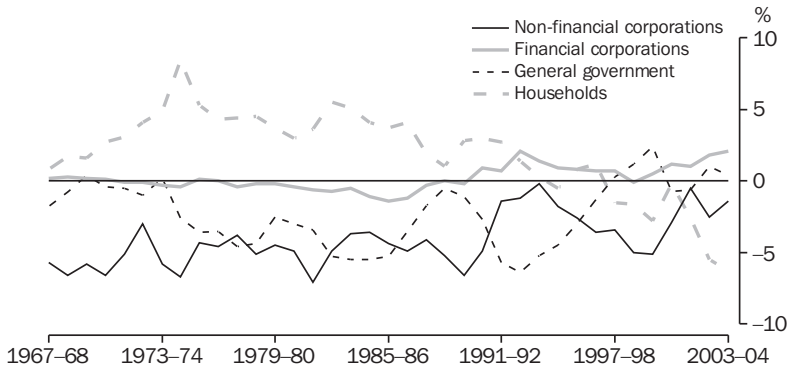
and in 2000–01 and 2001–02 general government was a net borrower before returning to being a net lender in 2002–03. In 2003–04 general government net lending represented 0.4% of GDP.

### External account

The external account is derived from the detailed balance of payments current and capital accounts (see the *International accounts and trade* chapter). It shows Australia’s exports and imports, incomes and transfers received by Australian residents from non-residents, and incomes and transfers payable to non-residents by Australian residents. The balance on the external account is net lending to non-residents. This is the same as the balance in the national capital account.

Tables 29.16 and 29.17 show the external account for a number of years between 1975–76 and 2003–04. Table 29.16 provides a series of snapshots at five-yearly intervals to 1995–96, while table 29.17 shows annual time series from 1999–2000 to 2003–04.

**29.15 NET LENDING, By sector — share of GDP**



Source: Australian System of National Accounts, 2003–04 (5204.0).

**29.16 EXTERNAL ACCOUNT, Current prices — five-yearly intervals**

	1975–76	1980–81	1985–86	1990–91	1995–96
	\$m	\$m	\$m	\$m	\$m
<b>Income account</b>					
Income of non-residents					
Imports of goods and services	11 163	25 530	47 199	66 948	101 078
Primary income receivable					
Compensation of employees	44	110	164	429	458
Property income receivable	1 587	3 147	8 879	20 552	26 215
<i>Total primary income receivable</i>	1 631	3 257	9 043	20 981	26 673
Secondary income receivable	773	1 264	1 797	2 422	3 228
<b>Total income of non-residents</b>	<b>13 567</b>	<b>30 051</b>	<b>58 039</b>	<b>90 351</b>	<b>130 979</b>
Uses of income of non-residents					
Exports of goods and services	11 225	22 604	38 948	66 259	99 095
Primary income payable					
Compensation of employees	59	119	165	432	610
Property income payable	370	741	2 025	3 325	6 530
<i>Total primary income payable</i>	429	860	2 190	3 757	7 140
Secondary income payable	486	823	1 413	2 875	3 292
Balance on external income account	1 427	5 764	15 488	17 460	21 452
<b>Total use of income of non-residents</b>	<b>13 567</b>	<b>30 051</b>	<b>58 039</b>	<b>90 351</b>	<b>130 979</b>
<b>Capital account</b>					
Balance on external income account	1 427	5 764	15 488	17 460	21 452
Capital transfers receivable	203	320	486	653	907
less Capital transfers payable	176	487	1 316	2 724	1 952
<i>Total net capital transfers</i>	27	-167	-830	-2 071	-1 045
<b>Gross saving and capital transfers</b>	<b>1 454</b>	<b>5 597</b>	<b>14 658</b>	<b>15 389</b>	<b>20 407</b>
Acquisitions less disposals of non-produced non-financial assets	—	—	—	7	25
Net lending (+) / net borrowing (-)	1 454	5 597	14 658	15 382	20 382
<b>Total capital accumulation and net lending (+) / net borrowing (-)</b>	<b>1 454</b>	<b>5 597</b>	<b>14 658</b>	<b>15 389</b>	<b>20 407</b>

Source: Australian System of National Accounts, 2003–04 (5204.0).

### 29.17 EXTERNAL ACCOUNT, Current prices

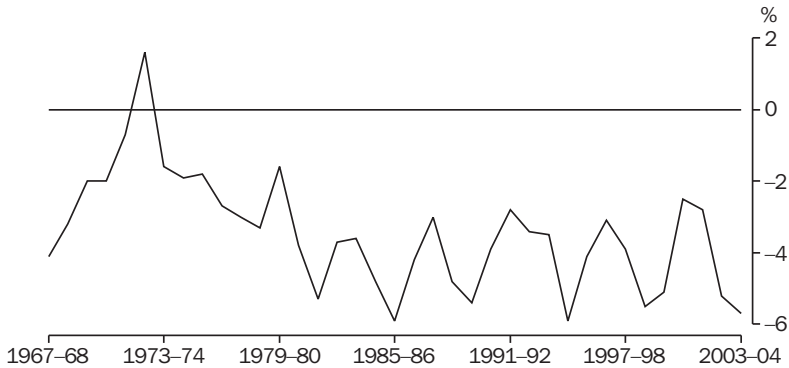
	1999-00	2000-01	2001-02	2002-03	2003-04
	\$m	\$m	\$m	\$m	\$m
<b>Income account</b>					
Income of non-residents					
Imports of goods and services	140 811	153 205	154 573	167 169	167 169
Primary income receivable					
Compensation of employees	963	1 057	1 196	1 324	1 616
Property income receivable	31 055	33 923	33 776	35 455	37 516
<i>Total primary income receivable</i>	<i>32 018</i>	<i>34 980</i>	<i>34 972</i>	<i>36 779</i>	<i>39 132</i>
Secondary income receivable	4 407	4 421	4 297	4 447	4 302
<b>Total income of non-residents</b>	<b>177 236</b>	<b>192 606</b>	<b>193 842</b>	<b>208 395</b>	<b>210 603</b>
Uses of income of non-residents					
Exports of goods and services	126 222	153 763	153 200	148 293	143 366
Primary income payable					
Compensation of employees	826	912	902	900	986
Property income payable	12 943	15 366	14 770	14 410	14 845
<i>Total primary income payable</i>	<i>13 769</i>	<i>16 278</i>	<i>15 672</i>	<i>15 310</i>	<i>15 831</i>
Secondary income payable	4 625	4 453	4 280	4 233	4 273
Balance on external income account	32 620	18 112	20 690	40 559	47 133
<b>Total use of income of non-residents</b>	<b>177 236</b>	<b>192 606</b>	<b>193 842</b>	<b>208 395</b>	<b>210 603</b>
<b>Capital account</b>					
Balance on external income account	32 620	18 112	20 690	40 559	47 133
Capital transfers receivable	1 199	1 260	1 357	1 301	1 399
less Capital transfers payable	2 335	2 442	2 543	2 404	2 629
<i>Total net capital transfers</i>	<i>-1 136</i>	<i>-1 182</i>	<i>-1 186</i>	<i>-1 103</i>	<i>-1 230</i>
<b>Gross saving and capital transfers</b>	<b>31 484</b>	<b>16 930</b>	<b>19 504</b>	<b>39 456</b>	<b>45 903</b>
Acquisitions less disposals of non-produced non-financial assets	-83	-73	-170	-112	-31
Net lending (+) / net borrowing (-)	31 567	17 003	19 674	39 568	45 934
<b>Total capital accumulation and net lending (+) / net borrowing (-)</b>	<b>31 484</b>	<b>16 930</b>	<b>19 504</b>	<b>39 456</b>	<b>45 903</b>

Source: Australian System of National Accounts, 2003-04 (5204.0).

Australia has generally been a net borrower of funds from overseas. In the Australian national accounts, this situation is reflected by a negative value for net lending to non-residents. The only exception to this pattern was in 1972-73. Net borrowing from non-residents (i.e. negative net lending to non-residents), expressed as a proportion of GDP, increased significantly during the early-1980s and has remained at relatively high levels since then. Graph 29.18 shows net lending to non-residents as a proportion of GDP since 1967-68.

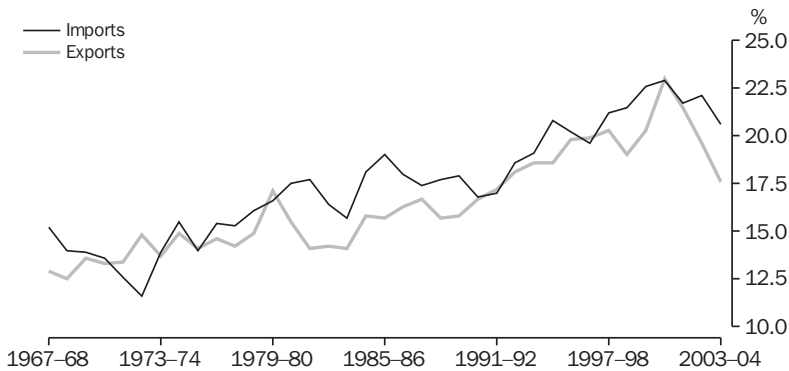
The importance of foreign trade to the Australian economy is illustrated by graph 29.19, which shows the ratios of imports and exports of goods and services to GDP for the financial years 1967-68 to 2003-04. In 2003-04 the import ratio was 20.6% and the export ratio, which has fallen for the past three years, was 17.6%.

### 29.18 NET LENDING TO NON-RESIDENTS, Share of GDP



Source: Australian System of National Accounts, 2003-04 (5204.0).

### 29.19 IMPORTS AND EXPORTS, Share of GDP



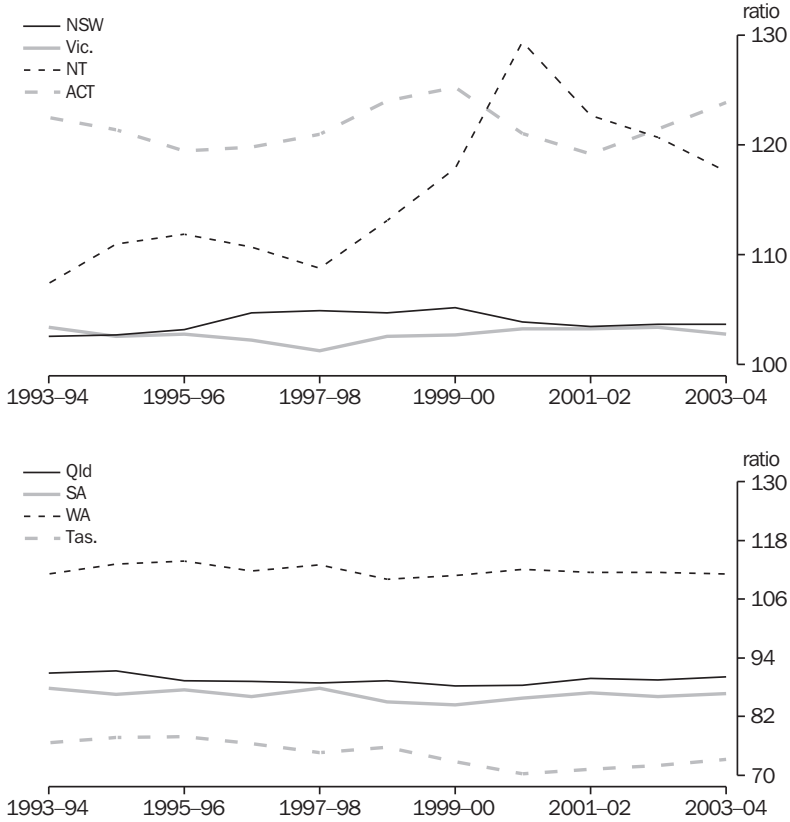
Source: Australian System of National Accounts, 2003-04 (5204.0).

## State accounts

As well as Australia's national accounts, the ABS produces annual accounts for each of Australia's states and territories. These provide estimates of gross state product (GSP) and state final demand. GSP is produced by summing the incomes generated in the production process (the income approach to measuring total production). State final demand is equal to the sum of government and household final consumption expenditure and public and private gross fixed capital formation. Estimates of state final demand and GSP are available in both current price and chain volume terms.

An important use of state accounts is to compare the performance of each state and territory. Graph 29.20 shows the ratio of GSP, in current prices, per person for each state and territory to the Australian value (GDP per person) since 1993-94. For New South Wales, Victoria, Western Australia, Northern Territory and Australian Capital Territory, GSP per person has been above the national average. For Queensland, South Australia and Tasmania, GSP per person has been below the national average.

## 29.20 GSP PER PERSON(a)



(a) Aust. = 100.0.

Source: Australian National Accounts: State Accounts, 2003-04 (5220.0).

## Input-output tables

### Basic structure

Input-Output (I-O) tables show the structure of a country's entire production system for a particular period, usually one year. They show which goods and services are produced by each industry and how they are used (e.g. some goods, such as cars, are sold to final consumers while others, such as steel, are used as inputs by other industries in producing more goods and services). The tables are based on the principle that the value of the output of each industry can be expressed as the sum of the values of all the inputs to that industry. These inputs include the use of the outputs of other

industries; any profits made from production; compensation of employees; and any taxes on production paid less any subsidies received. All the goods and services produced in a period are identified as being used as inputs by industries in their production process, being sold to final users of the goods and services (either in Australia, or overseas as exports), or contributing to the changes in inventories (an increase in inventories if more goods are produced than purchased, or a run-down in inventories if purchases exceed production). The net increase in inventories includes any timing difference between supply and use.

## Relationship to the national income and expenditure accounts

I-O tables are directly related to the GDP account. The income side of the GDP account shows the amount of income generated in the economy accruing to labour (in the form of compensation of employees) and to capital (as profits or, in national accounting terms, gross operating surplus and gross mixed income – the latter including some return to owners of businesses for their labour). The expenditure side of the account shows the value of goods and services entering into the various categories of final uses.

The I-O tables provide a much more detailed disaggregation of the GDP account than is available in the national income, expenditure and product accounts. The latter only shows details of the end results of economic activity, whereas the I-O tables show the flows of goods and services through the production process. The extra detail provided by the I-O tables is essential for many analyses.

### I-O table for seven industry sectors

Table 29.21 and diagram 29.22 show the flows of goods and services in respect of 1998–99.

The links between the table and the diagram are explained by working through the following formulae.

*Total intermediate use* – (\$557,889 million (m)) in the diagram is derived by summing from column 8 of the table: intermediate use (\$469,282m); taxes on products, net (\$18,325m); competing imports (\$70,203m); and complementary imports (\$79m).

*Domestic final use* – (\$606,345m) in the diagram is derived from the table by subtracting total exports (\$112,025m), column 12, from total final uses (\$718,370m), column 13.

*Imports* – (\$126,453m) is derived by summing from column 14 of the table: competing imports (\$126,007m); and complementary imports (\$446m). In the diagram it is dissected into imports for intermediate uses (\$70,282m); and imports for final uses (\$56,170m).

*Exports* – (\$112,025m) in the diagram is total exports, column 12 in the table.

*Total use* – (\$1,276,259m), which equals total supply, is the sum of domestic final use (\$606,345m); total intermediate use (\$557,889m); and exports (\$112,025m).

*Gross value added* – (\$542,831m) in the diagram is derived by summing from column 14 of the table: compensation of employees (\$286,610m); gross operating surplus and mixed income (\$235,465m); and other taxes on production (net) (\$20,756m).

*GDP (income measure)* – (\$591,917m) in the diagram is derived by summing from column 14 of the table: compensation of employees (\$286,610m); gross operating surplus and mixed income (\$235,465m); taxes on products (net) (\$49,086m); and other taxes on production (net) (\$20,756m).

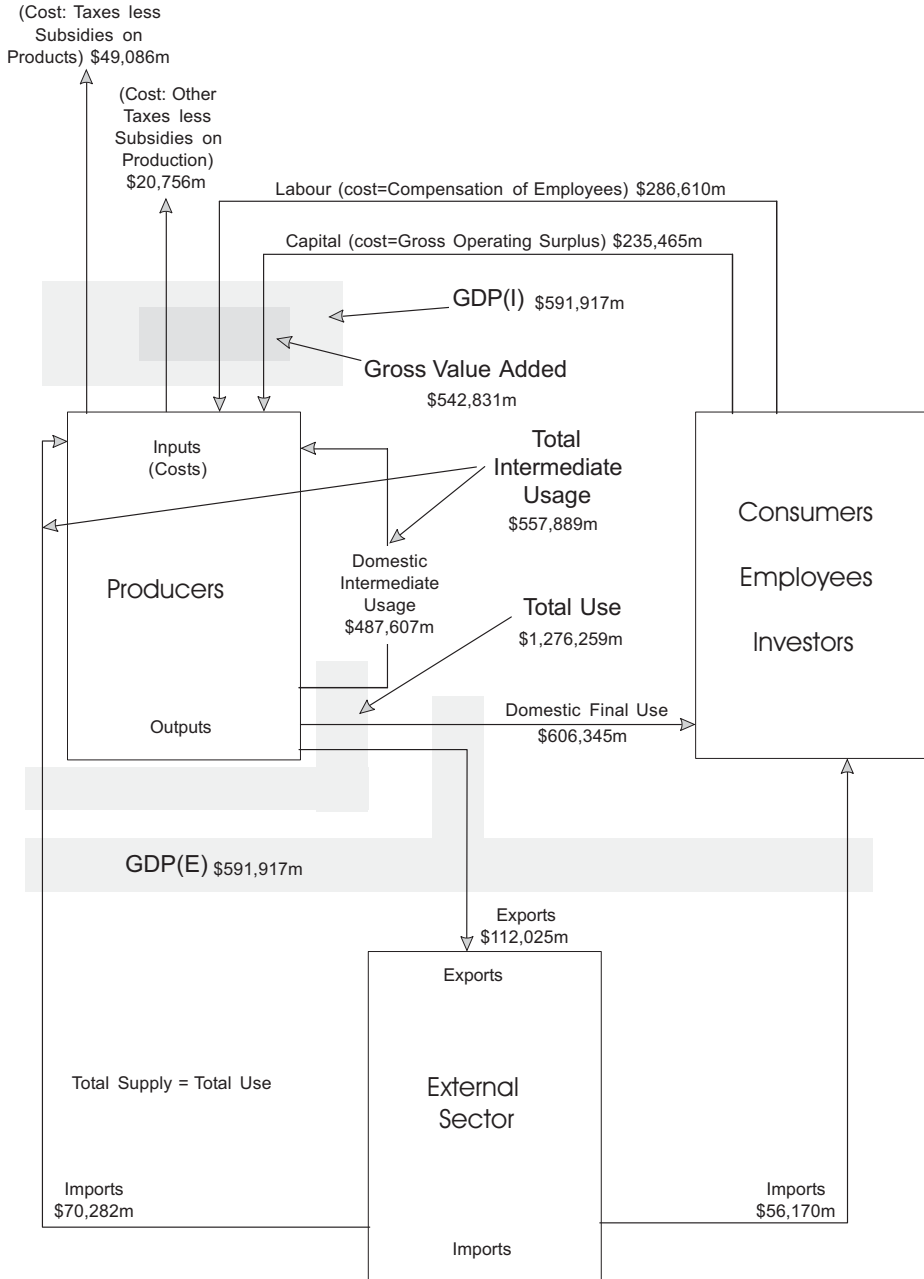
*GDP (expenditure measure)* – (\$591,917m) in the diagram is derived by summing domestic final use (\$606,345m); and exports (\$112,025m); and subtracting imports (\$126,453m).

**29.21 INDUSTRY BY INDUSTRY FLOW TABLE, Basic prices — 1998–99**

	1	2	3	4	5	6	7
	Agriculture	Mining	Manufacturing	Construction	Trade and transport	Service industries	Government admin. and defence
Supply	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Agriculture	4 062	25	14 755	136	429	1 872	62
Mining	29	4 201	8 283	499	224	4 238	63
Manufacturing	4 029	3 654	49 108	17 104	14 771	26 693	3 893
Construction	223	1 133	64	82	959	2 523	972
Trade and transportation	2 449	3 627	19 054	4 199	21 861	18 458	2 388
Service industries	4 563	5 388	28 053	11 158	52 298	114 357	9 205
Government admin. and defence	60	220	714	163	1 534	2 528	2 919
<i>Intermediate use</i>	15 415	18 248	120 031	33 341	92 076	170 669	19 502
Compensation of employees	4 699	5 889	38 456	14 817	53 307	149 389	20 053
Gross operating surplus and gross mixed income	12 907	17 879	28 966	18 727	16 414	137 186	3 386
Taxes on products (net)	851	673	2 205	1 169	4 862	8 088	477
Other taxes on production (net)	540	490	2 602	698	4 672	11 651	103
Competing imports	2 159	2 443	33 012	4 358	6 223	19 333	2 675
Complementary imports	—	—	47	—	5	27	—
<b>Australian production</b>	<b>36 572</b>	<b>45 621</b>	<b>225 317</b>	<b>73 111</b>	<b>177 561</b>	<b>496 342</b>	<b>46 196</b>
	8	9	10	11	12	13	14
	Intermediate usage = Sum (1 to 7)	Final consumption expenditure	Gross fixed capital formation	Changes in inventories	Exports	Final uses = Sum (9 to 12)	Total supply = Sum (8+13)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Agriculture	21 341	4 936	1 312	459	8 522	15 230	36 572
Mining	17 537	439	1 779	-100	25 968	28 085	45 621
Manufacturing	119 252	50 649	14 177	2 234	39 007	106 066	225 317
Construction	5 956	2 803	64 288	4	60	67 155	73 111
Trade and transportation	72 036	71 923	12 334	245	21 024	105 525	177 561
Service industries	225 022	241 036	17 442	—	12 837	271 319	496 342
Government admin. and defence	8 138	37 672	237	—	150	38 058	46 196
<i>Intermediate use</i>	469 282	409 458	111 569	2 843	107 568	631 438	1 100 720
Compensation of employees	286 610	—	—	—	—	—	286 610
Gross operating surplus and gross mixed income	235 465	—	—	—	—	—	235 465
Taxes on products (net)	18 325	22 071	7 716	717	256	30 761	49 086
Other taxes on production (net)	20 756	—	—	—	—	—	20 756
Competing imports	70 203	30 889	19 622	1 093	4 200	55 803	126 007
Complementary imports	79	266	92	10	—	367	446
<b>Australian production</b>	<b>1 100 720</b>	<b>462 684</b>	<b>138 999</b>	<b>4 662</b>	<b>112 025</b>	<b>718 370</b>	<b>1 819 090</b>
Gross value added	542 831	..	..	..	..	..	542 831
<b>Gross domestic product</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>591 917</b>

Source: Australian National Accounts: Input-Output Tables, 1998–99 (5209.0.55.001).

**29.22 THE AUSTRALIAN ECONOMY, Flow of goods and services — 1998–99**



**Notes:**

- (1) Flows are based on 1998–99 input-output tables.
- (2) This diagram shows the flows between producers and the rest of the economy. In this context a producer can also be a consumer (e.g. own account capital expenditure) or an investor.
- (3) The shaded areas identify the components that make up the main aggregates. Flows passing through the shaded areas are included in the calculation.

Source: Australian National Accounts: Input-Output Tables, 1998–99 (5209.0.55.001).



## Financial accounts

In addition to the Australian national accounts, the ABS produces annual and quarterly information on the levels of financial assets and liabilities of each institutional sector of the economy, the market for financial instruments, and inter-sectoral transactions in financial assets and liabilities classified by financial instrument (see the *Financial system* chapter). National and sectoral financial accounts, which show major financial aggregates, are published annually in *Australian System of National Accounts* (5204.0) and quarterly in *Australian National Accounts: Financial Accounts* (5232.0).

## National balance sheet

The national balance sheet provides estimates of the value of Australia's produced, non-produced and financial assets, its liabilities to the rest of the world, and the net worth (defined as the difference between total assets and liabilities, including the value of equity in Australian enterprises owned by non-residents) of the total economy. The major national and sectoral balance sheet tables are published in *Australian System of National Accounts* (5204.0). Balance sheets are provided for each of the four domestic sectors: non-financial corporations, financial corporations, general government and households (including unincorporated enterprises and non-profit institutions serving households).

The non-produced assets included in the balance sheet cover experimental estimates of the value of some of Australia's natural resources: subsoil assets, timber available for log production and land. The monetary estimates of natural resources contained in the balance sheet are underpinned by physical estimates of particular natural resources. Further, since valuation of natural resources is a difficult and contentious undertaking, the monetary estimates of these natural resources should be considered in conjunction with the physical estimates.

The natural resource estimates are used to monitor the availability and exploitation of these resources and to assist in the formulation of environmental policies. More generally, data on the level, composition and change in assets and liabilities shown in the balance sheet indicate the extent of economic resources available to and claims on a nation and each of its institutional sectors.

Sectoral balance sheets provide information necessary for analysing a number of topics; for example, the estimation of household liquidity; and the computation of widely used ratios, such as assets to liabilities, net worth to total liabilities, non-financial to financial assets, and debt to income. In a period of concern about the level of saving in Australia, national and sector balance sheets provide additional information on the relationships between consumption, saving and wealth accumulation.

## Real/volume balance sheets

An article introducing experimental real/volume balance sheets for Australia was published in the March quarter 2001 issue of *Australian National Accounts: National Income, Expenditure and Product* (5206.0). Subsequently, estimates have been published annually in *Australian System of National Accounts* (5204.0). The real/volume balance sheet is designed to remove the effect of price changes, in much the same way as for other real and volume estimates, and allow for comparisons of changes in the value of Australia's assets and liabilities over time, free of the direct effects of inflation.

Volume estimates for the major categories of fixed asset stocks described as 'produced assets' – such as dwellings, non-dwelling construction, and machinery and equipment – have been available for many years in the Australian national accounts. However, volume estimates for stocks of non-produced, non-financial assets (land and other natural resources, etc.) and real estimates of financial assets, liabilities and net worth (wealth) have only recently become available. The calculation of volume and real estimates for some of these components is subject to some practical and conceptual difficulties, and therefore the term 'experimental' has been attached to these initial estimates.

The values of non-financial assets, such as dwellings, equipment and standing timber, can be decomposed into prices and volumes. Volume indexes, which measure the volume change of an aggregate between one period and another, can thus be derived by holding prices the same in the two periods. The ABS calculates an annual volume index of an aggregate by dividing its value in one year with its value in the previous year, using the prices of the earlier of the two years – termed the base year – to derive the values for both years. Chain volume indexes are then derived by multiplying successive annual volume indexes from a reference year to the current year. For

example, starting with a year one reference year the chain volume index in year three is derived by multiplying the volume index for year one to year two by the volume index for year two to year three. ABS practice is to re-reference the chain indexes to the current price value of the aggregate in the year of the latest base year.

Financial assets and liabilities cannot be decomposed into prices and volumes, and so it is impossible to derive volume indexes for them. The same is true of gross operating surplus and other income flows, and is the reason why chain volume estimates of GDP cannot be derived by aggregating volume indexes of its income components. However, it is possible to deflate income flows, financial assets and liabilities by a price index in order to measure the purchasing power of the aggregate in question over a designated numeraire set of goods and services. Such measures are called 'real' estimates.

Real net worth has been derived by aggregating the chain volume estimates of the non-financial assets with the real estimates of financial assets less liabilities using the standard method of chain aggregation.

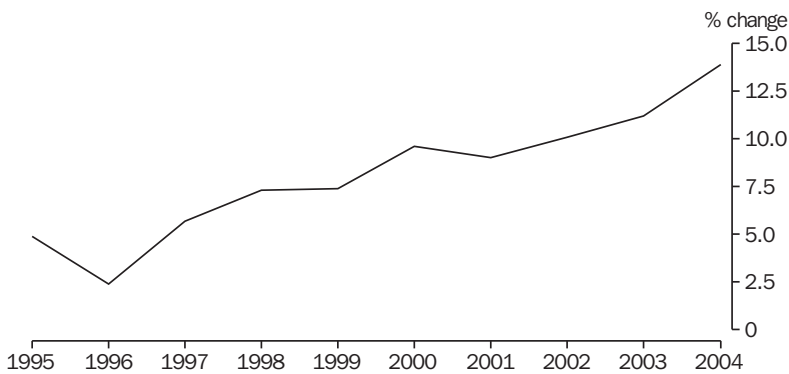
The ABS will continue to develop estimates of the value and volume of Australia's assets for inclusion in national balance sheets as additional data become available. Estimation techniques will be refined as research in Australia and abroad explores issues relating to the valuation of natural resources.

## Current price balance sheet estimates

Australia's net worth at 30 June 2004 was estimated at \$3,876.7b, an increase of \$473.8b (13.9%) since 30 June 2003 (table 29.24). Of the increase, \$31.0b was due to transactions (both capital and financial), and \$442.8b was due to revaluations and other flows (including discoveries of subsoil assets). Graph 29.23 shows that the net worth series has exhibited the strongest growth in the years since 1996–97 during which annual rates of at least 6% were achieved.

Total produced assets at 30 June 2004 were estimated at \$2,230.4b, an increase of 6.0% from the level at 30 June 2003 (table 29.24). The estimated value of produced assets rose at an average annual rate of 6.0% between 30 June 2000 and 30 June 2004 and consistently accounted for around 60% of net worth. At 30 June 2004, dwellings, non-dwelling construction, and machinery and equipment, represented about 92% of total produced assets. While computer software has consistently accounted for less than 2% of total produced assets over the period, the series has exhibited by far the strongest growth of produced assets, with an average annual rate between 30 June 2000 and 30 June 2004 of 8.9%.

**29.23 CHANGE IN TOTAL NET WORTH — 30 June**



Source: Australian System of National Accounts, 2003–04 (5204.0).

**29.24 NATIONAL BALANCE SHEET, Current prices — 30 June**

	2000	2001	2002	2003	2004
	\$b	\$b	\$b	\$b	\$b
<b>TOTAL ASSETS</b>	<b>3 305.4</b>	<b>3 633.8</b>	<b>3 942.4</b>	<b>4 345.0</b>	<b>4 961.1</b>
Non-financial assets	2 879.2	3 145.6	3 459.1	3 853.6	4 377.8
Produced assets	1 766.9	1 893.4	1 977.1	2 104.4	2 230.4
Fixed assets	1 662.3	1 784.2	1 867.1	1 992.4	2 113.9
Tangible fixed assets	1 636.1	1 753.4	1 833.6	1 957.0	2 077.3
Machinery and equipment	324.7	331.2	343.1	349.6	355.3
Non-dwelling construction	723.6	744.7	771.7	820.6	867.0
Livestock-fixed assets(a)	15.4	19.9	19.2	17.5	16.5
Dwellings	572.3	657.5	699.5	769.3	838.4
Intangible fixed assets	26.2	30.8	33.6	35.5	36.7
Computer software	25.5	30.0	32.8	34.6	35.8
Entertainment, literary or artistic originals	0.7	0.8	0.8	0.8	0.9
Inventories	104.6	109.2	110.0	112.0	116.5
Private non-farm(b)	83.4	88.0	87.4	90.2	94.4
Farm	6.8	7.1	7.4	7.0	6.5
Public authorities	3.8	3.0	3.0	2.9	2.8
Livestock-inventories	3.6	3.9	4.6	4.0	4.3
Plantation standing timber(c)	7.1	7.1	7.6	7.9	8.4
Non-produced assets(c)	1 112.3	1 252.2	1 481.9	1 749.2	2 147.4
Tangible non-produced assets	1 110.9	1 249.5	1 479.3	1 746.7	2 144.8
Land	906.5	991.4	1 154.5	1 400.2	1 760.4
Subsoil assets	200.3	252.0	318.3	339.6	376.8
Native standing timber	2.4	2.6	2.8	3.0	3.2
Spectrum	1.7	3.5	3.7	3.9	4.4
Intangible non-produced assets	1.4	2.7	2.6	2.6	2.7
Spectrum licences	1.4	2.7	2.6	2.6	2.7
Financial assets with the rest of the world	426.2	488.1	483.4	491.4	583.3
Monetary gold and SDRs	1.4	1.6	1.7	1.6	1.7
Currency and deposits	21.2	24.2	26.7	26.4	41.9
Securities other than shares	62.0	84.1	90.3	106.8	113.3
Loans and placements	39.2	57.2	61.2	61.1	78.6
Shares and other equity	282.0	294.3	278.0	269.5	322.2
Other accounts receivable	20.5	26.8	25.5	26.0	25.5
<b>LIABILITIES TO THE REST OF THE WORLD</b>	<b>754.9</b>	<b>854.6</b>	<b>881.7</b>	<b>942.2</b>	<b>1 084.4</b>
Currency and deposits	39.5	56.8	57.7	65.4	78.2
Securities other than shares	281.7	332.6	352.9	386.0	459.8
Loans and placements	85.0	96.7	106.7	113.3	104.4
Shares and other equity	338.1	358.1	353.2	363.1	429.9
Other accounts payable	10.6	10.3	11.3	14.3	12.2
<b>NET WORTH</b>	<b>2 550.5</b>	<b>2 779.2</b>	<b>3 060.7</b>	<b>3 402.9</b>	<b>3 876.7</b>
Memorandum items					
Consumer durables	162.9	171.5	180.1	186.3	194.8
Direct investment					
Foreign investment in Australia	196.2	201.2	215.9	237.2	254.0
Australian investment abroad	178.3	183.3	161.2	152.6	180.5
Non-rateable land	53.3	48.0	55.6	78.8	99.5

(a) Livestock-fixed assets included in the balance sheet include all animals and not just sheep and cattle as shown in the capital stock tables. (b) Includes for all periods the privatised marketing authorities. (c) Experimental estimates.

Source: Australian System of National Accounts, 2003–04 (5204.0).

**29.25 NATIONAL BALANCE SHEET, Real/volume(a) — 30 June**

	2000	2001	2002	2003	2004
	\$b	\$b	\$b	\$b	\$b
<b>TOTAL ASSETS</b>	<b>3 840.5</b>	<b>3 973.3</b>	<b>4 038.1</b>	<b>4 176.7</b>	<b>4 362.3</b>
Non-financial assets	3 384.7	3 465.6	3 549.1	3 689.8	3 795.0
Produced assets	1 852.3	1 936.8	1 976.1	2 070.6	2 148.8
Fixed assets	1 746.2	1 826.9	1 865.4	1 954.6	2 026.8
Tangible fixed assets	1 725.1	1 799.3	1 832.8	1 919.0	1 987.7
Machinery and equipment	313.6	325.8	339.8	359.4	380.3
Non-dwelling construction	767.5	774.9	784.7	800.5	818.2
Livestock-fixed assets(b)	19.1	20.7	19.3	17.2	15.8
Dwellings	672.4	689.9	713.1	741.9	773.5
Intangible fixed assets	22.6	28.2	32.7	35.6	39.0
Computer software	21.3	26.6	30.9	34.8	38.2
Entertainment, literary or artistic originals	0.8	0.8	0.8	0.8	0.9
Inventories	105.9	109.7	110.7	116.0	122.0
Private non-farm(c)	88.7	90.5	91.9	92.7	99.1
Farm	8.1	8.7	9.2	8.8	8.0
Public authorities	3.9	3.0	3.0	2.9	2.8
Livestock-inventories	4.1	3.8	4.3	3.8	3.8
Plantation standing timber(d)	6.6	6.9	7.5	7.9	8.3
Non-produced assets(d)	1 529.8	1 548.0	1 572.8	1 619.2	1 646.2
Tangible non-produced assets	1 528.4	1 545.3	1 570.3	1 616.8	1 643.7
Land	1 244.1	1 252.8	1 264.1	1 278.6	1 294.0
Subsoil assets	301.5	310.1	325.9	331.7	342.8
Native standing timber	2.9	2.9	2.9	2.9	2.9
Spectrum	1.7	3.4	3.5	3.7	4.0
Intangible non-produced assets	1.4	2.7	2.5	2.4	2.4
Spectrum licences	1.4	2.7	2.5	2.4	2.4
Financial assets with the rest of the world	455.2	504.3	488.4	486.9	567.3
Monetary gold and SDRs	1.5	1.6	1.7	1.5	1.7
Currency and deposits	22.6	25.0	27.0	26.2	40.8
Securities other than shares	66.2	86.9	91.2	105.9	110.2
Loans and placements	41.8	59.1	61.8	60.5	76.5
Shares and other equity	301.2	304.1	280.9	267.1	313.4
Other accounts receivable	21.9	27.7	25.8	25.8	24.8
<b>LIABILITIES TO THE REST OF THE WORLD</b>	<b>806.4</b>	<b>882.9</b>	<b>890.8</b>	<b>933.6</b>	<b>1 054.6</b>
Currency and deposits	42.2	58.6	58.3	64.8	76.1
Securities other than shares	300.9	343.6	356.5	382.5	447.2
Loans and placements	90.8	99.9	107.8	112.3	101.5
Shares and other equity	361.2	370.0	356.8	359.8	418.1
Other accounts payable	11.3	10.7	11.4	14.1	11.8
<b>NET WORTH</b>	<b>3 037.8</b>	<b>3 089.0</b>	<b>3 147.1</b>	<b>3 243.1</b>	<b>3 307.6</b>

(a) Reference year for volume and real measures is 2002–03. (b) Livestock-fixed assets included in the balance sheet include all animals and not just sheep and cattle as shown in the capital stock tables. (c) Includes for all periods the privatised marketing authorities. (d) Experimental estimates.

Source: Australian System of National Accounts, 2003–04 (5204.0).

## Real/volume balance sheet estimates

Table 29.25 presents real/volume balance sheet data for Australia. Real net worth (total assets less total liabilities to the rest of the world) grew by 8.9% between 30 June 2000 and 30 June 2004, compared with an increase of 52.0% in current prices.

Total assets, in real terms, grew by 13.6% during this period, driven mainly by increased volumes of dwellings (15.0%), machinery and equipment (21.3%), subsoil assets (13.7%), and real total financial assets with the rest of the world (24.6%). Real financial liabilities to the rest of the world increased by 30.8% between 30 June 2000 and 30 June 2004.

## Bibliography

### ABS products

*Australian National Accounts: National Income, Expenditure and Product* (5206.0)

*Australian National Accounts: State Accounts* (5220.0)

*Australian System of National Accounts* (5204.0)

*Information Paper: Introduction of Chain Volume Measures in the Australian National Accounts* (5248.0)

### Web sites

Organisation for Economic Co-operation and Development (OECD), last viewed October 2005 <<http://www.oecd.org>>. In addition to providing an overview of the history and structure of the organisation, this web site contains information on OECD publications and statistics which relate to a broad range of economic and social issues. Individual country surveys and reviews can also be found.

## INTERNATIONAL ACCOUNTS AND TRADE

This chapter presents statistics on Australia's international accounts, covering exports and imports of goods, international trade in services, international investment transactions, and levels of Australia's foreign financial assets and liabilities. Statistics are also provided on foreign ownership of equity in Australian enterprises.

These statistics are used by economic analysts and policy advisers to monitor, evaluate and forecast developments in Australia's external trade and external sector accounts for the purposes of domestic and international macroeconomic analysis and policy determination. They are used by governments, government agencies, businesses, industry associations, research institutions and others to analyse patterns of trade and assess particular types of transactions and financial claims and liabilities between Australian residents and non-residents, for purposes such as trade promotion and negotiations, and market and industry performance studies.

The chapter contains an article on the financial instrument *Kangaroo bonds*, which are bonds issued by non-residents on the Australian market.

## International accounts

International accounts cover the closely related and integrated balance of payments and international investment position statistics. Diagram 30.1 presents the broad structure and relationship of these statistics.

Australia's balance of payments provides a statistical statement that systematically summarises the economic transactions between residents of Australia and residents of other countries. Residents, who may be people or businesses, need not be Australian nationals. Transactions cover the provision (changes in ownership) of goods, services and income, financial claims on and liabilities to the rest of the world, and transfers without anything provided in exchange (such as gifts).

Australia's international investment position is a balance sheet of the stock of foreign financial assets and liabilities of Australian residents. International investment statistics integrate the balance sheet positions at two points in time with information on increases and decreases in the levels of these assets and liabilities as a result of the changes due to transactions (investment flows, including reinvestment of earnings) as shown in the financial account of the balance of payments, together with the other changes that affect either the value of the stock (price, exchange rate) or the volume of the stock (other adjustments) of financial assets and liabilities.

### Conceptual framework

Australia's international accounts statistics, which cover both the balance of payments and the international investment position, are compiled in accordance with international statistical standards as defined in the fifth edition of the International Monetary Fund's *Balance of Payments Manual (BPM5)*. The concepts of residency, transactions, valuation and time of recording are common to the balance of payments and international investment position statistics.

The balance of payments accounts, which present systematically the economic transactions between Australia and the rest of the world, incorporate four types of economic transactions. The first involves the provision of real resources, that is, transactions in goods, services and income. The

second involves the provision of financial resources, that is, financial assets and liabilities. The third covers those one-sided transactions of a current nature (described as current transfers) that are offsets to transactions in current real or financial resources undertaken without an exchange. Current resources are not associated with, nor do they finance, fixed assets. For example, famine relief, whether in cash or in kind, would have its offset in current transfers. The fourth type is capital transfers that offset transactions undertaken, without exchange, in fixed assets or in their financing. For example, the provision of foreign aid funds to build roads is classified as a capital transfer.

The first and third of these types of transactions make up the current account, while the second type makes up the financial account. The fourth type (capital transfers), together with a minor item for the acquisition and disposal of non-produced, non-financial assets (such as patents), make up the capital account.

The double entry accounting system is used for recording balance of payments transactions. Under this system, credit entries, which are shown with no arithmetic sign, are used to record the provision of real or financial resources. Credit entries are therefore required for exports of goods and services, and for income earned by residents (a return for providing the use of financial capital to non-residents, or for providing the labour of Australian residents). Credit entries are also required for providing financial resources to the rest of the world, either as new liabilities (such as issuing bonds), or through returning existing foreign assets (such as selling foreign equity securities to non-residents). Therefore, any credit entry in the financial account will reflect either an increase in Australia's foreign liabilities (more foreign debt or foreign ownership), or a decrease in Australia's foreign financial assets (such as a run-down in foreign exchange reserves).

Conversely, debit entries, which are identified by a minus sign (-), are used to record the provision by the rest of the world of real or financial resources to Australia, and are shown against imports of goods and services, income earned from Australia by non-residents, and financial transactions involving either an increase in foreign financial assets or a decrease in foreign liabilities.

### 30.1 RELATIONSHIP BETWEEN THE BALANCE OF PAYMENTS AND INTERNATIONAL INVESTMENT POSITION STATEMENTS

		<i>Balance of Payments</i>						
		<b>CURRENT ACCOUNT</b> <b>Goods</b> Credits Debits <b>Services</b> Credits Debits <b>Income</b> Credits Debits <b>Current transfers</b> Credits Debits						
		<b>CAPITAL ACCOUNT</b> Capital transfers Acquisition/disposal of non-produced, non-financial assets <b>Balance on Capital Account</b>						
<i>International Investment Position</i>	<b>Position at Beginning of Period</b>  <b>Australian Investment Abroad</b> Direct investment Portfolio investment Financial derivatives Other investment Reserve assets  <b>Foreign Investment in Australia</b> Direct investment Portfolio investment Financial derivatives Other investment  <b>Net International Investment Position</b>	<b>FINANCIAL ACCOUNT</b>  <b>Transaction Changes</b>  <b>Direct Investment</b> Abroad In Australia  <b>Portfolio Investment</b> Assets Liabilities  <b>Financial Derivatives</b> Assets Liabilities  <b>Other Investment</b> Assets Liabilities  <b>Reserve Assets</b>  <b>Balance on Financial Account</b>	<b>Other Changes in Position Reflecting:</b>  <table border="1"> <tr> <td>Price Changes</td> <td>Exchange Rate Changes</td> <td>Other Adjustments</td> </tr> </table>		Price Changes	Exchange Rate Changes	Other Adjustments	<b>Position at End of Period</b>  <b>Australian Investment Abroad</b> Direct investment Portfolio investment Financial derivatives Other investment Reserve assets  <b>Foreign Investment in Australia</b> Direct investment Portfolio investment Financial derivatives Other investment  <b>Net International Investment Position</b>
	Price Changes	Exchange Rate Changes	Other Adjustments					
						← Investment income from International Investment		
		<b>Net errors and omissions</b> (the sum, with sign reversed, of the balances on the current, capital and financial accounts)						

Source: *Balance of Payments and International Investment Position, Australia: Concepts, Sources and Methods (5331.0)*.



Transactions in a double entry accounting system are reflected in pairs of equal credit and debit entries. For example, an export transaction for which payment is received through the banking system involves a credit entry for providing the good to a non-resident and a debit entry for being provided with foreign exchange assets as payment for the export. Any entries for which there is no *quid pro quo* are matched by special offsetting entries. Such offsetting entries are made in the categories 'current transfers' (when offsetting the provision of current resources such as food for famine relief) and 'capital transfers' (when offsetting the provision of capital resources such as development aid to build a new dam).

In principle, the net sum of all credit and debit entries is zero. In practice, some transactions are not measured accurately (errors), while others are not measured at all (omissions). Equality between the sums of the credit and debit entries is then brought about by the inclusion of a 'net errors and omissions' item which balances the accounts.

Transactions and other changes should be valued in the balance of payments at market prices. However, for practical reasons, transactions are generally valued in the statistics at transaction prices as this basis provides the closest practical approximation to the market price principle.

Transactions and other changes recorded in the balance of payments should be recorded at the time of change of ownership. For current account transactions, this occurs when ownership of goods changes, or services are provided. Investment income is recorded on a full accrual basis, that is, when it is earned. Reinvested earnings are calculated for the earnings of the period of account, using current replacement cost estimates of depreciation and excluding holding gains and losses. Current and capital transfers should be recorded when the goods, services, cash, etc., to which they are offsets, change ownership. Those transfers, such as taxes and fines, which are imposed by one party on another, should ideally be recorded at the time of occurrence of the underlying transactions or other flows or events that give rise to the liability to pay. For financial account transactions, the time of recording is at the change of ownership of the financial claims, which by convention is the time at which transactions are entered in the books of the transactors.

In practice, the nature of the available data sources is such that the time of recording of transactions will often differ from the time of change of ownership. Where practical, timing adjustments are made for transactions to ensure that they are recorded in the time period in which change of ownership occurs.

International investment position statistics are the balance sheet of the levels (stock) of Australia's foreign financial assets and liabilities. The investment position at the end of a specific period reflects the financial transactions (investment flows) and other changes (non-transaction changes) due to exchange rate effects, other price effects and changes in the volume of these assets and liabilities, all of which affect the level of assets and liabilities that occurred during the period.

While the international investment position statistics form an integral part of Australia's balance of payments (diagram 30.1), they are also useful in their own right, for example, in determining the impact of foreign investment policies and the level of Australia's foreign assets and liabilities, including foreign debt. They are also useful when analysing the behaviour of financial markets.

As with the balance of payments, market price is the principal method of valuation in international investment position statistics, and financial assets and liabilities are recognised on a change of ownership basis, that is, at the time when the foreign financial asset or liability is acquired, sold, repaid or otherwise disposed of. By convention, this is generally taken to be the time at which the event is recorded in the books.

## Classifications

In the following tables, estimates are presented of the current, capital and financial accounts of Australia's balance of payments. Current and capital account transactions are generally recorded on a gross basis. This means that, for each item in the current and capital accounts, the credit entries are recorded separately from the debit entries. For example, goods credits are shown separately from goods debits. For each item in the financial account, however, debit and credit transactions are combined to produce a single result for the item which may be either a net credit or a net debit. For example, in a given period, non-resident purchases of shares issued by companies in Australia (credit) are netted against sales of Australian shares to residents by non-residents (debit) and the net result is recorded in the financial account as either a net credit or a net debit.

The current account records transactions between Australian residents and non-residents in goods, services, income and current transfers. Goods are classified into five main components: general merchandise; goods for processing; goods procured in ports by carriers; repairs on goods; and non-monetary gold. Changes of ownership from residents to non-residents are recorded as credits (also referred to as exports), and changes from non-residents to residents are recorded as debits (also referred to as imports). Services, comprising 11 primary components, cover services provided by Australian residents to non-residents (credits) and by non-residents to residents (debits), together with transactions in a few types of goods (e.g. goods purchased by travellers). Income, comprising investment income (e.g. dividends and interest) and compensation of employees (e.g. wages), covers income earned by Australian residents from non-residents (credits) or earned by non-residents from residents (debits). Current transfers cover the offsetting entries required when resources are provided, without something of economic value being received in return. When non-residents provide something to Australian residents, offsetting credits are required; when residents provide resources to non-residents, offsetting debits are required. General government transfers (e.g. official foreign aid) are distinguished from transfers made by other sectors.

The capital account covers capital transfers (such as migrants' funds), with general government distinguished from other sectors, and the acquisition/disposal of non-produced, non-financial assets.

The financial account shows transactions in foreign financial assets and liabilities. The primary split is by functional type of capital, (direct investment, portfolio investment, financial derivatives, other investment and reserve assets) further split into assets and liabilities where appropriate. Within the asset and liability categories, details are presented of instruments of investment and resident sectors (for other than direct investment), and in some cases the contractual maturity of the instruments.

The primary distinction used in international investment position statistics is between assets and liabilities. Assets primarily represent Australian investment abroad, and liabilities primarily represent foreign investment in Australia. The difference between the two represents the net

international investment position (graph 30.8 and table 30.9). Australian investment abroad refers to the stock of foreign financial assets owned by Australian residents, after netting off any liabilities of Australian direct investors to their direct investment enterprises abroad. Conversely, foreign investment in Australia refers to the stock of financial assets in Australia owned by non-residents, after netting off any claims of Australian direct investment enterprises on their foreign direct investors. The first breakdown below this asset/liability presentation is by functional type of capital, with details of the instruments of investment (table 30.11), the resident sectors and contractual maturities involved.

While many types of instruments of investment can be identified, similar instruments are combined for analytical reasons and ease of reporting. Some of those instruments are:

*Equity capital* – which includes ordinary and participating preference shares, units in trusts and net equity in branches

*Reinvestment of earnings of direct investors* – which refers to income retained within the enterprise from after-tax profits that is attributable to direct investors

*Debt securities* – which include longer term, generally tradeable security instruments such as bonds and debentures, with a contractual maturity of more than one year after issue, together with money market instruments (e.g. bills, commercial finance paper, negotiable certificates of deposit) with a contractual maturity of one year or less

*Trade credits* – which cover the direct extension of credit by suppliers and buyers for goods and services, including advances for work in progress or to be undertaken

*Loans* – which cover the direct lending of funds either, without a security evidencing the transaction, or with non-negotiable documentation. They include financial leases

*Deposits* – which comprise both transferable and other deposits

*Other assets and liabilities* – which consist of miscellaneous accounts in respect of interest, dividends, etc.

## Statistical overview

The balance on current account for 2004–05 was a deficit of \$57.2 billion (b), an increase of \$9.4b (20%) on the previous year (table 30.2). The net income deficit rose \$7.5b (32%) with an increase in income debits of \$11.2b (28%) partly offset by an increase in income credits of \$3.7b (22%). The deficit on goods and services was \$25.5b, an increase of \$1.8b on the 2003–04 deficit of \$23.8b. The net goods deficit rose by \$0.1b and the net services deficit rose by \$1.7b on the previous year.

The surplus on capital account increased by \$0.1b (10%) to \$1.2b in 2004–05.

The balance on financial account recorded a net inflow of \$55.7b, up \$9.8b (21%) on the previous year. Direct investment recorded a net inflow of \$56.9b, a \$73.0b turnaround on the net outflow of \$16.0b in 2003–04. Contributing to the net inflow was a rise in Australian direct investment abroad of \$83.0b to \$55.4b and a fall of \$10.1b in the net inflow of direct investment into Australia. The net inflow on portfolio investment decreased \$74.2b, while other investment recorded a turnaround of \$12.4b to record a net outflow of \$1.8b in 2004–05. Reserve assets rose \$3.0b, while financial derivatives recorded a turnaround of \$1.6b to be \$0.7b in 2004–05.

### 30.2 BALANCE OF PAYMENTS, Summary

	2000–01	2001–02	2002–03	2003–04	2004–05
	\$m	\$m	\$m	\$m	\$m
<b>Current account</b>	<b>-18 147</b>	<b>-21 057</b>	<b>-41 581</b>	<b>-47 780</b>	<b>-57 170</b>
Goods and services	558	-1 373	-18 876	-23 777	-25 534
Credits	153 763	153 200	148 293	143 484	162 308
Debits	-153 205	-154 573	-167 169	-167 261	-187 842
Goods	-308	-992	-18 478	-23 522	-23 599
Credits	120 216	120 950	115 800	109 504	127 321
Debits	-120 524	-121 942	-134 278	-133 026	-150 920
Services	866	-381	-398	-255	-1 935
Credits	33 547	32 250	32 493	33 980	34 987
Debits	-32 681	-32 631	-32 891	-34 235	-36 922
Income	-18 737	-19 667	-22 491	-23 734	-31 216
Credits	16 278	15 586	15 499	16 786	20 518
Debits	-35 015	-35 253	-37 990	-40 520	-51 734
Current transfers	32	-17	-214	-269	-420
Credits	4 453	4 280	4 233	4 273	4 269
Debits	-4 421	-4 297	-4 447	-4 542	-4 689
<b>Capital and financial account</b>	<b>17 388</b>	<b>20 165</b>	<b>41 285</b>	<b>47 016</b>	<b>56 850</b>
Capital account	1 109	1 016	991	1 095	1 200
Capital transfers	1 182	1 186	1 103	1 167	1 203
Credits	2 442	2 543	2 404	2 571	2 749
Debits	-1 260	-1 357	-1 301	-1 404	-1 546
Net acquisition/disposal of non-produced, non-financial assets	-73	-170	-112	-72	-3
Financial account	16 279	19 149	40 294	45 921	55 650
Direct investment	7 910	1 336	13 626	-16 044	56 922
Abroad	-14 353	-21 775	-7 773	-27 674	55 355
In Australia	22 263	23 111	21 399	11 630	1 568
Portfolio investment	11 067	8 944	17 367	78 599	4 357
Financial derivatives	-538	204	-1 037	-910	701
Other investment	6 720	7 888	15 958	-10 597	1 792
Reserve assets	-8 880	777	-5 620	-5 127	-8 123
<b>Net errors and omissions</b>	<b>759</b>	<b>892</b>	<b>296</b>	<b>764</b>	<b>320</b>

Source: Balance of Payments and International Investment Position, Australia (5302.0).

Graph 30.3 shows the differing influences of the trade balance and the net income deficit on the balance on current account. The net income deficit rose from \$12.2b in 1988–89 to \$31.2b in 2004–05. The underlying level of net income drives the level and direction of the current account deficit, as Australia continues to service its external liabilities. The trade deficit moved from a deficit of \$6.9b in 1988–89 to a deficit of \$25.5b in 2004–05 but fluctuated quite significantly over this period.

Table 30.4 describes the annual levels of Australia’s official reserve assets and both the end of year and period average exchange rates for the major currencies, special drawing rights, and the trade weighted index.

### International trade in goods and services (balance of payments basis)

Australia’s international trade in goods and services for the six years to 2004–05 is shown in tables 30.5 (exports or credits) and 30.6 (imports or debits). The tables provide both current price and chain volume measures.

The components of goods shown in tables 30.5 and 30.6 are defined in terms of groupings of items in the United Nations Broad Economic

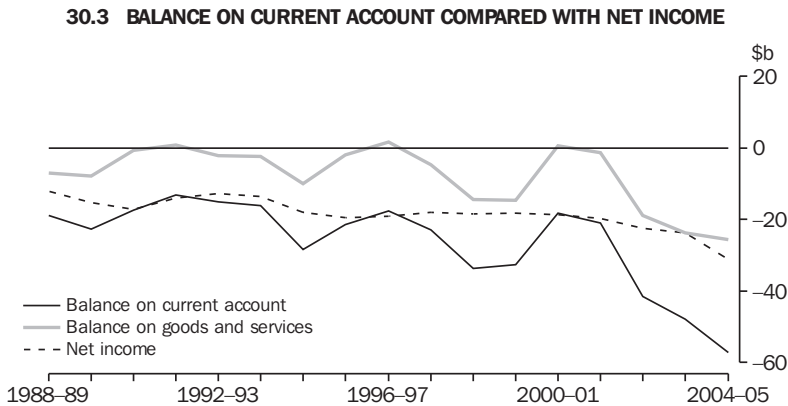
Categories (BEC) for credits, and a version of the BEC for balance of payments purposes, modified for debits.

The current price value of a transaction may be expressed as the product of a price and quantity.

Chain volume measures of exports and imports remove the effects of price changes. They provide measures, in dollar values, which indicate changes in the actual volume of exports and imports.

There are, however, many transactions recorded in statistics of international trade in goods and services for which it is not possible to apply such an approach. In such cases it is necessary to make assumptions and approximations (e.g. revaluing by means of the price index which is considered to be most closely related to the commodity involved).

In current price terms, the balance on goods and services recorded a deficit of \$25.5b in 2004–05, an increase of \$1.8b (7%) on the \$23.8b deficit recorded in 2003–04. Between these two years, goods and services credits rose \$18.8b (13%) to \$162.3b while debits rose \$20.6b (12%) to \$187.8b.



Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

### 30.4 RESERVE ASSETS AND EXCHANGE RATES

	2000-01	2001-02	2002-03	2003-04	2004-05
RESERVE ASSETS(a) (\$m)					
<b>Total reserve assets</b>	<b>-37 951</b>	<b>-37 435</b>	<b>-40 760</b>	<b>-50 342</b>	<b>-56 170</b>
Monetary gold	-1 367	-1 445	-1 329	-1 473	-1 468
Special drawing rights	-197	-216	-226	-256	-251
Reserve position in IMF	-2 412	-2 992	-3 185	-2 497	-1 734
Foreign exchange	-33 975	-32 782	-36 020	-46 117	-52 717
Currency and deposits	-11 340	-11 761	-10 254	-23 420	-32 464
Securities	-22 562	-21 137	-25 758	-22 695	-20 222
Financial derivatives (net)	-73	116	-8	-2	-31
EXCHANGE RATES – UNITS OF FOREIGN CURRENCY PER A\$					
End of period(a)					
United States dollar	0.5075	0.5648	0.6674	0.6889	0.7637
United Kingdom pound sterling	0.3603	0.3700	0.4038	0.3815	0.4224
Euro	0.6002	0.5715	0.5840	0.5702	0.6315
Japanese yen	62.94	67.48	79.99	74.82	84.14
Special drawing rights	0.4076	0.4277	0.4761	0.4694	0.5234
Period average(b)					
United States dollar	0.5379	0.5239	0.5847	0.7136	0.7529
United Kingdom pound sterling	0.3704	0.3632	0.3685	0.4102	0.4052
Euro	0.6023	0.5850	0.5577	0.5981	0.5918
Japanese yen	61.49	66.10	70.01	78.91	80.45
Special drawing rights	0.4177	0.4135	0.4313	0.4933	0.5024
TRADE-WEIGHTED INDEX OF VALUE OF THE A\$(c)					
End of period(a)	49.7	52.3	59.4	59.1	64.5
Period average(b)	50.3	50.7	53.5	61.5	62.7

(a) At 30 June. (b) Exchange rates and the trade-weighted index are provided by the Reserve Bank of Australia in respect of each trading day. Period averages are derived from these rates. (c) May 1970 = 100.0. The trade-weighted index is reweighted annually and on special occasions as required.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

Over the same period, goods credits rose \$17.8b (16%) to \$127.3b, with rural goods up \$1.1b and non-rural goods up \$16.8b. Goods debits rose \$17.9b (13%) to \$150.9b. Consumption goods rose \$4.2b, capital goods rose \$3.8b, while intermediate and other goods rose \$9.8b. Contributing to the rise in the intermediate and

other goods were imports of fuels and lubricants, up \$4.8b to \$14.8b, and processed industrial supplies, up \$2.0b to \$14.0b.

More detailed information on exports and imports of goods, on a merchandise trade basis without adjustment to a balance of payments basis, and trade in services, is shown later in this chapter.

### 30.5 GOODS AND SERVICES CREDITS

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
AT CURRENT PRICES					
<b>Goods and services credits</b>	<b>153 763</b>	<b>153 200</b>	<b>148 293</b>	<b>143 484</b>	<b>162 308</b>
Goods credits	120 216	120 950	115 800	109 504	127 321
General merchandise	112 806	113 331	107 108	101 530	119 472
Rural goods	29 164	30 085	25 484	24 560	25 668
Meat and meat preparations	5 796	6 246	5 655	5 758	6 944
Cereal grains and cereal preparations	5 937	6 481	4 487	5 094	5 157
Wool and sheepskins	3 897	3 687	3 545	2 778	2 838
Other rural	13 534	13 671	11 797	10 930	10 729
Non-rural goods	83 642	83 246	81 624	76 970	93 804
Metal ores and minerals	15 205	14 774	14 523	14 888	19 730
Coal, coke and briquettes	10 844	13 430	11 987	11 001	17 063
Other mineral fuels	13 464	10 940	11 049	8 766	11 121
Metals (excl. non-monetary gold)	10 146	9 650	8 711	7 759	8 675
Machinery	8 797	7 999	7 362	6 839	7 497
Transport equipment	5 041	5 686	6 273	5 155	4 942
Other manufactures	13 530	13 758	13 485	13 276	14 057
Other non-rural (incl. sugar)	6 615	7 009	8 234	9 286	10 719
Beverages	1 931	2 287	2 605	2 620	2 836
Sugar, sugar preparations and honey	1 330	1 610	1 363	1 123	n.p.
Other	3 354	3 112	4 266	5 543	n.p.
Other goods	7 410	7 619	8 692	7 974	7 849
Services credits	33 547	32 250	32 493	33 980	34 987
CHAIN VOLUME MEASURES(a)(b)					
<b>Goods and services credits</b>	<b>144 234</b>	<b>142 169</b>	<b>141 211</b>	<b>143 484</b>	<b>147 067</b>
Goods credits	108 137	108 439	108 141	109 504	113 122
General merchandise	100 233	100 758	99 771	101 530	105 676
Rural goods	27 909	26 965	23 517	24 559	25 618
Meat and meat preparations	6 200	5 942	6 010	5 758	6 409
Cereal grains and cereal preparations	5 426	5 520	3 754	5 094	5 502
Wool and sheepskins	3 918	3 416	2 735	2 778	3 161
Other rural	12 517	12 195	11 203	10 930	10 548
Non-rural goods	72 469	73 835	76 261	76 971	80 056
Metal ores and minerals	12 973	13 469	14 238	14 887	16 135
Coal, coke and briquettes	9 730	9 970	10 438	11 001	11 649
Other mineral fuels	11 005	10 818	10 129	8 765	8 917
Metals (excl. non-monetary gold)	9 170	9 816	9 131	7 759	7 441
Machinery	7 388	6 847	6 680	6 838	7 637
Transport equipment	4 599	4 905	5 577	5 156	4 964
Other manufactures	12 061	12 234	12 540	13 276	13 507
Other non-rural (incl. sugar)	5 845	6 159	7 656	9 286	9 805
Beverages	1 691	1 995	2 394	2 619	n.p.
Sugar, sugar preparations and honey	933	1 058	1 123	1 123	n.p.
Other	3 154	2 997	4 098	5 542	2 698
Other goods	7 886	7 618	8 389	7 973	7 448
Services credits	36 097	33 730	33 070	33 980	33 945

(a) Reference year is 2003-04. (b) Chain volume measures for years other than 2003-04 and 2004-05 are not additive.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

### 30.6 GOODS AND SERVICES DEBITS

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
AT CURRENT PRICES					
<b>Goods and services debits</b>	<b>-153 205</b>	<b>-154 573</b>	<b>-167 169</b>	<b>-167 261</b>	<b>-187 842</b>
Goods debits	-120 524	-121 942	-134 278	-133 026	-150 920
General merchandise	-116 165	-116 802	-128 645	-127 900	-145 798
Consumption goods	-35 775	-37 422	-41 228	-42 916	-47 147
Food and beverages, mainly for consumption	-4 483	-4 687	-5 067	-5 167	-5 768
Household electrical items	-3 000	-3 166	-3 657	-3 793	-4 019
Non-industrial transport equipment	-9 627	-9 930	-11 302	-12 326	-13 005
Textiles, clothing and footwear	-4 811	-4 849	-5 237	-5 078	-5 813
Toys, books and leisure goods	-3 359	-3 494	-3 740	-3 593	-3 744
Consumption goods n.e.s.	-10 495	-11 296	-12 225	-12 959	-14 798
Capital goods	-25 739	-27 208	-31 554	-32 118	-35 961
Machinery and industrial equipment	-8 876	-9 502	-11 007	-11 064	-13 408
ADP equipment	-5 260	-5 055	-4 908	-5 138	-5 761
Telecommunications equipment	-4 379	-3 643	-3 619	-4 105	-4 567
Civil aircraft	-609	-1 513	-3 887	-3 061	-2 496
Industrial transport equipment n.e.s.	-2 940	-3 613	-3 881	-4 144	-4 978
Capital goods n.e.s.	-3 675	-3 882	-4 252	-4 606	-4 751
Intermediate and other merchandise goods	-54 651	-52 172	-55 863	-52 866	-62 690
Food and beverages, mainly for industry	-592	-577	-736	-625	-659
Primary industrial supplies n.e.s.	-1 133	-1 117	-1 220	-1 079	-1 052
Fuels and lubricants	-10 358	-8 823	-10 393	-9 917	-14 764
Parts for transport equipment	-7 089	-6 827	-7 258	-6 548	-7 012
Parts for ADP equipment	-2 255	-2 159	-2 011	-1 812	-1 788
Other parts for capital goods	-9 072	-8 216	-8 605	-8 553	-9 490
Organic and inorganic chemicals	-3 777	-3 447	-3 089	-3 048	-3 623
Paper and paperboard	-2 311	-2 225	-2 326	-2 242	-2 313
Textile yarn and fabrics	-1 863	-1 830	-1 839	-1 576	-1 453
Iron and steel	-1 437	-1 765	-1 960	-2 026	-3 010
Plastics	-2 193	-2 182	-2 478	-2 177	-2 429
Processed industrial supplies n.e.s.	-11 251	-11 441	-12 238	-12 029	-14 043
Other merchandise goods	-1 320	-1 563	-1 710	-1 234	-1 054
Other goods	-4 359	-5 140	-5 633	-5 126	-5 122
Services debits	-32 681	-32 631	-32 891	-34 235	-36 922

For footnotes see end of table.

...continued



**30.6 GOODS AND SERVICES DEBITS** — *continued*

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
CHAIN VOLUME MEASURES(a)(b)					
<b>Goods and services debits</b>	<b>-129 406</b>	<b>-131 728</b>	<b>-148 756</b>	<b>-167 262</b>	<b>-186 927</b>
Goods debits	-99 491	-102 731	-119 134	-133 027	-150 332
General merchandise	-95 250	-97 959	-113 902	-127 900	-145 443
Consumption goods	-31 895	-32 941	-37 797	-42 917	-48 365
Food and beverages, mainly for consumption	-4 284	-4 465	-4 760	-5 167	-5 724
Household electrical items	-2 365	-2 532	-3 201	-3 793	-4 441
Non-industrial transport equipment	-9 326	-9 201	-10 747	-12 326	-13 370
Textiles, clothing and footwear	-3 978	-3 844	-4 447	-5 079	-6 055
Toys, books and leisure goods	-2 705	-2 817	-3 258	-3 593	-3 840
Consumption goods n.e.s.	-9 315	-10 137	-11 388	-12 958	-14 936
Capital goods	-19 279	-21 075	-26 851	-32 119	-38 236
Machinery and industrial equipment	-7 498	-7 945	-9 850	-11 064	-13 488
ADP equipment	-2 457	-2 868	-3 567	-5 138	-6 725
Telecommunications equipment	-3 051	-2 596	-2 848	-4 105	-5 454
Civil aircraft	-532	-1 263	-3 445	-3 061	-2 481
Industrial transport equipment n.e.s.	-2 688	-3 273	-3 588	-4 144	-5 036
Capital goods n.e.s.	-3 125	-3 267	-3 798	-4 607	-5 051
Intermediate and other merchandise goods	-44 407	-44 190	-49 305	-52 866	-58 842
Food and beverages, mainly for industry	-640	-616	-647	-626	-649
Primary industrial supplies n.e.s.	-1 034	-1 034	-1 127	-1 080	-1 031
Fuels and lubricants	-8 767	-8 928	-9 450	-9 917	-11 241
Parts for transport equipment	-6 045	-5 681	-6 380	-6 548	-7 211
Parts for ADP equipment	-1 067	-1 238	-1 466	-1 812	-2 078
Other parts for capital goods	-6 895	-6 352	-7 213	-8 553	-9 835
Organic and inorganic chemicals	-3 200	-2 891	-2 920	-3 048	-3 417
Paper and paperboard	-1 941	-1 852	-2 076	-2 241	-2 498
Textile yarn and fabrics	-1 538	-1 519	-1 600	-1 576	-1 346
Iron and steel	-1 426	-1 783	-1 944	-2 025	-2 517
Plastics	-1 833	-1 795	-2 166	-2 177	-2 298
Processed industrial supplies n.e.s.	-9 239	-9 464	-10 917	-12 029	-13 669
Other merchandise goods	-1 069	-1 273	-1 495	-1 234	-1 053
Other goods	-4 235	-4 838	-5 263	-5 126	-4 890
Services debits	-29 915	-28 997	-29 622	-34 235	-36 595

(a) Reference year for chain volume measures is 2003-04. (b) Chain volume measures for years other than 2003-04 and 2004-05 are not additive.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.



Table 30.7 presents various price indexes for Australia's trade in goods and services. The implicit price deflators (IPDs) are derived by dividing the current price measures by the corresponding chain volume measures. These IPDs reflect not only price change, but compositional effects from year to year.

Unlike IPDs, chain price indexes measure only the impact of a price change. The chain Laspeyres price index for goods and services credits rose 10.7% in 2004–05 to 110.7. The chain Laspeyres price index for goods and services debits rose 0.7% to 100.7.

Australia's terms of trade (derived by dividing the IPD for credits by the IPD for debits) rose by 9.8% in 2004–05, resulting from a 10.4% rise in the IPD for goods and services credits and a 0.5% rise in the IPD for goods and services debits (table 30.7).

## International investment position

Australia's net international investment position is the difference between the levels of Australia's foreign financial liabilities and the levels of its foreign financial assets. Historically, Australia has had a net liability position with the rest of the world.

Australia's net international investment position at 30 June 2005 was a net foreign financial liability of \$516.8b. This was up \$46.3b (9.8%) on the position a year earlier and resulted from net increases of \$11.1b in the level of foreign equity and \$35.3b in the level of foreign debt.

Graph 30.8 shows the components of Australia's international investment position between 30 June 1994 and 30 June 2005. It shows that the increase in net foreign liabilities primarily reflects increase in net foreign debt liabilities.

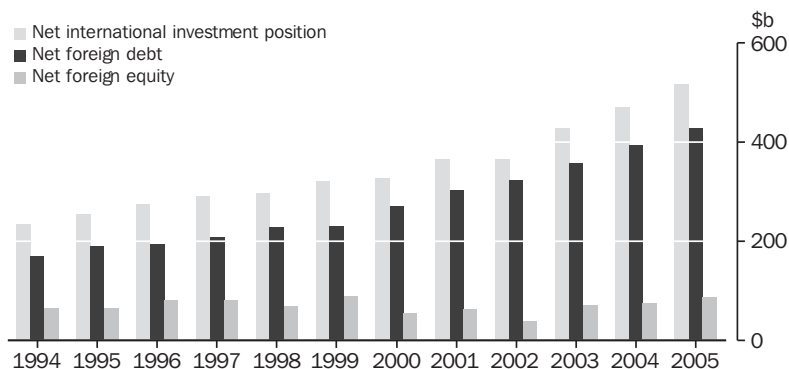
### 30.7 IMPLICIT PRICE DEFLATORS, Price indexes and terms of trade(a)

	2000–01	2001–02	2002–03	2003–04	2004–05
Implicit price deflators(b)					
Goods and services credits	106.9	107.8	105.0	100.0	110.4
Goods credits	111.2	111.5	107.1	100.0	112.6
Services credits	92.9	95.6	98.3	100.0	103.1
Goods and services debits	118.6	117.5	112.4	100.0	100.5
Goods debits	121.1	118.7	112.7	100.0	100.4
Services debits	109.2	112.5	111.0	100.0	100.9
Chain Laspeyres price indexes					
Goods and services credits	105.6	106.7	104.5	100.0	110.7
Goods credits	109.6	110.2	106.4	100.0	113.0
Services credits	92.8	95.5	98.2	100.0	103.2
Goods and services debits	117.3	116.5	112.0	100.0	100.7
Goods debits	119.7	117.6	112.2	100.0	100.7
Services debits	108.9	112.4	111.0	100.0	100.9
Terms of trade(c)					
Goods and services	90.1	91.8	93.4	100.0	109.8
Goods	91.8	94.0	95.0	100.0	112.1
Services	85.1	85.0	88.5	100.0	102.2

(a) Reference year for price and terms of trade indexes is 2003–04. (b) Derived by dividing the estimates at current prices in tables 30.5 and 30.6 by the chain volume measures in those tables. (c) Derived by dividing the IPDs for credits by the IPDs for debits.

Source: *Balance of Payments and International Investment Position, Australia* (5302.0).

### 30.8 NET INTERNATIONAL INVESTMENT POSITION — 30 June



Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

Table 30.9 provides a reconciliation between opening and closing levels for foreign financial assets, foreign financial liabilities and Australia's net international investment position. Increases or decreases in these assets and liabilities are due to financial transactions (investment flows), price changes, exchange rate changes and other adjustments.

#### Foreign debt

Foreign debt is a subset of the financial obligations that make up a country's international investment position. It includes all the non-equity components of the net international investment position, that is, all recorded assets and liabilities other than equity securities and direct investment equity capital, including reinvested earnings.

The level of borrowing and other non-equity liabilities of Australian residents at a particular date make up Australia's foreign debt liabilities. The level of Australian lending abroad and other

non-equity assets at the same date are deducted from the level of borrowing to arrive at Australia's net foreign debt.

The level of net foreign debt at 30 June 2005 was \$430.0b, up \$35.3b (8.9%) on 30 June 2004. The increase during 2004–05 resulted from a \$49.1b (7.4%) increase in foreign debt liabilities partly offset by an increase of \$13.8b (5.2%) in foreign debt assets (table 30.10).

At 30 June 2005 the net foreign debt of the public sector (general government plus public financial and non-financial corporations) was \$7.3b, which accounted for 1.7% of total net foreign debt. Net foreign debt levels of private financial corporations and private non-financial corporations were \$334.7b (77.8% of total net foreign debt) and \$87.9b (20.5%) respectively (table 30.10).

### 30.9 INTERNATIONAL INVESTMENT POSITION

	Position at beginning of period \$m	Changes in position reflecting				Position at end of period \$m
		Transactions \$m	Price changes \$m	Exchange rate changes \$m	Other adjustments \$m	
<b>NET INTERNATIONAL INVESTMENT POSITION</b>						
<b>Total</b>						
2002-03	365 181	40 296	7 122	15 161	367	428 127
2003-04	428 127	45 920	2 144	-6 550	851	470 491
2004-05	470 491	55 651	-12 643	3 968	-638	516 827
<b>Equity</b>						
2002-03	41 034	-5 604	5 253	29 791	-195	70 279
2003-04	70 279	-5 889	11 721	150	-450	75 811
2004-05	75 811	2 048	-13 068	22 278	-207	86 863
<b>Debt</b>						
2002-03	324 147	45 899	1 870	-14 631	562	357 848
2003-04	357 848	51 809	-9 577	-6 700	1 301	394 680
2004-05	394 680	53 601	426	-18 310	-432	429 964
<b>FOREIGN ASSETS(a)</b>						
<b>Total</b>						
2002-03	-518 514	-34 964	3 287	31 063	-789	-519 917
2003-04	-519 917	-48 580	-40 036	-15 204	362	-623 375
2004-05	-623 375	40 511	-53 848	14 612	285	-621 817
<b>Equity</b>						
2002-03	-309 245	-24 518	9 306	29 791	-114	-294 777
2003-04	-294 777	-34 811	-28 389	150	-127	-357 955
2004-05	-357 955	42 996	-50 685	22 278	784	-342 584
<b>Debt</b>						
2002-03	-209 269	-10 449	-6 020	1 273	-675	-225 140
2003-04	-225 140	-13 768	-11 647	-15 354	489	-265 420
2004-05	-265 420	-2 484	-3 163	-7 666	-500	-279 234
<b>FOREIGN LIABILITIES(b)</b>						
<b>Total</b>						
2002-03	883 695	75 261	3 836	-15 902	1 155	948 043
2003-04	948 043	94 500	42 181	8 653	488	1 093 866
2004-05	1 093 866	15 140	41 204	-10 644	-922	1 138 645
<b>Equity</b>						
2002-03	350 279	18 913	-4 054	—	-81	365 056
2003-04	365 056	28 924	40 111	—	-324	433 766
2004-05	433 766	-40 945	37 617	—	-990	429 447
<b>Debt</b>						
2002-03	533 416	56 346	7 891	-15 902	1 237	582 988
2003-04	582 988	65 576	2 070	8 653	811	660 100
2004-05	660 100	56 086	3 587	-10 644	68	709 198

(a) Assets include claims of Australian direct investment enterprises on direct investors abroad, which are classified as part of direct investment in Australia. (b) Liabilities include liabilities of Australian direct investors to direct investment enterprises abroad, which are classified as part of direct investment abroad.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

**30.10 LEVELS OF FOREIGN DEBT — 30 June**

	2001	2002	2003	2004	2005
	\$m	\$m	\$m	\$m	\$m
<b>Foreign debt assets(a)</b>	<b>-193 840</b>	<b>-209 269</b>	<b>-225 140</b>	<b>-265 420</b>	<b>-279 234</b>
Public sector	-63 432	-56 049	-55 337	-66 394	-73 198
General government	-10 338	-10 869	-10 757	-10 119	-9 611
Financial corporations	-46 151	-42 832	-43 377	-55 681	-62 487
Central Bank	-37 040	-35 053	-37 641	-47 845	-54 436
Central borrowing authorities	-1 426	-998	-568	-548	-419
Other financial corporations	-7 685	-6 781	-5 168	-7 287	-7 632
Non-financial corporations	-6 943	-2 348	-1 203	-594	-1 100
Private sector	-130 408	-153 220	-169 803	-199 027	-206 035
Financial corporations	-99 504	-121 185	-133 366	-160 168	-168 685
Non-financial corporations	-30 904	-32 036	-36 437	-38 858	-37 351
<b>Foreign debt liabilities(a)</b>	<b>496 307</b>	<b>533 416</b>	<b>582 988</b>	<b>660 100</b>	<b>709 198</b>
Public sector	69 150	67 310	63 587	71 474	80 522
General government	23 995	25 040	24 016	29 163	32 233
Debt domiciled abroad	1 453	1 686	1 523	1 187	1 158
Debt domiciled in Australia	22 542	23 354	22 494	27 976	31 075
Financial corporations	32 649	28 926	27 319	31 064	35 607
Central bank	366	43	150	124	173
Debt domiciled abroad	317	—	—	—	—
Debt domiciled in Australia	49	43	150	124	173
Central borrowing authorities	27 622	24 906	23 955	27 428	32 725
Debt domiciled abroad	24 596	22 319	21 091	24 572	26 477
Debt domiciled in Australia	3 027	2 588	2 864	2 855	6 248
Other financial corporations	4 661	3 976	3 214	3 512	2 708
Debt domiciled abroad	4 492	3 976	3 214	3 428	2 669
Debt domiciled in Australia	169	—	—	84	40
Non-financial corporations	12 506	13 344	12 251	11 247	12 682
Debt domiciled abroad	12 012	12 806	11 816	10 416	11 321
Debt domiciled in Australia	494	538	436	831	1 361
Private sector	427 157	466 106	519 401	588 626	628 676
Financial corporations	328 001	365 419	408 215	470 780	503 386
Non-financial corporations	99 157	100 687	111 186	117 846	125 290
<b>Net foreign debt</b>	<b>302 467</b>	<b>324 147</b>	<b>357 848</b>	<b>394 680</b>	<b>429 964</b>
Public sector	5 718	11 261	8 249	5 080	7 323
General government	13 656	14 171	13 259	19 044	22 622
Financial corporations	-13 502	-13 906	-16 058	-24 617	-26 880
Central Bank	-36 674	-35 010	-37 491	-47 721	-54 263
Central borrowing authorities	26 196	23 908	23 387	26 880	32 306
Other financial corporations	-3 024	-2 805	-1 955	-3 775	-4 924
Non-financial corporations	5 563	10 996	11 048	10 653	11 582
Private sector	296 750	312 886	349 598	389 599	422 641
Financial corporations	228 497	244 234	274 849	310 612	334 701
Non-financial corporations	68 253	68 652	74 749	78 988	87 940

(a) Foreign debt levels between direct investors and direct investment enterprises are recorded on a gross basis for assets and liabilities.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

## Levels of foreign investment in Australia and Australian investment abroad

In table 30.11, levels of investment are categorised by direction (Australian investment abroad and foreign investment in Australia), type of investment (direct, portfolio, financial derivatives, other and reserve assets) and instrument.

Direct investment is a category of international investment that reflects the objective of obtaining a lasting interest by a resident in one economy in an enterprise in another economy, and implies a significant degree of influence by the investor in the management of the enterprise. A foreign direct investment relationship is established when an investor, who is a resident in one economy, holds 10% or more of the ordinary shares or voting stock of an enterprise (direct investment enterprise) in another economy. The portfolio investment category covers investment in equity and debt securities other than direct investment, financial derivative assets, other investment assets and reserve assets.

The items 'Australian investment abroad' and 'Foreign investment in Australia' in table 30.11 do not equate with foreign assets and liabilities respectively in table 30.9. The difference is due to netting of assets and liabilities in regard to direct investment, both abroad and in Australia. Debt claims by direct investment enterprises on their direct investors, separately identified in table 30.11, are netted off in that table against liabilities to direct investors. These items are not netted off in table 30.9.

At 30 June 2005 Australian investment abroad totalled \$590.4b, down \$2.2b (0.4%) on the level a year earlier. This fall was the net effect of a \$29.1b decrease in direct investment abroad, a \$24.5b increase in portfolio investment assets, a \$4.0b

decrease in financial derivative assets, a \$0.5b increase in other investment assets and a \$5.8b increase in reserve assets. The item 'Australian investment abroad in portfolio investment assets; debt securities' includes investment by residents of Australia in Kangaroo bonds (see article *Kangaroo bonds* in this chapter).

Foreign investment in Australia totalled \$1,107.2b at 30 June 2005, up \$44.1b (4.2%) on June 2004. This rise was due to a \$3.1b increase in direct investment in Australia, a \$40.7b increase in portfolio investment liabilities, a \$4.3b increase in financial derivative liabilities and a \$3.9b decrease in other investment liabilities.

### Ratios

Table 30.12 and graph 30.13 show that the ratio of the current account deficit to gross domestic product (GDP) was 6.7% in 2004–05, an increase on the previous year, and above the average for the past ten years (4.7%).

Graph 30.14 shows the ratio of Australia's net foreign liabilities (Australia's net international investment position) to GDP has risen for most years since 1994 and reached its highest level of 60.8% at 30 June 2005. The ratio of net foreign debt to GDP was 50.6% at 30 June 2005, an increase over the 48.5% recorded the previous year. The ratio of net foreign equity to GDP was 10.2% at 30 June 2005, up on the ratio at 30 June 2004 and below the average for the last ten years (11.2%).

Table 30.12 shows the net investment income payable on net foreign debt as a percentage of goods and services credits was 9.5% in 2004–05. The ratio of net investment income payable on equity to goods and services credits was 9.4% in 2004–05, up from 7.3% the previous year.

**30.11 LEVELS OF AUSTRALIAN INVESTMENT ABROAD AND FOREIGN INVESTMENT IN AUSTRALIA — 30 June**

	2001	2002	2003	2004	2005
	\$m	\$m	\$m	\$m	\$m
<b>Levels of Australian investment abroad</b>	<b>-466 710</b>	<b>-496 182</b>	<b>-490 462</b>	<b>-592 575</b>	<b>-590 365</b>
Direct investment abroad(a)	-187 177	-193 084	-178 078	-216 454	-187 351
Equity capital and reinvested earnings	-182 367	-193 338	-182 357	-219 887	-191 012
Other capital	-4 809	255	4 278	3 433	3 661
Claims on affiliated enterprises	-14 470	-9 635	-12 630	-13 466	-13 688
Liabilities to affiliated enterprises	9 660	9 889	16 908	16 899	17 349
Portfolio investment assets	-148 854	-161 069	-159 772	-199 038	-223 556
Equity securities	-111 936	-115 906	-112 420	-138 068	-151 572
Debt securities	-36 918	-45 162	-47 352	-60 970	-71 984
Financial derivative assets	-23 804	-30 250	-40 703	-42 058	-38 067
Other investment assets	-68 924	-74 345	-71 150	-84 683	-85 222
Trade credits	-9 393	-9 624	-9 744	-9 552	-9 912
Loans and other assets	-49 162	-52 541	-48 468	-59 624	-61 033
Currency and deposits	-10 369	-12 180	-12 938	-15 507	-14 276
Reserve assets	-37 951	-37 435	-40 760	-50 342	-56 170
<b>Levels of foreign investment in Australia</b>	<b>832 267</b>	<b>861 363</b>	<b>918 589</b>	<b>1 063 066</b>	<b>1 107 192</b>
Direct investment in Australia(b)	215 187	225 581	252 435	272 351	275 403
Equity capital and reinvested earnings	184 215	187 945	209 849	230 704	231 328
Other capital	30 972	37 636	42 586	41 647	44 075
Claims on direct investors	-11 774	-12 442	-12 546	-13 901	-14 104
Liabilities to direct investors	42 746	50 078	55 132	55 549	58 179
Portfolio investment liabilities	472 640	474 766	480 934	609 103	649 774
Equity securities	173 179	162 334	155 207	203 063	198 119
Debt securities	299 461	312 432	325 727	406 040	451 655
Financial derivative liabilities	23 593	32 096	45 251	37 683	41 973
Other investment liabilities	120 847	128 920	139 969	143 929	140 043
Trade credits	3 297	3 157	3 786	3 056	2 981
Loans	56 041	64 605	67 445	58 682	67 749
Currency and deposits	56 756	57 703	65 391	78 802	64 383
Other liabilities	4 753	3 455	3 347	3 390	4 929

(a) Net direct investment abroad, after deduction of liabilities to direct investment enterprises abroad. (b) Net direct investment in Australia, after deduction of claims of Australian direct investment enterprises on direct investors.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

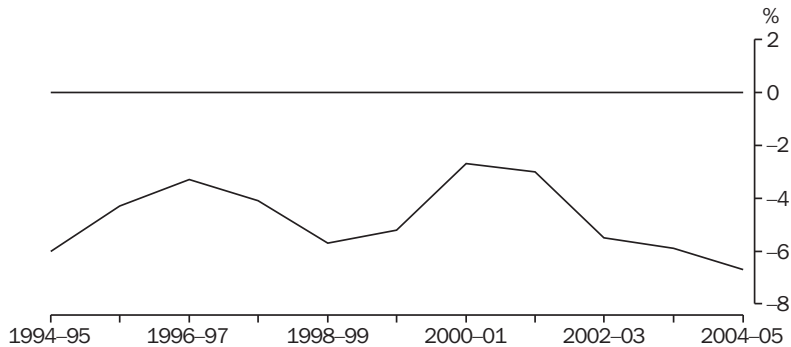
### 30.12 RATIOS

	2000-01	2001-02	2002-03	2003-04	2004-05
	%	%	%	%	%
<b>To GDP</b>					
Current account	-2.7	-3.0	-5.5	-5.9	-6.7
Goods and services	0.1	-0.2	-2.5	-2.9	-3.0
Credits	23.0	21.5	19.6	17.6	19.1
Debits	-22.9	-21.7	-22.0	-20.6	-22.1
Income	-2.8	-2.8	-3.0	-2.9	-3.7
Net international investment position(a)	54.7	51.2	56.5	57.8	60.8
Net foreign equity	9.4	5.8	9.3	9.3	10.2
Net foreign debt	45.3	45.4	47.2	48.5	50.6
<b>To goods and services credits</b>					
Net investment income	-12.1	-12.6	-14.9	-16.1	-18.8
Net foreign equity	-2.6	-3.7	-6.9	-7.3	-9.4
Net foreign debt	-9.5	-8.9	-8.0	-8.8	-9.5

(a) These ratios are derived by expressing net foreign liabilities at end of year as a percentage of GDP at current prices for that year.

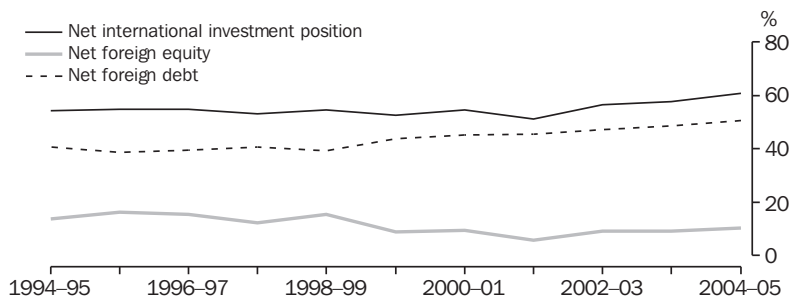
Source: Australian National Accounts: National Income, Expenditure and Product (5206.0); Balance of Payments and International Investment Position, Australia (5302.0).

### 30.13 RATIO OF BALANCE ON CURRENT ACCOUNT TO GDP



Source: Australian National Accounts: National Income, Expenditure and Product (5206.0); Balance of Payments and International Investment Position, Australia (5302.0).

### 30.14 RATIOS(a) OF NET INTERNATIONAL INVESTMENT POSITION TO GDP



(a) These ratios are derived by expressing net foreign liabilities at end of year as a percentage of GDP at current prices for that year.

Source: Australian National Accounts: National Income, Expenditure and Product (5206.0); Balance of Payments and International Investment Position, Australia (5302.0).

## Foreign ownership of equity in Australia

The total value of equity on issue by Australian enterprise groups at 30 June 2005 stood at \$1,538b (table 30.15). Of this total, 63% related to shares or equivalent equity instruments issued by non-financial corporations. Banks accounted for a further 15% of total equity issued, and other financial enterprises, including life offices and superannuation funds (but excluding non-bank deposit taking institutions and the central bank), accounted for 19%. Lesser amounts were issued by non-bank deposit taking institutions (3% of the total) and the central bank (1%).

Of the total equity on issue by Australian enterprise groups at 30 June 2005, non-residents held equity valued at \$429b (28%), while residents held \$1,108b (72%).

Although the proportion of equity held by non-residents remained relatively stable, the total value of equity on issue increased by 28%, from \$1,205b to \$1,538b, over the period from 30 June 2001 to 30 June 2005.

Analysed by sector, the value of equity on issue by non-financial corporations rose 21% to \$971b over the period 30 June 2001 to 30 June 2005, while the proportion held by non-residents decreased slightly from 33% to 32%.

The amount issued by banks increased by 27% between 30 June 2001 and 30 June 2005, while the proportion of non-resident holdings of the total equity issued by banks decreased from 27% to 25% over the same period.

The value of equity issued by life offices, superannuation funds and other financial enterprises increased by 54% over the period from 30 June 2001 to 30 June 2005, with foreign ownership of this equity falling from 19% to 17% over the same period.

### 30.15 FOREIGN OWNERSHIP OF EQUITY(a), By sectoral components — 30 June

	Units	2001	2002	2003	2004	2005
<b>Non-financial corporations(b)</b>						
Amount issued(c)	\$b	804.9	764.8	767.5	920.5	971.4
Amount held by rest of world	\$b	268.0	255.1	277.0	331.9	311.2
Proportion of foreign ownership	%	33.3	33.3	36.1	36.1	32.0
<b>Banks</b>						
Amount issued(c)	\$b	178.1	189.9	180.9	189.1	225.4
Amount held by rest of world	\$b	48.5	53.4	46.8	48.6	56.9
Proportion of foreign ownership	%	27.2	28.1	25.9	25.7	25.3
<b>Non-bank deposit taking institutions</b>						
Amount issued(c)	\$b	20.1	25.4	33.9	36.8	38.7
Amount held by rest of world	\$b	4.2	4.9	7.4	12.5	13.3
Proportion of foreign ownership	%	20.9	19.4	21.9	33.8	34.4
<b>Other financial enterprises(d)</b>						
Amount issued(c)	\$b	189.1	194.5	200.2	243.7	290.4
Amount held by rest of world	\$b	36.7	36.9	33.8	40.9	48.0
Proportion of foreign ownership	%	19.4	19.0	16.9	16.8	16.5
<b>Central bank</b>						
Amount issued(e)(f)	\$b	12.3	11.4	11.7	12.5	11.2
Total amount issued	\$b	1 204.7	1 186.4	1 194.5	1 402.9	1 537.5
Total amount held by rest of world	\$b	357.4	350.3	365.1	433.8	429.4
Proportion of foreign ownership	%	29.7	29.5	30.6	30.9	27.9

(a) Equity includes units in trusts. (b) Includes private non-financial corporations, and Commonwealth, state and local public non-financial corporations. (c) These estimated market values are considered to be of poor quality. They should be used cautiously. (d) Includes life offices and superannuation funds, central borrowing authorities, and other financial enterprises. (e) Net asset values. (f) There is no foreign ownership in this component.

Source: Australian National Accounts: Financial Accounts (5232.0); Balance of Payments and International Investment Position, Australia (5302.0).



## Kangaroo bonds

Kangaroo bonds are long-term debt securities issued by non-residents in the Australian domestic market. They are denominated in Australian dollars, documented to Australian legal requirements, settled through Austraclear, a central depository providing clearing and settlement facilities to the Australian financial markets, and listed on the Australian Stock Exchange.

The rapid growth in Kangaroo bond issues in the Australian market has given rise to an interest in the nature, trend and impact of this type of bond on Australia's international investment statistics. While Kangaroo bonds have been issued for a number of years, this article focusses on the period from 2000–01, when they became significant in terms of Australia's international investment position.

The growth of non-government bonds, such as Kangaroo bonds, is due in part to the reduction of Australian government bond issues. Non-resident financial institutions are the dominant issuers and most are resident in the United States of America (USA).

This article explains some of the key aspects of this instrument.

### Kangaroo bonds in Australia's IIP

Australia's international investment position (IIP) includes all financial positions and transactions between residents of Australia and non-residents. The global bond market may be represented as diagram 30.16 below. The Australian Bureau of Statistics conducts the Survey of International Investment, which collects data for the compilation of the IIP. Debt issues that are in scope of the survey are covered by areas 2, 3, 4 and 7 because they are transactions between residents and non-residents. Of these areas, 2 and 3 represent Australian investment abroad, while 4 and 7 represent foreign investment in Australia. Areas 1, 5, 6 and 8 are out of scope of the IIP because they represent transactions between residents or between non-residents.

Kangaroo bonds are covered by areas 1 and 2 of diagram 30.16.

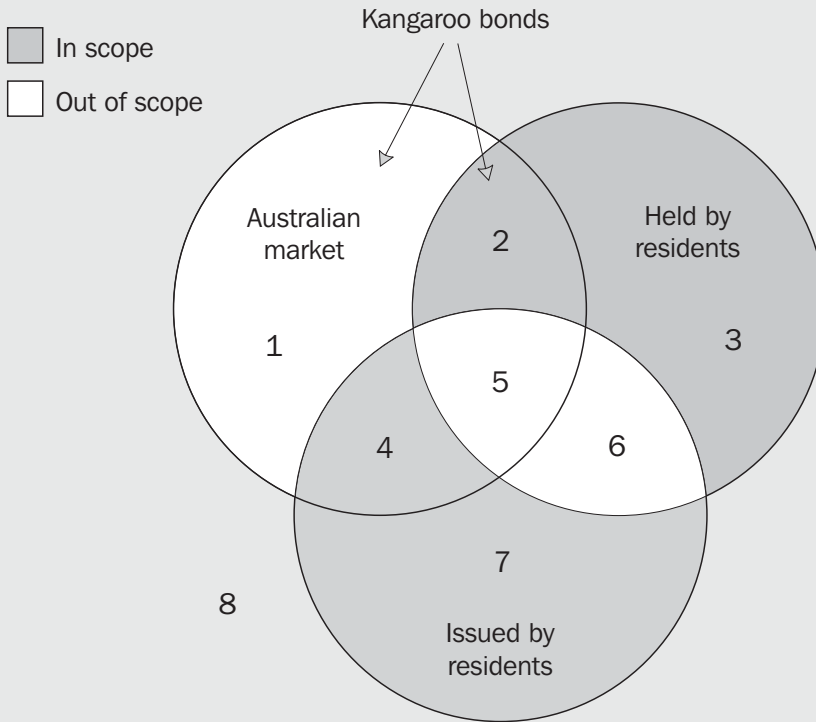
### Trends in Kangaroo bonds

From the mid-1990s, the Commonwealth and state governments in Australia reduced debt security issues as budget surpluses and privatisation proceeds were used to repay debt. Gross outstanding Commonwealth Government securities and state government securities recorded decreases from 2000 to 2005, while issues of non-government debt securities grew steadily. There was a strong build-up of managed funds over the same period, fuelled by superannuation contributions (see table 26.23 in the *Financial system* chapter). These funds were valued at \$839b as of March 2005. This growth, coupled with the decreasing government bonds on issue, stimulated development of the non-government bond market to meet the resulting high demand for debt securities. As at June 2005, there were \$205.2b of long-term non-government securities on issue in Australia. This was an increase of 25.4% over the June 2004 value of \$163.7b.

One of the notable contributors to the growth in the non-government bond market has been the increase in non-resident bond issuers (Kangaroo bonds). Kangaroo bonds issued increased to \$15.2b in 2003–04 from a level of \$1.8b in 2002–03. In 2004–05, non-resident borrowers entered the bond market with \$8.4b in issues, of which approximately \$5.8b (70%) were taken up by residents.

For Australian investors, Kangaroo bonds became attractive during this period, as did all highly rated corporate bond issues. The credit spread (the price difference between AA bonds from corporate issuers when compared with similarly denominated government issues) decreased in the first half of 2003 then picked up again in 2004. With the decreasing availability of government bonds, AA corporate bonds were being favoured as the best alternative in fixed income securities. This lowered the cost of borrowing for corporate borrowers and helped to increase the attractiveness of Australian denominated debt for non-resident issuers.

### 30.16 THE GLOBAL BOND MARKET



1. Issued by non-residents on Australian market, held by non-residents
2. Issued by non-residents on Australian market, held by residents
3. Issued by non-residents on foreign markets, held by residents
4. Issued by residents on Australian market, held by non-residents
5. Issued by residents on Australian market, held by residents
6. Issued by residents on foreign markets, held by residents
7. Issued by residents on foreign markets, held by non-residents
8. Issued by non-residents on foreign markets, held by non-residents

From the issuer's perspective, the reasons for the increasing levels of Kangaroo bond issues were less obvious, given the relative changes in official interest rates since early-2001. Since January 2001, Australian interest rates were higher than rates in Europe and the USA. Over time, the gap increased, (graph 30.17). This made issuing competitively priced debt securities in the Australian market more expensive than in other markets.

One explanation for the issuer choosing Australia as a market for their bonds was the reluctance of resident fixed interest fund managers to invest in non-resident markets due to the return not being high enough to justify the extra risk of corporate bonds. This made funds less available to

non-resident borrowers in other markets. This, however, does not explain why non-resident corporations would rather issue debt than borrow from financial intermediaries in low-interest rate countries.

Anecdotally, it is suggested that two main drivers explained trends in Kangaroo bond transactions. From the issuer's point of view, the first commonly quoted reason for the growth in Kangaroo bonds was a desire to diversify funding. Diversifying currency exposures for issuers lowers the risks associated with foreign borrowings. The second is the widening interest rate basis swap. This widening effectively made it cheaper for borrowers to hedge against interest rate movements.

### 30.17 OFFICIAL INTEREST RATES — January 2000 to June 2005



Source: RBA bulletin (August 2005), Table F13 Overseas Official Interest Rates (Statistical Tables P72).

### Source of Kangaroo bonds

For the financial years 2000–01 to 2004–05, Kangaroo bonds issued by non-residents in the Australian market totalled \$36b (table 30.18). Of this, financial institutions were the dominant issuer, accounting for \$25b as at June 2005, while supranational and other organisations accounted for \$11b. Total Kangaroo bond issues decreased from \$15b in 2003–04 to \$8b in 2004–05. The decrease coincided with a decrease in Australian investor demand for bonds issued by non-residents. With domestic and global credit

growth, most investors preferred high yield securities rather than the status (credit rating) of the international issuer.

Residents of the USA were issuers of most Kangaroo bonds on issue, as at 30 June 2005 (graph 30.19). Other significant issuers were the Cayman Islands, United Kingdom, Germany, Netherlands and Canada. The value of bonds on issue grew over the five-year period by almost \$28b with issues from USA resident institutions accounting for nearly \$11b of this total.

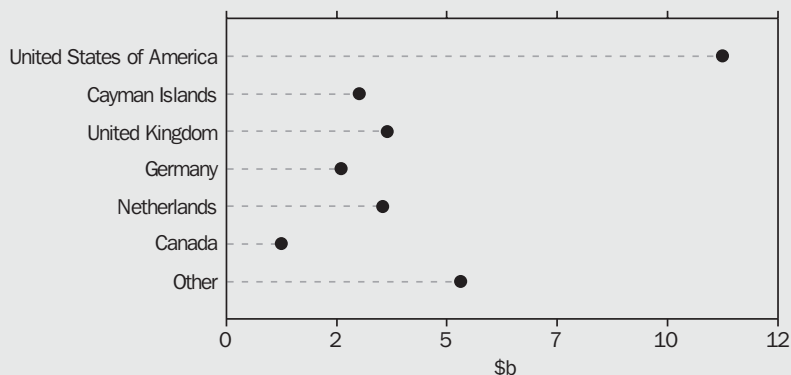
### 30.18 ISSUES OF KANGAROO BONDS, By type of issuer

	2000–01	2001–02	2002–03	2003–04	2004–05	Total
	A\$m	A\$m	A\$m	A\$m	A\$m	A\$m
Financial	4 400	1 850	1 320	10 305	7 220	25 095
Supranational	1 175	1 000	500	1 965	340	4 980
Other(a)	800	1 550	20	2 950	795	6 115
<b>Total</b>	<b>6 375</b>	<b>4 400</b>	<b>1 840</b>	<b>15 220</b>	<b>8 355</b>	<b>36 190</b>

(a) Includes government and corporate agencies.

Source: *Insto Magazine* – Jan 2002 issue (Bond deals for 2001, pp 27–28) – Jan 2003 issue (Bond deals for 2002, pp 30–31) – Jan 2004 issue (Bond deals for 2003, pp 2–9).

30.19 NATIONALITY OF ISSUER — June 2005



Source: Reuters 3000 Xtra Fixed Income data service, July 2005.

### Use of Kangaroo bonds

When Kangaroo bonds are taken up by residents of Australia, this represents claims by Australian residents on non-residents, hence Australian investment abroad. During the period 2000–01 to 2004–05, of the total Kangaroo bonds issued, \$25.3b (or 70%) were taken up by Australian residents.

New issues of Kangaroo bonds taken up by Australian residents are included in long-term portfolio debt securities (bonds and notes) transactions. These appear as debit entries in the financial account of Australia's balance of payments, representing an increase in assets. The resident holdings of Kangaroo bonds contribute to assets in Australia's IIP and continue to make a substantial contribution to Australia's net position.

## International merchandise trade

International merchandise trade statistics cover all movable goods which add to (imports) or subtract from (exports) Australia's stock of material resources. The statistics are compiled from information submitted by importers and exporters to the Australian Customs Service. Some goods are excluded for conceptual or practical reasons, for example, those goods temporarily brought to Australia for subsequent forwarding to foreign destinations, and low-value imports and exports in the parcel post system.

The merchandise exports and imports data are used in the compilation of the balance of payments. However, various adjustments relating to coverage, timing, classification and valuation are necessary to put international merchandise trade statistics on a balance of payments basis. Consequently, the merchandise exports and

imports statistics, and the excess of exports (+) or imports (-), shown in this section differ from those shown in the *International accounts* section.

### Conceptual framework

Australia's international merchandise trade statistics are compiled in broad agreement with the United Nations (UN) recommendations for the compilation of international merchandise trade statistics. More information on the concepts, sources and methods used is included in *International Merchandise Trade, Australia: Concepts, Sources and Methods* (5489.0).

The UN recommendations state that merchandise trade covers all movable goods which add to (imports) or subtract from (exports) the stock of material resources of a country as a result of their movement into or out of the country.

The UN definition excludes:

- direct transit trade, that is, goods being transhipped or moved through Australia for purposes of transport only
- ships and aircraft moving through Australia while engaged in the transport of passengers or goods between Australia and other countries
- non-merchandise trade, consisting primarily of goods moving on a temporary basis (e.g. mobile equipment, goods under repair and goods for exhibition).

International merchandise trade statistics are compiled from information submitted by exporters and importers or their agents to the Australian Customs Service.

### Classification

International merchandise trade is classified by commodity, by country of origin/destination, by Australian state of production/destination, and by industry of origin.

The international standard for the classification of internationally traded goods by commodity is the Harmonized System, a World Customs Organization classification which groups goods according to their component materials, from raw materials through to processed and manufactured products.

The ABS adopts this as the basis for exports classification using the Australian Harmonized Export Commodity Classification and for imports classification using the Combined Australian Customs Tariff Nomenclature and Statistical Classification (Customs Tariff).

The ABS also classifies export and import statistics according to:

- the UN Standard International Trade Classification (SITC Rev. 3) which groups goods according to the degree of processing they have undergone, from food and crude raw materials through to highly transformed manufactures
- the UN Classification Broad Economic Categories which classifies international trade for the purposes of general economic analysis according to the main end use of the commodities traded.

Commodity statistics in this section are presented according to SITC Rev. 3.

### Valuation

For exports, the point of valuation adopted is free-on-board (f.o.b.) at the Australian port of shipment, while the basis of valuation is 'transactions value', that is, the actual price at which the goods are sold.

For imports, the point of valuation is the point of containerisation (in most cases), or f.o.b. at the customs frontier of the exporting country or the port of loading, whichever comes first. The basis of valuation is the customs value. For transactions between independent buyers and sellers, this will generally be the price actually payable. Where traders are not independent (e.g. if they are related or affiliated in some way), an appropriate customs value may be determined.

### Total merchandise exports and imports

Australia's international merchandise trade balance in 2004–05 was a record deficit of \$22.8b. This followed deficits of \$21.9b in 2003–04 and \$17.7b in 2002–03. In 2004–05 there was a substantial rise in imports, up \$18.5b (14%) to \$149.5b, and a slightly smaller rise in exports, up \$17.7b (16%) to \$126.7b. Table 30.20 and graph 30.21 show the value of total merchandise exports and imports since 1999–2000.

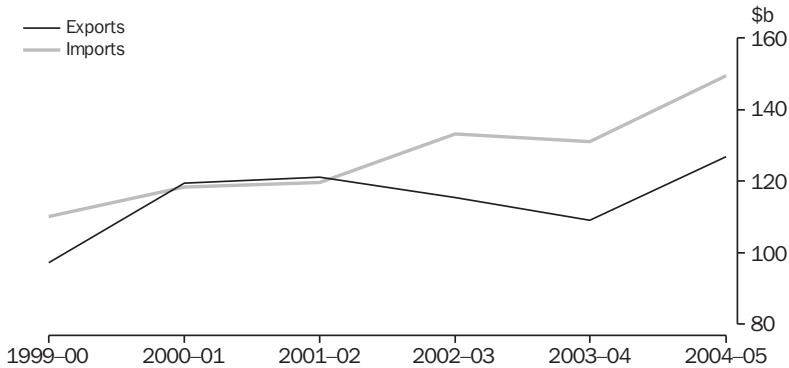
**30.20 TOTAL MERCHANDISE EXPORTS AND IMPORTS**

			Merchandise
	Exports	Imports	trade balance(a)
	\$m	\$m	\$m
1999–2000	97 286	110 078	-12 792
2000–01	119 539	118 317	1 222
2001–02	121 108	119 649	1 459
2002–03	115 479	133 129	-17 650
2003–04	109 049	130 997	-21 948
2004–05	126 719	149 520	-22 801

(a) A negative sign indicates that merchandise imports exceed merchandise exports.

Source: *International Trade in Goods and Services, Australia* (5368.0).

### 30.21 TOTAL MERCHANDISE EXPORTS AND IMPORTS



Source: *International Trade in Goods and Services, Australia* (5368.0).

#### Merchandise exports and imports by commodity

In 2004–05 exports increased by \$17.7b (16%) to \$126.7b. The SITC sections with the largest increases were:

- Mineral fuels, lubricants and related materials, up \$8.8b (43%)
- Crude materials, inedible, except fuels, up \$4.8b (23%)
- Food and live animals, up \$1.2b (7%)
- Manufactured goods classified chiefly by material, up \$1.0b (9%).

In 2004–05 imports increased by \$18.5b (14%) to \$149.5b. The SITC sections with the largest increases were:

- Machinery and transport equipment, up \$6.7b (11%)
- Mineral fuels, lubricants and related materials, up \$5.0b (50%)
- Chemical and related products n.e.s., up \$2.4b (16%)
- Manufactured goods classified chiefly by material, up \$2.0b (13%).

Slightly offsetting these increases in imports was a decrease in commodities and transactions not elsewhere classified in the SITC, down \$0.1b (5%).

The value of merchandise exports and imports by commodity for 2003–04 and 2004–05, and their share of total merchandise trade for 2004–05, are shown in table 30.22.

Australia's most valuable export commodities for 2004–05 and their contribution to total exports were: coal, \$17.1b (14%); iron ore, \$8.1b (6%); crude petroleum products, \$5.7b (5%); and non-monetary gold, \$5.6b (5%).

Between 2003–04 and 2004–05 the commodities that recorded the largest rises in the value of exports were coal, up \$6.2b (57%); iron ore, up \$2.8b (53%); and crude oil, up \$1.1b (23%).

Table 30.23 lists the highest value commodities exported (by SITC 3-digit code) for 2003–04 and 2004–05, and their share of total merchandise exports for 2004–05.

Australia's most valuable commodity imports for 2004–05, and their contribution to total imports were: passenger motor vehicles, \$11.6b (8%); crude petroleum oils, \$9.7b (6%); computing equipment, \$5.8b (4%); and medicaments, \$5.7b (4%).

Between 2003–04 and 2004–05 the commodities that recorded the largest rises in the value of imports were crude petroleum oils, up \$3.4b (53%); other petroleum oils, up \$1.5b (47%); and non-passenger motor vehicles, up \$0.9b (30%). These falls were partly offset by falls in aircraft, down \$0.1b (4%).

Table 30.24 lists the highest value commodities imported (by SITC 3-digit code) for 2003–04 and 2004–05, and their share of total merchandise imports for 2004–05.

## Merchandise exports and imports by country

For exports, country refers to the country to which the goods were consigned at the time of export. For imports, country refers to the country of origin of the goods, that is, where the majority of processing of the goods took place.

In 2004–05 Australia recorded a merchandise trade deficit of \$22.8b, which was an increase of \$0.9b on the deficit of \$21.9b in 2003–04. The following major trading partners contributed to this increased deficit:

- *Singapore* – trade deficit of \$3.9b, an increase of \$1.9b on the previous year's deficit due to a \$2.2b increase in imports partially offset by a \$0.3b increase in exports. The main commodities contributing to the increase in imports were, petroleum, petroleum products and related materials (up \$1.6b), non-monetary gold (up \$0.3b), and telecommunications and sound recording and reproducing apparatus and equipment (up \$0.2b). The increase in exports was spread across many commodities.

### 30.22 MERCHANDISE EXPORTS AND IMPORTS, By commodity(a)

SITC section	Exports			Imports		
	2003–04	2004–05	Share of total for 2004–05	2003–04	2004–05	Share of total for 2004–05
	\$m	\$m	%	\$m	\$m	%
Food and live animals	18 340	19 550	15.4	5 014	5 594	3.7
Beverages and tobacco	2 717	2 934	2.3	902	989	0.7
Crude materials, inedible, except fuels	20 900	25 717	20.3	1 931	1 947	1.3
Mineral fuels, lubricants and related materials	20 474	29 300	23.1	10 100	15 118	10.1
Animal and vegetable oils, fats and waxes	358	329	0.3	368	376	0.3
Chemical and related products, n.e.s.	5 302	5 937	4.7	15 059	17 482	11.7
Manufactured goods classified chiefly by material	11 368	12 335	9.7	15 740	17 725	11.9
Machinery and transport equipment	11 956	12 426	9.8	60 345	67 058	44.8
Miscellaneous manufactured articles	4 288	4 377	3.5	18 703	20 528	13.7
Commodities and transactions not classified elsewhere in the SITC(b)	13 346	13 813	10.9	2 835	2 705	1.8
<b>Total</b>	<b>109 049</b>	<b>126 718</b>	<b>100.0</b>	<b>130 997</b>	<b>149 522</b>	<b>100.0</b>

(a) Commodities subject to a confidentiality restriction are included in Commodities and transactions not classified elsewhere in the SITC. (b) Includes small value export entries that cannot yet be allocated by commodity.

Source: *International Trade in Goods and Services, Australia* (5368.0).

### 30.23 MERCHANDISE EXPORTS OF MAJOR COMMODITIES(a)

SITC 3-digit code			Share of total merchandise exports
	2003-04	2004-05	2004-05
	\$m	\$m	%
Coal, not agglomerated (321)	10 916	17 117	13.5
Iron ore and concentrates (281)	5 278	8 084	6.4
Petroleum oils and oils obtained from bituminous minerals, crude (333)	4 642	5 692	4.5
Gold, non-monetary (excl. gold ores and concentrates) (971)	5 652	5 643	4.5
Meat of bovine animals, fresh, chilled or frozen (011)	3 926	4 878	3.8
Aluminium ores and concentrates (incl. alumina) (285)	3 722	4 432	3.5
Aluminium (684)	3 808	4 127	3.3
Wheat (incl. spelt) and meslin, unmilled (041)	3 399	3 395	2.7
Natural gas (343)	2 173	3 200	2.5
Alcoholic beverages (112)	2 611	2 808	2.2
Motor vehicles principally designed for transport of persons (excl. public-transport type, incl. racing cars) (781)	2 927	2 791	2.2
Medicaments (incl. veterinary medicaments) (542)	2 170	2 554	2.0
Wool and other animal hair (incl. wool tops) (268)	2 490	2 490	2.0
Petroleum oils, oils from bituminous minerals (not crude); preparations, with 70% or more by weight of these oils (334)	1 995	2 373	1.9
Ores and concentrates of base metal (excl. iron, copper, nickel, aluminium, uranium and thorium) (287)	1 330	2 034	1.6
Meat and edible meat offal (excl. bovine), suitable or fit for human consumption, fresh, chilled or frozen (012)	1 711	1 931	1.5
Copper ores and concentrates; copper mattes, cement copper (283)	1 246	1 718	1.4
Copper (682)	1 280	1 709	1.3
Milk and cream and milk products (excl. butter and cheese) (022)	1 239	1 300	1.0
Total of all other commodities(b)	46 534	48 444	38.2
<b>Total</b>	<b>109 049</b>	<b>126 720</b>	<b>100.0</b>

(a) Some commodities are subject to a confidentiality restriction. Refer to 5372.0.55.001 on the ABS web site <<http://www.abs.gov.au>> for the confidentiality restriction listing. (b) Includes commodities subject to a confidentiality restriction.

Source: *International Trade in Goods and Services, Australia* (5368.0).

- *China* – trade deficit of \$6.8b, an increase of \$1.4b on the previous year's deficit due to a \$4.5b increase in imports partially offset by a \$3.0b increase in exports. The main commodities contributing to the increase in imports were office machines and automatic data processing machines (up \$0.9b), and telecommunications and sound recording and reproducing apparatus and equipment (up \$0.7b). The increase in exports was mainly due to metalliferous ores and metal scrap (up \$2.4b).
- *United States of America* – trade deficit rose by \$1.4b to \$11.8b due to a \$1.3b increase in imports. For imports, increases were recorded for general industrial machinery and equipment, n.e.s. and machine parts, n.e.s (up \$0.3b), and road vehicles (incl. air-cushion vehicles) (up \$0.3b), which were partially offset by an increase in exports of meat and meat preparations (up \$0.1b), and special transactions and commodities not classified according to kind (up \$0.1b).

The largest improvements in the balance of trade were recorded with the following countries:

*Japan* – trade surplus of \$7.8b, up \$4.0b due to a \$5.1b increase in exports partially offset by a \$1.1b increase in imports. Contributing to the increase in exports were coal, coke and briquettes (up \$2.4b), meat and meat preparations (up \$0.8b) and metalliferous ores and metal scrap (up \$0.8b). Partially offsetting the increase in exports was an increase in imports of road vehicles (incl. air-cushion vehicles) (up \$0.4b).

*Republic of (South) Korea* – trade surplus of \$4.7b, up \$1.1b due to a \$1.2b increase in exports partially offset by a \$0.1b increase in imports. Coal, coke and briquettes (up \$0.8b) was the major contributor to the increase in exports.

Graph 30.25 shows Australian merchandise exports and imports by value for Australia's top trading partners.



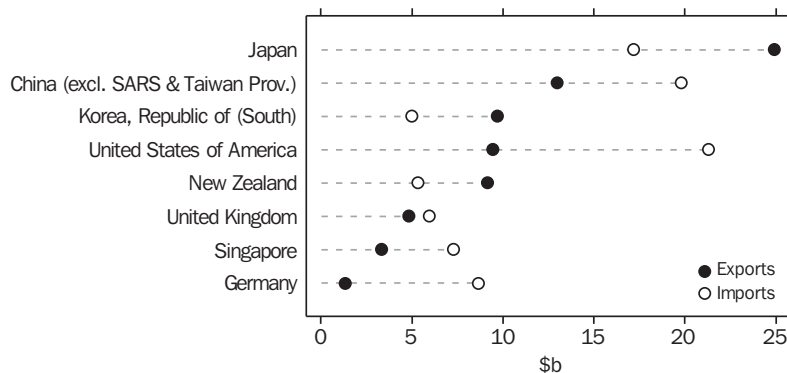
### 30.24 MERCHANDISE IMPORTS OF MAJOR COMMODITIES(a)

SITC 3-digit code	2003-04	2004-05	Share of total merchandise imports 2004-05
	\$m	\$m	%
Motor vehicles principally designed for transport of persons (excl. public-transport type, incl. racing cars) (781)	11 216	11 597	7.8
Petroleum oils and oils obtained from bituminous minerals, crude (333)	6 322	9 703	6.5
Automatic data processing machines and units thereof, magnetic, optical readers; data transcribers and processors (752)	5 126	5 792	3.9
Medicaments (incl. veterinary medicaments) (542)	4 897	5 719	3.8
Telecommunications equipment, n.e.s.; parts, and accessories of radio, television, video and similar apparatus, n.e.s. (764)	4 360	5 031	3.4
Petroleum oils, oils from bituminous minerals (not crude); preparations, with 70% or more by weight of these oils (334)	3 318	4 861	3.3
Motor vehicles for the transport of goods and special purpose motor vehicles (782)	3 112	4 037	2.7
Aircraft and associated equipment; spacecraft (incl. satellites and spacecraft launch vehicles; parts thereof) (792)	3 819	3 685	2.5
Gold, non-monetary (excl. gold ores and concentrates) (971)	2 563	2 468	1.7
Parts, n.e.s. and accessories of the motor vehicles of Groups 722, 781, 782 and 783 (784)	2 107	2 286	1.5
Measuring, checking, analysing and controlling instruments and apparatus, n.e.s. (874)	1 960	2 161	1.4
Parts and accessories (excl. covers, cases and the like) for use with office and automatic data processing mach. (759)	2 149	2 143	1.4
Civil engineering and contractors' plant and equipment (723)	1 731	2 096	1.4
Paper and paperboard (641)	2 028	2 071	1.4
Electrical machinery and apparatus, n.e.s. (778)	1 800	1 910	1.3
Furniture and parts thereof; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings (821)	1 586	1 908	1.3
Heating and cooling equipment, and parts thereof, n.e.s. (741)	1 553	1 766	1.2
Baby carriages, toys, games and sporting goods (894)	1 581	1 670	1.1
Internal combustion piston engines, and parts thereof, n.e.s. (713)	1 573	1 555	1.0
Sound recorders or reproducers; television image and sound recorders or reproducers; prepared unrecorded media (763)	1 319	1 555	1.0
Household type, electrical and non-electrical equipment, n.e.s. (775)	1 484	1 537	1.0
Televisions (incl. video monitors and projectors) (761)	1 304	1 480	1.0
Total of all other commodities(b)	64 090	72 489	48.5
<b>Total</b>	<b>130 998</b>	<b>149 520</b>	<b>100.0</b>

(a) Some commodities are subject to a confidentiality restriction. Refer to 5372.0.55.001 on the ABS web site <<http://www.abs.gov.au>> for the confidentiality restriction listing. (b) Includes commodities subject to a confidentiality restriction.

Source: *International Trade in Goods and Services, Australia* (5368.0).

### 30.25 MERCHANDISE EXPORTS AND IMPORTS, Selected countries — 2004–05



Source: *International Trade in Goods and Services, Australia* (5368.0).

Table 30.26 provides details of total merchandise exports and imports for the last two financial years and the merchandise trade balance for 2004–05 for Australia's top trading partners. Statistics are also provided for the following country groupings:

- *APEC* – Brunei Darussalam, Canada, Chile, China, Hong Kong (SAR of China), Indonesia, Japan, Republic of (South) Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, Philippines, Russian Federation, Singapore, Taiwan, Thailand, United States of America and Vietnam.
- *ASEAN* – Brunei Darussalam, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand and Vietnam.
- *EU* – Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom. The countries of Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic and Slovenia are included from July 2004.
- *OECD* – Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Japan, Republic of (South) Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States of America.

**30.26 MERCHANDISE EXPORTS AND IMPORTS, By country and country group(a)**

	Exports		Imports		Balance of trade
	2003-04	2004-05	2003-04	2004-05	2004-05
	\$m	\$m	\$m	\$m	\$m
Belgium	676	884	1 237	1 179	-295
Brazil	512	633	494	643	-10
Canada	1 828	1 896	1 818	1 904	-8
China (excl. SARs and Taiwan Prov.)	9 935	12 980	15 338	19 812	-6 832
Denmark	167	170	856	1 044	-874
Egypt(b)	649	286	36	14	272
Fiji	430	394	210	212	182
Finland	575	571	651	815	-244
France	939	1 010	3 816	4 437	-3 427
Germany	1 309	1 315	7 985	8 644	-7 329
Hong Kong (SAR of China)	2 754	2 709	1 202	1 210	1 499
India	4 865	6 049	1 000	1 220	4 829
Indonesia	2 984	3 410	3 765	3 318	92
Iran	125	169	43	24	145
Iraq	315	383	—	6	377
Ireland	172	179	1 686	1 917	-1 738
Israel	160	173	470	584	-411
Italy	1 375	1 544	4 215	4 496	-2 952
Japan	19 821	24 917	16 101	17 157	7 760
Korea, Republic of (South)	8 490	9 701	4 877	5 004	4 697
Kuwait	580	463	110	164	299
Malaysia	2 224	2 582	4 707	5 920	-3 338
Mexico	341	686	603	776	-90
Netherlands	1 368	1 790	1 197	1 261	529
New Zealand	8 094	9 160	5 056	5 340	3 820
Pakistan	438	587	161	146	441
Papua New Guinea	809	1 195	1 422	1 735	-540
Philippines	938	868	762	699	169
Saudi Arabia	1 992	1 816	757	1 409	407
Singapore	3 061	3 344	5 112	7 280	-3 936
South Africa	1 427	1 653	1 246	1 328	325
Spain	659	914	1 103	1 327	-413
Sweden	228	280	1 739	1 964	-1 684
Switzerland	181	249	1 190	1 481	-1 232
Taiwan	3 705	4 883	3 396	3 612	1 271
Thailand	2 463	3 900	3 669	4 202	-302
Turkey	277	279	262	365	-86
United Arab Emirates	1 185	1 275	742	822	453
United Kingdom	5 147	4 813	5 429	5 934	-1 121
United States of America	9 481	9 434	19 929	21 273	-11 839
Vietnam	512	708	2 019	3 098	-2 390
Other countries(c)	5 858	6 468	4 587	5 747	721
<b>Total</b>	<b>109 049</b>	<b>126 719</b>	<b>130 997</b>	<b>149 520</b>	<b>-22 801</b>
APEC	77 838	92 913	91 075	103 758	-10 845
ASEAN	12 273	14 952	20 551	25 196	-10 244
Developing countries	52 823	62 297	52 071	63 799	-1 502
Least developed countries	1 183	1 488	213	223	1 265
European Union	12 951	13 804	31 500	35 085	-21 281
OECD	61 426	70 125	81 841	88 895	-18 770

(a) A negative sign indicates that merchandise imports exceed merchandise exports. (b) Exports of alumina to Egypt are excluded from its country total and included in the 'Other countries' category. (c) Other countries include: all countries not displayed in the table; Zone of Co-op A-Timor Gap; Destination or Origin Unknown; International Waters; No country details; Confidentialised alumina exports; and Ship and aircraft stores.

Source: *International Trade in Goods and Services, Australia (5368.0)*.

## Merchandise exports and imports by industry of origin

Table 30.27 shows Australia's merchandise trade statistics classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC). The statistics are compiled by allocating international trade data for a commodity to an ANZSIC industry of origin category, based upon the industry which predominantly produces that commodity in Australia, as defined by the ANZSIC.

The majority of exports in 2004–05 were classified to the Manufacturing division, \$67.4b (53% of total exports) and the Mining division, \$41.0b (32% of total exports). Most ANZSIC subdivisions recorded increases in 2004–05 with the largest being in Coal

mining, up \$6.2b (57%); Metal ore mining, up \$4.1b (41%); Oil and gas extraction, up \$2.2b (30%); and Metal products, up \$1.8b (10%). Slightly offsetting these rises was a fall in Textiles, clothing, footwear and leather, down \$0.2b (11%).

The majority of imports were classified to the Manufacturing division, \$138.0b (92% of total imports), an increase of \$15.2b (12%) from 2003–04. The Mining division increased to \$10.3b and the Agriculture, forestry, fishing and hunting division increased marginally to \$0.8b. The ANZSIC subdivisions recording the largest increases were Machinery and equipment, up \$7.1b (11%); Petroleum, coal, chemical and associated product manufacturing, up \$4.4b (20%); and Oil and gas extraction, up \$3.4b (52%).

**30.27 MERCHANDISE EXPORTS AND IMPORTS, By industry of origin**

Industry of origin	Exports			Imports		
	2002–03 \$m	2003–04 \$m	2004–05 \$m	2002–03 \$m	2003–04 \$m	2004–05 \$m
<b>Agriculture, forestry, fishing and hunting</b>						
Agriculture	8 544	8 415	8 520	870	678	686
Services to agriculture; hunting and trapping	1 249	1 058	840	8	8	8
Forestry and logging	116	125	89	7	6	7
Commercial fishing	929	724	628	181	141	143
<i>Total</i>	<b>10 838</b>	<b>10 322</b>	<b>10 077</b>	<b>1 066</b>	<b>832</b>	<b>844</b>
<b>Mining</b>						
Coal mining	11 943	10 920	17 119	13	13	18
Oil and gas extraction	9 346	7 466	9 697	7 893	6 488	9 849
Metal ore mining	9 716	9 924	13 975	191	228	232
Other mining	255	255	251	163	202	173
<i>Total</i>	<b>31 261</b>	<b>28 565</b>	<b>41 043</b>	<b>8 260</b>	<b>6 932</b>	<b>10 272</b>
<b>Manufacturing</b>						
Food, beverage and tobacco	15 721	15 495	17 075	5 961	5 905	6 551
Textile, clothing, footwear and leather	2 759	2 174	1 925	7 842	7 369	8 071
Wood and paper products	1 883	1 872	2 016	3 759	3 709	3 819
Printing, publishing and recorded media	585	551	543	2 193	2 048	2 102
Petroleum, coal, chemical and associated products	8 028	7 849	8 977	21 247	22 064	26 501
Non-metallic mineral products	325	301	304	1 630	1 608	1 632
Metal products	19 518	18 839	20 637	9 925	9 608	11 178
Machinery and equipment	15 814	14 141	14 659	66 285	66 132	73 265
Other manufacturing	1 176	1 221	1 305	4 199	4 400	4 924
<i>Total</i>	<b>65 810</b>	<b>62 442</b>	<b>67 442</b>	<b>123 041</b>	<b>122 844</b>	<b>138 043</b>
<b>Other(a)(b)</b>	<b>7 571</b>	<b>7 721</b>	<b>8 158</b>	<b>763</b>	<b>389</b>	<b>360</b>
<b>Total</b>	<b>115 479</b>	<b>109 049</b>	<b>126 719</b>	<b>133 129</b>	<b>130 997</b>	<b>149 520</b>

(a) Includes exports which cannot yet be allocated by industry of origin. (b) Includes commodities subject to a confidentiality restriction.

Source: *International Trade in Goods and Services, Australia* (5368.0).

## International trade price indexes

The export price index for goods (All groups) increased by 13.6% in 2004–05 (table 30.28). The largest increases were in the index numbers for the Mineral fuels, lubricants and other related materials (32.6%), and Manufactured goods (20.4%) SITC sections.

Between 2000–01 and 2004–05 the All groups export price index increased by 1.4%. The largest increases were in the index numbers for the Mineral fuels, lubricants and related materials (13.6%), and Crude materials, inedible, except fuels (7.7%) SITC sections.

The import price index for goods (All groups) increased by 0.4% in 2004–05 (table 30.29). The largest increases were in the index numbers for

the Mineral fuels, lubricants and other related materials (up 29.5%) and Animal and vegetable oils, fats and waxes (5.4%) SITC sections. Offsetting these increases were decreases in the index numbers for the Machinery and transport equipment (down 4.8%) and Beverages and tobacco (4.4%) SITC sections.

Between 2000–01 and 2004–05 the All groups import price index decreased by 16.0%. The largest decreases were in index numbers for the Machinery and transport equipment (31.9%) and Miscellaneous manufactured articles (25.2%) SITC sections.

For further information concerning the definition and compilation of international trade price indexes see the *Prices* chapter.

### 30.28 EXPORT PRICE INDEX(a)

SITC section	2000–01	2001–02	2002–03	2003–04	2004–05
Food and live animals	109.6	118.9	109.3	100.7	106.8
Beverages and tobacco	137.8	142.8	143.8	124.4	126.4
Crude materials, inedible, except fuels	95.7	99.0	97.0	90.0	103.1
Mineral fuels, lubricants and other related materials	162.7	164.7	160.9	139.4	184.9
Chemicals and related products, n.e.s.	119.9	113.0	100.4	97.2	108.3
Manufactured goods classified chiefly by materials	116.7	105.1	102.1	100.6	121.1
Machinery and transport equipment	104.1	105.6	100.6	89.8	88.4
Miscellaneous manufactured articles	118.4	119.2	104.5	90.8	89.2
<b>All groups</b>	<b>114.8</b>	<b>116.7</b>	<b>111.7</b>	<b>102.5</b>	<b>116.4</b>

(a) Reference year 1989–90 = 100.0.

Source: *International Trade Price Indexes, Australia* (6457.0).

### 30.29 IMPORT PRICE INDEX(a)

SITC section	2000–01	2001–02	2002–03	2003–04	2004–05
Food and live animals chiefly for food	121.4	122.5	125.1	116.9	120.0
Beverages and tobacco	128.5	132.9	139.9	134.1	128.2
Crude materials, inedible, except fuels	139.9	124.9	123.1	112.2	115.1
Mineral fuels, lubricants and other related materials	188.0	158.4	174.9	156.2	202.3
Animal and vegetable oils, fats and waxes	122.6	122.1	141.0	134.9	142.2
Chemicals and related products n.e.s.	128.1	128.5	120.2	113.2	116.8
Manufactured goods classified chiefly by material	131.3	133.9	129.2	118.9	123.2
Machinery and transport equipment	129.7	128.2	118.7	103.3	98.3
Miscellaneous manufactured articles	140.0	143.0	132.1	114.4	111.8
Commodities and transactions n.e.s.	99.6	110.8	115.4	110.2	113.3
<b>All groups</b>	<b>134.3</b>	<b>132.3</b>	<b>126.0</b>	<b>112.3</b>	<b>112.8</b>

(a) Reference year 1989–90 = 100.0.

Source: *International Trade Price Indexes, Australia* (6457.0).

## International trade in services

International trade in services covers all services rendered by Australian residents to non-residents (exports) and by non-residents to residents (imports), where services are broadly defined as products other than tangible goods. As international trade in services covers a diverse range of activities, a variety of data sources and methods is used to compile estimates of the different service types.

### Conceptual framework

Australia's international trade in services statistics are compiled in accordance with the of the International Monetary Fund's *Balance of Payments Manual, fifth edition (BPM5)*. More information on the concepts, sources and methods used to produce Australia's international trade in services statistics is included in *Balance of Payments and International Investment Position, Australia: Concepts, Sources and Methods, 1998* (5331.0).

### Classification

The international standard for the classification of international trade in services is defined in the BPM5 framework. This framework has been further elaborated in the 'Extended Balance of Payments Services Classification', as detailed in the UN publication *Manual on Statistics of International Trade in Services, 2002*.

International trade in services statistics are compiled for transportation, travel, communications, construction, computer and information services, royalties and licence fees, other business services, personal, cultural and recreational services and government services. Some information is also available by partner country and state.

### Statistical overview

In current price terms, Australia's international trade in services balance in 2004–05 recorded a deficit of \$1.9b, an increase of \$1.7b on the \$0.3b deficit recorded in 2003–04. Services exports (credits) rose \$1.0b (3.0%) to \$35.0b and services imports (debits) rose \$2.7b to \$36.9b (7.8%). Table 30.30 provides details of Australia's international trade in services by service type.

The largest country contributor to the overall deficit on services was the United States of America, with a deficit of \$1.7b. Deficits were recorded for most European trading partners, with Switzerland the largest at \$0.6b. Australia recorded a net surplus with a number of its Asian trading partners, the largest being with Japan at \$1.3b. Australia also recorded a net surplus of \$0.8b with New Zealand. Tables 30.31 and 30.32 provide details of Australia's international trade in services by partner country and country groups.

### 30.30 INTERNATIONAL TRADE IN SERVICES, By service type

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
<b>EXPORTS</b>					
Transportation services	8 062	7 665	7 458	7 602	8 016
Passenger(a)	7 024	6 664	6 538	6 772	7 231
Freight	1 038	1 001	920	830	785
Other(a)	n.p.	n.p.	n.p.	n.p.	n.p.
Travel services	15 507	15 645	15 452	17 108	17 589
Business	1 206	1 156	1 122	1 262	1 227
Personal	14 301	14 489	14 330	15 846	16 362
Communications services(b)	1 397	927	1 082	834	790
Construction services	68	101	85	84	77
Insurance services	709	673	673	686	684
Financial services	920	966	984	995	1 004
Computer and information services	826	981	1 091	1 125	1 172
Royalties and licence fees	626	515	618	622	624
Other business services	3 185	3 391	3 638	3 566	3 738
Merchanting and other trade-related	489	549	509	632	666
Operational leasing	16	26	27	23	18
Miscellaneous business, professional and technical	2 680	2 816	3 102	2 911	3 054
Personal, cultural and recreational services	1 514	598	610	523	432
Government services n.i.e.	733	788	802	835	861
<b>Total</b>	<b>33 547</b>	<b>32 250</b>	<b>32 493</b>	<b>33 980</b>	<b>34 987</b>
<b>IMPORTS</b>					
Transportation services	-11 352	-10 776	-10 960	-11 634	-13 176
Passenger	-4 337	-4 182	-4 248	-4 790	-4 766
Freight	-5 991	-5 626	-5 808	-6 056	-7 514
Other	-1 024	-968	-904	-788	-896
Travel services	-11 072	-10 918	-11 012	-12 136	-13 525
Business	-2 786	-2 701	-2 677	-2 908	-3 017
Personal	-8 286	-8 217	-8 335	-9 228	-10 508
Communications services	-1 770	-1 451	-1 407	-879	-704
Construction services	—	—	—	—	-0
Insurance services	-878	-856	-856	-874	-872
Financial services	-592	-612	-585	-587	-584
Computer and information services	-849	-884	-967	-1 009	-1 056
Royalties and license fees	-1 706	-1 791	-1 828	-1 978	-2 011
Other business services	-3 069	-3 812	-3 746	-3 499	-3 242
Merchanting and other trade-related	-248	-334	-369	-192	-229
Operational leasing	-1 011	-948	-955	-916	-703
Miscellaneous business, professional and technical	-1 810	-2 530	-2 422	-2 391	-2 310
Personal, cultural and recreational services	-767	-882	-846	-883	-992
Government services n.e.i.	-626	-649	-684	-756	-760
<b>Total</b>	<b>-32 681</b>	<b>-32 631</b>	<b>-32 891</b>	<b>-34 235</b>	<b>-36 922</b>

(a) Passenger transportation exports includes other transportation services. (b) Communication services includes other services n.e.i..

Source: Balance of Payments and International Investment Position, Australia (5302.0).

**30.31 SERVICE EXPORTS, By country and country group(a)**

	1999–00	2000–01	2001–02	2002–03	2003–04
	\$m	\$m	\$m	\$m	\$m
Belgium	95	111	115	137	140
Brunei Darussalam	19	21	34	27	32
Canada	376	426	416	399	453
Central America and Caribbean	4	6	24	14	42
Chile	11	13	16	10	12
China (excl. SARs and Taiwan Prov.)	701	868	921	977	1 187
Fiji	190	141	114	131	129
France	290	366	357	377	410
Germany	768	856	803	762	818
Greece	78	77	61	54	69
Hong Kong (SAR of China)	997	1 198	1 442	1 331	1 292
India	346	432	453	456	565
Indonesia	787	869	986	972	999
Ireland	165	216	220	318	388
Italy	271	294	238	252	218
Japan	3 324	3 678	3 453	3 361	3 300
Korea, Republic of (South)	597	735	815	837	891
Malaysia	754	852	839	885	970
Mexico	10	13	13	14	10
Netherlands	300	308	271	285	389
New Zealand	2 045	2 275	2 190	2 341	2 485
Norway	96	111	136	68	167
Papua New Guinea	379	388	353	296	316
Peru	—	23	33	33	38
Philippines	174	157	141	129	119
Russian Federation	56	73	63	45	61
Singapore	1 687	2 160	2 282	2 200	2 224
South Africa	183	219	183	236	247
Sweden	285	229	181	180	197
Switzerland	313	382	384	397	384
Taiwan	420	444	379	352	426
Thailand	429	492	472	479	489
United Kingdom	3 111	3 575	3 601	3 662	3 814
United States of America	4 590	5 854	4 605	4 756	4 454
Vietnam	99	111	156	200	204
Africa n.e.s.	134	152	175	129	243
America n.e.s.	296	182	136	155	160
Asia n.e.s.	949	1 289	1 359	1 464	1 578
Europe n.e.s.	672	968	782	870	936
Oceania n.e.s.	235	207	228	229	263
Unallocated	2 325	2 772	2 817	2 671	2 839
<b>Total</b>	<b>28 561</b>	<b>33 543</b>	<b>32 247</b>	<b>32 491</b>	<b>33 959</b>
APEC	17 454	20 651	19 611	19 748	19 962
ASEAN	3 959	4 675	4 913	4 896	5 040
EU	5 672	6 378	6 109	6 308	6 776
OECD	17 026	19 846	18 145	18 639	18 948

(a) At the time of compilation, final country data for 2004–05 were not available for inclusion.

Source: *International Trade in Goods and Services, Australia (5368.0)*.



### 30.32 SERVICE IMPORTS, By country and country group(a)

	1999-00	2000-01	2001-02	2002-03	2003-04
	\$m	\$m	\$m	\$m	\$m
Belgium	-91	-60	-36	-41	-34
Brunei Darussalam	-24	-36	-42	-53	-51
Canada	-388	-402	-387	-412	-378
Central America and Caribbean	-238	-255	-260	-252	-220
Chile	-38	-64	-76	-70	-64
China (excl. SARs and Taiwan Prov.)	-621	-677	-808	-913	-881
Fiji	-354	-323	-327	-385	-417
France	-381	-425	-419	-538	-564
Germany	-885	-1 102	-1 273	-1 175	-1 192
Greece	-266	-281	-278	-202	-187
Hong Kong (SAR of China)	-1 287	-1 643	-1 967	-1 664	-1 586
India	-193	-221	-217	-205	-239
Indonesia	-525	-552	-634	-523	-511
Ireland	-181	-229	-252	-225	-323
Italy	-421	-436	-457	-446	-496
Japan	-2 074	-2 166	-1 788	-1 888	-2 001
Korea, Republic of (South)	-206	-293	-303	-409	-388
Malaysia	-743	-922	-790	-692	-688
Mexico	-33	-29	-35	-39	-39
Netherlands	-598	-536	-398	-553	-569
New Zealand	-1 546	-1 698	-1 650	-1 809	-1 723
Norway	-57	-48	-53	-57	-176
Papua New Guinea	-162	-177	-162	-169	-159
Peru	—	-1	-18	-18	-28
Philippines	-171	-184	-169	-181	-205
Russian Federation	-45	-117	-130	-52	-55
Singapore	-1 928	-2 244	-2 368	-2 450	-2 585
South Africa	-171	-188	-229	-291	-265
Sweden	-82	-102	-73	-86	-71
Switzerland	-702	-924	-1 012	-996	-943
Taiwan	-136	-135	-129	-173	-223
Thailand	-626	-735	-795	-812	-821
United Kingdom	-3 675	-3 871	-3 676	-3 809	-3 821
United States of America	-6 372	-6 454	-6 211	-5 982	-6 182
Vietnam	-213	-242	-267	-336	-371
Africa n.e.s.	-331	-365	-334	-278	-380
America n.e.s.	-164	-149	-147	-169	-185
Asia n.e.s.	-756	-1 097	-1 278	-1 591	-1 950
Europe n.e.s.	-845	-933	-1 098	-1 026	-1 418
Oceania n.e.s.	-230	-256	-231	-266	-313
Unallocated	-2 240	-2 109	-1 855	-1 654	-1 549
<b>Total</b>	<b>-29 999</b>	<b>-32 681</b>	<b>-32 632</b>	<b>-32 890</b>	<b>-34 251</b>
APEC	-17 139	-18 770	-18 728	-18 644	-18 941
ASEAN	-4 275	-4 931	-5 079	-5 047	-5 238
EU	-6 933	-7 416	-7 210	-7 403	-8 000
OECD	-18 580	-19 544	-18 768	-19 067	-19 877

(a) At the time of compilation, final country data for 2004-05 were not available for inclusion.

Source: *International Trade in Goods and Services, Australia (5368.0)*.

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The ABS wishes to give a special thanks to the following persons and organisations for their input into *Year Book Australia 2006*:

Robin Green (editor)

Michael Harrington (indexer)

Australian government departments and agencies:

AusAID

Australian Bureau of Agricultural and Resource Economics

Australian Bureau of Meteorology

Australian Centre for International Agricultural Research

Australian Wheat Board Limited

Bureau of Rural Sciences

Bureau of Transport and Regional Economics

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The General Assembly of the United Nations has declared 2006 the International Year of Deserts and Desertification. Like most of Australia's desert lakes, Lake Amadeus, north of Uluru (Northern Territory), is a vast salt pan. *Photograph by Mike Smith.*



2130100001060

ISSN 0312-4746

Recommended retail price \$93.00

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Produced by the Australian Bureau of Statistics