
A Statistical appendix

A.1 Introduction

This appendix contains contextual information to assist the interpretation of the performance indicators presented in the Report. The following six key factors in interpreting the performance data are addressed:

- *Australia's population.* Section A.2 presents data on population characteristics, including age and sex, ethnicity, geographic location, and a profile of Indigenous Australians.
- *Family and household.* Section A.3 provides an overview of the family and household environments in which Australians live.
- *Income, education and employment.* Section A.4 summarises the income and employment characteristics of Australians, including educational attainment and workforce participation, and gross domestic product.
- *Statistical concepts used in the Report.* Section A.5 provides technical information on the key statistical concepts used in the Report.
- *List of attachment tables.* Section A.6 lists the attachment tables for this appendix. Attachment tables are identified in references throughout the appendix by an 'AA' suffix (for example, table AA.3 is table AA.3 in the attachment tables). Attachment tables are provided on the CD-ROM enclosed with the Report and on the Review website (www.pc.gov.au/gsp).
- *References.* Section A.7 lists references used in this appendix.

A.2 Population

The Australian people are the principal recipients of the government services covered by this Report. The size, trends and characteristics of the population can have a significant influence on the demand for government services and the cost of delivery. This section provides a limited description of the Australian population to support the interpretation of government services provided in the Report. More

detail is provided in the Australian Bureau of Statistics (ABS) annual publication *Australian Social Trends* (ABS 2007b).

In this appendix and associated attachment tables, population totals for the same year can vary because they are drawn from different ABS sources depending on the information required — for example, some data are from the *Census of Population and Housing* (ABS 2006b) and others from the *Australian Demographic Statistics* (ABS 2007a).

Most of the service areas covered by the Report use population data from tables AA.1 and AA.2 for descriptive information (such as expenditure per person in the population) or performance indicators (such as participation rates for vocational education and training [VET]).

Population size and trends

More than three quarters of Australia's 20.7 million people lived in the eastern mainland states as at 30 June 2006, with NSW, Victoria and Queensland accounting for 32.9 per cent, 24.8 per cent and 19.8 per cent, respectively, of the nation's population. Western Australia and SA accounted for a further 9.9 per cent and 7.6 per cent, respectively, of the population, while Tasmania, the ACT and the NT accounted for the remaining 2.4 per cent, 1.6 per cent and 1.0 per cent, respectively (table AA.1).

Nationally, the average annual growth rate of the population between 2002 and 2006 was approximately 1.3 per cent. The growth across jurisdictions ranged from 2.3 per cent in Queensland to 0.8 per cent in NSW and SA (table AA.2, 31 December estimates).

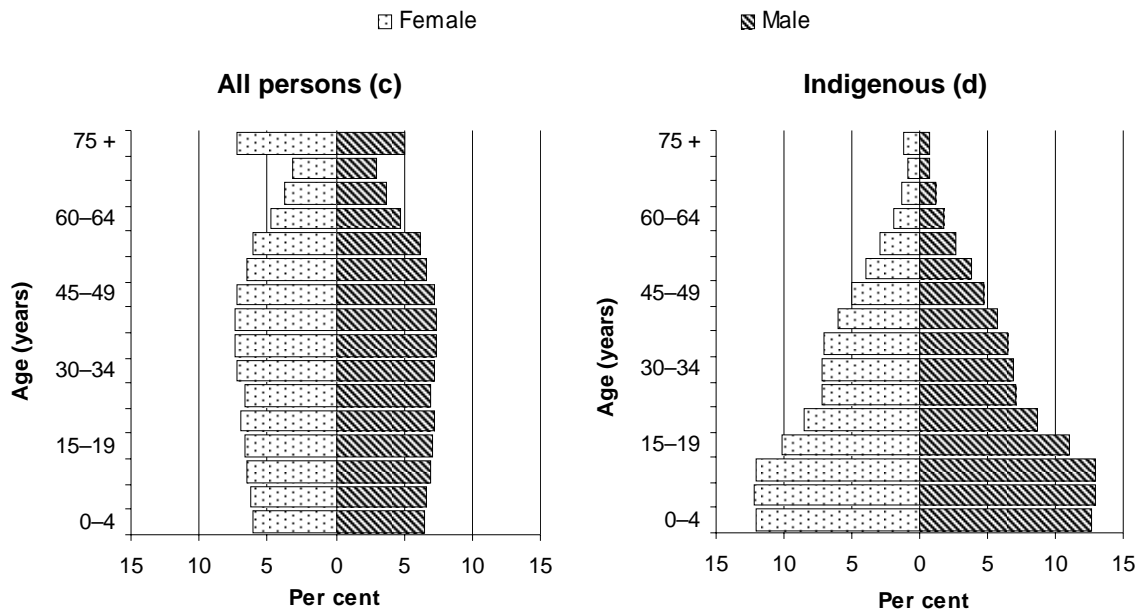
Population, by age and sex

As in most other developed economies, greater life expectancy and declining fertility have contributed to an 'ageing' of Australia's population. However, the age distribution of Indigenous Australians is markedly different (figure A.1). At 30 June 2006, 9.2 per cent of Australia's population was aged 70 years or over, in contrast to 1.8 per cent of Australia's Indigenous population (tables AA.1 and AA.7). Across jurisdictions, the proportion of people aged 70 years or over ranged from 11.0 per cent in SA to 2.6 per cent in the NT (table AA.1).

Half of the population at June 2006 was female (50.3 per cent). This distribution was similar across all jurisdictions except the NT, which had a lower representation of women in its population (48.1 per cent) (table AA.1). The proportion of women

in the population varies noticeably by age. Nationally, approximately 56.7 per cent of people aged 70 or over were female, compared with 48.7 per cent of people aged 14 years or younger (table AA.1).

Figure A.1 **Population distribution, Australia, by age and sex, 30 June 2006^{a, b}**



^a Totals may not add as a result of rounding. ^b Includes other territories. ^c Estimated resident population (ERP) figures as at 30 June 2006 are preliminary and rebased on the 2006 Census of Population and Housing. ^d Experimental estimates at 30 June 2006 are preliminary rebased estimates and are based on the 2006 Census of Population and Housing.

Source: ABS (unpublished) *Australian Demographic Statistics, December Quarter 2006*; ABS (2007) *Australian Demographic Statistics, March Quarter 2007*; tables AA.1 and AA.7.

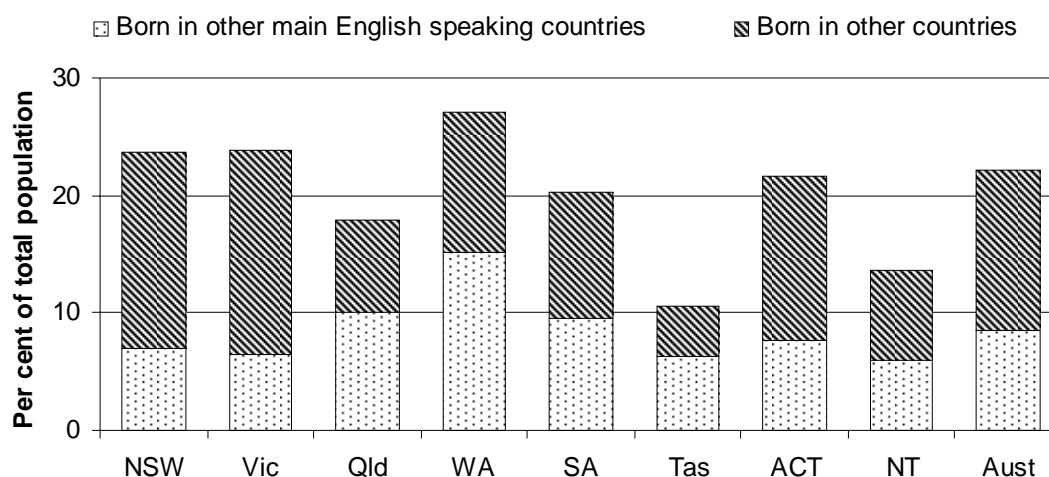
Population, by ethnicity and proficiency in English

New Australians face specific problems when accessing government services. Language and culture can be formidable barriers for otherwise capable people. Cultural backgrounds can also have a significant influence on the support networks offered by extended families. People born outside Australia accounted for 22.2 per cent of the population in August 2006 (8.4 per cent from the main English speaking countries and 13.8 per cent from other countries).¹ Across jurisdictions, the proportion of people born outside Australia ranged from 27.1 per cent in WA to 10.6 per cent in Tasmania. The proportion from countries other than the main

¹ The ABS defines the other main English speaking countries as Canada, Ireland, New Zealand, South Africa, the United States of America and the United Kingdom.

English speaking countries ranged from 17.3 per cent in Victoria to 4.2 per cent in Tasmania (figure A.2).

Figure A.2 **People born outside Australia, by country of birth, August 2006^{a, b}**



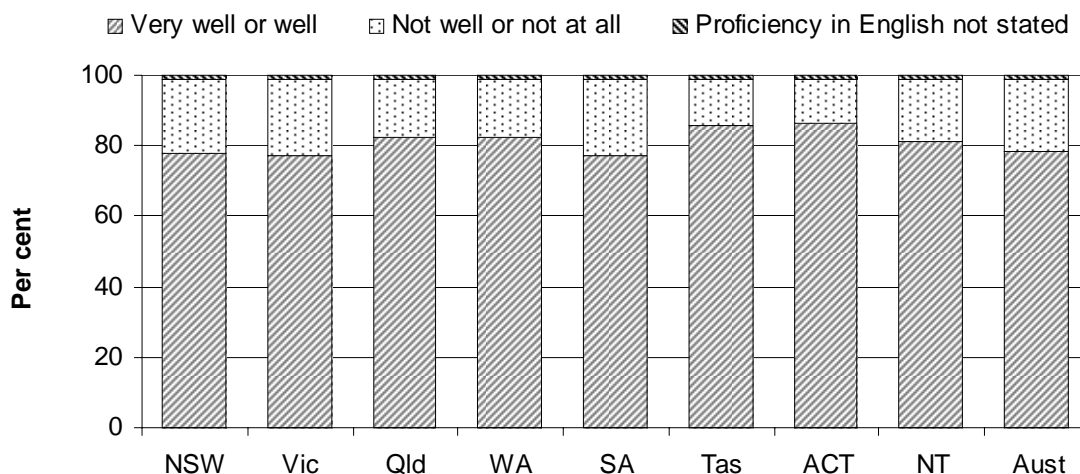
^a 'Australia' includes other territories. ^b The ABS defines the other main English speaking countries as Canada, Ireland, New Zealand, South Africa, the United States of America and the United Kingdom.

Source: ABS (unpublished) 2006 Census of Population and Housing; table AA.4.

Of the population born outside Australia, in August 2006, 89.0 per cent spoke only English, or spoke another language as well as speaking English very well or well. Figure A.3 shows proficiency in English of people born overseas who speak another language. Of those people born overseas who spoke another language, 78.6 per cent also spoke English very well or well. The proportion of people born overseas who spoke another language, who did not speak English well or at all, ranged from 21.9 per cent in Victoria to 12.8 per cent in Tasmania (table AA.3).

The proportion of all people born overseas who did not speak English well or at all was 10.0 per cent nationally, and ranged from 12.9 per cent in Victoria to 3.1 per cent in Tasmania (table AA.3).

Figure A.3 People born overseas who spoke another language, by proficiency in English, August 2006^a



^a Excludes persons who did not state their country of birth.

Source: ABS (unpublished) 2006 Census of Population and Housing, Cat. no. 2068.0; table AA.3.

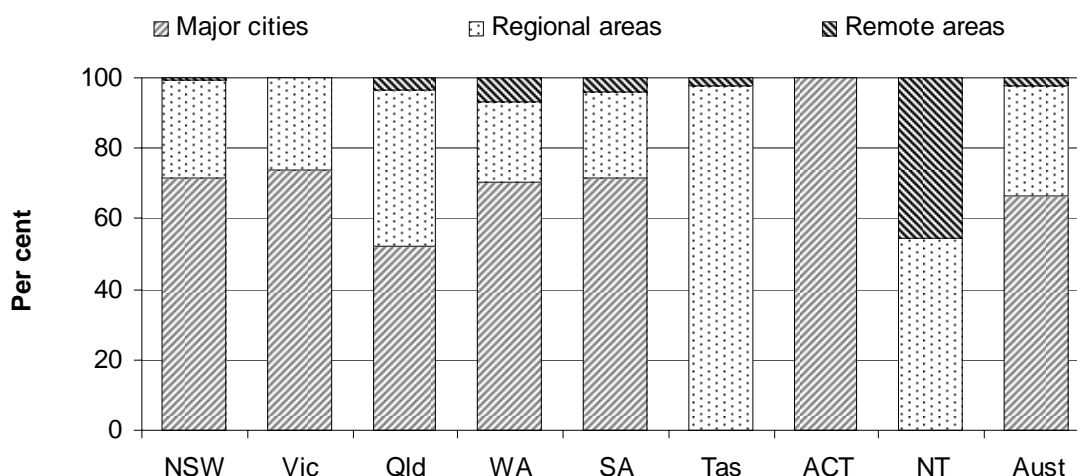
Approximately 15.8 per cent of Australians spoke a language other than English at home in August 2006. Across jurisdictions, this proportion ranged from 23.2 per cent in the NT to 3.5 per cent in Tasmania (table AA.5). The most common languages spoken were Chinese languages, Italian, Greek and Arabic.

The most and least common languages other than English spoken in people's homes varied across jurisdictions in August 2006. The most extreme variation was in the NT, where 15.1 per cent of people spoke an Australian Indigenous language (65.3 per cent of the total persons in the NT who spoke a language other than English in their homes) (table AA.5).

Population, by geographic location

The Australian population is highly urbanised, with 66.2 per cent of the population located in major cities as at 30 June 2006 (figure A.4). Across jurisdictions, this proportion ranged from 99.8 per cent in the ACT to 52.2 per cent in Queensland (table AA.6). Tasmania and the NT by definition have no major cities. In Tasmania, 97.8 per cent of the population lived in regional areas. Australia-wide, 2.4 per cent of people lived in remote areas. The NT was markedly above this average, with 45.7 per cent of people living in remote areas.

Figure A.4 Population, by remoteness area, June 2006^{a, b}



^a Preliminary rebased ERP based on the 2006 Census of Population and Housing by 2001 remoteness areas.

^b 'Australia' includes other territories.

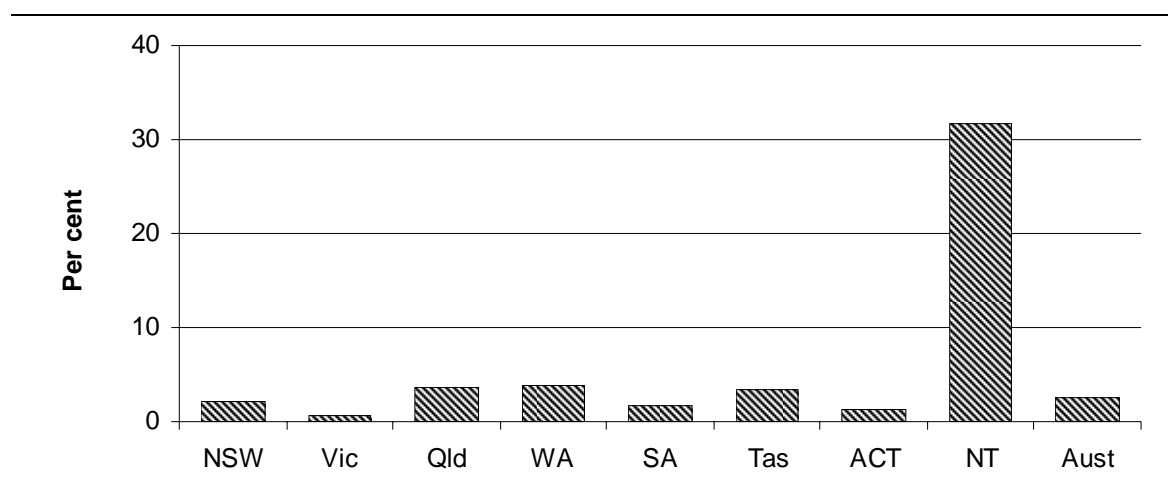
Source: ABS (unpublished) *Australian Demographic Statistics, March Quarter 2007*; table AA.6.

Indigenous population profile

There were an estimated 517 174 Indigenous people (259 693 female and 257 481 male) in Australia at 30 June 2006, accounting for approximately 2.5 per cent of the total population (tables AA.2 and AA.7). The proportion of people who were Indigenous was significantly higher in the NT (31.6 per cent) than in any other jurisdiction. Across the other jurisdictions, the proportion ranged from 3.8 per cent in WA to 0.6 per cent in Victoria (figure A.5). Nationally, the Indigenous population is projected to grow to 528 645 people in 2009 (table AA.8).

The majority of Indigenous people (81.8 per cent) at August 2006 spoke only English at home, while a further 9.0 per cent spoke an Indigenous language and English very well or well. However, 2.2 per cent spoke English not well or not at all (up to 12.2 per cent in the NT). Nationally, 5.2 per cent did not state proficiency in any specific language (table AA.9).

Figure A.5 **Indigenous people as a proportion of the population, 30 June 2006^{a, b, c}**



^a 'Australia' includes other territories. ^b Experimental estimates of the Australian Indigenous population at 30 June 2006 are preliminary rebased estimates and are based on the *2006 Census of Population and Housing*. ^c The ERP at 30 June 2006 is preliminary and rebased on the *2006 Census of Population and Housing*.

Source: ABS (December Quarter 2006, March Quarter 2007) *Australian Demographic Statistics*; tables AA.2 and AA.7.

A.3 Family and household

Family structure

There were 5.7 million families in Australia in 2006.² Across jurisdictions, the number of families ranged from 1.9 million in NSW to 40 000 in the NT. The average family size across Australia was 3.0 people (unchanged since 2002). Across jurisdictions, the average family size was the same as the national average except for SA and Tasmania, where the average family size was 2.9 people. Nationally, 39.9 per cent of families had at least one child under 15 years, and 17.7 per cent of families had at least one child under 5 years (table AA.10).

Lone parent families may have a greater need for government support and particular types of government services (such as child care for respite reasons). Nationally, 19.0 per cent of children aged under 15 years lived in one parent families in 2006.

² The ABS *Census Dictionary* (ABS 2006a) defines a family as two or more persons, one of whom is aged 15 years or over, who are related by blood, marriage (registered or de facto), adoption, step or fostering; and who are usually resident in the same household. The basis of a family is formed by identifying the presence of a couple relationship, lone parent-child relationship or other blood relationship. Some households contain more than one family.

Lone mother families made up 18.0 per cent of families with children aged under 15 years. Lone father families made up 2.7 per cent of families with children under 15 years. Across jurisdictions, the proportion of children aged under 15 years living in one parent families ranged from 23.1 per cent in SA to 17.4 per cent in Victoria and the NT (table AA.11).

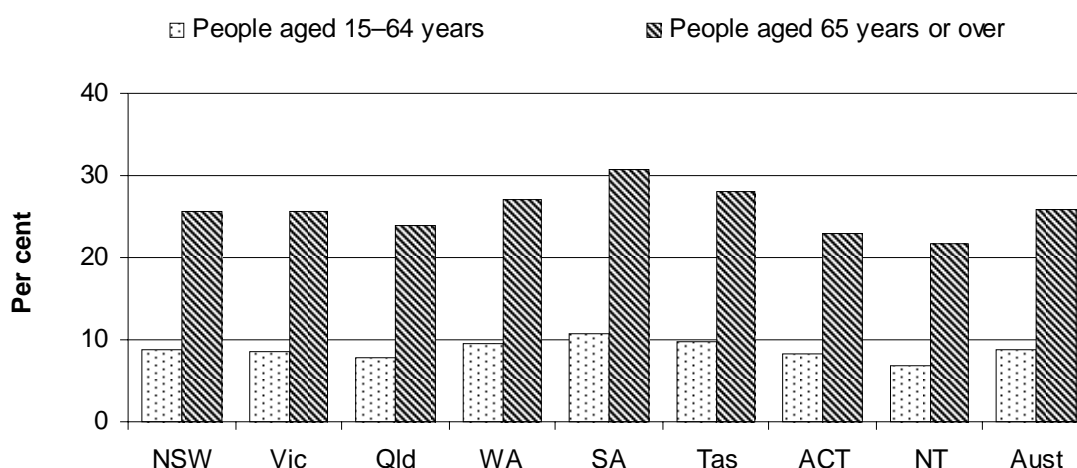
Employment status also has implications for the financial independence of families. Nationally, 15.7 per cent of children aged under 15 years in 2003-04 lived in families where no parent was employed (table AA.12).

Household profile

There were 8.1 million households in Australia in 2006 (table AA.14). Over one quarter (26.5 per cent) of these were lone person households. Across jurisdictions, the proportion of lone person households ranged from 30.7 per cent in Tasmania to 23.5 per cent in the NT.

In June 2006, the proportion of people aged 65 years or over who lived alone (25.9 per cent) was considerably higher than that for people aged 15–64 years (8.8 per cent). Across jurisdictions, the proportion of people aged 65 years or over who lived alone ranged from 30.8 per cent in SA to 21.6 per cent in the NT (figure A.6).

Figure A.6 **Proportion of population who lived alone, by age group, June 2006**



Source: ABS (2007) *Australian Social Trends 2007*, Cat. no. 4102.0; table AA.14.

Home ownership can reflect on a family's wealth and savings, and is often positively related to employment and income. Approximately 15.4 million people in families lived in private dwellings in August 2006 (table AA.13).³

Nationally, the majority of occupied private dwellings (68.1 per cent, or 4.9 million dwellings) in August 2006 were owned or were being purchased. Home ownership was highest in Victoria (71.6 per cent) and lowest in the NT (47.6 per cent). Australians rented 2.0 million dwellings, or 28.1 per cent of dwellings (of these, 50.9 per cent were from real estate agents and 15.1 per cent from state or territory housing authorities) (table AA.15). Across jurisdictions, the proportion of dwellings that were rented was highest in the NT (47.8 per cent) and lowest in Victoria (24.6 per cent) (figure A.7).

Figure A.7 **Occupied private dwellings, by tenure type, August 2006^{a, b, c}**



a 'Australia' includes other territories. **b** 'Owned or being purchased' includes dwellings being purchased under a rent/buy scheme. **c** 'Other tenure type' includes dwellings being occupied under a life tenure scheme.

Source: ABS (unpublished) 2006 Census of Population and Housing, Cat. no. 2068.0; table AA.15.

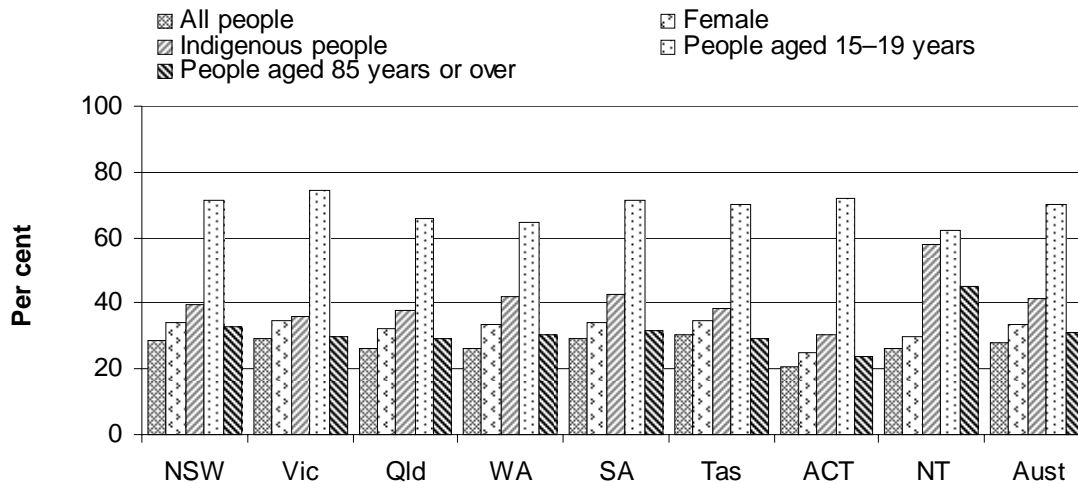
³ The ABS *Census Dictionary* (ABS 2006a) defines an occupied private dwelling as a private dwelling occupied by one or more people. A private dwelling is normally a house, flat, or even a room. It can also be a caravan, houseboat, tent or a house attached to an office, or rooms above a shop.

A.4 Income, education and employment

Income

Nationally, 28.0 per cent of people aged 15 years or over in August 2006 had a relatively low weekly individual income of \$249 or less (table AA.16). The proportion was considerably higher for younger people (70.3 per cent for people aged 15–19 years), Indigenous people (41.4 per cent), females (33.5 per cent) but similar for older people (30.9 per cent for people aged 85 years or over) (figure A.8).

Figure A.8 **Weekly individual income of \$249 or less, by sex, Indigenous status and age, August 2006^a**

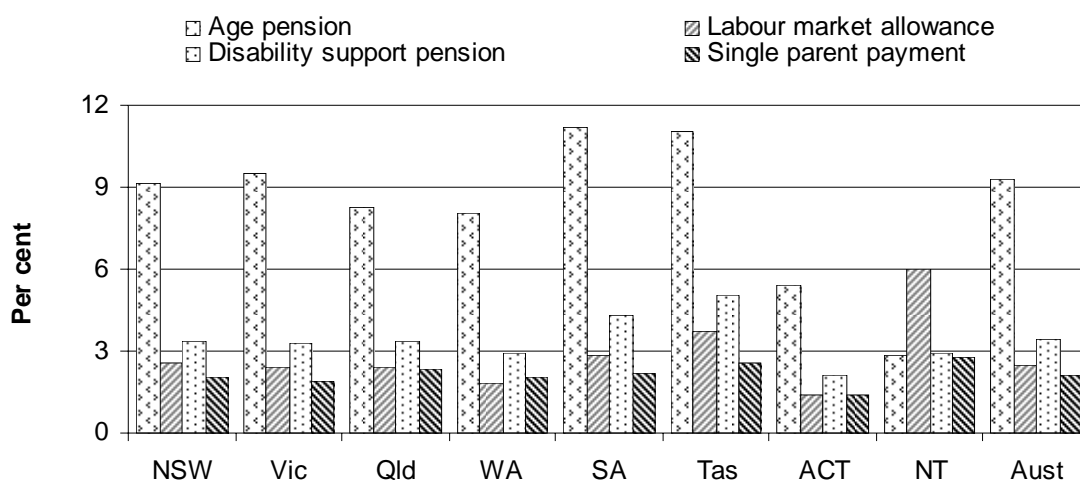


^a 'Australia' includes other territories.

Source: ABS (unpublished) 2006 Census of Population and Housing; ABS (unpublished) 2006 Census of Population and Housing, Cat. no. 2068.0; tables AA.16–AA.18.

Nationally, 17.3 per cent of the total population was receiving income support in 2006. The age pension was received by 9.3 per cent of the population, while 3.4 per cent received a disability support pension and 2.1 per cent received a single parent payment. A further 2.5 per cent of the population received some form of labour market allowance in 2006 (figure A.9).

Figure A.9 Proportion of total population on income support, June 2006^{a, b}



^a Components do not add to Australian total because total for Australia includes payments to people living overseas and where valid geographic data were not available. ^b Excludes Newstart customers who received a nil rate of payment.

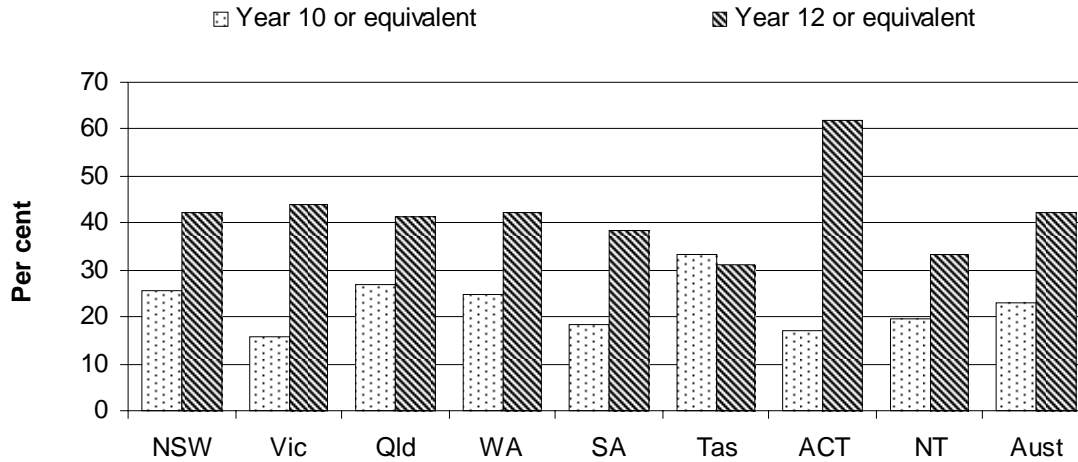
Source: ABS (2007) *Australian Social Trends 2007*, Cat. no. 4102.0; table AA.19.

The proportion of the population receiving the age pension in 2006 ranged from 11.2 per cent in SA to 2.8 per cent in the NT; the proportion receiving a disability support pension ranged from 5.1 per cent in Tasmania to 2.1 per cent in the ACT; and the proportion receiving a single parent payment ranged from 2.8 per cent in the NT to 1.4 per cent in the ACT. The proportion receiving a labour market allowance in 2006 ranged from 6.0 per cent in the NT to 1.4 per cent in the ACT.

Educational attainment

Employment outcomes and income are closely linked to the education and skill levels of individuals. At August 2006, 42.2 per cent of people aged 15 years and over (approximately 6.7 million people) had completed year 12 or equivalent as the highest level of schooling. A further 22.9 per cent (3.6 million people) had completed year 10 or equivalent schooling. Across jurisdictions, the proportion of people aged 15 years and over who had completed year 12 or equivalent schooling ranged from 62.1 per cent in the ACT to 31.3 per cent in Tasmania (figure A.10).

Figure A.10 People aged 15 years or over, by highest year of school completed, August 2006^a

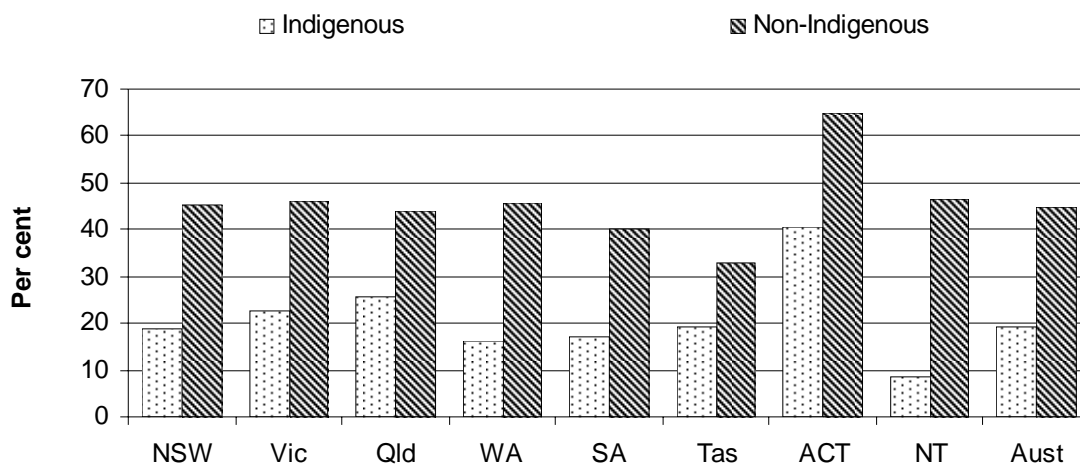


^a 'Australia' includes other territories.

Source: ABS (unpublished) 2006 Census of Population and Housing, Cat. no. 2068.0; table AA.20.

The proportion of non-Indigenous people aged 15 years or over who had completed year 12 or equivalent schooling as the highest level of schooling (44.9 per cent) was considerably higher than the proportion of Indigenous people (19.4 per cent) in August 2006. Across jurisdictions, the proportion of Indigenous people aged 15 years or over who had completed year 12 or equivalent schooling ranged from 40.7 per cent in the ACT to 8.5 per cent in the NT. The proportion of non-Indigenous people who had completed year 12 or equivalent was highest in the ACT (65.0 per cent) and lowest in Tasmania (33.0 per cent) (figure A.11).

Figure A.11 **People aged 15 years or over who had completed year 12 or equivalent as highest level of schooling, by Indigenous status, August 2006^a**



^a 'Australia' includes other territories.

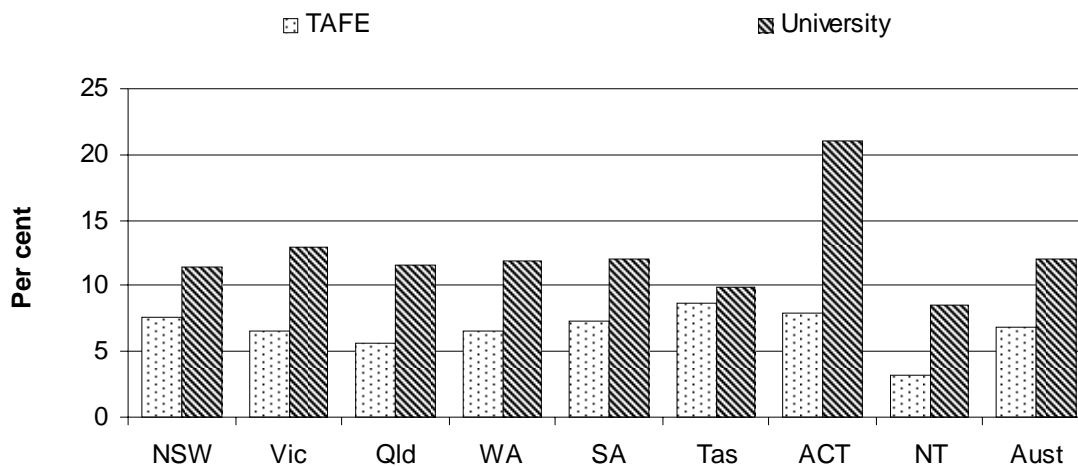
Source: ABS (unpublished) 2006 Census of Population and Housing, Cat. no. 2068.0; table AA.20.

Tertiary education in Australia is principally provided by universities and technical and further education (TAFE) institutes. Nationally, 18.9 per cent of those attending an educational institution⁴ were attending university or TAFE in August 2006 (12.0 per cent at university and 6.9 per cent at TAFE). Across jurisdictions, the proportion of students attending TAFE ranged from 8.7 per cent in Tasmania to 3.2 per cent in the NT; the proportion attending university ranged from 21.1 per cent in the ACT to 8.5 per cent in the NT (figure A.12).

In August 2006, the proportion of the Indigenous tertiary students who were attending TAFE was highest in Tasmania (9.5 per cent) and lowest in the NT (2.0 per cent). At August 2006, the proportion of non-Indigenous students (14.4 per cent) attending university was considerably higher than the proportion of Indigenous students (3.7 per cent). Across jurisdictions, the proportion of non-Indigenous students attending university ranged from 24.0 per cent in the ACT to 11.7 per cent in Tasmania. For Indigenous students the proportion ranged from 10.0 per cent in the ACT to 2.2 per cent in the NT (figure A.13).

⁴ Educational institutions include pre-school, infants/primary school, secondary school, tertiary institutions and other educational institutions.

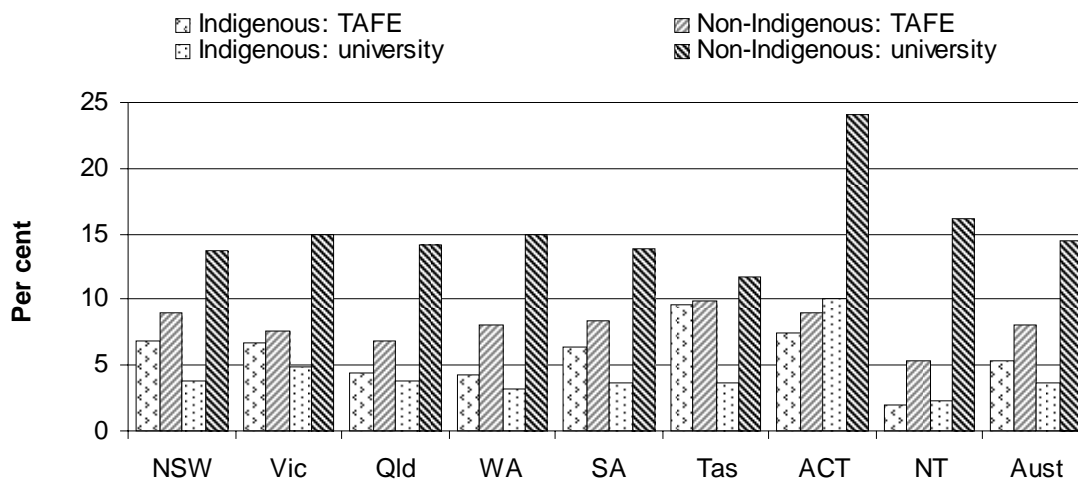
Figure A.12 Proportion of students attending tertiary education institutions, August 2006^{a, b}



^a 'Australia' includes other territories. ^b Includes 'technical and further educational institution (including TAFE colleges)'.

Source: ABS (unpublished) 2006 Census of Population and Housing, Cat. no. 2068.0; table AA.21.

Figure A.13 Proportion of students attending tertiary education institutions, by Indigenous status, August 2006^{a, b}



^a 'Australia' includes other territories. ^b Includes 'technical and further educational institution (including TAFE colleges)'.

Source: ABS (unpublished) 2006 Census of Population and Housing, Cat. no. 2068.0; table AA.21.

Employment and workforce participation

There were 10.9 million people aged 15 years or over in the labour force in Australia in June 2007. Of these, 95.8 per cent were employed. This means 4.2 per cent of the participating labour force were unemployed at June 2007. The majority of employed persons (71.1 per cent) were in full time employment. A further 460 000 people were looking for work (70.9 per cent for full time work and 29.1 per cent for part time work) (table AA.22).

Across jurisdictions, the proportion of employed people in full time employment in June 2007 ranged from 80.0 per cent in the NT to 68.2 per cent in SA. The unemployment rate ranged from 4.9 per cent in Tasmania to 3.0 per cent in the ACT. The proportion of unemployed people looking for full time work ranged from 74.5 per cent in SA to 48.0 per cent in the NT (tables AA.22 and AA.24).

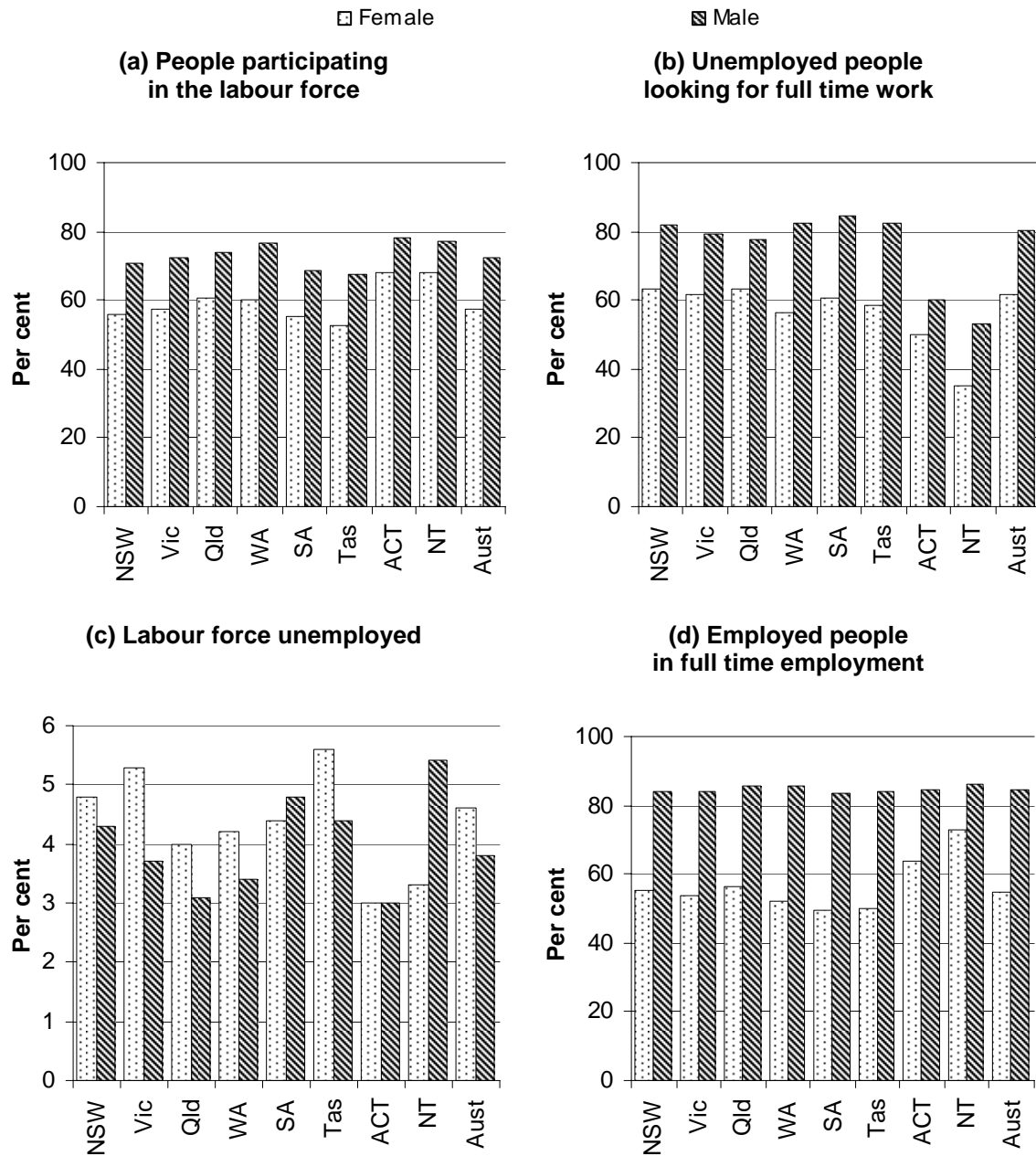
The unemployment rate needs to be interpreted within the context of labour force participation rates, which were higher for males than for females in all jurisdictions (figure A.14a). Nationally, fewer unemployed females were looking for full time work than males (61.5 per cent and 80.3 per cent respectively) (figure A.14b).

The unemployment rate for females was higher than that for males in all jurisdictions except SA and the NT. Male and female unemployment rates were the same in the ACT (figure A.14c). A greater proportion of employed males than of employed females had full time employment in all jurisdictions. The difference between male and female full time employment ranged from 34.4 percentage points in Tasmania to 13.1 percentage points in the NT (figure A.14d).

General economic indicators

Gross Domestic Product (GDP) is the total market value of goods and services produced in Australia within a given period. Australia's GDP is the total of all State and Territory Gross State Product (GSP). In 2005-06, the GSP for NSW accounted for 33.1 per cent of national gross product, compared with 1.3 per cent for the NT. Growth from the previous year's GSP (in 2005-06 dollars) was highest for WA (10.7 per cent) and lowest for NSW (-0.2 per cent). Across Australia, the GSP per person was \$47 181 in 2005-06 (table AA.25).

Figure A.14 Labour force outcomes for people aged 15 years or over, by sex, June 2007



Source: ABS (unpublished) *Labour Force, Australia*, (data cube ST LM8) Cat. no. 6291.0; tables AA.22–AA.24.

A.5 Statistical concepts used in the Report

Reliability of estimates

Outcome and quality indicators for some services covered in this Report are reported from surveys (including surveys of client and community perception). Police services, for example, use a survey to obtain an indicative level of community satisfaction with the services that police agencies provide. The potential for sampling error — that is, the error that occurs by chance because the data are obtained from only a sample and not the entire population — means that the reported responses may not indicate the true responses.

Standard error

The standard error (SE) is one measure of the variability that occurs as a result of surveying a sample of the population. There are two chances in three (67 per cent) that a survey estimate is within one SE of the figure that would have been obtained if the entire population had been surveyed, and about 19 chances in 20 (95 per cent) that it is within approximately two SEs. There is a 95 per cent probability that the true value of a survey estimate (x) lies within:

$$x - 1.96 SE(x) \text{ and } x + 1.96 SE(x)$$

where x is the estimate (for example, the number of persons responding either ‘satisfied’ or ‘very satisfied’). The SE of an estimate can be obtained from either (1) the tables in chapters reporting the estimates and relative standard errors (RSEs) or (2) the RSE tables produced at the end of each of the relevant attachments. Linear interpolation needs to be used to calculate the SEs of estimates falling between the sizes of estimates listed in these tables.

Relative standard error

The SE can be expressed as a proportion of the estimate — known as the RSE, which is determined by dividing the SE of the estimate $SE(x)$ by the estimate x and expressing it as a percentage:

$$RSE(x) = \frac{SE(x)}{x}$$

If, for example, 4.3 million people in NSW were estimated to be satisfied with a service, and the SE was approximately $\pm 34\ 100$ people, then the $RSE(x)$ would be

equal to 0.0078, or 0.78 per cent. The RSE is a useful measure that provides an immediate indication of the percentage errors likely to have occurred as a result of sampling.

Proportions and percentages formed from the ratio of two estimates are also subject to sampling error, as when estimating the proportion of a population that is ‘satisfied’ or ‘very satisfied’ with a service. The size of the error depends on the accuracy of both the numerator (the estimated number of persons responding as ‘satisfied’ or ‘very satisfied’) and the denominator (the estimated size of the population). The formula for the RSE of a proportion is:

$$\text{RSE}\left(\frac{x_1}{X}\right) = \sqrt{[\text{RSE}(x_1)]^2 - [\text{RSE}(X)]^2}$$

where x_1 is estimated as the number of persons from jurisdiction x responding as ‘satisfied’ or ‘very satisfied’, and X is the estimated population of jurisdiction x .

Testing for statistical differences

The chance that an estimate falls within a certain range of the true value is known as the *confidence* of the estimate. For any particular survey, there is a tradeoff between the confidence of the estimate and the range of error (in terms of SEs) attached to the estimate. The appropriate level of reliability chosen depends on the purpose of obtaining the estimate. The lower the level of confidence required, the smaller the range the estimate will fall within (for example, we might be able to be 90 per cent confident the true result lies between 18 and 20, but if we want to be 95 per cent confident, we might have to increase the possible range to between 16 and 22).

Confidence intervals (CIs) — the value ranges within which estimates are likely to fall — can be used to test whether the results reported for two jurisdictions are statistically different. If the CIs for the results overlap, then there can be little confidence that the estimated results differ from each other.

For example, assume survey data estimated a result of 60 per cent for NSW, with a 95 per cent CI of ± 3.2 per cent, and a result of 58 per cent for Queensland, with a 95 per cent confidence interval of ± 1.15 per cent. These results imply that we can be 95 per cent sure the true result for NSW lies between 56.8 and 62.3 per cent, and the true result for Queensland lies between 56.5 and 59.5 per cent. As these two ranges overlap, we cannot be sure that the true results for NSW and Queensland are statistically different.

Expressed mathematically, the estimated response is within the 95 per cent confidence interval:

$$\left(\frac{x_1}{X} - \frac{y_1}{Y}\right) - 1.96\sqrt{\text{RSE}\left(\frac{x_1}{X}\right) \times \frac{x_1}{X} + \text{RSE}\left(\frac{y_1}{Y}\right) \times \frac{y_1}{Y}}$$

and

$$\left(\frac{x_1}{X} - \frac{y_1}{Y}\right) + 1.96\sqrt{\text{RSE}\left(\frac{x_1}{X}\right) \times \frac{x_1}{X} + \text{RSE}\left(\frac{y_1}{Y}\right) \times \frac{y_1}{Y}}$$

where x_1 , X , y_1 and Y represent the estimated number of respondents and estimated populations of jurisdictions x and y respectively. If none of the values in this interval is zero, then the difference between jurisdiction x 's response and jurisdiction y 's response is statistically significant.

Growth rates

Average annual growth rates

Given that data in the Report cover different periods, compound annual averages have been used to facilitate more meaningful comparisons of changes over time.

The formula for calculating a compound annual growth rate (AGR) is:

$$\text{AGR} = \left[\left(\frac{P_v}{P_0} \right)^{\left(\frac{1}{n-1} \right)} - 1 \right] \times 100$$

where AGR is the annual growth rate

P_v is the present value

P_0 is the beginning value

n is the number of periods.

Summing and taking averages of growth rates

Total growth rate

The formula for calculating a total growth rate (TGR) from AGRs is:

$$\text{TGR} = \prod_t (1+r)_t - 1$$

that is, the total growth over the period, TGR, is found by taking the product (Π) of each $(1+r)_t$ and deducting 1. If, for example, the sample ranges of growth rates are:

6 per cent in 2002-03 to 2003-04
6 per cent in 2003-04 to 2004-05
8 per cent in 2004-05 to 2005-06

where TGR is the total growth rate
 t is the year (2002, 2003, 2004... n)
 n is the final period

then the total growth over the period 2002-03 to 2005-06 can be calculated as:

$$\begin{aligned} r_T &= [\prod_t (1+r)_t - 1] \times 100 \\ &= [(1.06) \times (1.06) \times (1.08) - 1] \times 100 \\ &= (1.213488 - 1) \times 100 \\ &= 21.3 \text{ per cent.} \end{aligned}$$

Average growth rates

The formula for the average of growth rates is:

$$r_A = \left\{ \left[\prod_t (1+r)_t \right]^{\frac{1}{t}} - 1 \right\} \times 100$$

This involves first finding the total growth over the period, then finding the average. Note that t is the count of growth rates being averaged, not the years. For example:

$$\begin{aligned} r_A &= \{ [(1.06 \times 1.06 \times 1.08)^{\frac{1}{3}} - 1] \times 100 \} \\ &= \{ [(1.213488)^{\frac{1}{3}} - 1] \times 100 \} \\ &= [(1.066625) - 1] \times 100 \\ &= 6.66 \text{ per cent.} \end{aligned}$$

Gross domestic product deflators

Table AA.26 in the attachment contains GDP deflators for 1997-98 to 2006-07. Financial data in the Report are often deflated by the GDP deflator (except in some health chapters and chapter 5 on VET, which use service-specific deflators) to calculate real dollars.

The general formula used to re-base GDP deflators is as follows:

$$N_t = 100 \times \frac{O_t}{B}$$

where N_t is the new index based in year t

O_t is the current index for year t

B is the current index for the year that will be the new base.

Age standardisation of data

How age profiles can distort observed service usage patterns

The age profile of Australians varies across jurisdictions and across different cultural and linguistic backgrounds (see for example the different age profiles of Indigenous and all Australians, figure A.1). Variations in age profiles are important because the likelihood of needing certain services (such as aged care services) increases with age. As a result, observed differences in service usage rates by different cohorts within the community may arise from different age profiles, rather than from different usage patterns. One method of eliminating this distortion from the data is to standardise for the age profiles of different groups.

Method of standardisation

Either direct or indirect standardisation can be used. Indirect standardisation is presented here because it is more appropriate when comparing small populations. This method applies standard age-specific usage rates (in this case, average Australian rates) to actual populations (different groups within states and territories), and compares observed numbers of clients with the numbers that would have been expected if average rates had applied. Comparisons are made via the standardised incidence ratio. A value greater than 1.0 in this ratio means that use is higher than would be expected if the particular group had the same usage rate as that of the Australian population as a whole. A value below 1.0 means use is lower than would be expected. Age standardisation generally covers use by all age groups,

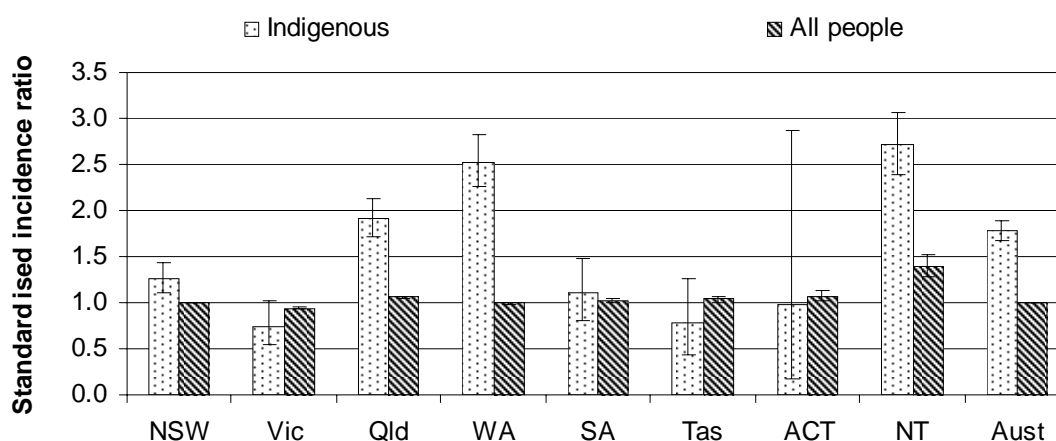
so the resulting standardised incidence ratios compare use by complete population groups.

Application of indirect standardisation

In the following illustration, the combined use of permanent residential aged care and Community Aged Care Packages (CACPs) by Indigenous people is compared with average service use by all Australians (using 2001 data). The resulting standardised incidence ratios are presented in figure A.15. The error bars in the figure show how accurate the comparisons are—if an error bar goes across the value of 1.0, then the usage rate by Indigenous people in that jurisdiction is not significantly different from the average use by all Australians.

Figure A.15 shows that Indigenous people had a higher than average combined use of CACPs and permanent residential aged care — nationally, about 80 per cent higher. This result reflects the higher age-specific usage rates of CACPs for Indigenous people at all ages, and of permanent residential aged care for those Indigenous people aged under 75 years (table A.1). Results vary across jurisdictions.

Figure A.15 Standardised incidence ratio for use of CACP and permanent residential aged care (combined), 30 June 2001^{a, b, c}



^a The Indigenous ratio is per 1000 Indigenous people aged 50 or over, the all people ratio is per 1000 Indigenous people aged 50 or over and non-Indigenous people aged 70 or over. ^b The calculations use indirect age standardisation against use by all people Australia-wide. ^c ACT data are based on a very small Indigenous population and have high standard errors.

Source: AIHW (unpublished); table AA.27.

Table A.1 Age-specific usage rates of CACPs and permanent residential aged care, 30 June 2005, (per 1000 people)^{a, b}

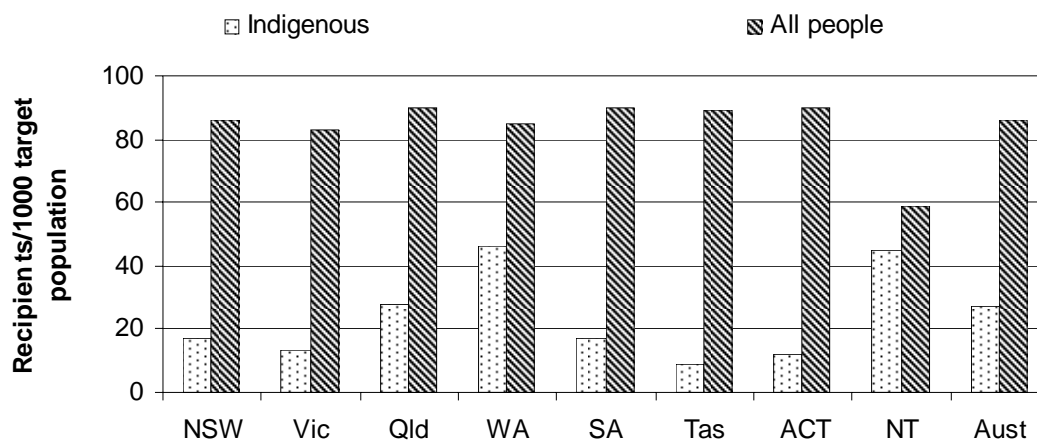
Age (years)	CACP recipients		Permanent aged care residents	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
50–54	4.1	0.1	2.5	0.7
55–59	9.8	0.3	5.8	1.4
60–64	19.2	0.8	8.8	2.8
65–69	36.3	1.8	15.4	5.9
70–74	48.5	3.9	28.7	13.5
75+	82.1	17.8	106.8	102.0

^a Excludes clients of multipurpose and flexible services. ^b Cases with missing data on Indigenous status have been pro-rated within gender/age groups.

Source: AIHW (2006) *Residential Aged Care in Australia 2004–05: A Statistical Overview*, Cat. no. AGE 45, Aged Care Statistics Series no. 22; AIHW (2006) *Community Aged Care Packages in Australia 2004–05: A Statistical Overview*, Cat. no. AGE 47, Aged Care Statistics Series no. 23.

The age standardised rates are quite different from those that result from comparing use with the target group population (clients per 1000 in the target group). The target group measure (figure A.16) suggests that combined use of CACPs and permanent residential aged care is much lower for Indigenous people than for all people. Figure A.16 also suggests that use of the two services for all people is much lower in the NT than in other jurisdictions; this difference is not apparent after age standardisation (figure A.15), indicating that the difference in this measure is the result of the relatively young age structure of the NT (even within the two subgroups of people 70 years and over, and Indigenous people 50 years and over).

Figure A.16 Ratio of CACP recipients and permanent residents (combined) to 1000 persons in target population, 30 June 2001^a



^a Indigenous ratio is per 1000 Indigenous people aged 50 years or over, 'all people' ratio is per 1000 Indigenous people aged 50 years or over and non-Indigenous people aged 70 years or over.

Source: AIHW (unpublished); table AA.27.

A.6 Attachment tables

Attachment tables are identified in references throughout this appendix by an 'AA' suffix (for example, table AA.3 is table 3 in the attachment). Attachment tables are provided on the CD-ROM enclosed with the Report and on the Review website (www.pc.gov.au/gsp). On the CD-ROM, the files containing the attachment tables are provided in Microsoft Excel format as `\Publications\Reports\2008\Attach_stat_app.xls` and in Adobe PDF format as `\Publications\Reports\2008\Attach_stat_app.pdf`. Users without access to the CD-ROM or the website can contact the Secretariat to obtain the attachment tables (see contact details on the inside front cover of the Report).

Population

Table AA.1	Estimated resident population by age and sex, 30 June 2006 ('000)
Table AA.2	Estimated resident population by calendar and financial year
Table AA.3	Proficiency in spoken English of people born overseas, August 2006 ('000)
Table AA.4	Persons by country of birth, August 2006 ('000)
Table AA.5	Persons by language spoken at home, August 2006 ('000)
Table AA.6	Estimated resident population by remoteness area, 30 June 2006
Table AA.7	Experimental estimated resident Australian Indigenous population, 30 June 2006
Table AA.8	Experimental projection of the Indigenous population, 2000 to 2009 (number)
Table AA.9	Language spoken at home by Indigenous people and proficiency in spoken English, by sex, August 2006 (number)

Family and household

Table AA.10	Family structure, 2002–2006
Table AA.11	Family structure: lone parents, 2002–2006 (per cent)
Table AA.12	Families and work (per cent)
Table AA.13	Families and persons in families in occupied private dwellings by Indigenous status and family/household composition, August 2006
Table AA.14	Household structure, 2002–2006
Table AA.15	Occupied private dwellings by tenure type and landlord type, August 2006 ('000)

Income, education and employment

Table AA.16	Persons aged 15 years and over, by weekly individual income and sex, August 2006
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Table AA.17	Persons aged 15 years and over by weekly individual income and Indigenous status, August 2006
Table AA.18	Persons aged 15 years and over, by weekly individual income and age, August 2006
Table AA.19	Income support, June, 2002–2006
Table AA.20	People aged 15 years or over, by highest level of schooling completed and Indigenous status, August 2006 ('000)
Table AA.21	Type of educational institution attending by Indigenous status, August 2006 ('000)
Table AA.22	Labour force profile of the civilian population aged 15 years or over by sex, June 2007
Table AA.23	Labour force participation rate of the civilian population aged 15 years or over by sex (per cent)
Table AA.24	Unemployment rate of labour force participants aged 15 years or over by sex (per cent)

General economic indicators

Table AA.25	Gross State Product, 2001-02 to 2005-06, (2005-06 dollars)
Table AA.26	Gross Domestic Product price deflator (index)

Statistical concepts

Table AA.27	Age standardisation data, June 2001
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A.7 References

ABS (Australian Bureau of Statistics) 2006a (Reissue), *Census Dictionary*, Cat. no. 2901.0, Canberra.

—2006b, *Census of Population and Housing*, Cat. no. 2068.0, Canberra.

—2007a, *Australian Demographic Statistics March Quarter 2007*, Cat. no. 3101.0, Canberra.

—2007b, *Australian Social Trends 2007*, Cat. no. 4102.0, Canberra.