
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 size, 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 environment within which Australians live.
- *Income, education and employment.* Section A.4 summarises the income and employment characteristics of Australians, including educational attainment and workforce participation.
- *Statistical concepts used in the Report.* Section A.5 provides technical information on the key statistical concepts used in the Report.
- *List of source tables.* Section A.6 lists the supporting tables for this appendix. Supporting tables are identified in references throughout the appendix by an 'AA' suffix (for example, table AA.3 is table AA.3 in the attachment). Supporting tables are provided on the CD-ROM enclosed with the Report.
- *References.* Section A.7 lists references used in this chapter.

A.2 Population

The Australian people are the principal recipients of the government funded and/or provided 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 their delivery. This section provides a limited exposition of the Australian population to support the analysis of government services provided in the Report. A more detailed exposition is provided in the Australian Bureau of Statistics (ABS) annual publication *Australian Social Trends* (ABS 2006a). In the statistical

appendix and 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 (ABS 2002a) and others from the Australian Demographic Statistics.

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 20.3 million people lived in the eastern states as at 30 June 2005, with NSW, Victoria and Queensland accounting for 33.3 per cent, 24.7 per cent and 19.5 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 2001 and 2005 was approximately 1.2 per cent. The growth across jurisdictions ranged from 2.3 per cent in Queensland to 0.5 per cent in SA and the ACT (table AA.2, calendar year estimates).

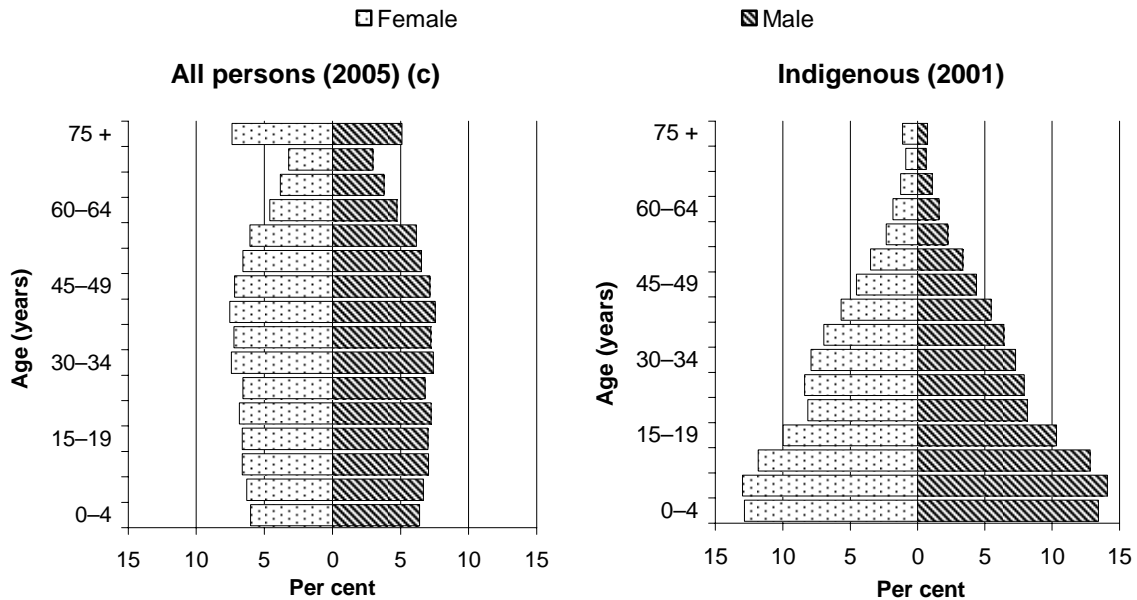
Population, by age and sex

As in most other developed economies, greater life expectancy and declining fertility have contributed to an 'ageing' of Australia's population. The experiences of Indigenous Australians, however, are markedly different (figure A.1). At 30 June 2005, 9.3 per cent of Australia's population was aged 70 years or over, in contrast to 1.7 per cent of Australia's Indigenous population at 30 June 2001 (tables AA.1 and AA.7). Across jurisdictions, the proportion of people aged 70 years or over ranged from 11.1 per cent in SA to 2.7 per cent in the NT (table AA.1).

Approximately half (50.3 per cent) of the population at June 2005 was female. This distribution was similar across all jurisdictions except the NT, which had a relatively low representation of women in its population (47.4 per cent) (table AA.1). The proportion of women in the population varies noticeably by age.

Nationally, approximately 56.9 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^{a, b}**



^a Totals may not add as a result of rounding. ^b Includes other territories. ^c Preliminary data.

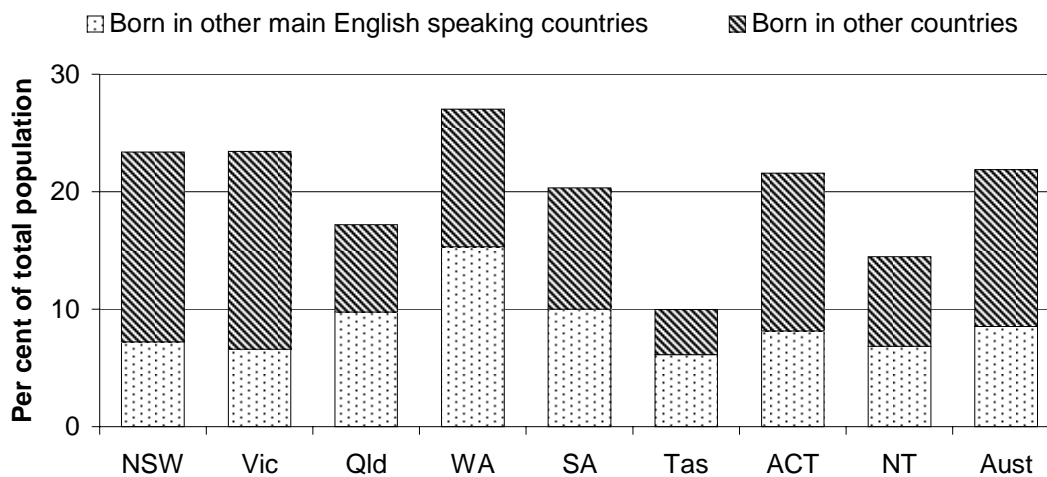
Source: ABS (2001); ABS Australian Demographic Statistics (unpublished); tables AA.1 and AA.7.

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 21.9 per cent of the population in August 2001 (8.5 per cent from the main English speaking countries and 13.3 per cent from other countries).¹ Across jurisdictions, the proportion of people born outside Australia ranged from 27.0 per cent in WA to 10.0 per cent in Tasmania. The proportion from countries other than the main English speaking countries ranged from 16.8 per cent in Victoria to 3.9 per cent in Tasmania (figure A.2).

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

Figure A.2 **People born outside Australia, by country of birth, August 2001^{a, b, c}**



^a Born outside Australia excludes overseas visitors. ^b The ABS defines other main English speaking countries as the United Kingdom, Ireland, New Zealand, Canada, the United States and South Africa. ^c Born in other countries includes inadequately described, at sea and not elsewhere classified.

Source: ABS (2002a); table AA.4.

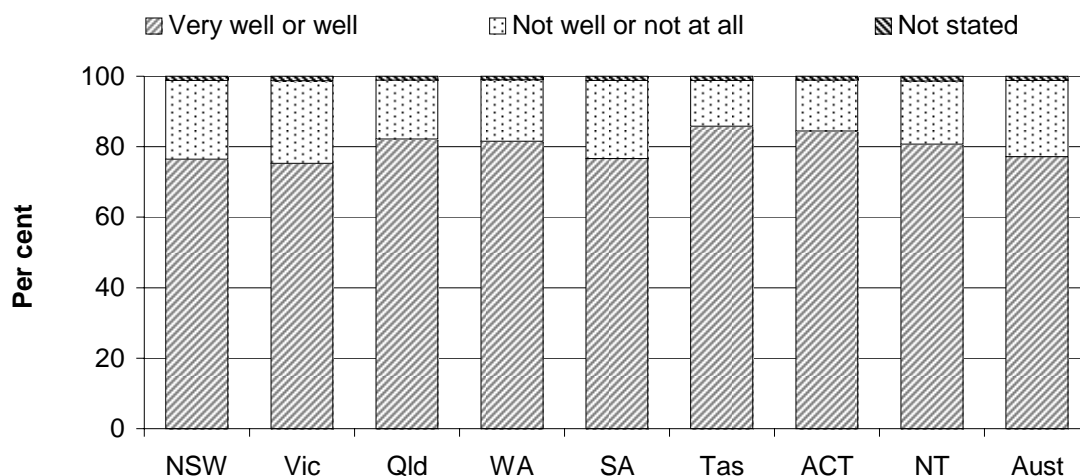
Of the population born outside Australia, in August 2001 88.5 per cent spoke only English, or spoke another language as well as speaking English very well or well. The proportion of the total population born outside Australia who did not speak English well or at all ranged from 29.3 per cent in Victoria to 2.7 per cent in Tasmania (tables AA.1 and AA.3).

Across jurisdictions in August 2001, the proportion of the population who were born outside Australia and who spoke a language other than English ranged from 58.4 per cent in Victoria to 22.7 per cent in Tasmania. The proportion of this group who were born outside Australia and who did not speak English well or at all ranged from 13.6 per cent in Victoria to 2.9 per cent in Tasmania (table AA.3).

Figure A.3 shows proficiency in English of people born overseas who speak another language. Of those people born overseas who spoke another language, 77.2 per cent also spoke English very well or well. The proportion who did not speak English well or at all ranged from 23.5 per cent in Victoria to 13.0 per cent in Tasmania.

Approximately 15.2 per cent of Australians spoke a language other than English at home in August 2001. Across jurisdictions, this proportion ranged from 22.8 per cent in the NT to 3.1 per cent in Tasmania (table AA.5). The most common languages spoken were Chinese languages, Italian, Greek and Arabic (including Lebanese).

Figure A.3 **People born overseas who spoke another language, by proficiency in English, August 2001^{a, b, c}**



^a Excludes overseas visitors and people who did not state their birthplace. ^b Includes other territories. ^c 'Not stated' includes cases where language spoken at home was stated but proficiency in English was not stated, and cases where both language spoken at home and proficiency in English were not stated.

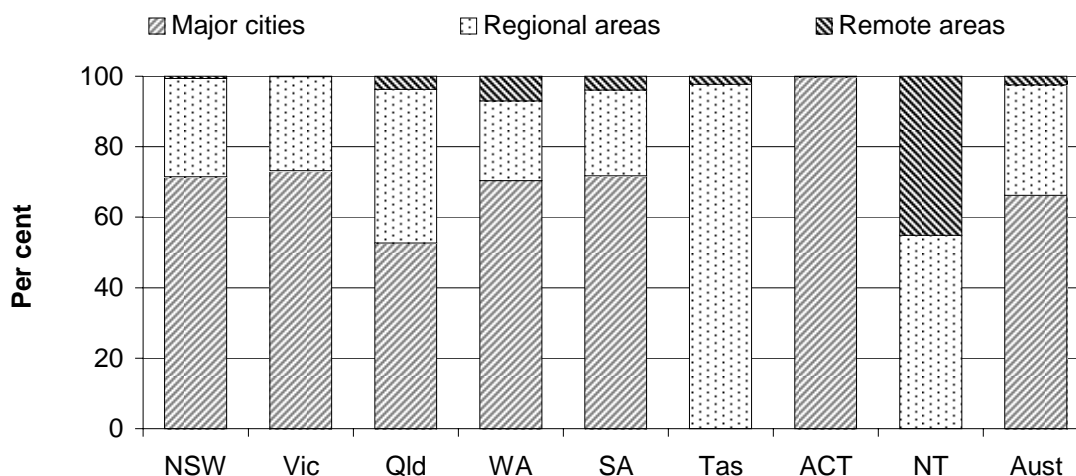
Source: ABS (2002a); table AA.3.

The most and least common languages other than English spoken in people's homes varied across jurisdictions in August 2001. The most extreme variation was in the NT, where 15.4 per cent of people spoke an Australian Indigenous language (67.6 per cent of the total persons 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 2005 (figure A.4). Across jurisdictions, this proportion ranged from 99.8 per cent in the ACT to 52.7 per cent in Queensland (table AA.6). Tasmania and the NT by definition have no major cities. In Tasmania, 97.7 per cent of the population lived in regional areas. Australia-wide, 2.5 per cent of people lived in remote areas. The NT was markedly above this average, with 45.1 per cent of people living in remote areas.

Figure A.4 **Estimated residential population, by geographic location, June 2005^{a, b, c}**



^a Preliminary data. ^b Geographic location is based on the Remoteness Structure outlined in the 2001 Australian Standard Geographic Classification (ASGC). ^c 'Australia' includes other territories.

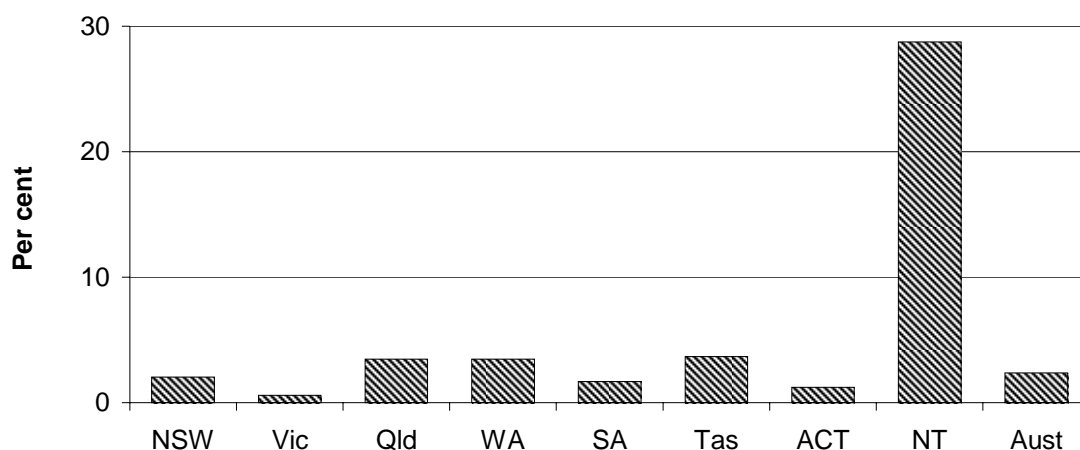
Source: ABS Australian Demographic Statistics (unpublished); table AA.6.

Indigenous population profile

There were an estimated 458 520 (230 994 female and 227 526 male) Indigenous people in Australia at 30 June 2001, accounting for approximately 2.4 per cent of the population (tables AA.2 and AA.7). The proportion of people who were Indigenous was significantly higher in the NT (28.8 per cent) than in any other jurisdiction. Across the other jurisdictions, the proportion ranged from 3.7 per cent in Tasmania 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 (79.8 per cent) at August 2001 spoke only English at home, while 8.8 per cent spoke an Indigenous language and English very well or well. However, 3 per cent spoke English not well or not at all (5.6 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 2001^a**



^a 'Australia' includes other territories.

Source: ABS (2001); ABS Australian Demographic Statistics (unpublished); tables AA.2 and AA.7.

A.3 Family and household

Family structure

There were 5.6 million families in Australia in 2005. Across jurisdictions, the number of families ranged from 1.8 million in NSW to 39 000 in the NT. The average family size across Australia was 3.0 people (unchanged since 2002). Across jurisdictions, the average ranged from 3.1 people in NSW and the NT and 2.9 people in Tasmania (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, 18.9 per cent of children aged under 15 years lived in one parent families in 2005; 18.7 per cent of families with children aged under 15 years were lone mother families and 2.7 per cent had a father only. Across jurisdictions, the proportion of children aged under 15 years living in one parent families ranged from 25.1 per cent in the NT to 17.9 per cent in the ACT (table AA.11).

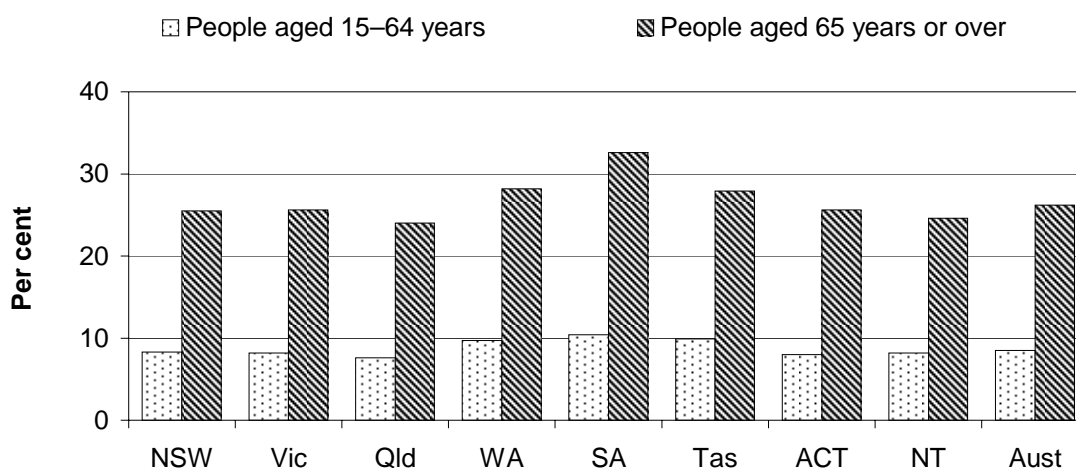
Employment status also has implications for the financial independence of families. Nationally, 15.7 per cent of children aged under 15 years in 2003-04 lived in families where no parent was employed. Across jurisdictions, the proportion ranged from 24.4 per cent in Tasmania to 8.0 per cent in the ACT (table AA.12).

Household profile

There were 7.4 million households in Australia in 2001 (table AA.14). Close to one quarter (24.5 per cent) of these were lone person households. Across jurisdictions, the proportion of lone person households ranged from 28.0 per cent in SA to 21.3 per cent in the NT.

The proportion of people aged 65 years or over who lived alone in June 2005 was considerably higher than that for people aged 15–64 years — nationally, 26.2 per cent compared with 8.5 per cent respectively. Across jurisdictions, the proportion of people aged 65 years or over who lived alone ranged from 32.6 per cent in SA to 24.0 per cent in Queensland (figure A.6).

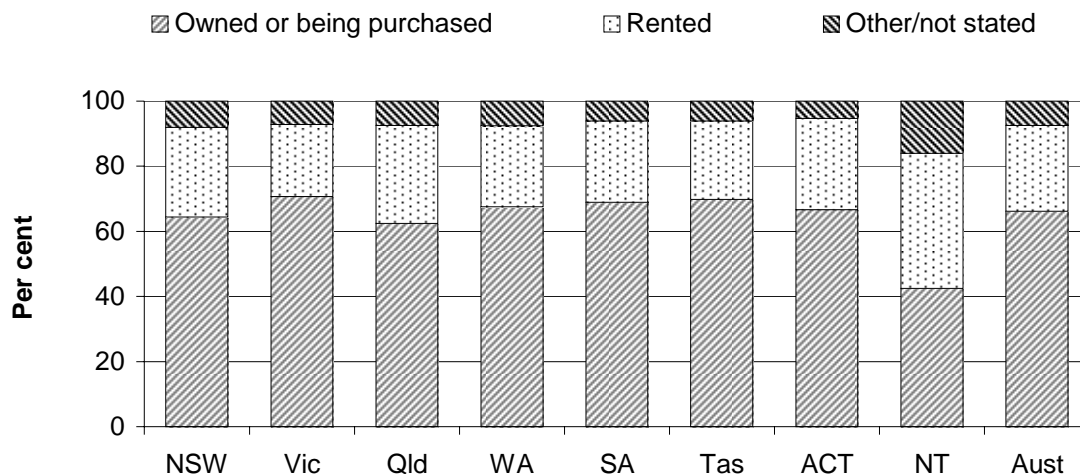
Figure A.6 **Proportion of population who lived alone, by age group, June 2005**



Source: ABS (2006a); table AA.14.

Nationally, the majority of occupied private dwellings (66.2 per cent, or 4.7 million dwellings) in August 2001 were owned or were being purchased. Home ownership was highest in Victoria (70.7 per cent) and lowest in the NT (42.5 per cent). Australians rented 26.3 per cent of dwellings (21.5 per cent from private rental sources, 4.5 per cent from government and 0.3 per cent from unspecified sources) (table AA.15). Across jurisdictions, the proportion of dwellings that were rented was highest in the NT (41.5 per cent) and lowest in Victoria (22.1 per cent) (figure A.7).

Figure A.7 **Occupied private dwellings, by tenure type and landlord type, August 2001^{a, b}**



^a 'Rented' includes rented dwellings where the landlord type was not stated. ^b 'Other' includes dwellings being occupied rent free or under a life tenure scheme.

Source: ABS (2002a); table AA.15.

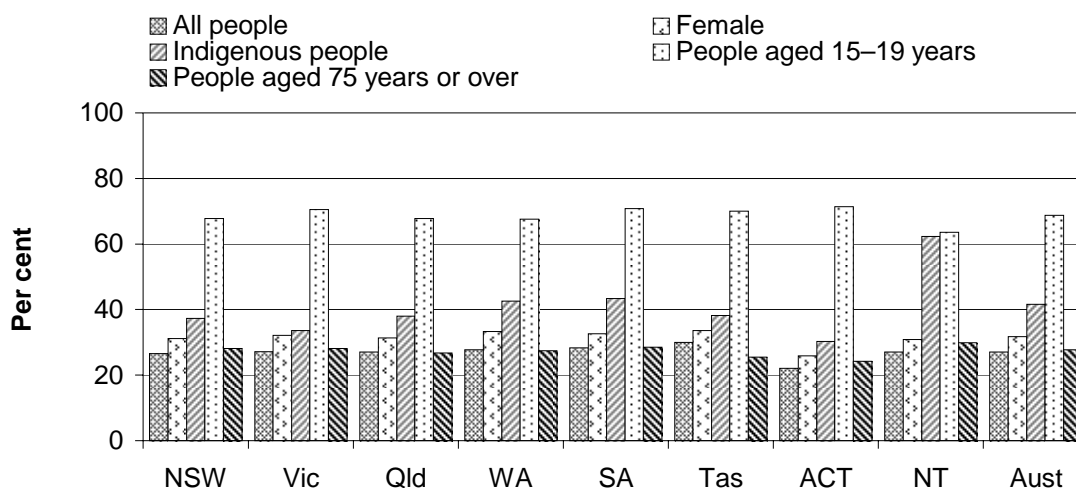
A.4 Income, education and employment

Income

Nationally, 27.1 per cent of people aged 15 years or over in August 2001 had a weekly individual income of \$199 or less (table AA.16). The proportion was considerably higher for younger people (68.8 per cent for people aged 15–19 years), Indigenous people (41.6 per cent), females (31.8 per cent) but similar for older people (27.7 per cent for people aged 75 years or over) (figure A.8).

Nationally, 17.7 per cent of the total population was receiving income support in 2005. The age pension was received by 9.4 per cent of the population, while 3.5 per cent received a disability support pension and 2.2 per cent received a single parent payment. A further 2.6 per cent of the population received some form of labour market allowance in 2005 (figure A.9).

Figure A.8 Weekly individual income of \$199 or less, by sex, Indigenous status and age, August 2001^a



^a 'Australia' includes other territories.

Source: ABS (2002a); ABS (2002b); tables AA.16–AA.18.

Figure A.9 Proportion of total population on income support, June 2005^{a, b}



^a Data for the labour market allowance from 2001 excludes Newstart customers who received a nil rate of payment. ^b Data for the disability support pension includes payments to people living overseas.

Source: ABS (2006a); table AA.19.

The proportion of the population receiving the age pension in 2005 ranged from 11.5 per cent in SA to 3.0 per cent in the NT; the proportion receiving a disability support pension ranged from 5.2 per cent in Tasmania to 2.2 per cent in the ACT; and the proportion receiving a single parent payment ranged from 2.9 per cent in the

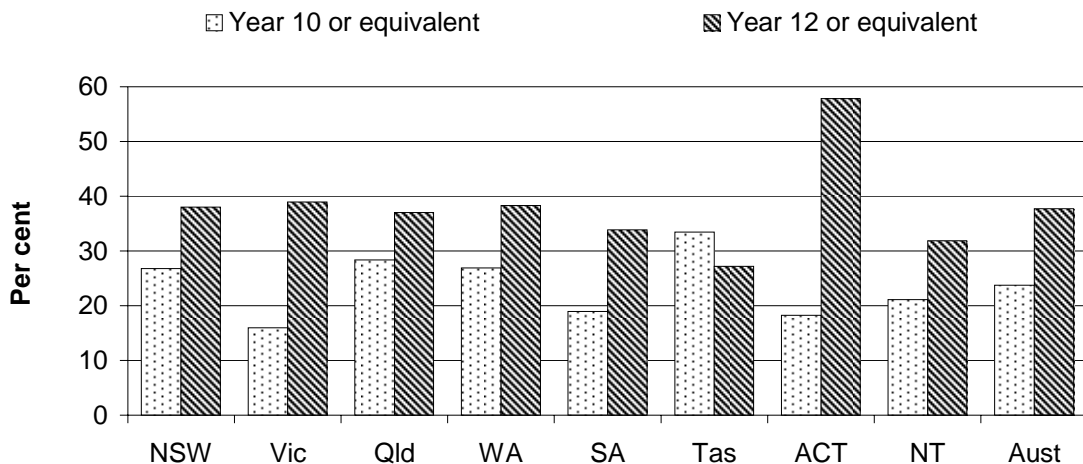
NT to 1.6 per cent in the ACT. The proportion receiving a labour market allowance in 2005 ranged from 6.2 per cent in the NT to 1.6 per cent in the ACT.

Educational attainment

Employment outcomes and income are closely linked to the education and skill levels of individuals. At August 2001, 37.7 per cent of people aged 15 years and over (approximately 5.6 million people) had completed year 12 or equivalent as the highest level of schooling. A further 23.8 per cent (3.5 million people) had completed year 10 or equivalent schooling, excluding the 3.4 per cent (500 000 people) who were still at school (many of whom were studying in year 11 or 12, and had completed year 10). Across jurisdictions, the proportion of people aged 15 years and over who had completed year 12 or equivalent schooling ranged from 57.8 per cent in the ACT to 27.2 per cent in Tasmania (figure A.10).

The proportion of non-Indigenous people aged 15 years or over who had completed year 12 or equivalent schooling (39.5 per cent) was considerably higher than the proportion of Indigenous people (16.8 per cent) in August 2001. Across jurisdictions, the proportion of Indigenous people aged 15 years or over who had completed year 12 or equivalent schooling ranged from 36.4 per cent in the ACT to 7.1 per cent in the NT. The proportion of non-Indigenous people who had completed year 12 or equivalent was highest in the ACT (59.8 per cent) and lowest in Tasmania (28.4 per cent) (figure A.11).

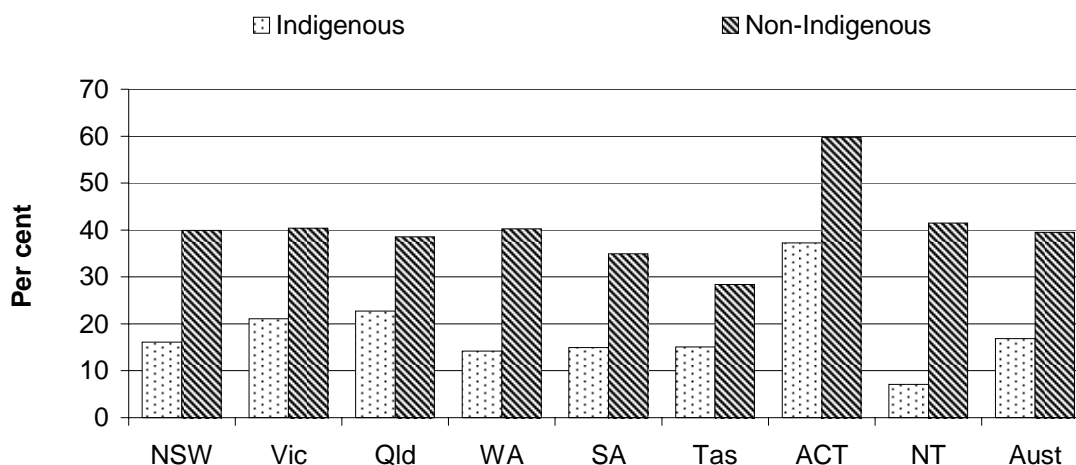
Figure A.10 **People aged 15 years or over, by highest year of school completed, August 2001^{a, b, c}**



^a Refers to primary or secondary schooling. ^b 'Australia' includes other territories. ^c 'All persons' includes Indigenous status not stated.

Source: ABS (2002b); table AA.20.

Figure A.11 People aged 15 years or over who had completed year 12 or equivalent, by Indigenous status, August 2001^{a, b}

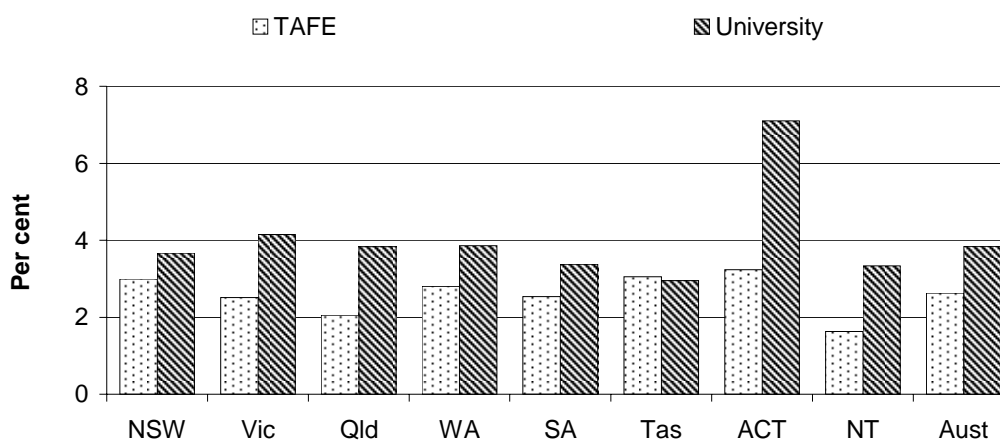


^a Refers to primary and secondary schooling. ^b 'Australia' includes other territories.

Source: ABS (2002b); table AA.20.

Tertiary education in Australia is principally provided by universities and technical and further education (TAFE) institutes. Nationally, 6.5 per cent of the population were attending university or TAFE in August 2001 (3.8 per cent at university and 2.6 per cent at TAFE). Across jurisdictions, the proportion of people attending TAFE ranged from 3.2 per cent in the ACT to 1.6 per cent in the NT; the proportion attending university ranged from 7.1 per cent in the ACT to 2.9 per cent in Tasmania (figure A.12).

Figure A.12 Proportion of population attending higher education institutions, August 2001^{a, b}

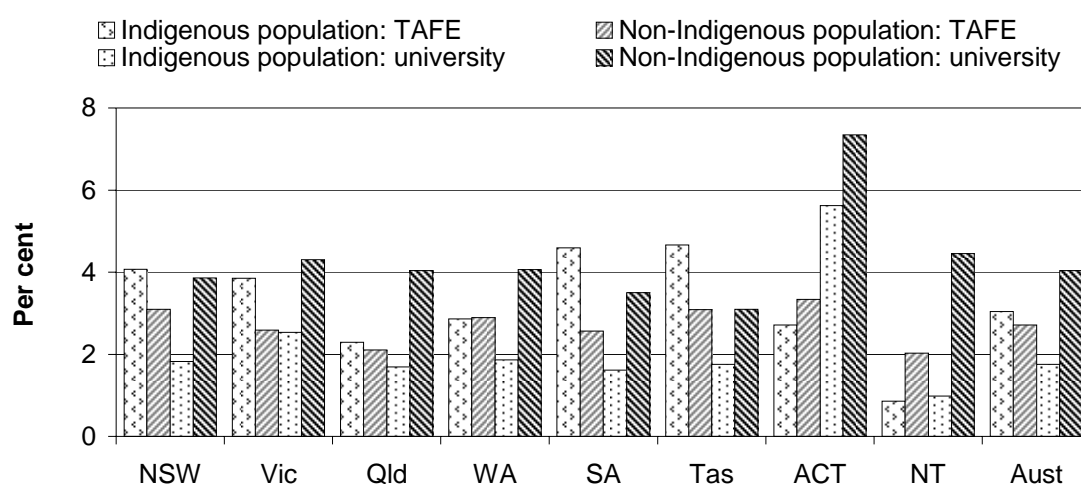


^a 'Australia' includes other territories. ^b 'University' includes other tertiary institutions.

Source: ABS (2002b); table AA.21.

The proportion of the Indigenous population who were attending TAFE in August 2001 was greater than the proportion of the non-Indigenous population in all jurisdictions except WA, the ACT and the NT. Conversely, the proportion of the Indigenous population attending university was less than that of the non-Indigenous population in all jurisdictions (figure A.13).

Figure A.13 Proportion of population attending higher education, by Indigenous status, August 2001^{a, b}



^a 'Australia' includes other territories. ^b 'University' includes other tertiary institutions.

Source: ABS (2002b); table AA.21.

Employment and workforce participation

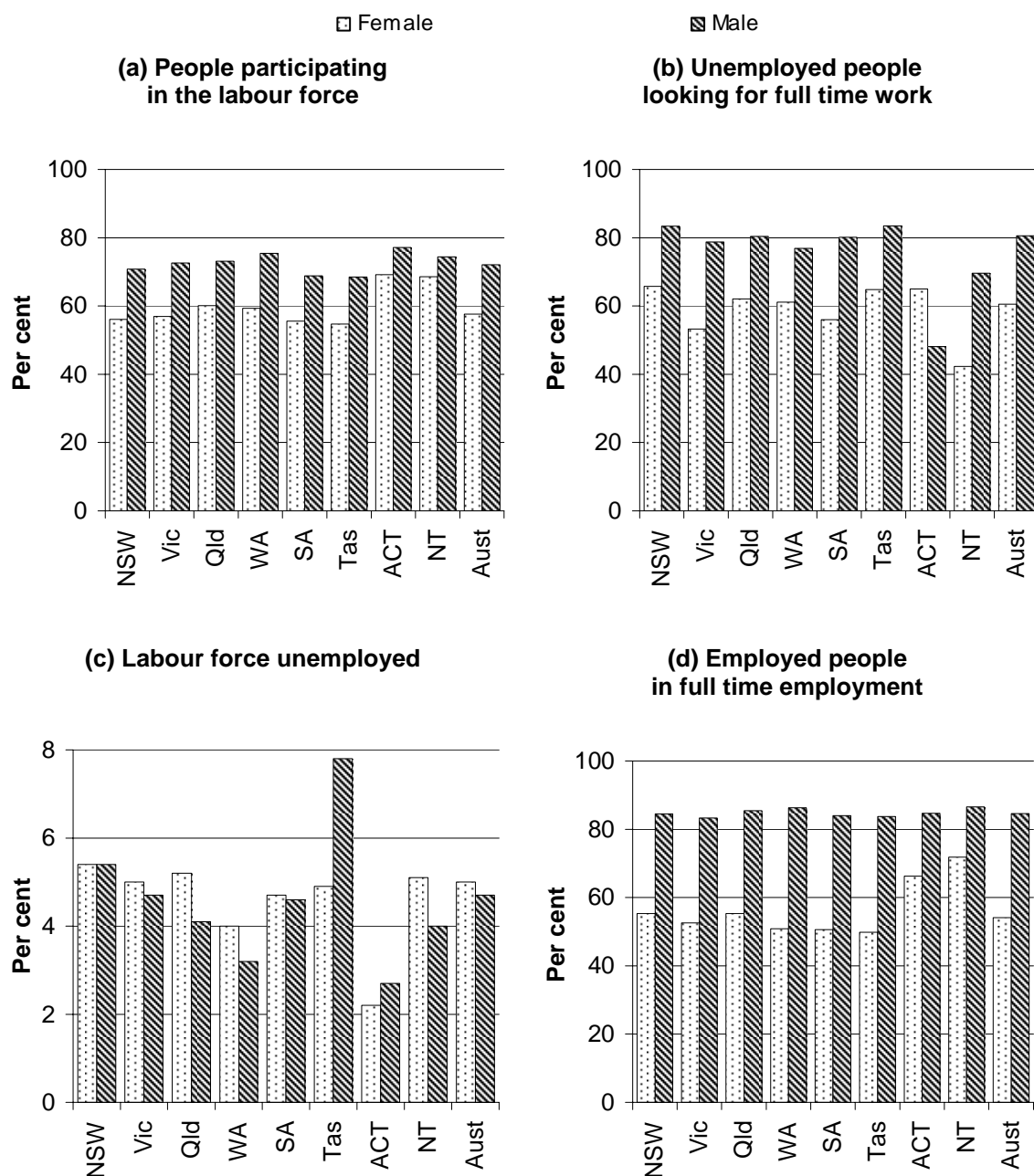
There were 10.7 million people aged 15 years or over in the labour force in Australia in June 2006. Of these, 95.2 per cent were employed. This means 4.8 per cent of the participating labour force were unemployed at June 2006. The majority of employed persons (70.8 per cent) were in full time employment. A further 515 000 people were looking for either full time work (71.2 per cent of those looking for work) or part time work (28.8 per cent) (table AA.22).

Across jurisdictions, the proportion of employed people in full time employment in June 2006 ranged from 79.9 per cent in NT to 68.0 per cent in Tasmania. The unemployment rate ranged from 6.5 per cent in Tasmania to 2.5 per cent in the ACT. The proportion of unemployed people looking for full time work ranged from 77.1 per cent in Tasmania to 55.3 per cent in the ACT (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, 60.6 per cent and 80.6 per cent respectively (figure A.14b).

Figure A.14 Labour force outcomes for people aged 15 years or over, by sex, June 2006



Source: ABS (2006b); tables AA.22–AA.24.

The unemployment rate for females was higher than that for males in all jurisdictions except NSW, Tasmania and 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 35.4 percentage points in WA to 14.7 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). The GSP for NSW accounted for 34.3 per cent of national gross product, compared with 1.2 per cent for the NT. Growth from the previous year's GSP (in current prices) was highest for WA (9.1 per cent) and lowest for Victoria (3.3 per cent). Across Australia, the GSP per person was \$44 107 in 2004-05 (table AA.25).

A.5 Statistical concepts used in the Report

Reliability of estimates

Outcome and quality indicators are reported from surveys (including surveys of client and community perception) for a number of services covered in this Report. 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 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 x lies within:

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

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 in that it 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:

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

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 56.8–62.3 per cent, and the true result for Queensland lies between 56.5–59.5 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 $(1+r)_i$ 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 (2001, 2002, 2003... n)
 n is the final period

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

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

Average growth rates

The formula for the average of growth rates is:

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

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 1996-97 to 2005-06. Financial data in the Report are often deflated by the GDP deflator (except in some health chapters and chapter 4 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

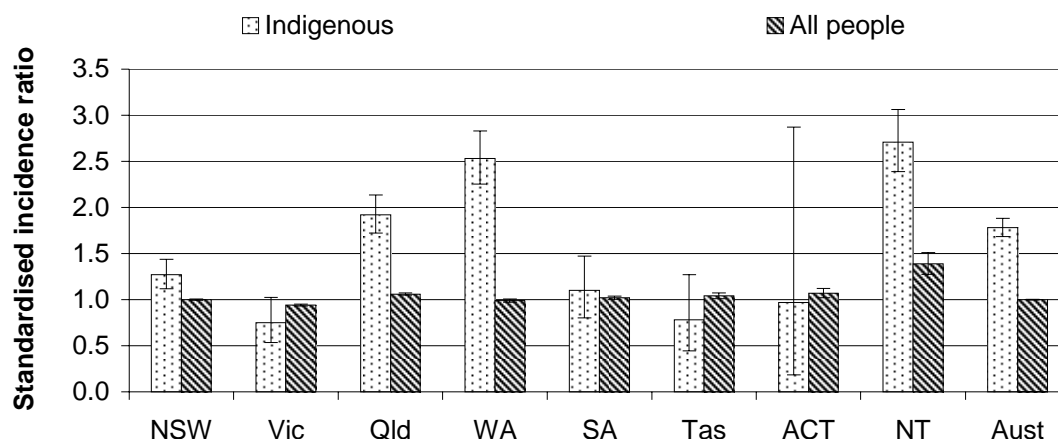
Either direct or indirect standardisation can be used. Indirect standardisation is presented here because it is more appropriate when comparing small populations. This method applies standard age-specific usage rates (in this case, average Australian rates) to actual populations (different groups within 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 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 that population group 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 (per 1000 people), 30 June 2005^{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

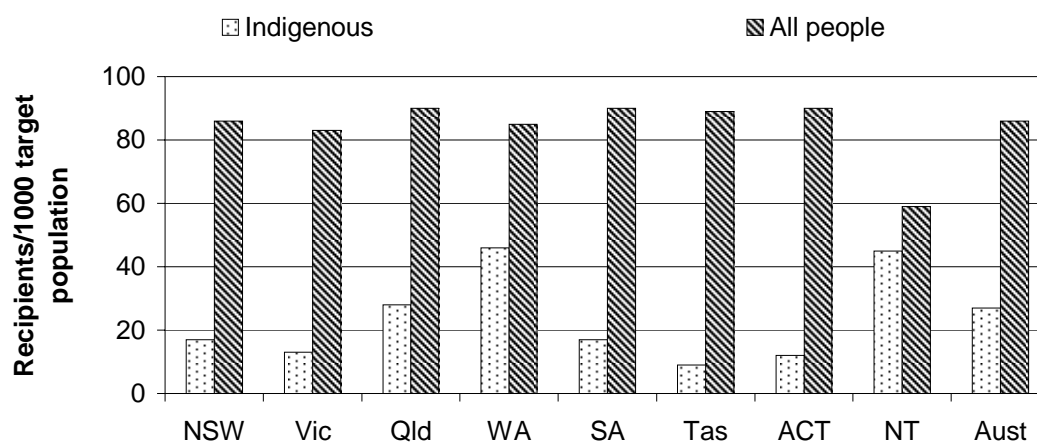
^a Excludes clients of multipurpose and flexible services. ^b Cases with missing data on Indigenous status have been pro rated within gender/age groups.

Source: AIHW 2006a, AIHW 2006b.

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 Supporting tables

Supporting tables are identified in references throughout this appendix by an 'AA' suffix (for example, table AA.3 is table 3 in the attachment). Supporting tables are provided on the CD-ROM enclosed with the Report. The files containing the supporting tables are provided in Microsoft Excel format as \Publications\Reports\2007\Attach_stat_app.xls and in Adobe PDF format as \Publications\Reports\2007\Attach_stat_app.pdf. The files containing the supporting tables can also be found on the Review web pages (www.pc.gov.au/gsp). Users without access to the CD-ROM can contact the Secretariat to obtain the supporting 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 2005 ('000)
Table AA.2	Estimated resident population by calendar and financial year
Table AA.3	Proficiency in spoken English of people born overseas, August 2001 ('000)
Table AA.4	Persons by country of birth, August 2001 ('000)
Table AA.5	Persons by language spoken at home, August 2001 ('000)
Table AA.6	Estimated resident population by geographic location, 30 June 2005
Table AA.7	Preliminary estimated resident Indigenous population by age and sex, 30 June 2001
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 2001 (number)

Family and household

Table AA.10	Family structure, 2001–2005
Table AA.11	Family structure: lone parents, 2001–2005 (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 type, August 2001
Table AA.14	Household structure, 2001–2005
Table AA.15	Occupied private dwellings by tenure type and landlord type, August 2001 ('000)

Income, education and employment

- Table AA.16** Persons aged 15 years and over, by weekly individual income and sex, August 2001
- Table AA.17** Persons aged 15 years and over by weekly individual income and Indigenous status, August 2001
- Table AA.18** Persons aged 15 years and over, by weekly individual income and age, August 2001
- Table AA.19** Income support, June, 2001–2005
- Table AA.20** People aged 15 years or over, by highest level of schooling completed and Indigenous status, August 2001 ('000)
- Table AA.21** Type of educational institution attending by Indigenous status, August 2001 ('000)
- Table AA.22** Labour force profile of the civilian population aged 15 years or over by sex, June 2006
- 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, 2000-01 to 2004-05
- Table AA.26** Gross Domestic Product price deflator (index)

Statistical concepts

- Table AA.27** Age standardisation data, June 2001

A.7 References

- ABS (Australian Bureau of Statistics) 2001, *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians*, Cat. no. 3238.0, Canberra.
- 2002a, *Census of Population and Housing: Basic Community Profiles*, Australia, Cat. no. 2002.0, DX Database, viewed 18 July 2002, unpublished.
- 2002b, *Census of Population and Housing: Indigenous Community Profiles*, Australia, Cat. no. 2002.0, DX Database, viewed 18 July 2002, unpublished.
- 2006a, *Australian Social Trends*, Cat. no. 4102.0, Canberra.
- 2006b, *Labour Force Survey*, Cat. no. 6291.0, Canberra.
- AIHW (Australian Institute of Health and Welfare) 2006a, *Residential Aged Care in Australia 2004-05: A Statistical Overview*, Cat. no. AGE 45, Aged Care Statistics Series no. 22, Canberra.
- 2006b, *Community Aged Care Packages in Australia 2004-05: A Statistical Overview*, Cat. no. AGE 47, Aged Care Statistics Series no. 23, Canberra.

