
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 four 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 methods used in the Report.

Supporting tables

Supporting tables for this appendix are provided on the CD-ROM enclosed with the Report. The files are provided in Microsoft Excel format as \Publications\Reports\2005\Attach_stat_app.xls and in Adobe PDF format as \Publications\Reports\2005\Attach_stat_app.pdf. Box A.1 contains a list of the source tables.

Supporting tables are identified in references throughout this chapter by an 'A' suffix (for example, table A.3 is table 3 in the electronic files). These files can be found on the Review web page (www.pc.gov.au/gsp). Users without Internet access can contact the Secretariat to obtain these tables (see details on the inside front cover of the Report).

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Most of the service areas covered by the Report use population data from tables A.1 and A.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]). Financial data are often deflated by the gross domestic product (GDP) deflator data from table A.26 (except in some health chapters and chapter 4 on VET, which use service-specific deflators) to calculate real dollars.

A.2 Population

The Australian people are the principal beneficiaries 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 2004a). 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 Estimated Resident Population (ABS 2004c).

Population size and trends

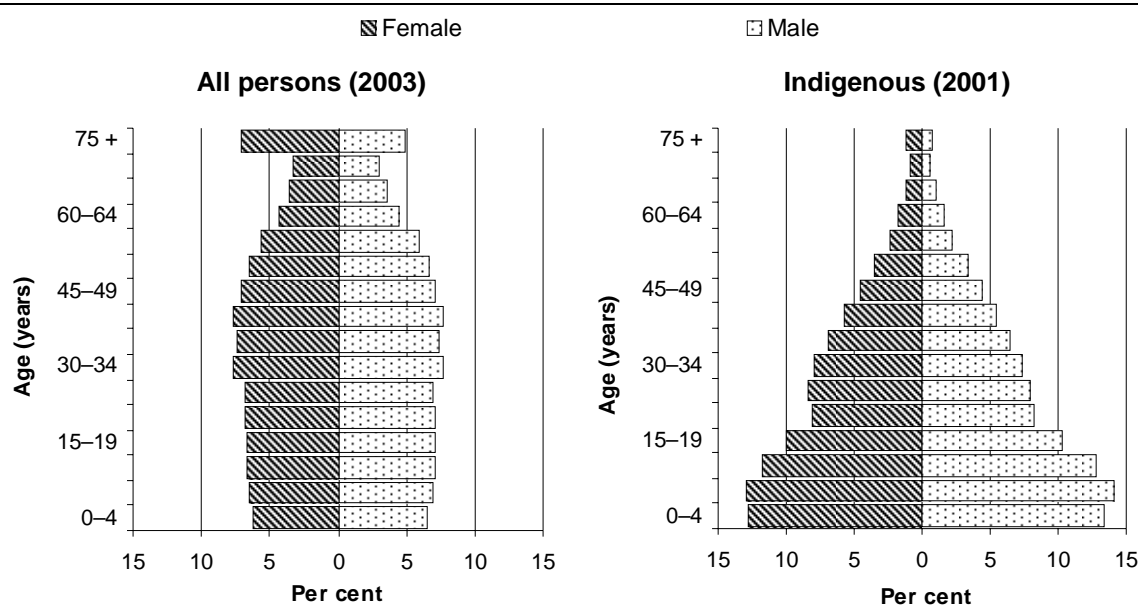
More than three quarters of Australia's 19.8 million people lived in the eastern states in June 2003, with NSW, Victoria and Queensland accounting for 33.6 per cent, 24.7 per cent and 19.1 per cent respectively of the nation's population. Western Australia and SA accounted for a further 9.8 per cent and 7.7 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 A.1).

Nationally, the average annual growth rate of the population between 1998 and 2003 was approximately 1.2 per cent. The growth across jurisdictions ranged from 2.0 per cent in Queensland to just over zero growth in Tasmania (table A.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 people, however, are markedly different (figure A.1). At 30 June 2003, 9.2 per cent of Australia’s population was aged 70 years or over, in contrast to 1.6 per cent of Australia’s Indigenous population at 30 June 2001 (table A.7). Across jurisdictions, the proportion of people aged 70 years or over ranged from 10.9 per cent in SA to 2.5 per cent in the NT (table A.1).

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



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

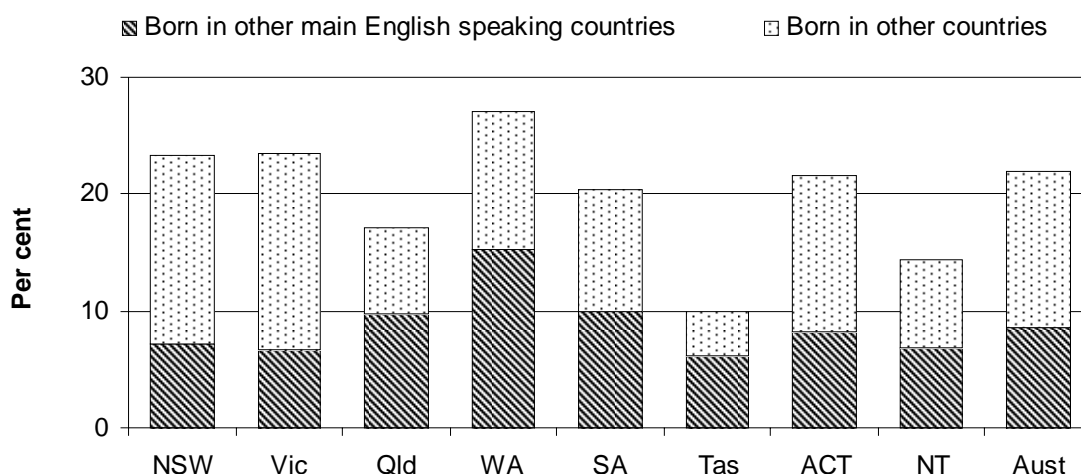
Source: ABS (2001 and 2004c); tables A.1 and A.7.

Approximately half (50.3 per cent) of the population at June 2003 was female. This distribution was similar across all jurisdictions except the NT, which had a relatively low representation of women in its population (47.5 per cent) (table A.1). The proportion of women in the population varies noticeably by age. Nationally, approximately 57.3 per cent of people aged 70 or over were female, compared with 48.7 per cent of people aged 14 years or younger. These proportions were similar across all jurisdictions except the NT, which had relatively low representation of women in the group aged 70 years or over (49.3 per cent) (table A.1).

Population, by ethnicity

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).

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



^a Born outside Australia excludes overseas visitors. ^b Other main English speaking countries include 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 A.4.

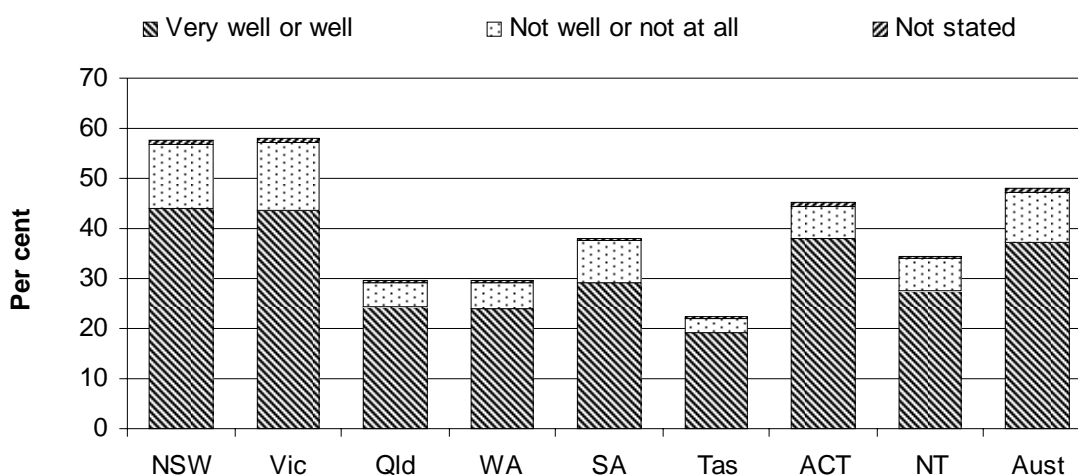
People who speak a language other than English accounted for 47.9 per cent of the population born outside Australia in August 2001 (table A.3). Of these, 21.6 per cent did not speak English well or at all. Across jurisdictions in August 2001, the proportion of the population who were born outside Australia and who spoke a language other than English ranged from 58.0 per cent in Victoria to 22.0 per cent in Tasmania. The proportion who were born outside Australia and

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

who did not speak English well or at all ranged from 13.6 per cent in Victoria to 2.9 per cent in Tasmania (figure A.3).

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 A.5). The most common languages spoken were Chinese languages, Italian and Greek.

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



^a Excludes overseas visitors and people who did not state their birthplace. ^b Australia 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 A.3.

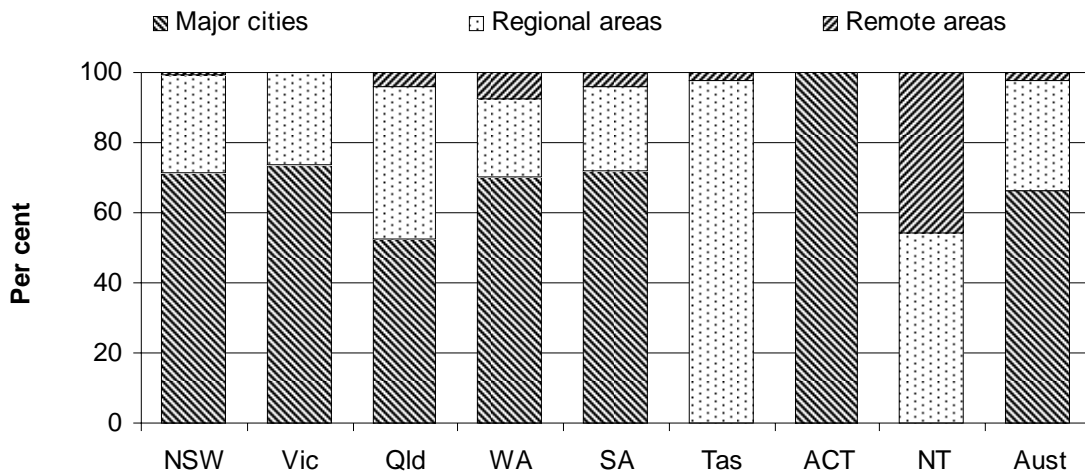
The most and least common languages other than English spoken in people's homes varied across jurisdictions in August 2001. The most extreme variation was in the NT, where 15.4 per cent of people spoke an Australian Indigenous language (67.6 per cent of the total persons who spoke a language other than English in their homes) (table A.5).

Population, by geographic location

The Australian population is highly urbanised, with 66.3 per cent of the population located in major cities in June 2003 (figure A.4). Across jurisdictions, this proportion ranged from 99.8 per cent in the ACT to 52.7 per cent in Queensland (table A.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 45.6 per cent of people living in remote areas.

Figure A.4 **Estimated residential population, by geographic location, June 2003^{a, b}**



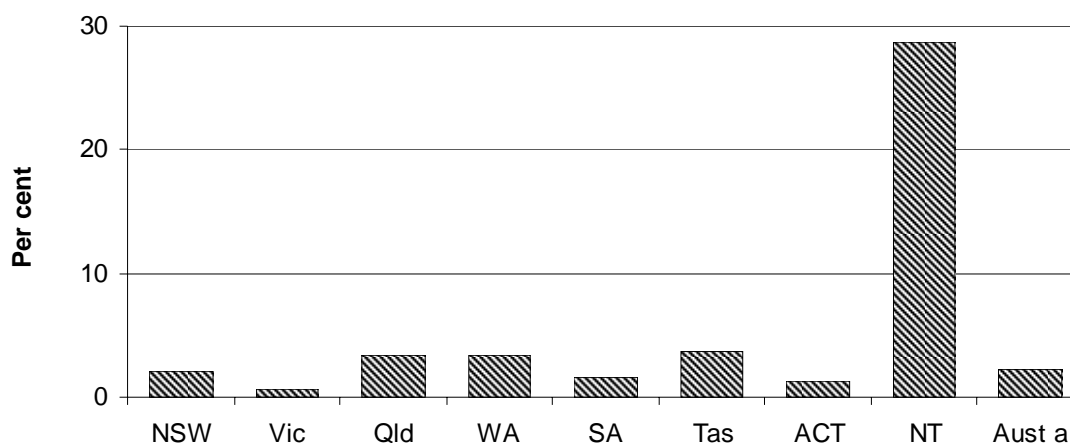
^a Includes other territories. ^b The accessibility/remoteness index of Australia (ARIA) relies on road distance as a surrogate for remoteness and on the population size of a service centre as a surrogate for the availability of services. The ARIA+ method produces index values between 0 and 15. Areas with an ARIA+ index value of 0 have the highest levels of access to goods and services, and areas with an ARIA+ index value of 15 have the highest level of remoteness. Remoteness areas and their ARIA+ index value range include major cities of Australia = 0–0.2, inner regional Australia = >0.2–2.4, outer regional Australia = >2.4–5.92, remote Australia = >5.92–10.53, very remote Australia = >10.53–15.

Source: ABS (unpublished); table A.6.

Indigenous population profile

There were 458 520 (230 994 female and 227 526 male) Indigenous people in Australia at 30 June 2001, accounting for approximately 2.3 per cent of the population (tables A.1 and A.7). The proportion of people who were Indigenous was significantly higher in the NT (28.7 per cent) than in any other jurisdiction. Across the other jurisdictions, the proportion ranged from 3.6 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 A.8).

Figure A.5 **Indigenous people as a proportion of the population, 30 June 2001^a**



^a Australia includes other territories.

Source: ABS (2001, 2004c); tables A.1 and A.7.

The majority of Indigenous people (79.8 per cent) at August 2001 spoke only English at home, while 12.1 per cent spoke an Indigenous language and English, and 2.5 per cent spoke another language. At that time, 5.6 per cent did not state any specific language (table A.9).

A.3 Family and household

Family structure

There were 5.5 million families in Australia in 2003. Across jurisdictions, the number of families ranged from 1.8 million in NSW to 38 000 in the NT. The average family size across Australia was 3.0 people (the same as in 2002). Across jurisdictions, the average ranged from 3.2 people in the NT to 2.9 people in both SA and Tasmania (table A.10).

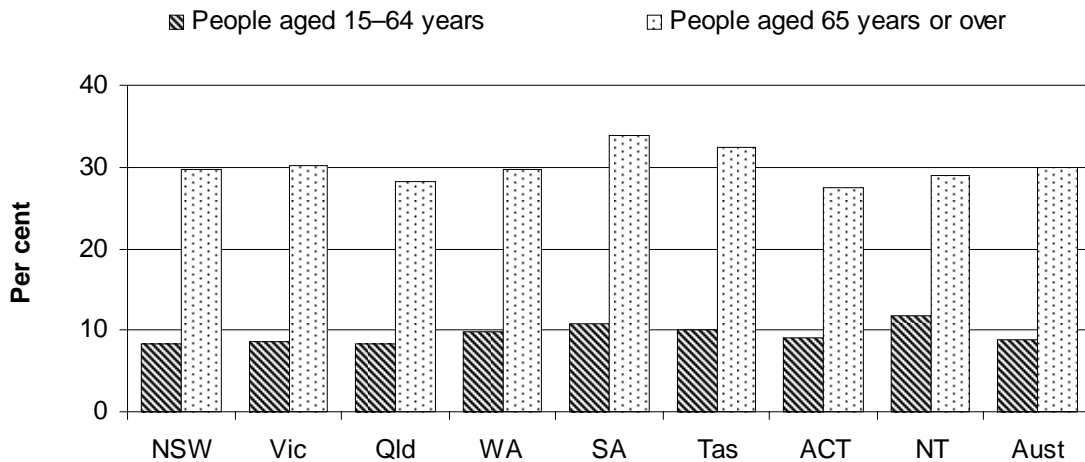
Lone parent families may have a greater need for government support and particular types of government service (such as child care for respite reasons). Nationally, 19.9 per cent of children aged under 15 years lived in one parent families in 2003; 19.3 per cent of families with children aged under 15 years were lone mother families and 2.5 per cent had a father only. Across jurisdictions, the proportion of children aged under 15 years living in one parent families ranged from 23.6 per cent in South Australia to 17.7 per cent in the Victoria (table A.11).

Employment status also has implications for the financial independence of families. Nationally, 17.4 per cent of children aged under 15 years in 2003 lived in families where no parent was employed. Across jurisdictions, the proportion ranged from 23.0 per cent in Tasmania to 8.9 per cent in the ACT (table A.12).

Household profile

There were 7.4 million households in Australia in 2001 (table A.14). Close to one quarter (24.6 per cent) of these were lone person households. Across jurisdictions, the proportion of lone person households ranged from 29.3 per cent in Tasmania to 23.1 per cent in NSW. The proportion of people aged 65 years or over who lived alone in June 2003 was considerably higher than that for people aged 15–64 years — nationally, 30.0 per cent compared with 8.9 per cent respectively. Across jurisdictions, the proportion of people aged 65 years or over who lived alone ranged from 33.8 per cent in SA to 27.4 per cent in the ACT (figure A.6).

Figure A.6 **Proportion of population who lived alone, by age group, 2003**



Source: ABS (2004a); table A.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 A.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 A.15.

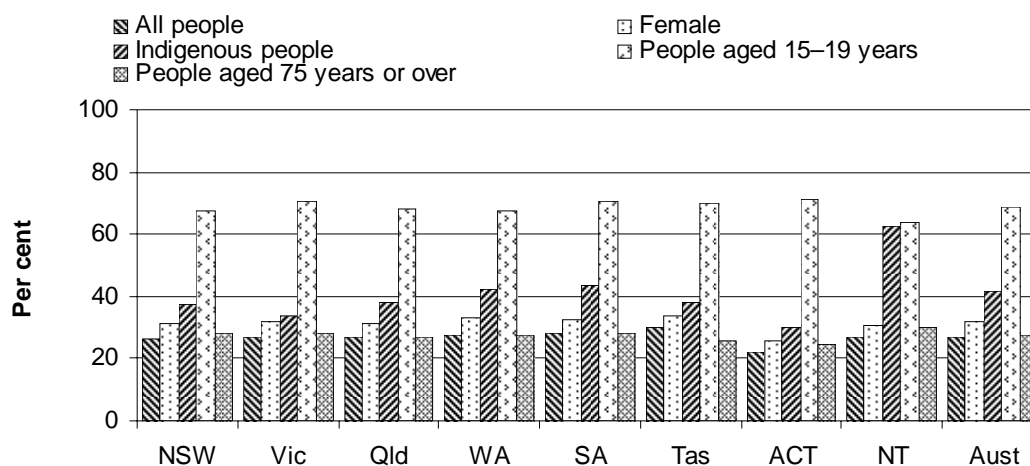
A.4 Income, education and employment

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. 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 (31.7 per cent) and older people (27.7 per cent for people aged 75 years or over) (figure A.8).

Nationally, the number of people receiving income support as a proportion of the total population was 18.1 per cent in 2003. The Age Pension was received by 9.3 per cent of the population, while 3.4 per cent received a disability support pension and 2.2 per cent received a single parent payment. A further 3.2 per cent of the population received some form of labour market allowance in 2003 (figure A.9).

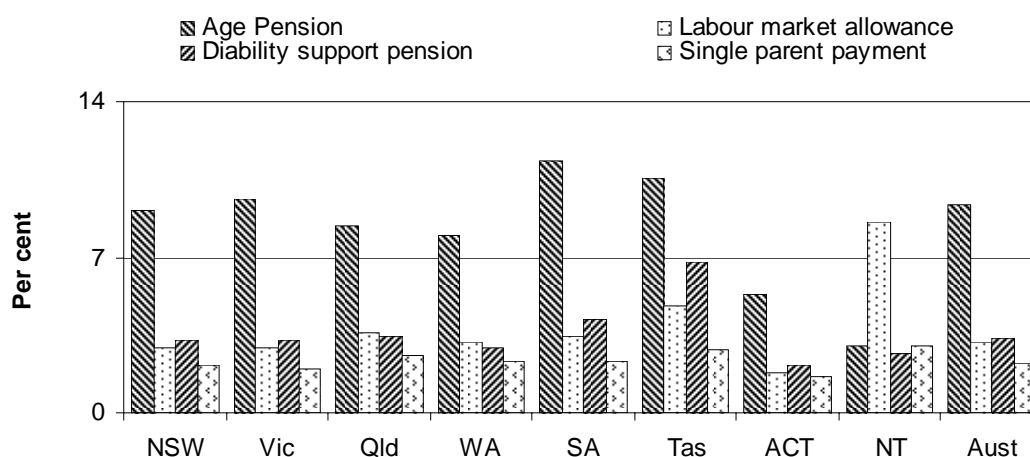
Figure A.8 **Weekly individual income of \$199 or less, by sex, Indigenous status and age, August 2001^a**



^a Australia includes other territories.

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

Figure A.9 **Proportion of total population on income support, June 2003^{a, b}**



^a Jurisdictions do not add to total because data for Australia include pensions paid to people living overseas.

^b Data for the labour market allowance are for a point in time that does not match the average of weekly data, which include people who receive a nil rate of payment.

Source: ABS (2004a); table A.19.

The proportion of the population receiving the Age Pension in 2003 ranged from 20.4 per cent in Tasmania to 3.0 per cent in the NT; the proportion receiving a disability support pension ranged from 6.8 per cent in Tasmania to 2.1 per cent in the ACT; and the proportion receiving a single parent payment ranged from 3.0 per cent in the NT to 1.6 per cent in the ACT. The proportion receiving a labour

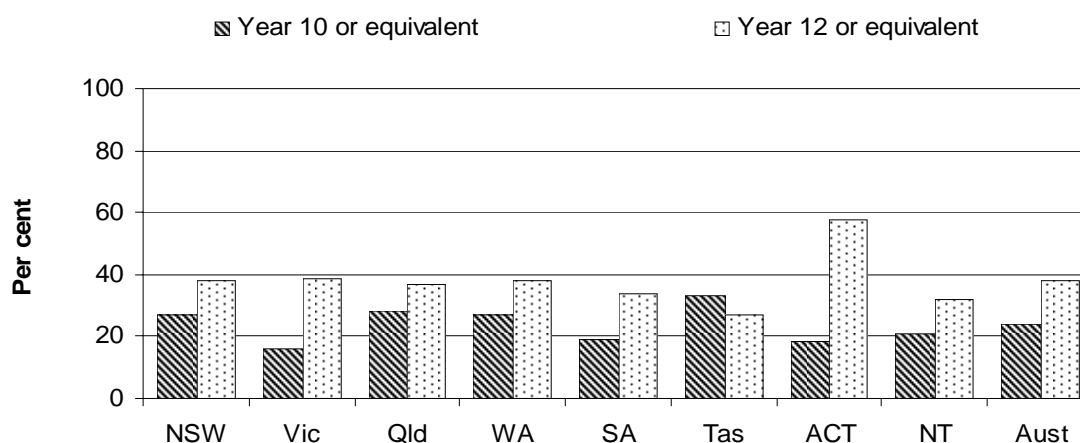
market allowance in 2003 ranged from 8.6 per cent in the NT to 1.8 per cent in the ACT.

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 (503 200 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 was considerably higher than the proportion of Indigenous people (39.5 per cent and 16.8 per cent respectively) 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 was highest in the ACT (59.8 per cent) and lowest in Tasmania (28.4 per cent) (figure A.11).

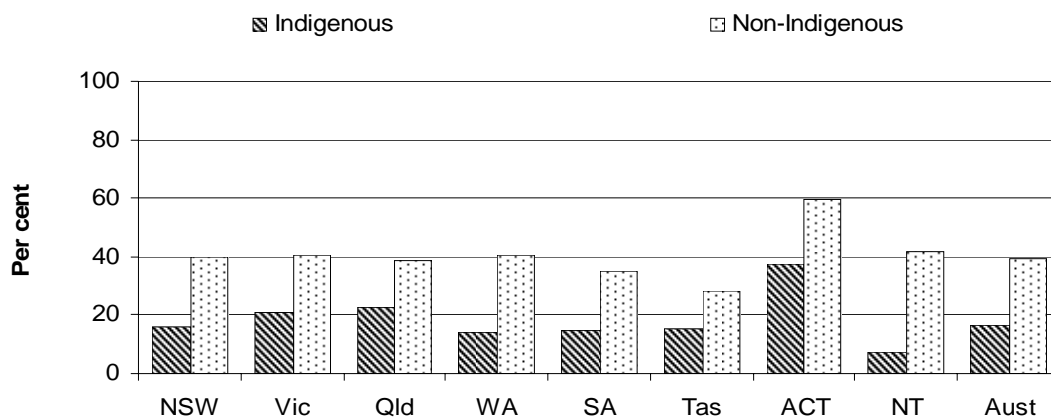
Figure A.10 **People aged 15 years or over, by highest year of school completed, August 2001^{a, b, c}**



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

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

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

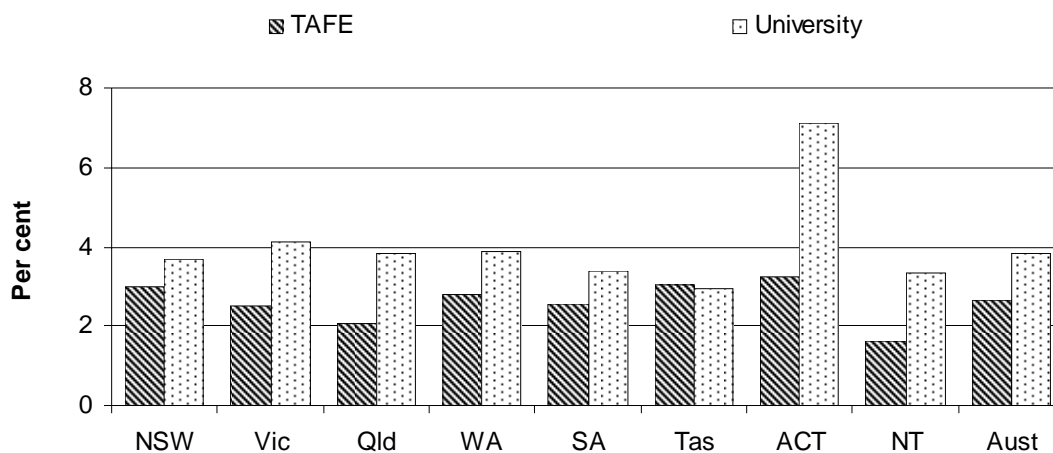


^a Australia includes other territories.

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

Tertiary education in Australia is principally provided by technical and further education (TAFE) institutes and universities. Nationally, 6.5 per cent of the population were attending TAFE or university 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 3.0 per cent in Tasmania (figure A.12)

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

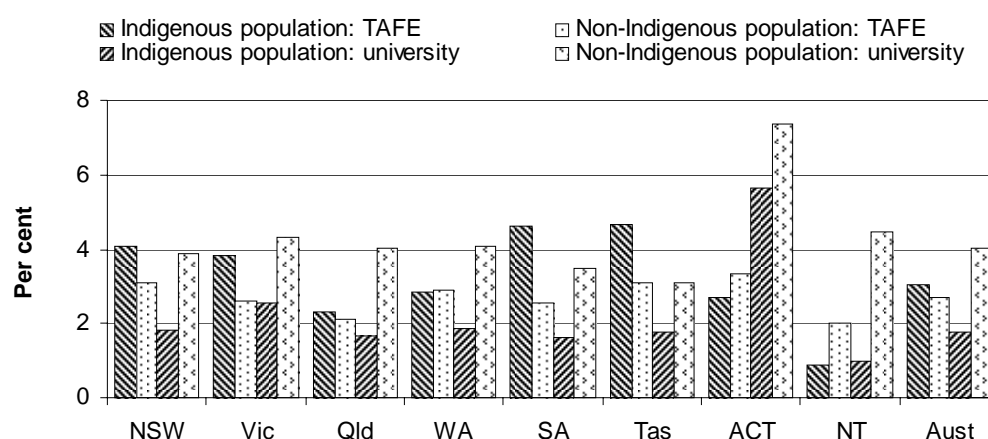


^a Australia includes other territories. ^b 'University' includes other tertiary institutions.

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

Employment and workforce participation

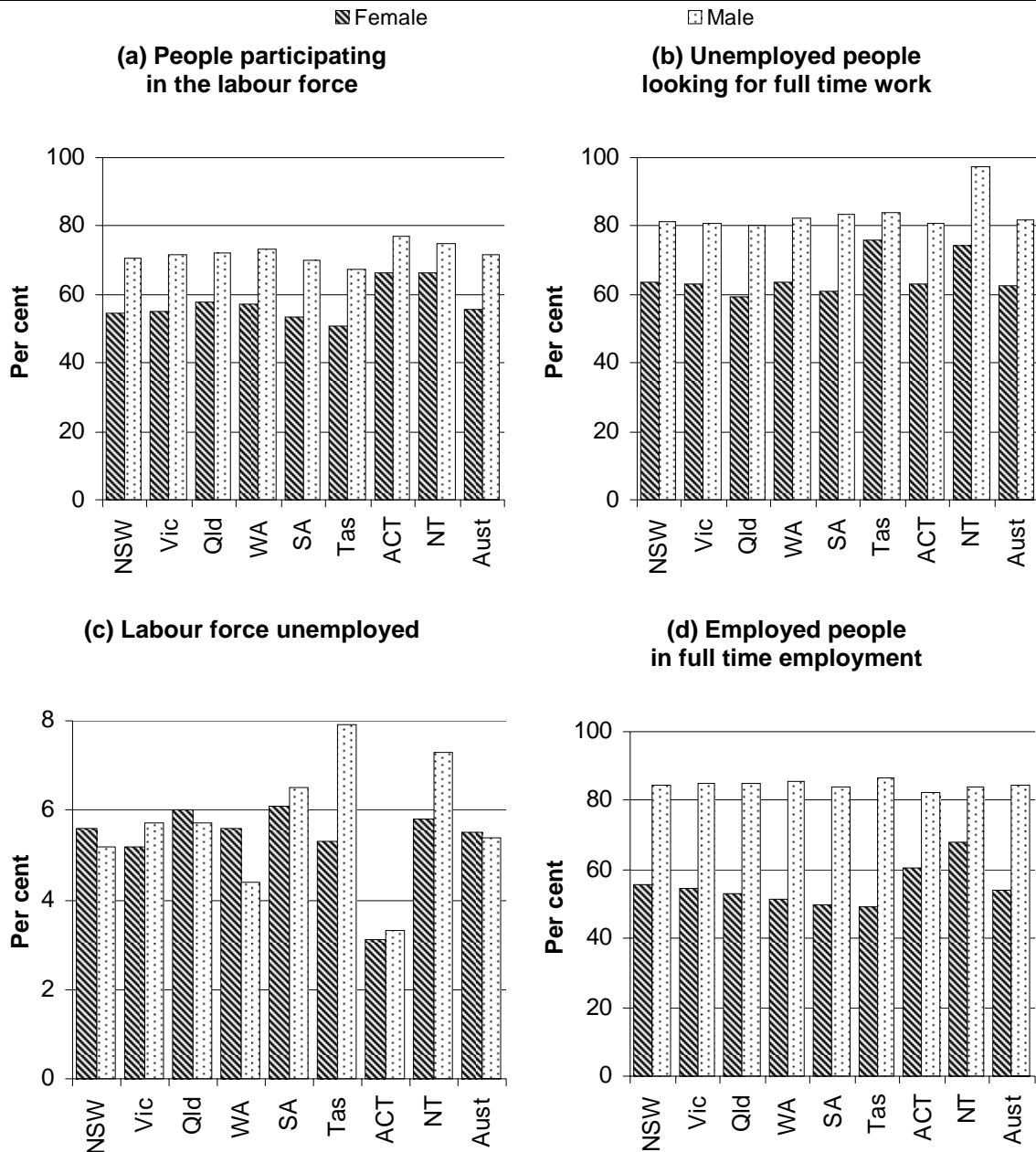
There were 9.6 million people aged 15 years or over employed in Australia in June 2004. The majority (71.0 per cent) were in full time employment. A further 562 000 were looking for either full time work (73.1 per cent) or part time work (26.9 per cent). This means 5.5 per cent of the participating labour force were unemployed at June 2004 (table A.22).

Across jurisdictions, the proportion of employed people in full time employment in June 2004 ranged from 76.4 per cent in NT to 69.7 per cent in Tasmania. The unemployment rate ranged from 6.8 per cent in Tasmania to 3.2 per cent in the ACT (tables A.22 and A.24). The proportion of unemployed people looking for full time work ranged from 88.1 per cent in the NT to 70.7 per cent in Queensland.

A greater proportion of employed males than of employed females had full time employment. The difference between male and female full time employment ranged from 37.6 percentage points in Tasmania to 15.9 percentage points in the NT (figure A.14d). Fewer unemployed females, however, were looking for full time

work. The difference ranged from 23.4 percentage points in the NT to 8.2 percentage points in Tasmania (figure A.14b).

Figure A.14 **Labour force outcomes for people aged 15 years or over, by sex, June 2004**



Source: ABS (2004b); table A.22-A.24.

The unemployment rate for females was equal to, or lower than, that for males in all jurisdictions except NSW, Queensland and WA. The greatest difference was in Tasmania (2.6 percentage points) (figure A.14c). These rates need to be interpreted within the context of labour force participation rates, which were higher for males

than for females in all jurisdictions. The difference ranged from 16.8 percentage points in Victoria to 8.3 percentage points in the NT (figure A.14a).

General economic indicators

The proportion of national gross product varied widely across the states and territories in 2002–03. The gross State product for NSW accounted for 35.3 per cent of national gross product, compared with 1.2 per cent for the NT. Growth from the previous year's gross State product was highest for Queensland (3.0 per cent) and lowest for the NT (0.3 per cent). Across Australia, the gross State product per person was \$38 151 in 2002–03 (table A.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 an AC Nielsen survey to obtain an indicative level of community satisfaction with the services that police agencies provide. The presence of sampling error — that is, the error that occurs by chance because the data are obtained from only a sample and not the entire population — implies 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 standard error of the figure that would have been obtained if the population had been included, and about 19 chances in 20 (95 per cent) that it is within approximately two standard errors. 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 standard error of an estimate can be obtained from either (1) the tables reporting the estimates and relative standard errors or (2) the relative standard error tables produced at the end of each of the relevant

attachments. Linear interpolation needs to be used to calculate the standard errors of estimates falling between the sizes of estimates listed in these tables.

Relative standard error

The standard error can be expressed as a proportion of the estimate — known as the relative standard error (RSE), which is determined by dividing the standard error 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 standard error was approximately $\pm 34\,100$ people, then the $RSE(x)$ would be equal to 0.0078, or 0.78 per cent. The relative standard error 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 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 standard errors) 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 more precise the estimate will be.

Confidence intervals — the value ranges within which estimates are likely to fall — can be used to test whether the reported proportions between two jurisdictions are

different. When comparing proportions, if the confidence intervals for the jurisdictions overlap, then there can be little confidence that the estimated proportions differ from each other.

If, for example, the 95 per cent confidence interval for survey data was estimated at ± 3.2 per cent for NSW and ± 1.5 per cent for Queensland, that would imply a 95 per cent probability that for a survey estimate of 60 per cent for NSW clients the true result would be within a 56.8–62.3 per cent confidence interval, and that the true result would be within a 56.5–59.5 per cent confidence interval for a survey estimate of 58 per cent for Queensland clients.

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 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 from annual growth rates is:

$$r_T = \prod_i (1+r)_i - 1$$

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

6 per cent in 1995-96 to 1996-97
6 per cent in 1996-97 to 1997-98
8 per cent in 1997-98 to 1998-99

then the total growth over the period 1995-96 to 1998-99 can be calculated as:

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

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 A.26 on the CD-ROM table contains GDP deflators for 1994–2004. 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.

A.6 References

- ABS (Australian Bureau of Statistics) 2001, *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians*, Cat. no. 3238.0, Canberra.
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