13 Measuring multiple disadvantage

Box 13.1 **Key messages**

In 2006:

- Indigenous people were markedly disadvantaged when compared with non-Indigenous people against measures of education, labour force and income (figures 13.1.1–3)
- patterns of disadvantage by age and sex were generally similar for Indigenous and non-Indigenous people. However, for Indigenous people, disadvantage increased with remoteness, while rates of disadvantage for non-Indigenous people were lower in remote areas (figures 13.1.1–3).

Using a statistical technique that holds other modelled factors constant, in 2006:

- Males and females who had attained higher than year 8 were more likely to be in the labour force and less likely to be unemployed than those whose highest level of educational attainment was year 8 or below. This effect was stronger for Indigenous males and females than for non-Indigenous males and females (figure 13.3.1 and table 13.3.2).

Different aspects of disadvantage often seem to occur together — for example, poor education may be linked with poor employment outcomes, and both may be linked with poor income. This chapter uses data from the ABS 2001 and 2006 Censuses to present some indicators of Indigenous disadvantage that tend to occur together. However, this information does not reveal cause and effect (that is, it does not say that disadvantage in one area is the *cause* of another poor outcome).

Section 13.1 examines patterns of disadvantage against proxy measures of the COAG targets and headline indicators according to age, sex and remoteness area, and compares patterns of outcomes for Indigenous and non-Indigenous people. Section 13.2 examines links between proxy measures of the COAG targets and headline indicators and some strategic change indicators, and compares Indigenous and non-Indigenous results. Section 13.3 uses data from the ABS 2006 Census to identity factors related to Indigenous labour market participation and unemployment. In this section, statistical techniques have been used to isolate the contribution of one factor holding other modelled factors constant. The analytical technique used in this section means that the results of this analysis are not comparable to other sections of this chapter or other chapters of the report.

Other approaches to measuring multiple disadvantage exist. Silburn et al. (2006) examined three measure of socioeconomic disadvantage for Aboriginal children:

- low education — defined as primary carers who had not been to school or whose highest level of education was Years 1–9
- no employment history — primary carers who have never had a paid job
- financial strain — defined as primary carers who reported that their family's money situation was 'spending more money than we get' and that they have 'just enough money to get to the next pay day'.

A child whose primary carer met two of these criteria was considered by Silburn et al. (2006) to experience multiple socioeconomic disadvantage. The study found that one in five Aboriginal children had primary carers who met two of these criteria.

13.1 Patterns of relative Indigenous disadvantage

The analysis in this chapter is built on the Overcoming Indigenous Disadvantage indicator framework. The report covers a wide range of socioeconomic dimensions, but the analysis in this chapter is limited to indicators where comparable data items were available from the ABS 2001 and 2006 Censuses.

This section analyses five measures from the ABS 2001 and 2006 Censuses. These measures are closely aligned with the COAG targets and headline indicators. Box 13.1.1 lists the measures used and the corresponding headline indicators.

Box 13.1.1 **Measuring relative Indigenous disadvantage**

The following measures for the Indigenous and non-Indigenous population are from the ABS 2001, 2006 Census.

Census measure	*Headline indicator*
• without a non-school qualification (without a vocational or higher education qualification)	• Post-secondary education, participation and attainment
• not in the labour force	• Employment
• unemployed	• Employment
• individual income in the lowest 20 per cent of income for the total Australian population aged 15 to 64 years	• Household and individual income
• equivalised household income[a] in the lowest 20 per cent of income for the total Australian population	• Household and individual income

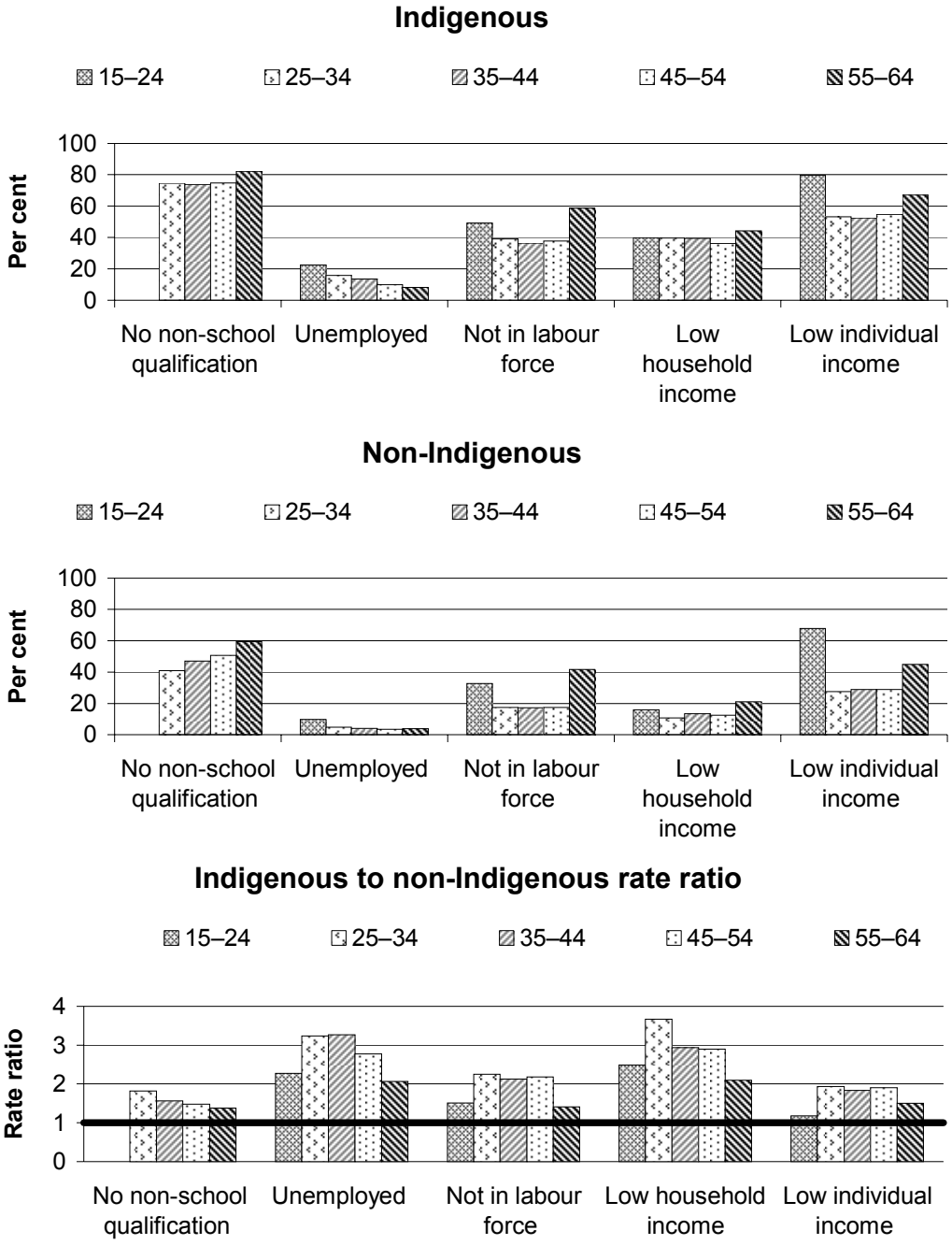
[a] Equivalised household income adjusts the actual incomes of households to make households of different sizes and composition comparable. It results in a measure of the economic resources available to members of a standardised household.

In both 2001 and 2006, Indigenous people were markedly disadvantaged when compared with non-Indigenous people against all the selected proxy measures of the COAG targets and headline indicators (see box 13.1.2 for an explanation of the method used to measure relative Indigenous disadvantage).

Box 13.1.2 **Measuring 'relative' Indigenous disadvantage**

'Relative' Indigenous disadvantage is measured by comparing the rate of Indigenous disadvantage (for example, the proportion of Indigenous people reporting they do not have a non-school qualification) with the rate for the non-Indigenous population. The 'rate ratio' is calculated by dividing the rate for the Indigenous population by the rate for the non-Indigenous population. When using indicators of disadvantage, a rate ratio value greater than one (above the solid horizontal black line) implies that Indigenous people are disadvantaged when compared to non-Indigenous people with the same characteristics.

Figure 13.1.1 **Relative disadvantage by Indigenous status and age, 2006**[a, b, c, d]



[a] Data for no non-school qualification for people aged 15–24 years are not included because many people aged 15–24 years are still attending school or obtaining a non-school qualification. Non-school qualifications include: 'Certificate', 'Advanced diploma/diploma', 'Bachelor degree', 'Graduate diploma/graduate certificate' and 'Postgraduate degree'. [b] No non-school qualification includes: 'Level of education inadequately described', 'Level of education not stated', and 'Not applicable' (people with no qualifications, still studying for a first qualification, and qualifications out of scope of this classification). [c] Low equivalised household income includes people who are in households in the lowest quintile (<$315). [d] Low individual income includes people who have negative or nil income and people who have an income of less than $400 per week.

Source: ABS (unpublished) derived from the *2006 Census of Population and Housing*; tables 13A.1.16; 13A.1.18; 13A.1.20; 13A.1.22; and 13A.1.24.

Non-school qualifications

In 2006:

- Indigenous people in all age groups were less likely to have a non-school qualification (figure 13.1.1)
- the relative Indigenous disadvantage (as measured by the Indigenous to non-Indigenous rate ratio) was largest for the 25–34 years age group (Indigenous people in this age group were 1.8 times as likely as non-Indigenous people to have no non-school qualification, compared to 1.6 times as likely in 2001) (figure 13.1.1 and table 13A.1.2)
- for both Indigenous and non-Indigenous people those in older age groups were less likely to have a non-school qualification (figure 13.1.1).

Labour force participation and unemployment rates

In 2006 :

- Indigenous people in all age groups were much more likely to be unemployed than non-Indigenous people (figure 13.1.1)
- the relative Indigenous disadvantage was greatest for those in the 25–34 and 35–44 year age groups (Indigenous people in these age groups were 3.2 and 3.3 times as likely as non-Indigenous people to be unemployed in 2006, compared to 2.9 and 2.8 times as likely in 2001) (figure 13.1.1 and table 13A.1.4)
- Indigenous and non-Indigenous people in older age groups were less likely to be unemployed (figure 13.1.1)
- Indigenous people in all age groups were much less likely to be in the labour force (figure 13.1.1)
- for both Indigenous and non-Indigenous people, those aged 15–24 years and 55–64 years were most likely be out of the labour force (figure 13.1.1).

Low income

In both 2006 and 2001, age related patterns in individual income were similar for Indigenous and non-Indigenous people. In both populations people in the 15–24 years age group and the 55–64 years age group were more likely to have low individual incomes (less than $400 per week).

In 2006:

- for all age groups Indigenous people had lower individual incomes than non-Indigenous people (figure 13.1.1)
- relative disadvantage was greatest for Indigenous people aged 25–54 years (figure 13.1.1).

13.1.2 Differences between males and females

Figure 13.1.2 shows outcomes for Indigenous and non-Indigenous people by sex.

Non-school qualifications

In 2006, for those aged 25–64 years:

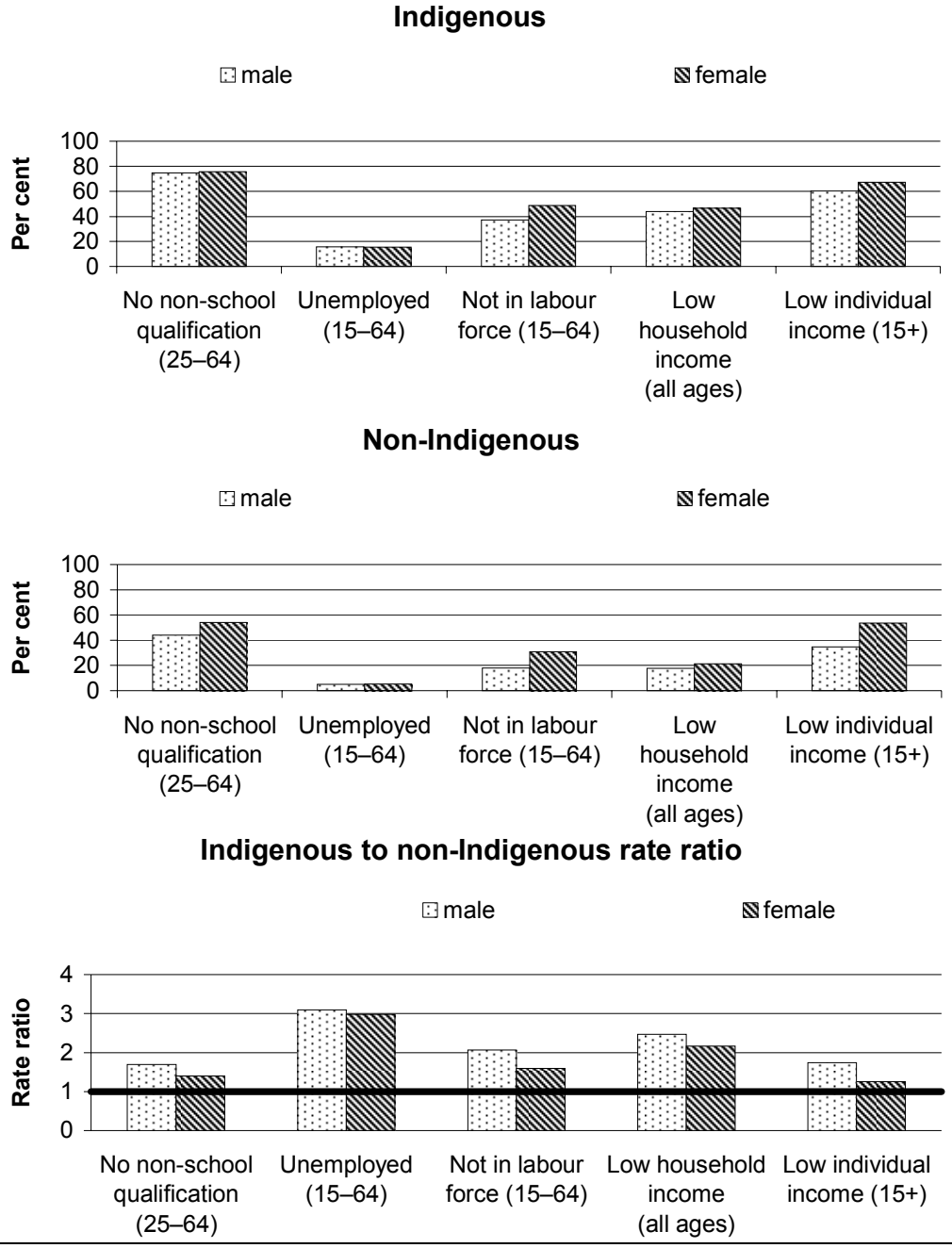
- Indigenous males and females were less likely than non-Indigenous males and females to have non-school qualifications (figure 13.1.2)
- relative Indigenous disadvantage was greater for males than for females (Indigenous males were 1.7 times as likely as non-Indigenous males to have no non-school qualification in 2006, compared to 1.6 times as likely in 2001) (figure 13.1.2 and table 13A.1.2)
- for both Indigenous and non-Indigenous people, females were less likely to have non-school qualifications than males. However, the gap between males and females was much greater for non-Indigenous people (figure 13.1.2).

Labour force participation and unemployment rates

In 2006, for those aged 15–64 years:

- Indigenous people of both sexes were much less likely to be in the labour force (figure 13.1.2)
- relative Indigenous disadvantage was greater for males than for females (rate ratios of 2.1 and 1.6, respectively) (figure 13.1.2).
- Indigenous people of both sexes were much more likely to be unemployed than non-Indigenous people (figure 13.1.2)
- the relative gap between Indigenous and non-Indigenous people was similar for males and females (in 2006, Indigenous males were 3.1 times as likely to be unemployed and Indigenous females were 3.0 times as likely to be unemployed, the corresponding 2001 ratios were 2.8 and 2.7) (figure 13.1.2 and table 13A.1.4).

Figure 13.1.2 **Relative disadvantage, by Indigenous status and sex, 2006**[a, b, c, d]



[a] Data for no non-school qualification for people aged 15–24 years are not included because many people aged 15–24 years are still attending school or obtaining a non-school qualification. Non-school qualifications include: 'Certificate', 'Advanced diploma/diploma', 'Bachelor degree', 'Graduate diploma/graduate certificate' and 'Postgraduate degree'. [b] No non-school qualification includes: 'Level of education inadequately described', 'Level of education not stated', and 'Not applicable' (people with no qualifications, still studying for a first qualification, and qualifications out of scope of this classification). [c] Low equivalised household income includes people who are in households in the lowest quintile (<$315). [d] Low individual income includes people who have negative or nil income and people who have an income of less than $400 per week.

Source: ABS (unpublished) derived from the *2006 Census of Population and Housing*; tables 13A.1.16; 13A.1.18; 13A.1.20; 13A.1.22; and 13A.1.24.

Low income

In 2006:

- Indigenous males and females had lower equivalised household incomes and lower individual incomes than non-Indigenous males and females, respectively (figure 13.1.2)
- for both the Indigenous and non-Indigenous populations females were more likely to have low equivalised household income (figure 13.1.2)
- for both Indigenous and non-Indigenous people aged 15 years and above females were more likely to have low individual incomes (figure 13.1.2).

13.1.3 Differences by remoteness area

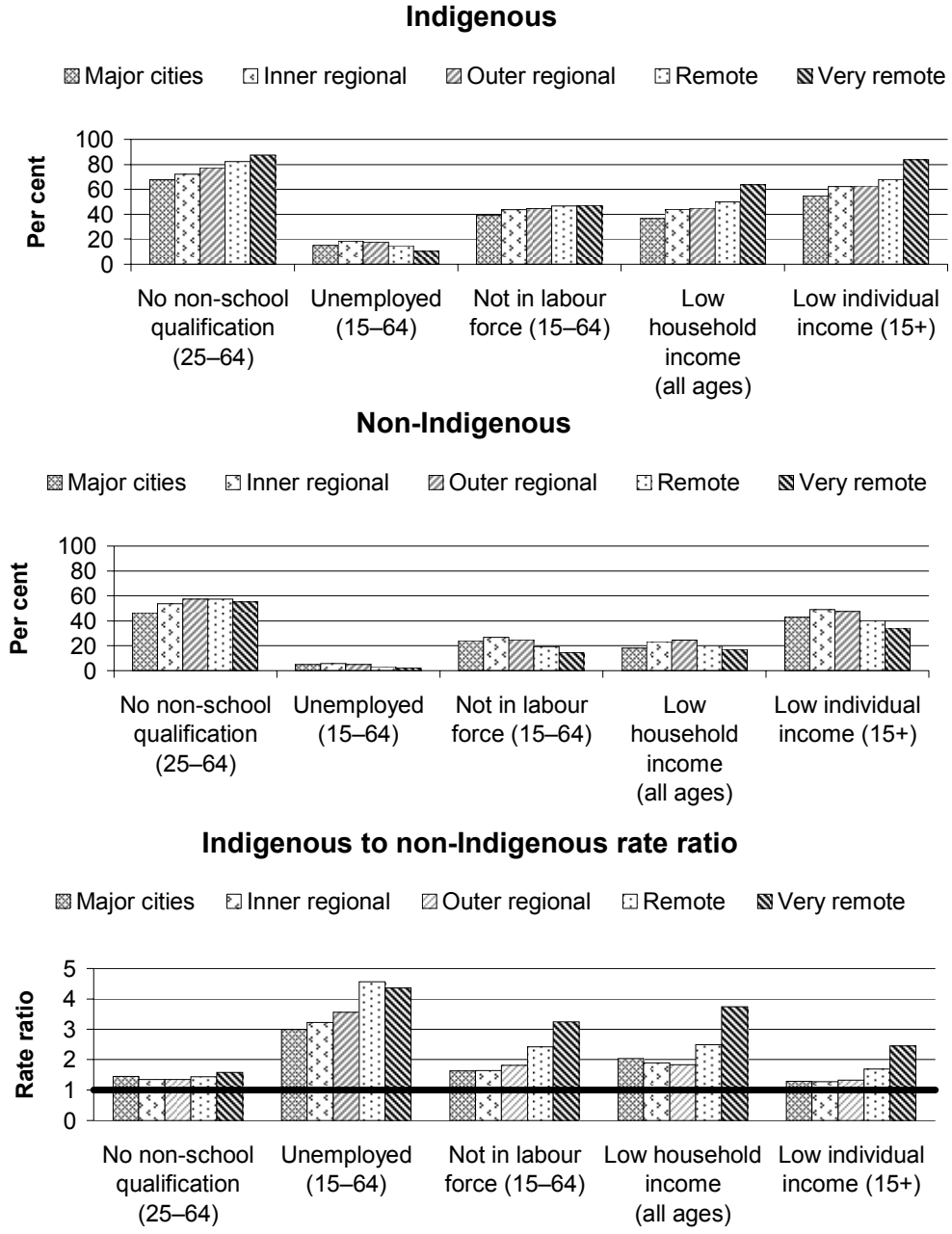
Figure 13.1.3 shows outcomes for Indigenous and non-Indigenous people by remoteness areas: major cities, inner regional, outer regional, remote, and very remote. Where the characteristics of people in major cities, inner regional and outer regional areas are similar, they may be collectively described as the characteristics of people in 'non-remote' areas. Similarly, where the characteristics of people in remote and very remote areas are similar, they may be collectively described as the characteristics of people in 'remote' areas.

Non-school qualifications

In 2006, for those aged 25–64 years:

- Indigenous people were less likely than non-Indigenous people to have a non-school qualification in all remoteness areas (figure 13.1.3)
- Indigenous people in more remote areas were less likely to have a non-school qualification (figure 13.1.3)
- relative Indigenous disadvantage was greatest in very remote areas (in 2006, Indigenous people were 1.6 times as likely as non-Indigenous people in very remote areas to have no non-school qualification, the corresponding 2001 figure was 1.5) (figure 13.1.3 and table 13A.1.2)
- for both Indigenous and non-Indigenous people those in major cities were most likely to have non-school qualifications (figure 13.1.3).

Figure 13.1.3 **Relative disadvantage, by Indigenous status and remoteness, 2006**[a, b, c, d]



a Data for no non-school qualification for people aged 15–24 years are not included because many people aged 15–24 years are still attending school or obtaining a non-school qualification. Non-school qualifications include: 'Certificate', 'Advanced diploma/diploma', 'Bachelor degree', 'Graduate diploma/graduate certificate' and 'Postgraduate degree'. **b** No non-school qualification includes: 'Level of education inadequately described', 'Level of education not stated', and 'Not applicable' (people with no qualifications, still studying for a first qualification, and qualifications out of scope of this classification). **c** Low equivalised household income includes people who are in households in the lowest quintile (<$315). **d** Low individual income includes people who have negative or nil income and people who have an income of less than $400 per week.

Source: ABS (unpublished) derived from the *2006 Census of Population and Housing*; tables 13A.1.16; 13A.1.18; 13A.1.20; 13A.1.22; and 13A.1.24.

Labour force participation and unemployment rates

In 2006, for those aged 15–64 years:

- for all remoteness areas, Indigenous people were much less likely than non-Indigenous people to be in the labour force (figure 13.1.3)
- relative Indigenous disadvantage was greatest in very remote areas (Indigenous people were 3.2 times less likely to be in the labour force) and lowest in major cities (Indigenous people were 1.6 times less likely to be in the labour force) (figure 13.1.3 and table 13A.1.4)
- Indigenous people in all remoteness areas were much more likely to be unemployed than non-Indigenous people (figure 13.1.3)
- for both Indigenous and non-Indigenous people those in remote and very remote areas were least likely to be unemployed (figure 13.1.3)
- relative Indigenous disadvantage in unemployment was lowest in major cities and highest in remote areas (figure 13.1.3).

Low income

- In 2006, patterns of household and individual income across remoteness areas were very different for the Indigenous and non-Indigenous populations. Indigenous people in remote areas were more likely than those in non-remote areas to have low equivalised household incomes and low individual incomes. In contrast, non-Indigenous people in very remote areas were least likely to have low equivalised household incomes and low individual incomes. These patterns were similar in 2001 and 2006.

13.2 Patterns of multiple disadvantage

This section examines the associations between disadvantage in one dimension and disadvantage in another. For example, to what extent is a low level of educational attainment associated with a high level of unemployment, and do the Indigenous and the non-Indigenous populations follow the same or different patterns?

The approach to measuring associations between proxy measures of the COAG targets and headline indicators and other COAG targets and headline indicators or strategic change indicators is described in box 13.2.1.

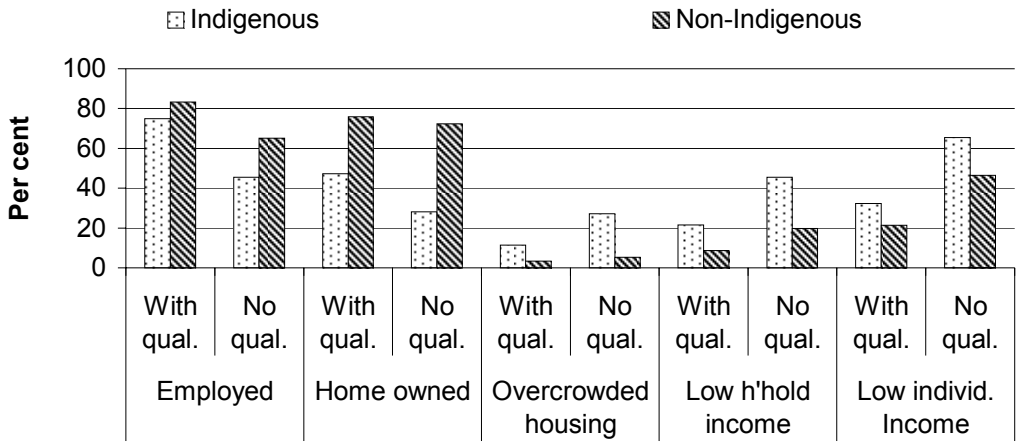
Box 13.2.1 **Measuring associations between the proxy measures of the COAG targets and other headline indicators and other COAG targets and headline indicators or strategic areas for action**

This analysis is based on proxy measures of the COAG targets and headline indicators defined in box 13.1.1, using data from the ABS 2001 and 2006 Censuses. The analysis:

- classifies the population into various subgroups based on their educational attainment (has a non-school qualification or has no non-school qualification) or labour force status (employed, unemployed or not in the labour force)
- compares the proportions of people in each population subgroup which have other outcomes (for example, are people who are employed more likely than the unemployed to own a home or live in overcrowded housing).

Although Indigenous people experience higher rates of disadvantage for all the proxy measures, the patterns of association between the measures are similar for Indigenous and non-Indigenous people. For both Indigenous and non-Indigenous people, poor educational outcomes, low levels of labour force participation and employment and low household incomes are interrelated (figures 13.2.1–2).

Figure 13.2.1 **Proportion of people aged 25–64 years with (and without) non-school qualifications and other selected characteristics, 2006**[a, b, c, d, e, f]



[a] Non-school qualifications include: 'Certificate', 'Advanced diploma/diploma', 'Bachelor degree', 'Graduate diploma/graduate certificate' and 'Postgraduate degree'. [b] No non-school qualification includes: 'Level of education inadequately described', 'Level of education not stated', and 'Not applicable' (people with no qualifications, still studying for a first qualification, and qualifications out of scope of this classification). [c] 'Home owned' comprises people who live in a house that is: 'Fully owned', 'Being purchased', or 'Being purchased under a rent/buy scheme' by a member of the household. [d] Housing overcrowding is based on the Canadian National Occupancy Standard. For more information on housing overcrowding see section 9.1. [e] 'Low h'hold income' includes people who live in a household that has an equivalised household income in the lowest quintile (<$315 per week). [f] Low individual income includes people who have negative or nil income and people who have an income of less than $400 per week.

Source: ABS (unpublished) derived from the *2006 Census of Population and Housing*; tables 13A.2.20; 13A.2.22; 13A.2.24; 13A.2.26; and 13A.2.28.

In 2006, for those aged 25–64 years:

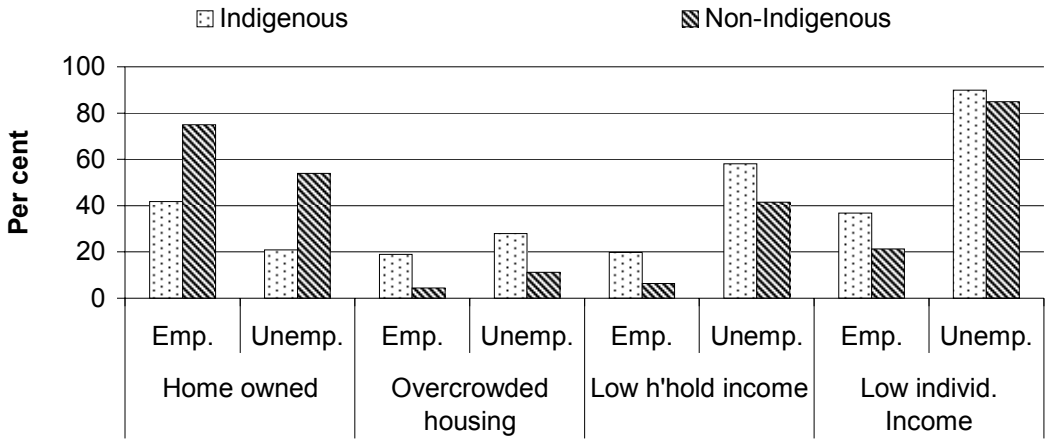
- both Indigenous and non-Indigenous people with a non-school qualification were more likely to be employed. However, a lower proportion of Indigenous than non-Indigenous people with a non-school qualification were employed (74.9 per cent and 83.3 per cent, respectively) (figure 13.2.1)
- 47.3 per cent of Indigenous people with a non-school qualification lived in a home that was owned or being purchased by a member of the household (compared to 28.1 per cent for Indigenous people without a non-school qualification). There was no association between having a non-school qualification and living in a home that was owned or being purchased by a member of the household for non-Indigenous people (figure 13.2.1)
- Indigenous people were much more likely than non-Indigenous people to live in overcrowded housing. Indigenous people with a non-school qualification were much less likely than Indigenous people without a non-school qualification to

live in overcrowded housing (11.4 per cent and 27.2 per cent, respectively) (figure 13.2.1)

- both Indigenous and non-Indigenous people with a non-school qualification were much less likely to live in a household with low equivalised household income. However, a much higher proportion of Indigenous than non-Indigenous people with a non-school qualification lived in a household with a low equivalised household income (21.6 per cent and 8.6 per cent, respectively) (figure 13.2.1)
- both Indigenous and non-Indigenous people with a non-school qualification were much less likely to have a low individual income (less than $400 a week). However, a much higher proportion of Indigenous than non-Indigenous people with a non-school qualification had low individual incomes (32.2 per cent and 21.4 per cent, respectively) (figure 13.2.1).

These patterns of disadvantage were similar in 2001. Comparable data are available for 2001 in tables 13A.2.2, 13A.2.4, 13A.2.6, 13A.2.8 and 13A.2.10.

Figure 13.2.2 **Proportion of people aged 15–64 years who were employed (and unemployed), selected characteristics, 2006** [a, b, c, d]



[a] 'Home owned' comprises people who live in a house that is: 'Fully owned', 'Being purchased', or 'Being purchased under a rent/buy scheme' by a member of the household. [b] Housing overcrowding is based on the Canadian National Occupancy Standard. For more information on housing overcrowding see section 9.1. [c] 'Low h'hold income' includes people who live in a household that has an equivalised household income in the lowest quintile (<$315). [d] Low individual income includes people who have negative or nil income and people who have an income of less than $400 per week.

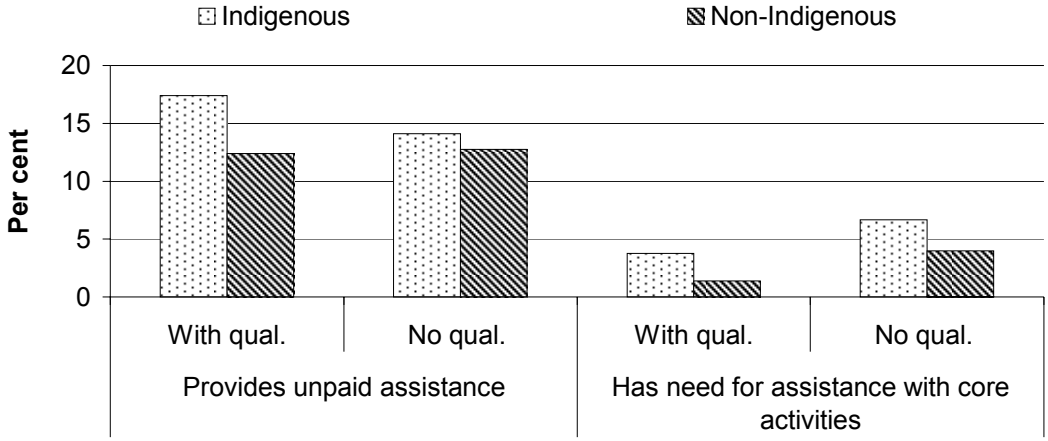
Source: ABS (unpublished) derived from the *2006 Census of Population and Housing*; tables 13A.2.34; 13A.2.36; 13A.2.38; and 13A.2.40.

In 2006, for those aged 15–64 years:

- Indigenous and non-Indigenous people who were employed were much more likely to live in a home that was owned or being purchased by a member of the household. However, a lower proportion of Indigenous than non-Indigenous people who were employed lived in a home that was owned or being purchased by a member of the household (41.7 per cent and 75.0 per cent, respectively) (figure 13.2.2)
- Indigenous people who were employed or unemployed were both much more likely than non-Indigenous people with these characteristics to live in overcrowded housing. However, Indigenous people who were employed were less likely than Indigenous people who were unemployed to live in overcrowded housing (18.9 per cent and 28.0 per cent, respectively) (figure 13.2.2)
- Indigenous and non-Indigenous people who were unemployed were much more likely to live in a household with low equivalised household income. However, a higher proportion of Indigenous than non-Indigenous people who were unemployed lived in a household with a low equivalised household income (58.0 per cent and 41.5 per cent, respectively) (figure 13.2.2)
- Indigenous and non-Indigenous people who were unemployed were much more likely than those who were employed to have a low individual income (less than $400 a week) (89.9 per cent and 84.9 per cent, respectively) (figure 13.2.2).

These patterns of disadvantage were similar in 2001. Comparable data are available for 2001 in tables 13A.2.12, 13A.2.14, 13A.2.16 and 13A.2.18.

Figure 13.2.3 **Proportion of people aged 25–64 years with (and without) non-school qualifications who provide unpaid assistance to a person with a disability or have a core activity need for assistance, 2006[a]**



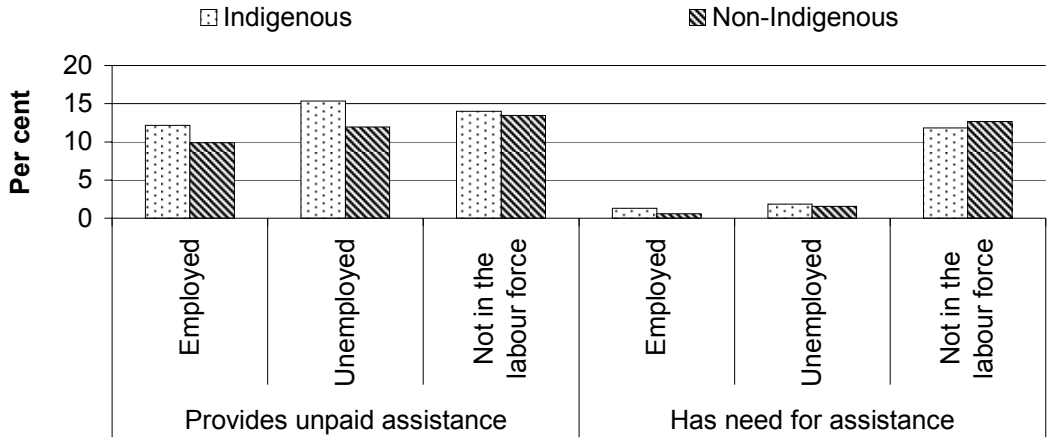
[a] People who provided unpaid assistance to another person with disability, long term illness or problems related to old age.

Source: ABS (unpublished) derived from the *2006 Census of Population and Housing*; tables 4A.2.30 and 13A.2.32.

In 2006, for those aged 25–64 years:

- Indigenous people with non-school qualifications were more likely than Indigenous people without non-school qualifications to provide unpaid assistance to a person with a disability (17.4 per cent and 14.1 per cent, respectively). Similar proportions of non-Indigenous people with and without non-school qualifications provided assistance to a person with a disability (12.4 per cent and 12.7 per cent, respectively) (figure 13.1.3)
- for both Indigenous and non-Indigenous people those with non-school qualifications were much less likely to have a core activity need for assistance. However Indigenous people with non-school qualifications were much more likely to have a core activity need for assistance than non-Indigenous people with non-school qualifications (3.8 per cent and 1.4 per cent, respectively) (figure 13.1.3).

Figure 13.2.4 **Proportion of people aged 15–64 years who were employed (and unemployed) who provide unpaid assistance to a person with a disability or have a core activity need for assistance, 2006[a]**



[a] People who provided unpaid assistance to another person with disability, long term illness or problems related to old age.

Source: ABS (unpublished) derived from the *2006 Census of Population and Housing*; tables 13A.2.42; and 13A.2.44*:*

In 2006, for those aged 15–64 years:

- Indigenous people who were employed, unemployed and not in the labour force were more likely than non-Indigenous people to provide unpaid assistance to a person with a disability (figure 13.1.4)
- for both Indigenous and non-Indigenous people those who were not in the labour force were much more likely to have a core activity need for assistance (11.8 per cent and 12.6 per cent, respectively) (figure 13.1.4).

13.3 Influences on Indigenous labour force participation and unemployment

Using data from the ABS 2006 Census, this section uses a technique called multiple regression analysis to identify which factors have the strongest effects on Indigenous labour force participation and unemployment. The Census provides data on 'human capital' factors, such as educational attainment, and other factors that can contribute to people's labour market outcomes (such as family status, the need for assistance with core activities and geographical location).

The analytical technique used in this section allows modelled factors to be held constant, in order to isolate the effect that just one factor has on labour force participation and unemployment. For details on the methodology see box 13.3.1. For further details, including a full description of the modelled variables, marginal effects, mean values, coefficients and diagnostic tests, see tables 13A.3.1–8.

Box 13.3.1 **Methodology**

The estimates in this section were produced using a statistical technique that estimates how a selected factor affects either labour force participation or unemployment, holding all other modelled factors constant.

To produce the estimates two steps are required (while this box uses labour force participation as an example, the same steps were used for unemployment).

First, the relationships of all the factors to labour force participation are estimated using a standard statistical technique called regression analysis. In this case, the technique is used to study the relationship between labour force participation and a number of factors that are related to labour force participation.

Second, the parameter estimates from this technique are used to investigate the effect of each factor on labour force participation. The effect of a factor on participation is estimated differently for two different types of factors:

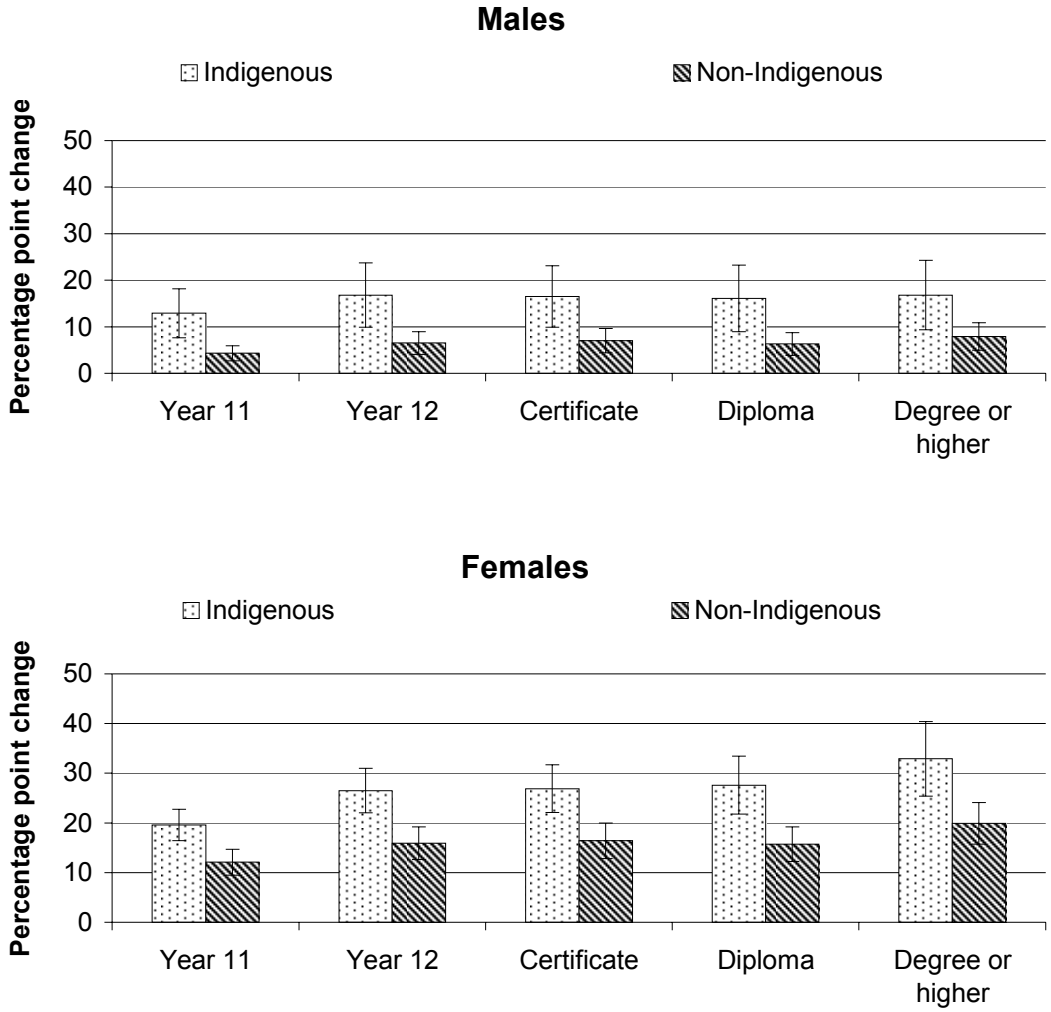
- factors that have only two outcomes, for example, being married or not married (called 'binary outcomes'). The effect of being married on labour force participation is the change in participation rate expected if a person changes from being unmarried to married, holding other factors constant
- factors that have a range of outcomes, for example, age. The effect of factors like age is the change in the participation rate that would be expected if a person was one year older or younger than the average age.

One issue that often arises in studies of Indigenous labour market outcomes is the small sample size that can cause estimates to be unreliable. To overcome this limitation, all 210 000 Indigenous people of working age (those aged 15–64 years), who completed the 2006 Census were included in the study. One in ten (1.2 million) non-Indigenous people of working age were randomly selected for comparative analysis (Productivity Commission, unpublished).

Labour force participation

Labour force participation rates are calculated as the number of people aged 15 to 64 years who are either employed or actively looking for work (the labour force), divided by the population in that age group. Figure 13.3.1 and table 13.3.1 present data on the associations between a number of factors and labour force participation.

Figure 13.3.1 **Marginal effect of educational attainment (relative to year 8 or lower) on labour force participation, people aged 15–64 years, 2006 (percentage point change)[a, b, c]**



[a] Percentage point change in participation if a person's highest level of educational attainment were to increase from year 8 or lower. [b] All variables are binary variables. [c] The bars attached to each estimate indicate the 95 per cent confidence interval of the estimate. The standard errors of the estimates are provided in table 13.3.1.

Source: Productivity Commission estimates; table 13A.3.1.

It is generally agreed that completing year 12 and/or having a non-school qualification improves labour market outcomes. Therefore, it would be expected that people with higher educational attainment would be more likely to be in the labour force. This analysis examines the effect of people's highest level of education attainment on labour force participation, relative to people whose highest level of educational attainment was year 8 or below.

As expected, higher education was associated with increased labour force participation. The effect was greater for Indigenous people than for non-Indigenous people, and peaked at year 12 for Indigenous males (although there were still benefits from even higher levels of education) and at degree or higher level for Indigenous females. In 2006, holding other modelled factors constant (a full list of modelled factors are included in table 13A.3.1), relative to people whose highest level of educational attainment was year 8 or below:

- Indigenous males whose highest level of educational attainment was year 12 were 16.8 percentage points more likely to be in the labour force, compared to 6.5 percentage points for non-Indigenous males (figure 13.3.1)
- Indigenous females whose highest level of educational attainment was year 12 were 26.5 percentage points more likely to be in a labour force, compared to 15.9 percentage points for non-Indigenous females (figure 13.3.1).

The subject area studied at post-school level can also influence labour market outcomes. For this analysis, one subject area must be chosen as the 'base case' in order to compare the effect of subject areas on labour market incomes. The food, hospitality and personal services subject area was chosen as the base case. In 2006, holding other factors constant, relative to people who studied food hospitality and personal services subject areas:

- Indigenous males who studied education subject areas had the greatest increase in labour force participation (8.0 percentage points), and there were also improvements for those who studied health (7.0 percentage points), management and commerce (7.6 percentage points) and society and culture (4.7 percentage points) (table 13A.3.1)
- Indigenous females who studied education subject areas had the greatest increase in labour force participation (14.4 percentage points), and there were also improvements for those who studied health (11.0 percentage points), management and commerce (9.8 percentage points) and society and culture (6.5 percentage points) (table 13A.3.1).

For non-Indigenous people, estimates of the effects of subject area on labour force participation, holding other factors constant, were much smaller than for Indigenous people (table 13A.3.1).

Table 13.3.1 **Marginal effects of selected other factors on labour market participation, people aged 15–64 years, 2006 (percentage point change)[a, b]**

		Indigenous		*Non-Indigenous*	
	Unit	*Male*	*Female*	*Male*	*Female*
Personal and family characteristics					
Children under 5 in family	Binary	-3.0***	-20.4***	-1.1**	-18.5***
Income of other family members	$'000	6.5***	9.3***	1.4***	1.2***
Core assistance needed	Binary	-55.1***	-43.3***	-58.3***	-58.8***
Voluntary work	Binary	7.2***	8.8***	0.9***	-0.7***
Relationship status					
Married	Binary	12.0***	0.7	9.6***	-6.7***
Defacto	Binary	9.4***	-1.4**	4.8***	-5.0***
Single parent	Binary	-5.1***	-4.2***	-2.5**	0.3
Geographical location					
Remote and very remote	Binary	6.2***	9.7***	1.9***	4.2***

a The asterisks indicate the degree of certainty of each estimate. *** = significant at 1 per cent level (a 1 in 100 possibility that the result is due to chance); ** = significant at 5 per cent level (a 5 in 100 possibility that the result is due to chance); * = significant at 10 per cent level (a 10 in 100 possibility that the result is due to chance). **b** Standard errors for these estimates are contained in table 13A.3.1.

Source: Productivity Commission estimates; table 13A.3.1.

Table 13.3.1 examines the effect of non-education factors on labour force participation, such as personal and family characteristics, relationship status and geographical location. In 2006, holding other modelled factors constant:

- the likelihood of Indigenous males and females being in the labour force would be 6.5 and 9.3 percentage points higher if the income of other family members were $1000 higher. The effect was much smaller for non-Indigenous people (table 13.3.1)
- both Indigenous and non-Indigenous females who had children under five were much less likely to be in the labour force. There was a much smaller effect for Indigenous and non-Indigenous males (table 13.3.1)
- both Indigenous and non-Indigenous males who were married, relative to those who were unmarried, were much more likely to be in the labour force. Indigenous females who were married, relative to those who were unmarried, were as likely to be in the labour force. In contrast, non-Indigenous females who were married were less likely to be in the labour force (table 13.3.1)
- Indigenous and non-Indigenous males and females who needed assistance with a core activity were much less likely to be in the labour force (table 13.3.1)
- Indigenous males and females who were single parents were less likely to be in the labour force. The effect was much smaller for non-Indigenous people (table 13.3.1)

- Indigenous males and females who lived in remote or very remote areas were more likely to be in the labour force. However, Indigenous people in remote or very remote areas are much more likely to participate in CDEP. CDEP is discussed in more detail in section 4.6. Non-Indigenous males and females who lived in remote areas were also more likely to be in the labour force, but the effect was much smaller (table 13.3.1).

Unemployment

Unemployment rates are calculated as the number of people aged 15 to 64 years who are actively looking for work, divided by the number of people in the labour force (the employed plus those actively looking for work). Tables 13.3.2 and 13.3.3 present data on the associations between a number of factors and unemployment.

Table 13.3.2 **Marginal effect of educational attainment on unemployment, people aged 15–64 years, 2006 (percentage point change)[a, b, c, d]**

	Indigenous		*Non-Indigenous*	
	Male	*Female*	*Male*	*Female*
Education, highest level completed (relative to year 8 or lower)				
Degree or higher	-8.8***	-9.4**	-2.4***	-2.9***
Diploma	-7.3***	-7.5**	-2.0***	-2.2***
Certificate	-8.2***	-6.8**	-2.0***	-1.9***
Year 12	-7.1***	-7.5**	-1.8***	-2.3***
Year 11	-3.7***	-5.3**	-1.3***	-1.7***
Subject area of post-school study (relative to food, hospitality and personal services)				
Health	ns	-3.0**	-1.3***	-1.9***
Education	ns	-4.2**	-1.4***	-1.3***
Management and commerce	ns	-2.9**	0.1	-0.3**
Society and culture	ns	-0.9	0.4	-0.4**

ns = Not significant in regression. [a] The asterisks indicate the degree of certainty of each estimate. *** = significant at 1 per cent level (a 1 in 100 possibility that the result is due to chance); ** = significant at 5 per cent level (a 5 in 100 possibility that the result is due to chance); * = significant at 10 per cent level (a 10 in 100 possibility that the result is due to chance). [b] All variables are binary variables. [c] The standard errors of the estimates are provided in table 13A.3.2. [d] A minus sign indicates that the unemployment rate has decreased.

Source: Productivity Commission estimates; table 13A.3.2.

It would be expected that people with higher educational attainment would be less likely to be unemployed. This analysis examines the effect of people's highest level of education attainment on unemployment relative to people whose highest level of educational attainment was year 8 or below.

As expected, higher educational attainment was associated with decreases in unemployment. The effect was greater for Indigenous people than for non-Indigenous people, and peaked at degree or higher level. In 2006, holding other modelled factors constant (a full list of modelled factors are contained in table 13A.3.2), relative to people whose highest level of educational attainment was year 8 or below:

- Indigenous males whose highest level of educational attainment was year 12 were 7.1 percentage points less likely to be unemployed. Non-Indigenous males whose highest level of educational attainment was year 12 were 1.8 percentage points less likely to be unemployed (table 13.3.2)
- Indigenous females whose highest level of educational attainment was year 12 were 7.5 percentage points less likely to be unemployed. Non-Indigenous females whose highest level of educational attainment was year 12 were 2.3 percentage points less likely to be unemployed (table 13.3.2).

The subject area studied at post-school level can also influence the likelihood of a person being unemployed. In 2006, holding other factors constant, relative to people who studied food, hospitality and personal services subject areas:

- Indigenous females who studied education subject areas had the greatest decrease in unemployment (4.2 percentage points), and there were also decreases in unemployment for those who studied health (3.0 percentage points), management and commerce (2.9 percentage points) and society and culture (0.9 percentage points) (table 13.3.2).

Estimates of the impact of subject choice on unemployment for Indigenous males were not significant. Estimates of the effects of subject area on unemployment for non-Indigenous people in 2006, were small (table 13.3.2).

Table 13.3.3 **Selected other unemployment marginal effects, people aged 15–64 years, 2006 (percentage point change)[a, b, c]**

		Indigenous		*Non-Indigenous*	
	Unit	*Male*	*Female*	*Male*	*Female*
Personal and family characteristics					
Income of other family members	$'000	-3.4***	-4.9**	-0.6***	-0.9***
Relationship status					
Married	Binary	-10.2***	-5.9**	-5.0***	-2.5***
Divorced	Binary	-3.6***	-1.3**	-0.9***	-0.3**
Separated	Binary	-3.3**	-0.9	-1.2***	-0.2
Single parent	Binary	3.3	0.9	1.6	1.0
Defacto relationship	Binary	-4.1***	-2.6**	-2.0***	-1.3***
Geographical location					
Remote and very remote	Binary	-10.0***	-9.0**	-1.0***	-1.4***

[a] The asterisks indicate the degree of certainty of each estimate. *** = significant at 1 per cent level (a 1 in 100 possibility that the result is due to chance); ** = significant at 5 per cent level (a 5 in 100 possibility that the result is due to chance); * = significant at 10 per cent level (a 10 in 100 possibility that the result is due to chance). [b] The standard errors of the estimates are provided in table 13A.3.2. [c] A minus sign indicates that the unemployment rate has decreased.

Source: Productivity Commission estimates; table 13.3.2.

Table 13.3.3 examines the effect on unemployment of non-education factors such as personal and family characteristics, relationship status and geographical location. In 2006, holding other modelled factors constant:

- the likelihood of Indigenous males and females being unemployed would be 3.4 and 4.9 percentage points lower if the income of other family members were $1000 higher. The effect was much smaller for non-Indigenous people (table 13.3.3)
- for Indigenous and non-Indigenous males and females, those who were married were less likely to be unemployed (table 13.3.3)
- Indigenous males who were single parents were more likely to be unemployed. The effect was much smaller for Indigenous females and non-Indigenous males and females (table 13.3.3)
- Indigenous males and females who lived in remote or very remote areas were much less likely to be unemployed, relative to those who lived in non-remote areas. Non-Indigenous males and females who lived in remote or very remote areas were slightly less likely to be unemployed (table 13.3.3). However, Indigenous people in remote or very remote areas are much more likely to participate in CDEP (see section 4.6).

13.4 References

Silburn S., Zubrick S., De Maio J., Shepherd C., Griffin J., Mitrou F., Dalby R., Hayward C. and Pearson G. 2006, *The Western Australian Aboriginal Child Health Survey: Strengthening the Capacity of Aboriginal Children, Families and Communities*, Curtin University of Technology and Telethon Institute for Child Health Research, Perth.