



Australian Government

**Australian Institute of
Health and Welfare**

Closing the Gap targets

2017 analysis of progress
and key drivers of change





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Australian Institute of Health and Welfare
Canberra

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Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABDS	Australian Burden of Disease Study
ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum Assessment and Reporting Authority
ACT	Australian Capital Territory
AEDC	Australian Early Development Census
AIHW	Australian Institute of Health and Welfare
AQF	Australian Qualifications Framework
ATAR	Australian Tertiary Admission Rank
BMI	body mass index
CDEP	Community Development Employment Projects
COAG	Council of Australian Governments
CURF	confidentialised unit record file
DSS	Department of Social Services
ECE	early childhood education
ERP	estimated resident population
HIPPY	Home Interaction Program for Parents and Youngsters
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th revision
ICSEA	Index of Community Socio-Educational Advantage
IREG	Indigenous Regions
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
IRSEO	Indigenous Relative Socioeconomic Outcomes index
LORI	Level of Relative Isolation
LSAC	Longitudinal Study of Australian Children
LSAY	Longitudinal Surveys of Australian Youth
LSIC	Longitudinal Study of Indigenous Children
MBS	Medicare Benefits Schedule
NAPLAN	National Assessment Program—Literacy and Numeracy
NATSISS	National Aboriginal and Torres Strait Islander Social Survey

NCVER	National Centre for Vocational Education Research
NECECC	National Early Childhood Education and Care Collection
NICU	neonatal intensive care unit
NIRA	National Indigenous Reform Agreement
NMD	National Mortality Database
NMS	national minimum standards
NPDC	National Perinatal Data Collection
NQF	National Quality Framework
NQS	National Quality Standard
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
PM&C	Department of the Prime Minister and Cabinet
PYLL	potential years of life lost
Qld	Queensland
RJCP	Remote Jobs and Communities Program
RSAS	Remote School Attendance Strategy
SA	South Australia
SA2	Statistical Area, Level 2
SCN	special care nursery
SEIFA	Socio-Economic Indexes for Areas
SES	socioeconomic status
SEW	Survey of Education and Work
SIDS	sudden infant death syndrome
SMART	specific, measurable, achievable, relevant and time-bound
SUDI	sudden unexpected death in infancy
VET	vocational education and training
WA	Western Australia
WIC	Special Supplemental Nutrition Program for Women, Infants and Children
YBFS	year before full-time schooling
YLL	years of life lost

Symbols

—	nil or rounded to zero
..	not applicable
n.a.	not available
n.f.d.	not further defined
n.e.c.	not elsewhere classified
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

1 Overview

This report summarises evidence on progress towards the seven Closing the Gap targets agreed to by the Council of Australian Governments (COAG), along with an analysis of the underlying key drivers of change—see Box 1.1. The COAG targets are set out in the National Indigenous Reform Agreement (NIRA) between the Australian Government and the state and territory governments (COAG 2012).

COAG has agreed to work in partnership with Aboriginal and Torres Strait Islander Australians to refresh the Closing the Gap agenda (PM&C 2017b). This report provides key insights to inform policy debate and discussion on refreshed target setting.

Since finalising the analyses in this report, new data for 6 of the 7 targets have become available. These newly available data, reported in the *Closing the Gap Prime Minister's Report 2018* (PM&C 2018), affected the assessment of progress towards 2 of the targets. Based on the new data, progress towards the child mortality and early childhood education targets are now on track. Updated assessments of progress based on these new data have been noted in the relevant sections of this report, however the report has otherwise not been updated.

Box 1.1: About this report

This report summarises available evidence on progress towards the seven COAG Closing the Gap targets. It also highlights key drivers of change for each target—that is, factors associated with outcomes—based on data modelling and evidence from the literature.

The chapters are ordered according to a lifecourse approach, with each chapter providing detailed information on one of the COAG targets:

- Chapter 2—Child mortality target
- Chapter 3—Early childhood education target
- Chapter 4—School attendance target
- Chapter 5—Literacy and numeracy target
- Chapter 6—Year 12 or equivalent attainment target
- Chapter 7—Employment target
- Chapter 8—Life expectancy target.

The term '**Aboriginal and Torres Strait Islander people**' is preferred in Australian Institute of Health and Welfare (AIHW) publications when referring to the separate Indigenous peoples of Australia. However, the term 'Indigenous' Australians is used interchangeably with 'Aboriginal and Torres Strait Islander' in order to assist readability.

In this report, '**significant**' or '**statistically significant**' is an indication based on a statistical test at a specified level of confidence that an observed difference or association has not arisen by chance. Unless specifically noted as 'significant' or 'not significant', a difference or association has not been tested for statistical significance.

The remainder of this chapter presents an overview of: the current picture and progress of each target; key drivers of change; key themes across the targets; data limitations; and implications for future target setting.

1.1 Closing the Gap targets and progress

1.1.1 About the targets

The COAG targets are a mix of process targets (early childhood education, school attendance and Year 12 attainment) and outcome targets (child mortality, literacy and numeracy, employment and life expectancy).

Five of the seven targets were set in 2008, one in 2014 (school attendance) and a revised version of the early childhood education target was agreed in 2015. The seven targets have different end points, with assessment periods ranging from 5 to 25 years.

Progress across the targets has varied and is dependent on a range of factors including the size of the initial gap when the targets were set, the type of target (process or outcome) and the time available to achieve the target (Table 1.1).

Table 1.1: Closing the Gap targets

COAG Target	Baseline year	Target year ^(a)	Type of measure ^(b)	Absolute or relative
<i>Child mortality</i>				
Halve the gap in mortality rates for Indigenous children under 5 (aged 0–4) (by 2018)	2008	2018	Outcome	Relative—halve the gap
<i>Early childhood education (new)^(c)</i>				
Ninety-five percent of all Indigenous four-year olds are enrolled in early childhood education (by 2025)	2015	2025	Process	Absolute—95%
<i>School attendance</i>				
Close the gap between Indigenous and non-Indigenous school attendance within 5 years (by 2018)	2014	2018	Process	Relative—close the gap
<i>Literacy and numeracy</i>				
Halve the gap for Indigenous children in reading, writing and numeracy within a decade (by 2018)	2008	2018	Outcome	Relative—halve the gap
<i>Year 12 attainment</i>				
Halve the gap for Indigenous Australians aged 20–24 in Year 12 or equivalent attainment rates (by 2020)	2006	2020	Process	Relative—halve the gap
<i>Employment</i>				
Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade (by 2018)	2008	2018	Outcome	Relative—halve the gap
<i>Life expectancy</i>				
Close the gap in life expectancy between Indigenous and non-Indigenous Australians within a generation (by 2031)	2006	2031	Outcome	Relative—close the gap

(a) Target year relates to the year specified in the COAG target; however, the final measurement year for each target may differ. For the school attendance target, the baseline data were for 2014 Semester 1 baseline, and so the final measurement year (that is, 5 years later) will be Semester 1 2019. For the Year 12 attainment target, the target year is 2020, but Census data on Year 12 attainment will not be available for this year. Instead, data from the 2021 Census will be used to assess whether or not the target has been achieved.

(b) 'Process' measures relate to processes that contribute to the achievement of outcomes (for example, attending school contributes to improved literacy and numeracy outcomes), while 'outcome' measures relate to achievement of an end outcome (for example, reducing child mortality).

(c) An early childhood education target set in 2008 expired in 2013 and was not achieved. A revised target was agreed by COAG in 2015 and a methodology endorsed, taking account of variation in school start ages and numerator/denominator misalignments, resulting in a 2015 baseline.

Source: Data sources for each target are referenced in the relevant chapters.

1.1.2 Current picture and progress

This section provides an overview of the status of each target at the national level based on data available at the time of this analysis—including the gap, trend over time, and progress towards the targets. For selected targets, data by state and territory are available in Appendix B.

Based on data available at the time of analysis, only the Year 12 attainment target was on track. However, a number of the other targets, although not assessed as being ‘on track’, have shown either improvements for Indigenous Australians, decreases in the gap, or a combination of both (Table 1.2).

Since finalisation of this analysis, new data have been released for 6 of the 7 targets. This has affected the assessment of progress towards 2 of the targets. Based on the newly available data, progress towards the child mortality and early childhood education targets are now also assessed as being on track (PM&C 2018).

Table 1.2: Closing the Gap targets—2017 analysis and progress

COAG target	Data assessment year	Indigenous rate in data year	Gap in data year ^(a)	Progress for Indigenous Australians ^(c)	Progress towards the target ^(c)
Child mortality (halve gap)	2015	163.6 deaths per 100,000 (NSW, Qld, WA, SA and NT combined)	88.6 deaths per 100,000	Rate has improved	Gap has narrowed—annual progress has varied ^(d)
Early childhood education (95% enrolment)	2015	87.1%	. .	Revised target—too early to determine	Revised target—too early to determine ^(e)
School attendance (close gap)	2016	83.4%	9.7 pp	Relatively unchanged	No change in gap—target not on track
Literacy and numeracy (halve gap)	2016	% meeting NMS ^(b) Year 5 Reading: 70.8% Numeracy: 76.1%	NMS pp ^(b) Year 5 Reading: 23.6 Numeracy: 19.4	Progress in some areas	Gap has narrowed—target not on track
Year 12 attainment (halve gap)	2014–15	61.5%	24.9 pp	Rate has improved	Gap has narrowed—target on track
Employment (halve gap)	2014–15	48.4%	24.2 pp	Rate has worsened ^(f)	No change in gap—target not on track
Life expectancy (close gap)	2010–12	Males: 69.1 years Females: 73.7 years	Males: 10.6 years Females: 9.5 years	Minimal improvement	Gap has narrowed—target not on track

NMS = national minimum standards; . . = not applicable; n.a. = not available; pp = percentage points

(a) Gap refers to the gap between Indigenous and non-Indigenous Australians.

(b) Data are shown for Year 5 only; see Chapter 5 for additional year levels.

(c) Progress between baseline and reported data year.

(d) Based on 2015 data—the most recent available at time of analysis for this report—progress towards the target was assessed as not on track; however, there is variability in child mortality rates from year to year. More recent data for 2016, reported in the *Closing the Gap Prime Minister's Report 2018*, indicate that the target is on track (PM&C 2018).

(e) At the time of analysis for this report only baseline data were available, and an assessment of progress could not be made. More recent data for 2016, reported in the *Closing the Gap Prime Minister's Report 2018*, indicate that the target is on track (PM&C 2018).

(f) Interpretation of trends in Indigenous employment is affected by the classification of the Community Development Employment Projects (CDEP), which ceased operations on 30 June 2015. In the calculation of 2008 Indigenous baseline data for this target CDEP participants were classified as employed. When CDEP participants are not classified as employed, there is minimal change in the Indigenous employment rate over time.

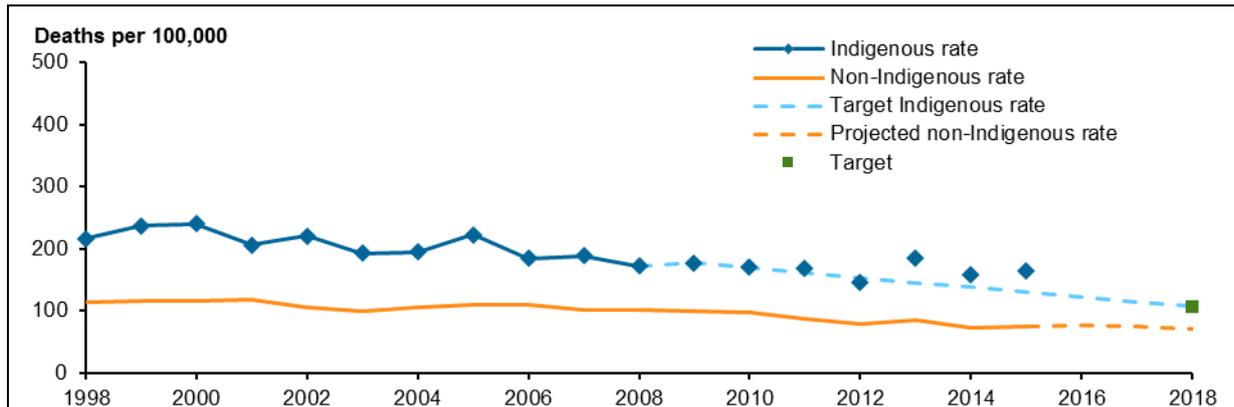
Source: Data sources for each target are referenced in the relevant chapters.

Child mortality

Target: Halve the gap in mortality rates for Indigenous children under 5 (aged 0–4) by 2018

In 2015, there were 124 deaths of Indigenous children aged 0–4 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, yielding a child mortality rate of 163.6 per 100,000 children aged 0–4. The non-Indigenous rate was 75.0 per 100,000—resulting in a gap of 88.6 deaths per 100,000.

Between 1998 and 2015, Indigenous child mortality rates declined significantly by 33% and between 2008 and 2015, there was a small non-significant decline of 6% (Figure 1.1).



Note: Caution should be used in interpreting time series data due to variability in single year data and changes in Indigenous identification.

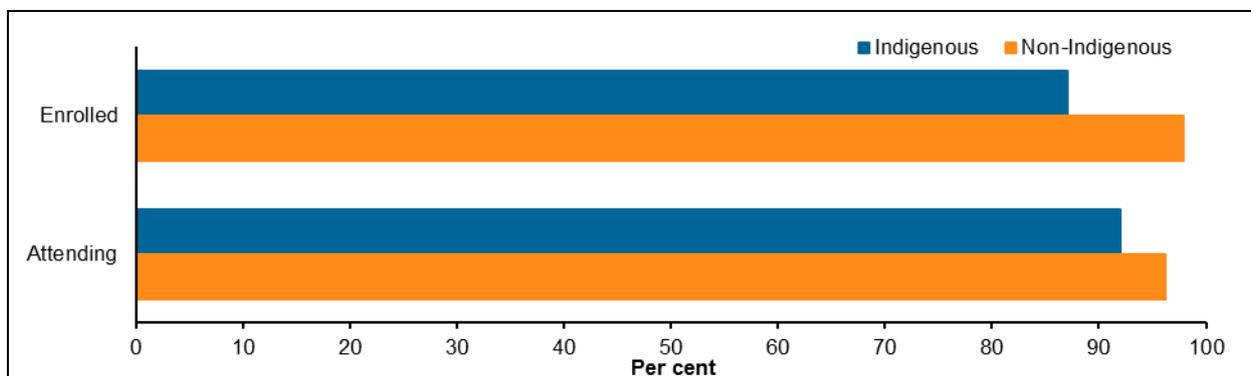
Source: AIHW & ABS analyses of NMD, published in PM&C 2017a and AHMAC 2017.

Figure 1.1: Child mortality rates (deaths per 100,000 children aged 0–4), by Indigenous status, NSW, Qld, WA, SA and the NT combined, 1998 to 2018

Early childhood education

Target: Ninety-five percent of all Indigenous four-year olds are enrolled in early childhood education (ECE) (by 2025)

In 2015, 87% of Indigenous children were enrolled in an ECE program in the year before full-time schooling, compared with 98% of non-Indigenous children (Figure 1.2). The attendance rate for Indigenous children (of those enrolled and attending at least one hour in the reference week) was 92% compared with 96% for non-Indigenous children.



Source: SCRGSP 2016a.

Figure 1.2: Proportion of children enrolled or attending an ECE program in the year before full-time schooling, by Indigenous status, 2015

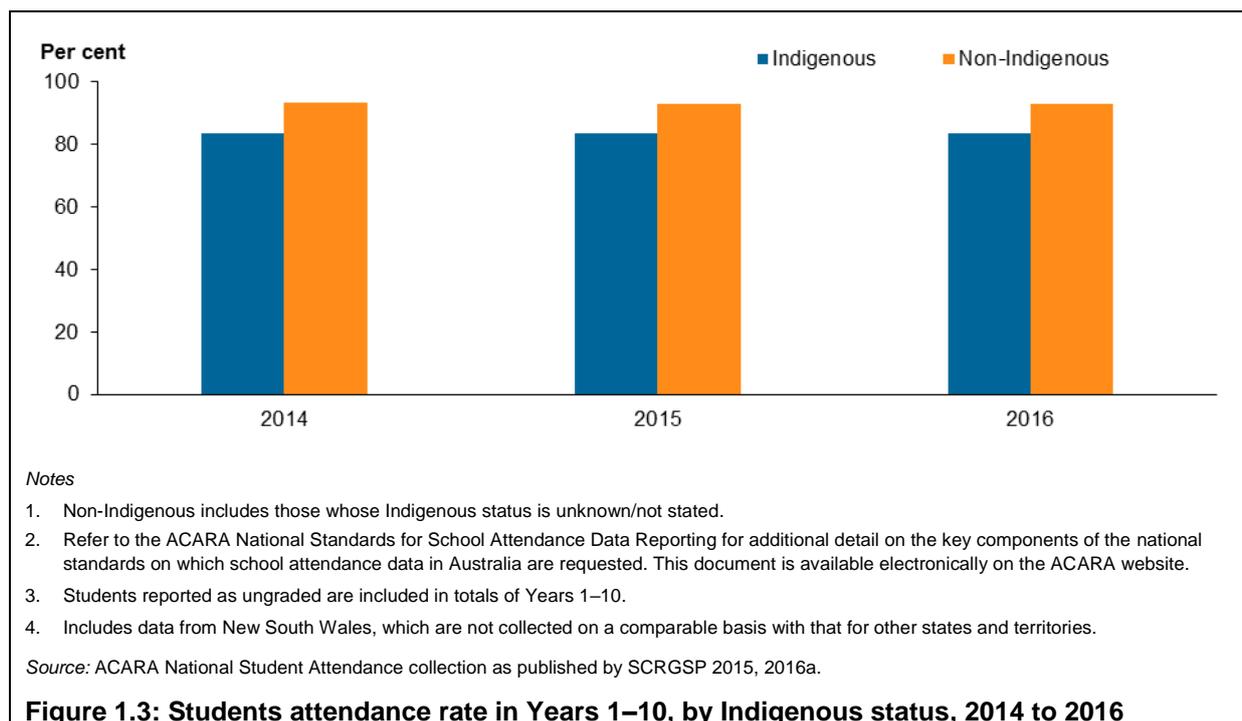
Student attendance

Target: Close the gap between Indigenous and non-Indigenous school attendance within 5 years (by 2018)

In 2016, the average school attendance rate for Indigenous students in Years 1–10 was 83%, compared with an average of 93% for non-Indigenous students (Figure 1.3).

The average attendance rate for Indigenous students in 2016 was lower in secondary school years (79%) than in primary school years (86%).

In both 2014 and 2016 the gap in average school attendance rates for Indigenous and non-Indigenous students was 9.7 percentage points.

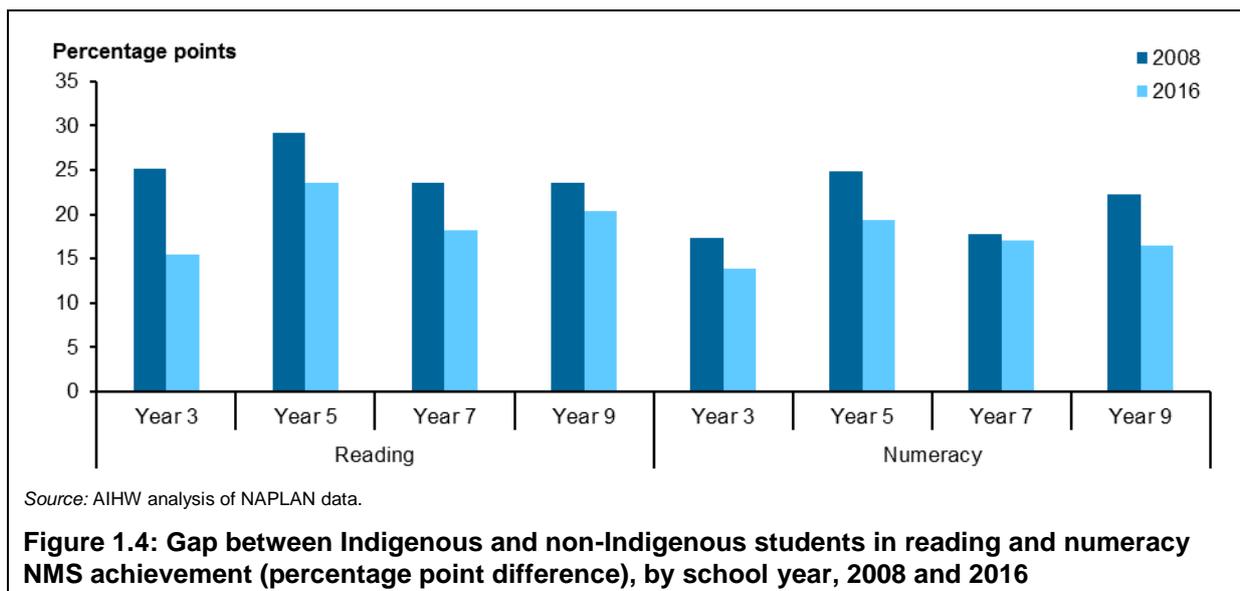


Literacy and numeracy

Target: Halve the gap for Indigenous children in reading, writing and numeracy within a decade (2018)

In 2016, the majority of Indigenous students met the national minimum standards (NMS) in NAPLAN testing. Across the eight areas used for assessing progress (reading and numeracy in Year 3, 5, 7 and 9), the proportion of Indigenous students achieving the NMS in 2016 ranged from 71% in Year 5 reading to 83% in Year 3 numeracy. The gap between Indigenous and non-Indigenous students meeting the NMS was smallest in Year 3 numeracy (14 percentage points) and largest in Year 5 reading (24 percentage points).

Progress since the 2008 baseline has been mixed, with year-to-year variability in results for Indigenous students. For all 8 measures, the gap between Indigenous and non-Indigenous in 2016 was smaller than the gap in 2008 (Figure 1.4). However, the decreases were minimal in several instances, including less than 1 percentage point in Year 7 numeracy, and only 3.1 percentage points in Year 9 reading. The largest decrease in the gap occurred in Year 3 reading (9.8 percentage points, which represents a decline of about 40% from the 2008 baseline gap of 25.2 percentage points).

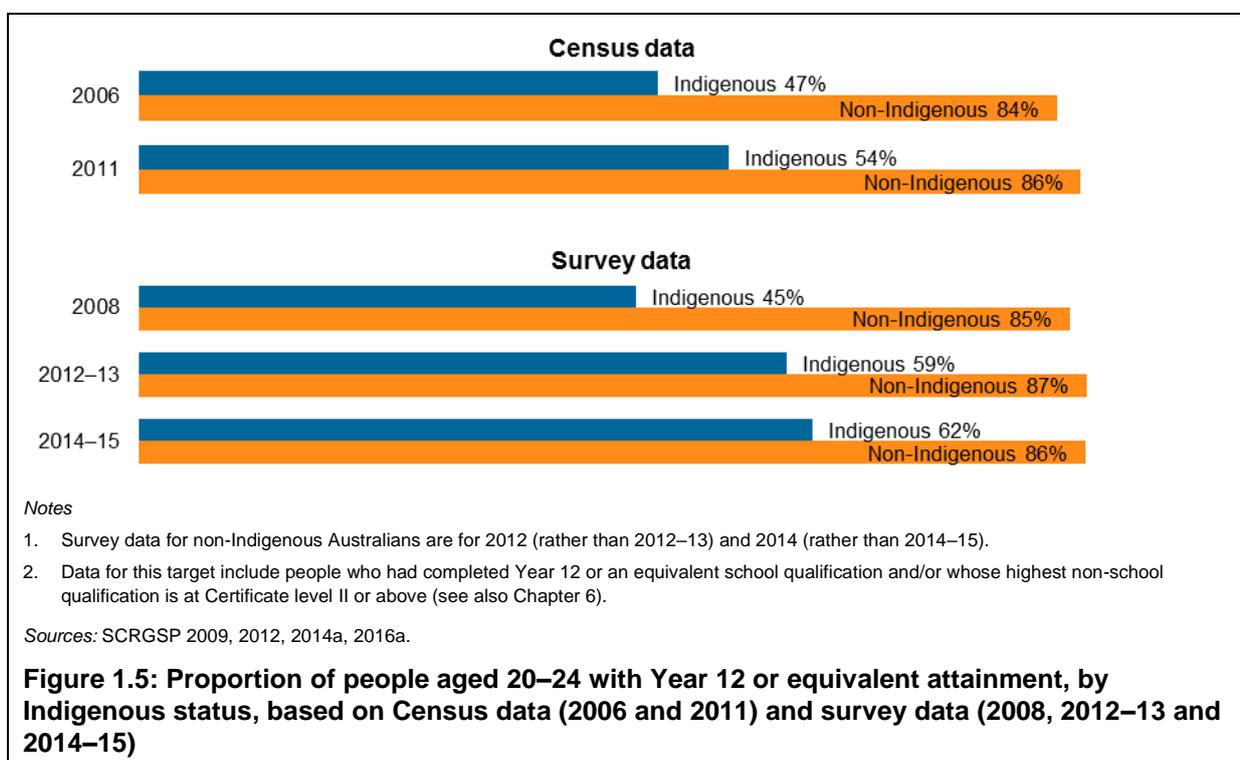


Year 12 attainment

Target: Halve the gap for Indigenous Australians aged 20–24 in Year 12 or equivalent attainment rates (by 2020)

Based on survey data, in 2014–15, 62% of Indigenous Australians aged 20–24 had attained Year 12 or equivalent, compared with 86% of non-Indigenous Australians.

Based on Census data (the main data source for this measure), between 2006 and 2011, the rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–24 increased from 47% to 54% (Figure 1.5), and the gap decreased from 36 to 32 percentage points.



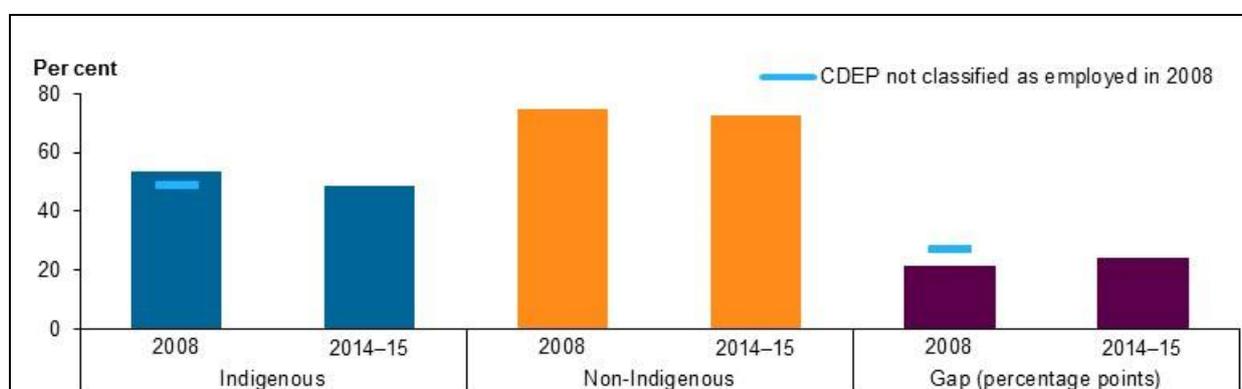
Employment

Target: Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade (2018)

In 2014–15, the employment rate for Indigenous Australians aged 15–64 was 48.4%, while the rate for non-Indigenous Australians was 72.6%, resulting in a gap of 24.2 percentage points (Figure 1.6). This is not statistically different to the 2008 baseline gap of 21.2 percentage points—in these 2008 baseline data, participants in the Community Development Employment Project (CDEP) were classified as being employed.

From 2008 to 2014–15:

- if CDEP participants are as classified as employed—the employment rate for Indigenous Australians decreased (from 53.8% to 48.4%) along with the rate for non-Indigenous Australians (from 75.0% to 72.6%)
- if CDEP participants are classified as not employed—the employment rate for Indigenous Australians remained steady (at around 48%).



Notes

1. In the calculation of 2008 Indigenous baseline data for this target, CDEP participants were classified as employed. The employment rate for Indigenous Australians when CDEP participants are not classified as employed is also indicated in the figure.
2. The gap was calculated as the rate for non-Indigenous Australians minus the rate for Indigenous Australians (expressed in percentage points).

Sources: AIHW analysis of ABS 2008 and 2014–15 NATSISS (CURFs), ABS 2007 and 2014 SEW (CURFs); PM&C 2017a; SCRGSP 2009, 2016a.

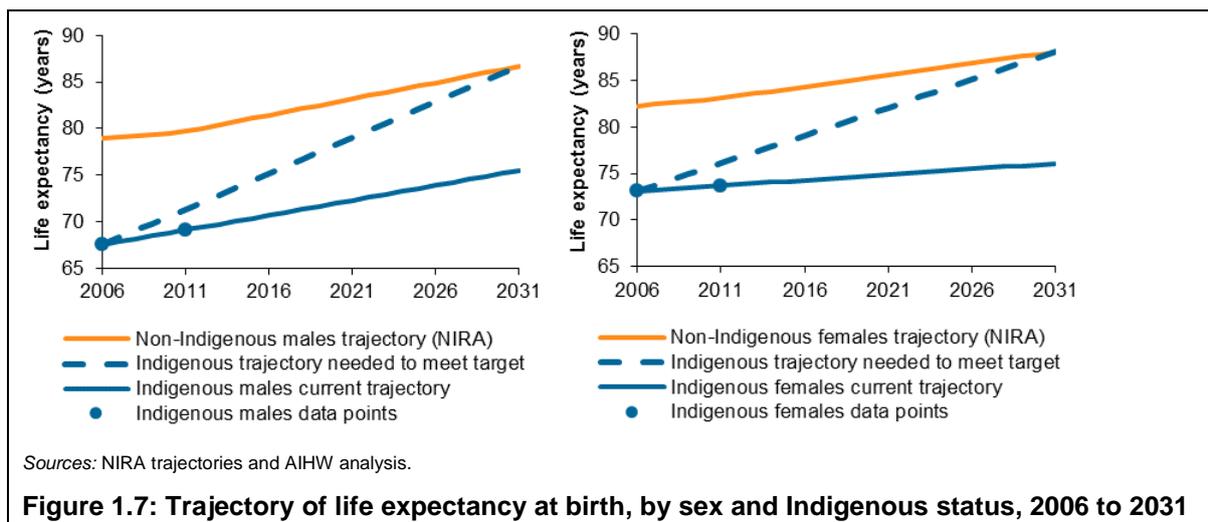
Figure 1.6: Employment rate among people aged 15–64, by Indigenous status, 2008 and 2014–15

Life expectancy

Target: Close the gap in life expectancy between Indigenous and non-Indigenous Australians within a generation (by 2031)

In 2010–2012, Indigenous Australian life expectancy at birth was 69.1 years for males and 73.7 for females (Figure 1.7). The gap between Indigenous and non-Indigenous Australian life expectancy was 10.6 years for males, and 9.5 for females (estimates for non-Indigenous life expectancy were 79.7 years for males and 83.1 for females).

Based on the estimates of life expectancy at birth for 2005–2007 and 2010–2012, life expectancy for Indigenous males has increased by an average of 0.32 years per year since 2005–2007, and by 0.12 years per year for Indigenous females. This is well below what would be required to close the gap in life expectancy between Indigenous and non-Indigenous Australians by 2031 (Figure 1.7).



1.2 Key drivers of change

The health and welfare of many Aboriginal and Torres Strait Islander Australians is affected by a colonial history that separated them from their land and culture, and exposed them to racism and social exclusion. A number of studies have highlighted that the everyday living conditions of Indigenous Australians are the intergenerational consequences of this history—known as ‘distal determinants’ (for example, Osborne et al. 2013; Silburn et al. 2006). The impact of these distal determinants is difficult to measure because of their complex causal pathways. They may occur through a loss of lifestyle and culture, which can result in, among other effects, marginalisation, isolation and discrimination. These in turn, influence education, employment, housing and health outcomes (Matthews 1997).

The connection to country and family lies at the heart of Indigenous wellbeing (PM&C 2017a), and a strengths-based approach to an analysis of Indigenous outcomes is key in understanding drivers of change. In this report, the key driver analyses for the COAG targets include, where possible, consideration of cultural determinants of Indigenous health and wellbeing. There is growing literature on the strengths of these linkages (see, for example, Department of Health 2017b). However, more work is needed in this area including how the cultural determinant variables may be usefully measured and related to survey data, such as the ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS).

Each chapter in this report provides a broad range of information on each of the COAG targets and identifies key drivers of change. Key drivers are identified based on available evidence from existing research as well as new AIHW data analysis. While this report identifies factors that are likely to be important influences, it is limited by data availability; further work is needed to understand ‘what works’ to affect meaningful change (see Section 1.3.6).

The analysis in this report focuses on contemporaneous variables available in cross-sectional health and social data, noting that some of the analyses consider the association of variables related to distal determinants, such as discrimination and having been removed from the natural family. More work is needed to examine the intergenerational outcomes of a wide range of distal determinants. This requires the development of longitudinal data at the national level, on individual families (Atkinson 2002) and specific subpopulations.

For each target, many factors were found to be associated with a positive or negative outcome. Whether or not, and how these associations cause change, and their relative impact on progress, or lack of progress, is difficult to assess. The available data capture only a subset of variables thought to influence each target, and with data sets capturing only cross-sectional information, it is not possible to establish causal relationships.

The relationship between explanatory variables may be difficult to disentangle; where strong associations exist, the importance of one variable may not be observed in the regression results. For example, the effects of remoteness may have been accounted for through the effects of socioeconomic status, resulting in remoteness not being identified as significant. In addition, new regression analyses included have not considered possible interactions between variables.

Table 1.3 summarises the main findings of the AIHW driver of change analysis for each COAG target. This provides a broad understanding of key drivers of change—though limited to the scope of available data and the period of time available for the literature review (see also, references to the relevant chapter sections for further details).

Table 1.3: Summary of key drivers of change^(a), by COAG target^(b)

Target (report section)	Key drivers
Child mortality (Chapter 2, Section 2.3)	<ul style="list-style-type: none"> Birth outcomes (for example, pre-term birth, small for gestational age, low birthweight) Maternal health (mental and physical) Maternal risk factors during pregnancy (for example, smoking, alcohol, drug use, antenatal care use) Parenting behaviours during infancy and early childhood (for example, safe sleeping practices, child safety, immunisations, nutrition, smoke free environment) Maternal SES and other social determinants (for example, educational attainment, access to well-maintained and not overcrowded housing) Community and societal characteristics (for example, availability and cultural competency of health services, community safety, social exclusion)
Early childhood education (Chapter 3, Section 3.3)	<ul style="list-style-type: none"> Family SES (for example, parental education, employment, income) Learning environment (for example, quality, cultural appropriateness)
School attendance (Chapter 4, Section 4.3)	<ul style="list-style-type: none"> History of being bullied in school Child health Family SES (for example, employment status, educational attainment) School environment (for example, socio-educational advantage) Structural/community factors (for example, transport)
Literacy and numeracy (Chapter 5, Section 5.3)	<ul style="list-style-type: none"> Family SES (for example, parental education and income) and school SES area Regular school attendance Participation in preschool Child's health (for example, disability, specific health conditions such as otitis media, low birthweight) High-quality instruction (school and early childhood) High expectations Early life stressors (for example, child protection, family death or imprisonment, instability in care).

(continued)

Table 1.3 (continued): Summary of key drivers of change^(a), by COAG target^(b)

Target (<i>report section</i>)	Key drivers
Year 12 attainment (<i>Chapter 6, Section 6.3</i>)	Family SES (for example, parental education, employment status) Prior school achievement Student aspirations
Employment (<i>Chapter 7, Section 7.3</i>)	Education English language proficiency Health (for example, poor self-perceived health, disability) Family considerations (for example, child caring responsibilities, family size/dependants) Contact with the justice system (for example, whether arrested in the previous 5 years) Economic conditions
Life expectancy (<i>Chapter 8, Section 8.3</i>)	SES and other social determinants (for example, income, education, employment, housing) Risk factors (for example, tobacco use, alcohol use, high body mass index, dietary factors) Availability and cultural competency of health services

SES = socioeconomic status

(a) The variables included in this table are limited to those identified using the available data and a non-exhaustive literature review (due to time constraints); further research and more extensive literature reviews may identify additional drivers. Most of the regression analyses in this report have been done using cross-sectional data, which make it difficult to establish causal relationships.

(b) For most of the target measures, there are significant differences in outcomes related to age, sex and remoteness. These fixed characteristics are not listed as drivers of the measures in order to focus on the more modifiable characteristics.

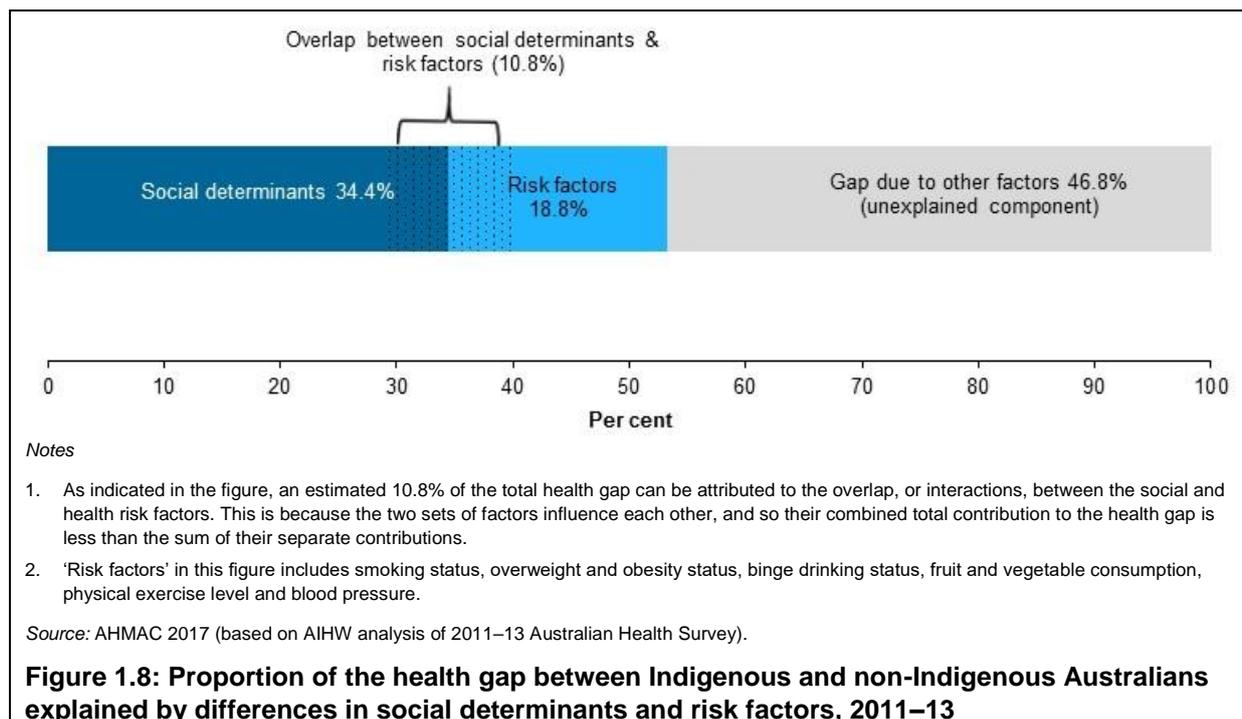
Source: Data and literature sources for analysis of key drivers for each target are referenced in the relevant chapters.

1.3 Key themes across the targets

1.3.1 Social determinants are critical

Social determinants—such as education, employment, income and housing—directly affect the target outcomes. Social determinants also operate indirectly by interacting with other influences (such as environmental, ecological and cultural factors) in a broader framework of Indigenous wellbeing. For example, low socioeconomic status (SES) and intergenerational poverty are associated with lower levels of achievement in education, which can result in reduced health and employment outcomes. Some of the targets are themselves social determinants.

Analysis of results from the ABS 2011–13 Australian Health Survey showed that selected social determinants accounted for around one-third (34%) of the gap in health outcomes between Indigenous and non-Indigenous Australians (AHMAC 2017) (Figure 1.8).



The impacts of social determinants are also reflected in the higher rates of circulatory disease, respiratory disease, kidney disease and cancer in the Indigenous population. Higher rates of these diseases are linked to the higher prevalence of risk factors such as smoking, poor diet and physical inactivity. These risk factors are mainly associated with differences in SES related to current levels of education, employment, income and housing conditions.

Contact with the criminal justice system is not only influenced by a range of social determinants but also impacts on the social determinants for the individual and potentially leads to intergenerational disadvantage. The effects of intergenerational trauma resulting from the loss of connection to country and culture also adds to the over-representation of Indigenous Australians in prisons. Between 2006 and 2016, the age-standardised imprisonment rate of Indigenous adults increased by 37% (AIHW 2017). The literature shows that the main determinants of Indigenous over-representation in prison are negative early life experiences, alcohol and drug use, low educational attainment and long-term unemployment (see, for example, Weatherburn 2014). Negative life experiences in childhood may lead to a trajectory of disadvantage from contact with the child protection system, to juvenile supervision and ultimately to adult imprisonment.

The critical role of the socioeconomic determinants of Indigenous health outcomes is given prominence in the next iteration of the Implementation Plan for the National Aboriginal and Torres Strait Islander Health Plan 2013–2023 (Department of Health 2017a). This Plan also recognises the central role of cultural determinants in supporting better health outcomes for Indigenous Australians.

1.3.2 Remoteness has a relatively large impact

Increased remoteness is associated with poorer outcomes on a range of target-related measures. Geographic differences in outcomes within the Indigenous population are sometimes greater than the national gap between the Indigenous and non-Indigenous populations. An understanding of the additional factors behind such regional variations in the Indigenous population can help focus efforts.

In June 2011, estimated resident population (ERP) data (based on the 2011 Census) show that:

- Indigenous Australians comprise 3.0% of the total Australian population. With the exception of the Northern Territory, where Indigenous Australians comprised 30% of the territory's total population, Indigenous Australians represented 6% or less of the total population within all other jurisdictions (ABS 2013)
- most Indigenous Australians lived in *Major cities*, *Inner regional* or *Outer regional* areas, with 79% living in these 3 areas combined
- 7.7% of Indigenous Australians lived in *Remote* areas and 14% in *Very remote* areas; in contrast, 1.7% of non-Indigenous Australians lived in *Remote and very remote* areas combined (Table 1.4).

The proportion of the total population that is Indigenous is substantially higher in remote than non-remote areas. In 2011, Indigenous Australians comprised 45% of the population in *Very remote* areas and 16% of the population in *Remote* areas, compared with 7% or less of the population in the other remoteness areas *Major cities*, *Inner regional* and *Outer regional* areas (Table 1.4).

See Appendix A for further demographic information about the Indigenous population, including preliminary population estimates for June 2016.

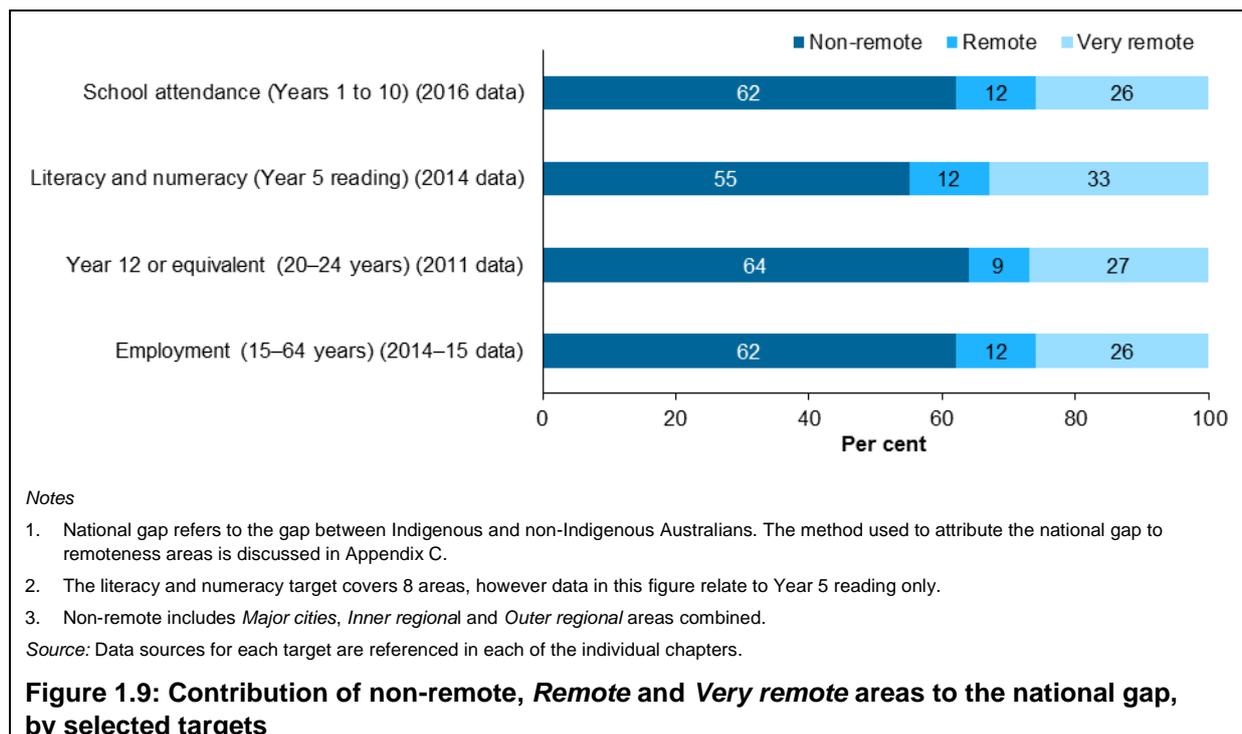
Table 1.4: Indigenous and total Australian population, by remoteness, 30 June 2011^(a)

Remoteness area	Indigenous population			Non-Indigenous population
	Number	% of total population	% of Indigenous population	%
Major cities	233,146	1.5	34.8	71.3
Inner regional	147,683	3.6	22.0	18.3
Outer regional	146,129	7.2	21.8	8.7
Remote	51,275	16.3	7.7	1.2
Very remote	91,648	45.1	13.7	0.5
Total	669,881	3.0	100.0	100.0

(a) ABS ERP data based on the 2011 Census.

Source: AIHW analysis of ABS 2013.

Estimates of the extent to which the national gap can be attributed to each remoteness area are shown for selected targets in Figure 1.9 (for method used see Appendix C). The combined contribution of *Remote* and *Very remote* areas is substantial, ranging from 35% for the employment target to 45% for the literacy and numeracy (Year 5 reading) target. However, because almost 80% of Indigenous Australians do not live in remote areas, it is their outcomes that contribute most to the national gap.



1.3.3 Improved access to services is needed

Indigenous Australians' access a range of mainstream services, including early childhood education, schools, hospitals and other health services. The 2017 Indigenous Expenditure Report estimated the total direct expenditure on services for Indigenous Australians in 2015–16 to be \$33.4 billion. Around 82% of this total expenditure was for mainstream services (\$27.4 billion); the remaining 18% (\$6 billion) was provided through Indigenous-specific (targeted) services (SCRGSP 2017). Therefore, improved and efficient service delivery across both Indigenous-specific and mainstream services is needed to improve current and future outcomes for Indigenous Australians. This will ultimately help to close the gap. For instance, changes to the Medicare Benefit Scheme to include Indigenous-specific items (health checks, item 715) has resulted in an increase in the use of health services among Indigenous Australians.

1.3.4 Investment is needed across the lifecycle

In considering a lifecycle approach, it is critical to identify opportunities where interventions and structural changes can be used to produce the greatest impact. For example, early childhood education and schools are services that are not only used relatively early in the lifecycle but also represent settings where a relatively large proportion of children can be reached. The better educated the current generation of children, the better will be the outcomes for them and their children on a wide range of measures.

Four of the target measures analysed in this report pertain to educational outcomes across the lifecycle: early childhood education, school attendance, literacy and numeracy of school children, and Year 12 attainment. These targets are associated with each other, as a positive outcome at one level can determine success in subsequent levels. For example, early childhood education improves school readiness and school attendance. School attendance improves school achievement, and both attendance and achievement improve Year 12 attainment rates. Year 12 attainment is then associated with better employment outcomes.

Better education and employment outcomes are associated with reductions in mortality and improved life expectancy, both of which are also COAG targets.

Education is a long-term investment as it takes time to influence health and wellbeing. Early childhood education has been shown to be most effective in improving outcomes for those children from socioeconomic disadvantaged backgrounds. Achieving these long-term benefits requires realistic time frames and sustained efforts over the lifecourse and over time.

Parental factors, such as education and employment, have an impact on a child's education participation and related outcomes. For example, parental employment is associated with higher school attendance, higher school achievement and better health. Programs and systems to harness this intergenerational connection need to be considered.

To address Indigenous disadvantage, a two-pronged approach is needed: dealing with immediate problems; and undertaking early interventions to prevent disadvantage later in life. For example, stressors or trauma experienced in early childhood have immediate effects and well as effects later in life.

1.3.5 Interactions between outcomes are important

Measures of Indigenous wellbeing are associated across outcome areas. This is due both to common key determinants and to the interplay between outcomes. For example, education is linked to employment and both are linked with income.

The complex relationships between determinants and outcomes can be leveraged in setting targets for Indigenous Australians that follow the SMART principles (Specific, Measurable, Achievable, Relevant and Time-bound). A few well-chosen actions may influence a wide range of outcomes concurrently (ABS 2004). In the *Overcoming Indigenous Disadvantage* report, the Steering Committee for the Review of Government Service Provision note that there is evidence that dealing with a single key issue, such as overcrowding in housing, could have multiple important influences on education, health and justice outcomes (SCRGSP 2016b).

Indigenous culture is key to this complex interaction between outcomes; connection to land, language, spirituality and ancestry, family relations and kinship, and community contribute to resilience, for example, through moderating the impact of stressful life events (Zubrick et. al 2014 cited in SCRGSP 2014b).

1.3.6 Need more evidence on 'what works'

The setting of future targets and intermediate progress measures should be better informed by the research and evaluation evidence on what works most effectively to make changes in the target measures (Productivity Commission 2015).

The body of literature on the evaluation of programs and policies that are effective in improving Indigenous outcomes has grown, but important gaps in knowledge still exist. For example, research shows that much of the work undertaken has been short term or piecemeal, or has not been evaluated robustly enough (see, for example, *Closing the Gap Clearinghouse* 2011; Helme & Lamb 2011; Ivers 2011; and Osborne et al. 2013).

More work is required to strengthen the evidence base to inform the setting of appropriate targets and performance indicators that will effectively improve outcomes.

1.4 Data limitations

There are a number of data issues that affect the ability to monitor the existing COAG targets and these are outlined within each chapter of this report. A summary of the data sources used for each target and some of the key data limitations are presented in Table 1.5.

Overarching issues relate to:

- Indigenous under-identification in available data sets
- changes in Indigenous identification over time
- small Indigenous sample sizes in surveys which limit the level of disaggregation that is possible and the ability to assess if differences over time or between populations are statistically significant.

In addition, the Australian Bureau of Statistics (ABS) is considering changing the way it collects household survey data with existing surveys to be consolidated into the Australian Population Survey (ABS 2016); this may impact on the measures and time periods available for assessing progress towards the targets. The effect of this change needs to be considered in future reporting about progress towards the Closing the Gap targets.

Effective strategies to deal with data issues across the targets should be part of a proposed data development strategy (see also Section 1.5).

Table 1.5: Closing the Gap targets, data sources and limitations

COAG Target	COAG agreed data sources	Data limitations
Child mortality	ABS Death registrations	Quality of Indigenous identification; small numbers create variability in time-series.
Early childhood education	ABS National Early Childhood Education and Care Collection	The current methodology results in ECE enrolment rates for some jurisdictions exceeding 100%.
School attendance	ACARA National Student Attendance Collection	Data on the underlying days attended are not available publicly.
Literacy and numeracy	ACARA National Assessment Program—Literacy and Numeracy	A focus on the NMS is only one point in distribution of scores; Indigenous NMS % fluctuates across years.
Year 12 attainment	Main: ABS Census; Supplementary: ABS NATSISS/AATSIHS (Indigenous) and ABS SEW (non-Indigenous)	Infrequent collection as well as non-response for Census data; survey data affected by small sample in 20–24 age group.
Employment	Main: ABS NATSISS/AATSIHS (Indigenous) and ABS SEW (non-Indigenous); Supplementary: ABS Census	Infrequent collection of existing data; baseline affected by CDEP; inclusion of young ages (15–20) can affect the employment rate through changes in continuing education.
Life expectancy	ABS experimental Aboriginal and Torres Strait Islander and non-Indigenous life tables	Quality of Indigenous identification; small numbers prevent regular time series.

1.5 Future target setting

Effective future target setting should be specifically linked to national evidence and ideally follow the SMART principles (Specific, Measurable, Achievable, Relevant and Time-bound). For example, the timeframe for reaching the current Indigenous Australian life expectancy target was set at 25 years, while it has taken over 70 years for the same increase in life expectancy to occur in the overall Australian population (ABS 2014). Interventions take time to have measurable impacts, particularly for outcome targets.

Six of the seven existing targets were set to address the ‘gap’ between Indigenous and non-Indigenous Australians, comparing progress of Indigenous Australians with the

non-Indigenous population. While this has the worthwhile objective of focusing on reducing inequality for Indigenous Australians, it makes the target measures relative rather than absolute. For a number of the targets, substantial improvements in outcomes for Indigenous Australians have occurred, but the gap has either remained unchanged, or widened over the assessment period because of simultaneous improvements in outcomes for non-Indigenous Australians.

Future target setting will need to consider the merits of relative versus absolute targets. Absolute Indigenous targets with an agreed realistic end-point from a current baseline will not be affected by changes in outcomes in the non-Indigenous population over the period of assessment, unlike the relative gap targets currently used for all of the Closing the Gap targets except the new early childhood education target. Implementing absolute targets does not preclude reporting gaps with non-Indigenous outcomes, but such comparisons will not affect the assessment of progress towards the target.

Trends for non-Indigenous Australians, where applicable, could be used to guide the setting of targets for Indigenous Australians. The assessment of how realistic the targets are must rely on estimates that are based on evidence of how much change is possible over a specified time period, especially given the long time-lag between policy development, adoption and delivery, and improved outcomes (AIHW 2014).

The evidence base now supports the use of improved methods to set future targets. Some of the improvements in the evidence base since 2008 have been due to the data improvements supported by the NIRA.

When the main target measure has a long assessment period for progress, such as the current life expectancy measure (which has an assessment period of 25 years, and where the expected gains are slow), interim measures can be useful to assess whether progress towards the target is on track. For example, the life expectancy target could have interim measures related to rates of chronic disease for conditions with the most impact on life expectancy, health risk factors and access to health care. Future target setting will need to consider the appropriateness of target benchmarks and intermediate progress measures from the perspectives of both desiring equity in outcomes and acknowledging progress in Indigenous-specific results.

In addition, current targets are assessed nationally, without taking regional geographic variation into account. These local level variations could provide additional information on where more effort is required to close the national gap.

The Closing the Gap refresh work should also include a data development strategy, based on policy priorities identified through stakeholder engagement. This plan should consider:

- priorities for data improvements or the development of new data collections
- timing lags from data improvements to baseline reporting or regular monitoring
- a requirement for sub-national level data—to ensure reliable data are available for the Indigenous target groups in smaller jurisdictions.

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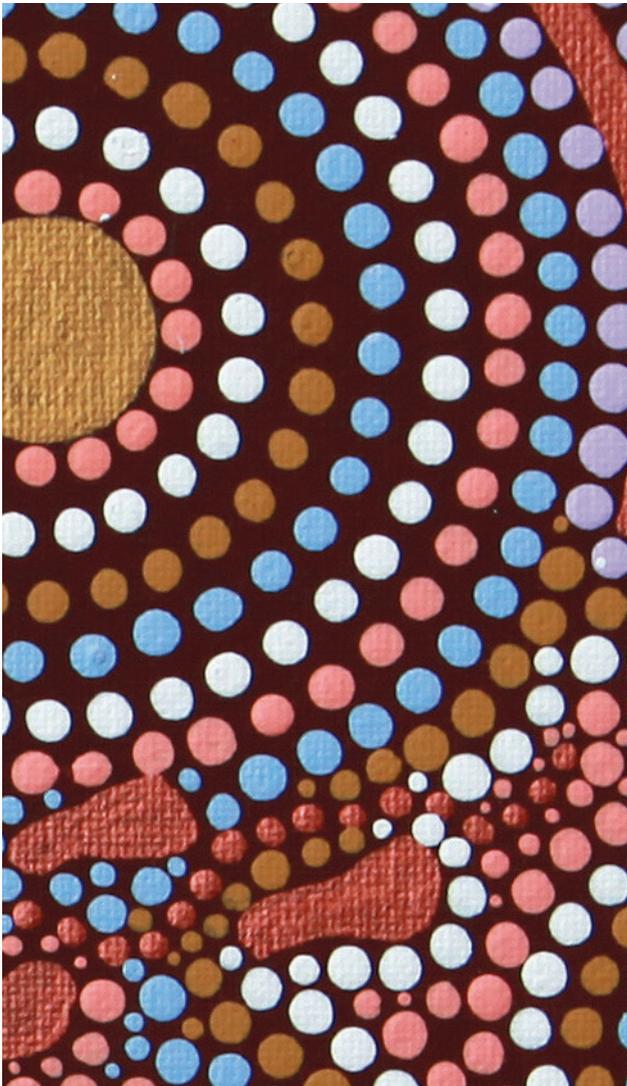
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Chapter 2

Child mortality target



COAG target: Halve the gap in mortality rates for Indigenous children under 5 (aged 0–4) by 2018.

Current picture

- In 2015, there were 124 deaths of Indigenous children aged 0–4 in NSW, Qld, WA, SA and the NT combined, yielding a child mortality rate of 163.6 per 100,000 children aged 0–4. The non-Indigenous rate was 75.0 per 100,000—resulting in a gap of 88.6 deaths per 100,000.
- Both Indigenous and non-Indigenous child mortality rates varied across jurisdictions (Figure 2a). The risk of dying during early childhood was highest for Indigenous children living in the Northern Territory, where the gap between Indigenous and non-Indigenous rates was also the largest.

Has there been progress?

- In 2015, the number of Indigenous child deaths (124) was 6 deaths higher than in 2014.
- Between 1998 and 2015, Indigenous child mortality rates declined significantly, by 33%. Between 2008 and 2015, there was a small 6% decline in Indigenous child mortality rates (which was not statistically significant) (Figure 2b).
- Between 1998 and 2015, Indigenous infant mortality rates declined significantly, by 66%; between 2008 and 2015, there was a non-significant 18% decline (Figure 2c).
- There were declines in Indigenous child mortality rates from most causes of death between 2006–2010 and 2011–2015, with the biggest declines in deaths related to conditions originating in the perinatal period as well as those from congenital and chromosomal conditions.
- Caution is needed in interpreting rates and trends in Indigenous child mortality due to variability in single year data and changes in Indigenous identification.
- Annual progress has varied. Based on 2015 data, the target was assessed as not on track; however, since finalising the analysis for this report, data for 2016 have become available and indicate that progress towards the target is now on track.

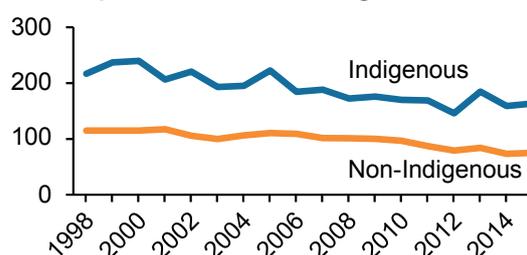
Deaths per 100,000 children aged 0–4



Source: AIHW 2017a.

Figure 2a: Child mortality rates, by Indigenous status and state and territory, 2011–2015

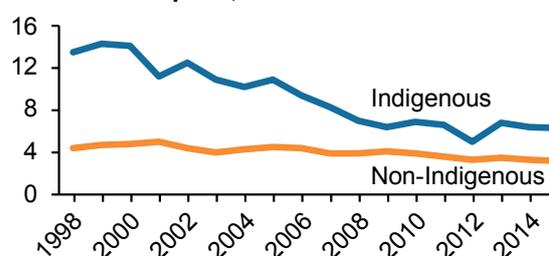
Deaths per 100,000 children aged 0–4



Source: AIHW 2017a.

Figure 2b: Child mortality rates by Indigenous status, NSW, Qld, WA, SA and the NT combined, 1998 to 2015

Infant deaths per 1,000 live births



Source: AIHW 2017a.

Figure 2c: Infant mortality rates, by Indigenous status, NSW, Qld, WA, SA and the NT combined, 1998 to 2015

Additional analysis and key drivers

Age of infant deaths

- In 2011–2015, 40% of Indigenous infant deaths occurred during the first day of life, 22% occurred between 1 day and 1 month and 38% occurred between 1 month and 1 year.
- Indigenous babies were 1.8 times as likely to die during the first day of life than non-Indigenous babies (Figure 2d).

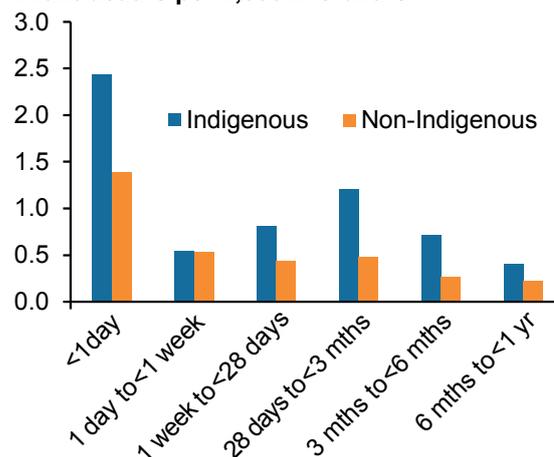
Causes of death

- In 2011–2015, four causes of death were responsible for 90% of the gap in child mortality rates: 40% due to conditions originating in the perinatal period (that is, during pregnancy or up to 28 days after birth); 26% due to SIDS and other unknown causes; 18% due to accidents, injuries and other external causes (such as drowning, suffocation, poisoning, falls, assault); and 5% due to respiratory diseases.
- The leading cause of death for Indigenous children in the neonatal period was conditions originating in the perinatal period (241 deaths); in the post-neonatal period the leading cause of death was SIDS and other unknown causes (89 deaths), and in early childhood (ages 1–4) the leading cause was injuries and other external causes (59 deaths).

Key drivers

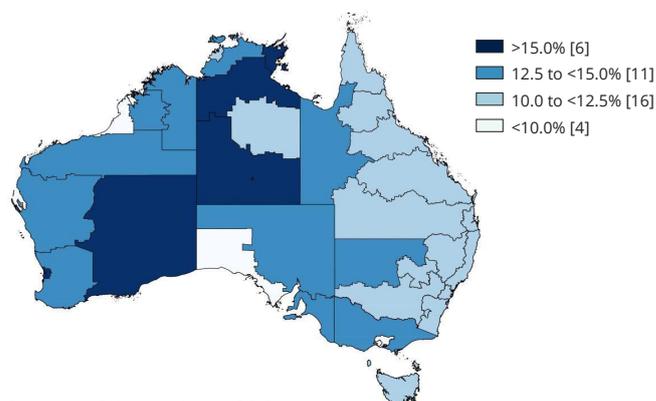
- Based on available evidence, key drivers of child mortality relate to birth outcomes (for example, low birthweight), maternal health, maternal risk factors during pregnancy (for example, antenatal care use), and maternal SES and other social determinants.
- Compared with non-Indigenous mothers, Indigenous mothers are more likely to smoke during pregnancy, have pre-existing health conditions, be underweight or obese, and are less likely to attend antenatal care in the first trimester. Indigenous mothers are also more likely to live in areas with higher levels of socioeconomic disadvantage. Babies born to Indigenous mothers are more likely to be born pre-term, to have low birthweight, and to be admitted to NICUs or SCNs. It is important to note that these outcomes are not uniform, but varied geographically (figures 2e and 2f).

Infant deaths per 1,000 live births



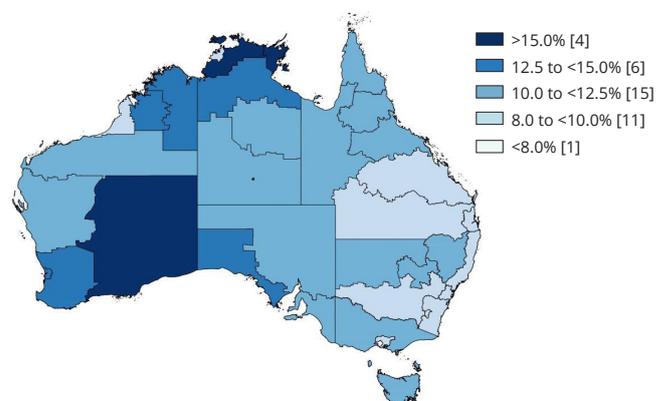
Source: AIHW analyses of National Mortality Database.

Figure 2d: Infant mortality rates, by age at death and Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015



Source: AIHW analysis of NPDC.

Figure 2e: Proportion of pre-term births (<37 weeks' gestation) among infants born to Indigenous mothers, by Indigenous Region, 2012–2013



Source: AIHW analysis of NPDC.

Figure 2f: Proportion of babies with a low birthweight (<2500 grams) among infants born to Indigenous mothers, by Indigenous Region, 2012–2013

- A multivariate analysis of perinatal data for 2012–2014 indicated that, excluding pre-term and multiple births, 51% of low birthweight births to Indigenous mothers were attributable to smoking, 21% to area-level socioeconomic status (SES), and 5% to remoteness.
- A multivariate logistic regression analysis on factors associated with pre-term birth using 2014 perinatal data showed that, for Indigenous mothers, maternal health factors (such as, diabetes and high blood pressure), pre-pregnancy weight, no antenatal care use, and smoking during pregnancy were significantly associated with the risk of pre-term birth. Examples of the odds ratios for selected variables from the model are in Table 2a.
- Preliminary results from multivariate logistic regression analyses of the AIHW’s linked perinatal, births, deaths data set highlight that there are two key factors predictive of infant mortality: maternal smoking and pre-term birth.

Table 2a: Odds ratios on whether a birth was pre-term, 2014

Category	Variable	Odds ratio
Maternal health	Pre-existing diabetes	3.90
	Pre-existing hypertension	1.98
	Gestational diabetes	1.30
	Pregnancy-induced hypertension	4.12
Antenatal care	No antenatal care/ not stated	3.04
Pre-pregnancy weight	Underweight (BMI <18.5)	1.79
Smoking	Smoked during pregnancy	1.32

Notes:

1. This table shows selected significant variables. See Table 2.12 for full results.
2. Analysis includes data from Queensland, the Northern Territory, South Australia, Tasmania and the Australian Capital Territory for the full year; data from Western Australia are included from 1 July onwards.

Source: AIHW analysis of NPDC.

Data limitations and measurement issues

There are several key data issues affecting the ability to monitor the child mortality target.

Child deaths data issues

- There are problems with the quality of Indigenous identification in the deaths data; Indigenous deaths data are reported for only five jurisdictions (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory).
- The quality of Indigenous identification in deaths data has changed over time, leading to challenges in accurately monitoring trends.
- Challenge of small numbers; given the overall small number of child deaths, a minor change in the number of deaths can lead to large variability in rates over time.

Population and births data issues

- Changes in Indigenous identification between Censuses (used to derive the population denominator).
- The known under-count of babies in the Census, leading to under-reporting in the projections of Indigenous children aged 0–4 (the ABS plans to adjust for this in the 2016 Census).
- Under-coverage in the birth registrations data set, which is the source of the denominator (live births) for infant deaths.

Data on key determinants

- Need for improved capture of factors in the pre-conception, pregnancy, delivery and early childhood periods that may influence childhood mortality outcomes—for example diet and nutrition, exposure to stress, psychological distress, domestic violence, alcohol use during pregnancy, breastfeeding, immunisation, sleep-related behaviours.

2.1 Background

The death of a baby or young child is devastating for the families and communities involved. Preventing these deaths has long been a goal for all levels of government and services, both in Australia and worldwide.

At the aggregate level, infant and child mortality rates are used as summary indicators of overall population health. They broadly reflect community health status, socioeconomic factors and access to health services. They are also used to compare population groups within societies. Australia has some of the lowest infant and child mortality rates in the world, but these national rates mask substantial variation between Indigenous and non-Indigenous babies and children, with Indigenous babies and children twice as likely to die as non-Indigenous babies and children (AIHW 2017a).

Recognising this disparity, in 2008 COAG committed to halve the gap in mortality rates for Indigenous children aged under 5 (0–4) within a decade (that is, by 2018)—see Box 2.1.

This chapter provides detailed information on child mortality, including:

- current rates and progress towards the COAG target
- differences by state and territory, age and cause of death
- identification of key drivers based on evidence from the literature and new AIHW data analyses
- a discussion of data limitations and measurement issues.

Box 2.1: Child mortality—Closing the Gap target and data sources

The COAG target for child mortality: Halve the gap in mortality rates for Indigenous children under 5 (aged 0–4) (by 2018).

The child mortality rate is defined as:

- the number of deaths among children aged 0–4 as a proportion of the total number of children in that age group, presented as a rate per 100,000 children aged 0–4.

This chapter also reports rates for:

- infant (aged 0–<1) mortality—defined as the number of deaths among children aged less than one year as a proportion of number of live births, presented as a rate per 1,000 live births.
- perinatal mortality rates—defined as the number of perinatal deaths (fetal and neonatal) as a proportion of the number of all live births and stillbirths (of at least 20 completed weeks of gestation or with a birthweight of at least 400 grams), presented as a rate per 1,000 births.

Deaths data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the ABS. The data are maintained by the AIHW in the National Mortality Database (NMD). In this chapter Indigenous deaths are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined. These five jurisdictions have adequate levels of Indigenous identification in their mortality data; the remaining jurisdictions have lower levels of identification and a small number of Indigenous deaths.

(continued)

Box 2.1 (continued): Child mortality—Closing the Gap target and data sources

At the time of analysis, the most recent deaths and cause of deaths data available for inclusion in this chapter were for 2015. This results in aggregate year data reporting for 2011–2015.

The denominators for the child mortality rates are from the ABS ERP. Indigenous identification has changed markedly with each Census; there are also known problems with the under-count of babies in the 2011 Census (leading to under-reporting in the projections of Indigenous children aged 0–4). There are also under-coverage issues for births registrations data which affects the denominators for infant and perinatal mortality rates.

This chapter also draws on data from the National Perinatal Data Collection (NPDC). See Appendix F for further information on these and other data sources used in the report.

2.2 Current picture and progress

2.2.1 National data on child mortality

In 2015, for the 5 states and territories with acceptable levels of Indigenous identification in their mortality data (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined), 124 Indigenous children aged 0–4 and 781 non-Indigenous children aged 0–4 died, yielding:

- a child death rate of 163.6 per 100,000 for Indigenous children and 75.0 per 100,000 for non-Indigenous children
- a gap of 88.6 deaths per 100,000 children
- a rate ratio of 2.2 (that is, Indigenous children were 2.2 times as likely to die during early childhood as non-Indigenous children) (AIHW 2017a).

Progress towards the child mortality target

The Closing the Gap target for child mortality is to halve the gap in mortality rates between Indigenous and non-Indigenous children aged 0–4 by 2018. Establishing the 2018 target rate requires several steps:

- establishing the baseline gap (rate difference) in 2008
- projecting what the rate for non-Indigenous Australians is expected to be in 2018 (as, by definition, measuring the gap requires knowing the non-Indigenous rate)
- estimating what Indigenous child mortality rate is needed so that the rate difference in 2018 is half of what it was in 2008.

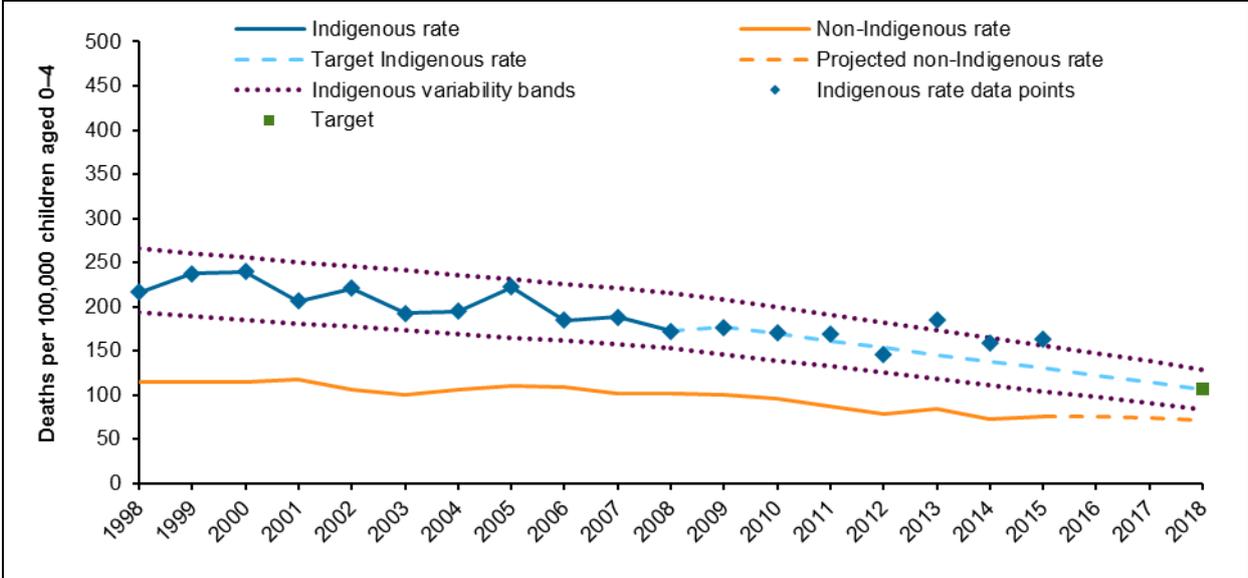
In 2008, the Indigenous child mortality rate was 172.3 deaths per 100,000 children aged 0–4, and 101.3 for non-Indigenous children, with a gap of 70.9 (rate difference).

The trend for the non-Indigenous child mortality rate is based on existing data up to and including 2012, then projected forward to 2018. This yields an expected non-Indigenous child mortality rate of 76.9 deaths per 100,000 children aged 0–4 in 2018.

For the 2008 gap to be halved, the rate difference needs to be no greater than half the rate difference in 2008 (that is, a target rate difference of 35.4). Calculating the Indigenous target rate by adding 35.4 to the projected non-Indigenous child mortality rate in 2018 (76.9) yields an Indigenous child mortality target rate of 112.3 deaths per 100,000 Indigenous children aged 0–4. To account for yearly variation in rates, variability bands calculated around each

yearly rate present a high and low value around the target. If the yearly rate is between the bands, progress toward the target is said to be on track.

Figure 2.1 presents the trends in child mortality rates for both Indigenous and non-Indigenous children since 1998, the target point in 2018, and the variability bands around the single year rates. Between 1998 and 2015, Indigenous child mortality rates declined significantly by 33% and between 2008 and 2015, there was a small non-significant decline of 6%.



Source: AIHW & ABS analysis of NMD, published in PM&C 2017 and AHMAC 2017.

Figure 2.1: Child mortality rates (aged 0–4), by Indigenous status, NSW, Qld, WA, SA and the NT combined, 1998 to 2015, with trajectory to 2018

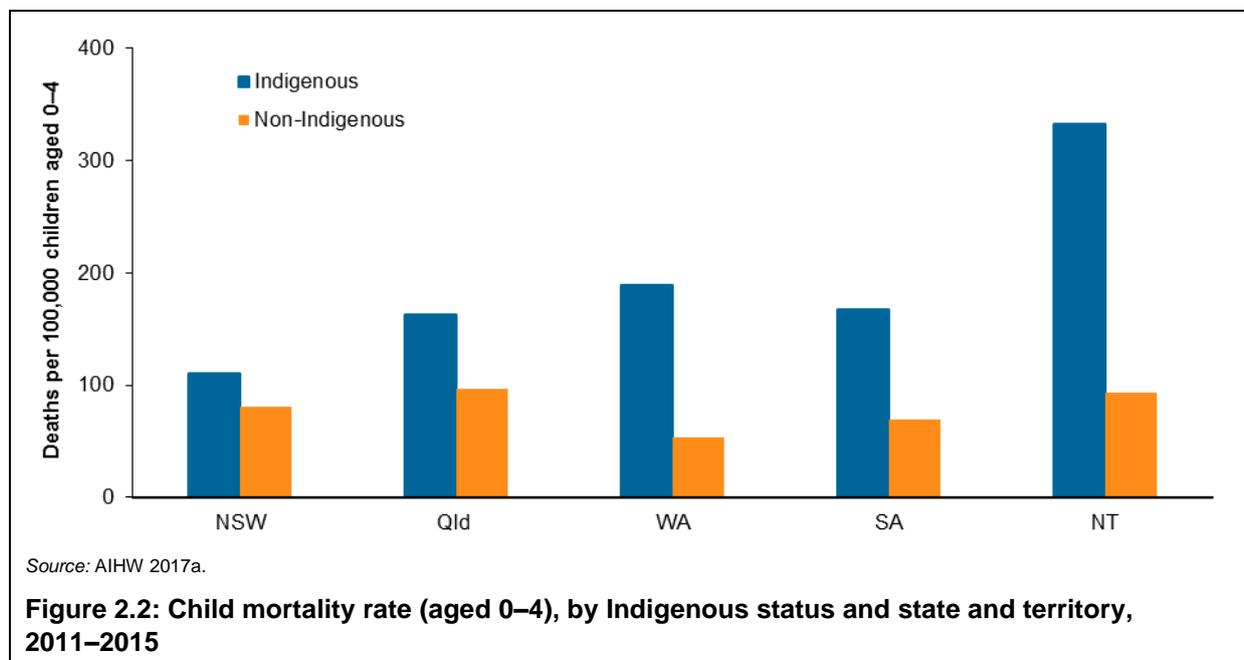
Figure 2.1 also highlights the variability in single year mortality rates. Note that the quality of Indigenous identification in the mortality data has changed over time, leading to challenges in accurately monitoring trends. For example, Queensland has recently changed its Indigenous identification strategy, which resulted in more child deaths in 2015 being classified as Indigenous than in the past. For 2015 data, the Queensland Registry of Births, Deaths and Marriages included Medical Certificate of Cause of Death information for the first time to contribute to the Indigenous status data item. This was associated with a decrease in the number of deaths for which Indigenous status was ‘not stated’, and an increase in the number of deaths identified as Indigenous in Queensland (PM&C 2017; AHMAC 2017).

The change in method for Indigenous identification together with the variability in single year child mortality rates means that caution should be used in interpreting time series data.

Based on 2015 data, this target was assessed as not on track. Since finalising the detailed analysis in this report, data for 2016 have become available; these newly available data, reported in the *Closing the Gap Prime Minister’s Report 2018* (PM&C 2018), indicate that progress towards the target is now on track.

2.2.2 Child mortality by state and territory

Calculating reliable state and territory child mortality rates requires combining 5 years of data. Figure 2.2 illustrates how the risk of death for both Indigenous and non-Indigenous children varies by state and territory of residence using data from 2011–2015 combined. The risk of dying during childhood was highest for Indigenous children living in the Northern Territory, where the gap between the rates for Indigenous and non-Indigenous children was also the largest.



2.2.3 Age of childhood death

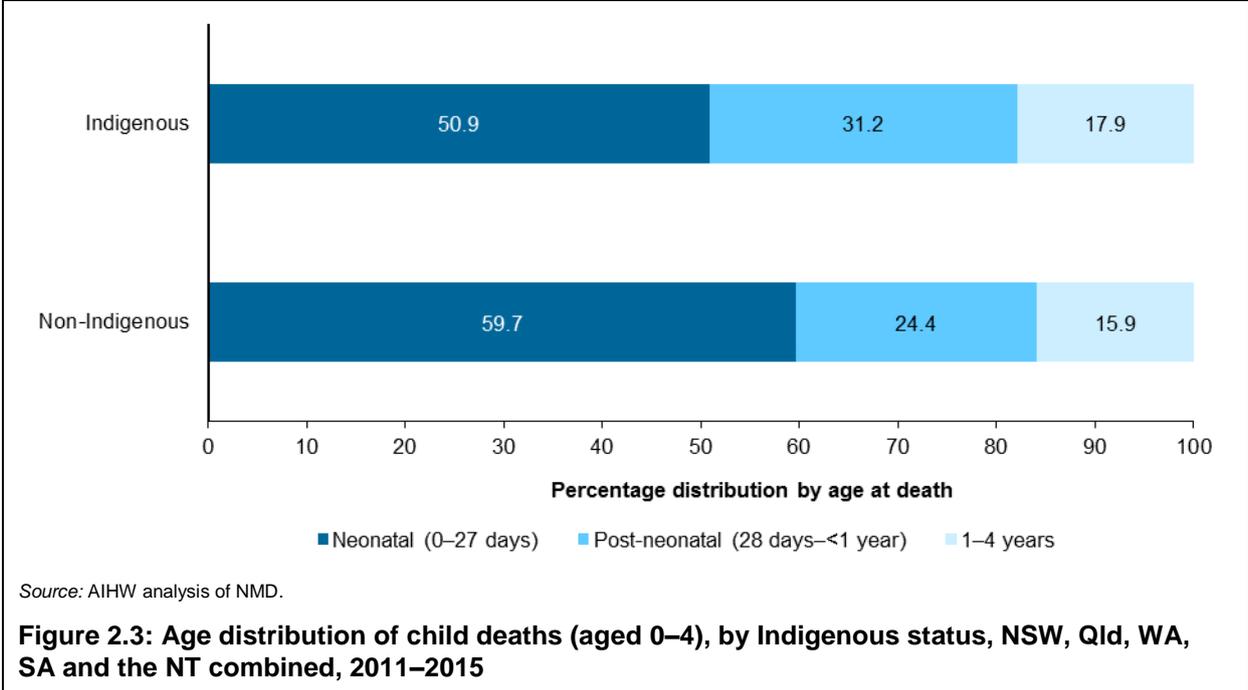
The risk of child death is not distributed equally throughout infancy and early childhood. The majority of child deaths occur in the first year of life for both Indigenous and non-Indigenous children (82% of Indigenous child deaths and 84% of non-Indigenous child deaths).

Box 2.2: Key periods in child mortality

Child deaths are divided into different periods, depending upon the child's age at death:

- **Neonatal deaths** are deaths to live born babies that occur before 28 days of life (that is, up to and including 27 days after birth)
- **Post-neonatal deaths** are deaths to live born babies that occur between 28 days of birth and before the baby's first birthday
- **Early childhood deaths** are deaths to children aged 1–4 (that is, up to and including the day before their fifth birthday)
- **Infant mortality** refers to deaths to live born babies that occur before the baby's first birthday (neonatal + post-neonatal deaths)
- **Child mortality** refers to deaths to children aged 0–4 (that is, from birth up to and including the day before their fifth birthday). Only includes live births.

A higher proportion of Indigenous than non-Indigenous child deaths occur after 28 days of life (Figure 2.3). These differential age patterns are discussed later in this chapter.



2.2.4 Causes of death

One of the key questions underpinning the higher mortality rates for Indigenous children is whether these rates are due to higher risks from all causes of death, or whether Indigenous children have higher risks of dying from particular causes.

This section provides an overview of the distribution of causes of death for Indigenous children, and discusses which of these causes account for the gap between Indigenous and non-Indigenous child mortality rates. A description of the top five broad causes of death is presented in Table 2.1, followed by their distribution in Table 2.2. The broad causes of death are defined by the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) chapter levels.

Table 2.1: Description of the top five causes of Indigenous child deaths

Cause and ICD-10 codes	Term used in this paper	Description/examples
Conditions originating in the perinatal period P00–P96	Conditions originating in the perinatal period	<p>These are deaths due to conditions that have their origin in the perinatal period (during pregnancy or up to 28 days' post-partum), even though death occurs later. They include:</p> <ul style="list-style-type: none"> maternal factors and complications of pregnancy, labour and delivery (for example, pre-existing maternal hypertensive disorder, premature rupture of membranes, placenta praevia, complications with the umbilical cord, complications of labour and delivery) disorders related to length of gestation and fetal growth (for example, slow fetal growth/small for gestational age, extremely low and low birthweight, pre-term delivery, long gestation, high birthweight) respiratory and cardiovascular disorders specific to the perinatal period (for example, intra-uterine or birth asphyxia, respiratory distress, congenital pneumonia, cardiovascular disorders originating in the perinatal period—but not congenital malformations of the circulatory system) infections specific to the perinatal period (for example, congenital rubella, bacterial sepsis of the newborn). <p>Does not include congenital and chromosomal conditions.</p>
Symptoms, signs and abnormal clinical findings, not elsewhere classified R00–R99	SIDS and other unknown causes	<p>The data included deaths from only two of the codes within this chapter: SIDS (R95) and deaths of unknown causes (R99).</p> <p>SIDS is the sudden unexpected death of an infant under 1, (with onset of the fatal episode apparently occurring during sleep) that remains unexplained after a thorough investigation, which includes performing a complete autopsy and reviewing the circumstances of death and the clinical history. SIDS is a diagnosis of exclusion made when other causes have been ruled out.</p> <p>Other deaths of unknown causes (R99) are those where the cause is not able to be identified, excluding SIDS. In the Aboriginal and Torres Strait Islander Health Performance Framework, the R99 deaths are referred to as SUDI deaths.</p>
External causes of morbidity and mortality V01–Y98	Accidents, injuries and other external causes	<p>External or injury-related causes are potentially preventable deaths that may be intentional or unintentional. They include deaths due to transport-related incidents (for example as a pedestrian or a passenger), drowning, suffocation, fire, falls, poisoning and assault.</p>
Congenital malformations, deformations and chromosomal abnormalities (also known together as birth defects or congenital anomalies) Q00–Q99	Congenital and chromosomal conditions	<p>Congenital anomalies or birth defects refer to structural, functional or metabolic abnormalities that are present at birth, even if not diagnosed until months or years later.</p> <p>They are sometimes inherited, and other times may be caused by exposure to chemicals, high-risk medicines, and alcohol or other drugs.</p> <p>Congenital malformations of the nervous system (such as brain malformations and spina bifida), circulatory system (heart defects) and other congenital malformations (not otherwise specified, and not due to chromosomal abnormalities) are the leading specific causes of death for Indigenous children within this category.</p>
Diseases of the respiratory system J00–J99	Diseases of the respiratory system	<p>Diseases and conditions of the respiratory system may be caused by acute illnesses such as influenza, bronchitis and pneumonia, or chronic illnesses such as asthma.</p>

SIDS = sudden infant death syndrome; SUDI = sudden unexpected death in infancy

Table 2.2 shows that conditions arising in the perinatal period account for 42% of all Indigenous child deaths, with deaths from sudden infant death syndrome (SIDS) and other unknown causes accounting for another 18%. Deaths from accidents, injuries and other external causes, and deaths from congenital and chromosomal conditions are responsible for another 25% of Indigenous child deaths.

Table 2.2: Indigenous child deaths and child mortality rates (aged 0–4), top five causes of death, NSW, Qld, WA, SA and the NT combined, 2011–2015

Cause	Number	%	Deaths per 100,000 Indigenous children aged 0–4
Conditions originating in the perinatal period (P00–P96)	257	42.2	69.5
SIDS and other unknown causes (R00–R99)	112	18.4	30.3
Accidents, injuries and other external causes (V01–Y98)	78	12.8	21.1
Congenital and chromosomal conditions (Q00–Q99)	74	12.2	20.0
Diseases of the respiratory system (J00–J99)	23	3.8	6.2
All other causes	65	10.7	17.6
Total	609	100.0	164.4

Notes

1. Components may not sum to totals due to rounding.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

The percentage share of particular causes of death to the fall in Indigenous child mortality rates between 2006–2010 and 2011–2015 are presented in Table 2.3. The data show that 62% of the decline arose from two causes: conditions originating in the perinatal period, and congenital and chromosomal conditions. The data also show that there was an increase in the rate of deaths from SIDS and other unknown causes between the two periods.

As deaths from conditions originating in the perinatal period and from SIDS and other unknown causes make up 61% of Indigenous child deaths, reducing deaths from these causes would have a substantial impact on the overall Indigenous child death rate.

Four causes account for 90% of the gap between Indigenous and non-Indigenous child mortality rates: conditions originating in the perinatal period; SIDS and other unknown causes; accidents, injuries and other external causes; and diseases of the respiratory system (Table 2.4).

Although congenital and chromosomal conditions is the fourth leading cause of death for Indigenous children, it accounts for only 3% of the gap between Indigenous and non-Indigenous children. This is because the mortality rate for non-Indigenous children is also high (17.4 per 100,000), and the rate difference is 2.6 per 100,000.

Table 2.3: Main causes of death contributing to the fall in Indigenous child mortality rates (aged 0–4), NSW, Qld, WA, SA and the NT combined, 2006–2010 and 2011–2015

Cause	Deaths per 100,000 Indigenous children aged 0–4		Reduction in rate	% Share of fall in child mortality rate
	2006–2010	2011–2015		
Certain conditions originating in the perinatal period (P00–P96)	91.0	69.5	21.5	40.6
SIDS and other unknown causes (R00–R99)	27.3	30.3	–3.0	–5.7
Congenital and chromosomal conditions (Q00–Q99)	31.4	20.0	11.4	21.6
Accidents, injuries and other external causes (V01–Y98)	28.0	21.1	6.9	13.0
Diseases of the respiratory system (J00–J99)	11.1	6.2	4.9	9.3
Diseases of the circulatory system (I00–I99)	8.1	3.0	5.1	9.6
Infectious and parasitic diseases (A00–B99)	5.4	3.8	1.6	3.0
Other causes	15.2	10.8	4.4	8.3
Total	217.5	164.6	52.9	100.0

Notes

- Components may not sum to totals due to rounding.
- Data for 2010 have been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010. For more details, see Technical note 3 in Causes of death, Australia, 2010 (ABS cat. no. 3303.0).
- Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Sources: AIHW 2013 for 2006–2010; AIHW analysis of NMD for 2011–2015.

Table 2.4: Top four high-level causes of death for Indigenous children (aged 0–4) that account for 90% of the gap between Indigenous and non-Indigenous child mortality rates, NSW, Qld, WA, SA and the NT combined, 2011–2015

Cause	Number of deaths		Rate per 100,000		Rate ratio	Rate difference	% of total rate difference
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous			
Conditions originating in the perinatal period (P00–P96)	257	1,782	69.5	35.4	2.0	34.0	40.3
SIDS and other unknown causes (R00–R99)	112	344	30.3	7.9	3.8	22.4	26.4
Accidents, injuries and other external causes (V01–Y98)	78	299	21.1	5.7	3.7	15.4	18.2
Diseases of the respiratory system (J00–J99)	23	99	6.2	2.0	3.2	4.3	5.0
All other causes	139	1,509	37.3	29.0	1.3	8.3	9.8
Total	609	4,033	164.4	80.1	2.1	84.1	100.0

Notes

- Components may not sum to totals due to rounding.
- Deaths registered in 2012 and earlier are based on the final data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

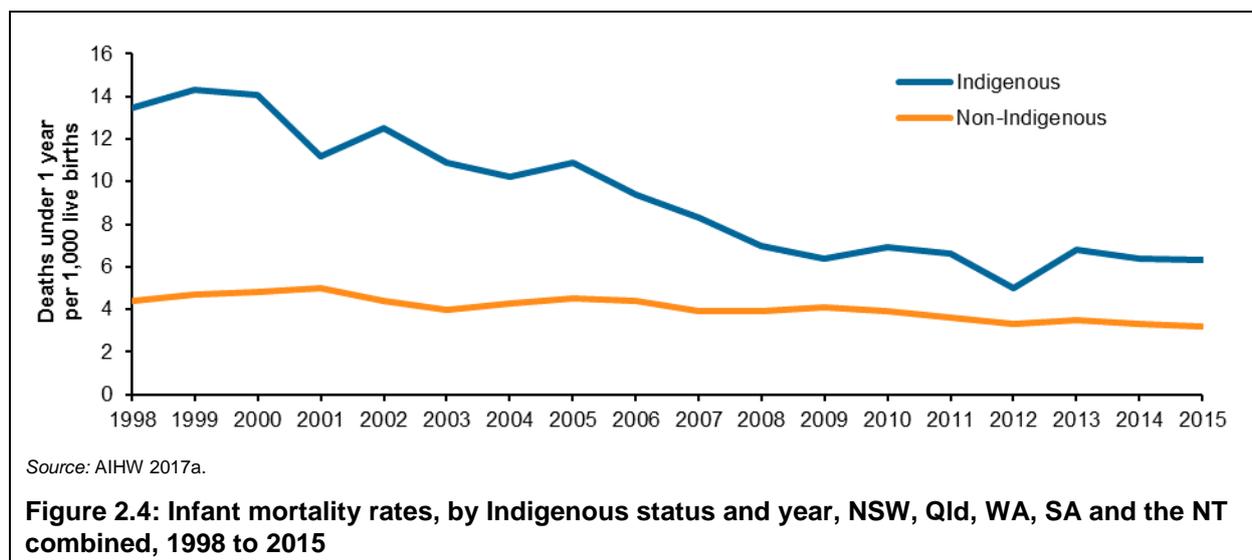
2.2.5 Infant mortality

In 2015, in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined:

- 104 Indigenous and 652 non-Indigenous babies died before their first birthday. This equates to an infant mortality rate of 6.3 per 1,000 live births for Indigenous infants, and 3.2 for non-Indigenous infants, leading to a gap of 3.1 deaths per 1,000 live births
- Indigenous babies were 1.9 times as likely to die as non-Indigenous babies (AIHW 2017a).

Trends and patterns in infant mortality

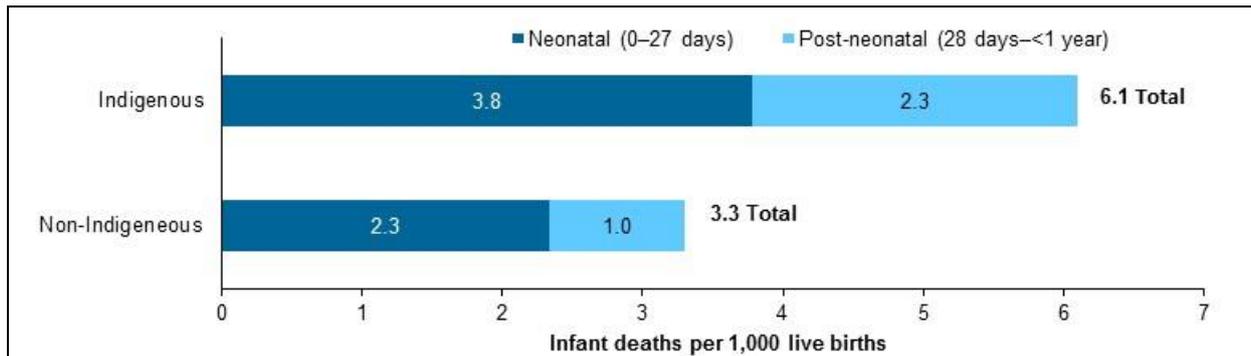
Since 1998, the decline in the Indigenous mortality rate for children aged 0–4, and the decrease in the gap between the rates for Indigenous and non-Indigenous children, have been mainly due to a statistically significant decline in the Indigenous infant mortality rate (AIHW 2017a). Figure 2.4 presents the trend in infant mortality rates from 1998. Infant mortality rates remained fairly stable for non-Indigenous infants, but declined substantially for Indigenous infants. Between 1998 and 2015, Indigenous infant mortality rates declined significantly, by 66%; between 2008 and 2015, there was a non-significant 18% decline.



Most of the long-term decline in Indigenous infant mortality rates was due to decreases in two of the causes presented earlier in tables 2.2 and 2.3: conditions originating in the perinatal period, and SIDS and other unknown causes. For example, since 1998, there has been a 69% decline in deaths to Indigenous babies from SIDS and other unknown causes (AIHW 2017a). Although the long-term trend is one of decline, there has been a recent increase in the mortality rate from SIDS and other unknown causes.

The infant mortality rate can be disaggregated by deaths that occurred in the neonatal (before 28 days after birth) or the post-neonatal period (28 days to less than 1 year after birth). Figure 2.5 presents these rates. It shows that:

- Indigenous infants are 1.6 times as likely to die in the neonatal period as non-Indigenous infants (infant mortality rate of 3.8 compared with 2.3)
- Indigenous infants are 2.3 times as likely to die during the post-neonatal period as non-Indigenous infants (infant mortality rate of 2.3 compared with 1.0).



Source: AIHW 2017a.

Figure 2.5: Neonatal and post-neonatal mortality rates, by Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015

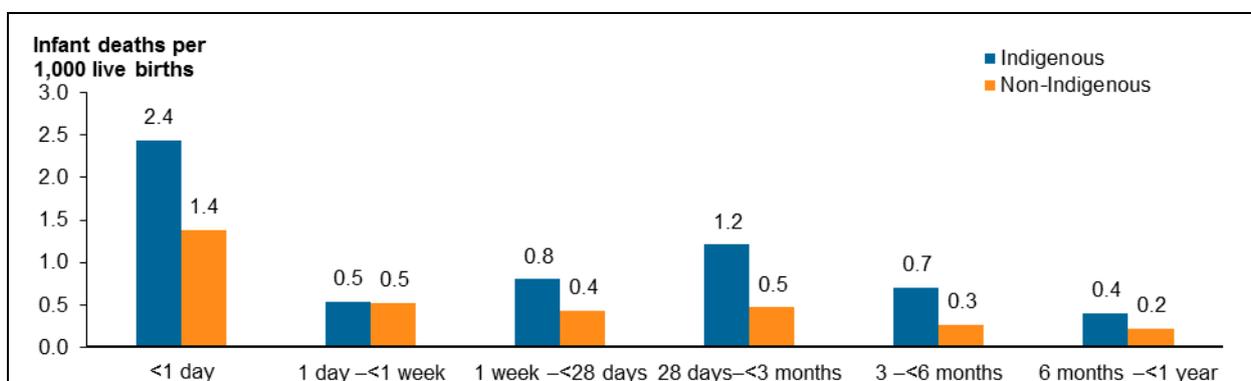
While these age distinctions are important, recent research from the United States suggests there is value in looking more closely within these periods. An investigation into why United States infant mortality rates are higher than those in Europe used more detailed age categories to examine the timing of infant deaths in the United States (Chen et al. 2016).

Detailed age-at-death categories show that for Indigenous Australian infant deaths in the 5-year period 2011–2015:

- 40% occurred on the first day of life
- 9% occurred between 1 day and 1 week
- 13% occurred between 1 week and 1 month
- 20% occurred between 1 and 3 months and
- 18% occurred between 3 months and 1 year.

Figure 2.6 illustrates the variation in the risk of dying in each of the detailed age-at-death categories by Indigenous status:

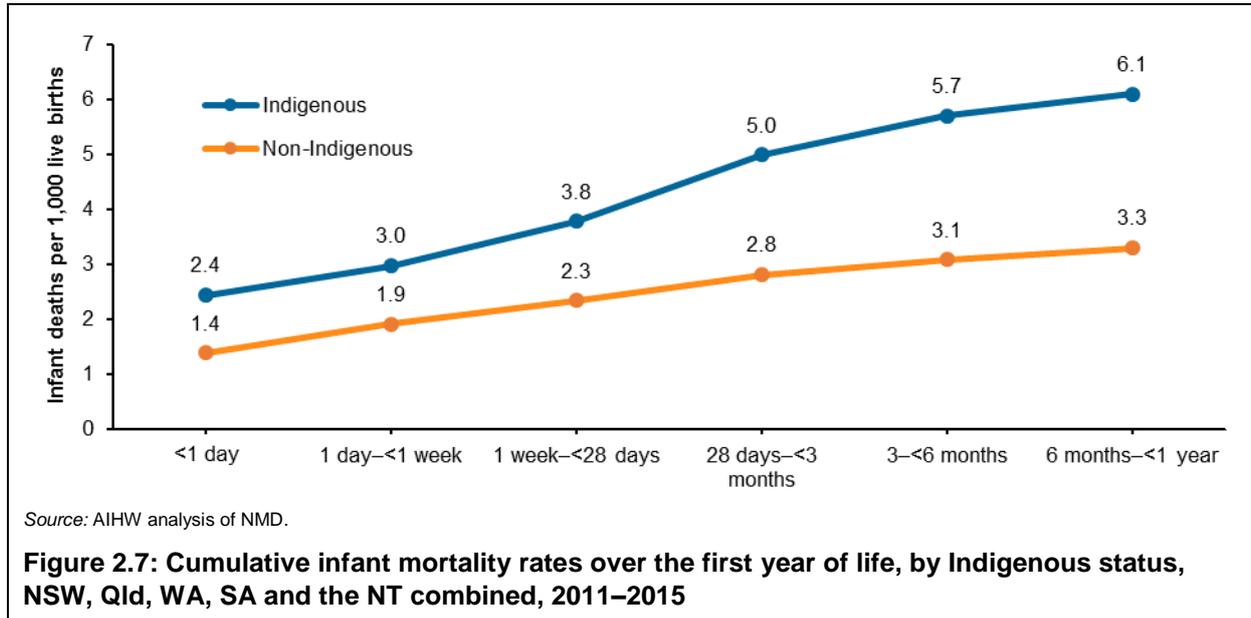
- the risk of dying is highest during the first day of life for Indigenous and non-Indigenous babies, but is 1.8 times as high for Indigenous babies.
- for non-Indigenous babies, the risk of death is generally lower in periods of infancy after the first day. For Indigenous babies, the risks are more variable, with mortality rates higher in the 1–3 month period than in the rest of the infancy period.



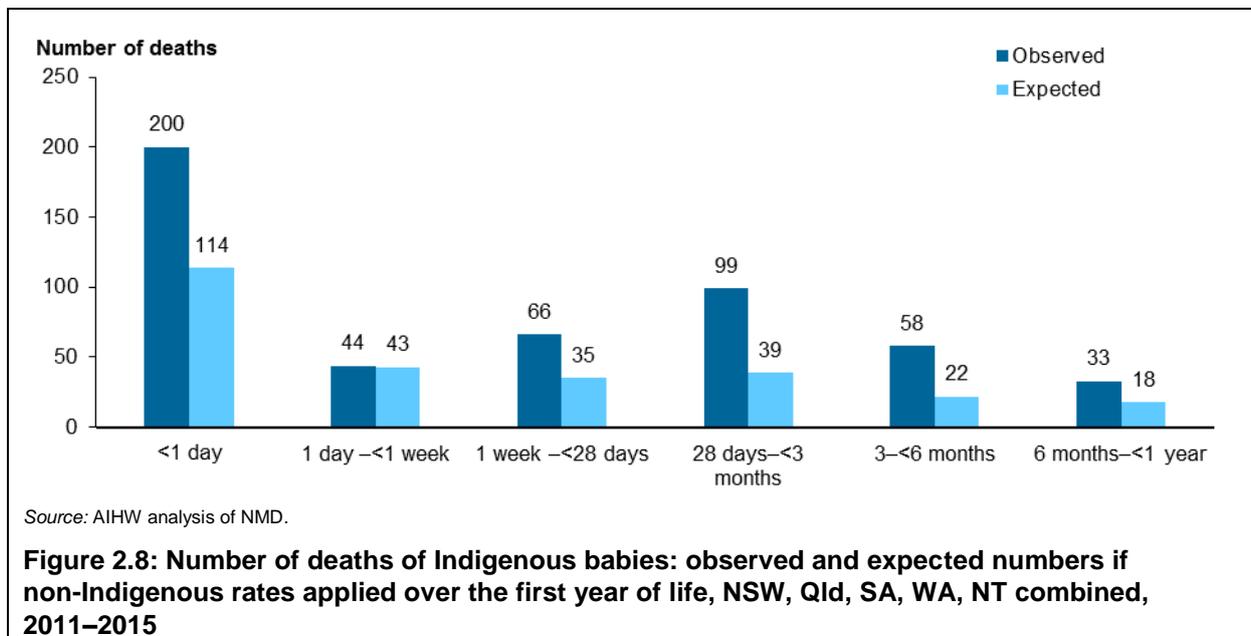
Source: AIHW analysis of NMD.

Figure 2.6: Infant deaths per 1,000 live births, by detailed age-at-death categories and Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015

Figure 2.7 shows that the cumulative gap (rate difference) between Indigenous and non-Indigenous babies increases over the first year.



The effect of these differential rates is shown in Figure 2.8, where the non-Indigenous age-specific rates were applied to Indigenous births to measure excess Indigenous mortality. The findings show that, in the period 2011–2015, there would have been 229 fewer infant deaths if Indigenous babies had the same age-specific risks of death as non-Indigenous babies. Thus, instead of the 500 observed deaths, there would have been 271 deaths to Indigenous babies (46% fewer). This would comprise 38% fewer deaths in the neonatal period, and 54% fewer deaths in the post-neonatal period.



Causes of death during infancy

Table 2.5 presents the top three causes of death for infants by whether the death occurred in the neonatal or post-neonatal period. In 2011–15:

- for the neonatal period, there is consistency in the top three causes of death for Indigenous and non-Indigenous babies. Conditions originating in the perinatal period account for 78% of all Indigenous deaths during this period, and nearly 70% of non-Indigenous deaths
- in the post-neonatal period differences emerge. SIDS and other unknown causes make up nearly half of the Indigenous post-neonatal deaths. Diseases of the respiratory system; and accidents, injuries and other external causes account for another 20% of deaths (66% in total). In contrast, these causes make up 44% of non-Indigenous deaths.

Table 2.5: Top three causes of infant death by timing and Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015

Indigenous infants			Non-Indigenous infants		
Cause	Number of deaths	% of deaths in the age group	Cause	Number of deaths	% of deaths in the age group
Neonatal deaths					
Conditions originating in the perinatal period (P00–P96)	241	77.7	Conditions originating in the perinatal period (P00–P96)	1,665	69.2
Congenital and chromosomal conditions (Q00–Q99)	52	16.8	Congenital and chromosomal conditions (Q00–Q99)	611	25.4
SIDS and other unknown causes (R00–R99)	14	4.5	SIDS and other unknown causes (R00–R99)	46	1.9
Other causes	3	0.1	Other causes	85	3.6
Total Indigenous	310	100.0	Total non-Indigenous	2,407	100.0
Post-neonatal deaths					
SIDS and other unknown causes (R00–R99)	89	46.8	SIDS and other unknown causes (R00–R99)	311	31.5
Diseases of the respiratory system (J00–J99)	20	10.5	Congenital and chromosomal conditions (Q00–Q99)	205	20.8
Accidents, injuries and other external causes (V01–Y98)	17	9.0	Conditions originating in the perinatal period (P00–P96)	109	11.1
Other causes	64	33.7	Other causes	361	36.7
Total Indigenous	190	100.0	Total non-Indigenous	986	100.0

Notes

1. Components may not sum to totals due to rounding.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

Neonatal deaths—conditions originating in the perinatal period

Conditions originating in the perinatal period were responsible for 241 Indigenous babies dying in the neonatal period (from birth to 27 days), with most of those deaths occurring on the first day (169 out of 241).

Analysis of the specific causes underpinning these deaths shows that the two causes that account for the majority of the deaths are:

- maternal health, complications of pregnancy, labour and delivery (116 deaths)
- disorders related specifically to short gestation (premature birth) and low birthweight (56 deaths).

Understanding the types of conditions in these categories is important. Table 2.6 presents examples of the underlying conditions grouped into these categories for the top five detailed causes (which account for 73% of the 241 deaths attributed to conditions originating in the perinatal period).

Table 2.6: Examples of detailed causes of death and number of Indigenous neonatal deaths from conditions originating in the perinatal period, NSW, Qld, WA, SA and the NT combined, 2011–2015

Code	Title	Deaths	Examples (not an exhaustive list)
P07	Disorders related to short gestation and low birthweight, not elsewhere classified	53	Extremely low birthweight; other low birthweight; extreme immaturity; other pre-term infants
P01	Fetus and newborn affected by maternal complications of pregnancy	52	Incompetent cervix; premature rupture of membranes polyhydramnios; multiple pregnancy; maternal death; malpresentation before labour
P02	Fetus and newborn affected by complications of placenta, cord and membranes	38	Placenta praevia; other placental separation and haemorrhage; prolapsed cord; compression of umbilical cord; chorioamnionitis
P96	Other conditions originating in the perinatal period	19	Congenital renal failure; neonatal withdrawal from maternal use of drugs of addiction; other conditions originating in the perinatal period
P03	Fetus and newborn affected by other complications of labour and delivery	15	Breech delivery and extraction malpresentation, malposition and disproportion during labour and delivery; affected by caesarean delivery

Note: Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

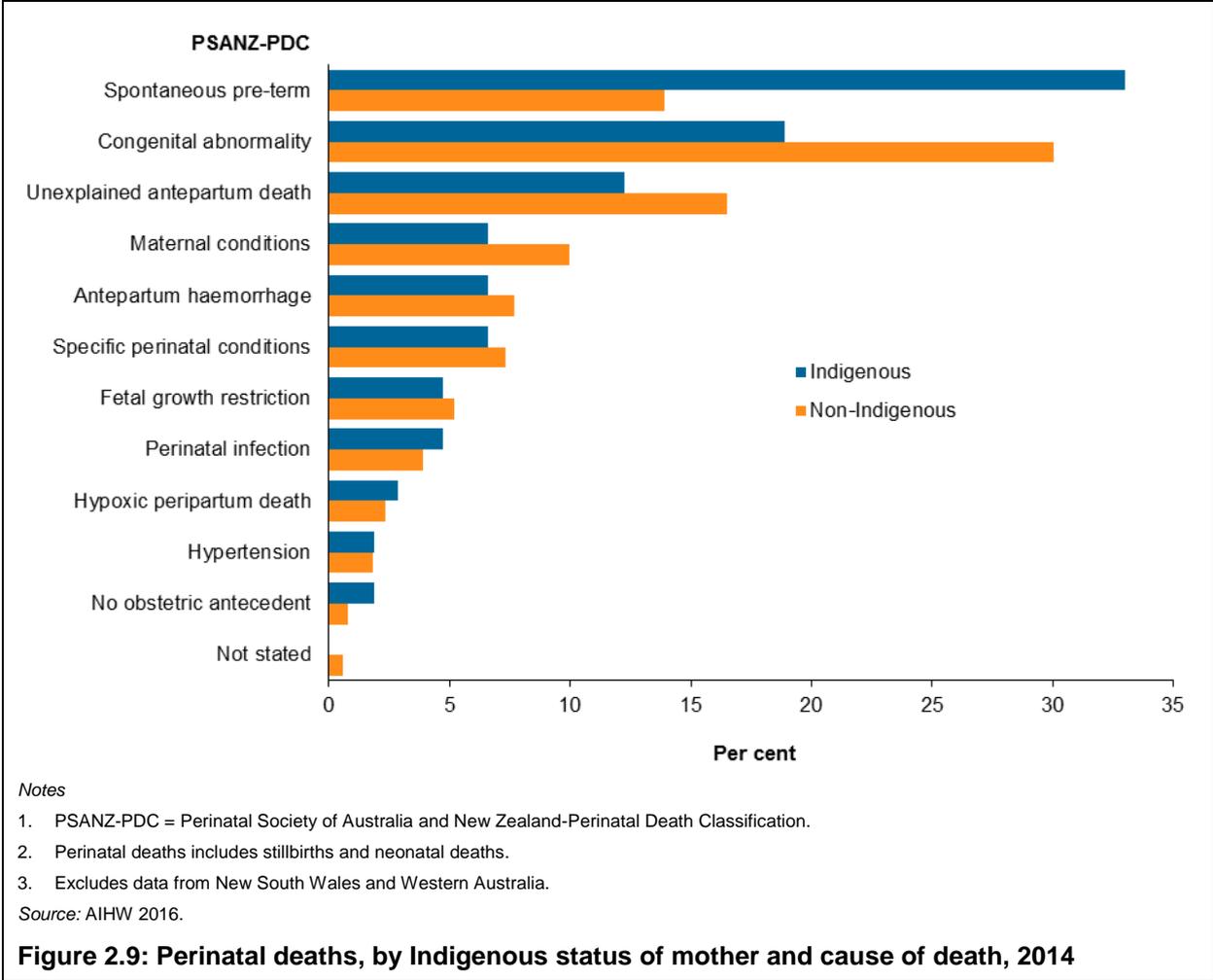
Table 2.6 highlights that a number of the specific causes are related to either pre-term labour/birth or poor fetal growth. For example, placenta praevia may cause extensive bleeding which requires early delivery of the fetus. Babies born before 37 completed weeks of pregnancy (pre-term) are at higher risk of death and long-term health conditions because they are born before their organs are fully developed.

Although the ICD-10 codes provide information on causes of death, in their current format they are less useful for targeted public health interventions as they are not grouped according to their antecedents. For example, there are causes of death that are directly related to pre-term birth, but are not counted as conditions originating in the perinatal period. Thus, identifying which of the ICD-10 causes of death can be attributed to pre-term birth has been a challenge, and a number of systems have been proposed to group causes together in more effective ways (Callaghan et al. 2006; Nakamura et al. 2015; Sowards 1999).

In Australia, jurisdictional perinatal mortality review committees use the Perinatal Society of Australia and New Zealand Clinical Practice Guidelines for Perinatal Mortality Perinatal Death Classification or Neonatal Data Classifications to classify causes of death (AIHW: Monk et al. 2016). Figure 2.9 shows that there were clear differences in the causes of perinatal deaths (that is, stillbirths and neonatal deaths combined) by the mother's Indigenous status. In 2014, nearly 35% of perinatal deaths to Indigenous mothers were due

to spontaneous pre-term delivery (compared with less than 15% to non-Indigenous mothers) (AIHW 2016).

Decreasing the number of Indigenous neonatal deaths requires a focus on maternal health and pregnancy-related conditions, as well as risk factors for pre-term birth and fetal growth restriction. Doing so will require improved data to understand these factors.



Post-neonatal deaths

Section 2.2.5 highlighted that the risk of dying during the post-neonatal period (28 days to less than 1 year after birth) was greatest between 28 days and 3 months after birth, and that a high proportion of deaths in the post-neonatal period were due to SIDS and other unknown causes; diseases of the respiratory system; and accidents, injuries and other external causes. Table 2.7 provides more details around these causes of death and their timing within the post-neonatal period. For example, it shows that the highest number of SIDS deaths occurs between 28 days and 6 months; only 3 out of the 35 SIDS deaths occurred between 6 months and 1 year.

Table 2.7: Deaths to Indigenous babies during the post-neonatal period (28 days to less than 1 year after birth) by age and cause of death, NSW, Qld, WA, SA and the NT combined, 2011–2015

Cause	Age at death			Total
	28 days–<3 months	3 months–<6 months	6 months–<1 year	
	Number of deaths			
Unknown cause of mortality (R99)	38	10	6	54
SIDS (R95)	21	11	3	35
Diseases of the respiratory system (J00–J99)	9	9	2	20
Accidents, injuries and other external causes (V01–Y98)	5	6	6	17
All other causes	26	22	16	64
Total	99	58	33	190
	Distribution of deaths (%)			
Unknown cause of mortality (R99)	38.4	17.2	18.2	28.4
SIDS (R95)	21.2	19.0	9.1	18.4
Diseases of the respiratory system (J00–J99)	9.1	15.5	6.1	10.5
Accidents, injuries and other external causes (V01–Y98)	5.1	10.3	18.2	9.0
All other causes	26.3	37.9	48.5	33.7
Total	100.0	100.0	100.0	100.0

Notes

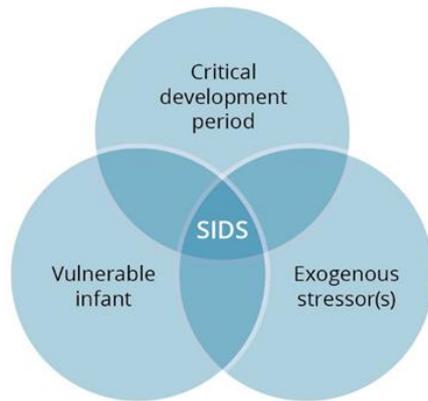
1. Components may not sum to totals due to rounding.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

SIDS

SIDS and other unknown causes account for nearly half of post-neonatal Indigenous deaths. The risk of death from these causes is highest in the 28 day to 3-month period, then declines over the rest of the first year. Deaths due to diseases of the respiratory system are highest from 28 days to 6 months, while the risk of death from external causes is spread throughout the post-neonatal period (a discussion of mortality from external causes is presented in Section 2.2.6).

According to the American Academy of Pediatrics (Moon & AAP Task Force on Sudden Infant Death Syndrome 2016), SIDS is a result of the intersection of three sets of risk factors: vulnerable infant, critical development period, and exogenous stressors (Figure 2.10).



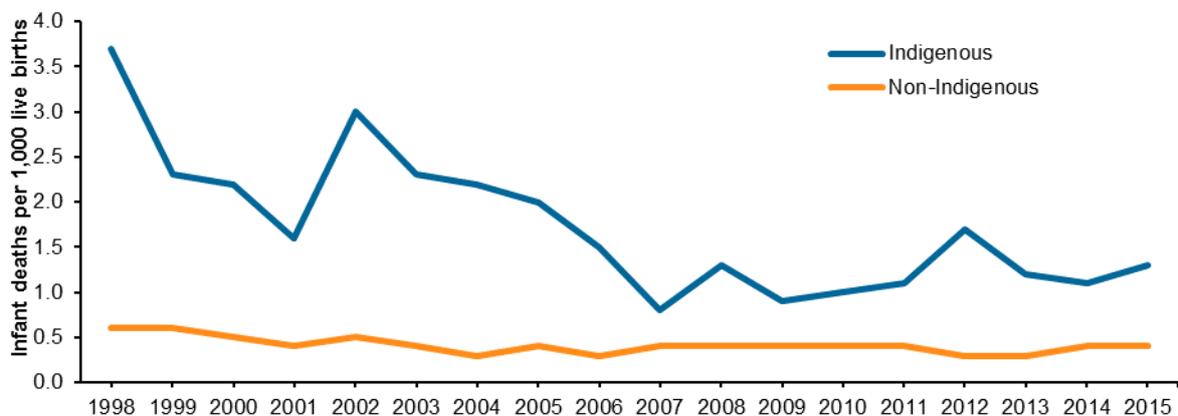
Source: Moon and AAP Task Force on Sudden Infant Death Syndrome 2016.

Figure 2.10: Intersection of risk factors for SIDS

Infants who die of SIDS are more likely to have been born pre-term and/or have a low birthweight, or exposed to maternal smoking or alcohol consumption during pregnancy. There also may be underlying genetic or physical vulnerabilities that are not related to pregnancy per se, and are often not discovered until after death. Stressors include prone sleep position, over-bundling, and airway obstruction. The risk of SIDS peaks between 1 and 4 months.

Being male, being Indigenous, living in areas with fewer socioeconomic resources and living outside major cities were associated with a greater risk of sudden unexpected death in infancy (SUDI), which includes SIDS and other undetermined causes (NSW CDRT 2016). Children with a child protection history were nearly 9 times as likely to die from SUDI as were those without a child protection history (NSW CDRT 2014).

As noted previously, much of the decline in Indigenous infant mortality rates since 1998 has been attributed to declines in rates of SIDS and other unknown causes (Figure 2.11). The decline for both Indigenous and non-Indigenous infant mortality rates was statistically significant, however, the magnitude of the decline was much greater for Indigenous infants. Although the long-term trend is one of decline, more recent comparisons (2006–2010 to 2011–2015) show a slight increase in these rates.



Source: AIHW 2017a.

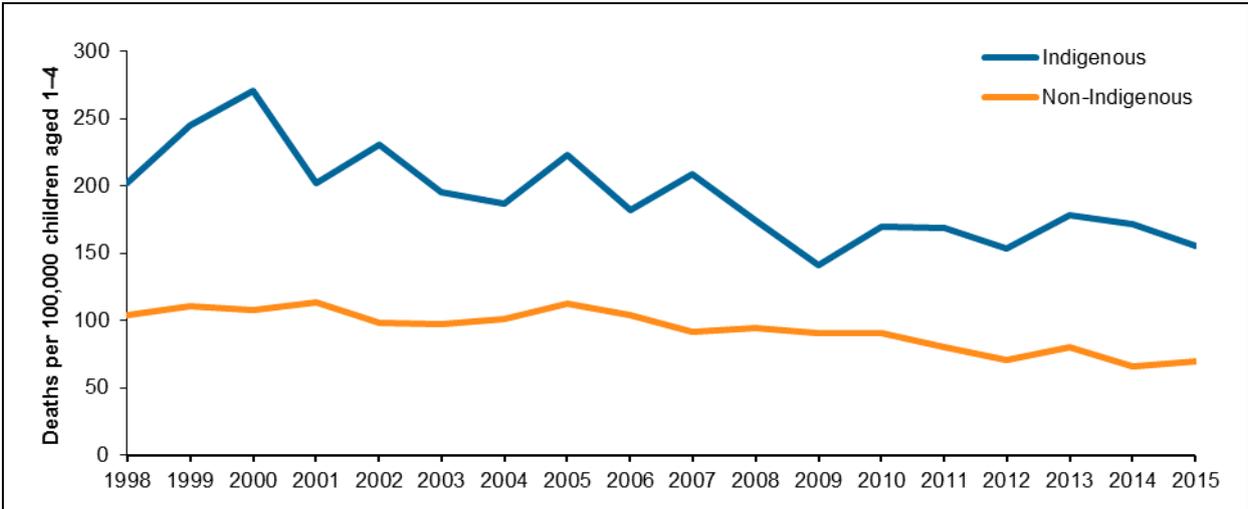
Figure 2.11: Infant mortality rate from SIDS and other unknown causes, by Indigenous status and year, NSW, Qld, WA, SA and the NT combined, 1998 to 2015

The higher risk of death for Indigenous infants from SIDS, other unknown causes, and sleep accidents in Australia, is consistent with the findings of higher risk among Native Americans in the United States (US Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau 2015).

Decreasing the number of Indigenous post-neonatal deaths requires a focus on reducing the risks of death from SIDS and other unknown causes, external causes of mortality and respiratory illnesses.

2.2.6 Early childhood mortality

There has been a non-significant decline in death rates for Indigenous children aged 1–4 (by 13% from 1998 to 2015), with a great deal of variability in the yearly rates (Figure 2.12).



Source: AIHW 2017a.

Figure 2.12: Early childhood mortality rates (ages 1–4), by Indigenous status and year, NSW, Qld, WA, SA and the NT combined, 1998 to 2015

Although accidents, injuries and other external causes of mortality are responsible for the highest number of deaths for both Indigenous and non-Indigenous children in this age group, their prevalence is much higher among Indigenous children, where they account for over half of deaths in early childhood (Table 2.8).

Deaths from external causes are potentially preventable, therefore a closer examination of these deaths will help to highlight where there is potential for risk reduction.

Table 2.8: Top three causes of death to children aged 1–4, by Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015

Cause	Number of deaths	% of deaths in the age group	Cause	Number of deaths	% of deaths in the age group
Indigenous			Non-Indigenous		
Accidents, injuries and other external causes (V01–Y98)	59	54.1	Accidents, injuries and other external causes (V01–Y98)	205	32.0
SIDS and other unknown causes (R00–R99)	9	8.3	Neoplasms (cancer) (C00–D48)	100	15.6
Neoplasms (cancer) (C00–D48)	8	7.3	Congenital and chromosomal conditions (Q00–Q99)	59	9.2
All other causes	33	30.3	All other causes	276	43.1
Total Indigenous	109	100.0	Total non-Indigenous	640	100.0

Notes

1. Components may not sum to totals due to rounding.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

Deaths from injuries and other external causes to children aged 0–4

Children are particularly vulnerable to certain types of injury, depending on their stage of development. As children develop and their mobility increases, the hazards to which they are exposed change. Before children have the ability to properly assess the risks involved in new activities and to avoid potential dangers, they are particularly vulnerable to injury (AIHW: Pointer 2016).

In 2011–2015, accidents, injuries and other external causes accounted for 13% of Indigenous child deaths and 7% of non-Indigenous child deaths. Table 2.9 presents the distributions and rate of selected external cause of deaths for all children aged 0–4 by Indigenous status. Together they show that:

- Indigenous children were 3.7 times as likely as non-Indigenous children to die from accidents, injuries and other external causes
- of the external causes, transport accidents accounted for the most Indigenous deaths (36%), followed by other accidental threats to breathing (22%), accidental drowning (18%) and assault (13%)
- the gap in mortality rates arose primarily from higher rates of death from transport accidents, drowning, other accidental threats to breathing, and assault.

The data also showed that no Indigenous children aged 0–4 died as a result of accidental poisoning.

Table 2.9: Distribution of deaths across external cause categories^(a), children aged 0–4, by Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015

ICD-10 codes	Indigenous		Non-Indigenous		Rate ratio	Rate difference
	Deaths	Rate	Deaths	Rate		
V01–V99 Transport accidents	28	7.6	74	1.8	5.2	6.1
V01–V09 Pedestrian injured in transport accident	13	3.5	33	5.4	2.9	2.9
V40–V49 Car occupant injured in transport accident	14	3.8	27	7.1	3.3	3.3
W00–X55 Other external causes of accidental injury	40	10.8	175	3.5	3.1	7.3
W65–W74 Accidental drowning and submersion	14	3.8	82	2.3	2.2	2.2
W75–W84 Other accidental threats to breathing	17	4.6	55	4.2	3.5	3.5
X85–Y09 Assault	10	2.7	27	0.5	5.0	2.2
Total external causes (V01–Y98)^(b)	78	21.1	289	5.7	3.7	15.4

(a) Top causes within each subcategory are shown, subcategory totals include deaths from all specified cause codes.

(b) Total includes deaths from all external causes (V01–Y98) including all other external causes of death not presented elsewhere in this table.

Note: Deaths registered in 2012 and earlier are based on the final cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

More detailed analysis of the external causes of death across the three broad age groups (neonatal, post-neonatal and ages 1–4) for deaths to Indigenous children found that:

- accidental suffocation and strangulation in bed (due to factors such as bed linen, mother’s body, or a pillow) was the cause of death for 2 neonatal deaths, 6 post-neonatal deaths, and 1 death during early childhood (1–4 years)
- other external causes of death during the post-neonatal period were inhalation of gastric contents/choking (4 deaths), assault (2 deaths), transport (2 deaths as car occupants), drowning (1 death) and fall (1 death)
- of the 59 deaths to children aged 1–4:
 - 25 were due to transport accidents, including 12 pedestrian deaths
 - 13 were due to accidental drowning
 - 8 were the result of assault
 - 4 were due to fire
 - 3 were due to accidental suffocation/strangulation.

Given the large number of Indigenous child deaths from external causes, decreasing the child mortality rate requires a reduction in the risks of transport accidents, drowning, accidental suffocation, and assault.

2.3 Key drivers of child mortality

The scope of this section is not exhaustive—it highlights key relationships identified in the literature (including previously published AIHW material) and presents new modelling results related to child mortality. The modelling results are limited by the coverage of the variables in the data sets used.

Fetal health and development represent an intersection between the physiological state and the greater social context and environment. Inequalities in infant health outcomes and the likelihood of death during infancy and early childhood are not randomly distributed throughout society; rather, they reflect broader social, environmental, historical, economic and cultural conditions. Figure 2.13 provides a conceptual overview of these processes.

The social and historical context—such as the long-term effects of colonisation and its impact on factors such as self-determination, the disruption of ties to land, and the adverse impact of racism—have all had an effect on Indigenous people’s socioeconomic and psychosocial wellbeing (Osborne et al. 2013; Reading & Wien 2009).

Compared with non-Indigenous mothers, Indigenous mothers have higher rates of the factors associated with poor infant health outcomes and child death. On average, Indigenous mothers have poorer SES, lower levels of education, higher levels of psychosocial distress, are more likely to live in poor housing and in areas with fewer health services. These interact with maternal health and risk factors which also have physiological effects on fetal health and development. Some of the key factors and relationships are discussed in the sections that follow.

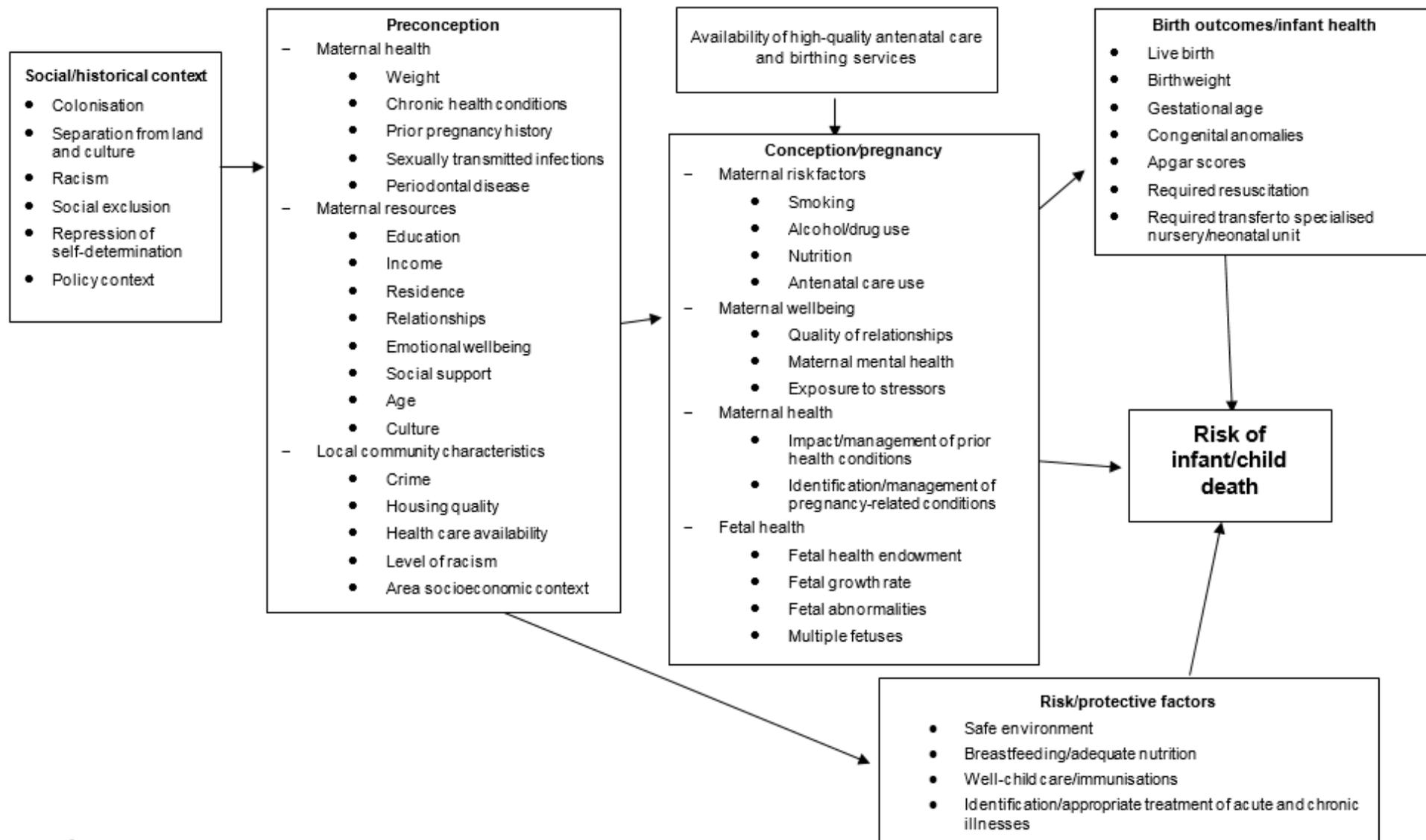


Figure 2.13: Conceptual framework of factors affecting infant and child mortality

2.3.1 Evidence from the literature

Socioeconomic status

Higher maternal SES is linked with a number of protective factors before and during pregnancy; better birth outcomes; improved early childhood health, development and wellbeing; and lower risks of death. For example, women with more economic and social resources may be healthier before becoming pregnant, have better access to nutritious foods during pregnancy, have more social and psychological support, face less income-related stress, and have better housing.

The association between low SES and poorer outcomes for children is well established, but the causal relationships are complex. Low SES reflects a combination of low income/low education, higher likelihood of living in poorer or higher risk neighbourhoods with poorer access to services, poorer parental health status (physical and mental), and different parenting styles (Behrman & Butler 2007; Burris et al. 2011). Thus programs designed to mitigate the impact of low SES need to recognise the impact of all of these factors. Research has shown that the most effective programs for high-risk children (as defined by SES) are those that work with both children and parents, and are able to link parents with local community services and supports (for example, Home Interaction Program for Parents and Youngsters) (AIHW 2014).

Maternal health

Pre-conception maternal health refers to how healthy a woman is before pregnancy. Factors such as anaemia; genitourinary tract infections; periodontal disease; being overweight, obese or underweight; pre-existing high blood pressure (hypertension); and pre-existing diabetes, all increase the risk of poor birth outcomes. Available data show that Indigenous mothers have higher rates of health risks: they are 1.6 times as likely to be obese as non-Indigenous mothers and to have higher rates of high blood pressure and pre-existing diabetes (AIHW 2016).

Pre-conception health includes social–emotional wellbeing as well as physical health. For example, a recent study in Western Sydney found that antenatal depression was associated with an increased risk of haemorrhage during pregnancy and the development of gestational diabetes (Dahlen et al. 2015).

Maternal health also includes pregnancy-induced or pregnancy-related conditions (for example, those that arise during the pregnancy). These conditions include pre-eclampsia, pregnancy-induced hypertension, and gestational diabetes, which pose risks to fetal development and increase the likelihood of pre-term birth.

Maternal risk factors

Nutrition

Nutrition prior and during pregnancy is critical to fetal development (McDermott et al. 2009; Wen et al. 2010). Pregnant women and women considering pregnancy are advised to have a balanced diet. Maintaining folate levels is particularly important to decrease the risk of neural tube defects such as spina bifida (AHMAC 2014), which is twice as common among babies born to Indigenous women as among those born to non-Indigenous women (Macaldowie & Hilder 2011). Poor maternal nutrition has also been linked with increased risk of developing insulin resistance and obesity in children (Drake & Reynolds, 2010).

Reichman and Teitler (2003) found that participation in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) in New Jersey had a significant protective effect on birthweight among a high-risk population, even after controlling for a number of individual psychosocial, socioeconomic and medical factors. The beneficial effects of WIC participation carry through to lower risks of infant mortality as well (Khanani et al. 2010).

Smoking, alcohol and other drugs

One of the strongest risk factors for poor birth outcomes and subsequent infant and child mortality is maternal smoking. Smoking during pregnancy has been linked with intrauterine growth restriction, poor lung development, stillbirth, pre-term birth, and placenta abruption. Intrauterine growth restriction and low birthweight can increase the risk of poor perinatal outcomes (for example, necrotising enterocolitis which is a serious disease of the intestine common in premature babies) and long-term effects (for example, cognitive delay and poor cardiovascular health) (Reeves & Bernstein 2008). Babies born to mothers who smoke during and after pregnancy are also more likely to die from SIDS and other unknown causes.

Although smoking rates during pregnancy have decreased, in 2013, 47% of Indigenous mothers smoked during pregnancy, compared with 10% of non-Indigenous mothers (AIHW 2016).

Alcohol consumption during pregnancy raises the risk of miscarriage, stillbirth, intrauterine growth restriction, congenital malformations, prematurity and low birthweight. It has also been linked with fetal alcohol spectrum disorders, which may have physical, mental, behavioural and cognitive consequences. Similarly, the use of drugs (including illicit drugs and some legal medicines) may also pose a risk both to maternal health and fetal growth and development (AHMAC 2017).

Birth outcomes

Pre-term birth

Pre-term births (prior to 37 completed weeks of pregnancy) account for a substantial proportion of Indigenous infant deaths, and are responsible for approximately 40% of the child mortality gap.

Maternal risk factors for pre-term labour include pre-eclampsia, chronic medical illness (such as heart or kidney disease), infections (including urinary tract infections, vaginal infections, infections of the fetal or placental tissues, or group B *Streptococcus*), illicit drug use, abnormal structure of the uterus, cervical incompetence, or previous pre-term birth. There are also pregnancy-specific characteristics that increase the risk, including placenta praevia, placental abruption, premature rupture of membranes and too much amniotic fluid.

The consequences of pre-term birth are substantial; immediate health risks include temperature instability, respiratory problems, cardiovascular problems, blood and metabolic issues, gastrointestinal disorders, neurologic problems (such as bleeding in the brain, seizures and poor muscle tone), and higher susceptibility to infection.

Research has also shown that being born prematurely carries with it a number of ongoing risks and health issues (Strobel et al. 2017). For example, Srinivasjois et al. (2015) found that, compared with full-term infants, infants born at shorter gestational age in Western Australia remained vulnerable to a higher risk of hospitalisation for a number of causes up until age 18. Long-term risks of respiratory issues and pulmonary abnormalities have also been found (Moss 2005; Vrijlandt et al. 2013).

While maternal health risk factors for pre-term delivery are well established, they are less effective at predicting which of those women with risk factors will go into premature labour.

However, if the likelihood of pre-term labour is thought to be high, there are potential treatments, which may include bed rest (at home or hospital) and antibiotics (to treat infection). Premature babies may require highly specialised care in neonatal intensive care units (NICUs) or special care nurseries (SCNs) to enhance their chances of survival.

Low birthweight and/ or small for gestational age

Low birthweight (newborns weighing less than 2,500 grams) is associated with premature birth or restricted fetal growth. Low birthweight infants are at a greater risk of dying during their first year of life; they are prone to ill health in childhood and the development of chronic diseases as adults, including cardiovascular disease, high blood pressure, kidney disease and type 2 diabetes (Arnold et al. 2016; Hoy & Nicol 2010; Luyckx et al. 2013; OECD 2011; White et al. 2010; Zhang et al. 2014).

Low birthweight is a risk factor for SIDS and deaths from other unknown causes, and even moderately low birthweight infants have been shown to have increased vulnerability to infections (Read et al. 1994). Low birthweight may be influenced by smoking and alcohol consumption during pregnancy, poor nutrition, low maternal body mass index (BMI), maternal age and maternal health.

Congenital and chromosomal conditions

Although the causes of most congenital and chromosomal conditions are unknown, they are thought to be caused by a combination of genetic, behavioural and environmental factors. Some factors that have been linked to birth defects include smoking, alcohol and drug use, poorly controlled medical conditions (such as diabetes), use of some medicines during pregnancy, young (under 20) or older maternal age (over 35), family history, and inadequate levels of folic acid (directly linked to neural tube defects).

However, while these associations have been established at a population level, explaining the causes of individual cases is more difficult. A recent study reviewing individual cases in Utah was able to attribute a specific cause in only 20% of cases (Feldkamp et al. 2017).

Role of services

Antenatal care and birthing services can improve the chances of having a healthy baby by working with Indigenous mothers to ensure they have the medical care, practical support and the social support they require. Early access to care can improve infant health by promoting positive change, such as reducing or stopping smoking, and identifying physiological risk factors which may require more specialised management (AIHW 2014; Beekman et al. 2012). High-quality, evidence-based, and culturally competent maternal and child health services, in partnership with pregnant Indigenous women, can help to improve maternal and birth outcomes (AHMC 2011; ANFPP 2015).

Culturally competent antenatal care services are those in which woman-centred care is provided in ways that are respectful, understanding of local culture, and meet the emotional, cultural, practical and clinical needs of the women (NACCHO/RACGP 2012; Wyndow & Jackiewicz 2014). Some characteristics of culturally competent maternal care services include having specific Indigenous programs, Indigenous staff providing continuity of care, viewing women as partners in their care, having a welcoming physical environment, and ensuring that cultural awareness and safety are the responsibility of all staff members in the service (Kruske 2011).

Women's use of antenatal care services is affected by a number of factors, such as the availability and the financial and cultural accessibility of services (as just described), as well as maternal factors, such as early recognition of pregnancy and the perceived value attached to antenatal care (Kruske 2011; Pagnini & Reichman 2000).

Previous work has shown that while nearly all Indigenous mothers access antenatal care before giving birth, they are less likely than non-Indigenous mothers to access care early in the pregnancy (51% of Indigenous mothers attend an antenatal visit in the first trimester, compared with 62% of non-Indigenous mothers).

Increased accessibility to high-quality, evidence-based and culturally competent maternity care for Indigenous mothers close to where women live—one of the goals of the National Maternity Services Plan (Action 2.2, AHMC 2011)—is expected to help close the gap in infant and child health outcomes between Indigenous and non-Indigenous babies. However, even high-quality antenatal care may not be enough to eliminate the gap on its own:

To expect prenatal care, in less than 9 months, to reverse the impacts of early life programming and cumulative allostatic load on a woman's reproductive health may be expecting too much of prenatal care. Even preconceptional care may do too little too late if it is provided in a single visit shortly before a planned pregnancy, rather than as an integral part of women's health care continuum for all women of reproductive age (Walford et al. 2010).

Protective factors after birth

Protective factors for infant and child mortality include:

- safe living environment (smoke-free, low risk of injury/accident/violence, adequate housing)
- risk reduction strategies (for example, safe sleeping environment to reduce the risk of SIDS and sleep accidents, age-appropriate child restraints in cars)
- adequate nutrition (breastfeeding, provision of healthy and age-appropriate foods)
- well-child care (immunisations, developmental checks)
- early identification and management/treatment of acute illnesses
- optimal management of chronic and ongoing illnesses.

These factors are affected by parents' characteristics, their knowledge of and capacity to provide these environments, and the availability of health and early intervention services. Population health initiatives, health promotion (for example, the 'back to sleep campaign' for SIDS, and injury-prevention campaigns) and increased safety regulations (for example, mandatory child restraints for children up to age 7) may also have an effect.

Home visits by nurses, midwives and other health professionals may also help provide parents and caregivers with information, guidance and access to services that support these practices.

Prevalence of risk and protective factors

A summary of data on the key indicators in Figure 2.13 is presented in Table 2.10. The table shows the magnitude of the additional risks faced by Indigenous babies and children (on average) from conception through to early childhood. Table 2.11 summarises the key relationships between the risk factors and the outcomes.

Table 2.10: Percentage distribution of the prevalence of key indicators in the conceptual framework, by Indigenous status

Indicator	Variables	Year	Indigenous	Non-Indigenous
Pre-pregnancy health	Pre-existing diabetes	^(a) 2014	2.2	1.1
	Pre-existing hypertension	^(a) 2014	1.0	0.8
Body mass	Underweight (BMI <18.5)	^(a) 2014	7.5	3.9
	Normal weight (BMI 18.5–24.9)	^(a) 2014	37.9	50.6
	Overweight (BMI 25.0–29.9)	^(a) 2014	26.3	25.8
	Obese (BMI 30.0 or more)	^(a) 2014	28.3	19.7
Maternal risk factors during pregnancy	First trimester antenatal care use	^(a) 2014	53.9	62.0
	5 or more visits during pregnancy (32 weeks gestation+)	^(a) 2014	85.8	95.8
	Ever smoked during pregnancy	^(a) 2014	46.0	9.5
	Smoked after 20 weeks	^(a) 2014	39.9	6.8
	Consumed alcohol during pregnancy	^(b) 2014–15	9.8	^(c) n.a
	Mother used illicit drugs or substances	^(b) 2014–15	4.1	^(c) n.a
Pregnancy-related health conditions	Gestational diabetes	^(a) 2014	9.3	8.3
	Gestational hypertension	^(a) 2014	3.4	3.4
Birth outcomes	Pre-term birth	^(a) 2014	13.7	7.5
	Low birthweight	^(a) 2014	12.2	6.1
	Admitted to SCN/NICU	^(a) 2014	22.7	16.5
	Required resuscitation	^(a) 2014	19.5	20.1
Early childhood	Breastfeeding (ever breastfed)	^(b) 2014–15	82.4	85.6
	Fully immunised age 1	^(d) 2015	89.5	93.2
	Fully immunised age 2	^(d) 2015	87.2	90.4
	Fully immunised age 5	^(d) 2015	95.1	93.1
	Children (0–14) living in a household with a daily smoker	^(b) 2014–15	56.9	20.5
	Households living in dwellings with major structural problems	^(b) 2014–15/ 2013–14	25.7	13.6

n.a. = not available

SCN/NICU = special care nursery/neonatal intensive care unit

(a) Data are from the NPDC.

(b) Data for Indigenous Australians are from the 2014–15 NATSISS. For non-Indigenous Australians, data are from the 2014–15 National Health Survey, with the exception of data for households living in dwellings with major structural problems, which are from the 2013–14 Survey of Income and Housing.

(c) Data for non-Indigenous Australians are available from the AIHW National Drug Strategy Household Survey; however, these data are not included due to limited comparability with the Indigenous data.

(d) Data are from Australian Childhood Immunisation Register.

Sources: AIHW 2017a, 2017b.

Table 2.11: Risk factors for child mortality, areas of impact and associated mortality

Risk factor	Areas of impact	Associated types of mortality
Health service access		
Inadequate antenatal care	Maternal risk factors (for example, smoking during pregnancy), identification/management of pre-conception and pregnancy-induced conditions, pre-term delivery, low birthweight, poor birth outcomes	Stillbirth, perinatal mortality, infant mortality, child mortality
Maternal factors		
Maternal nutrition	Fetal growth and development, pre-term delivery	Perinatal mortality
Maternal health (pre-pregnancy weight, diabetes)	Low birthweight, pre-term delivery, fetal development	Stillbirth, perinatal mortality
Maternal STIs	Pre-term birth, complications during pregnancy, transfer of viral STIs to baby	Stillbirth
Smoking during pregnancy	Pre-term birth, low birthweight, pre-term labour, ectopic pregnancy, miscarriage, congenital disorders, increased risk of cleft lip and cleft palate, retarded growth and development, childhood health problems such as asthma and obesity	SIDS, fetal death, perinatal mortality
Alcohol use during pregnancy	Low birthweight, FASD, heart defects, intellectual disability, pre-term birth	Fetal death, infant mortality
Drug use during pregnancy	Low birthweight, birth defects, pre-term birth	Fetal death, infant mortality
Maternal age (teenage and older mothers)	Low birthweight, pre-term birth, perinatal complications, acute lymphoblastic leukaemia, inadequate antenatal care (younger mothers)	Fetal, neonatal, perinatal mortality; infant mortality
Socioeconomic status	Maternal health, behaviours during pregnancy, pre-term birth	Infant mortality
Remoteness	Maternal health, access to health services, availability of nutritious food	Perinatal and infant mortality
Birth outcomes		
Low birthweight (which may be a result of fetal growth restriction, pre-term delivery or both)	Vulnerability to infections, pulmonary and gastrointestinal diseases	SIDS, stillbirth, perinatal mortality, infant mortality, child mortality (infectious diseases, congenital malformations)
Pre-term birth	Complications relating to immature organ development, such as lung and respiratory conditions	Perinatal, infant and child mortality
Post-birth		
Breastfeeding	Diarrhoea, infections and allergies Growth, development and health of infants and young children (such as malnutrition)	Infant mortality, diarrhoea mortality
Immunisation	Vaccine-preventable conditions	Infant and child mortality from vaccine-preventable conditions
Child safety	Intentional and unintentional injuries (for example, drowning, transport-related injuries, poisonings)	Infant and child mortality

STI = sexually transmissible infection; FASD = fetal alcohol spectrum disorders

Source: AIHW 2014.

2.3.2 Evidence from new AIHW analyses

Ideally, there would be indicators for each area in the conceptual framework to estimate their relative influence on child mortality, however there are limited data available.

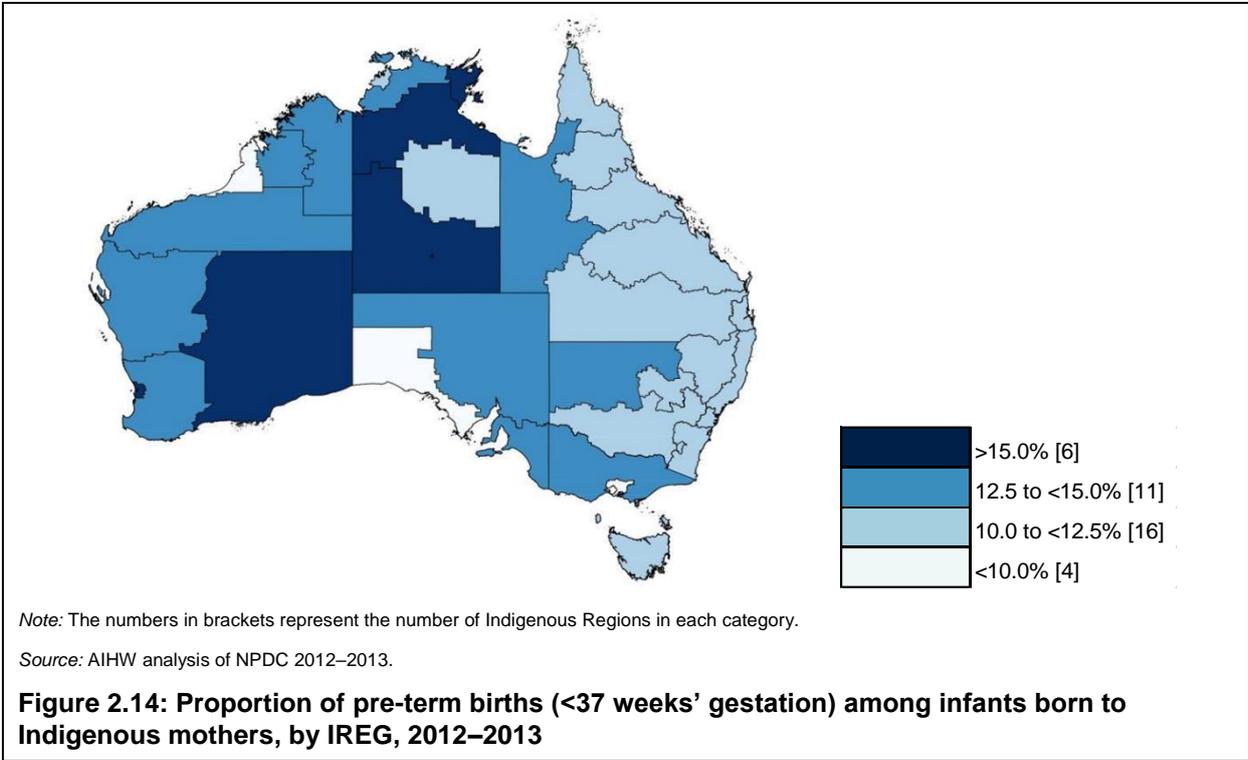
- National Perinatal Data Collection (NPDC) includes maternal health and birth outcomes—but does not include maternal education, nutrition or psychosocial issues.
- NPDC contains information on the SES of the area the mother resides (Socio-Economic Indexes for Areas—SEIFA)—but not information on the mother’s own SES.
- NATSISS includes retrospective data on factors such as diet and antenatal care use—but this is not a nationally representative of women who gave birth.
- The AIHW recently developed a linked perinatal, births and deaths data set that allows investigation on the effects of maternal factors and infant health on the likelihood of death during early childhood—but, there are no data on critical factors of maternal mental health, education, family relationships and social support, nor is it currently able to examine the quality and content of antenatal care.

Despite the data limitations some analyses can be undertaken.

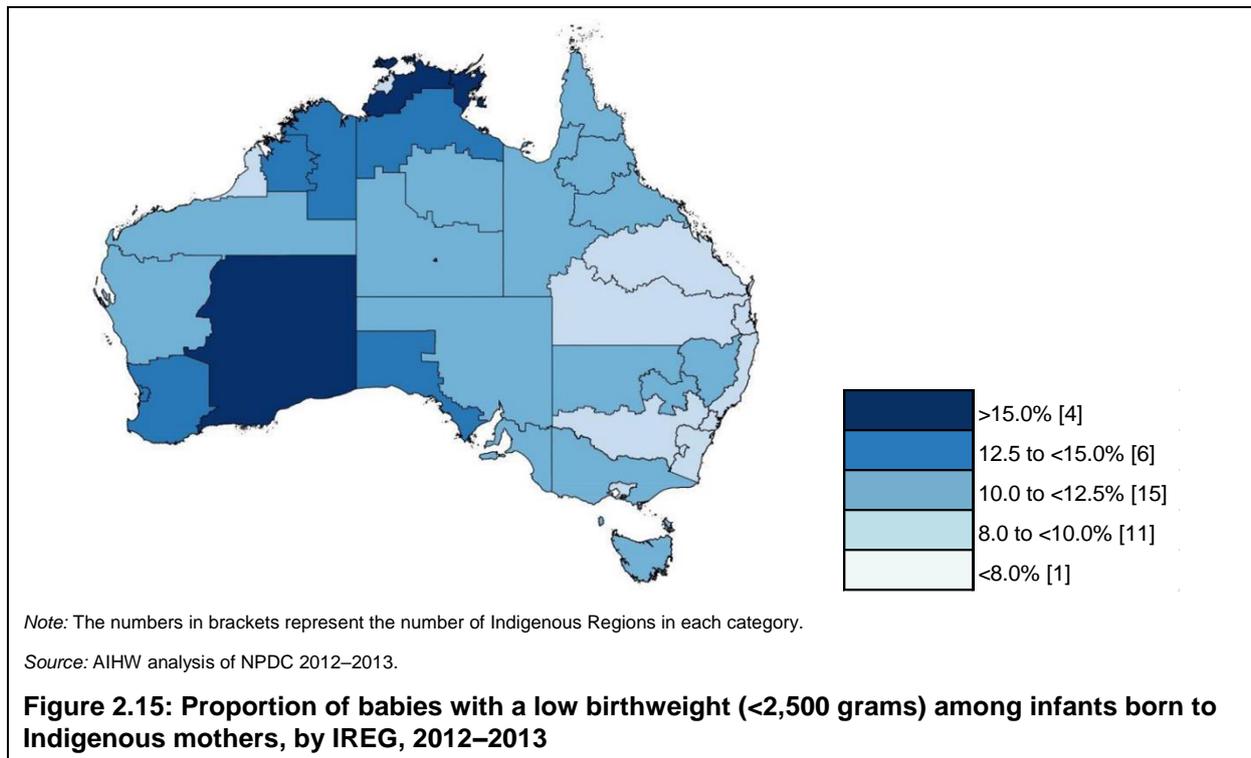
Spatial variation

The national rate of pre-term birth among infants born to Indigenous mothers is 14.0%, but there is considerable geographic variation. Analysis of the pre-term birth rate by Indigenous Region (IREG) shows that the rates vary from a low of 8.1% to a high of 19.3% (Figure 2.14).

Investigating areas with low rates of pre-term births may identify the factors associated with lower rates. For example, whether the risks vary across areas because the characteristics and risk factors of pregnant Indigenous women vary (for example, smoking, and SES) or due to contextual or service-level factors that promote better outcomes.



There is also spatial variation in area-level rates of smoking during pregnancy and low birthweight (low birthweight is shown in Figure 2.15).



Preliminary analysis of linked perinatal, births, deaths data

Using linked data for three jurisdictions (Western Australia, South Australia and the Northern Territory), a series of multivariate logistic regression models were run for each jurisdiction to examine the effects of maternal health, behaviours during pregnancy, remoteness and area SES on the likelihood of death prior to age 1.

Preliminary findings indicate that:

- babies who were born pre-term were significantly more likely to die than those born at 38 weeks or after
- babies whose mothers smoked during pregnancy were more likely to die in infancy than those whose mothers did not smoke (even when pre-term birth and small for gestational age were taken into account)
- neither the timing of antenatal care use or remoteness had a significant effect once other variables (such as maternal health and pre-term birth) were taken into account
- maternal health conditions were associated with pre-term delivery, admission to SCN/NICU and small for gestational age, but were not associated with infant death once those birth outcomes were controlled for.

This preliminary analysis highlights that there are two key factors associated with poor birth outcomes and infant mortality that present potential opportunities for progress: maternal smoking and pre-term birth. More research and reporting focused on understanding the factors responsible for pre-term delivery and the higher rates of pre-term births among Indigenous mothers, along with research into the factors that support women to reduce or refrain from tobacco use during pregnancy and after birth would provide valuable information.

National analyses of key factors associated with pre-term birth

The result from two sets of multivariate analyses on factors associated with pre-term birth using the NPDC are presented in Table 2.12. Model 1 includes both Indigenous and non-Indigenous mothers. Model 2 includes only Indigenous mothers, and is designed to capture which factors are associated with pre-term birth among Indigenous mothers.

The explanatory variables include remoteness, maternal age, SEIFA of mother's area of residence, antenatal care, maternal health variables, body mass, and smoking during pregnancy.

Model 1 (all mothers, with Indigenous status as an independent variable) shows that:

- all four of the maternal health factors are statistically significant, with odds ratios of:
 - 4.65 for pre-existing diabetes
 - 3.70 for pregnancy-induced hypertension
 - 1.96 for pre-existing hypertension (high blood pressure)
 - 1.47 for gestational diabetes
- women who smoked during pregnancy were 1.7 times as likely to have a pre-term birth as those who did not smoke, and women with no antenatal care were 1.8 times as likely to have a pre-term birth as those who attended antenatal care in the first trimester
- Indigenous mothers 1.5 times as likely to have a pre-term birth as non-Indigenous mothers.

Note that the relationship between explanatory variables may be difficult to disentangle; where strong associations exist, the importance of one variable may not be observed in the regression results. In addition, these analyses have not considered possible interactions between variables.

Further, using the odds ratios shown in Table 2.12 alone, it is not possible to compare the relative importance of the effects of the explanatory variables. To assess the relative importance, the logistic regression results of Model 1 have been used to estimate the change in the probability of pre-term birth associated with a change from the reference level of each of the explanatory variables. The relative importance of the explanatory variables is based on the absolute size of the associated changes in probability (see Appendix C for details). Based on this ranking method, the explanatory variables with relatively larger impacts on pre-term births of all mothers include mothers having diabetes or hypertension, being a smoker or living in the most disadvantaged areas.

Table 2.12: Multivariate logistic regression analysis: odds ratios of a birth being pre-term, 2014

Explanatory variable and reference group	Level	Model 1:	Model 2:
		All mothers	Indigenous mothers
Indigenous status (ref: non-Indigenous)	Indigenous	1.50 ^(a)	..
Remoteness (ref: Major cities)	Inner regional	0.96	1.09
	Outer regional	0.93	0.99
	Remote	0.85 ^(b)	1.01
	Very remote	0.92	1.01
	Maternal age (ref: 25–29)	<17	1.15	0.64^{(b)}
	18–19	1.28 ^(a)	0.91
	20–24	1.09 ^(b)	0.91
	30–34	1.08 ^(b)	1.26
	35–39	1.25 ^(a)	1.35
	40+	1.47 ^(a)	1.26
	Area level SEIFA (Index of Relative Socio-Economic Disadvantage; IRSD) (ref: Quintile 5 – most advantaged)	Quintile 1 – most disadvantaged	1.28 ^(a)	1.28
Quintile 2		1.14 ^(a)	1.19
Quintile 3		1.11 ^(a)	1.09
Quintile 4		1.05	1.06
Antenatal care (ref: antenatal care in the first trimester)		Antenatal care began after first trimester	0.97	1.09
	No antenatal care/not stated	1.83 ^(a)	3.04 ^(a)
Pre-pregnancy body mass (ref: Normal weight, BMI 18.5–24.9)	Underweight – BMI <18.5	1.41 ^(a)	1.79 ^(a)
	Overweight – BMI 25.0–29.9	0.88 ^(a)	0.67 ^(a)
	Obese – BMI 30.0 or more	0.87 ^(a)	0.57 ^(a)
Pre-existing diabetes (ref: did not have pre-existing diabetes)	Had pre-existing diabetes	4.65 ^(a)	3.90 ^(a)
Pre-existing hypertension (ref: did not have pre-existing hypertension)	Had pre-existing hypertension	1.96 ^(a)	1.98 ^(b)
Gestational diabetes (ref: did not have gestational diabetes)	Had gestational diabetes	1.47 ^(a)	1.30 ^(b)
Pregnancy-induced hypertension (ref: did not have pregnancy-induced hypertension)	Had pregnancy-induced hypertension	3.70 ^(a)	4.12 ^(a)
Smoking status (ref: did not smoke during pregnancy)	Smoked during pregnancy	1.67 ^(a)	1.32 ^(a)

.. = not applicable

(a) Significant at the $p < 0.01$ level.

(b) Significant at the $p < 0.05$ level.

Notes

1. Analysis includes data from Queensland, the Northern Territory, South Australia, Tasmania, and the Australian Capital Territory for the full year; data from Western Australia are included from July 1 onwards.

2. Included controls for jurisdiction.

Source: AIHW analysis of NPDC.

Model 2 shows that, among Indigenous mothers:

- there was no significant effect of remoteness once other factors were adjusted for in the model
- young maternal age was not associated with a higher likelihood of pre-term birth. This is consistent with the analysis of Steenkamp et al. (2017) of birth outcomes in the Northern Territory
- maternal health factors are significantly associated with pre-term birth, with odds ratios of:
 - 4.12 for pregnancy-induced hypertension
 - 3.90 for pre-existing diabetes
 - 1.98 for pre-existing hypertension (high blood pressure)
 - 1.30 for gestational diabetes
- Indigenous mothers with no antenatal care were 3.04 times as likely to have a pre-term birth as those who began care in the first trimester
- Indigenous mothers who were underweight were 1.82 times as likely to have a pre-term birth as those of normal weight, and those who smoked were 1.32 times as likely to have a pre-term birth as those who did not smoke (Table 2.12).

The explanatory variables with the relatively larger impacts on pre-term births of Indigenous mothers include pregnancy-induced hypertension, having a weight outside a normal BMI, having pre-existing diabetes, being a smoker and living in the most disadvantaged areas.

These results are preliminary. As New South Wales does not report BMI, women from this state were excluded from the model. Women from Victoria, and births that occurred in Western Australia before 1 July 2014 were also excluded due to the lack of availability of data on BMI.

Low birthweight

A multivariate analysis of perinatal data for the period 2012–2014 indicates that, excluding pre-term and multiple births, 51% of low birthweight births to Indigenous mothers were attributable to smoking, compared with 16% for non-Indigenous mothers (Table 2.13). Another 21% were attributable to the SES of the areas in which Indigenous mothers reside (as measured by SEIFA). Less than 5% (4.5%) were due to the remoteness of the areas in which Indigenous mothers live.

After adjusting for age differences and other factors, it is estimated that if the smoking rate among Indigenous pregnant women were the same as among non-Indigenous pregnant women, the proportion of low birthweight babies born to Indigenous women could be reduced by 40% (AIHW 2017a). Using this same method, and controlling for the same factors, if Indigenous mothers had the same distribution across SEIFA areas as non-Indigenous mothers, the low birthweight rate would be reduced by 9.4%.

Table 2.13: Adjusted burden and gap analysis of low birthweight among live born singleton term babies, by selected maternal characteristics and Indigenous status, 2012–2014^{(a)(b)(c)}

Variable	Adjusted ^(d) rate ratios (95% confidence interval)		Adjusted population attributable fraction ^{(d)(e)}				Adjusted potential impact fraction ^{(d)(f)}
	Indigenous	Non-Indigenous	Indigenous		Non-Indigenous		
			Summary	Summary	Summary	Summary	Summary
Age group of mother (years)							
Less than 20	0.92 (0.78,1.09)	0.99 (0.90,1.09)	-1.4	0.0			
20–24	REF	REF	REF	REF			
25–29	0.89 (0.76,1.03)	1.04 (0.99,1.10)	-2.9	-0.6	1.2	10.6	-6.3
30–34	1.07 (0.90,1.28)	1.12 (1.06,1.18)*	1.0		3.8		
35 and over	1.29 (1.06,1.58)*	1.30 (1.22,1.38)*	2.5		6.3		
Smoking during pregnancy							
Yes	3.24 (2.85,3.68)*	2.93 (2.81,3.06)*	50.9	50.9	16.0	16.0	40.0
No	REF	REF	REF	REF	REF	REF	
Socioeconomic status^(g)							
1st Quintile (most disadvantaged)	1.31 (0.92,1.87)	1.40 (1.32,1.49)*	13.1		7.5		
2nd Quintile	1.49 (1.04, 2.14)*	1.24 (1.17,1.32)*	10.9		4.6		
3rd Quintile	0.99 (0.67,1.45)	1.12 (1.06,1.19)*	-0.2	21.3	2.4	14.3	9.4
4th Quintile	0.97 (0.63,1.50)	1.07 (1.01,1.13)*	-0.2		1.4		
5th Quintile (least disadvantaged)	REF	REF	REF		REF		
Remoteness							
Major cities and inner/outer regions	REF	REF	REF	4.5	REF	-0.5	4.2
Remote and very remote regions	1.20 (1.06,1.37)*	0.73 (0.62, 0.86)*	4.5		-0.5		
Parity							
Primiparas	1.33 (1.16,1.52)*	1.69 (1.63,1.75)*	16.3	16.3		32.9	-3.3
Multiparas	REF	REF	REF	REF	REF		

REF = reference group

* Represents statistically significant differences at the $p < 0.05$ level

(a) Year refers to the year of birth.

(b) Table excludes births with missing maternal age, smoking status, SES, remoteness, Indigenous status and birthweight.

(c) Low birthweight is defined as birthweight of a live born infant of less than 2,500 grams.

(d) Adjusted for all other maternal characteristics in the table.

(e) Burden (%) = population attributable fraction.

(f) Gap (%) = potential impact fraction.

(g) Based on SEIFA Index of Relative Socioeconomic Disadvantage.

Source: AIHW 2017a.

2.4 Data limitations and measurement issues

Measurement of child mortality among Indigenous Australians requires accurate and timely data. Key data issues are discussed in this section.

2.4.1 Child deaths data

There are a range of issues affecting the count of Indigenous child deaths including:

- problems with the quality of Indigenous identification in the deaths data; Indigenous deaths data are reported only for five jurisdictions (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) and do not reflect the national picture. The remaining jurisdictions have lower levels of identification and a small number of Indigenous deaths. More work is needed to assess the potential feasibility of using adjustment factors to enable accurate estimates of Indigenous child mortality data for all states and territories to inform a national child mortality estimate (see, for example, AIHW 2012)
- the quality of Indigenous identification in deaths data over time has changed, resulting in challenges in accurately monitoring trends; improved identification over time may make it appear as if Indigenous child deaths rates are increasing, when it is the accuracy of reporting that is increasing. In order to dissociate improvements in Indigenous identification from improvements in mortality rates, scenario modelling that accounts for different levels of Indigenous identification can be used
- more work is needed to assess the potential feasibility of re-calculating the historical mortality rates to deal with the issues of under-identification of Indigenous child deaths in the NMD in the past
- small numbers; given the overall small number of child deaths, a minor change in the number of deaths can lead to large variability in rates over time.

2.4.2 Population and births data

There are a range of issues affecting the population denominators (ERP and live births) including:

- changes in Indigenous identification over time. For example, between the 2006 and 2011 Censuses the count of Indigenous people (on which the ERP denominators are based) increased by 21%, of which about one-third cannot be explained by demographic factors (such as births and deaths). An increased propensity to identify as Indigenous is thought to have contributed to part of the increase (ABS 2013)
- the known under-count of babies in the Census leading to under-reporting in the projections of Indigenous children aged 0–4 (the ABS plans to adjust for this in the 2016 Census)
- under-coverage in the birth registrations data set, which is the source of the denominator (live births) for infant death rates.

2.4.3 Cause of death classifications

There are issues relating to how ICD-10 classifications are used for defining pre-term related deaths and SUDI deaths:

- Current methods for classification of pre-term birth-related mortality that use only the ICD-10 codes of P00–P96 underestimate the impact of pre-term birth on infant mortality.

Because causes of death are not grouped according to their antecedents, there are causes of death that are directly related to short gestation (such as respiratory distress syndrome), but are not counted as conditions originating in the perinatal period. Measuring pre-term related mortality using a combination of ICD-10 codes may provide useful additional information.

- Definitions of SUDI are inconsistent within Australia. Sometimes SUDI deaths refer to those of SIDS (R95) and the ICD-10 code R99; other times, the term refers only to the R99-coded deaths. This makes comparisons difficult. These definitions also exclude a key category of deaths which is often considered a subset of SUDI—accidental suffocation and strangulation in bed (W75 deaths).

2.4.4 Data on key determinants

Opportunities also exist for improving existing data collections to understand the key determinants of child mortality, including:

- need for improved capture of factors in the pre-conception, pregnancy, delivery and early childhood periods that may influence childhood mortality outcomes—for example, diet and nutrition, exposure to stress, psychological distress, domestic violence, alcohol use during pregnancy, breastfeeding, immunisation, sleep-related behaviours
- improved knowledge on pre-term births. Work with the AIHW's linked perinatal, births, deaths data set to calculate gestation-specific survival rates and to analyse the individual and contextual factors that are associated with survival among pre-term births could provide additional information.

2.5 Bringing it together

2.5.1 An overview

The COAG target for child mortality is to halve the gap in mortality rates for Indigenous children under 5 (aged 0–4) by 2018.

The risk of child death is not distributed equally throughout infancy and early childhood. The majority of child deaths occur in the first year of life for both Indigenous and non-Indigenous children. Detailed age-at-death categories shows that for Indigenous infant deaths in the 5-year period 2011–2015:

- 40% occurred on the first day of life
- 9% occurred between 1 day and 1 week
- 13% occurred between 1 week and 1 month
- 20% occurred between 1 and 3 months
- 18% occurred between 3 months and 1 year.

Four causes account for 90% of the gap between Indigenous and non-Indigenous child mortality rates: conditions originating in the perinatal period (40% of the gap); SIDS and other unknown causes (26%); accidents, injuries and other external causes (18%); and diseases of the respiratory system (5%).

Based on available evidence, key drivers of child mortality relate to birth outcomes (for example, low birthweight), maternal health, maternal risk factors during pregnancy (for example, antenatal care use), and maternal SES and other social determinants.

2.5.2 Examples of opportunities for further progress

Many deaths of Indigenous children are potentially avoidable. These deaths include those that are:

- preventable—for example, through reducing smoking during pregnancy and improved road safety
- treatable—for example, asthma and some complications of labour and delivery.

There are two complementary approaches that could be used to reduce the incidence of these causes of death among Indigenous children: the first is to reduce the incidence/prevalence of the risk factors themselves, and the second is to mitigate the effects of those risk factors when they do exist. Examples of Indigenous child and family health approaches and a summary of successful Indigenous-specific programs are presented in Appendix D, Figure D1 and Table D1.

Drawing from the analysis presented in this chapter examples of opportunities for further progress are provided in this section. There is, however, a need for more robust evaluations of maternal and child health programs that target identified risk factors for Indigenous Australians (Productivity Commission 2015).

Reducing pre-term births

A number of the specific causes of Indigenous neonatal deaths are related to either pre-term labour/birth or poor fetal growth. Babies born before 37 completed weeks of pregnancy (pre-term) are at higher risk of death and long-term health conditions because they are born before their organs are fully developed.

Reducing pre-term births could be achieved through a broad population-based approach, or an approach targeted to high-risk population groups. Examples of both include:

- The Western Australian Pre-term Birth Prevention Initiative (broad population approach). This initiative provided education about new clinical guidelines to health-care professionals, undertook a public health campaign for women and families, and opened a dedicated Pre-term Birth prevention unit at the state's major hospital. This initiative was followed by a state-wide decline in pre-term birth rates (Newnham et al. 2017)
- the Philadelphia Collaborative Pre-term Prevention Project (targeted approach) focuses on women who have already had one pre-term birth to try to prevent future pre-term births. Risk factors are identified in six key areas: infection, periodontal disease, smoking, major depressive disorders, low literacy and housing instability, with services provided to cater for each of the needs (Webb et al. 2014).

Additional information on pre-term births are available in the AIHW's linked perinatal, births and deaths data set which will be used to calculate gestation-specific survival rates and analyse the individual and contextual factors that are associated with survival among pre-term births.

Reducing tobacco smoking

One of the strongest risk factors for poor birth outcomes and subsequent infant and child mortality is maternal smoking. Smoking is associated with three of the top four causes of death that underpin the gap between Indigenous and non-Indigenous child mortality rates—conditions originating in the perinatal period, SIDS and other unknown causes, and diseases of the respiratory system.

This priority area is consistent with ongoing efforts through the National Aboriginal and Torres Strait Islander Health Plan and the Tackling Indigenous Smoking initiative. Examples of programs and resources that support reducing smoking rates include:

- the Smoke-free Pregnancy program (part of the Deadly Choices program), which provides rewards and incentives for pregnant women who monitor and reduce their smoking (Deadly Choices 2017)
- the 'Quit for you, quit for two' program, which provides support and encouragement to help future mothers help give up smoking (Department of Health 2017).

Even after controlling for maternal health conditions, smoking during pregnancy had an independent effect on the likelihood of infant death. After adjusting for age differences and other factors, it is estimated that if the smoking rate among Indigenous pregnant women were the same as among non-Indigenous pregnant women, the proportion of low birthweight babies born to Indigenous women could be reduced by 40% (AIHW 2017a).

Reducing SIDS and other unexplained deaths

SIDS and other unknown causes account for nearly half of post-neonatal Indigenous deaths. The risk of death from these causes is highest in the 28 day to 3-month period, then declines over the rest of the first year. Example of programs providing culturally appropriate information on the risk of SIDS and sleep-related deaths include:

- 'Reducing the Risk of SUDI in Aboriginal Communities' program in Western Australia (Red Nose 2017)
- based on the higher risks of SUDI among babies with a child protection history, jurisdictions including New South Wales and Queensland have taken steps to ensure that Community Services staff members receive adequate training in identifying sleep risks and promoting safe sleep practices. (NSW CDRT 2014, 2016; Queensland Government 2012)
- the distribution of Pēpi-Pods (portable infant sleep spaces) to mothers aged 15–25 in Queensland across Indigenous communities to encourage safe sleeping (Queensland Government 2017; USC 2017).

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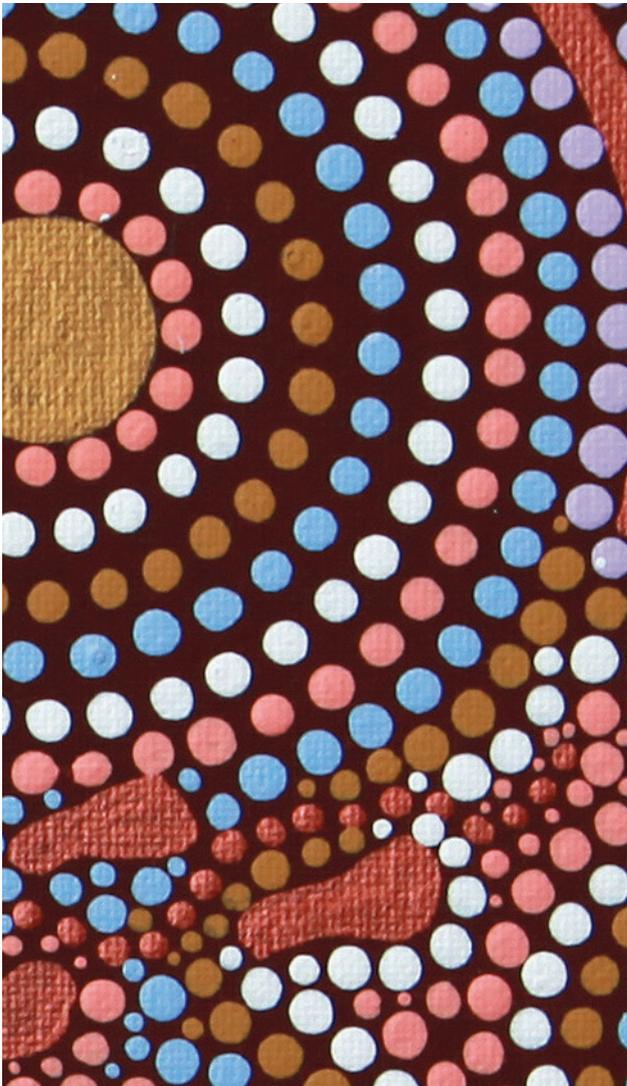
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Chapter **3**

Early childhood education target

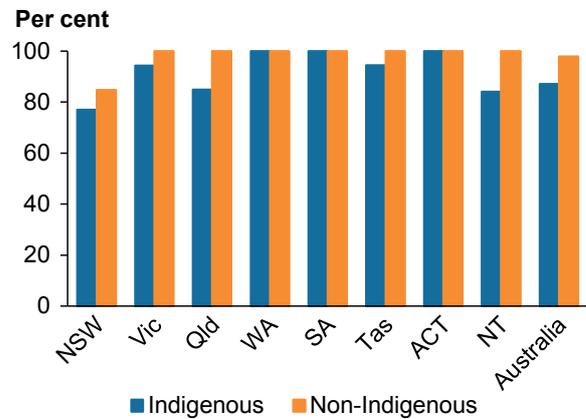


COAG target: Ninety-five percent of all Indigenous four-year olds are enrolled in early childhood education (by 2025).

Current picture

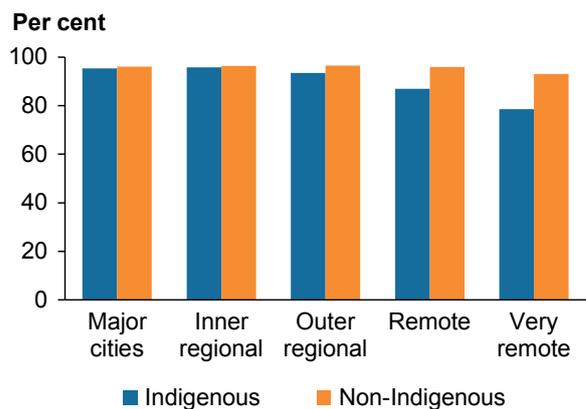
Data for the ECE target are available for the 2015 baseline only.

- In 2015, 87% of Indigenous children were enrolled in an ECE program in the year before full-time schooling (YBFS), compared to 98% of non-Indigenous children.
- Indigenous ECE enrolment rates varied by jurisdiction—rates were greater than 95% in Western Australia, South Australia and the Australian Capital Territory. In 2015, the lowest Indigenous ECE enrolment rates were in New South Wales (77%) and the Northern Territory (84%) (Figure 3a).
- In 2015, the Indigenous ECE attendance rate (among enrolled children) was 92% compared to 96% for non-Indigenous children.
- The proportion of children attending ECE was generally lower in *Remote* and *Very remote* areas compared with non-remote areas, with the difference more pronounced for Indigenous children (Figure 3b).
- The gap between Indigenous and non-Indigenous children in ECE attendance was largest in *Remote* (9 percentage points) and *Very remote* (14 percentage points) areas.



Source: SCRGSP 2016.

Figure 3a: Proportion of children enrolled in an ECE program in the year before full-time schooling, by Indigenous status and state and territory, 2015



Source: SCRGSP 2016.

Figure 3b: Proportion of enrolled children attending an ECE program for at least 1 hour per week in the year before full-time schooling, by Indigenous status and remoteness, 2015

Has there been progress?

- At the time of analysis for this report, only baseline data for 2015 were available, and an assessment of progress could not be made. Since finalising the analysis for this report, more recent data for 2016 have become available and indicate that the target is on track.

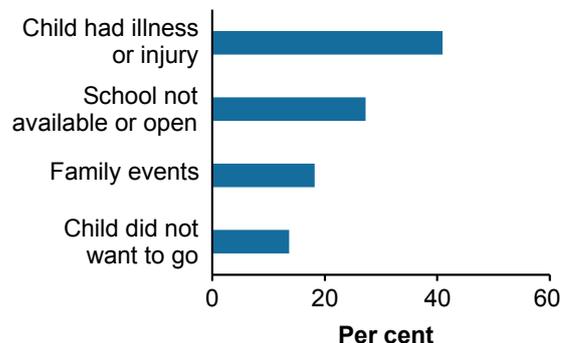
Additional analysis and key drivers

Available evidence suggests that key drivers of ECE enrolment include:

- higher family SES—for example, education and employment status of main carer
- learning environment—for example, greater cultural support (such as staff being trained to develop an understanding and appreciation of Indigenous values and protocols) and quality ECE programs
 - higher quality programs support a more successful transition to school.
 - the proportion of centre-based services assessed as exceeding national quality standards decreases with remoteness.

Other factors impacting on ECE enrolment include accessibility of ECE programs (for example, cost) and the health of the child.

- For example, child illness or injury was the main reason (41%) given by carers for why Indigenous children missed days of ECE in the previous week (Figure 3c).



Source: AIHW analyses of LSIC Release 7 data.

Figure 3c: Reasons reported by primary carer for child missing days of ECE in the last week, Indigenous children, 2011–2012 (%)

Data limitations and measurement issues

Data issues for consideration include:

- possible misalignment between Indigenous identification in the numerator and denominator
- the methodology used to derive ECE enrolment rates, which results in rates for some jurisdictions exceeding 100%
- the potential double counting across child care and ECE services (numerator)
- a reliance on Indigenous population projections for a single age group (denominator)
- different school start dates across jurisdictions.

The supplementary measure on ECE attendance is also impacted by data issues affecting the enrolment rate as enrolments are the denominator for calculating attendance rates.

3.1 Background

Early Childhood Education (ECE) programs promote school readiness and are associated with better outcomes at school, in employment and beyond (AIHW 2015a; PM&C 2017; Dockett et al. 2010; Garces et al. 2002).

Analysis of data from the Longitudinal Study of Indigenous Children (LSIC) suggests that ECE promotes a range of cognitive and developmental outcomes (Arcos Holzinger & Biddle 2015). Other studies show that ECE attendance positively impacts on Year 3 National Assessment Program—Literacy and Numeracy (NAPLAN) results (an estimated increase of around 10 to 20 points) (DEECD & Melbourne Institute of Applied Economic and Social Research 2013). Further, findings from the Programme for International Student Assessment (PISA) show that, after controlling for socioeconomic background, students aged 15 who had attended ECE for at least 1 year out-performed those who had not (OECD 2014).

Analysis of data from the Australian Early Development Census (AEDC) indicates that children who attend preschool are more likely to be developmentally on track at school entry. For example:

- using data from the 2009 and 2012 AEDC in New South Wales, Jorgensen et al. (2017) found that Indigenous children who attended preschool were significantly more likely to be developmentally ‘on track’ in four of the five domains, compared with Indigenous children who did not attend preschool.
- using data from the 2009 AEDC, Biddle & Bath (2013) found that for Indigenous children, the average number of domains on which the child was classified as being developmentally vulnerable was lower for children who attended ECE in the year before starting school (1.0 compared with 1.2 domains). This was higher than for non-Indigenous children (0.6 domains for non-Indigenous children who attended ECE in the year before schooling, and 0.8 domains for those that did not attend).

Biddle & Bath (2013) found that whether the child attended ECE in the year before schooling was significantly associated with development vulnerability, even after controlling for factors such as the child’s sex, SES and the remoteness area in which the child lived.

PricewaterhouseCoopers (2014) modelling indicates that increasing the number of children from disadvantaged or vulnerable backgrounds in ECE promotes positive outcomes—for both those children and society—in the form of reduced future costs associated with education, the justice system and health care.

In December 2015, COAG agreed to a new ECE Closing the Gap target. The previous target, which focused on access to ECE for Indigenous children aged 4 in remote communities, was set in 2008 and expired unmet in 2013. The new target has a national focus—specifically, that 95% of all Indigenous children aged 4 be enrolled in early childhood education (by 2025)—see Box 3.1.

Box 3.1: Early Childhood Education—Closing the Gap target and data sources

The COAG target for ECE: Ninety-five percent of all Indigenous four-year olds are enrolled in early childhood education (by 2025).

There are two measures for this target:

- Main—the proportion of children *enrolled* in a preschool program in the year before full-time schooling (YBFS).
- Supplementary—the proportion of children *attending* a preschool program in the year before full-time schooling (YBFS) (for at least one hour in the reference week).

The key data source for measuring progress towards the target is the annual ABS National Early Childhood Education and Care Collection (NECECC) compiled from state and territory administrative data.

The target measures relate to children in the year before full-time schooling; it is difficult to accurately measure this cohort; for example, because of variation in school starting ages by jurisdiction (see Appendix Table D2 for school starting ages). For the 2015–16 cycle of COAG NIRA performance reporting, state-specific adjustments were made to the data to more accurately capture the YBFS cohort (including: addressing numerator and denominator misalignments for age and location; removing from the denominator, children already in school; adjustment for Indigenous status not stated). This resulted in a new baseline for 2015 and these data are reported on in this chapter (SCRGSP 2016). At the time of analysis, only 2015 data were available for inclusion in this chapter.

Consistent with official NIRA terminology, the term ECE program is used for the remainder of this chapter to describe a formal preschool program provided by a qualified teacher.

Additional key data sources used in this chapter

The LSIC collects data on Indigenous children relating to health, learning and development, family, and community. Two groups used in this chapter are the B cohort (children aged 6 to 18 months at study commencement) and the K cohort (3½ to 5 years at study commencement) (DSS 2015). This chapter analyses LSIC Release 7 for the B cohort who were of the right age for attending ECE at the time of the Wave 4 and 5 data collection.

For further information on these and other data sources used in the report, see Appendix F.

This chapter provides detailed information on ECE, including:

- current rates and progress towards the COAG target
- differences by geographic areas and other characteristics
- identification of key drivers based on evidence from the literature and new data analysis by the AIHW
- a discussion of data limitations and measurement issues.

3.2 Current picture and progress

At the time of analysis for this report, only 2015 baseline data were available and an assessment of progress could not be made. Since finalising the analysis for this report, data for 2016 have become available; these newly available data, reported in the *Closing the Gap Prime Minister's Report 2018* (PM&C 2018), indicate that the target is on track.

3.2.1 National data on enrolment and attendance

In 2015, ECE enrolment and attendance rates for Indigenous children were below the rates for non-Indigenous children. The Indigenous ECE enrolment rate in the YBFS was 87% compared with 98% for non-Indigenous children. The Indigenous ECE attendance rate (among enrolled children) was 92% compared with 96% for non-Indigenous children (SCRGSP 2016).

3.2.2 Enrolment and attendance by state and territory

Enrolment

In 2015, enrolment rates for Indigenous children were greater than 95% in Western Australia, South Australia and the Australian Capital Territory (Table 3.1). Two jurisdictions, Victoria and Tasmania, were also close to this rate, having 94% of children enrolled in ECE. The remaining three jurisdictions—New South Wales (77%), Queensland (85%) and the Northern Territory (84%)—enrolled a lower proportion of Indigenous children. For non-Indigenous children, the 2015 ECE enrolment rates were consistently at or above 100% of the potential population in the YBFS, and only New South Wales enrolled less than 100% of non-Indigenous children (Table 3.1) (SCRGSP 2016).

Table 3.1: Children enrolled in an ECE program in the YBFS, by state and territory and Indigenous status, 2015^(a)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Indigenous									
Enrolled ^(b)	3,862	1,145	4,072	2,181	1,020	580	187	1,185	14,232
Potential population ^{(c)(d)}	5,017	1,214	4,794	2,073	907	614	151	1,405	16,337
Proportion enrolled (%) ^(e)	77.0	94.3	84.9	100.0	100.0	94.5	100.0	84.3	87.1
Non-Indigenous									
Enrolled ^(b)	78,342	74,445	58,782	31,972	19,472	5,623	5,500	2,254	276,389
Potential population ^(f)	92,443	71,998	54,678	31,661	18,876	5,504	5,062	2,123	282,345
Proportion enrolled (%) ^(e)	84.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.9

(a) In the NECECC, there are some children whose Indigenous status is not stated (or inadequately defined). In the estimation of counts and proportion of children enrolled, these children are apportioned to either the Indigenous or non-Indigenous category in proportion to the children whose Indigenous status is recorded. Overall, this relates to 3.3% of all children nationally.

(b) Counts of children enrolled in some states and territories may be underestimated in 2015 due to under-reporting of long day care centres providing an ECE program to enrolled children.

(c) The number of all Indigenous children enrolled in school in 2015 have been subtracted from these populations (4,432 in NSW, 321 in Qld, 75 in SA, 6 in WA and 27 in the NT). No subtraction was necessary for the remaining jurisdictions.

(d) For 2015, the base population before adjustment is based on the average population projections of children aged 4 for 2014 and 2016. This is to account for the anomaly in under-counts for infants in the 2011 Census.

(e) Proportions exceeded 100% in some jurisdictions and in these instances, the proportions are presented as 100%.

(f) Non-Indigenous potential population denominator data are calculated by subtracting the Indigenous population denominator from the total population (including deductions for children in the target age ranges who are enrolled in school).

Source: SCRGSP 2016.

Attendance

The 2015 data on ECE attendance rates for children in the YBFS are given in Table 3.2. They show ECE attendance rates for Indigenous children at the national level was 92% (of enrolled children attending at least one hour in the reference week). The attendance rates for Indigenous children in Western Australia (88%) and the Northern Territory (73%) were below the national rate of 92%. For non-Indigenous children, Victoria (94%) and the Northern Territory (94%) were below the national rate of 96%. Therefore, the Northern Territory has a comparatively low ECE attendance for both Indigenous and non-Indigenous children (SCRGSP 2016).

Of the jurisdictions meeting a 95% Indigenous enrolment rate in 2015 (from Table 3.2), South Australia and the Australian Capital Territory had the highest attendance rates (97% and 95% of Indigenous children attending, respectively). In comparison, the Northern Territory had the second lowest Indigenous enrolment rate and the lowest Indigenous attendance rate.

Table 3.2: Enrolled children attending an ECE program for at least 1 hour per week in the YBFS, by state and territory and Indigenous status, 2015^{(a)(b)}

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Indigenous									
Attending (≥1 hour)	3,605	1,053	3,834	1,899	989	530	173	859	12,942
Enrolment denominator	3,787	1,144	4,053	2,160	1,016	541	183	1,176	14,061
Proportion attending (≥1 hour) (%)	95.2	92.0	94.6	87.9	97.3	98.0	94.5	73.0	92.0
Non-Indigenous									
Attending (≥1 hour)	74,547	70,125	56,142	30,600	19,115	5,168	5,345	2,110	263,152
Enrolment denominator	76,836	74,277	58,511	31,679	19,400	5,243	5,467	2,237	273,651
Proportion attending (≥1 hour) (%)	97.0	94.4	96.0	96.6	98.5	98.6	97.8	94.3	96.2

(a) Excludes children whose Indigenous status is not stated or inadequately defined. Consequently, the numbers in this table may differ to numbers in other tables where children with not stated or inadequately defined Indigenous status are apportioned to either the Indigenous or non-Indigenous categories.

(b) Counts of children enrolled or attending in some states and territories may be underestimated due to under-reporting of long day care centres providing an ECE program to children enrolled.

Source: SCRGSP 2016.

Changes in ECE participation of Indigenous and non-Indigenous children can also be analysed by using the AEDC data. For example, O'Connor et al. (2016) tracked Indigenous and non-Indigenous rates of attendance of 'any preschool' in the year before schooling between the 2009 and 2012 AEDC collections. They found that the proportion attending was stable for both Indigenous (around 60%) and non-Indigenous (around 74%) children. AEDC data show that for all Australian children, the preschool attendance rate was steady between 2009 and 2012 (at around 81%), but increased to 91% between 2012 and 2015 (AEDC 2017). (Different methodologies are used across these sources however, the stability between 2009 and 2012 is consistent).

3.2.3 Attendance by remoteness

Attendance rate data are available nationally by remoteness. Data are not available under the revised method for enrolment rates by remoteness, due to the lack of a reliable method for calculating the potential population estimates by remoteness.

Attendance

The proportion of children attending ECE in the YBFS is generally lower in *Remote* and *Very remote* areas compared with more urbanised areas, with the difference more pronounced for Indigenous children. In 2015, the Indigenous attendance rates in *Remote* and *Very remote* areas were 87% and 79%, respectively, compared with between 94% and 96% in non-remote areas (Table 3.3). Attendance rates for non-Indigenous children were also lowest in *Very remote* areas. However, the 3.5 percentage point difference between *Very remote* areas and *Outer regional* areas (the area with the highest rate) for non-Indigenous children was much lower than the 17 percentage point difference between *Very remote* areas and *Inner regional* areas for Indigenous children.

Table 3.3: Enrolled children attending an ECE program for at least 1 hour per week in the YBFS, by remoteness and Indigenous status, 2015^{(a)(b)}

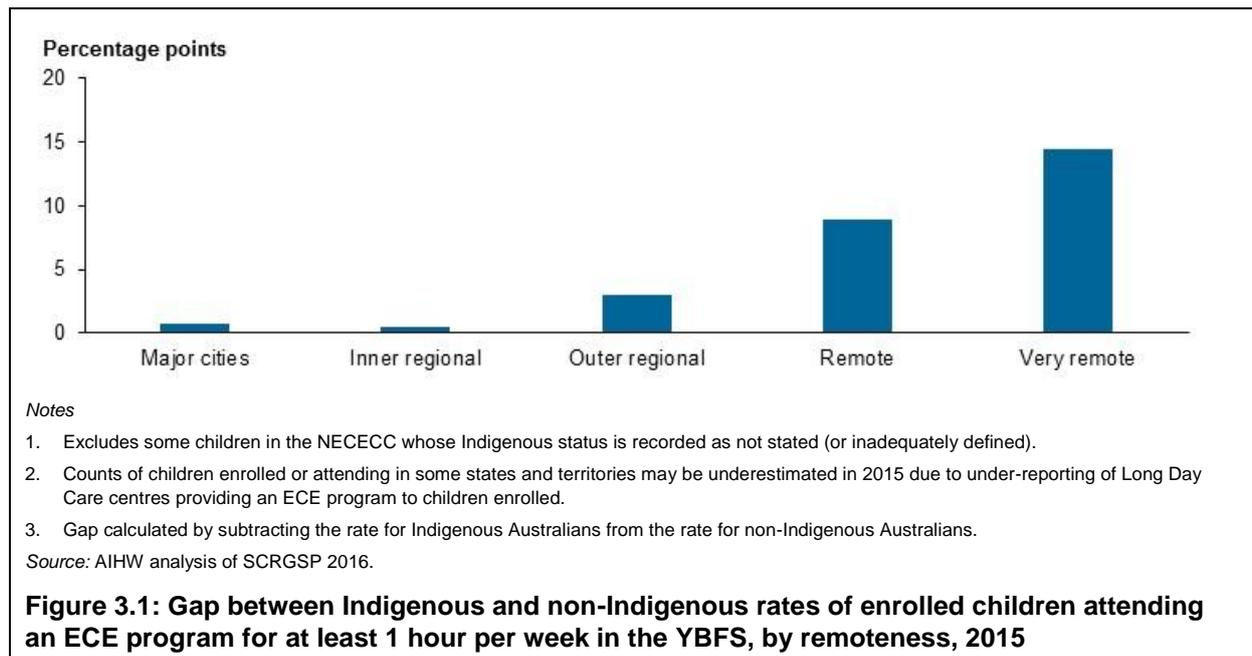
	Major cities	Inner regional	Outer regional	Remote	Very remote
Indigenous					
Attending (≥1 hour)	4,380	3,129	3,226	1,009	1,220
Enrolment denominator	4,593	3,267	3,452	1,160	1,553
Proportion attending (≥1 hour) (%)	95.4	95.8	93.5	87.0	78.6
Non-Indigenous					
Attending (≥1 hour)	188,372	48,447	22,036	3,268	1,044
Enrolment denominator	196,003	50,288	22,841	3,409	1,123
Proportion attending (≥1 hour) (%)	96.1	96.3	96.5	95.9	93.0

(a) Excludes some children in the NECECC whose Indigenous status is recorded as not stated (or inadequately defined).

(b) Counts of children enrolled or attending in some states and territories may be underestimated in 2015 due to under-reporting of long day care centres providing an ECE program to children enrolled.

Source: SCRGSP 2016.

In 2015, the gap between Indigenous and non-Indigenous children in ECE attendance was largest in *Remote* (8.9 percentage points) and *Very remote* (14 percentage points) areas (Figure 3.1).

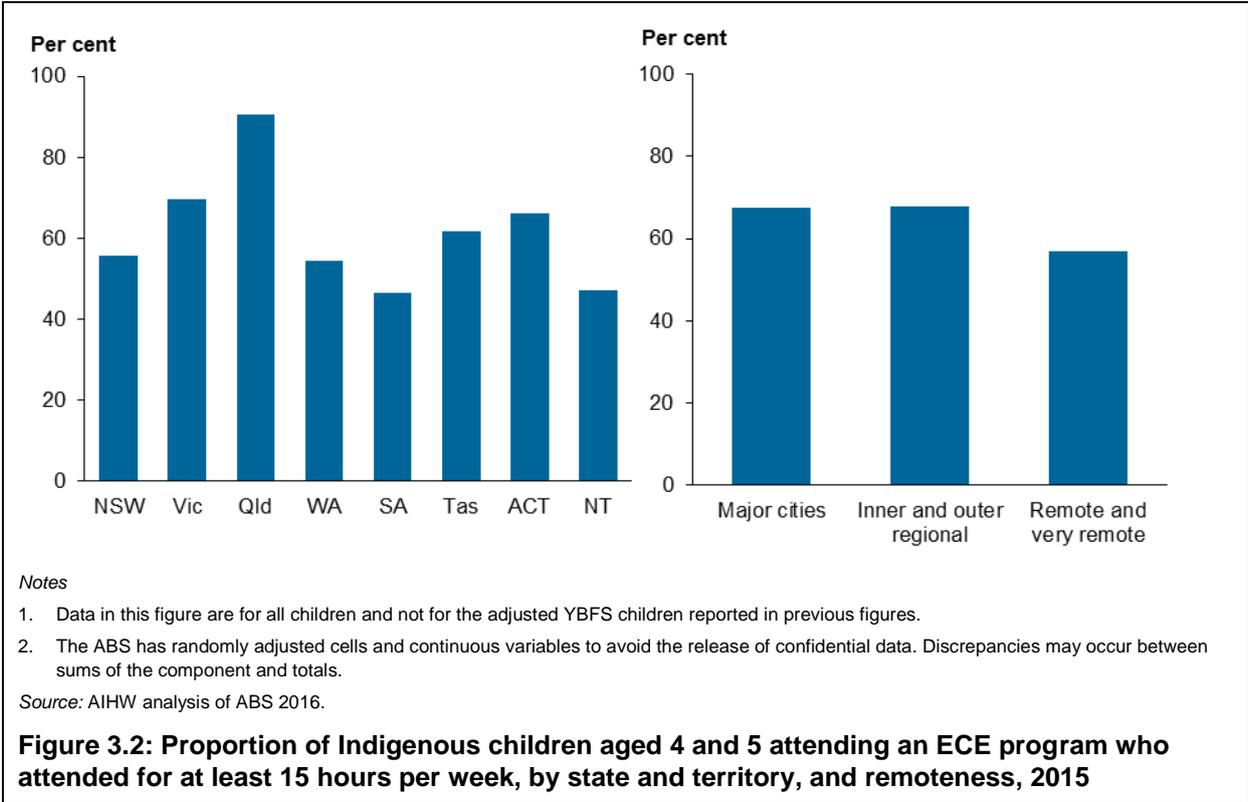


Weekly hours of attendance

The COAG objective of universal access provides for access to a quality ECE program for all children in the YBFS for up to 15 hours per week.

In 2015, among all Indigenous children aged 4 and 5 (that is, broader than the YBFS cohort) who were attending ECE for at least 1 hour per week:

- two-thirds (66%, or about 9,300 children) attended for 15 hours or more
- across the states and territories, the proportion ranged from 47% (in both Northern Territory and South Australia) to 90% in Queensland
- across remoteness areas, the proportion was lower in *Remote and very remote areas* (57%) compared with *Major cities* (67%) and *Inner and outer regional areas* (68%) (Figure 3.2).



3.3 Key drivers of participation in ECE

The scope of this section is not exhaustive—it highlights key relationships identified in the literature (including previously published AIHW material) and presents new modelling related to ECE. The modelling results are limited by the coverage of the variables in the data sets used.

3.3.1 Evidence from the literature

Socioeconomic status

The association of socioeconomic factors with ECE attendance depends on the component being measured (for example, income, education, employment) and the level of measurement (for example, individual, household or family, and geographic area). For example:

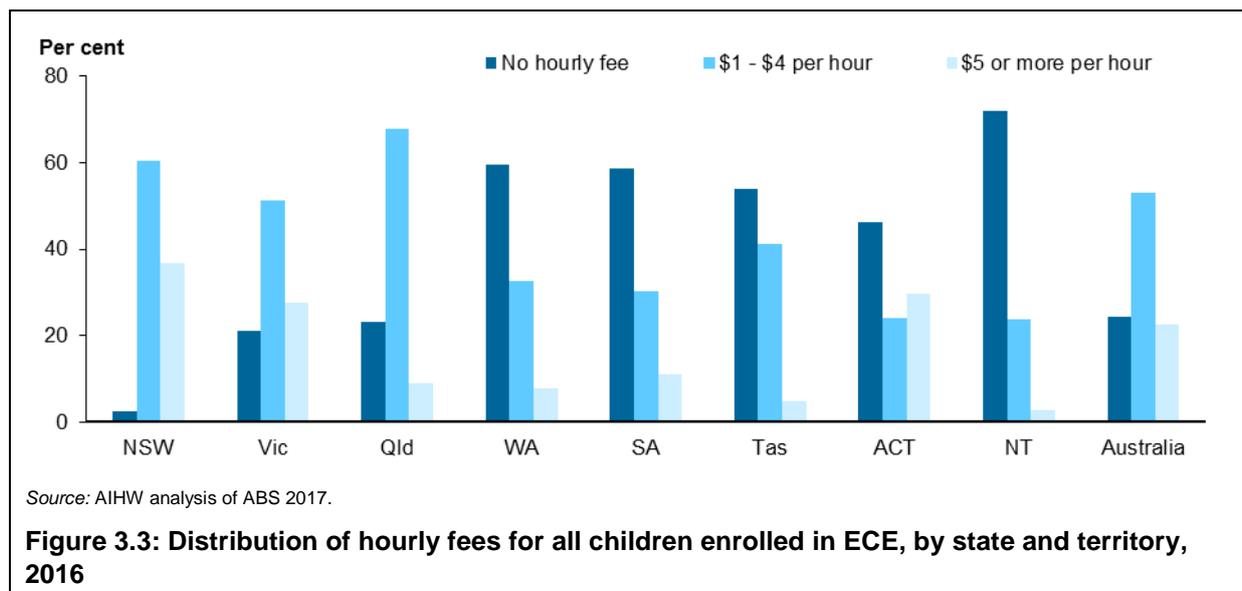
- Hewitt and Walter (2014) found that socioeconomic characteristics of the primary carer were not significantly associated with ECE attendance. The authors noted that the socioeconomic factors of other household members (or the household as a whole) may be more important
- other analysis indicates that lower household income and education levels of parents does explain, to some extent, lower levels of ECE attendance for Indigenous children (Biddle 2007)
- at the Indigenous area level, results using the Indigenous Relative Socioeconomic Outcomes index (IRSEO) indicate that there is greater attendance in areas that are in the second and third quartiles (that is, the middle groups) of socioeconomic disadvantage. In interpreting their finding, Biddle and Bath (2013) note that access issues may explain lower participation rates in more disadvantaged areas, while cost issues or other childcare options may contribute in more advantaged areas.

Accessibility—cost of service

The cost of an ECE program is one factor parents report as affecting their decision not to enrol their children (DSS 2015). Nationally in 2016, almost one-quarter (24%) of enrolled children were in fee-free ECE programs, while 53% were enrolled at a cost of \$1–\$4 per hour, and 23% at \$5 or more per hour (ABS 2017).

Figure 3.3 shows that for all children (both Indigenous and non-Indigenous combined) enrolled in ECE, New South Wales (2.5%) had a substantially lower proportion of children in fee-free programs followed by Victoria (21%) and Queensland (23%). In contrast, the Northern Territory (72%), Western Australia (60%), South Australia (59%), Tasmania (54%) and the Australian Capital Territory (46%) had higher proportions of fee-free enrolments for all children.

Considering the high proportion of Indigenous adults living in households in the lowest income quintile (for example, 36% in 2014–15, compared with 17% of non-Indigenous adults) (AIHW 2017), further analysis may provide more insight into the impact of cost as a barrier for Indigenous children accessing ECE.



Health of the child

A higher proportion of Indigenous children have poorer health than non-Indigenous children, including higher rates of long term conditions such as chronic obstructive pulmonary disease, ear and hearing problems, and eye and vision problems (AIHW 2015b). In 2011, among Indigenous children aged 0–4, three main causes were responsible for around two-thirds of the years of healthy life lost due to poor health; infectious diseases, blood and metabolic disorders and respiratory conditions (such as asthma) (AIHW 2016). Through improving their health, it may be possible to increase the number and proportion of Indigenous children able to participate fully in ECE.

The health of the child is considered in further detail as part of analysis of LSIC data presented in Section 3.3.2.

Quality learning environment

For an ECE program to be effective, it is important that it is of high quality; that is, it provides a safe, nurturing environment, with qualified teachers, suitable staff-to-student ratios, a comfortable learning space, and good developmental and learning experiences (ACECQA 2017b). High quality ECE programs support a more successful transition into formal schooling and often result in improved performance in standardised school testing, such as NAPLAN (DEECD & Melbourne Institute of Applied Economic and Social Research 2013; Productivity Commission 2014). The qualifications of ECE teachers are also important, with children whose teacher had a diploma or degree in ECE or child care gaining the most from attending ECE (DEECD & Melbourne Institute of Applied Economic and Social Research 2013).

Conversely, programs of low quality may have negative effects on children, particularly on non-cognitive outcomes such as self-esteem, motivation and self-control (Arcos Holzinger & Biddle 2015). These factors have an impact not only on educational attainment but also on employment, income, and involvement in crime, particularly for individuals from low socioeconomic backgrounds (Carneiro et al. 2007). Improving the quality of ECE programs may increase the number and proportion of Indigenous children able to fully participate in ECE.

The National Quality Framework (NQF) was introduced in 2012 to improve the quality in Australian ECE centres and to promote continual improvement and consistency in early

childhood education and care services. One aspect of the NQF, the National Quality Standard (NQS), represents a benchmark for services. Seven Quality Areas are included:

- educational program and practice—developing a culture of learning, supporting agency, and be part of reconciliation
- children’s health and safety—toileting and nappy changing principles and practice
- physical environment—keeping pets in education and care services, and the environment as the third teacher
- staffing arrangements—belonging, being and becoming for educators
- relationships with children
- collaborative partnerships with families and communities—building partnerships with families
- leadership and service management—educational leadership and team building.

ECE providers are assessed against each of these seven Quality Areas and given an overall rating to encourage continual quality improvement—these ratings are: Significant Improvement Required, Working Towards NQS, Meeting NQS, Exceeding NQS or Excellent (ACECQA 2012).

Overall quality rating results

In the first quarter of 2017, 13,663 ECE services (88%) operating across Australia had a quality rating. Of these, 9,934 services (72%) were rated as ‘Meeting NQS’ or ‘Exceeding NQS’ by the Australian Children’s Education and Care Quality Authority, and 53 services (0.4%) were rated as ‘Excellent’ (Table 3.4) (ACECQA 2017a). These results indicate that over one-quarter (27%) of Australian ECE services have room for improvement in working towards providing a quality learning environment. Of the 1,959 services that had a reassessment, 61% improved their overall quality rating (ACECQA 2017a).

Overall quality ratings of centre-based services, by remoteness

As shown in Section 3.2, ECE attendance rates are lower in remote areas. In 2017, the proportion of ECE centre-based services assessed by the ACECQA as meeting or exceeding the NQS was also lower in remote areas (Figure 3.4). In the first quarter of 2017, *Very remote* areas had the lowest proportion of services rated as meeting or exceeding NQS (58%) and the highest proportion (42%) rated as working towards NQS (Figure 3.4).

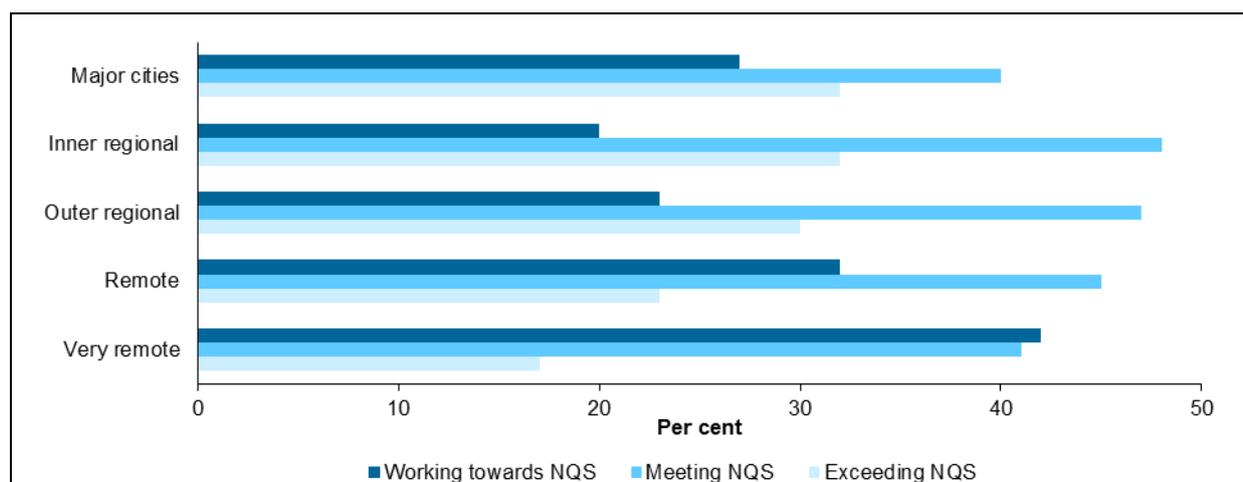
Table 3.4: Number of services with overall quality rating results, by rating and state and territory, Quarter 1, 2017

	Significant improvement required	Working towards NQS		Meeting NQS		Exceeding NQS		Excellent	Total
	Number	Number	%	Number	%	Number	%	Number	Number
NSW	24	1,550	33.0	1,872	39.9	1,233	26.3	13	4,692
Vic	12	645	17.0	1,835	48.4	1,288	34.0	8	3,788
Qld	2	608	23.0	1,191	45.1	825	31.2	16	2,642
WA	0	352	37.4	361	38.3	227	24.1	2	942
SA	0	281	32.4	205	23.6	376	43.4	5	867
Tas	0	55	24.8	89	40.1	78	35.1	0	222
ACT	1	108	35.4	65	21.3	124	40.7	7	305
NT	0	91	44.4	81	39.5	31	15.1	2	205
Australia	39	3,690	27.0	5,699	41.7	4,182	30.6	53	13,663

Notes

1. Quarter 1 results were taken from the National Quality Agenda IT System on 1 April 2017 for the period ending 31 March 2017.
2. For reliability reasons due to small numbers, percentages for the 'Significant improvement required' and 'Excellent' ratings have not been calculated.

Source: ACECQA 2017a.



Notes

1. A centre-based service is an education and care service other than a family day care service. This includes most Long Day Care centres, ECE and outside school hours care services that are delivered at a centre. It does not include ECE services out of scope of the NQF in Tasmania or Western Australia, as well as other services not regulated under the National Law.
2. A total of 100 centre-based services with an address but unable to be assigned to a remoteness category.

Source: ACECQA 2017a.

Figure 3.4: Proportion of centre-based services working towards, meeting and exceeding NQS, by remoteness, Quarter 1, 2017

Culturally appropriate learning environment

Evidence indicates that having a culturally appropriate environment, as well as a positive ECE learning environment, may facilitate desirable ECE outcomes for Indigenous children. The Productivity Commission (2014) noted that the increased inclusion of Indigenous children may be facilitated through greater cultural support—such as staff being trained to develop an understanding and appreciation of Indigenous values and protocols, and using educational material that reflects the culture, values and significant events important to the local Indigenous community. Increased employment of local Indigenous people within the ECE environment may also promote the delivery of culturally appropriate services.

Hewitt and Walter (2014) note that it is important to consider the distinct social, cultural and physical environments in which Indigenous people live, rather than grouping diverse Indigenous Australians together as one. In creating a culturally welcoming environment, it is important to consider that specific practices may differ from one Indigenous region to the next. Efforts to shape a culturally appropriate environment could draw through lessons learned from Indigenous specific ECE programs or those that have an Indigenous focus (for example, Families as First Teachers, Foundations of Success, and the Home Interaction Program for Parents and Youngsters) (Bowes & Grace 2014).

3.3.2 Evidence from AIHW analysis of the LSIC

Based on analysis of LSIC data for the younger (B) cohort, this section presents information on factors that influence whether a child attends preschool. Logistic regression modelling has been used for this analysis—see Box 3.2 for details and important data considerations.

Box 3.2: Logistic regression analysis of preschool participation using LSIC data

Logistic regression analysis of data for the B cohort of LSIC children was carried out to investigate factors associated with participation of Indigenous children in ECE. The B cohort of LSIC were of the correct age to attend ECE during the Wave 4 and Wave 5 survey interviews (conducted in 2011 and 2012). Multi-wave data relating to around 640 B cohort children could be assessed to determine whether a child was ever reported as going to preschool. For this sample, around 75% were ever-reported to have been in preschool in Waves 4 or 5.

Key limitations of the analysis

All regression results with LSIC data should be interpreted with caution due to the small sample sizes and the unrepresentative nature of the LSIC sample (children are sampled from only 11 sites around Australia).

The relationship between explanatory variables may be difficult to disentangle; where strong associations exist, the importance of one variable may not be observed in the regression results. In addition, this analysis has not considered possible interactions between variables.

The results of the analysis show that ECE participation was significantly more likely for children who:

- had a main carer who was employed
- lived in a household with mid-level or high income
- had a primary carer with a Diploma or Bachelor degree
- lived in less disadvantaged areas (based on IRSEO) (Table 3.5).

Table 3.5: Multivariate logistic regression analysis: odds ratios of participating in ECE, Indigenous children, 2011–2012

Explanatory variable and reference group	Level	Odds ratio estimate	Lower 95% CI	Upper 95% CI
Child's sex (ref: male)	Female	1.13	0.75	1.72
Child's dominant language (ref: English)	Indigenous language	0.97	0.3	2.62
Sex of primary carer (ref: female)	Male	0.98	0.24	4.09
Indigenous status of primary carer (ref: Indigenous)	Non-Indigenous	2.91 ^(a)	1.45	5.86
Age of primary carer (ref: 30 years or more)	Less than 30 years	0.88	0.57	1.35
Employment status of primary carer (ref: not employed)	Employed	1.63 ^(b)	0.96	2.77
Household status of second parent (ref: does not live in same household)	Lives in same household	1.51	0.72	3.19
Household income (ref: low-level)	Mid-level	2.14 ^(b)	1.03	4.45
	High-level	2.27 ^(b)	1.02	5.05
Isolation (ref: low level)	High or moderate level	0.61	0.31	1.17
Number of children's books in household (ref: 10 or more)	Less than 10	0.67	0.39	1.17
Level of Disadvantage based on IRSEO (ref: High level of disadvantage, deciles 1–3)	Mid-level of disadvantage (deciles 4–7)	0.50 ^(b)	0.25	1.00
	Low-level of disadvantage (deciles 8–10)	0.28 ^(a)	0.12	0.63
Post-school qualification of primary carer (ref: does not have post-school qualification)	Has post-school qualification	1.84 ^(c)	0.95	3.55
Whether primary carer has Advanced Diploma or Bachelor degree (ref: does not have Adv. Dip/Bachelor)	Has Adv. Dip/Bachelor	1.88 ^(b)	1.11	3.20
Child's health (ref: poor/fair/good)	Excellent or very good	1.21	0.73	2.02
Whether child has a long-term health condition (ref: does not have condition)	Has condition	1.20	0.77	1.86

(a) Significant at the $p < 0.01$ level.

(b) Significant at the $p < 0.05$ level.

(c) Significant at the $p < 0.1$ level.

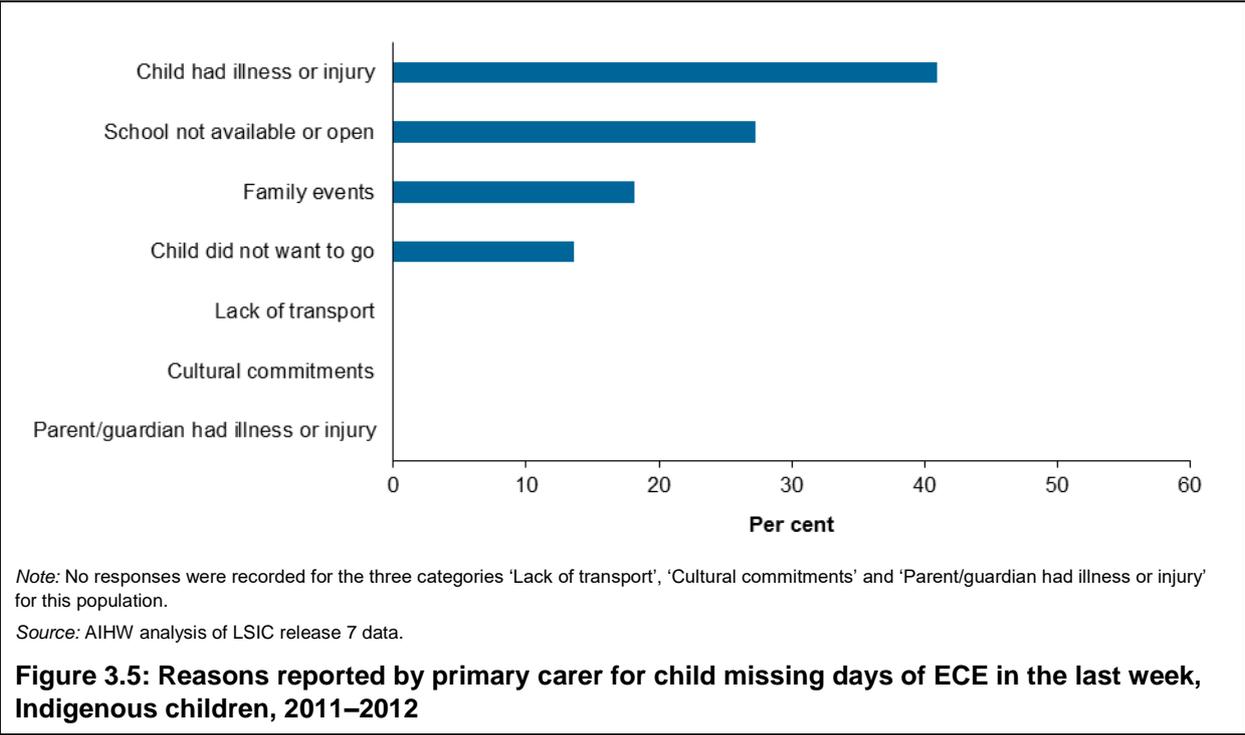
Note: CI refers to confidence interval. The intervals can be interpreted as meaning there is 95% confidence that the true odds ratio lies between the lower and upper bounds of the CI. An odds ratio greater than 1 indicates that school attendance is more likely, while an odds ratio below 1 indicates school attendance is less likely.

Source: AIHW analysis of LSIC release 7 data.

The results also show that children living in areas with lower levels of disadvantage (based on the IRSEO) were less likely to participate in ECE. A broadly similar finding on disadvantage was also reported by Biddle and Bath (2013) in their analysis of ECE participation of the older (K) cohort of LSIC, where they hypothesised that parents of children in the most advantaged areas may find ECE too expensive or use other forms of childcare. However, this result (even if common to the K and B cohort of LSIC) may not be generalisable beyond the specific locations included in the LSIC, since other data sources show ECE participation is usually positively correlated with the area-level of socioeconomic advantage. For example, O'Conner et al. (2016) used the 2009 and 2012 AEDC to investigate preschool non-attendance in the year before schooling. Using both 2009 and 2012 data, the results showed that the more disadvantaged the area in which the child lives, the higher the odds of not attending preschool.

Using the odds ratios shown in Table 3.5, alone, it is not possible to compare the relative importance of the effects of the explanatory variables. To assess the relative importance, the logistic regression results were used to estimate the change in the probability of attending ECE associated with a change from the reference level of each of the explanatory variables. The relative importance of the explanatory variables is based on the absolute size of the associated changes in probability (see Appendix C for details). Based on this ranking method, the explanatory variables with relatively larger impacts on ECE participation include IRSEO ranking, having higher household income and having a more educated main carer. These findings highlight the importance of primary carer factors (such as education) as positive influences on Indigenous children’s participation in ECE.

LSIC data also provide information on the reasons given by parents for why their child missed attending ECE in the previous week (if the child was enrolled). Of the enrolled Indigenous children included in the analysis, 17% (44 children) did not attend all days in the previous week. For these children, the most common reason reported by primary carers for the missed days was that the child was ill or injured (41%) (Figure 3.5). Other common reasons included that the ECE was not available or open (27%); family events (18%); and the child did not want to attend (14%). Despite the small sample, these results highlight the importance of child health to ECE attendance, and indicate that a focus on improving the health of young Indigenous children may be one way to improve Indigenous ECE attendance rates. Further, there are many reasons why ECE may not have been available or open (such as teacher absence) that are outside the control of children and their carers.



3.4 Data limitations and measurement issues

Measurement of ECE attendance among Indigenous (and other) Australians requires accurate and timely data. Key data issues are discussed in this section.

3.4.1 Comparable enrolment and attendance rates

For the 2015 baseline data, state-specific adjustments were made to the data to more accurately capture enrolment in the YBFS cohort, including:

- addressing numerator and denominator misalignments for age and location
- removing children already in school from the denominator
- adjusting records for which the Indigenous status was not stated (SCRGSP 2016).

However, this methodology still results in ECE enrolment rates for some states and territories exceeding 100%. Limitations with this method, are acknowledged, and further refinements to measurement are ongoing (SCRGSP 2016).

Further issues for consideration relate to:

- possible misalignment between Indigenous identification in the numerator and denominator
- the potential double counting across child care and ECE services (numerator)
- a reliance on Indigenous population projections for a single age group (denominator).

The supplementary measure on ECE attendance is also impacted by data issues affecting the enrolment rate as this forms the denominator.

3.5 Bringing it together

3.5.1 An overview

The COAG target for ECE is that ninety-five percent of all Indigenous four-year olds are enrolled in early childhood education by 2025.

In 2015 ECE enrolment and attendance rates for Indigenous children were below the rates for non-Indigenous children. The ECE enrolment rate for Indigenous children was 87% compared with 98% for non-Indigenous children. The ECE attendance rate for Indigenous children (among those enrolled) was 92% compared with 96% for non-Indigenous children (SCRGSP 2016).

Evidence for ECE programs being linked to positive school outcomes is well established in the research literature (AIHW 2015a). Available evidence suggests that key drivers of ECE enrolment include:

- higher family SES—for example, education and employment status of main carer
- learning environment—for example, greater cultural support (such as staff being trained to develop an understanding and appreciation of Indigenous values and protocols) and quality ECE programs:
 - higher quality programs support a more successful transition to school.
 - the proportion of centre-based services assessed as exceeding national quality standards decreases with remoteness.

Other factors impacting on ECE enrolment include accessibility of ECE programs (for example, cost) and the health of the child. For example, child illness or injury was the main reason given by carers for why Indigenous children missed days of ECE in the previous week.

3.5.2 Examples of opportunities for further progress

Drawing from the analyses presented in this chapter, examples of opportunities for further progress are provided in this section. There is however a need for more evidence on what works best to improve ECE enrolment and attendance among Indigenous children (Productivity Commission 2015).

Improved understanding of barriers to ECE participation

Lessons learned from the evaluation of other more general early childhood intervention programs, such as the Home Interaction Program for Parents and Youngsters (HIPPY), may be applicable to assess the barriers faced by disadvantaged Indigenous families when making choices for children on ECE participation. HIPPY was most successful in locations where the local Indigenous community was closely involved in the planning and implementation of the program, and where there were ongoing strong relationships between the agency delivering HIPPY and other local child and family services for Indigenous Australians (Liddell et al. 2011).

The cost of an ECE program is one factor parents report as affecting their decision not to enrol their children; thus, an improved understanding of the extent of cost as a barrier will provide further insights.

Improved cultural appropriateness of ECE

The increased inclusion of Indigenous children may be facilitated through greater cultural support—such as staff being trained to develop an understanding and appreciation of Indigenous values and customs, and using educational material that reflects the culture, values and significant events important to the local Indigenous community. Increased employment of local Indigenous people within ECE settings may also promote the delivery of culturally appropriate services (Productivity Commission 2014).

Quality improvements in disadvantaged areas

In 2017, the proportion of ECE centre-based services assessed by the ACECQA as meeting the NQS or above was also lower in remote areas.

Consistent with the NQF, opportunities include building on initiatives to improve the quality of ECE centres, particularly in remote and other disadvantaged areas where there may be constraints in attracting and retaining qualified staff and in access to other required inputs. For example, in the Northern Territory, the population density of only 0.17 people per square kilometre makes the delivery of an education program within a reasonable distance from children's home logistically and economically difficult (Wilson 2014).

A focus on hours of attendance

Attendance is not just about turning up at preschool, it is also about how many hours children are at preschool—less hours attended means less learning time. Nationally in 2015, 66% of enrolled Indigenous children attending ECE attended 15 hours or more (that is, about 9,300 children). There is limited Australian research on how to address the challenge of low use of early learning programs by Indigenous families.

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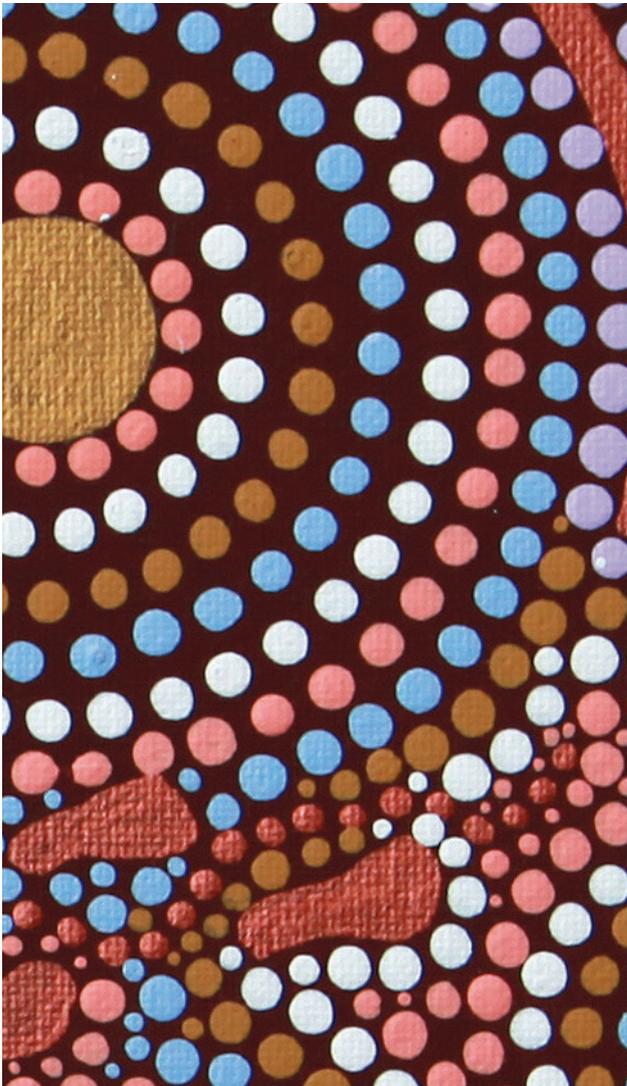
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Chapter 4

School attendance target



4

Summary

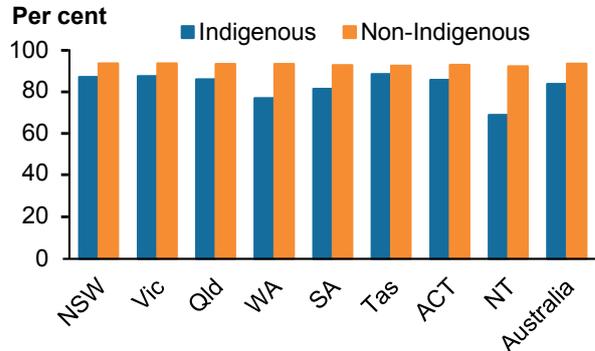
COAG target: Close the gap between Indigenous and non-Indigenous school attendance within 5 years (by 2018).

Current picture

- In 2016, the attendance rate for Indigenous students in Years 1–10 was 83%, compared to 93% for non-Indigenous students.
- The Indigenous attendance rate in 2016 was lower in secondary school years (79%) than in primary school years (86%).
- Attendance rates for Indigenous students varied by jurisdiction; in 2016 the attendance rate was highest in Tasmania (88%) and lowest in the Northern Territory (69%) (Figure 4a).
- Indigenous attendance rates generally declined with remoteness; in 2016 *Major cities* and *Inner regional* areas had the highest rates of attendance (86% and 87%, respectively) and *Very remote* areas had the lowest (66%) (Figure 4b).
- Taking account of the Indigenous population size, 86% of the national gap between Indigenous and non-Indigenous school attendance in 2016 was contributed by Queensland (23%), Western Australia (21%), New South Wales (21%) and the Northern Territory (20%) combined; this is expected given that 83% of Indigenous students live in these areas combined.
- In 2016, 47% of Indigenous students in government schools and 58% in non-government schools attended on 90% or more of possible school days.
- Less than half (48%) of all schools in 2016 reported an Indigenous attendance rate of 90% or more.

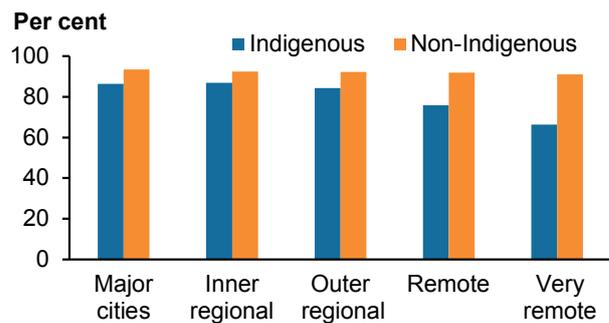
Has there been progress?

- In both 2014 and 2016 the gap between Indigenous and non-Indigenous school attendance rates was 9.7 percentage points.
- For most jurisdictions, between 2014 and 2016 there was little change in the gap. The largest change was in the Northern Territory (2.5 percentage point increase) (Figure 4c).
- Based on 2016 data, progress towards the target is not on track. Since finalising the analysis for this report, data for 2017 have become available and also indicate that progress towards the target is not on track.



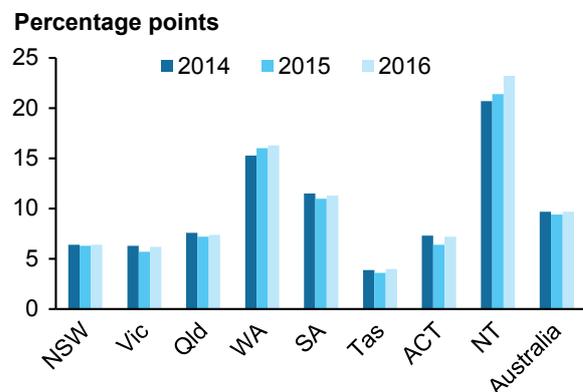
Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

Figure 4a: Student attendance rates in Years 1–10, by Indigenous status and state and territory, 2016



Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

Figure 4b: Student attendance rates in Years 1–10, by Indigenous status and remoteness, 2016



Sources: ACARA National Student Attendance collection as published by SCRGSP 2015, 2016.

Figure 4c: Percentage point gap in Indigenous and non-Indigenous school attendance rates, by jurisdiction, 2014 to 2016

Additional analysis and key drivers

- Available evidence suggests that key drivers of school attendance include family SES, school environment, child health, history of being bullied, and structural/community factors.
- Regression analysis of Indigenous school attendance using 2014–15 NATSISS data show that factors which had a negative association on Indigenous school attendance included:
 - being in an older age group
 - living in a *Remote* or *Very remote* area
 - having been bullied in current school.

Conversely, children who reported learning an Indigenous language at school tended to have more favourable patterns of school attendance. Estimated odds ratios are shown in Table 4a.

- An additional complementary regression analysis using 2014 LSIC data indicated that significant factors which had a negative association on Indigenous school attendance included:
 - living in an area that is moderately or highly isolated
 - the child having a long-term health condition
 - the main carer feeling sad, blue or depressed
 - the main carer not being employed.

Estimated odds ratios are shown in Table 4b.

- In 2014–15, the most common main reason given for Indigenous children missing days of school was the school not being available or open (59%) (Figure 4d); this was the most common main reason in both remote (52%) and non-remote areas (60%). Further details to distinguish between planned and unplanned school closures were not available.
 - Other main reasons for missing school days included child had illness or injury (16%) and cultural commitments or sorry business (3%).

Table 4a: Estimated odds ratios for Indigenous school attendance, significant variables only, 2014–15 (NATSISS data)

Variable	Odds ratio
Child is aged 10–14 (ref: aged 6–9)	0.46
Child living in a remote or very remote location	0.28
Child bullied at current school	0.62
Child learning an Indigenous language	1.97

Note: Odds ratios are based on multivariate logistic regression modelling. This table shows statistically significant variables only—see Table 4.12 for full results.

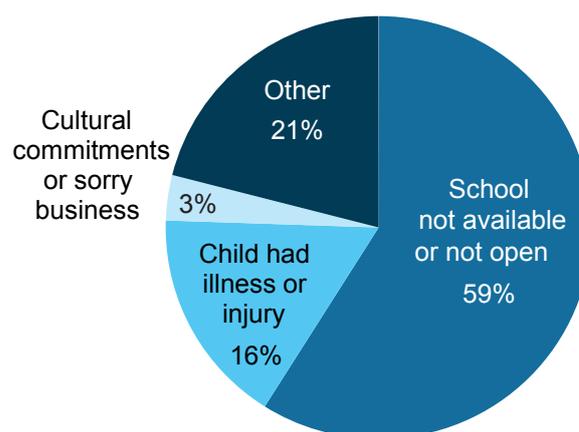
Source: AIHW analysis of 2014–15 NATSISS.

Table 4b: Estimated odds ratios for Indigenous school attendance, significant variables only, 2014 (LSIC data)

Variable	Odds ratio
Living in area that is moderately or highly isolated	0.53
Child has a long-term health condition	0.64
Main carer felt sad, blue or depressed	0.70
Main carer is not employed	0.72

Note: Odds ratios are based on multivariate logistic regression modelling. This table shows statistically significant variables only—see Table 4.13 for full results.

Source: AIHW analysis of LSIC release 7 data; LSIC Wave 7 sample, both cohorts.



Note: 'Other' includes: parent/guardian had an illness or injury; home schooling/education at home; away with parents; attending appointments; child did not want to go to school; and other reason.

Source: AIHW analysis of 2014–15 NATSISS.

Figure 4d: Main reason given by primary carer for child missing days of school in the last week, selected reasons, Indigenous children aged 6–14, 2014–15 (%)

Data limitations and measurement issues

Data issues affecting the ability to monitor the school attendance target include:

- Both the measures *rates of student attendance* and *proportion of students achieving 90% attendance* are calculated using days attended and possible days of attendance, however, data on the underlying days attended are not publicly available.
- The main reason given by parents of Indigenous children for why children missed school in the previous week was that the school was not available or open; additional information on the reasons why schools were not available or open is needed in order to distinguish between planned and unplanned/unexpected school closures.

4.1 Background

The importance of regular school attendance to improve school achievement, school completion and overall educational attainment is well recognised. Working with families, communities and non-government organisations to support school attendance and completion through a range of programs and interventions is a focus of government (PM&C 2017).

Analysis of the Longitudinal Surveys of Australian Youth (LSAY) indicates that school attendance may explain around one-fifth of the gap between Indigenous and non-Indigenous test scores in science (22%), reading (21%) and maths (18%) in the Programme for International Student Assessment (PISA) (Biddle 2014).

Research on NAPLAN performance shows that schools with higher attendance rates have higher reading test scores (ACARA 2016; Purdie & Buckley 2010). Student-level analysis shows that after SES, attendance rates are the second most important contributor, to the variation in Indigenous reading achievement (Productivity Commission 2016). As absences increase, NAPLAN results decrease, and there is no 'safe' level whereby results are not negatively affected by absences (Zubrick 2014). Absences are linked to achievement in the current year as well as future years (Daraganova et al. 2014; Zubrick 2014).

The effect of absences on achievement is stronger for unauthorised absences than authorised absences pointing to a distinction between truancy (able but unwilling to attend) and absenteeism (willing but unable to attend) (Zubrick 2014). These types of absences are thought to have distinct causal influences, and are stronger where disadvantage is greater; this is of concern given that Indigenous families are disproportionately represented in more disadvantaged quintiles. Truancy may relate to educational disengagement as well as to negative peer or family factors (Dreise et al. 2016).

The frequency of school attendance is also important for improved educational outcomes. Frequently missing even half a day of school a week (less than 90% attendance) can negatively affect a child's education (Purdie & Buckley 2010; Zubrick et al. 2006). Regular attendance (90% attendance or more) appears critical in closing the gap in reading, writing and numeracy achievements, as well as Year 12 attainment and employment outcomes (Helme & Lamb 2011; Productivity Commission 2016).

In 2014, COAG agreed to a new Closing the Gap school attendance target—to close the gap in Indigenous and non-Indigenous school attendance rates within 5 years by 2018—see Box 4.1.

This chapter provides detailed information on school attendance, including:

- current rates and progress towards the COAG target
- differences by geographical areas and other characteristics
- identification of key drivers based on evidence from the literature and new AIHW data analysis
- a discussion of data limitations and measurement issues.

Box 4.1: School attendance—Closing the Gap target and data sources

The COAG target for school attendance is: Close the gap between Indigenous and non-Indigenous school attendance within five years (by 2018).

The measure for this target is defined as the rate of attendance for students in Years 1 to 10 (combined year levels and sectors) calculated as the aggregate number of days in attendance as a proportion of the number of possible days (for children enrolled fulltime only). Data are available for this target measure from 2014.

Two supplementary measures to the supporting NIRA performance indicator include:

- student attendance level at 90% or more: proportion of Indigenous students who attend school 90% or more of possible attendance
- school attendance level at 90% or more: proportion of schools achieving 90% or more attendance on average by Indigenous status.

Data for these supporting performance indicator measures are only available from 2015.

The key data source for measuring progress towards the target and the supporting performance indicator measures is the Australian Curriculum Assessment and Reporting Authority (ACARA) National School Attendance Collection. At the time of analysis, the most recent attendance data available for inclusion in this chapter were for 2016.

Additional key data sources used in this chapter

This chapter also draws on two other key data sources:

- Longitudinal Study for Indigenous Children (LSIC). The LSIC collects data on two groups of Indigenous children, B cohort (aged 6 to 18 months at the start of the study) and K cohort (those aged 3½ to 5 at the start of the study). The study covers topics relating to the child's health, learning and development; family, and community (DSS 2015).
- National Aboriginal and Torres Strait Islander Social Survey (NATSISS). The NATSISS was most recently conducted in 2014–15 and includes topics relating to education, health, and housing, among others.

See Appendix F for further information on these and other data sources used in the report.

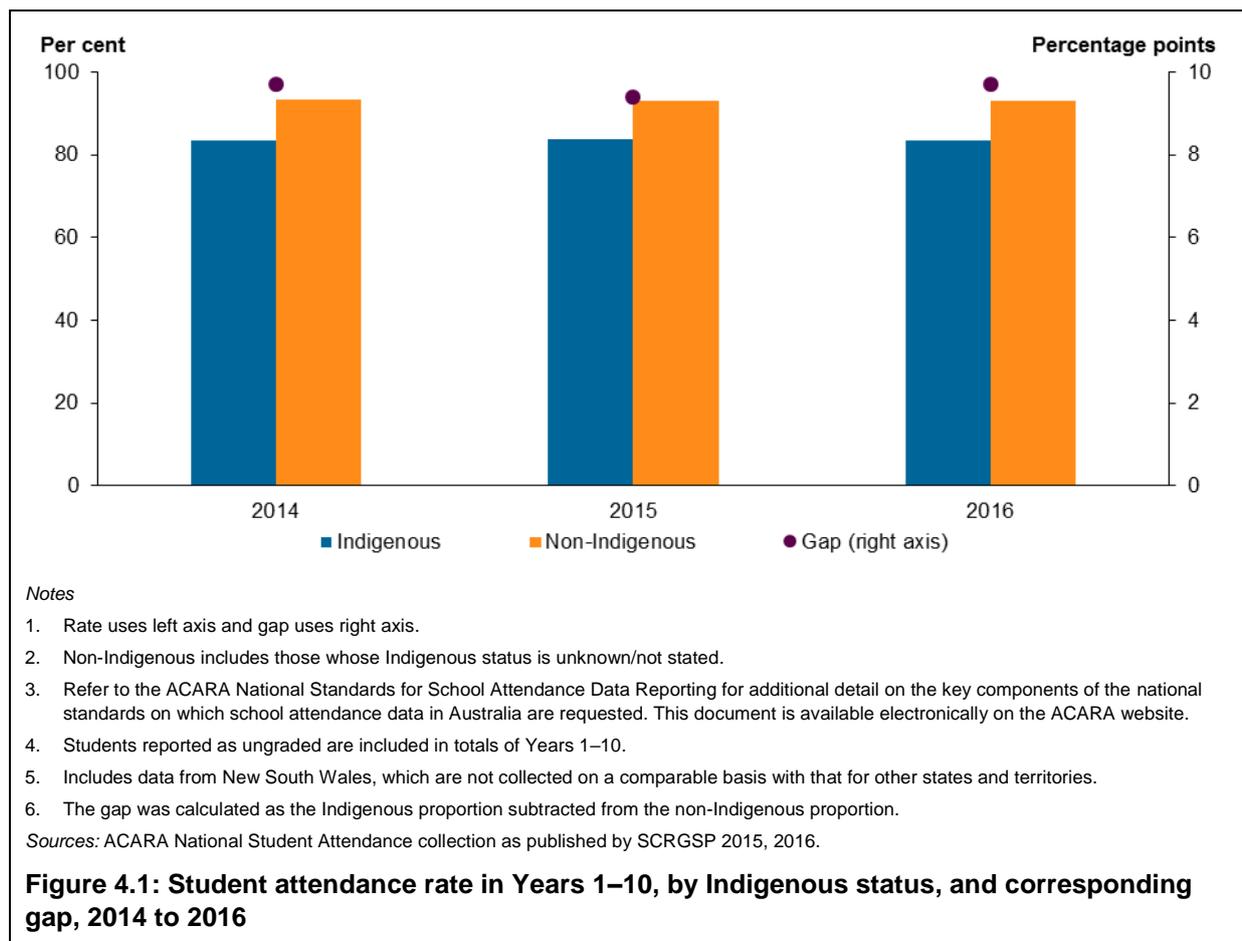
4.2 Current picture and progress

4.2.1 National data on school attendance

Student attendance rates

Nationally consistent data on school attendance rates are available from 2014 to 2016. At the 2014 baseline, the national Indigenous school attendance rate was 83.5% compared with 93.2% for non-Indigenous students—a 9.7 percentage point gap.

Figure 4.1 shows that in 2016, the national rates for both Indigenous and non-Indigenous students were 0.1 percentage points less than in 2014, indicating that the gap remained the same as in 2014 (SCRGSP 2015, 2016). Based on 2016 data, progress towards the target is not on track. Since finalising the analysis for this report, data for 2017 have become available; these newly available data, reported in the *Closing the Gap Prime Minister's Report 2018* (PM&C 2018), indicate that the target is on track.



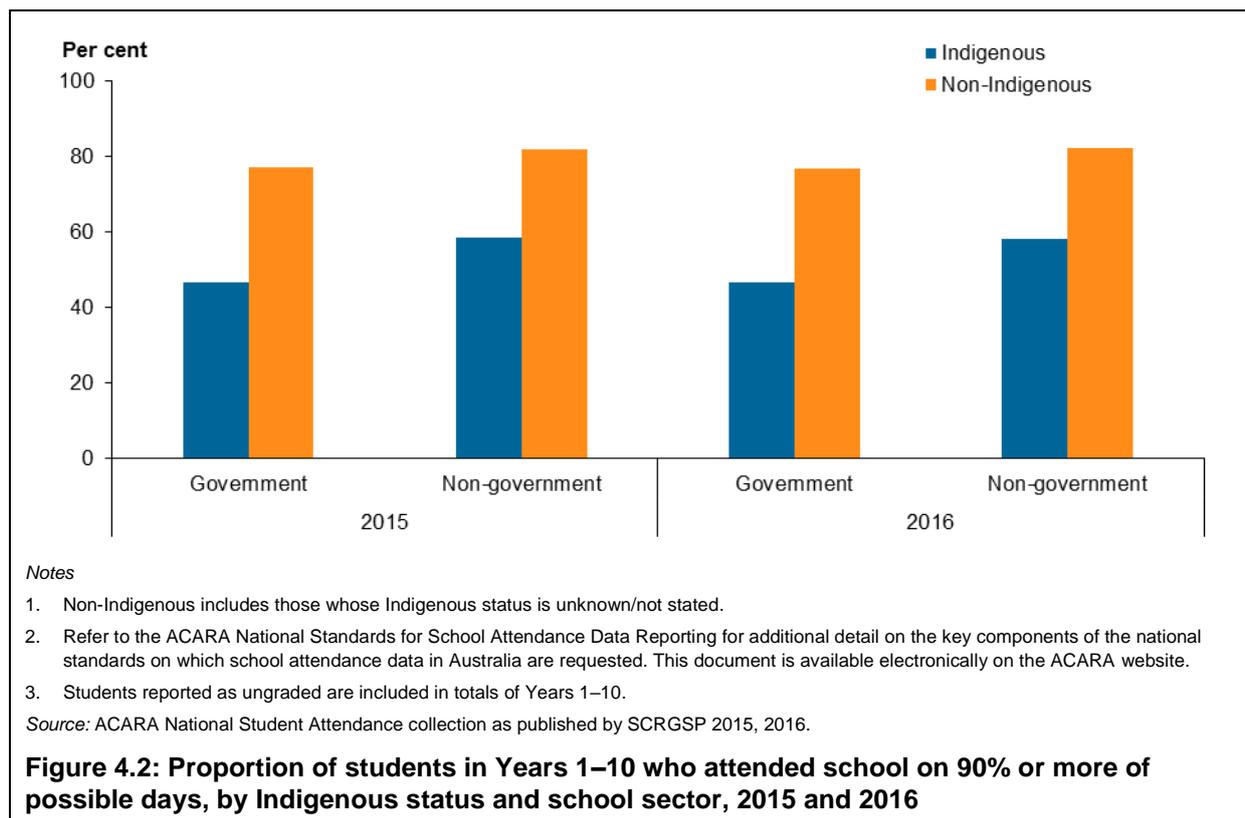
Students achieving 90% or more attendance

Figure 4.2 shows that in 2015 and 2016 the proportion of students who attended school on 90% or more of possible days is lower for Indigenous students than for non-Indigenous students, nationally, and across government and non-government school sectors.

- In 2015, 47% of Indigenous students in government schools and 59% of Indigenous students in non-government schools attended school 90% or more of the time.
- In 2016, the respective proportions of school attendance for Indigenous students were similar: 47% for government schools and 58% for non-government schools (SCRGSP 2015, 2016).

Schools achieving 90% or more attendance

Data from 2016 indicate that a lower proportion of schools achieved an average attendance rate of 90% or more for their Indigenous students (48%) than for their non-Indigenous students (86%). Similar rates were observed in 2015, 47% of schools achieving 90% or more attendance for Indigenous students and 88% of schools achieving 90% or more attendance for non-Indigenous students (SCRGSP 2015, 2016).



4.2.2 School attendance by state and territory

School attendance rate by state and territory

In 2016, the attendance rate for Indigenous students was highest in Tasmania (88%) and Victoria (87%), and lowest in the Northern Territory (69%), almost a 20 percentage point difference across the states and territories (SCRGSP 2016). The gap between Indigenous and non-Indigenous attendance rates was largest in the Northern Territory (23 percentage points), followed by Western Australia (16 percentage points) and South Australia (11 percentage points). These three jurisdictions also had the lowest Indigenous attendance rates (SCRGSP 2016).

Given that the non-Indigenous attendance rates are relatively similar across jurisdictions (ranging from 92% in the Northern Territory to 93% in Victoria), school attendance rate gap differences are largely driven by differences in Indigenous students' attendance rates (Table 4.1).

Table 4.1: Students attendance rate in Years 1–10, by Indigenous status, 2016^{(a)(b)(c)}

	NSW ^(d)	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Indigenous	86.8	87.1	85.6	76.6	81.1	88.2	85.4	68.6	83.4
Non-Indigenous	93.2	93.3	93.0	92.9	92.4	92.2	92.6	91.8	93.1
Gap ^(e)	-6.4	-6.2	-7.4	-16.3	-11.3	-4.0	-7.2	-23.2	-9.7
Total	92.8	93.2	92.4	91.8	91.8	91.8	92.4	82.2	92.5

(a) Non-Indigenous includes those whose Indigenous status is unknown/not stated.

(b) Refer to the ACARA National Standards for School Attendance Data Reporting for additional detail on the key components of the national standards on which school attendance data in Australia are requested. This document is available electronically on the ACARA website.

(c) Students reported as ungraded are included in totals of Years 1–10.

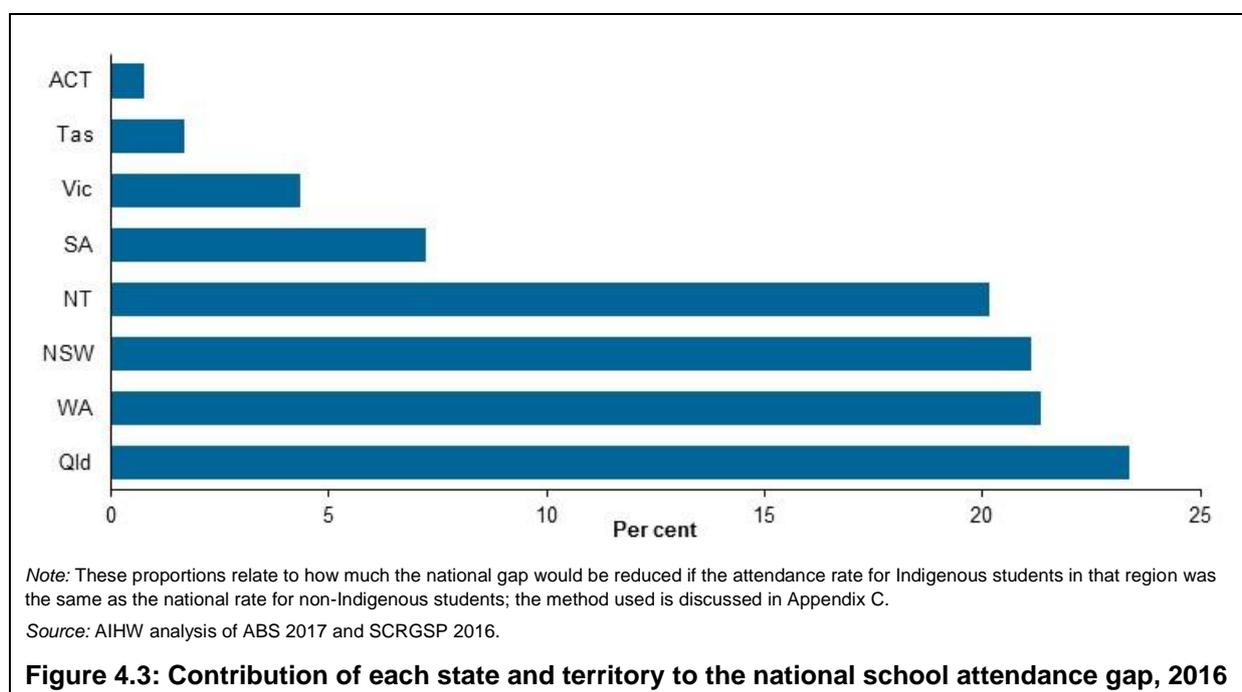
(d) New South Wales data are not collected on a comparable basis with that for other states and territories. Therefore, comparisons with other jurisdictions should be made with caution.

(e) This is the attendance rate for Indigenous students minus the attendance rate for non-Indigenous students.

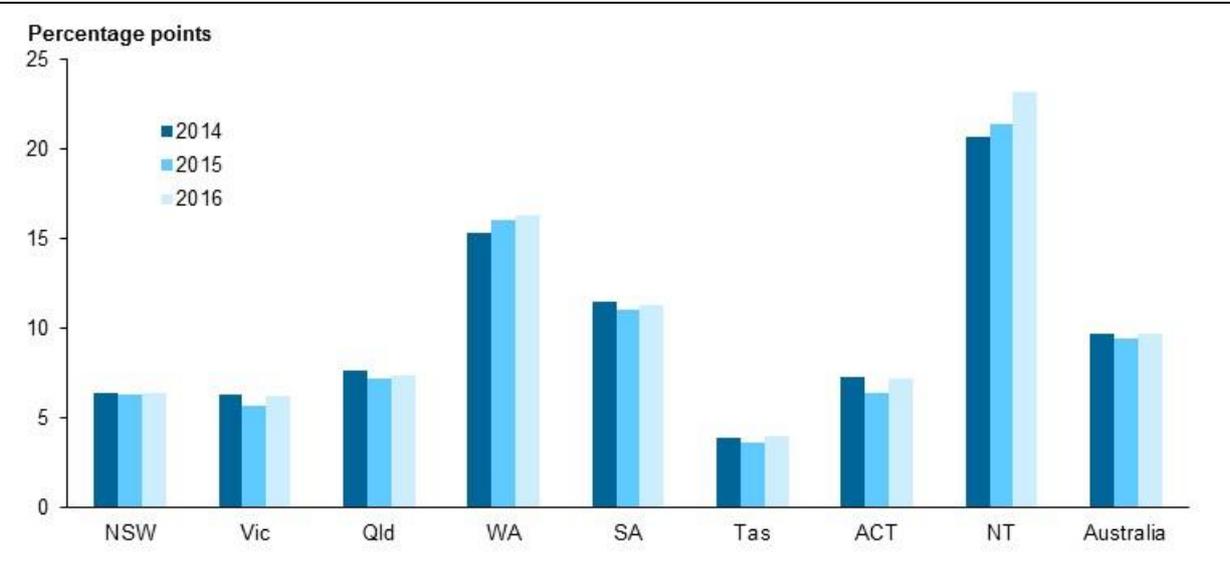
Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

The contribution of specific geographic areas to the national gap in student attendance is affected not only by differences in the rates, but also by the size of the Indigenous population in that area. Taking the Indigenous population size into account, estimates of the proportion of the 2016 national gap in school attendance attributed to each state and territory are shown in Figure 4.3 (for method used see Appendix C).

Queensland, Western Australia, New South Wales and the Northern Territory made a larger contribution to the national school attendance gap between Indigenous and non-Indigenous Australians than the other jurisdictions. These four jurisdictions collectively account for over 85% of the national gap; this is expected given that 84% of Indigenous students live in these areas.



There has been little reduction in the gap in school attendance across states and territories between 2014 and 2016 (Figure 4.4). Although small reductions in the gap over this period were seen in Queensland and South Australia (0.2 percentage point change in both) and in Victoria and the Australian Capital Territory (0.1 percentage point change in both), the gap widened in the Northern Territory (2.5 percentage point change), Western Australia (1.0 percentage point change) and Tasmania (0.1 percentage point change). The overall national gap for 2016 was unchanged from 2014, at 9.7 percentage points.



Sources: ACARA National Student Attendance collection as published by SCRGSP 2015, 2016.

Figure 4.4: Percentage point gap in Indigenous and non-Indigenous school attendance rates, by state and territory, 2014 to 2016

Students achieving 90% or more attendance, by state and territory

Table 4.2 shows the proportion of students in the government school sector for Semester 1 of 2016 who attended 90% or more of possible school days. These data show that a lower proportion of Indigenous students than non-Indigenous students were attending 90% or more of the time, across all states and territories (excluding New South Wales). Tasmania had the highest rate (63%) for Indigenous students on this measure and the Northern Territory had the lowest attendance rate for Indigenous students (25%).

Table 4.2: Students in the government school sector, attending 90% or more of the time as a proportion of all students, by Indigenous status, 2016

	NSW ^(a)	Vic	Qld	WA	SA	Tas	ACT	NT
Indigenous	n.a.	57.9	52.8	38.0	42.3	63.3	48.4	24.7
Non-Indigenous	n.a.	78.6	76.3	76.7	74.7	75.2	75.0	69.4

n.a. = not available

(a) New South Wales data are not available for this measure.

Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

Schools achieving 90% or more attendance, by state and territory

The Indigenous to non-Indigenous gap for this measure was greatest for the Northern Territory (58 percentage points) and lowest in Tasmania (22 percentage points). In jurisdictions where the proportion of schools meeting the 90% or more target for Indigenous students was lowest (the Northern Territory, Western Australia and South Australia), the Indigenous to non-Indigenous gap was largest (Table 4.3) (SCRGSP 2016).

Table 4.3: Schools achieving 90% or more attendance level in Years 1–10, by Indigenous status 2016^{(a)(b)(c)}

	NSW ^(d)	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Schools achieving 90% or more attendance for Indigenous students									
Number of schools	956	290	584	167	102	123	37	20	2,279
Proportion of schools	56.5	47.1	49.6	28.6	30.3	63.1	43.5	21.1	47.7
Schools achieving 90% or more attendance for non-Indigenous students									
Number of schools	1,461	542	1,062	498	257	166	70	75	4,131
Proportion of schools	86.3	88.0	90.2	85.4	76.3	85.1	82.4	78.9	86.4
Gap^(e)	-29.8	-40.9	-40.6	-56.8	-46.0	-22.1	-38.8	-57.9	-38.7

(a) Non-Indigenous includes those whose Indigenous status is unknown/not stated.

(b) Refer to the ACARA National Standards for School Attendance Data Reporting for additional detail on the key components of the national standards on which school attendance data in Australia are requested. This document is available electronically on the ACARA website.

(c) Where student attendance rates have not been provided by the jurisdiction, or where rates have been suppressed due to small numbers, schools are excluded from both the numerator and denominator.

(d) New South Wales data are not collected on a comparable basis with that for other states and territories. Therefore, comparisons with other jurisdictions should be made with caution.

(e) This is the proportion of schools achieving 90% or more attendance for Indigenous students minus the proportion of schools achieving 90% or more attendance for non-Indigenous students.

Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

4.2.3 School attendance by remoteness

School attendance rate by remoteness areas

In 2016, national school attendance rates tended to decline with increasing remoteness, and to a greater extent for Indigenous students. There was a difference of around:

- 20 percentage points in the Indigenous attendance rates between *Inner regional areas* and *Major cities* (87% and 86%, respectively) and *Very remote areas* (66%)
- 2 percentage points in non-Indigenous attendance between *Major cities* and *Very remote areas*.

This pattern of a decline in attendance with increasing remoteness also applied across all jurisdictions, except for Tasmania (Table 4.4) (SCRGSP 2016). One interpretation of these results is that it is not remoteness per se that shapes attendance. Rather, it appears that increasing remoteness presents greater challenges for school attendance for Indigenous students than for non-Indigenous students. This may reflect differences in SES and other characteristics between Indigenous and non-Indigenous students in remote areas.

Table 4.4: Student attendance rate (%) in Years 1–10, by Indigenous status, by remoteness, 2016^{(a)(b)(c)(d)}

	NSW ^(e)	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Indigenous									
Major cities	87.7	87.4	87.7	81.5	83.0	..	85.5	..	86.3
Inner regional	86.6	87.7	87.8	83.9	85.9	87.1	n.a.	..	86.9
Outer regional	85.5	84.9	84.7	78.9	80.2	89.6	..	84.4	84.3
Remote	83.3	n.a.	80.7	72.1	79.9	87.2	..	72.8	75.9
Very remote	81.8	..	78.5	63.9	66.2	89.2	..	59.5	66.4
Non-Indigenous									
Major cities	93.6	93.5	93.2	93.2	92.6	..	92.7	..	93.4
Inner regional	92.2	92.6	92.6	92.0	92.1	92.3	59.0	..	92.4
Outer regional	92.0	92.7	93.0	91.7	91.6	91.8	..	91.8	92.3
Remote	91.3	91.6	92.2	92.3	91.4	90.5	..	91.7	91.9
Very remote	92.2	..	91.6	90.8	90.3	93.0	..	90.9	91.1
Total									
Major cities	93.4	93.5	93.0	92.8	92.3	..	92.5	..	93.2
Inner regional	91.6	92.4	92.1	91.5	91.8	92.0	57.7	..	92.0
Outer regional	90.8	92.1	91.6	90.0	90.5	91.6	..	90.5	91.2
Remote	88.0	91.7	88.6	86.6	90.6	90.2	..	83.1	87.2
Very remote	84.6	..	83.5	75.2	78.3	92.7	..	62.7	74.0

.. = not applicable; n.a. = not available

(a) Non-Indigenous includes those whose Indigenous status is unknown/not stated.

(b) Refer to the ACARA National Standards for School Attendance Data Reporting for additional detail on the key components of the national standards on which school attendance data in Australia are requested. This document is available electronically on the ACARA website.

(c) Based on the ABS Australian Statistical Geography Standard, there are: no *Very remote* areas in Victoria; no *Major cities* in Tasmania; no *Major cities* or *Inner regional* areas in the Northern Territory; and no *Outer regional*, *Remote* or *Very remote* areas in the Australian Capital Territory.

(d) Students reported as ungraded are included in totals of Years 1–10.

(e) New South Wales data are not collected on a comparable basis with that for other states and territories. Therefore, comparisons with other jurisdictions should be made with caution.

Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

This gap across remoteness areas has also widened over time, from 23 percentage points in 2014 to 25 percentage points in 2016 (Table 4.5). However, due to different geographic classifications used in 2016 to those used in 2014 (*Metropolitan*, *Provincial*, *Remote* and *Very remote*) and 2015 (*Major cities*, *Inner regional*, *Outer regional*, *Remote* and *Very remote*), results may not be directly comparable.

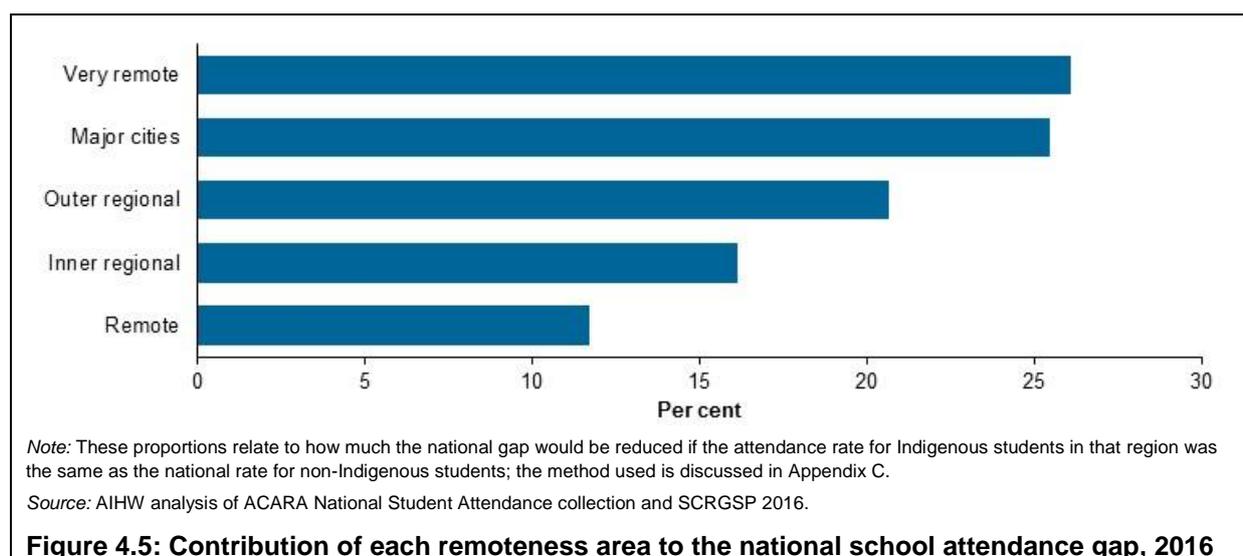
Table 4.5: Student attendance rate (%) in Years 1–10 for Very remote areas, by Indigenous status, 2014 to 2016^{(a)(b)(c)(d)(e)}

	Indigenous	Non-Indigenous	Gap ^(f)
2014	67.9	91.2	23.3
2015	67.4	91.5	24.1
2016	66.4	91.1	24.7

- (a) Non-Indigenous includes those whose Indigenous status is unknown/not stated.
 (b) Refer to the ACARA National Standards for School Attendance Data Reporting for additional detail on the key components of the national standards on which school attendance data in Australia are requested. This document is available electronically on the ACARA website.
 (c) Students reported as ungraded are included in totals of Years 1–10.
 (d) Includes data from New South Wales, which are not collected on a comparable basis with that for other states and territories.
 (e) Reporting categories used in 2014 and 2015 differed from those used in 2016, resulting in a break in series for geography, and results should be interpreted accordingly.
 (f) The gap was calculated as the Indigenous proportion subtracted from the non-Indigenous proportion.

Sources: ACARA National Student Attendance collection as published by SCRGSP 2015, 2016.

The contribution of specific geographic areas to the national gap in student attendance is affected not only by differences in the rates, but also by the size of the Indigenous population in that area. Taking the Indigenous population size into account, estimates of the proportion of the 2016 national gap in school attendance attributed to each remoteness area are shown in Figure 4.5 (for method used see Appendix C).



In 2016, *Very remote* areas (26%), *Major cities* (25%) and *Outer regional* areas (21%) made the largest contribution to the national gap compared with *Inner regional* (16%) and *Remote* areas (12%).

- *Major cities* had a relatively smaller actual gap in rates (in percentage points); but a larger share of Indigenous student population, resulting in the largest contribution to the national gap.
- *Very remote* areas had relatively few students (around 9%) but a larger actual gap in rates, resulting in a contribution to the total gap similar to that of *Major cities*.

Students achieving 90% or more attendance level, by remoteness

Analysis of ACARA data for Semester 1 of 2016 shows that a lower proportion of Indigenous students than non-Indigenous students attended 90% or more of the time, on average,

across all remoteness areas (Table 4.6). Among Indigenous students, the proportion attending 90% or more of the time was highest in *Inner regional* areas (62%), followed by *Major cities* (59%) and *Outer regional* areas (58%). *Remote* (48%) and *Very remote* areas (31%) had the lowest attendance rates for Indigenous students.

Table 4.6: Students attending 90% or more of the time as a proportion of all students, by remoteness area and Indigenous status, 2016^(a)

	Major cities	Inner regional	Outer regional	Remote	Very remote
Indigenous	59.1	61.8	58.1	48.4	30.5
Non-Indigenous	77.9	75.6	76.3	74.9	68.1

(a) Results represent the average value for each remoteness area.

Source: AIHW analysis of ACARA National Student Attendance collection.

Nationally, in 2016, the proportion of Indigenous students at government and non-government schools attending 90% or more of possible days tended to decline as remoteness increased, except for *Inner regional* areas which were slightly higher than *Major cities* for both school types (SCRGSP 2016).

Across remoteness areas (excluding New South Wales), the proportion of Indigenous students at government schools attending 90% or more of possible days was lowest in *Very remote* areas of the Northern Territory (12%), followed by *Very remote* areas of South Australia and *Very remote* areas of Western Australia (both 17%) (SCRGSP 2016).

The respective non-government school rates also tended to be lower in *Very remote* areas. The category *Very remote* areas in the Northern Territory stands out as the only remoteness area with less than one-quarter of non-government sector students (10%) and government sector students (12%) attending 90% or more of possible days (Table 4.7) (SCRGSP 2016).

Table 4.7: Proportion (%) of Indigenous students who attended 90% or more of possible days in Years 1–10, by remoteness and school sector, 2016^(a)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Government^(b)									
Major cities	n.a.	58.8	57.5	46.7	45.0	..	48.3	..	52.9
Inner regional	n.a.	59.5	56.9	49.9	52.1	61.2	n.a.	..	57.1
Outer regional	n.a.	51.9	51.3	38.9	41.0	66.3	..	47.5	49.6
Remote	n.a.	n.a.	41.0	29.9	47.5	55.1	..	33.0	34.6
Very remote	n.a.	..	41.2	16.8	16.6	59.2	..	12.4	21.7
Non-government									
Major cities	62.9	63.1	68.7	54.2	58.4	..	64.9	..	63.1
Inner regional	62.5	64.0	69.2	63.4	62.5	64.4	n.a.	..	64.6
Outer regional	71.2	55.0	64.3	49.9	48.6	73.5	..	49.3	62.5
Remote	59.0	n.a.	50.7	43.7	..	83.3	..	28.5	39.2
Very remote	52.7	..	55.3	26.2	26.2	n.a.	..	10.0	23.6

.. = not applicable; n.a. = not available

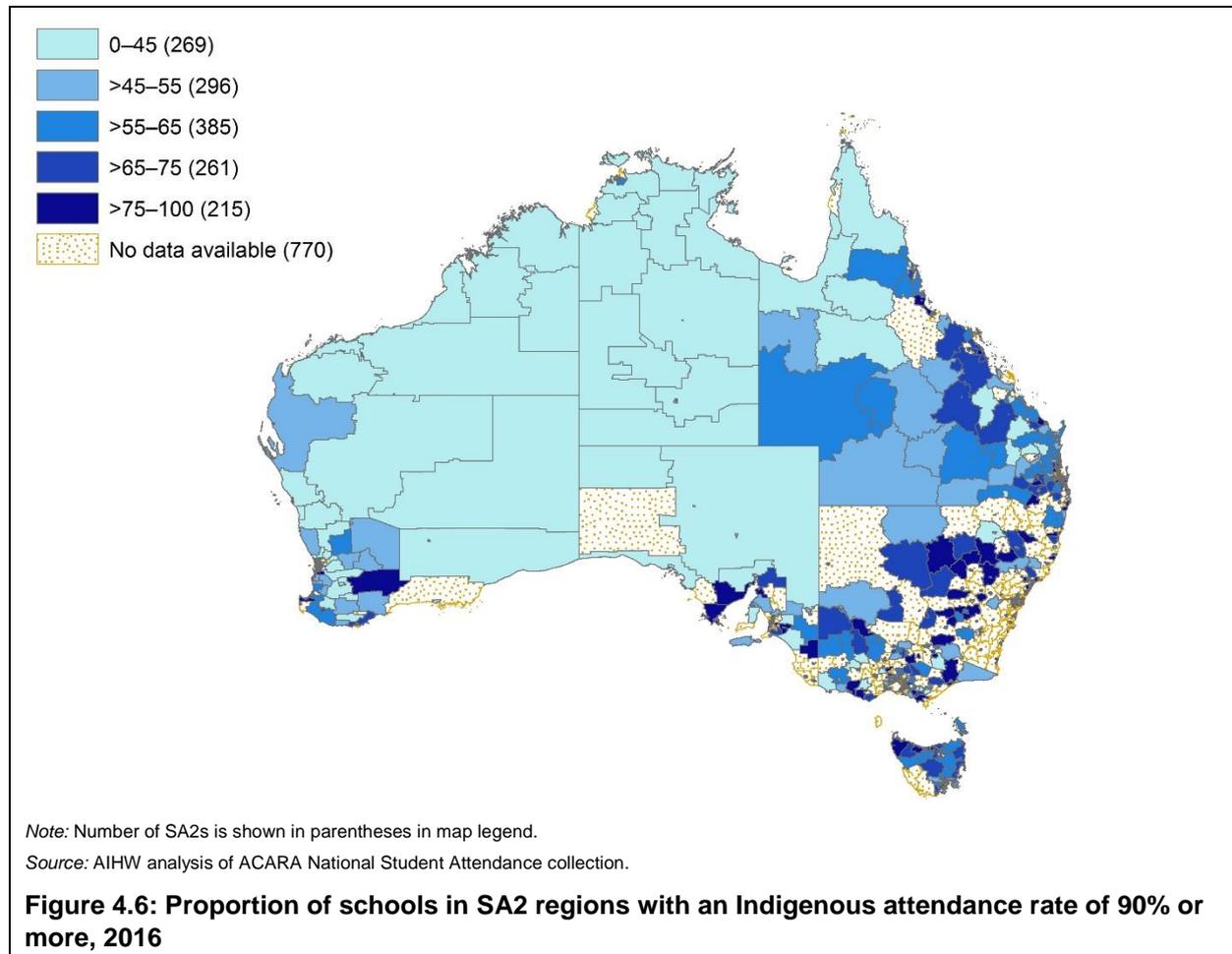
(a) Based on the ABS Australian Statistical Geography Standard, there are: no *Very remote* areas in Victoria; no *Major cities* in Tasmania; no *Major cities* or *Inner regional* areas in the Northern Territory; and no *Outer regional*, *Remote* or *Very remote* areas in the Australian Capital Territory.

(b) Data are not available for New South Wales government schools, and national government school totals do not include New South Wales.

Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

Schools achieving 90% or more attendance level, by statistical area

Figure 4.6 maps the 2016 ACARA school level data at the Statistical Area, Level 2 (SA2) showing the proportion of schools in each SA2 region meeting an Indigenous school attendance rate of 90% or more. Consistent with earlier analysis, schools located in more remote areas tend to do less well against this 90% or more mark for their Indigenous students.



4.2.4 Patterns of student attendance

School attendance by year level

Data on 2016 attendance rates by school years show that attendance rates for Indigenous students are lower than attendance rates for non-Indigenous students in every year group from Year 1 to Year 10. Non-Indigenous attendance rates do decline slightly with year group (a difference of 3 percentage points between Year 1 and Year 10), however the difference is greater for Indigenous students (a difference of 11 percentage points between Year 1 and Year 10). Consequently, the gap increases from 8 percentage points in primary years (Years 1–6) to 13 percentage points in secondary years (Years 7–10) (Table 4.8). Indigenous attendance rates in 2016 were similar across Years 1–6 (around 86%), but decreased from the start of high school (Year 7 onwards), to around 75% in Year 10.

A number of possible factors may contribute to the decline in attendance in the secondary school years, including:

- increased susceptibility to illness and injury in the early teenage years compared with earlier in life
- the development of independence across the teenage years, and being more involved in deciding whether to attend school
- struggling with, or failing to meet, work demand in high school, particularly for students experiencing academic difficulty
- poorer student and parental engagement with schooling as a result of having different teachers for each subject (Hancock et al. 2013).

Table 4.8: Student attendance rates for combined school sectors, by Indigenous status and school year level 2016 (%)^{(a)(b)(c)(d)}

Indigenous status	Year level										Primary (1–6) ^(e)	Secondary (7–10) ^(e)
	1	2	3	4	5	6	7	8	9	10		
Indigenous	85.6	86.2	86.7	86.4	86.4	85.8	83.3	79.3	76.3	74.8	86.2	78.6
Non-Indigenous	93.8	94.0	94.1	94.0	94.0	93.7	93.7	92.0	91.1	90.4	93.9	91.8
Gap ^(f)	8.2	7.8	7.4	7.6	7.6	7.9	10.4	12.7	14.8	15.6	7.7	13.2

(a) Non-Indigenous includes those whose Indigenous status is unknown/not stated.

(b) Refer to the ACARA National Standards for School Attendance Data Reporting for additional detail on the key components of the national standards on which school attendance data in Australia are requested. This document is available electronically on the ACARA website.

(c) Students in ungraded classes who cannot readily be allocated to a year of education are not included.

(d) Includes data from New South Wales, which are not collected on a comparable basis with that of other states and territories.

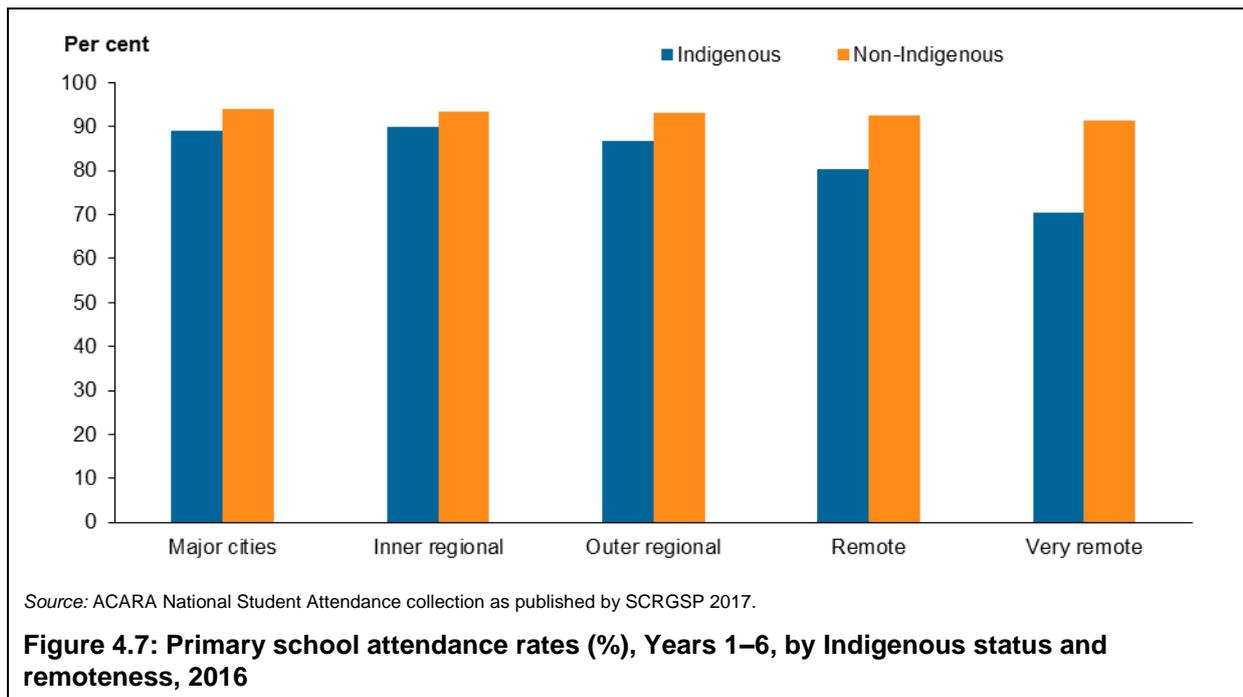
(e) For primary and secondary totals, the following cut-offs have been used as a proxy for all jurisdictions: Year 1–6 for primary and Year 7–10 for secondary.

(f) The gap was calculated as the Indigenous proportion subtracted from the non-Indigenous proportion.

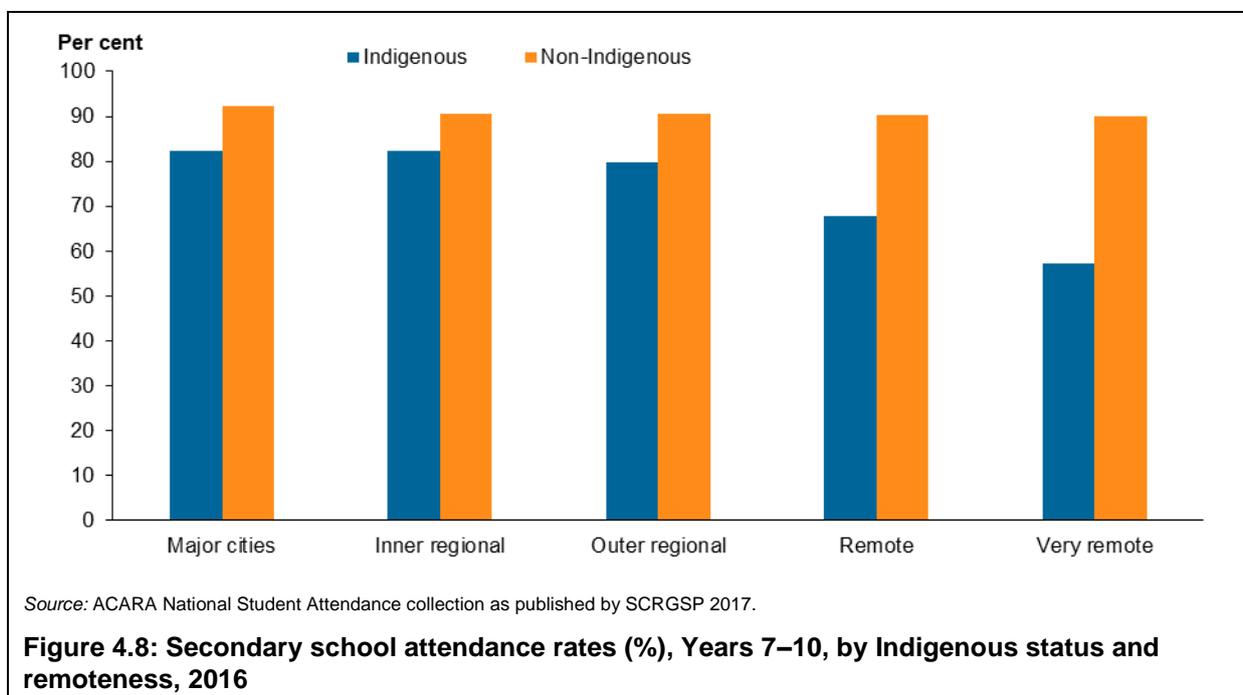
Source: AIHW analysis of ACARA National Student Attendance collection as published by SCRGSP 2016.

The Indigenous school attendance rate was around 86% in primary school (Years 1–6) and decreased to around 79% in secondary school (Years 7–10) in 2016. For non-Indigenous children, the attendance rate was around 94% for Years 1–6, decreasing slightly to 90% by Year 10. By the end of secondary schooling, there was a 15 percentage point difference in the national attendance rates between Indigenous and non-Indigenous students (SCRGSP 2016). The difference in attendance rates between primary and secondary school for Indigenous students was highest in Western Australia (12 percentage points), followed by the Northern Territory (11 percentage points), and was lowest in South Australia (5 percentage points).

In 2016, school attendance rates for both primary school and secondary school years varied by remoteness. For primary school, the rate for Indigenous students in *Major cities* was 89% and the rate for non-Indigenous students was 94%. The resulting gap was around 5 percentage points. In *Very remote* areas, the rate for Indigenous students was 71% and the rate for non-Indigenous students was 92%. The resulting gap was around 21 percentage points (Figure 4.7).



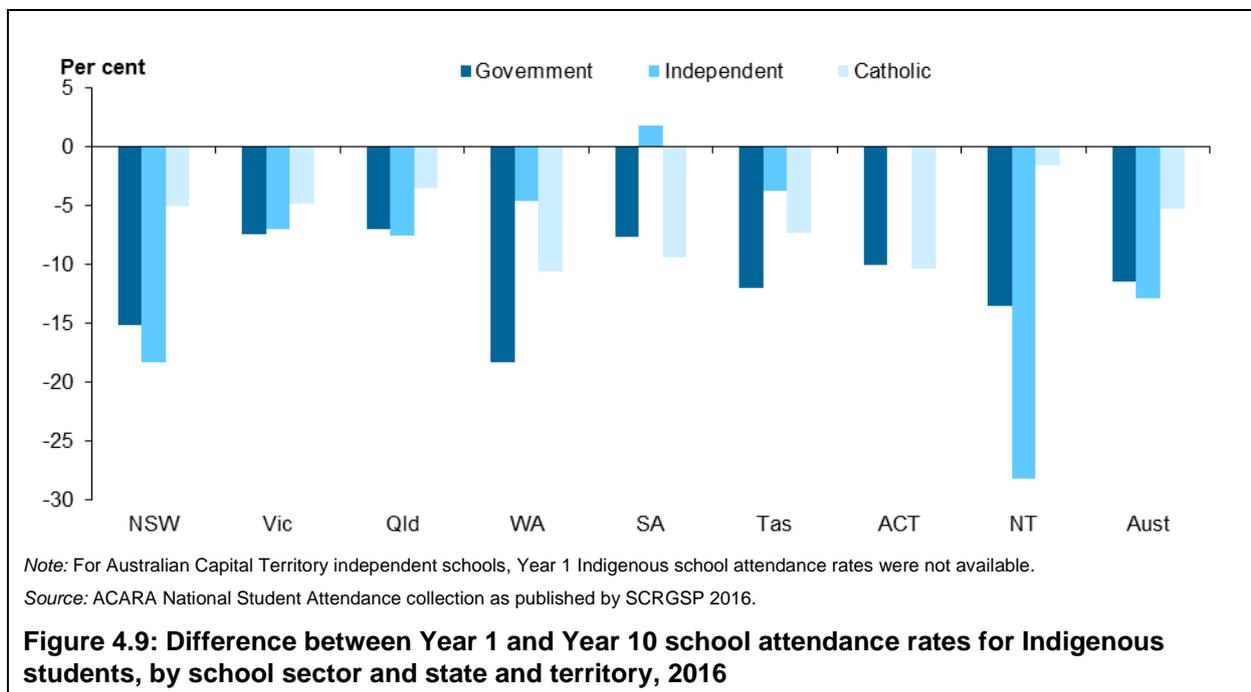
For secondary school, the school attendance rate for Indigenous students in 2016 in *Major cities* was 82% and the rate for non-Indigenous students was 92%. The resulting gap was around 10 percentage points. In *Very remote* areas, the rate for Indigenous students was 57% and the rate for non-Indigenous students was 90%. The resulting gap was around 33 percentage points (Figure 4.8). The difference in the gap between *Major cities* and *Very remote* areas was greater for secondary school than for primary school.



In their study of school attendance in Western Australia, Hancock et al. (2013) noted differences between authorised and unauthorised absences of Indigenous and non-Indigenous students. During primary school years, the gap between Indigenous and non-Indigenous students was around 1–2 percentage points for authorised absences and 10–11 percentage points for unauthorised absences. This increased during secondary school years, where the gap was 2–3 percentage points for authorised absences and 16–19 percentage points for unauthorised absences.

School attendance by school sector

Nationally, in 2016, Indigenous school attendance rates decreased for all school sectors, when comparing Year 1 with Year 10. The difference between Year 1 and Year 10 Indigenous attendance was greater for government and independent schools (around 12 percentage points) than for Catholic schools (around 5 percentage points) (Figure 4.9). Patterns of attendance between school sectors also varied by state and territory.



Differences between jurisdictions and school sectors also emerge when examining the supplementary measure of whether students attend school for 90% or more of possible days. Nationally, in 2016, only 47% of Indigenous students in Years 1–10 at government schools attended school for 90% or more of possible days. This was around 30 percentage points less than the attendance rate for non-Indigenous students, of whom 77% attended school on 90% or more of possible days. Both Indigenous and non-Indigenous attendance for 90% or more of possible days in 2016 was higher at non-government schools than at government schools. Rates for Indigenous students in the Northern Territory were lowest, of all jurisdictions, for both government (25%) and non-government (28%) schools (Table 4.9) (SCRGSP 2016).

Table 4.9: Proportion (%) of students who attended 90% or more of possible days in Years 1–10, by type of school and Indigenous status, 2016

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Government^(a)									
Indigenous	n.a.	57.9	52.8	38.0	42.3	63.3	48.4	24.7	46.6
Non-Indigenous	n.a.	78.6	76.3	76.7	74.7	75.2	75.0	69.4	76.9
Gap ^(b)	n.a.	-20.7	-23.5	-38.7	-32.4	-11.9	-26.6	-44.7	-30.3
Total	n.a.	78.2	74.0	73.4	72.6	74.0	74.0	48.6	74.8
Non-government									
Indigenous	63.4	62.4	65.7	44.3	55.4	68.8	64.1	27.8	58.1
Non-Indigenous	81.8	83.5	83.9	82.3	80.0	80.6	80.2	74.3	82.4
Gap ^(b)	-18.4	-21.1	-18.2	-38.0	-24.6	-11.8	-16.1	-46.5	-24.3
Total	81.3	83.3	83.2	81.1	79.6	79.9	79.9	61.8	81.8

n.a. = not available

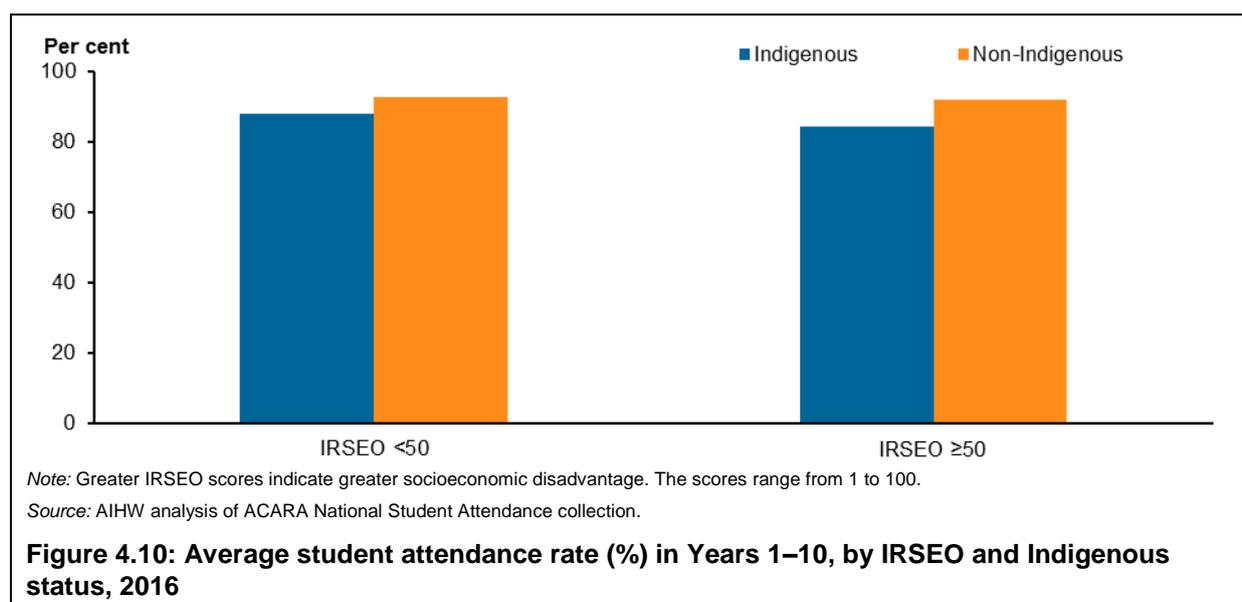
(a) Data are not available for New South Wales government schools, and national government school totals do not include those for New South Wales.

(b) This is the proportion of Indigenous students who attend school 90% or more of possible days minus the equivalent non-Indigenous data item.

Source: ACARA National Student Attendance collection as published by SCRGSP 2016.

School attendance by socioeconomic advantage of the area

The Indigenous Relative Socioeconomic Outcomes index (IRSEO) incorporates measures of employment, education, income and housing to provide an assessment of relative advantage at the Indigenous Area level. A score of 1 indicates the area is most advantaged, and a score of 100 indicates the area is most disadvantaged. Analysis of 2016 ACARA data shows that the average Indigenous school attendance rate is higher when the IRSEO is less than 50 (88%) relative to an IRSEO equal to or greater than 50 (84%). A similar pattern, but much smaller difference, is observed in rates for non-Indigenous students (93% for IRSEO less than 50 and 92% for IRSEO equal to or greater than 50) (Figure 4.10).



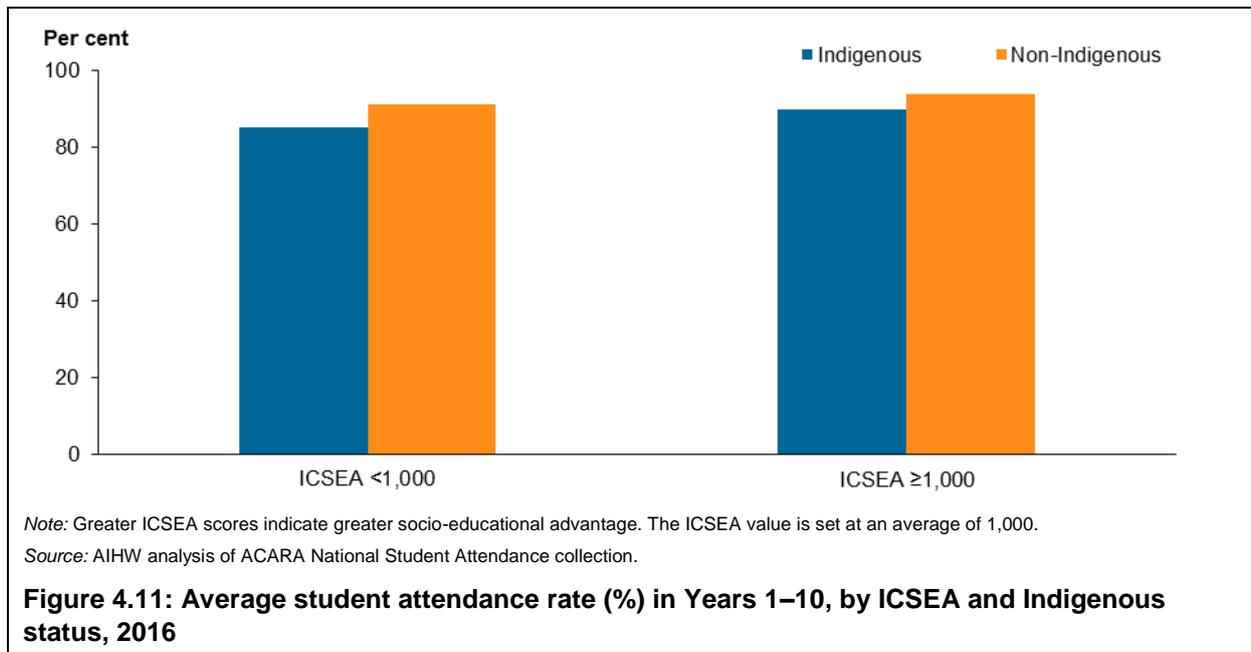
One limitation of the IRSEO is that it reflects the relative advantage or disadvantage of the community in which the school is located, rather than the school itself. In light of this limitation, additional analysis was performed to consider an index of disadvantage that pertains to each individual school.

School attendance by socio-educational advantage of the school

Alongside attendance information, data collected by the ACARA include information on the socio-educational background of students. The Index of Community Socio-Educational Advantage (ICSEA) is calculated for each school by accounting for factors relating to parents' occupation and education, the geographic location of the school, and the proportion of Indigenous students attending the school. Higher ICSEA scores indicate a greater level of educational advantage for the students that attend the school.

As presented in Figure 4.11, both Indigenous and non-Indigenous average attendance rates for 2016 are higher when there is greater socio-educational advantage. Schools that had a relatively high socio-educational advantage (ICSEA equal to or greater than 1,000) have an average Indigenous attendance rate of 90%. When comparing rates for Indigenous and non-Indigenous students for schools below 1,000 ICSEA with schools at or above 1,000 ICSEA, it appears that relatively low socio-educational advantage may be a greater inhibitor of school attendance for Indigenous than non-Indigenous students.

The effects of both socioeconomic and socio-educational advantage on Indigenous school attendance were investigated using 2016 ACARA school-level data. This analysis showed that—controlling for remoteness, total enrolments, the proportion of total enrolments that were Indigenous students and school sector—higher socioeconomic disadvantage (based on IRSEO) was associated with lower school attendance, and higher socio-educational advantage (based on ICSEA scores) was associated with higher school attendance (both at the $p < 0.01$ level) (AIHW analysis of 2016 ACARA school-level data, Semester 1). This is consistent with the evidence presented in this chapter on the relationship between attendance rates and socioeconomic and socio-educational advantage.



School attendance by school size and Indigenous enrolments

In a multivariate analysis, 2016 ACARA school-level data were used to investigate the effect of school size and Indigenous enrolments on Indigenous school attendance rates. Controlling for the effects of remoteness, school sector, IRSEO and ICSEA, Indigenous school attendance rates decreased as both school size (that is, total enrolments) and the Indigenous student share of those enrolments increased (both statistically significant at the $p < 0.01$ level) (AIHW analysis of 2016 ACARA school-level data, Semester 1).

In considering these results, it is important to note that the proportion of Year 1–10 enrolments that are Indigenous is not uniformly distributed across states and territories. For example, in 2016, the proportion of students enrolled at Australian schools identifying as Indigenous was highest in the Northern Territory (40%), and varied between 2.9% and 8.5% across the other states and territories (Table 4.10).

There is also variation in the proportion of students who are Indigenous by remoteness. For example, looking at data for 2014 by geolocation, Indigenous students represented 5% of all Year 5 students nationally, but 25% of those in Remote areas, and 66% in Very remote areas (Productivity Commission 2016).

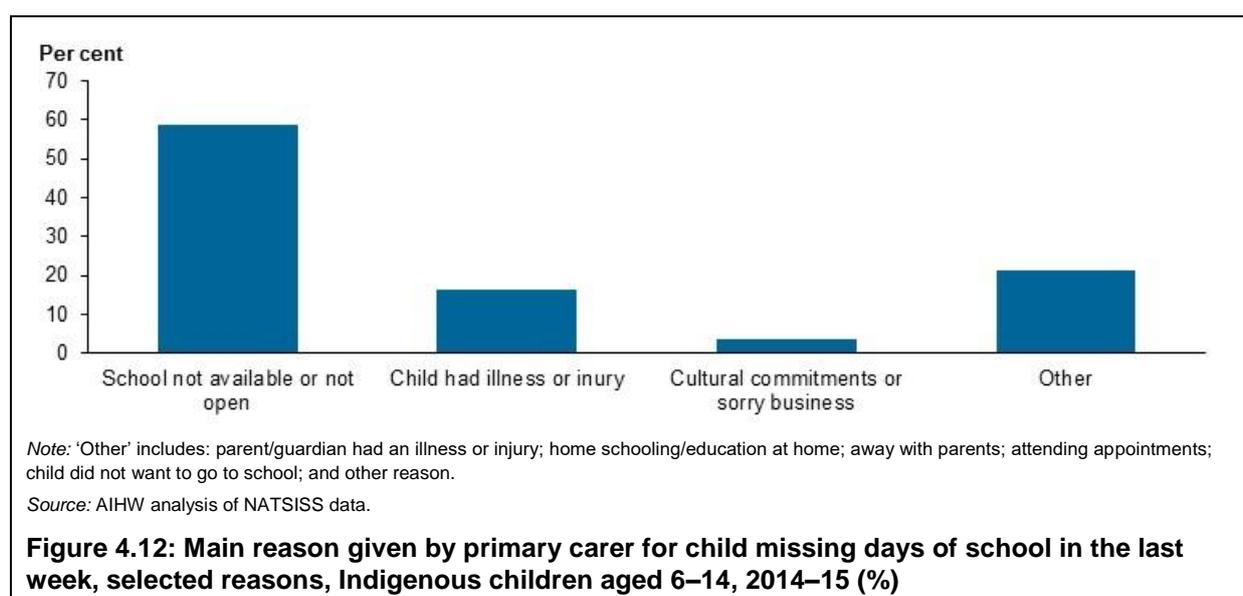
Table 4.10: Students enrolled in Australian schools: proportion who are Indigenous, by state and territory, 2016

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Per cent	5.6	1.6	7.8	6.3	4.6	8.5	2.9	40.1	5.5

Source: AIHW analysis of ABS 2017.

Reasons for missed school days

Data from the 2014–15 NATSISS on the reasons provided for a child missing days of school in the last week were analysed. Children aged 6–14 were included, and the NATSISS categories of responses on the main reason for a child missing school were used. The school not being available or open was the most common main reason given for missing days (59%), the second most common main reason was the child being ill or injured (16%) (Figure 4.12). The category ‘school not available or not open’ was investigated further but additional detail relating to the measurement or definition of this category was not available.



Further analysis of NATSISS data shows that reasons for missing school varied by remoteness. A greater proportion of absence in non-remote areas was attributable to the school's not being available or open (60% in non-remote areas and 52% in remote areas), whereas a relatively greater proportion of absence in remote areas was attributable to cultural commitments or sorry business (8% in remote areas and 2% in non-remote areas) (Table 4.11).

Table 4.11: Main reason given by primary carer for missing days of school in the last week for Indigenous children aged 6–14, selected reasons, by remoteness, 2014–15 (%)

Main reason missed school	Non-remote ^(a)	Remote ^(b)	Total
School not available or open	60.3	51.5	58.7
Child had illness or injury	17.1	14.0	16.5
Cultural commitments or sorry business	2.4	7.9	3.4
Other ^(c)	20.2	26.6	21.4
Total	100.0	100.0	100.0

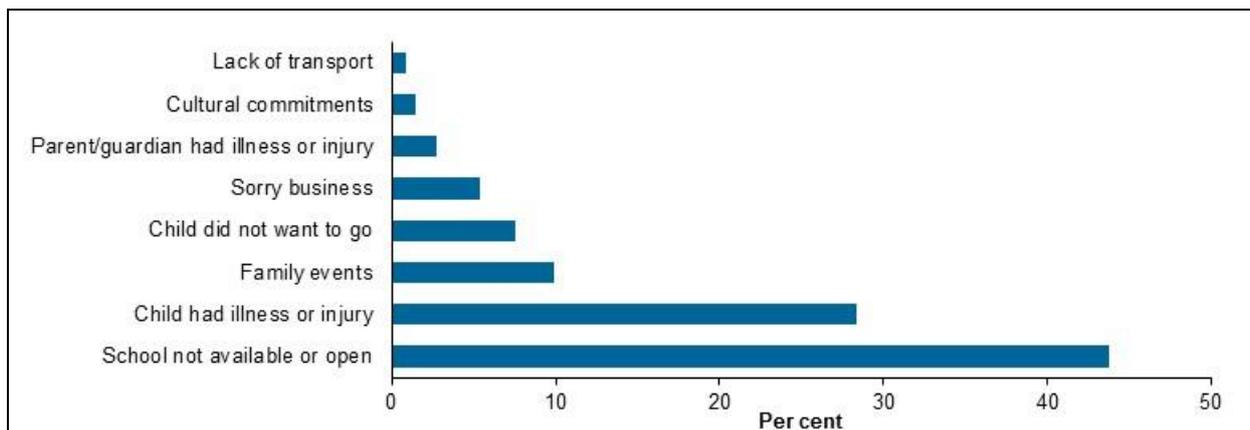
(a) Includes *Major cities, Inner regional and Outer regional* areas.

(b) Includes *Remote and Very remote* areas.

(c) 'Other' includes: parent/guardian had an illness or injury; home schooling/education at home; away with parents; attending appointments; child did not want to go to school; and other reason.

Source: AIHW analysis of NATSISS data.

Reasons given by the primary carer for their child missing school in the previous week in 2014, based on Release 7 of the LSIC, were also investigated. Figure 4.13 shows the respective proportions for the reasons for missing days of school, as reported for the 354 (29%) children in Years 2–7 that did not attend every day of the previous week. Consistent with the NATSISS analysis, the school's not being available or open (44%) and the child being ill or injured (28%) were the main reasons for missed days. Importantly, there are many reasons the school was not available or open (such as teacher absences or planned days off) that are not controlled by children or their carers.



Source: AIHW analysis of LSIC release 7 data.

Figure 4.13: Reasons given by primary carer for child missing days of school in the last week, Indigenous children, Years 2–7, 2014 (%)

4.3 Key drivers of school attendance

The scope of this section is not exhaustive—it highlights key relationships identified in the literature (including previously published AIHW material) and presents new modelling related to school attendance. The modelling results are limited by the coverage of the variables in the data sets used.

4.3.1 Evidence from the literature

AIHW (2014) identified four domains to categorise factors impacting on Indigenous school attendance, at both the primary and secondary school levels. These include school, structural/community, family and student factors (Box 4.2). Each domain, and the factors within, differ in the extent to which they are modifiable.

Box 4.2: Factors affecting non-attendance among Indigenous students by domain

School factors

- Culturally appropriate curriculum and school environment
- Cultural understanding
- Language
- Indigenous staff members
- Bullying and suspension policies
- School leadership

Family factors

- Family SES
- Experience with education
- Parental level of literacy and numeracy

Structural/community factors

- Remoteness
- Transport
- Community involvement
- Education experiences
- Employment opportunities

Student factors

- Child's health
- Level of school readiness
- Safe and secure environment
- Attachment to school/education

Source: AIHW 2014.

Student experiences at school

Evidence from a survey of over 21,000 Australian young people aged 15–19 indicates that school or study problems are a major concern for 33% of Indigenous young people, and that Indigenous students are less satisfied with their studies than their non-Indigenous peers (50% satisfied and 14% very satisfied for Indigenous students, and 56% satisfied and 16% very satisfied for non-Indigenous students) (Bailey et al. 2016). Facilitating a positive school experience may be one mechanism to promote attendance.

School attendance and sex

There are some factors that have been identified in the literature as being associated with school attendance that are not reflected in the results of the regression models (tables 4.12 and 4.13). These models were run using the most recent data available at the time of analysis; therefore discrepancies may reflect the changing nature of the influences on attendance. First, there is evidence from the literature that school attendance does vary sometimes by sex. Although research shows that Indigenous males are less likely to attend school, sex was not a significant variable in either of the regression models presented in this chapter. Nevertheless, reasons for Indigenous male truancy are acknowledged as complex and multifaceted (Biddle & Meehl 2016). Further analysis could be helpful in establishing the merits of focusing on male attendance patterns.

School attendance and housing problems

Biddle (2014) found that living in a house with structural problems is negatively associated with school attendance. Brackertz (2016) suggests that social housing and housing instability are associated with reductions in school attendance. The model presented in the next section in Table 4.12 includes variables relating to whether the child's dwelling had a structural problem or was overcrowded, however both variables were not statistically significant. It is possible that only specific housing factors are associated with attendance, or that housing factors have an indirect effect (via other variables) on Indigenous school attendance.

Remote School Attendance Strategy

The Remote School Attendance Strategy (RSAS) was implemented by the Department of the Prime Minister and Cabinet (PM&C) to improve school attendance rates in a number of remote communities. These communities had previously been identified as having low school attendance rates. The RSAS was first introduced (stage 1) in Term 1 of 2014 and involved 44 schools in New South Wales, Queensland, South Australia, Western Australia and the Northern Territory. In Term 2 of 2014, an additional 33 schools were added. As part of the strategy, local school attendance officers and supervisors are employed to work with schools, families and children to ensure attendance on every possible school day. An important element of the strategy is the employment of local Indigenous community members, with the aim of drawing from their understanding of, and connection to, the community (O'Brien Rich Research Group 2016; PM&C 2015).

An interim evaluation of the RSAS, focusing on stage 1, reveals promising results. Although the medium and longer term effects of the RSAS are unknown, a comparison of school attendance rates in Term 3 of 2013 and 2014 shows that the majority of schools in the Northern Territory and Queensland (29 of 40) recorded higher attendance rates after the introduction of the strategy (PM&C 2015). This is an encouraging result given that the Northern Territory has the lowest Indigenous school attendance rates of all states and territories (Table 4.1), and that the Northern Territory and Queensland together contribute

over 42% of the national gap in school attendance. Importantly, attendance rates in RSAS schools increased at a faster rate than in other control schools.

RSAS case studies indicate that the effectiveness of the strategy is facilitated by creating an effective and stable RSAS team; having a skilled coordinator; having the coordinator and team support, educate and foster relationships with families; and having the team and the school work cooperatively (O'Brien Rich Research Group 2016).

Better Attendance: Brighter Futures strategy

Programs designed to improve school attendance programs should be based on sound empirical evidence and guided by successful programs that have been formally evaluated. A review from the Western Australian Auditor General (2015) notes that the state's Better Attendance: Brighter Futures strategy, in which Indigenous attendance was a focus, directed \$15 million over 4 years with no formal evaluation and no consistent improvement. However, the report also found that schools are employing a number of strategies themselves to reduce absenteeism, including drawing attention to attendance records, engaging with parents, and working with the local community (Western Australian Auditor General 2015). Many of these strategies, particularly in relation to liaising with parents, align with evidence-based attendance recommendations (Epstein & Sheldon 2002; Hancock et al. 2013).

4.3.2 Evidence from new AIHW analysis

Analysis of NATSISS data

Multivariate logistic regression models are estimated in this section to better understand the factors that contribute to Indigenous school attendance in Years 1–10. Using data collected as part of the 2014–15 NATSISS on a sample of Indigenous children aged between 6–14, a school attendance measure was created, based on whether the child had *not missed school without permission in the previous 12 months*.

Previous sections indicate that remoteness, factors linked with socioeconomic advantage (examined here as household income and housing issues), the child's health, and age of the child (which relates to the child's school year group), may contribute to school attendance. Additionally, a number of additional variables theorised to be associated with school attendance—including the child's sex, whether the child is learning an Indigenous language at school, and whether the child has been bullied at school—were included as independent variables. The model includes variables that are non-modifiable (such as sex, age and location) as well as variables that are more modifiable (such as those relating to experiences at school, health, income, and housing issues) (Table 4.12). The relationship between explanatory variables may be difficult to disentangle; where strong associations exist, the importance of one variable may not be observed in the regression results. In addition, the analysis has not considered possible interactions between variables.

Of the modifiable factors, findings reveal statistically significant effects at the $p < 0.05$ level for whether the child was learning an Indigenous language at school, and at the $p < 0.1$ level for whether the child had been bullied. Of the non-modifiable factors, findings reveal statistically significant effects at the $p < 0.01$ level for the age of the child and remoteness.

The model indicates that Indigenous children who are older (that is, aged 10–14 rather than 6–9), who live in a more remote location, or who have been bullied at their current school show less favourable patterns of school attendance. Conversely, children who learn an Indigenous language at school tend to have more favourable patterns of school attendance.

These findings indicate that efforts to target Indigenous school attendance should involve children in older year groups and children in more remote areas. Importantly, the results also indicate that more modifiable factors, including experiences of bullying and learning an Indigenous language at school may also contribute to patterns of attendance. It is possible that the latter of these modifiable factors reflects a broader focus on cultural appropriateness and understanding at the school.

Using the odds ratios shown in Table 4.12 alone, it is not possible to compare the relative importance of the effects of the explanatory variables. To assess the relative importance, the logistic regression results have been used to estimate the change in the probability of school attendance associated with a change from the reference level of each of the explanatory variables. The relative importance of the explanatory variables is based on the absolute size of the associated changes in probability (see Appendix C for details). Based on this ranking method, the explanatory variables with relatively larger impacts on Indigenous school attendance include remoteness, the child being aged 10 to 14, and the child being bullied at the current school.

Table 4.12: Multivariate logistic regression analysis: odds ratios of school attendance, Indigenous children, 2014–15

Explanatory variable and reference group	Level	Odds ratio estimate	Lower 95% CI	Upper 95% CI
Sex (ref: Male)	Female	1.06	0.63	1.80
Age (ref: 6–9)	10–14	0.46 ^(a)	0.26	0.82
Remoteness (ref: <i>Major cities, Inner regional and Outer regional</i> areas combined)	<i>Very remote or Remote</i>	0.28 ^(a)	0.15	0.50
Whether child is bullied at current school (ref: child not bullied at current school)	Bullied at current school	0.62 ^(c)	0.36	1.09
Whether learning an Indigenous language at school (ref: not learning an Indigenous language at school)	Learning an Indigenous language at school	1.97 ^(b)	1.02	3.80
Self-assessed health status (ref: child is in good/fair/poor health)	Excellent or Very good health	1.52	0.82	2.85
Whether lives in a dwelling with a structural problem (ref: child lives in a dwelling with a structural problem)	Does not live in a dwelling with a structural problem	0.75	0.42	1.34
Overcrowding (ref: dwelling not overcrowded)	Dwelling overcrowded (extra bedrooms needed)	0.86	0.46	1.61
Financial stability (ref: Household members did not run out of money for basic living expenses in last 12 months)	Household members ran out of money for basic living expenses in last 12 months	0.67	0.39	1.16
Equivalised household weekly income (ref: Low-range, deciles 1–3)	Mid-range (deciles 4–7)	1.32	0.74	2.36
	High-range (deciles 8–10)	2.34	0.64	8.57

(a) Significant at the $p < 0.01$ level.

(b) Significant at the $p < 0.05$ level.

(c) Significant at the $p < 0.1$ level.

Notes

- Children aged 6–14 are included in the model.
- CI refers to confidence interval. The intervals can be interpreted as meaning there is 95% confidence that the true odds ratio lies between the lower and upper bounds. An odds ratio of greater than 1 indicates that school attendance is more likely, while an odds ratio below 1 indicates school attendance is less likely.

Source: AIHW analysis of 2014–15 NATSISS data.

Analysis from LSIC sample

Although the model presented in Table 4.12 provides useful insight into the factors associated with Indigenous school attendance, it is limited in that the NATSISS data collected on the child sample are limited (compared with the adult sample). It is useful, therefore, to consider supplementary analysis that can complement and provide additional insight to that of the above model. To this end, an additional model (Table 4.13) has been run using LSIC release 7 data on children aged 6–14 who are enrolled in Years 2 to 7. This model therefore draws on a separate sample and uses different variables for analysis relating to 2014.

The LSIC model (Table 4.13) includes variables identified as relevant from the existing literature (Biddle 2014) and from the analysis presented within this chapter. These variables include the LSIC cohort (B cohort were babies when LSIC began in 2008); the age of the child; the child's school year level; the sex of the child; the Level of Relative Isolation (LORI); whether the child's second parent is in the household; the health status of the child; whether the child has a long-term health condition; the school sector; whether the main carer felt sad, blue or depressed; whether the main carer is employed; and whether the main carer has a post-school qualification. Therefore, both non-modifiable and modifiable variables have been included. School attendance was defined as whether the child had attended school every day in the previous week.

Of the modifiable factors, findings reveal statistically significant effects at the $p < 0.05$ level for whether the main carer felt sad, blue or depressed, and for the primary caregiver's not being employed. Of the non-modifiable factors, findings reveal statistically significant effects at the $p < 0.01$ level for the LORI and for the child's having a long-term health condition. Among the results for the statistically significant variables associated with school attendance in Table 4.13, the most influential variables (using marginal effects) included high degree of isolation (LORI), child's having a long-term health condition, and whether the main carer reported feeling sad, blue or depressed. All of these variables had a negative effect on the odds of a child's attending school regularly. See Appendix C for further detail on the methodology used for this analysis.

The results relating to remoteness are consistent with the NATSISS regression analysis, giving further support to these findings. The effects relating to the child's main carer and whether the child has a long-term health condition were not considered in the previous model, and add to these findings. The results reveal that improvements that impact on students' long-term health conditions (and not simply overall health) may be useful for increasing attendance, and that parents appear to have an important influence on attendance. That is, when parents face challenging circumstances (such as unemployment and adverse mental states), the school attendance of their child may also suffer. One important implication is that efforts to improve Indigenous mental health and employment may have positive effects for Indigenous school attendance rates.

Table 4.13: Multivariate logistic regression analysis: odds ratios of attending school, Indigenous children, 2014

Explanatory variable and reference group	Level	Odds ratio estimate	Lower 95% CI	Upper 95% CI
Non-modifiable factors				
Cohort (ref: Kinder cohort)	Baby cohort	0.97	0.27	3.44
Child age in years (continuous variable)	..	0.97	0.69	1.36
Child's Year level in school (ref: Years 1 or 2)	Years 3, 4	1.37	0.44	4.28
	Years 5, 6 7	1.19	0.32	4.39
Child sex (ref: Male)	Female	1.08	0.81	1.44
Level of Relative Isolation (ref: None or Low)	Moderate or High	0.53 ^(a)	0.37	0.76
Main carer—Indigenous status (ref: Indigenous)	Non-Indigenous	1.06	0.71	1.58
Whether child attends government school (ref: Yes)	No	1.02	0.65	1.57
Whether child has long-term health condition (ref: No)	Yes	0.64 ^(a)	0.47	0.85
More modifiable factors				
Whether second parent is in same household (ref: Yes)	No	0.87	0.64	1.16
	Excellent or Very good	1.14	0.78	1.65
Self-assessed health of child (ref: Good, Fair or Poor)				
Whether main carer felt sad, blue or depressed (ref: No)	Yes	0.70 ^(b)	0.51	0.95
Employment status of main carer (ref: Employed)	Not employed	0.72 ^(b)	0.53	0.98
Whether main carer has post-school educational qualification (ref: No)	Yes	1.22	0.86	1.68

.. = not applicable

(a) Significant at the $p < 0.01$ level.

(b) Significant at the $p < 0.05$ level.

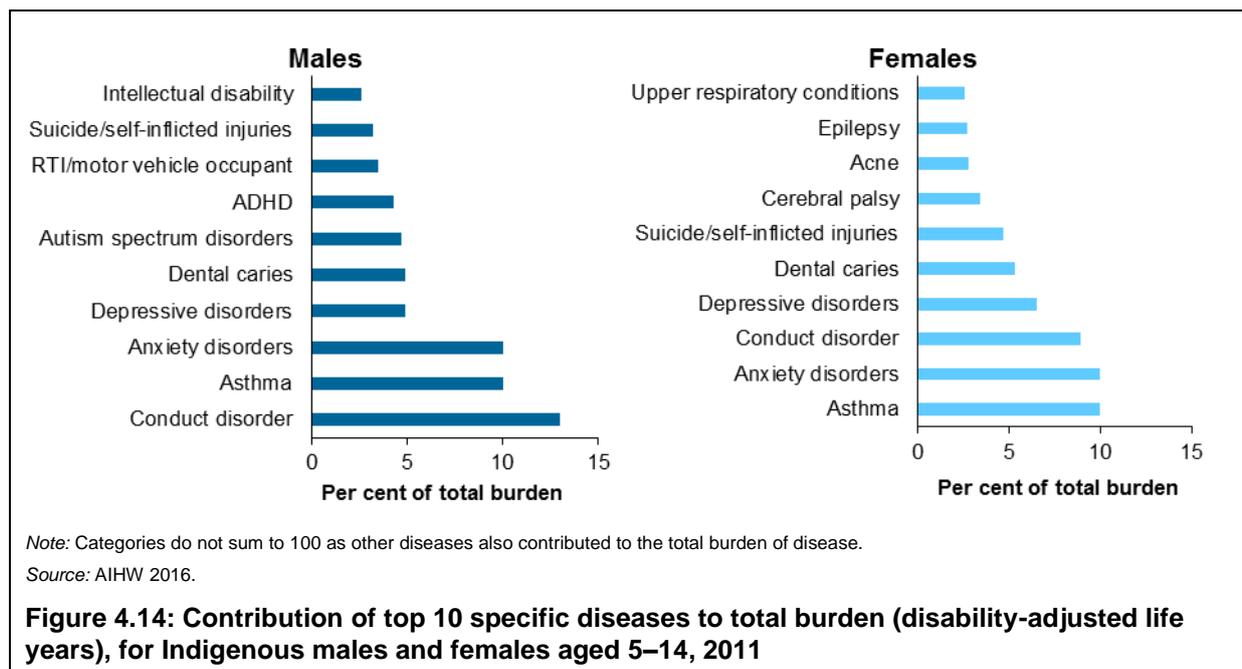
Notes

1. Children aged 6–14 are included in the model. They include children selected in both the Kinder and Baby cohorts of the LSIC sample. The Kinder cohort is older.
2. CI refers to confidence interval. The intervals can be interpreted as meaning there is 95% confidence that the true odds ratio lies between the lower and upper bounds. An odds ratio of greater than 1 indicates that school attendance is more likely, while an odds ratio below 1 indicates school attendance is less likely.

Source: AIHW analysis of LSIC release 7 data; LSIC Wave 7 sample, both cohorts.

Analysis of child health

Although self-assessed health status was not significantly associated with school attendance in either regression models, the presence of a long-term health condition was associated with lower school attendance. Furthermore, child illness or injury was identified as one reason provided by parents for why their child missed days of school. The 2011 Australian Burden of Disease Study (AIHW 2016) found that asthma, anxiety disorders, depressive disorders and conduct disorder were the main causes of health loss for Indigenous males and females aged 5–14 (Figure 4.14).



4.4 Data limitations and measurement issues

Measurement of student attendance among Indigenous Australians requires accurate and timely data. Key data issues are discussed in this section.

4.4.1 Reporting on days of attendance

Both the target measure on *rates of student attendance* and the supporting performance indicator measure on the *proportion of students achieving 90% or more attendance* are calculated using days attended and possible days of attendance, however data on the underlying days attended are not publically available. Accurate data on days would allow a calculation of how many extra days of school Indigenous children need to attend in order to meet the COAG target.

4.4.2 Measuring student attendance rates

Student attendance data for New South Wales government schools are not comparable with data from other states and territories. This affects:

- the rates of student attendance (main measure), where school attendance rates for NSW government schools are reported and included in the Australian totals, but are not comparable to other states and territories.
- the proportion of students achieving 90% or more attendance (supplementary measure). NSW government are excluded.

Data quality improvements are a priority and NSW is working towards a comparable data collection in the near future (SCRGSP 2016).

Student attendance rates exclude those young people that are not enrolled fulltime, therefore attendance rates are likely to underestimate those participating in schooling.

For primary and secondary totals, the following cut-offs were used as a proxy for all states and territories: Years 1–6 for primary and Years 7–10 for secondary. Structural changes

across states and territories over time should be considered when making time series comparisons within jurisdictions (SCRGSP 2016).

4.4.3 Measuring students achieving 90% or more attendance

Measuring the overall attendance rates does not illustrate the impact of low-attending students. It may be more informative to focus on the proportion of students achieving 90% or more attendance as a target measure.

Currently, a 90% or more measure is included as a measure under the supporting NIRA performance indicator calculated as the sum of possible school days for students attending on 90% or more of possible days, divided by the sum of possible school days. In addition, it may be useful to consider the number of students attending 90% or more of the time as a proportion of the total number of students. Although this measure has limitations (such as students enrolled at multiple schools across the collection period, part-time enrolments and switching schools) (ACARA 2015), it may be informative to consider.

4.4.4 Survey and longitudinal data sets

The school not being available or open was the main reason given by parents of Indigenous children for why they missed school in the previous week. It would be valuable if the surveys that collected these data (NATSISS and LSIC) included further detail on why the school was not available or open, including distinguishing between reasons related to planned holiday periods and unplanned or unexpected school closures. The latter may be expected to occur more often in remote areas.

4.5 Bringing it together

4.5.1 An overview

The COAG target for school attendance is to close the gap between Indigenous and non-Indigenous school attendance within five years (by 2018).

The school attendance gap (9.7 percentage points) between Indigenous and non-Indigenous students was unchanged between 2014 and 2016. Progress towards this target is not on track.

Literature highlights that each day of attendance in school contributes towards a child's learning, and that there is no 'safe' threshold for which school absences do not have an impact. The data shows that Indigenous school attendance rates vary across:

- states and territories with Northern Territory at the lowest level
- remoteness areas, with the lowest level in Very remote areas
- school year levels—attendance rates are lower during secondary years
- socioeconomic-level factors—attendance rates lower for areas that are less advantaged.

Available evidence suggests that key drivers of school attendance include family SES, school environment, child health, history or being bullied, and structural/community factors.

4.5.2 Examples of opportunities for further progress

Drawing from the analyses presented in this chapter, examples of opportunities for further progress are provided in this section. There is however a need for more evidence on what works best to improve school attendance among Indigenous Australians (Purdie and Buckley 2010; Productivity Commission 2015).

Address low attendance early

Although gaps are most apparent in high-school attendance rates between Indigenous and non-Indigenous students, these reflect growing disparities first evident in primary-school. As such, initiatives focusing on improving school attendance of Indigenous students in earlier years are key.

Multiple factors of influence

A better understanding of the combination of home, school and individual factors affecting students' absence from school, and their relative roles, which can differ greatly in specific situations, is warranted. Multiple channels to improving school attendance need to be considered.

Encouraging the involvement of students' families and community can help improve school attendance rates. Collaboration between public agencies and the community, often by engaging parents or community-based organisations, can be of benefit (Purdie and Buckley 2010; Epstein & Sheldon 2002).

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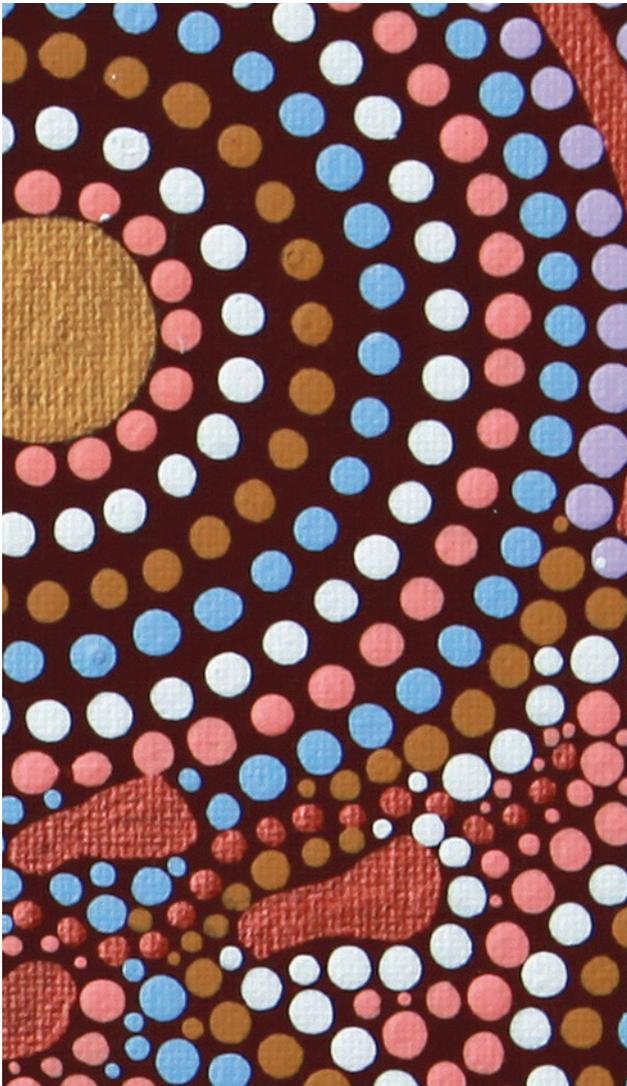
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Chapter **5**

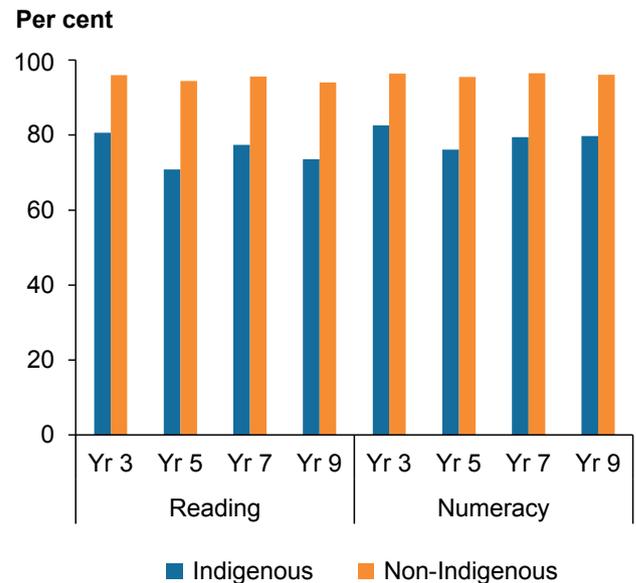
**Literacy and
numeracy target**



COAG target: Halve the gap for Indigenous children in reading, writing and numeracy within a decade (by 2018).

Current picture

- In 2016, the majority of Indigenous students met the National Minimum Standards (NMS) in NAPLAN testing. Across the 8 areas used to assess progress towards the 2018 target (reading and numeracy tests in Years 3, 5, 7 and 9), the proportion of Indigenous students achieving the NMS ranged from 71% in Year 5 reading to 83% in Year 3 numeracy in 2016 (Figure 5a).
- Across the 8 areas, the gap between Indigenous and non-Indigenous students meeting the NMS was smallest in Year 3 numeracy (14 percentage points) and largest in Year 5 reading (24 percentage points).
- The proportion of Indigenous students meeting the NMS varied by state and territory, ranging from 27% for Year 5 reading in the Northern Territory to 94% for Year 3 numeracy in Tasmania.
- The proportion of Indigenous students who achieved the NMS in 2016 declined substantially with increasing remoteness, while there was little variation by remoteness for non-Indigenous students.
- The gap between Indigenous and non-Indigenous students in meeting the NMS was greater in more remote areas. For example, the Year 9 reading gap in 2016 was 57 percentage points in *Very remote* areas.
- Taking into account the Indigenous population size, the lower NAPLAN results of Indigenous students living in *Remote* and *Very remote* areas contributed substantially to the national gap between Indigenous and non-Indigenous students, despite the large majority of Indigenous students living in non-remote areas. For example, Indigenous students in *Remote* and *Very remote* areas contributed to almost half (45%) of the national gap in 2014 Year 5 reading, while students in *Major cities*, *Inner regional* and *Outer regional* areas contributed to the remaining 55%.

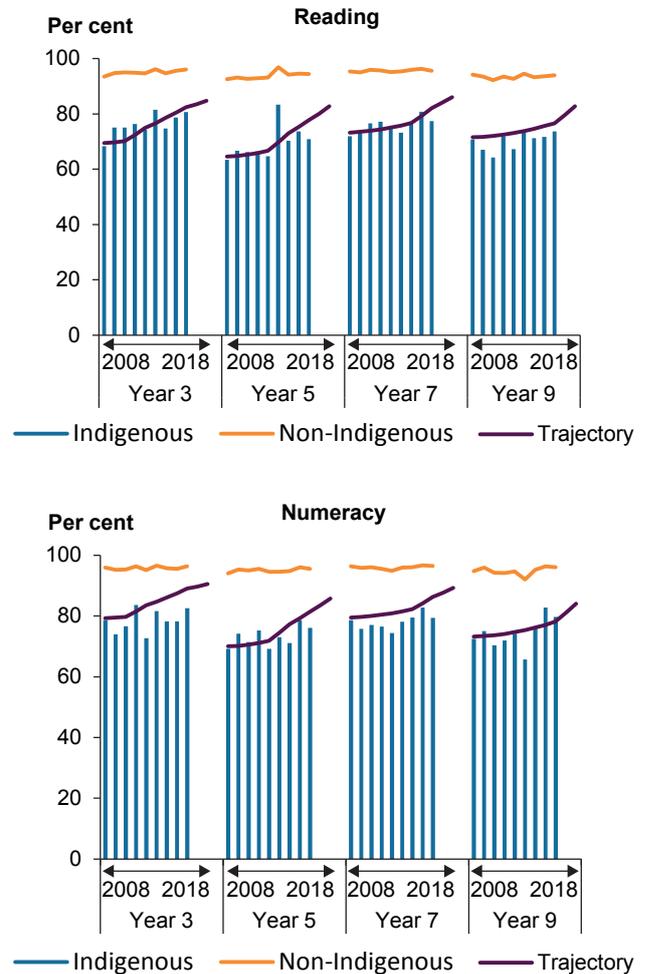


Source: ACARA 2016a.

Figure 5a: Proportion of Year 3, 5, 7 and 9 students at or above the NMS for reading and numeracy, by Indigenous status, 2016

Has there been progress?

- Progress since the 2008 baseline has been mixed, with year to year variability in results for Indigenous students. When assessed against the trajectory points for 2016, only one of the eight areas used to assess progress towards the 2018 target was on track—that is Year 9 numeracy (Figure 5b).
- Another way to assess progress towards the target is to see whether the latest results (2016) for Indigenous students have improved from the 2008 baseline. In 4 of 8 measures, the proportion of Indigenous children meeting the NMS was significantly higher in 2016 than in 2008 (Years 3 and 5 reading; and Years 5 and 9 numeracy).
- Based on 2016 data, progress towards the target is not on track. Since finalising the analysis for this report, data for 2017 have become available and also indicate that progress towards the target is not on track.



Source: AIHW analysis of ACARA 2016b, COAG 2012.

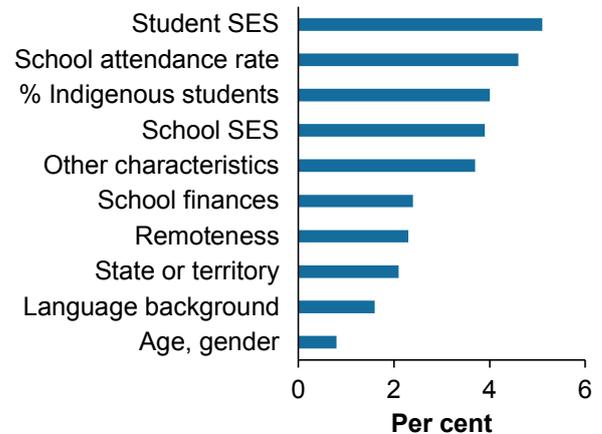
Figure 5b: Proportion of Year 3, 5, 7 and 9 students at or above the NMS for reading and numeracy, and trajectory to COAG target, by Indigenous status, 2008 to 2016

Additional analysis and key drivers

- Key drivers of Indigenous students' achievement identified in the literature include SES of the family, average SES of student peers, preschool participation, regular school attendance, health of the student, high quality instruction and high expectations. Early life stressors are another key driver—for example, contact with the child protection system is associated with lower NAPLAN achievement among all students.
- Remoteness is also important, for example, the proportion of Indigenous students meeting the NMS declined substantially with increasing remoteness in 2016.
- The analysis by the Productivity Commission of 2013 and 2014 NAPLAN data for Year 5 students showed that the top three most influential variables explaining the overall variation in Indigenous students' NAPLAN performance were:
 - student SES
 - average attendance rate at their school
 - proportion of Indigenous students at the school (Figure 5c).

Remoteness was the fifth most important variable, however this result may underestimate its importance due to interactions between variables.

- Care should be taken when interpreting these statistics, as the contribution attributed to each variable may be sensitive to the specific ranking method and the set of variables used in the regression model.
- In the Productivity Commission analysis, much of the variation in student achievement remained unexplained by the characteristics observed in the ACARA data. Observed student-level and school-level characteristics explained around one-quarter of the total variation in the NAPLAN performance of Indigenous students in 2013–2014 (26% of variation for Year 5 reading, and 23% for Year 5 numeracy).



Source: Productivity Commission 2016.

Figure 5c: Percentage contributions to the total variation in Year 5 reading NAPLAN achievement, Indigenous students, 2013–2014

Data limitations and measurement issues

Use of the NMS

- The proportion of students at or above the NMS focuses on only one point in the distribution of NAPLAN scores. Consequently, the target only tracks changes across this single point in the distribution.
- Compared with non-Indigenous students, a larger proportion of Indigenous students have scores close to the NMS cut-off point. This can contribute to the short-term variability across calendar years in the proportion of Indigenous students meeting the NMS. The results are also sensitive to annual changes in the percentage of students who are exempt from taking the NAPLAN tests (as exempt students are defined as not meeting the NMS).

Participation in NAPLAN testing

- The accuracy of NAPLAN results is affected by the participation rate, as students who do not participate in the test are not counted towards the results. The level of literacy and numeracy among students who do not participate is unknown, but if participation is related to ability then this would skew the results.
- Although the majority of Indigenous students participate in the NAPLAN tests, the participation rate among Indigenous students is lower than among non-Indigenous students, and is generally worse in higher school years.

5.1 Background

Academic school achievements, in particular literacy and numeracy, are strong determinants of outcomes in later life, including post-school education, employment, income and good health. While most students finish primary school with literacy and numeracy skills at a foundation level for further learning, some do not. A lower proportion of Indigenous Australian students achieve the required literacy and numeracy standards (Productivity Commission 2016).

In 2008 COAG committed to halve the gap in school achievement in reading, writing and numeracy between Indigenous and non-Indigenous students in the decade between 2008 and 2018 (COAG 2012)—see Box 5.1. The agreed measure for this target is the proportion of Indigenous and non-Indigenous students at or above the national minimum standards (NMS) in the National Assessment Program—Literacy and Numeracy (NAPLAN) test.

Assessment of the target is based on eight areas: reading and numeracy for students in Years 3, 5, 7 and 9. In 2016, only one of these eight areas met the 2016 trajectory point—Year 9 numeracy.

Box 5.1: Literacy and numeracy—Closing the Gap target and data sources

The COAG target for literacy and numeracy is: Halve the gap for Indigenous children in reading, writing and numeracy within a decade (by 2018).

The measure for this target is defined as the proportion of students at or above the NMS for reading, writing and numeracy in Years 3, 5, 7 and 9.

Due to a change in the type of writing test used, writing results from 2011 onwards are not comparable to prior years; consequently, progress from the 2008 baseline is only assessed for reading and numeracy.

Data sources for COAG target

The data used for measuring progress towards the target are the NAPLAN tests. The NAPLAN tests are conducted annually for all students across Australia in Years 3, 5, 7 and 9. Assessments are made on 4 areas (or ‘domains’): reading, writing, numeracy and language conventions (spelling, grammar and punctuation). The Australian Curriculum, Assessment and Reporting Authority (ACARA) prepares national reports on each year’s NAPLAN results (see for example, ACARA 2016a). At the time of analysis, the most recent NAPLAN data available for inclusion in this chapter were for 2016.

Every year, a small proportion of students are exempt from the NAPLAN tests. Children can also be withdrawn from the NAPLAN testing program at the request of their parent/carer, or be absent on the day of the test. Exempt students are included in the count of students participating in the NAPLAN testing program and are assessed to not have met the NMS. Withdrawn and absent children are not included in the counts of participating students, nor in the calculations of the proportion of students who have met the NMS.

Other data sources used in this chapter

This chapter also draws on a research study by the Productivity Commission using NAPLAN data to look at the contributions of school-level and student-level characteristics to Indigenous students’ literacy and numeracy achievement. (Productivity Commission 2016). Further modelling has not been undertaken by the AIHW.

Although this chapter focuses on NAPLAN test scores for literacy and numeracy, these are only part of the overall set of skills that children need to acquire for success in life.

For example, for Indigenous children, other skills related to traditional languages and cultural knowledge can also influence outcomes later in life.

This chapter provides detailed information on literacy and numeracy achievement, including:

- current outcomes and progress towards the COAG target
- differences by state and territory and remoteness
- identification of key drivers based on evidence from the literature
- a discussion of data limitations and measurement issues.

5.2 Current picture and progress

5.2.1 National data on literacy and numeracy

NAPLAN results for 2016 show that across the 8 areas used to assess progress towards the target (reading and numeracy for Years 3, 5, 7 and 9):

- the majority of Indigenous students met the NMS, with the proportion of Indigenous students at or above the NMS ranging from 71% in Year 5 reading to 83% in Year 3 numeracy
- the gap between Indigenous and non-Indigenous students in the proportion meeting the NMS in 2016 was smallest in Year 3 numeracy (14 percentage points) and largest in Year 5 reading (24 percentage points) (Table 5.1).

Between 2008 and 2016, the gaps narrowed across all 8 measures; however based on 2016 data, progress will need to accelerate in order for the target to be met and progress towards this target is currently not on track (see Section 5.2.4).

Table 5.1: Proportion of students meeting the NMS, by Indigenous status and school year, reading and numeracy, 2016

	Reading				Numeracy			
	Year 3	Year 5	Year 7	Year 9	Year 3	Year 5	Year 7	Year 9
Indigenous (%)	80.6	70.8	77.4	73.6	82.6	76.1	79.4	79.7
Non-Indigenous (%)	96.0	94.4	95.6	94.0	96.4	95.5	96.5	96.1
Gap ^(a) (percentage points)	15.4	23.6	18.2	20.4	13.8	19.4	17.1	16.4

(a) The gap was calculated as the proportion for non-Indigenous students minus the proportion for Indigenous students.

Source: ACARA 2016a.

5.2.2 Literacy and numeracy outcomes by state and territory

The proportion of Indigenous students meeting the NMS in 2016 varied by state and territory, ranging from 27% for Year 5 reading in the Northern Territory to 94% for Year 3 numeracy in Tasmania (ACARA 2016a).

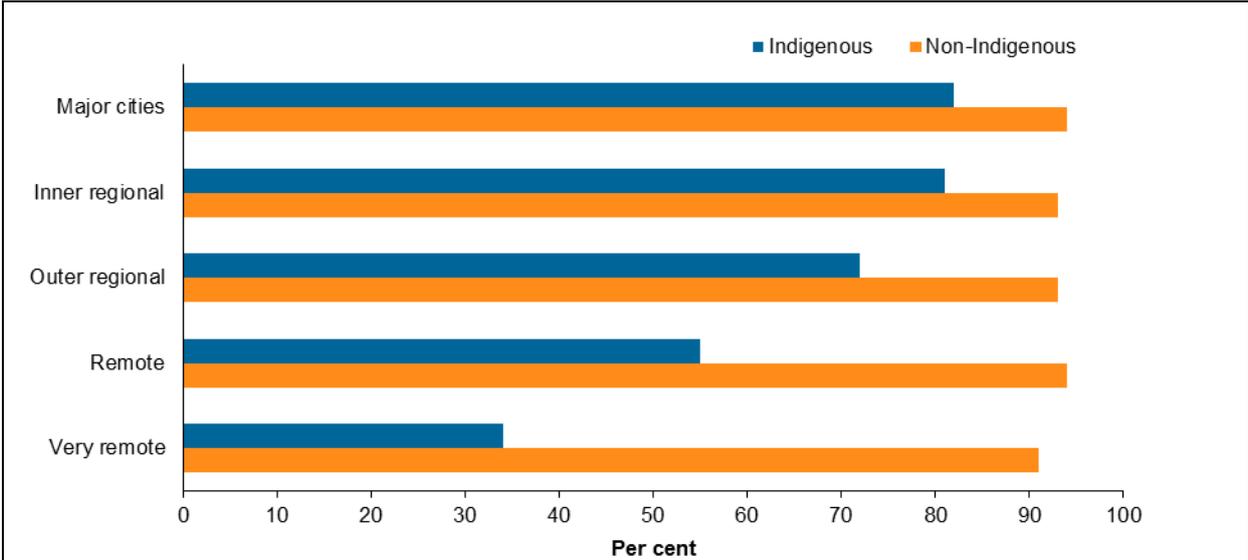
The Northern Territory had the lowest proportion of Indigenous students at or above the NMS for each of the test domains and test-year combinations. This result partly reflects the pattern by remoteness area in that jurisdiction, as the Northern Territory has a much higher proportion of Indigenous students in *Remote* or *Very remote* areas than any other jurisdiction (PM&C 2017).

The contribution of specific geographic areas to the national gap in NAPLAN performance is affected not only by differences in performance, but also by the size of the Indigenous

population in that area. Taking into account the Indigenous population sizes, the Productivity Commission (2016) estimated the proportion of the national gap in performance attributed to each state and territory (for method used see Appendix C). In 2014, for Year 5 reading approximately 90% of the national gap was attributable to four states and territories combined—Queensland (26% of national gap), Northern Territory (23%), New South Wales (21%) and Western Australia (20%). This reflects both the number of students and the size of the gap in each jurisdiction; for example, New South Wales, which has a relatively small gap in school achievement but a large Indigenous population, contributes to a similar share of the national gap as the Northern Territory, which has a smaller Indigenous population but a larger gap.

5.2.3 Literacy and numeracy outcomes by remoteness

The proportion of Indigenous students who achieved the NMS declined substantially with increasing remoteness in 2016, while there was little variation by remoteness for non-Indigenous students. There are large gaps not only between Indigenous and non-Indigenous students, but also within the Indigenous student population by remoteness. For example, in Year 9 reading in 2016, the gap between Indigenous and non-Indigenous students in the proportion of students achieving the NMS in *Very remote* areas was 57 percentage points. Within the Indigenous student population, there was an almost equally large gap (48 percentage points) in Year 9 reading results between Indigenous students in *Very remote* areas and those in *Major cities* (Figure 5.1).



Source: AIHW analysis of NAPLAN data in ACARA 2016a.

Figure 5.1: Proportion of students meeting the NMS in Year 9 reading, by Indigenous status and remoteness area, 2016

Taking into account the Indigenous population sizes, the Productivity Commission (2016) estimated the proportion of the national gap in performance attributed to each remoteness area (for method used see Appendix C). In 2014, for Year 5 reading:

- Indigenous students in *Remote* and *Very remote* areas contributed to almost half (45%) of the national gap in the NMS percentage. Indigenous students in *Major cities*, *Inner regional* and *Outer regional* areas contributed the remaining 55%
- *Very remote* areas contributed to one-third (33%) of the national gap in the NMS while only accounting for 12% of Indigenous student population. This is due to the substantially

larger gap in NAPLAN achievement between Indigenous and non-Indigenous students in *Very remote* areas than in other areas.

5.2.4 Progress towards the literacy and numeracy target

Overall, progress on this measure since the 2008 baseline year has been mixed. Consistent trends are not usually found, due to variability in the NAPLAN results from year to year for Indigenous students. The gaps are closing between 2008 and 2016 for all measures, however based on 2016 data, progress towards the target is not on track. Since finalising the analysis for this report, data for 2017 have become available; these newly available data, reported in the *Closing the Gap Prime Minister's Report 2018* (PM&C 2018), also indicate that progress towards this target is not on track.

Progress towards this target, is usually assessed by comparing the latest calendar year results with the agreed trajectory points for that year—see Box 5.2. Another way to assess progress is to see whether the latest results for Indigenous students have improved by comparing the latest year of results with the 2008 baseline year. The results of both approaches are presented in this section.

Box 5.2 Agreed trajectories for measuring progress

The target to halve the gap in school achievements in reading, writing and numeracy has been converted into an agreed trajectory between 2008 (the baseline year) and 2018 (the target year) on the proportion of Indigenous students who are at or above the NMS in the relevant NAPLAN tests.

These trajectories are one of the guides to measure progress from baseline performance to achievement of the target. They are used as a basis for assessing whether the latest calendar year's NAPLAN results are on track to meet the target by 2018. In assessing progress against the trajectories, because NAPLAN data contain some degree of uncertainty, confidence intervals around the percentage of students at or above the NMS are taken into consideration. The trajectories are only indicative of progress since achieving the annual trajectory progress points are neither requirements nor guarantees that the final target point will be reached.

The measures of progress for this target are limited to assessing whether the annual trajectories have been met in the latest NAPLAN test results for the reading and numeracy domains, in Years 3, 5, 7 and 9—a total of 8 test-year and test-domain combinations. (The NAPLAN writing test is excluded because of a major change in the test in 2011; see also Box 5.1).

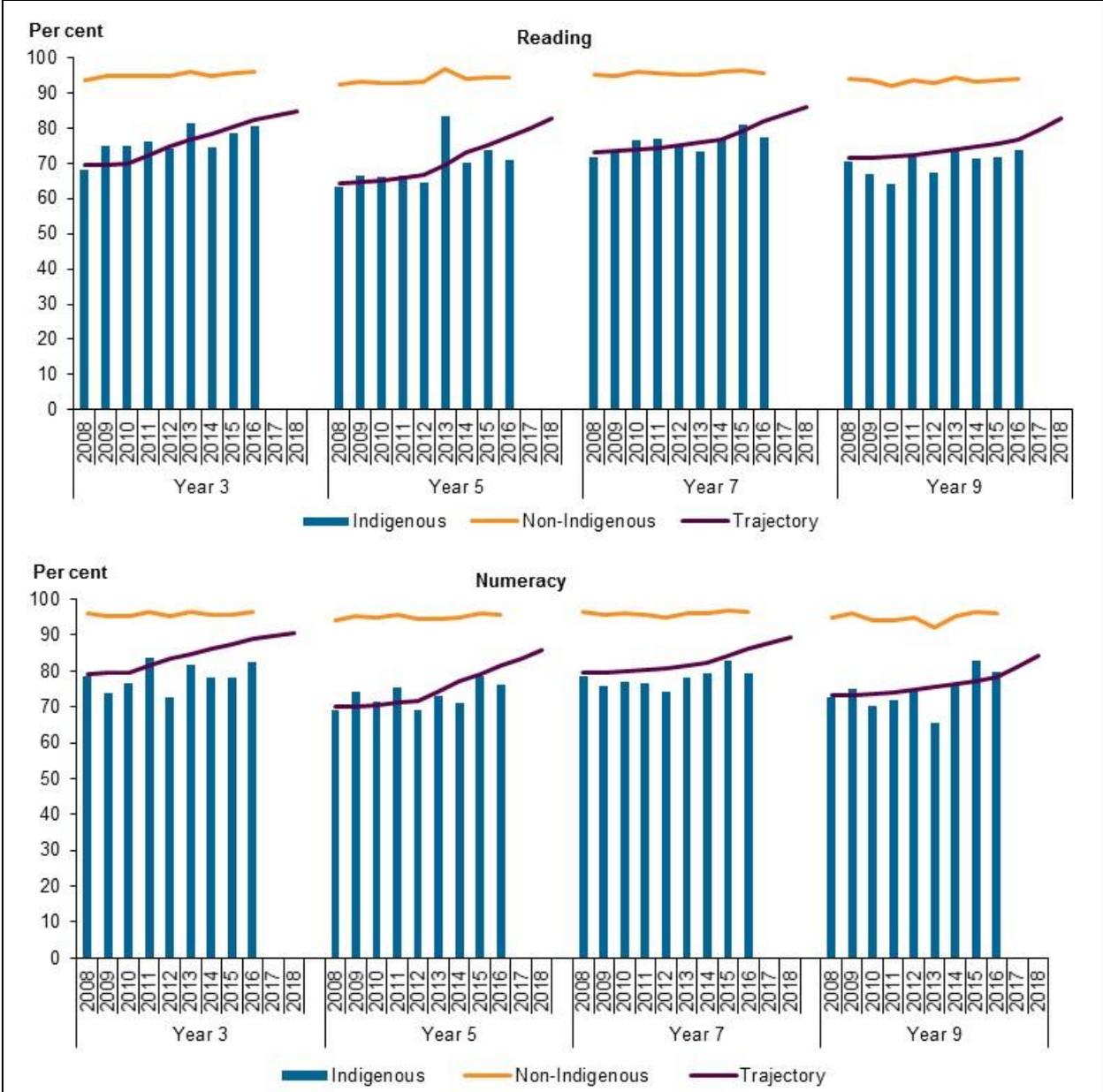
Measurement against the target trajectories

Annual results for Indigenous and non-Indigenous students in the NAPLAN reading and numeracy tests between 2008 and 2016 are shown in Figure 5.2, along with the agreed trajectory points (see Box 5.2). These data relate to the percentage of participating students assessed to be at or above the NMS.

In 2016, of the eight test-year and test-domain combinations assessed, apart from Year 9 numeracy, the achievement levels by Indigenous students were below the agreed trajectory points (Year 3 reading was close to the agreed trajectory point in 2016, with a deficit of only 1.8 percentage points). Achievements below the 2016 trajectory levels signal that progress achieved by 2016 was not on track to meet the 2018 target levels for Indigenous students.

The proportion of Indigenous students meeting the NMS in 2016 in the Year 9 numeracy test was 79.7%, slightly above the Indigenous trajectory point for that year of 78.2%.

In 2016, 80.6% of Year 3 Indigenous students met the NMS in reading, close to the agreed trajectory point for that test of 82.4%.



Note: The annual trajectory points shown are for Indigenous student results—these represent achievements consistent with halving the gap between 2008 and 2018. The trajectory points are given in Schedule G of COAG (2012).
Sources: AIHW analysis of ACARA 2016b; COAG 2012.

Figure 5.2: NAPLAN performance in reading and numeracy, by Indigenous status and school year, 2008 to 2016 and trajectories for Indigenous achievements (proportion meeting the NMS)

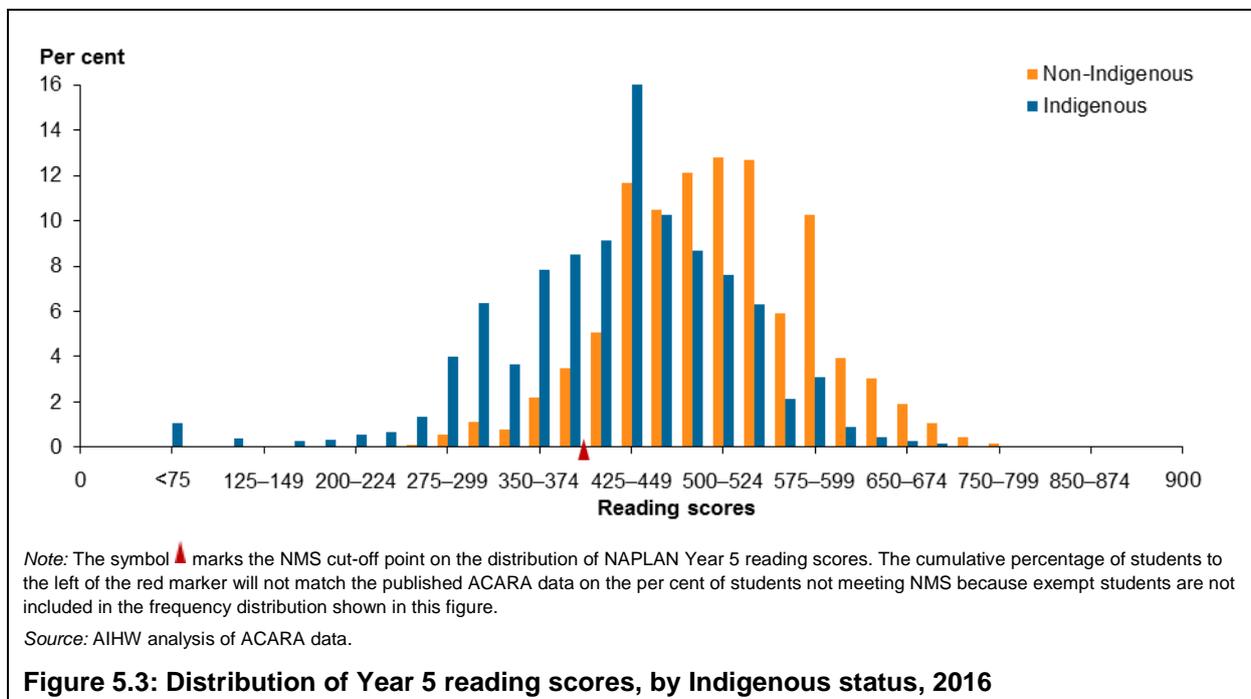
Comparing the Indigenous trajectory points with the annual performance between 2009 and 2016 shows that some NAPLAN results for Indigenous students have been below the trajectory points in most years, as in Year 7 numeracy; others have been on track in most years, as in Year 3 reading.

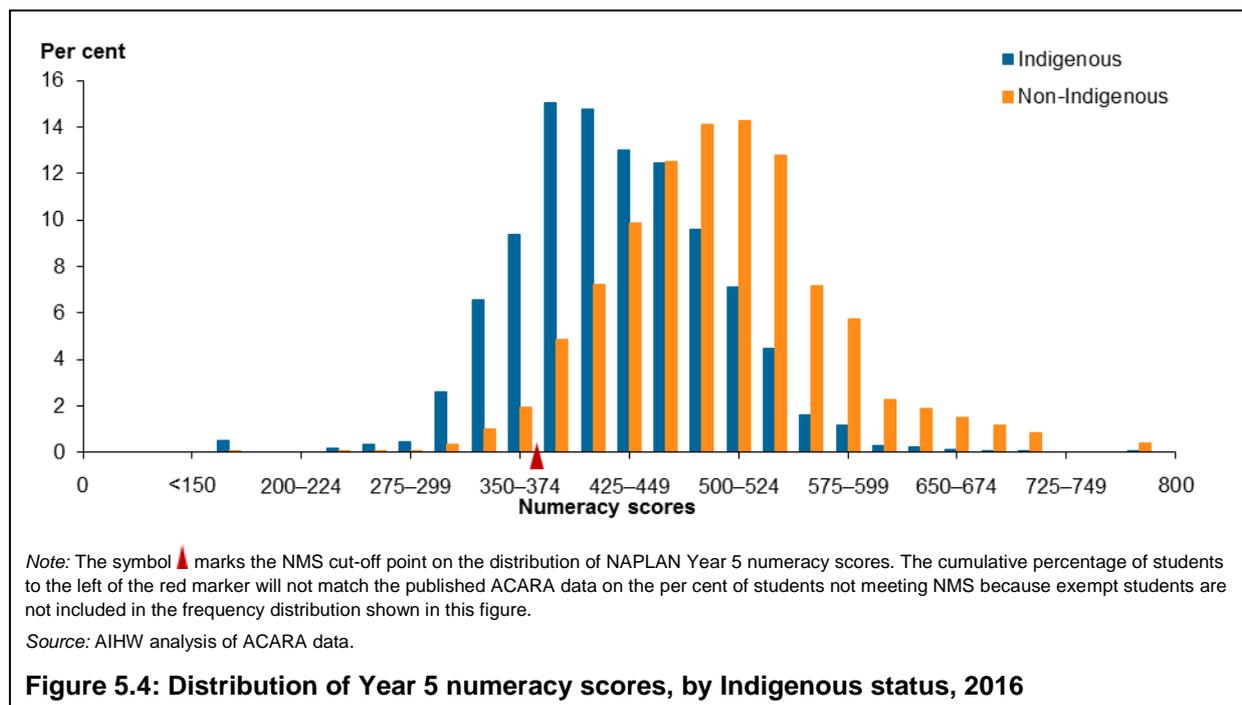
NAPLAN tests are designed to be equivalent in difficulty across calendar years so that the scaled scores measure the same level of achievement across different cohorts of students tested. Yet Figure 5.2 also shows large variability in the proportion of Indigenous students who meet the NMS across different calendar years—for example, the one-off large increase in 2013 Year 5 reading results. Such variability must be considered in assessing progress towards this target.

Using the 2015 NAPLAN results for Indigenous students, instead of the more recent 2016 results, the assessment of progress towards the target is quite different. The 2015 results for the proportion of Indigenous students meeting the NMS (also in Figure 5.2) show that progress was on track to meet four of the eight measures by 2018. The four measures were numeracy in Years 5, 7 and 9, and reading in Year 7.

For each of the NAPLAN domains and for each school year assessed, the raw tests scores can take on a limited set of values, this may partly explain the variability from year to year. Figures 5.3 and 5.4 present the distribution of 2016 student-level NAPLAN scores by Indigenous status, for Year 5 reading and numeracy tests respectively. The NMS cut-off point for Year 5 students occurs at a score of 374 (ACARA 2015). The figures show that a larger proportion of Indigenous students have scores around this cut-off point when compared with non-Indigenous students. This means small changes in scores for Indigenous students can increase the variability in the proportion meeting the NMS from year to year.

Across the eight jurisdictions and the eight test-year combinations, 29 of the 64 measures were on track in 2016 (that is, consistent with or above, the required jurisdiction-level trajectory points) (PM&C 2017). The Northern Territory had the poorest performance, not meeting the 2016 trajectory point in any of the eight test areas. The Australian Capital Territory had the best performance, being on track in all eight areas; however, this result should be treated with caution as the small number of Indigenous students in the territory means that there is more uncertainty around the results (hence the confidence intervals used to assess if progress is on track are larger).





Comparison to the baseline

In addition to checking if annual trajectory points are met, another way to assess progress towards the target is to see whether the latest results for Indigenous students have improved from the baseline—that is, by comparing the proportion of Indigenous students achieving the NMS in the 2008 baseline year, with the latest year of data (2016 at the time of analysis).

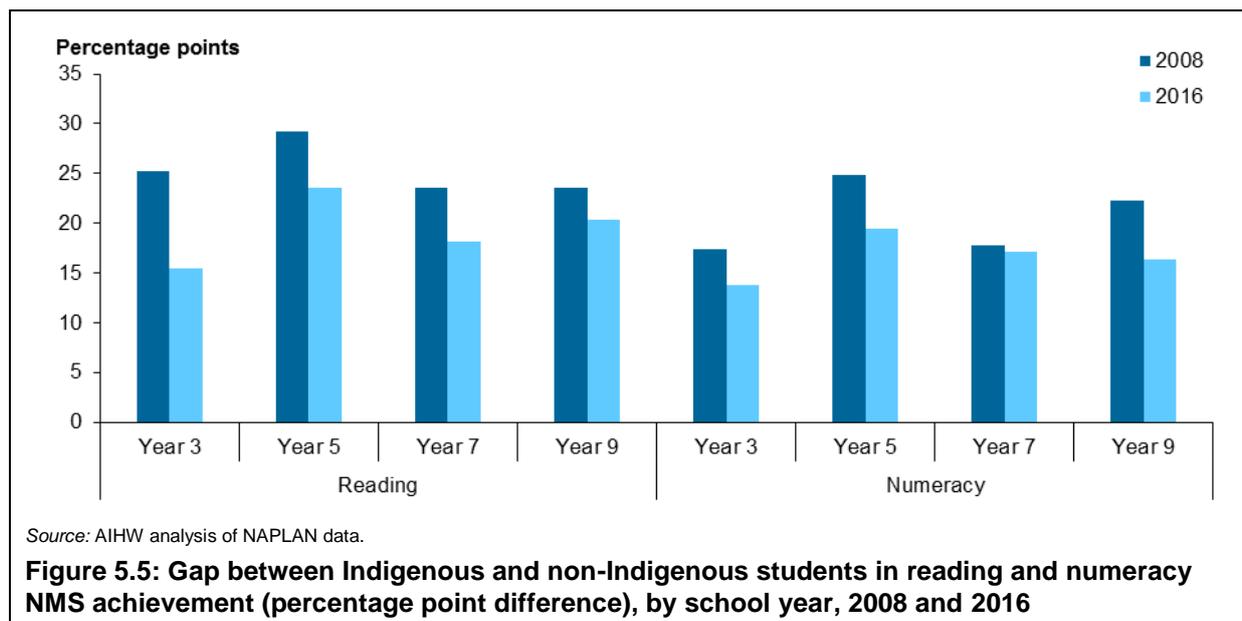
Note that given the variability in NAPLAN results from year to year, differences between the baseline year and latest year of data may not reflect consistent change over time.

National comparison

For reading and numeracy:

- in 4 of 8 measures, the proportion of Indigenous students meeting the NMS was significantly higher in 2016 than in 2008 (reading in Years 3 and 5, and numeracy in Years 5 and 9)
- in 2008 and 2016, the gap between Indigenous and non-Indigenous was highest in Year 5 for both reading and numeracy
- for all 8 measures, the gap between Indigenous and non-Indigenous in 2016 was smaller than the gap in 2008 (Figure 5.5). However, the decreases were minimal in several instances, including less than 1 percentage point in Year 7 numeracy, and only 3.1 percentage points in Year 9 reading. The largest decrease in the gap occurred in Year 3 reading (9.8 percentage points, which represents a decline of about 40% from the 2008 baseline gap of 25.2 percentage points).

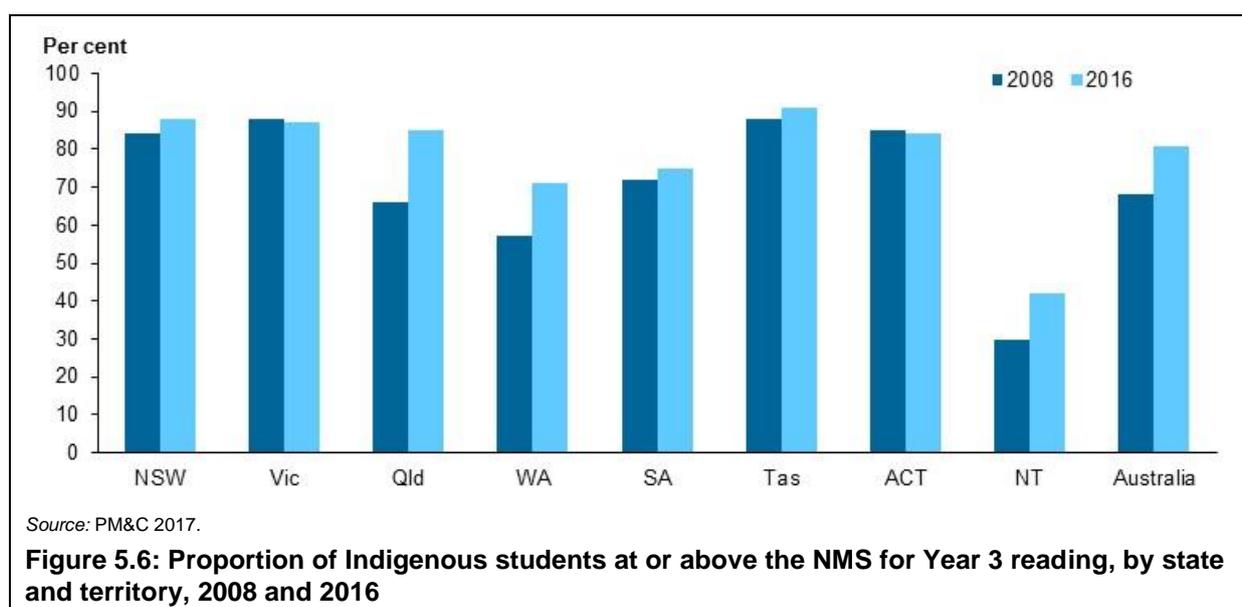
Despite the NAPLAN writing results not being part of the formal comparison to the 2008 baseline (see Box 5.1), the 2016 results can be compared with results from 2011 onwards. The proportion of Indigenous students meeting the NMS for writing was significantly higher in 2016 than in 2011 for 1 of the 4 school years assessed (Year 3).



Comparison by state and territory

For 14 of the 64 jurisdiction-level measures on numeracy and reading, there were statistically significant improvements in the proportion of Indigenous students meeting the NMS between 2008 and 2016 (and only one significant decline, in Year 3 numeracy NMS in Victoria) (PM&C 2017). Queensland has shown the largest improvements between 2008 and 2016, with significant improvement in six of the eight NAPLAN test measures for Indigenous students (the two exceptions are Year 9 reading and Year 7 numeracy) (PM&C 2017).

Jurisdiction-level improvements in the proportion of Indigenous students at or above the NMS are shown in Figure 5.6 for Year 3 reading. Queensland had the largest gain, with the proportion of Indigenous students at or above the NMS increasing from 66% in 2008 to 85% in 2016. Over this period, six of the eight jurisdictions showed increases, with Victoria and the Australian Capital Territory remaining relatively stable. In the Northern Territory, despite its low starting base in 2008 (30% of Indigenous students meeting the NMS in Year 3 reading), there has been a modest increase of 12 percentage points by 2016.



5.2.5 Improvements in mean NAPLAN scores

An alternative measure of literacy and numeracy is to look at mean scores achieved by students in NAPLAN tests. This measure is beyond that of the formal COAG target.

Almost half of the measures (7 of 16 measures, excluding writing) showed statistically significant increases in the mean NAPLAN test scores achieved by Indigenous students between 2008 and 2016. These consist of:

- 3 of 8 measures in the reading and numeracy domains, where Years 3 and 5 in reading and Year 5 in numeracy had significant gains
- 4 of 8 measures in the language conventions domain, where Year 3 in spelling and years 3, 5 and 7 in grammar/punctuation had significant gains (ACARA 2016b).

For the writing test, the mean score was not statistically higher in 2016 than in 2011 for any year level.

5.3 Key drivers of literacy and numeracy

The scope of this section is not exhaustive—it highlights key relationships identified in the literature (including previously published AIHW material).

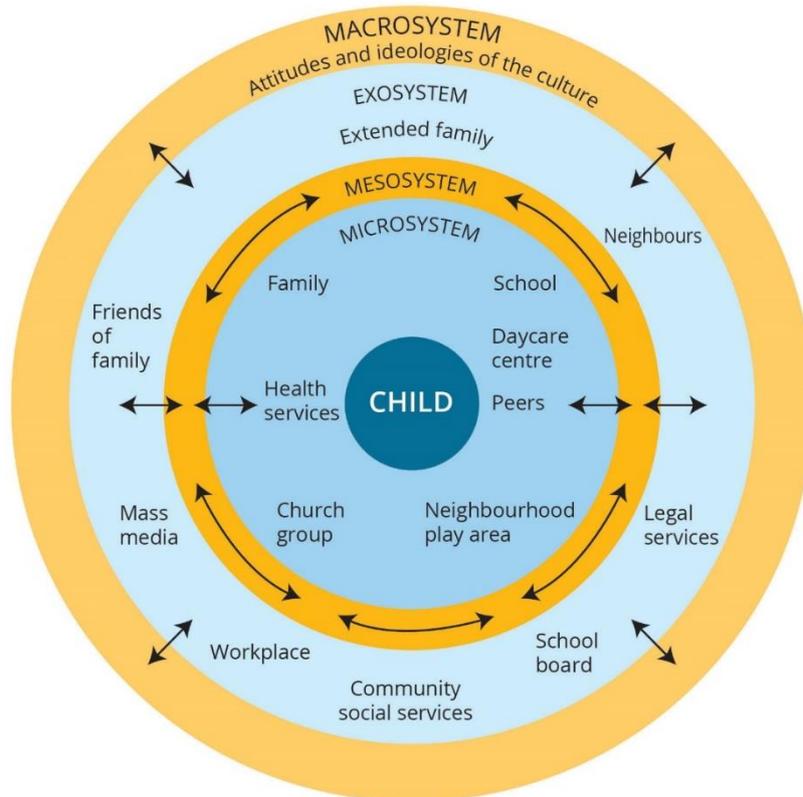
Literacy and numeracy achievement in school is related to the child's developmental history. A growing body of literature in child development confirms that gaps in cognitive (and other) skills between individual children and across socioeconomic groups is evident at early ages, even before formal schooling begins (Cunha & Heckman 2007). These early gaps are most closely related to differences in family circumstances and resources. However, as discussed in the next section, the roles of the early learning (preschool) and formal school environments in fostering cognitive (and other) skills required for success in adult outcomes are recognised as key factors of the broader influences on the growing child.

5.3.1 Conceptual framework on influences on child development

The cognitive development of the growing child is often interpreted within the structures of Bronfenbrenner's (1979) 'ecological' model of child development. Bronfenbrenner labelled different aspects or levels of the environment that influence children's development, including the micro-system, the meso-system, the exo-system, and the macro-system (Figure 5.7).

The micro-system is the immediate family environment in which the child lives. Parents and family are substantial influences throughout childhood, however their influence is increasingly added to by environmental influences in other spheres, such as the school environment and influence of peers. The character of the communities in which children live, and access to services, also have a marked influence on children's development (AIFS 2003).

The 'ecological' model highlights the multiple spheres of influences on child development that provide alternative avenues to redress or mitigate the persistence of initial disadvantage arising from the inequality in parental and family resources and skills into which individual children are born.



Source: Adapted from Kopp & Krakow 1983, Figure 12.1.

Figure 5.7: Bronfenbrenner diagram on ecological theory of child development

5.3.2 Drivers based on analysis of NAPLAN data

This section focuses on variables associated with school achievement outcomes based on NAPLAN testing. Prominence is given to the Productivity Commission (2016) report on drivers of Indigenous primary school achievement, but other literature on Indigenous achievement in the NAPLAN is also discussed, as well as general literature about NAPLAN achievement (that is, not considering Indigenous status).

Productivity Commission report on drivers of Indigenous primary school achievement

In a recent report, the Productivity Commission (2016) undertook a detailed analysis of 2013 and 2014 NAPLAN data from primary school students in Years 3 and 5. The research linked student demographics and school characteristics to NAPLAN results, with a focus on explaining NAPLAN performance of Indigenous students. Using data from Indigenous (and non-Indigenous) students, the study looked at the contributions of various school-level and student-level characteristics to Indigenous students' literacy and numeracy achievements.

The report showed gaps in NAPLAN educational achievement for Indigenous students across all remoteness areas and states and territories. For example, in metropolitan areas 20% of Year 5 Indigenous students did not meet the NMS for reading, compared with 4% of non-Indigenous students. The gap in achievement between Indigenous and non-Indigenous students was larger in *Remote* and *Very remote* areas; however, these areas account for a relatively smaller share of the Indigenous population. The larger Indigenous population in

provincial (regional) and metropolitan areas results in 55% of the national gap in literacy (in the 2014 Year 5 NAPLAN reading NMS percentage) being accounted for by Indigenous students in these areas.

The report distinguishes between variable categories observed in the NAPLAN data set and other unobserved characteristics of the study child and their broader environments (Figure 5.8).

	Observed in the dataset	Unobserved – data exist but not included in dataset	Unobserved – data do not exist
Social	<ul style="list-style-type: none"> Remoteness State 	<ul style="list-style-type: none"> Local unemployment rate 	<ul style="list-style-type: none"> Libraries and educational facilities
School	<ul style="list-style-type: none"> School sector Number of enrolments Staff numbers Attendance rate Finances 	<ul style="list-style-type: none"> Average satisfaction of teachers Teacher and principal turnover Principal characteristics 	<ul style="list-style-type: none"> School policies School culture Educational resources Extracurricular activities
Peers	<ul style="list-style-type: none"> % Indigenous students % LBOTE students % parents by education / occupation category 	<ul style="list-style-type: none"> Health School satisfaction 	<ul style="list-style-type: none"> Cognitive abilities Attitudes Aspirations
Teacher		<ul style="list-style-type: none"> Age Gender LBOTE Experience Qualifications 	<ul style="list-style-type: none"> Teaching style Attitudes
Family	<ul style="list-style-type: none"> Parental education Parental occupation 	<ul style="list-style-type: none"> Parent LBOTE 	<ul style="list-style-type: none"> Parent engagement Home learning activities
Student	<ul style="list-style-type: none"> Age Gender LBOTE 	<ul style="list-style-type: none"> Health and disability Attendance 	<ul style="list-style-type: none"> Cognitive abilities Attitudes Aspirations

Grouping of characteristics in the statistical analysis:
 ■ School-level ■ Student-level ■ Unobserved

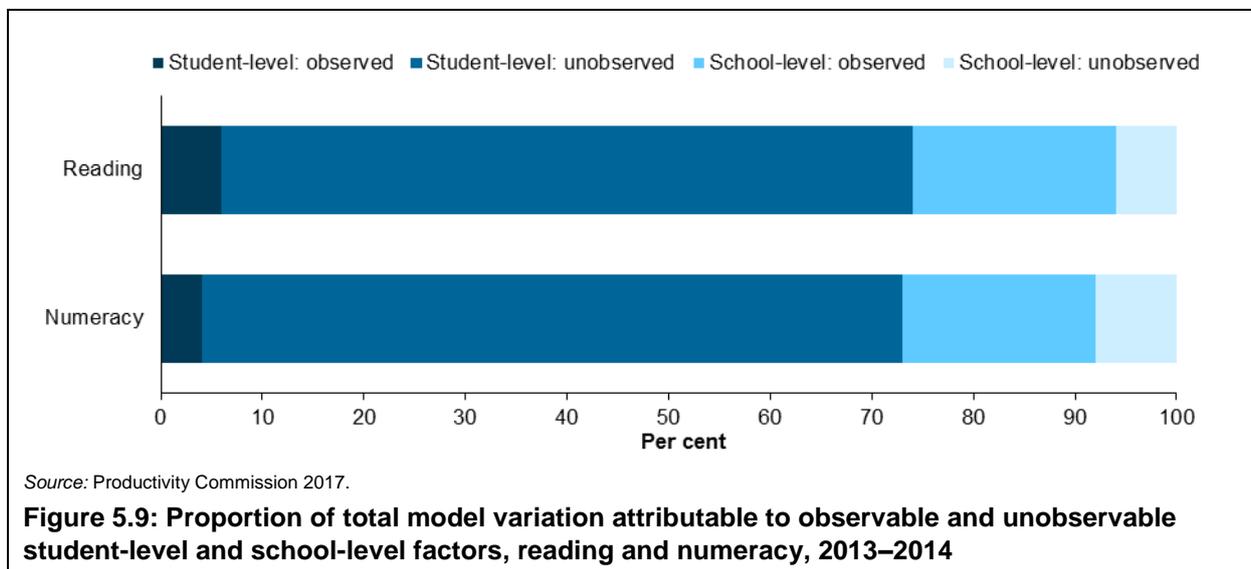
LBOTE = language background other than English
 Note: This schematic list of variables is incomplete. The Productivity Commission analysis also included school-level and student-level SES variables.
 Source: Productivity Commission 2016.

Figure 5.8: Grouping of characteristics in the Productivity Commission report of the sources of variation in Indigenous students’ NAPLAN performance, 2014

A statistical technique called multilevel modelling was used to partition the total variation in student performance into 2 components—school-level characteristics and student-level characteristics. The variation for each of these two components is further partitioned into observed and unobserved variation (Figure 5.9).

Figure 5.9 shows that school-level characteristics account for a relatively small share of the total variation in both reading and numeracy for Year 5 Indigenous students in 2013 and 2014: almost three-quarters of the variation in national achievement is related to student characteristics (74% for Year 5 reading, and 73% for Year 5 numeracy). Hence, within the same school, there is greater variation in performance related to individual characteristics between Indigenous students than there is variation in the average performance of Indigenous students across schools.

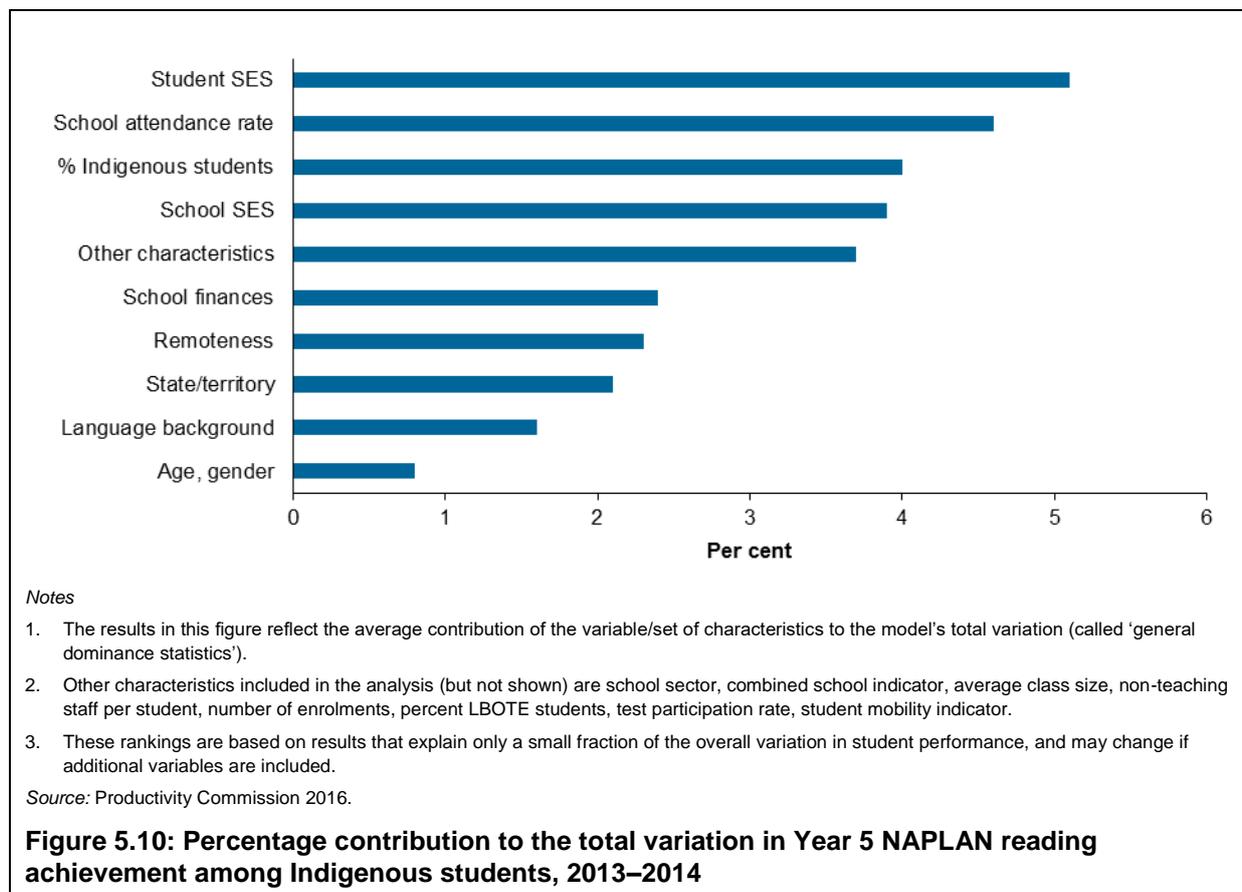
Figure 5.9 also shows that the large majority of the variation in Indigenous student achievement could not be explained by characteristics observed in the ACARA data set. Observed characteristics (both student-level and school-level) explained only about one-quarter of the total variation in Indigenous student achievement in 2013–2014 (26% of variation for Year 5 reading, and 23% for Year 5 numeracy).



Despite student-level characteristics accounting for 74% of the total national variation in Year 5 reading for Indigenous students, the set of student-level variables observed in the data account for only 6% of total variation, with the remaining 68% being unexplained (Figure 5.9). The results are similar for Year 5 numeracy for Indigenous students. These results indicate that key student-level information related to NAPLAN outcomes is not currently collected or are inherently unobservable (such as natural ability or personal attitudes and aspirations).

Figure 5.10 ranks the relative importance of variables used to explain the overall variation in Indigenous students' NAPLAN performance. This ranking is based on the percentage contribution of each variable to the total variation in Year 5 reading NAPLAN scores. Care should be taken when interpreting these statistics, as the contribution attributed to each variable may be sensitive to the specific ranking method and the set of variables used in the regression model. Also, the variables included in the model explained only one-quarter of the total variation in national student achievement.

The top three most influential variables observed in the model were student SES characteristics (5.1% of the total variation), the school attendance rate (4.6%), and the proportion of Indigenous students attending the school (4.0%).



Remoteness was the fifth most important variable, explaining 2% of the total variation in Year 5 NAPLAN reading scores for Indigenous students. This result may underestimate the importance of remoteness due to interactions between remoteness and each of the top three ranked variables. This is because the relationships between explanatory variables are difficult to disentangle where strong associations exist between those variables; the variation attributed to each variable in the Productivity Commission report may be sensitive to the specific ranking method and the set of variables used.

Literature on Indigenous-specific associations in NAPLAN outcomes

A number of studies have used NAPLAN data, either alone or linked to other data sets, to investigate Indigenous students' school achievement performance.

Data published in the national reports on NAPLAN performance prepared annually by ACARA highlight some of the key factors leading to differences in student school achievements among Indigenous and non-Indigenous students. One major finding from the 2016 report (ACARA 2016a) is that Indigenous student results vary by remoteness and by state and territory.

Guthridge et al. (2015) investigate the link between socio-demographic factors (including perinatal health) and NAPLAN results in a large cohort study of Indigenous (and non-Indigenous) children in the Northern Territory. Risk factors for both Indigenous and non-Indigenous children not meeting the NAPLAN NMS included higher birth order, maternal

smoking in pregnancy and being a boy. Unique risks found for Indigenous children included living in remote areas and having a low birthweight.

NAPLAN data for one year of Year 3 tests have also been linked to the older (Kinder) cohort in the LSIC. Due to the imperfect match between the ages of the cohort and the time when they reach Year 3, there is an insufficient sample size (up to Release 7 of the LSIC) to permit detailed analysis of the drivers of NAPLAN achievements using LSIC data. However, a preliminary analysis focusing on the role of child health factors, found that persistent poor health reduces a child's NAPLAN score, as did being born to a teenage mother, while a higher education level of the primary carer had a positive impact (Thapa 2016).

Rowland et al. (2016) also analysed Year 3 NAPLAN outcomes in the LSIC and found that children who experienced multiple family life events (such as severe illness or deaths in the family, parental job loss, parental contacts with the justice system) had lower NAPLAN test scores. This is consistent with other studies analysing a range of Indigenous child outcomes (not only cognitive skills) finding that Indigenous children face several other constraints not generally shared by the wider population of children (for example, see DSS 2015). Common among these are multiple early life stressors—deaths and adult imprisonment occurring more often in their families, having severe illnesses and accidents, and experiencing discrimination (Shepherd & Zubrick 2012).

Literature on general associations in NAPLAN outcomes

The association between NAPLAN outcomes and student-level and school-level characteristics has also been investigated for the general population (that is, not separated by Indigenous status). In general, variables related to SES play a prominent role in NAPLAN outcomes.

Two studies linking NAPLAN records with the 2011 Census investigate academic performance in Queensland and Tasmania while controlling for confounding factors (ABS 2014a, 2014b). These studies confirm the general expectation that SES—as reflected in parental education, parental labour force status and aggregated SEIFA ranking of place of residence—is an important determinant of NAPLAN scores. Sex also matters, with girls consistently performing better than boys. The analysis for Queensland shows that remoteness was associated with lower NAPLAN scores, even after controlling for the effects of other variables in the model; weekly household income did not have a separate independent effect on NAPLAN scores; children who had both parents born overseas had higher scores; as did students who had an internet connection at home (ABS 2014a).

Using a sample of students in Western Australia, Brinkman et al. (2013) demonstrated the link between AEDC assessments and meeting the NAPLAN NMS for students tested in Years 3, 5 and 7. School readiness observed at age 5 in the AEDC assessments, is associated with literacy and numeracy skills throughout the primary school years.

The beneficial effects of preschool are demonstrated by Warren and Haisken-DeNew (2013) using data from the Longitudinal Study of Australian Children (LSAC) linked to NAPLAN results. They found large effects of preschool attendance on NAPLAN test scores: for example, while one year of learning in Year 3 is represented by a difference of about 50 NAPLAN points, average preschool effects on the NAPLAN test scores are as much as 10–15 points. The study also reports on the importance of teacher quality, as the highest increases in NAPLAN scores were attained by children whose preschool teachers had diploma or degree level qualifications.

Using administrative data on Western Australian public school students and NAPLAN test outcomes, Hancock et al. (2013) showed a relationship between school attendance and

academic achievement. Not only does low attendance affect the academic achievement of all students; among disadvantaged students, achievement declined more rapidly with increasing levels of absence.

Analysis of the Child Protection National Minimum Data Set linked to the 2013 student level NAPLAN results showed that children in care were less likely to meet the NMS (AIHW 2015). The difference in the proportion of students at or above the NMS was between 13 and 39 percentage points lower (across test domains and years) for children in the child protection system, compared with all children. The difference was generally higher for students in Years 7 and 9, compared with students in Years 3 and 5. While contact with the child protection system is related directly to the substantiation of child abuse or neglect, the academic achievement of children in care is likely to be affected by the broader range of factors in their complex personal histories and the multiple aspects of disadvantage they experience (including instability in care and schooling) (AIHW 2015). Given the over-representation of Indigenous children in the child protection system (AIHW 2016), this particular pathway to poor school achievement is likely to be of more concern for Indigenous children.

5.3.3 Drivers based on other literature

This section looks at the Australian literature on the drivers of children's cognitive skills (unrelated to the NAPLAN), using analyses based on the LSAC and other administratively linked data on school readiness and school learning outcomes.

Indigenous-specific literature

The two most consistently identified drivers in studies focusing on school achievements of Indigenous students are preschool participation and regular school attendance (Biddle 2014; Biddle & Cameron 2012). The effects of these variables are maintained even after controlling for other socioeconomic factors.

Using data collected in Phase II of the Longitudinal Literacy and Numeracy Surveys for Indigenous Students, Purdie et al. (2011) found that the average achievement in literacy and numeracy for Indigenous students was lower than for non-Indigenous students across the final four years of primary schooling between 2003 and 2006. The study found positive associations between literacy and numeracy outcomes and student-level factors (such as lower student absenteeism, students whose parents were in higher skilled occupations and higher teacher ratings of student attentiveness) as well as school-level factors (such as students rating the school climate as 'favourable').

A study on the educational outcomes of Indigenous children, prepared as part of the Western Australian Aboriginal Child Health Survey project, reported a range of key factors associated with low academic performance of Indigenous students (Zubrick et al. 2006). These factors included low education level of the primary carer, living in extremely isolated areas, teacher assessment of the child's having marked emotional and behavioural difficulties, and children speaking Aboriginal English in the classroom. This study highlights the key role of socioeconomic and general wellbeing factors in reducing school achievements of Indigenous students, while showing that poor physical health and nutrition were not the major factors holding back the performance of Indigenous children.

Using PISA test results, Biddle (2014) shows that around 20% of the gap in academic achievement between Indigenous and non-Indigenous 15-year-olds was attributed to poorer school attendance of Indigenous students. In another study (Biddle 2013), PISA test results for Indigenous students were found to improve with higher levels of parental education and living in *Major cities*.

A study of children in the Northern Territory looked at the links between early life risk factors and being assessed as vulnerable in the AEDC (Guthridge et al. 2016). Factors found to increase the risk of Indigenous children (and non-Indigenous children) being assessed as vulnerable were pre-term births (34 to 36 weeks), speaking English as a second language, being a boy, and living in a *Very remote* area. A further risk for Indigenous children (but not for non-Indigenous children) was not having attended preschool, while there was a protective effect from increasing levels of the primary caregiver's education level.

The three collections of the AEDC to date (2009, 2012 and 2015) show that Indigenous children in the first year of full-time school are more than twice as likely as non-Indigenous children to be assessed as developmentally vulnerable on each of the 5 domains. In the 2015 collection, the largest gap occurred in the language and cognitive skills domain, with Indigenous children 3.5 times as likely to be assessed as developmentally vulnerable as non-Indigenous children (20% of Indigenous children, compared with 5.7% of non-Indigenous children) (DET 2016).

The link between early life stressors and school achievement for Indigenous children may represent more than the usual family SES effects. The emerging neurological literature on child development has emphasised the long-term adverse effects of very young children's experiencing 'toxic stress' (Shonkoff & Garner 2012). High levels of stress in the early years are linked to adverse effects on the developing brain and on the nervous system, which can lead to long-term problems in learning and behaviour. Reducing the incidence and levels of early life stressors may prove to be an important driver of improving cognitive skills and school achievement for a subset of Indigenous children.

The effects of preschool attendance on cognitive skills of Indigenous children has also been documented through analysis of the LSIC. Arcos Holzinger and Biddle (2015) found evidence that early childhood education promotes positive outcomes relating to non-NAPLAN related achievements in reading literacy, maths ability and abstract reasoning.

Health effects on learning outcomes for Indigenous children have primarily focused on specific health conditions such as otitis media, which is more prevalent in Indigenous communities in remote areas. For example, Williams & Jacob (2009) show that Indigenous children with otitis media are at increased risk of adverse educational outcomes, with this risk compounded for those Indigenous children who were learning English as a second language (typical among those who live in remote areas) (Williams & Jacob 2009).

Biddle and Meehl (2016) have analysed the differences in Indigenous students by sex and subsequent outcomes, and found that from preschool attendance through to school test scores and tertiary degree attainment, Indigenous men are lagging behind women. So, a gendered perspective is necessary to support Indigenous educational outcomes for all.

General literature

Many studies document a consistent and strong relationship between children's cognitive skills and even a simple measure of family income (for example, Duncan et al. 2014). The argument is that this relationship occurs primarily because wealthier families spend ('invest') more on child enrichment activities than poorer ones.

Duncan et al. (2014) argue that a simple measure of differences in parental expenditure on 'child nourishment' activities explains much of the socioeconomic gradient in child learning outcomes before and during schooling. Cunha and Heckman (2007) also present evidence of early divergence in cognitive and non-cognitive skills before schooling. They argue further that 'skills beget skills'—the effects of being born into families with low levels of resources can have a long-term effect on child development.

The beneficial effects of regular school attendance on learning outcomes have been demonstrated using the LSAC (Daraganova et al. 2014). This study also shows the importance of the timing of non-attendance, with school absences during the early primary years being more influential in affecting both learning outcomes and school absences in subsequent years. Previous rates of school attendance became more influential over time, implying that the absenteeism process is increasingly self-sustaining. There are also strong links between school attendance and current school achievement, school completion rates and overall educational attainment (Purdie & Buckley 2010; Zubrick et al. 2006).

Hattie's Visible Learning framework (Hattie 2009, 2012) ranks the influence of a large set of factors based on a meta-analysis of education systems worldwide. The classification of influences are categorised across six areas that contribute to learning: the student, home, school, curriculum, teacher, and the approach to teaching and learning. Examples of drivers of school achievement that rank highly on Hattie's list are prior achievement and preschool participation (in the student category), parental/family SES (in the home category), and school SES and peer influences (in the school category). The meta-analysis also found major influences among the other three categories, such as teacher clarity and building teacher–student relationships (in the teacher category), emphasis on reading and phonics instruction (in the curriculum category), and providing feedback to students and emphasising study skills (in the teaching and learning approaches category).

5.4 Data limitations and measurement issues

Measurement of literacy and numeracy among Indigenous Australians requires accurate and timely data. Key data issues are discussed in this section.

5.4.1 Use of the NMS

There are some limitations in using the NMS as a measure of literacy and numeracy achievement. In particular, the proportion of students at or above the NMS focuses on only one point in the distribution of NAPLAN scores. Consequently, the target only tracks changes across this single point in the distribution, and does not provide information on the overall distribution of scores. Further, this point in the distribution can be argued to be a low benchmark.

Compared with non-Indigenous students, a larger proportion of Indigenous students have scores close to the NMS cut-off point. This can contribute to the short-term variability across calendar years in the proportion of Indigenous students meeting the NMS. The results are also sensitive to annual changes in the percentage of students who are exempted from taking the NAPLAN tests; exempt students are defined as not meeting the NMS. While the proportion of Indigenous students who are exempt from NAPLAN tests is small (usually less than 3% in most test-years and domains), it can fluctuate from year to year.

Given some of the limitations of using NMS cut-off point, the use of mean or median NAPLAN for measuring changes in literacy and numeracy outcomes among Indigenous students should also be considered. Mean or median NAPLAN scores are already computed and discussed in detail in the annual NAPLAN reports. This is the more common approach used in measuring gaps in other school achievement scores, such as in the PISA tests.

Additionally, looking at movements within the higher bands of student achievement (rather than just focusing on the lowest band of achievement) may provide a more complete picture of changes in literacy and numeracy outcomes.

5.4.2 Participation in NAPLAN testing

Large number of students in each state and territory, both in primary and secondary school, take the NAPLAN test, with data available annually. This makes NAPLAN-based measures a useful way to assess progress on the academic achievements of Indigenous students, and to assess changes in the school learning gaps with non-Indigenous students.

However, the accuracy of NAPLAN results is affected by the participation rate, as students who do not participate in the test are not counted towards the results. The level of literacy and numeracy among students who do not participate in the test is unknown, but if participation is related to ability, then this would skew the results. Although the majority of Indigenous students participate in the NAPLAN tests, the participation rate among Indigenous students is lower than among non-Indigenous students, and is generally worse in higher school years. For example, in 2016, the participation rate among Indigenous students for Year 5 reading assessments was 89%, compared with 96% of non-Indigenous students (SCRGSP 2016). For Year 9 reading, the participation rate among Indigenous students was 75%, compared with 92% for non-Indigenous students.

5.5 Bringing it together

5.5.1 An overview

The COAG target for literacy and numeracy is to halve the gap for Indigenous children in reading, writing and numeracy within a decade (by 2018).

In 2016, the majority of Indigenous students met the NMS, with the proportion of Indigenous students at or above the NMS ranging from 71% in Year 5 reading to 83% in Year 3 numeracy.

Although there have been improvements since the 2008 baseline, progress towards this target is not on track. Nationally, in 2016, of the eight areas used to assess progress towards the 2018 target, only Year 9 numeracy was on track.

Available evidence indicates that variation in school achievement is largely due to differences between students, rather than between schools. Key drivers of Indigenous students' achievement identified in the literature include SES of the family, preschool participation, regular school attendance, health of the student, high quality instruction and high expectations of the student. Remoteness is also important, for example, the proportion of Indigenous students meeting the NMS declined substantially with increasing remoteness in 2016.

Although the gap between Indigenous and non-Indigenous children in school achievement emerges early, studies have also demonstrated that cognitive skills required for success in adult life can be learned through different life stages, including in the primary and secondary school environment (Heckman & Mosso 2014).

5.5.2 Examples of opportunities for further progress

Drawing from the analyses presented in this chapter examples of opportunities for further progress in literacy and numeracy achievement are outlined below.

There is however a need for more evidence on what works best to improve literacy and numeracy outcomes among Indigenous students (Productivity Commission 2015).

Integrated approach needed

The interconnectedness among several of the key drivers of child development and school learning requires that a more systematic and integrated approach—one that recognises the links across multiple factors—must be adopted that suits the individual needs of students. Anderson et al. (2017) emphasise the role of child health determinants on education outcomes by concluding that the needs of many Indigenous children require more integrated and coordinated services that connect health and educational delivery.

Interventions to counteract early life disadvantage are generally more effective when they occur at a younger age (Heckman 2008). However, since the effect of the initial experience of socioeconomic disadvantage in the early years of children's lives tends to have long-term and pervasive effects on later life outcomes, all disadvantaged children and adults need to be given the opportunity to improve their skills and capabilities throughout their life-cycle.

Improve preschool participation and school attendance

Two key pillars for improving Indigenous student school performance are preschool participation and regular school attendance.

Improved access to, and attendance in, preschool programs can be an effective tool for Indigenous children to improved future school outcomes. The quality of the preschool environment is also key, especially for Indigenous children from more disadvantaged families or areas. The beneficial effects of preschool participation are often magnified for disadvantaged students for whom a good-quality preschool environment can enhance specific school-readiness skills. A stimulating environment with well-trained staff who are culturally competent to engage and work effectively with young Indigenous children, and provide the kind of support their families also value and engage with, is required.

Once at school, research shows the strong positive link between regular school attendance and a child's academic achievement. A focus on improving school attendance rates for children who have not been in regular attendance, as well as on strategies that better manage the transition from primary to high school—so that attendance during high school years does not drop off, as it currently does—are important avenues to improving academic achievements of Indigenous students.

Evidence using LSAY data show that, given the same levels of ability developed by age 15 (as represented by the PISA test scores), Indigenous students have the same rate of completing high school and acquiring further educational qualifications as non-Indigenous students with similar levels of PISA test achievements (Mahuteau et al. 2016). Aspirations also make a difference—those who expect to complete Year 12 at age 15 have a higher tendency to end up completing Year 12, even after controlling for their academic ability at age 15 (Nguyen 2010). However, there are already large differences in the average academic achievements Indigenous and non-Indigenous students have by the time they are 15. Hence, support to improve educational outcomes among Indigenous students' needs to begin much earlier than age 15.

Personalised approaches to student learning

The Productivity Commission (2016) analysis shows that SES and some school-level characteristics, such as the average school attendance rate, accounted for a small part of the overall variation in NAPLAN scores. The bulk of the variation could not be explained by the available variables. Other layers in Bronfenbrenner's ecological model (see Section 5.3.1) may be more relevant to academic school achievement.

The report also noted that recent education literature suggests that the key to improving student achievement, for both Indigenous and non-Indigenous students, is high-quality instruction (Productivity Commission 2016). This includes assessing each child's learning needs and identifying strategies to meet them, while evaluating the effectiveness of those strategies. The report also highlights schools where Indigenous primary students achieved better NAPLAN outcomes than might be expected given their individual characteristics.

Particularly important to high-quality instruction, as recommended in the Productivity Commission report (2016), are:

- effective use of data in assessing where students are at and in evaluating the impact of teaching interventions
- high expectations (including a student's expectations of himself/herself)
- positive student wellbeing, which facilitates engagement
- strong student-teacher relationships
- supportive school and system leadership, including with respect to professional development of the teaching workforce.

Similar conclusions were contained in the Closing the Gap Clearinghouse report on the school completion gap (Helme & Lamb 2011). The report identified three strategies that worked to increase achievement: student-focused strategies, concentrating on the needs of students at risk of low achievement; a school culture and leadership that acknowledged and supported Indigenous students and their families; and strategies to maintain student engagement. It noted that a 'one size fits all' approach that either treats Indigenous students the same as non-Indigenous students, or assumes that all Indigenous students are the same, does not work.

Another Closing the Gap Clearinghouse report on positive learning environments for Indigenous children (Ockenden 2014) highlights several characteristics of the school that are effective in promoting Indigenous student achievements. These include:

- strong and effective school leadership
- a positive school culture that encourages care and safety among students and staff, as well as a positive sense of Indigenous student identity
- teachers with the skills and knowledge to effectively engage and develop relationships with Indigenous students
- high levels of community involvement in the planning and delivery of school processes, priorities and curricula.

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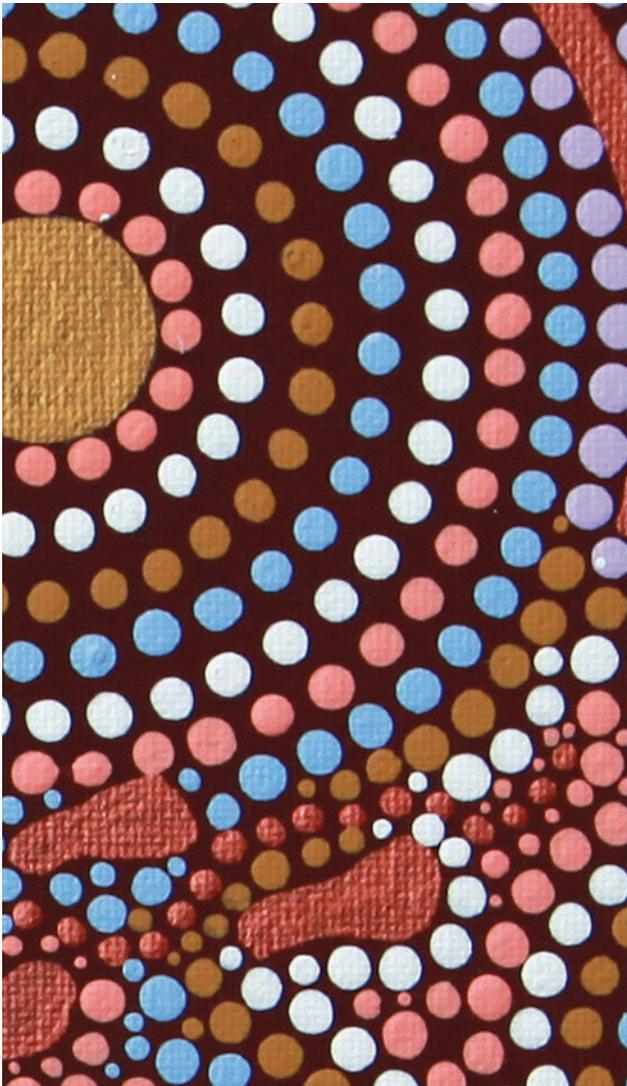
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Chapter 6

**Year 12 or equivalent
attainment target**



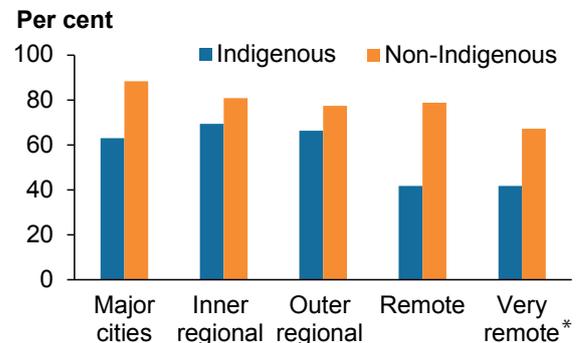
COAG target: Halve the gap for Indigenous Australians aged 20–24 in Year 12 or equivalent attainment rates (by 2020).

Current picture

- In 2014–15, 61.5% of Indigenous Australians aged 20–24 had completed Year 12 and/or attained a non-school equivalent qualification at Certificate II level or above, compared with 86.4% of non-Indigenous Australians.
- The rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–24 in 2014–15 varied by remoteness—ranging from 42% in *Remote* and *Very remote* areas to 69% in *Inner regional* areas (Figure 6a).
- Across the states and territories, the rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–24 ranged from 30% in the Northern Territory to 83% in the Australian Capital Territory (Figure 6b).

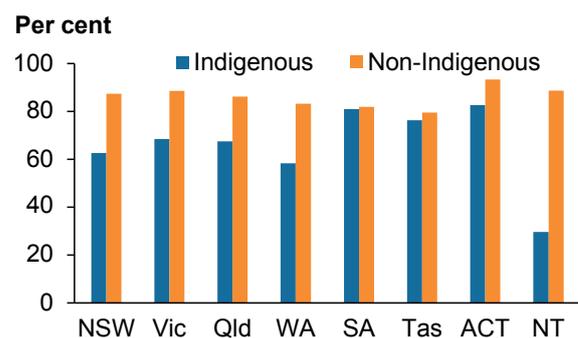
The contribution of specific geographic areas to the national gap in Year 12 or equivalent attainment is affected not only by differences in the rate of attainment, but also by the size of the Indigenous population in that area. Analysis of 2011 Census data suggests that:

- *Very remote* areas in the Northern Territory contributed most to the gap (15% of national gap), followed by *Major cities* in New South Wales (11%) and *Inner regional* New South Wales (10%) (Figure 6c)
- when data are aggregated by state, New South Wales was the largest contributor to the national gap (28%), followed by Queensland (20%), the Northern Territory (19%) and Western Australia (16%).



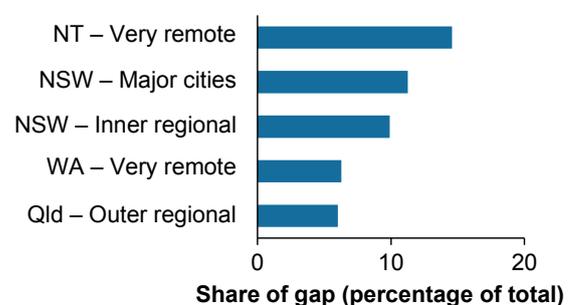
* The non-Indigenous rate for *Very remote* areas has a relative standard error greater than 50% and is considered too unreliable for general use.
 Note: Data for non-Indigenous Australians are for 2014 (rather than 2014–15).
 Source: AIHW 2017.

Figure 6a: Rate of Year 12 or equivalent attainment among people aged 20–24, by Indigenous status and remoteness, 2014–15



Note: Data for non-Indigenous Australians are for 2014 (rather than 2014–15).
 Source: AIHW 2017.

Figure 6b: Rate of Year 12 or equivalent attainment among people aged 20–24, by Indigenous status and state and territory, 2014–15

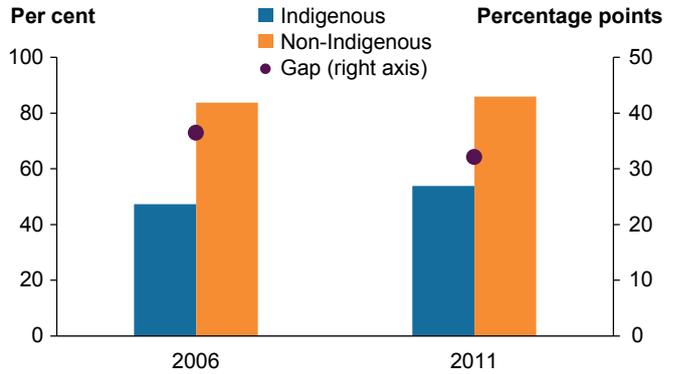


Note: For this analysis, data were disaggregated by state/territory and remoteness.
 Source: AIHW analysis of 2011 Census (TableBuilder).

Figure 6c: Top 5 geographic areas contributing most to the national gap in Year 12 or equivalent attainment among people aged 20–24, 2011

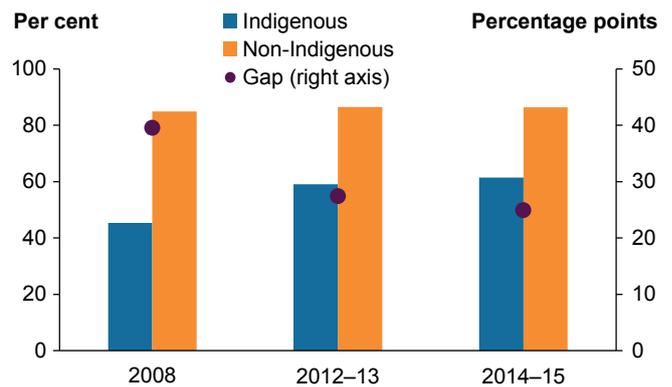
Has there been progress?

- The Year 12 or equivalent attainment rate among Indigenous Australians aged 20–24 has increased over time, and the gap between Indigenous and non-Indigenous Australians has narrowed.
- Based on Census data (the main data source for this measure), between 2006 and 2011, the rate of Year 12 or equivalent attainment among young Indigenous Australians increased from 47% to 54%, and the gap decreased from 36 to 32 percentage points (Figure 6d).
- Based on survey data, the proportion of young Indigenous Australians with Year 12 or equivalent attainment increased from 45% in 2008 to 62% in 2014–15, and the gap decreased from 40 to 25 percentage points over this period (Figure 6e).
- Based on 2011 Census data, progress towards the target is on track. Since finalising the analysis for this report, 2016 Census data have become available and also indicate that progress towards the target is on track.



Sources: SCRGSP 2009, 2012.

Figure 6d: Trends in rate of Year 12 or equivalent attainment among people aged 20–24, by Indigenous status, 2006 and 2011 Census data



Note: Data for non-Indigenous Australians are for 2012 (rather than 2012–13) and 2014 (rather than 2014–15).

Sources: SCRGSP 2009, 2014, 2016.

Figure 6e: Trends in rate of Year 12 or equivalent attainment among people aged 20–24, by Indigenous status, 2008, 2012–13 and 2014–15 survey data

Additional analysis and key drivers

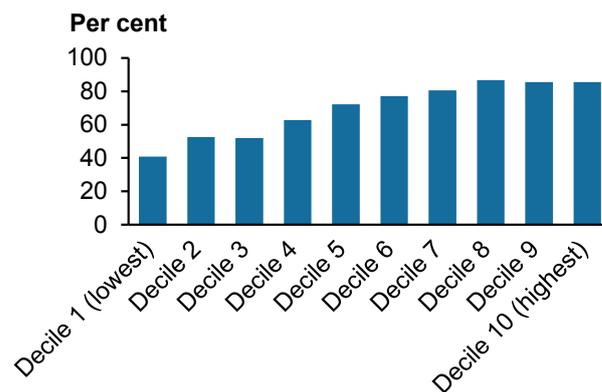
Based on available evidence, key drivers of Year 12 attainment include:

- prior school achievement
- socioeconomic characteristics of the family, such as parental education and parental employment status
- aspirations to complete school.

Many other factors are associated with Year 12 attainment, but the relative importance of these is difficult to disentangle. A key issue is that most data sets capture only a small subset of variables thought to influence Year 12 attainment. As well, many of the associated factors are interrelated, which makes it difficult to separate correlations from causal pathways.

However, cross-sectional analysis provides useful information on differences in attainment across subgroups. For example, data from the 2014–15 NATSISS show that the Year 12 attainment rate was higher among Indigenous Australians who:

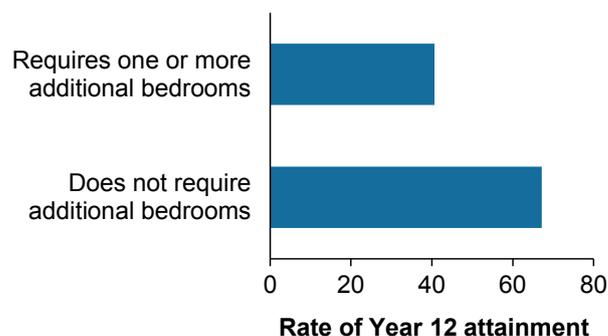
- had higher equivalised household income (Figure 6f)
- were not living in overcrowded dwellings (Figure 6g)
- had accessed the internet at home in the past 12 months (Figure 6h).



Note: Due to small numbers data are shown for people aged 20–39, rather than aged 20–24.

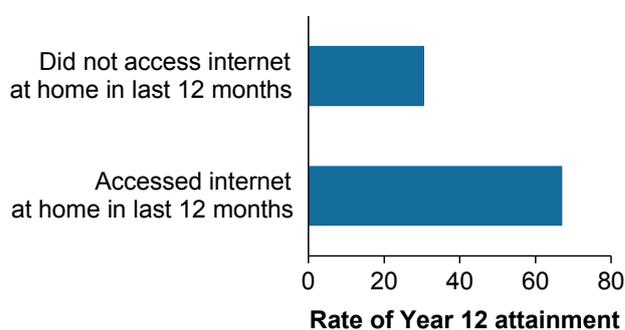
Source: AIHW analysis of 2014–15 NATSISS (TableBuilder).

Figure 6f: Rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–39, by deciles of equivalised household gross weekly income, 2014–15



Source: AIHW analysis of 2014–15 NATSISS (TableBuilder).

Figure 6g: Rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–24, by whether they live in an overcrowded dwelling, 2014–15



Note: Due to small numbers data are shown for people aged 20–39, rather than aged 20–24.

Source: AIHW analysis of 2014–15 NATSISS (TableBuilder).

Figure 6h: Rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–39, by whether they accessed internet at home, 2014–15

Data limitations and measurement issues

More frequent data on Year 12 or equivalent attainment among Indigenous Australians would facilitate better monitoring of changes over time.

While the Census (the main data source for this target) enables relatively detailed disaggregation by geography and other characteristics, these data are only available every 5 years, and missing responses create uncertainty around the accuracy of the estimates for educational attainment.

Supplementary data are drawn from more regular household surveys, but sample sizes limit the extent to which data can be disaggregated as well as the ability to assess if differences over time or between populations are statistically significant.

Given the limitations with existing data, the use of administrative data for measuring Year 12 or equivalent attainment for Indigenous Australians could be investigated for COAG target reporting.

Also, as the existing target captures a broad range of school outcomes, it may be useful to report on different aspects of Year 12 or equivalent attainment, for example those with a university entrance score.

6.1 Background

Good health and wellbeing throughout life depend to a considerable extent on a sound education. For Aboriginal and Torres Strait Islander people, better education could provide opportunities to avoid the many disadvantages they may experience in life (ABS 2011c; Biddle 2006; Biddle & Cameron 2012). Year 12 completion is associated with more successful transitions to work, even among those not proceeding to further study (Ryan 2011). One of the COAG education targets is to ‘halve the gap for Indigenous Australians aged 20–24 in Year 12 or equivalent attainment rates by 2020’ (COAG 2012)—see Box 6.1.

Box 6.1: Year 12 attainment—Closing the Gap target and data sources

The COAG target for Year 12 or equivalent attainment is to: Halve the gap for Indigenous Australians aged 20–24 in Year 12 or equivalent attainment rates (by 2020).

The measure for this target is defined as the proportion of people aged 20–24 who have:

- completed Year 12 or an equivalent school qualification, and/or
- whose level of highest non-school qualification is at Australian Qualifications Framework (AQF) Certificate level II or above.

In this chapter ‘Year 12 or equivalent’ refers to this definition, unless otherwise indicated.

In other reporting, ‘Year 12 or equivalent’ may be used to refer to Year 12 or equivalent school qualifications only (that is, excluding non-school qualifications); thus, care should be taken when comparing data in this report with those from other sources. Also, this target does not identify the highest level of educational attainment; that is, it includes people who meet the definition of Year 12 or equivalent attainment regardless of whether they went onto further study.

Data sources for COAG target

The main data source for assessing progress towards the COAG target is the ABS Census of Population and Housing. Data are available every 5 years, and can be disaggregated by Indigenous status. The Census enables relatively detailed disaggregation by geography and other characteristics. At the time of analysis, 2011 data were the most recent Census data available for inclusion in this chapter.

While not directly comparable with Census data, supplementary data are available from ABS household surveys. Estimates of Year 12 or equivalent attainment for the Indigenous population are available from the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) (most recently conducted in 2014–15, and previously in 2008) and the Aboriginal and Torres Strait Islander Health Survey (most recently conducted in 2012–13). Non-Indigenous comparisons are sourced from the ABS Survey of Education and Work (SEW) (conducted annually).

For further information on these and other data sources used in the report, see Appendix F.

(continued)

Box 6.1 (continued): Year 12 attainment—Closing the Gap target and data sources

In deriving data for reporting on this target:

- across both Census and Survey data, people who did not complete Year 12 (or school equivalent) and whose level of non-school qualification is determined to be certificate level but is not further defined—that is, ‘Certificate not further defined (nfd)’ are assumed to have attained below Certificate level II and are therefore excluded from the numerator (but included in the denominator)
- for survey data, people whose highest level of attainment cannot be determined are assumed to have attained below Certificate II and are excluded from the numerator (but included in the denominator).
- for Census data, people who did not state if they had a non-school qualification (or the level was inadequately described) and did not have Year 12, are excluded from both the numerator and denominator. People who did not state their highest year of school and did not have a qualification at certificate II level or above are also excluded.

Other data sources used in this chapter

This chapter also draws on data from several other sources (for example, data from the Longitudinal Surveys of Australian Youth and the National Schools Statistics Collection). Note that the type of educational attainment information captured in different data sources varies, and it is not always possible to measure Year 12 or equivalent attainment as defined in the COAG target. Thus, care should be taken when comparing information across data sources.

This chapter provides detailed information on Year 12 or equivalent attainment, including:

- current rates and progress towards the COAG target
- differences by geographic areas and other characteristics
- identification of key drivers based on evidence from the literature and new AIHW data analysis
- a discussion of data limitations and measurement issues.

6.2 Current picture and progress

This section presents the data available at the time of finalising this analysis on Year 12 or equivalent attainment rates, and progress towards the COAG target (Section 6.2.1), an analysis of attainment by geographical areas (Section 6.2.2) and other characteristics (Section 6.2.3). To align with the COAG target, data are generally presented for people aged 20–24, or where the analysis involves smaller numbers for those aged 20–39.

6.2.1 National data on Year 12 or equivalent attainment

The most recent data available at the time of finalising this analysis on Year 12 or equivalent attainment rates, are from the 2014–15 NATSISS (at the time of analysis, 2016 Census data for this target were not available).

In 2014–15, 61.5% of Indigenous Australians aged 20–24 had attained a Year 12 or equivalent qualification—of these:

- almost two-thirds (65%) had completed Year 12 or an equivalent school qualification

- the remainder (35%) had not completed Year 12 (or an equivalent school qualification) but had a non-school qualification at Certificate II level or above (AIHW analysis of 2014–15 NATSISS).

Indigenous Australians were less likely than non-Indigenous Australians to have attained Year 12 or equivalent—61.5% compared with 86.4% (Table 6.1).

Table 6.1: People aged 20–24 who have attained Year 12 or equivalent, by Indigenous status, 2014–15^(a)

	Indigenous	Non-Indigenous
Number with Year 12 or equivalent	39,900	1,377,000
Total population aged 20–24	64,800	1,593,200
Proportion with Year 12 or equivalent	61.5	86.4

(a) Indigenous data are from the ABS 2014–15 NATSISS, while non-Indigenous data are from the ABS 2014 Survey of Education and Work. Note: Data in this table have been rounded and randomly adjusted by the ABS to avoid the release of confidential data; these may not match data published elsewhere.

Source: SCRGSP 2016.

Progress towards target

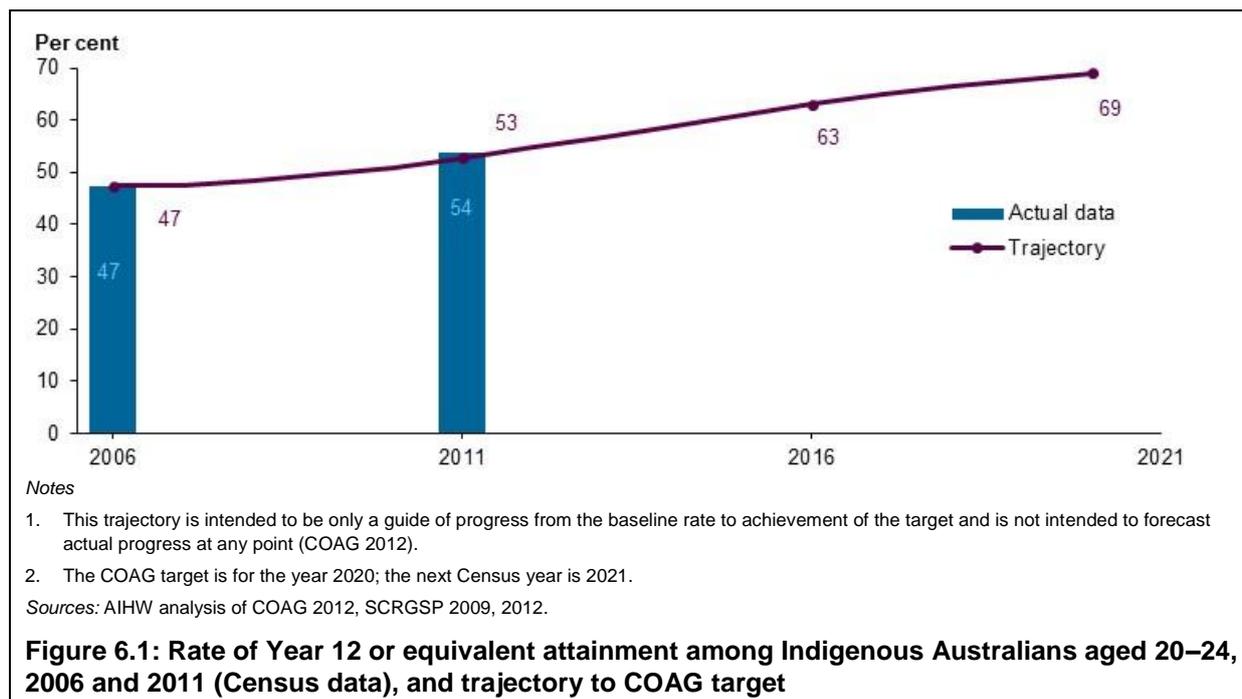
The COAG target for Year 12 or equivalent attainment is to halve the gap between Indigenous and non-Indigenous Australians by 2020. Nationally, there have been improvements over time in the proportion of Indigenous Australians completing Year 12 or equivalent, and progress towards this target is on track (PM&C 2017).

Based on Census data (the main data source for assessing progress towards the COAG target—see Box 6.1):

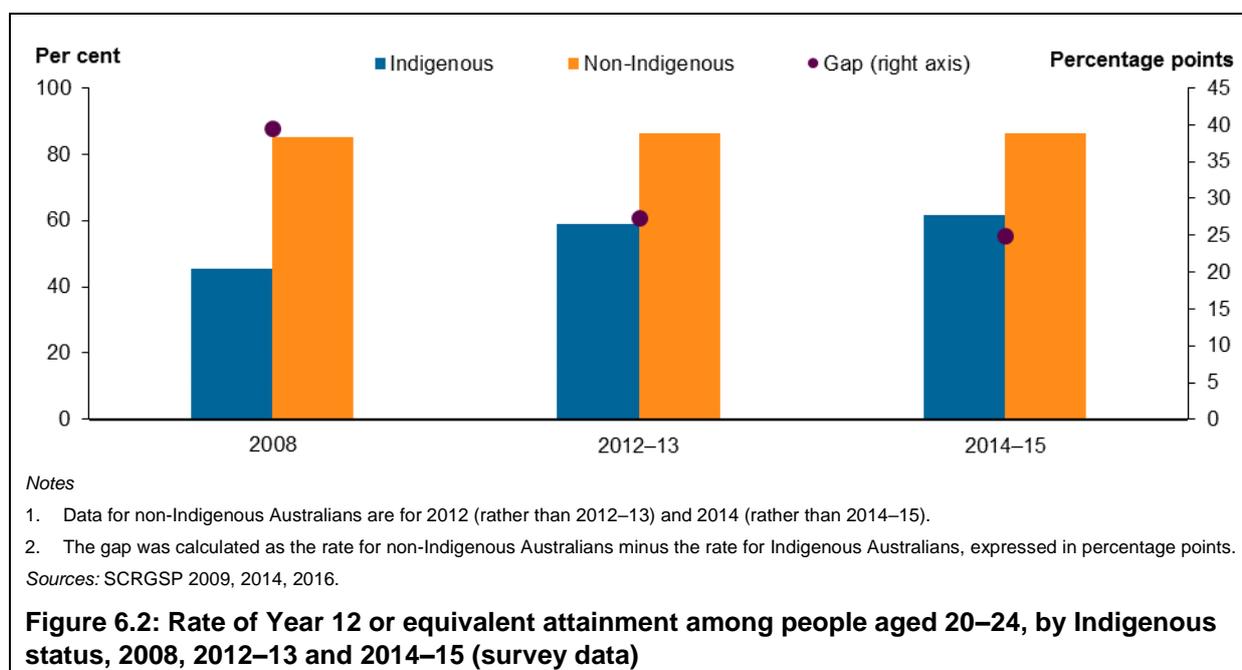
- in 2006 (baseline year), 47.4% of Indigenous Australians had a Year 12 or equivalent qualification, compared with 83.8% of non-Indigenous Australians—a gap of 36.4 percentage points
- between 2006 and 2011, the proportion of Indigenous Australians aged 20–24 with Year 12 or equivalent attainment increased by 7 percentage points (from 47.4% to 53.9%)
- the gap between Indigenous and non-Indigenous Australians narrowed by 4 percentage points between 2006 and 2011 (from 36 to 32 percentage points) (AIHW analysis of SCRGSP 2009, 2012).

By assuming a non-Indigenous attainment rate of 90% in 2020, COAG agreed to an Indigenous target rate of 69% (COAG 2012). This target was derived by calculating what the gap would be in 2020 if the rate for Indigenous Australians remained the same as in 2006 and the rate for non-Indigenous Australians was 90%. Since half that gap is 21 percentage points, this gives an Indigenous target rate of 69% (that is, 90 minus 21). To assist with monitoring whether progress towards the target is on track, national and state and territory trajectories were developed. The national trajectory is shown in Figure 6.1.

The rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–24 in 2011 was 1 percentage point higher than the agreed trajectory point for 2011 (54% compared with 53%, respectively). Since finalising the analysis for this report, data based on the 2016 Census have become available. These newly available data, reported in the *Closing the Gap Prime Minister's Report 2018* (PM&C 2018), show that 65% of Indigenous Australians aged 20–24 had Year 12 or equivalent in attainment in 2016, and indicate that progress towards this target is still on track.



Although not directly comparable to Census data, trends in survey data can be used to provide additional information on progress towards the target. Based on survey data, the proportion of Indigenous Australians aged 20–24 with Year 12 or equivalent attainment increased significantly from 45% in 2008 to 62% in 2014–15 (Figure 6.2) (PM&C 2017). The attainment rate for non-Indigenous Australians did not change significantly over this time period, resulting in a narrowing of the gap (from 40 to 25 percentage points). The rate of decline in the gap indicated by survey data suggests that progress towards the Census-based target is on track.



6.2.2 Year 12 or equivalent attainment by geographic area

The rate of Year 12 or equivalent attainment varies substantially by location of residence. For example, across the states and territories in 2014–15, the rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–24 ranged from 30% in the Northern Territory to 83% in the Australian Capital Territory (Table 6.2). The gap in attainment between Indigenous and non-Indigenous Australians aged 20–24 also varied greatly by location—it was lowest in South Australia (<1 percentage point) and highest in the Northern Territory (59 percentage points).

There was also a notable difference by remoteness—66% of Indigenous Australians aged 20–24 in non-remote areas had attained Year 12 or equivalent, compared with 42% of those in remote areas in 2014–15; *Inner regional* areas had the highest rate (69%). The gap between Indigenous and non-Indigenous Australians in remote areas was 39 percentage points, compared with 21 percentage points in non-remote areas.

Table 6.2: Proportion of 20–24 year olds who have attained Year 12 or equivalent, by Indigenous status and state/territory and remoteness, 2014–15^(a)

	State/territory								
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Indigenous	62.7	68.5	67.5	58.4	81.0	76.4	82.7	29.7	61.5
Non-Indigenous	87.4	88.6	86.2	83.3	81.9	79.6	93.4	88.7	86.4
Gap ^(b)	24.7	20.1	18.7	24.9	0.9	3.2	10.7	59.0	24.9
	Remoteness								Australia
	Major cities	Inner regional	Outer regional	Total non-remote	Remote	Very remote	Total remote		
Indigenous	63.1	69.4	66.3	66.0	41.7	41.7	42.3	61.5	
Non-Indigenous	88.4	80.9	77.5	86.5	78.9	67.2‡	81.3	86.4	
Gap ^(b)	25.3	11.5	11.2	20.5	37.2	25.5	39.0	24.9	

‡ Percentage has a relative standard error greater than 50% and is considered too unreliable for general use.

(a) Data for Indigenous Australians are for 2014–15, sourced from the ABS NATSISS, while data for non-Indigenous Australians are for 2014, sourced from the ABS 2014 SEW.

(b) The gap was calculated as the proportion for non-Indigenous Australians minus the proportion for Indigenous Australians.

Source: AIHW 2017.

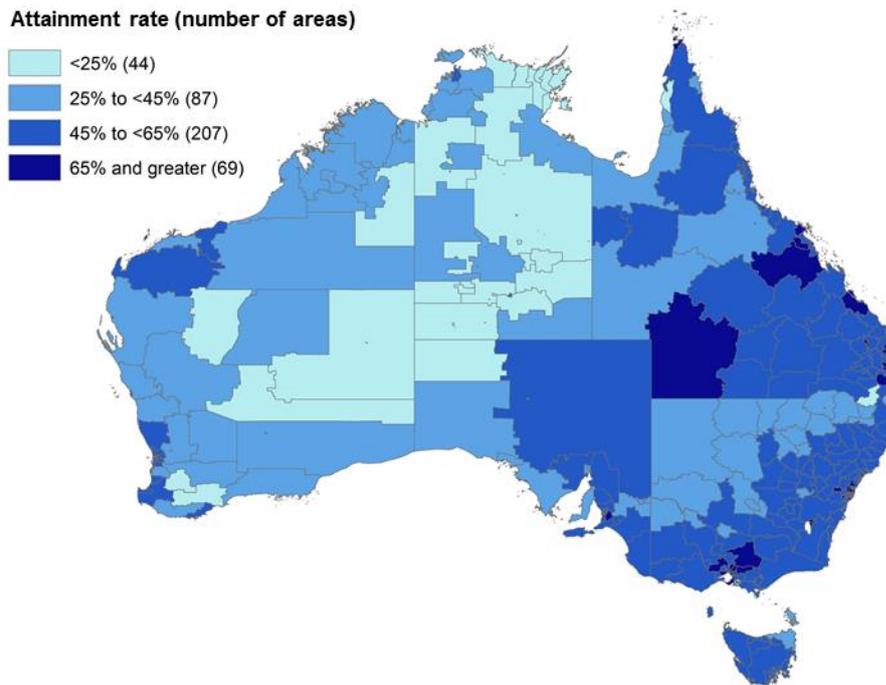
Data from the Census enable more detailed geographic analyses than are possible with survey data. Analysis by remoteness areas within each state/territory show that, in 2011, the rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–24 ranged from 20% in *Very remote* areas of the Northern Territory to 72% in *Major cities* of the Australian Capital Territory (Figure 6.3A). In comparison, among non-Indigenous Australians, the rates ranged from 59% in *Remote* areas of Tasmania to 91% in *Major cities* of the Australian Capital Territory (note: some areas were excluded from this analysis due to small numbers—see notes to Figure 6.3).

Figure 6.3B shows rates of Year 12 or equivalent attainment among Indigenous Australians in 407 Indigenous Areas (Indigenous Areas are medium-sized geographical units—see ABS 2011a). Due to small numbers of Indigenous Australians aged 20–24 in some areas, these data are shown for those aged 20–39. In 44 Indigenous Areas, fewer than one-quarter (25%) of Indigenous Australians aged 20–39 had completed Year 12 or equivalent. At the other end of the scale, in 69 areas, around two-thirds (65%) or more of the Indigenous population aged 20–39 had completed Year 12 or equivalent.

A: Rate of Year 12 or equivalent attainment among people aged 20–24, by Indigenous status, state/territory and remoteness



B: Rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–39, by Indigenous Areas



Notes

1. Data exclude areas with fewer than 10 Indigenous Australians within specified age groups enumerated in the 2011 Census—that is, in figure A: *Remote Victoria, Very remote Tasmania and Inner regional Australian Capital Territory*; and in figure B: *Stromlo—Namadgi, Lord Howe Island, Christmas Island and Cocos (Keeling) Islands*.
2. Data are based on place of usual residence and exclude people in Migratory, Offshore and Shipping regions; Other Territories; and those with no usual address.
3. In graph B, the number of Indigenous Areas within each attainment rate category are presented in brackets.

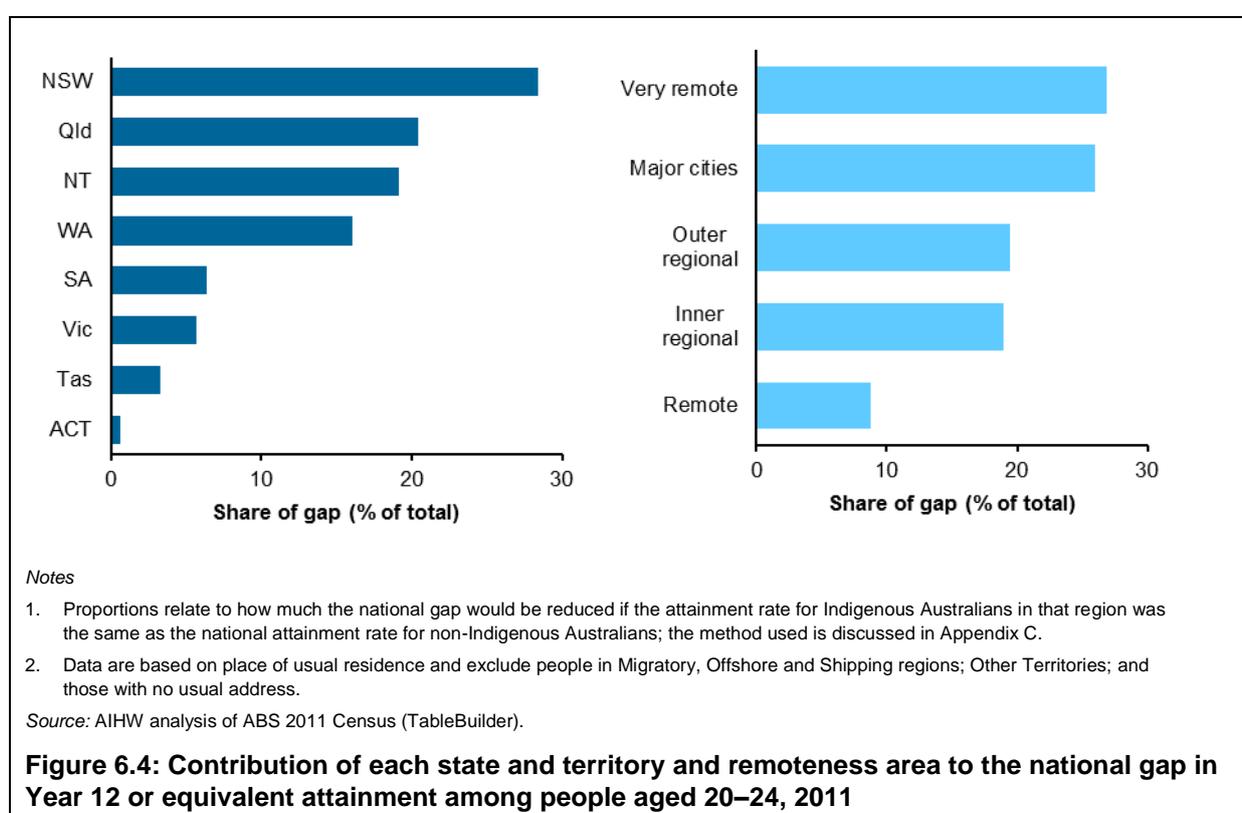
Source: AIHW analysis of ABS 2011 Census (TableBuilder).

Figure 6.3: Geographic variation in Year 12 or equivalent attainment rates, 2011

Which areas contribute most to the gap?

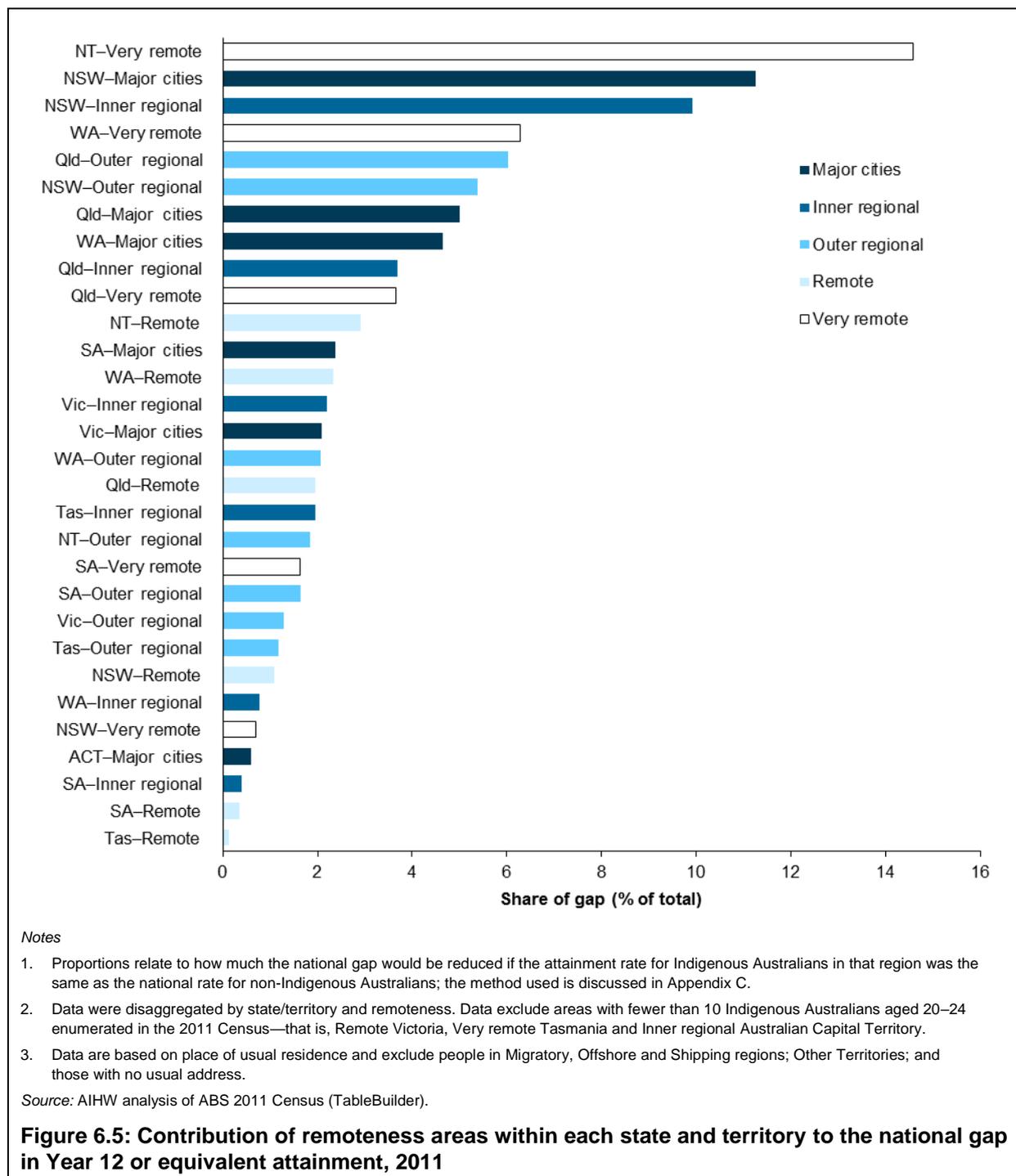
The contribution of specific geographic areas to the national gap in Year 12 or equivalent attainment is affected not only by differences in rates, but also by the size of the Indigenous population in that area. Taking the Indigenous population size into account, estimates of the contributions of state and territories and remoteness areas to the 2011 national gap in the rate of Year 12 or equivalent attainment among people aged 20–24 (32 percentage points) are shown in Figure 6.4 (for method used see Appendix C). This analysis shows that in 2011:

- approximately 84% of the national gap was attributable to four states and territories combined—New South Wales accounted for the largest share of the gap (28%), followed by Queensland (20%), the Northern Territory (19%) and Western Australia (16%)
- *Very remote* areas contributed most to the gap (27%), followed closely by *Major cities* (26%). In comparison, only a small proportion of Indigenous Australians aged 20–24 lived in *Very remote* areas (16%) and a larger proportion lived in *Major cities* (37%).



More detailed contributions of remoteness areas within each state and territory to the national gap is shown in Figure 6.5. This analysis shows that in 2011:

- *Very remote* areas in the Northern Territory contribute most to the gap in Year 12 attainment, accounting for 15% of the national gap—in comparison, 7% of Indigenous Australians aged 20–24 lived in these areas in 2011, indicating that these areas are over-represented in terms of the contribution to the gap
- the next two largest contributors to the gap in Year 12 attainment were *Major cities* of New South Wales (11% of the gap), and *Inner Regional* New South Wales (10% of the gap). This is not unexpected given that these two areas were the most populous areas for Indigenous Australians aged 20–24 in 2011, with 14% living in *Major cities* of New South Wales and 10% in *Inner regional* New South Wales.



6.2.3 Patterns of Year 12 or equivalent attainment

Type of attainment

Based on the 2011 Census, among people aged 20–24:

- 42% of Indigenous Australians had completed Year 12 or an equivalent school qualification, consisting of:
 - 28% who had completed Year 12 or an equivalent school qualification only
 - 14% who had completed Year 12 or an equivalent school qualification, as well as a non-school qualification at Certificate II level or above
- 12% of Indigenous Australians aged 20–24 had not completed Year 12, but had an equivalent non-school qualification at Certificate II level or above (Table 6.3).

Indigenous Australians aged 20–24 were substantially less likely to have completed Year 12 or an equivalent school qualification than non-Indigenous Australians of this age (gap of 35 percentage points) (Table 6.3). In contrast, the proportion of people aged 20–24 who had not completed Year 12 but had a Certificate II qualification or above was higher for Indigenous than non-Indigenous Australians (12% compared with 9%).

Table 6.3: People aged 20–24 who have attained Year 12 or equivalent, by Indigenous status and type of attainment, 2011

	Completed Year 12 or school equivalent			No Year 12, but has Certificate level II qualification or above ^(d)	Total Year 12 or equivalent
	Completed Year 12 only ^(a)	Completed Year 12 and has a Certificate level II qualification or above ^(b)	Total ^(c)		
Number					
Indigenous	11,462	5,773	17,235	4,824	22,059
Non-Indigenous	556,876	437,824	994,700	119,769	1,114,469
% of population					
Indigenous	28.0	14.1	42.1	11.8	53.9
Non-Indigenous	43.0	33.8	76.8	9.2	86.0
Gap ^(e)	15.0	19.7	34.7	-2.5	32.1

(a) Includes people who have completed Year 12 or an equivalent school qualification, but have not attained any non-school qualifications at AQF Certificate II level or above.

(b) Certificate II level or above includes Certificate I or II n.f.d, but excludes Certificate n.f.d and level not determined.

(c) This analysis combines information on highest year of school completed and level of non-school qualifications (see also Box 6.1); as a result, the data on completion of Year 12 or an equivalent school qualification shown here may differ from those published elsewhere.

(d) Includes people who did not state the highest year of school completed but had completed a certificate level II qualification or above.

(e) The gap was calculated as the proportion for non-Indigenous Australians minus the proportion for Indigenous Australians.

Note: Data in this table have been randomly adjusted by the ABS to avoid the release of confidential data and so may not match data shown elsewhere.

Source: AIHW analysis of ABS 2011 Census (TableBuilder).

Attainment by sex

In 2011, 55% of Indigenous females aged 20–24 had attained Year 12 or equivalent compared with 52% of males (AIHW analysis of 2011 Census). Similarly, among non-Indigenous Australians of this age, the rate was higher for females than males (88% compared with 84%).

For Indigenous Australians aged 20–24, differences in rates by sex varied by remoteness (Table 6.4). For example, among Indigenous Australians in *Major cities*, the rate of

attainment was 5 percentage points higher for females than for males, while in *Remote* areas the rate was 2 percentage points higher for males.

In comparison, among non-Indigenous Australians, the rate of Year 12 or equivalent attainment was consistently around 4 percentage points higher for females than for males across all remoteness areas (Table 6.4).

The gap in Year 12 attainment between Indigenous and non-Indigenous Australians aged 20–24 was larger for females than males in every remoteness area except *Major cities*.

Table 6.4: Proportion of people aged 20–24 who have attained Year 12 or equivalent, by Indigenous status, sex and remoteness area, 2011 (%)

Indigenous status	Major cities		Inner regional		Outer regional		Remote		Very remote	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Indigenous	61.5	66.6	54.9	58.3	53.4	53.1	44.1	42.2	29.7	31.5
Non-Indigenous	86.3	90.0	77.6	81.7	75.0	79.3	76.3	80.6	78.2	82.4
Gap ^(a)	24.7	23.4	22.7	23.4	21.7	26.2	32.2	38.4	48.5	50.9

(a) The gap was calculated as the proportion for non-Indigenous Australians minus the proportion for Indigenous Australians.

Notes

1. Data are based on place of usual residence and exclude people in Migratory, Offshore and Shipping regions; Other Territories; and those with no usual address.
2. Data in this table have been randomly adjusted by the ABS to avoid the release of confidential data and so may not match data shown elsewhere.

Source: AIHW analysis of ABS 2011 Census (TableBuilder).

Attainment by age

Looking across a broad range of age groups, the rate of Year 12 or equivalent attainment is higher among younger age groups for both Indigenous and non-Indigenous Australians (Table 6.5), reflecting an increasing rate of Year 12 attainment over time. However, the gap between Indigenous and non-Indigenous Australians is higher among those in the younger age groups. This suggests a combination of Indigenous Australians being more likely than non-Indigenous Australians to complete Year 12 or equivalent at older ages (that is, post-typical school completion age), as well as relatively greater improvements in attainment rates among the non-Indigenous population. Further analysis is required to determine the relative influence of these two factors.

Table 6.5: Proportion of Indigenous Australians aged 20 and over with Year 12 or equivalent attainment, by Indigenous status and age group, 2011 (%)

Indigenous status	Age group (years)							Total 20 and over
	20–24	25–29	30–34	35–39	40–44	45–49	50 and over	
Indigenous	53.9	53.8	53.0	52.1	47.5	43.0	33.5	46.5
Non-Indigenous	86.0	87.5	86.1	83.2	75.8	70.4	56.7	70.9
Gap ^(a)	32.1	33.7	33.1	31.1	28.3	27.4	23.2	24.4

(a) The gap was calculated as the proportion for non-Indigenous Australians minus the proportion for Indigenous Australians.

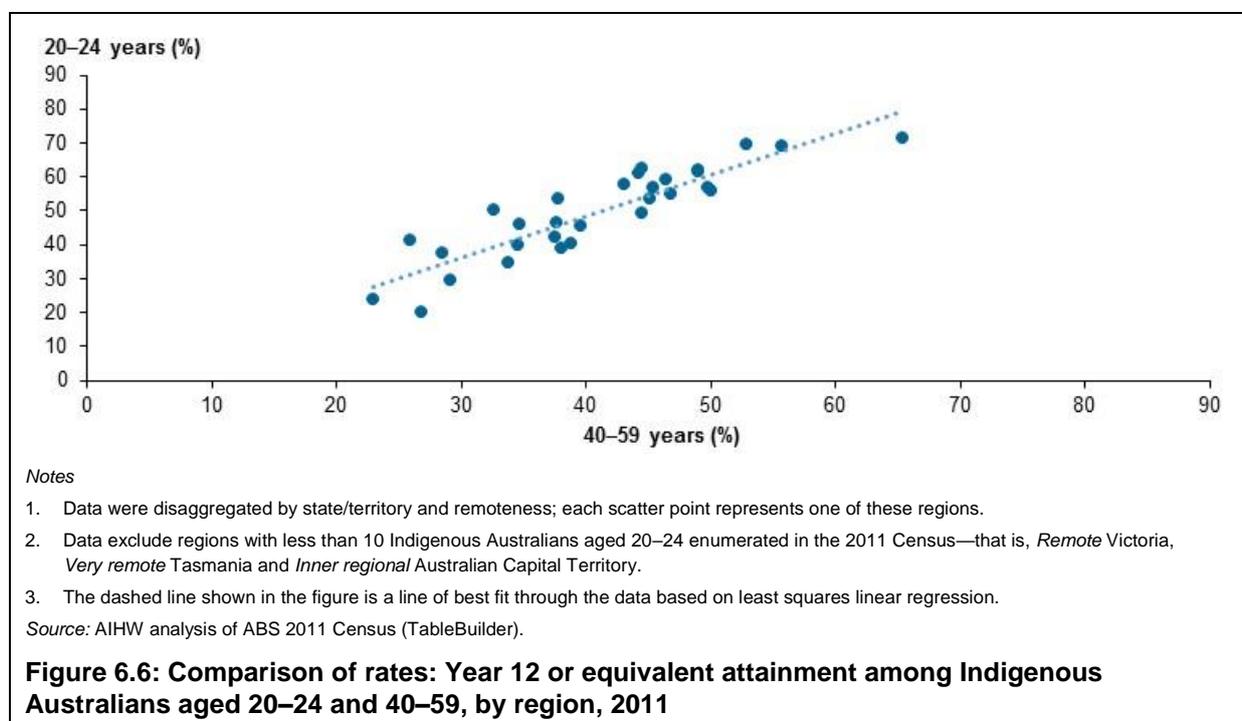
Note: Data in this table have been randomly adjusted by the ABS to avoid the release of confidential data and so may not match data shown elsewhere.

Source: AIHW analysis of ABS 2011 Census (TableBuilder).

Differences in attainment rates by age group can be used to explore the intergenerational relationship of Year 12 or equivalent attainment. Figure 6.6 compares rates of Year 12 attainment among Indigenous Australians aged 20–24 and 40–59 in specific geographic areas, using data disaggregated by remoteness areas within each state and territory.

The data indicate an intergenerational correlation in Year 12 attainment rates—that is, regions with relatively low rates of Year 12 or equivalent attainment among those aged 40–59 tend to also have similarly low rates among the younger generation (20–24). The data suggest that completion of Year 12 or equivalent has improved in 29 of the 30 regions included in the analysis, including in 22 regions where the attainment rate among those aged 20–24 was at least 5 percentage points higher than among those aged 40–59. Interestingly, in Queensland, the attainment rate among those aged 20–24 was at least 15 percentage points higher than among those aged 40–59 in all remoteness categories.

There was one region where the data suggest that attainment rates have worsened: in Northern Territory *Very remote* areas, the attainment rate in 2011 was 6.8 percentage points lower among those aged 20–24 than among those aged 40–59.



Attainment by school attendance and prior school achievement

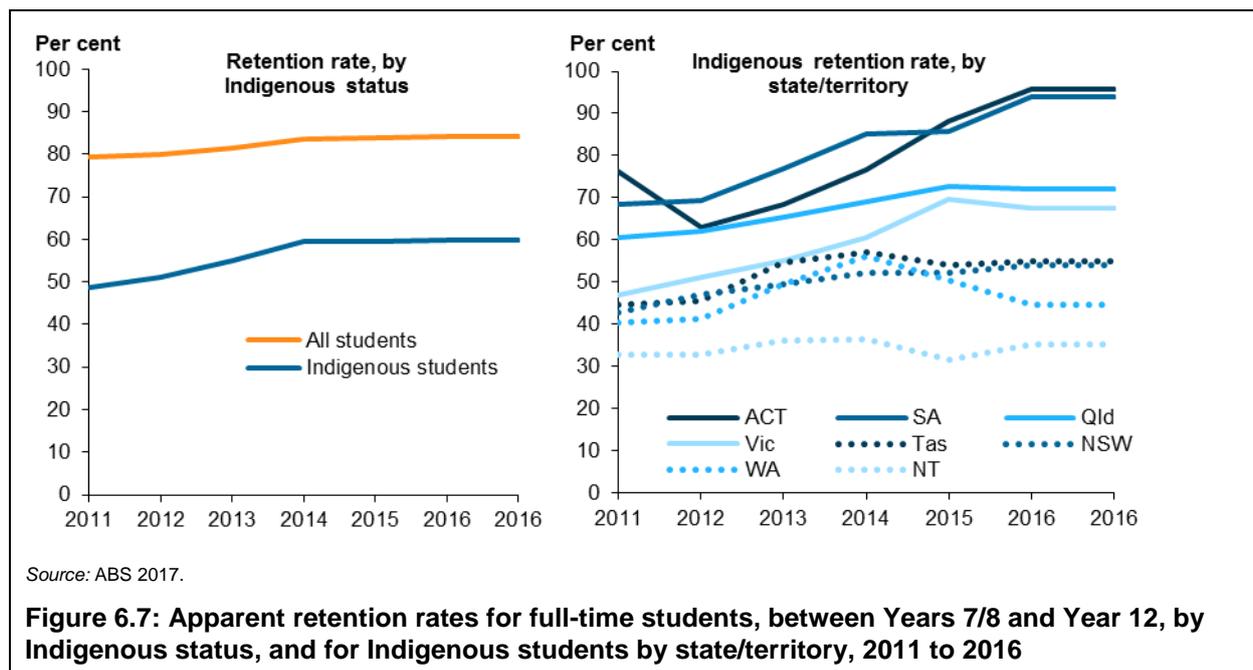
The relationship between attendance, achievement and outcomes starts early. Analysis of the LSIC suggests that participation in formal early childhood education and care can have positive influences on both developmental and learning goals (Arcos Holzinger & Biddle 2015). International research suggests that some early childhood programs can have positive influences on outcomes into early adulthood (Garces et al. 2000). Regular school attendance is also positively associated with school outcomes (Biddle 2014).

School retention has a direct relationship with Year 12 attainment rates. In 2016, there were 207,852 students enrolled in Australian schools identifying as Indigenous. The apparent retention rate for full-time Indigenous students from Years 7/8 to Year 12 was 60% (ABS 2017). In other words, 6 in 10 Indigenous students who had begun secondary education at Years 7/8 in 2010–2011 stayed at school until Year 12. By comparison, the apparent retention rate among all students was 84%.

Between 2011 and 2016, the apparent retention rate for Indigenous students from Years 7/8 to Year 12 increased by 11 percentage points, compared with a 5 percentage point increase for all students (Figure 6.7).

Apparent retention rates for Indigenous Australians varied by state and territory—in 2016, rates ranged from 35% in the Northern Territory to 96% in the Australian Capital Territory (Figure 6.7). Between 2011 and 2016, the apparent retention rate for Indigenous students increased by 10 percentage points or more in all states and territories except Western Australia (4 percentage point increase) and the Northern Territory (2 percentage points).

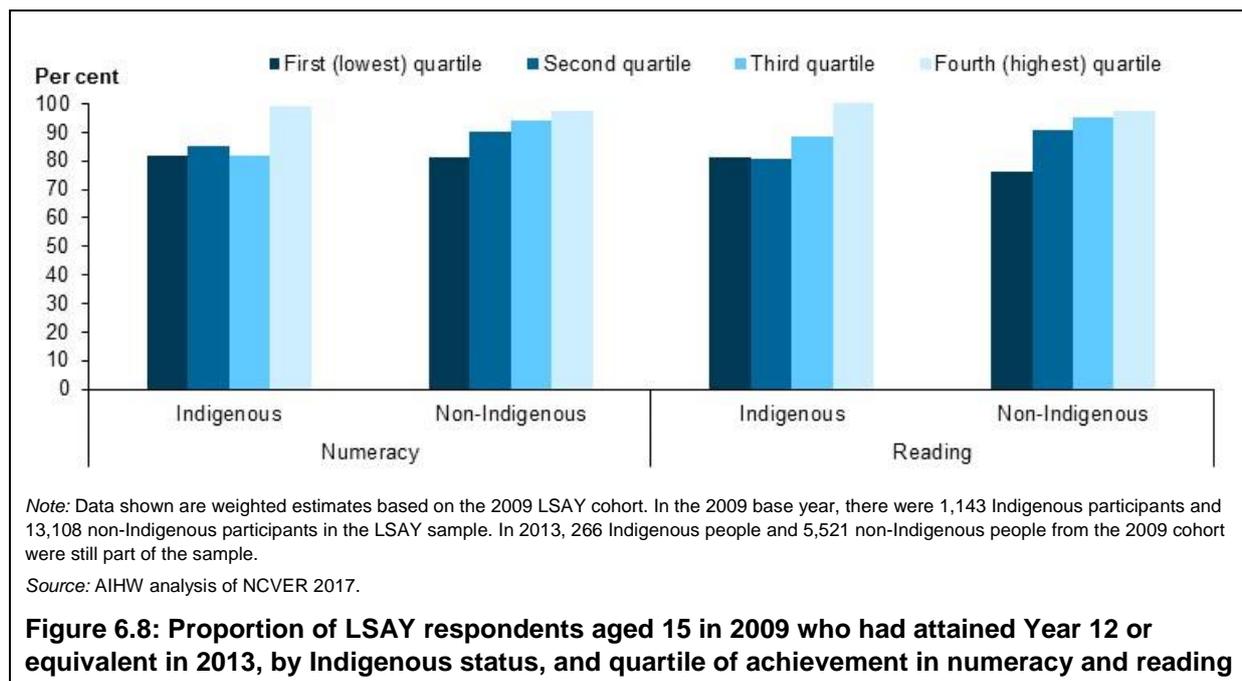
Further information about school attendance and the associated COAG target is provided in Chapter 4.



Prior school achievement—and particularly performance in Year 9 standardised testing—is associated with Year 12 completion (Biddle & Cameron 2012; Lamb et al. 2015; Mahuteau et al. 2015; Marks 2014).

For example, one source of information on student achievement is the PISA. PISA is administered to a sample of 15-year-old students (who are usually in Years 9, 10 or 11). In 2015, Indigenous students aged 15 were, on average, 2.5 years of schooling behind non-Indigenous students of this age in scientific literacy, and 2.3 years behind in both reading and mathematical literacy (ACER 2017).

Since 2003, the LSAY has drawn its sample from students who have undertaken the PISA; these students are then interviewed annually to examine transition points in young people’s lives, including completing school (NCVER 2014). Data from this survey demonstrate the link between school achievement and Year 12 attainment. For example, data from the 2009 LSAY cohort show that students with higher levels of numeracy and reading achievement at age 15 were more likely to have completed Year 12 or equivalent by age 19 (AIHW analysis of NCVER 2017; Figure 6.8). The relationship appears more linear for non-Indigenous students; however, it should be noted that the Indigenous sample is small, and there is a relatively higher sample attrition among the Indigenous participants than the non-Indigenous participants (see notes to Figure 6.8).



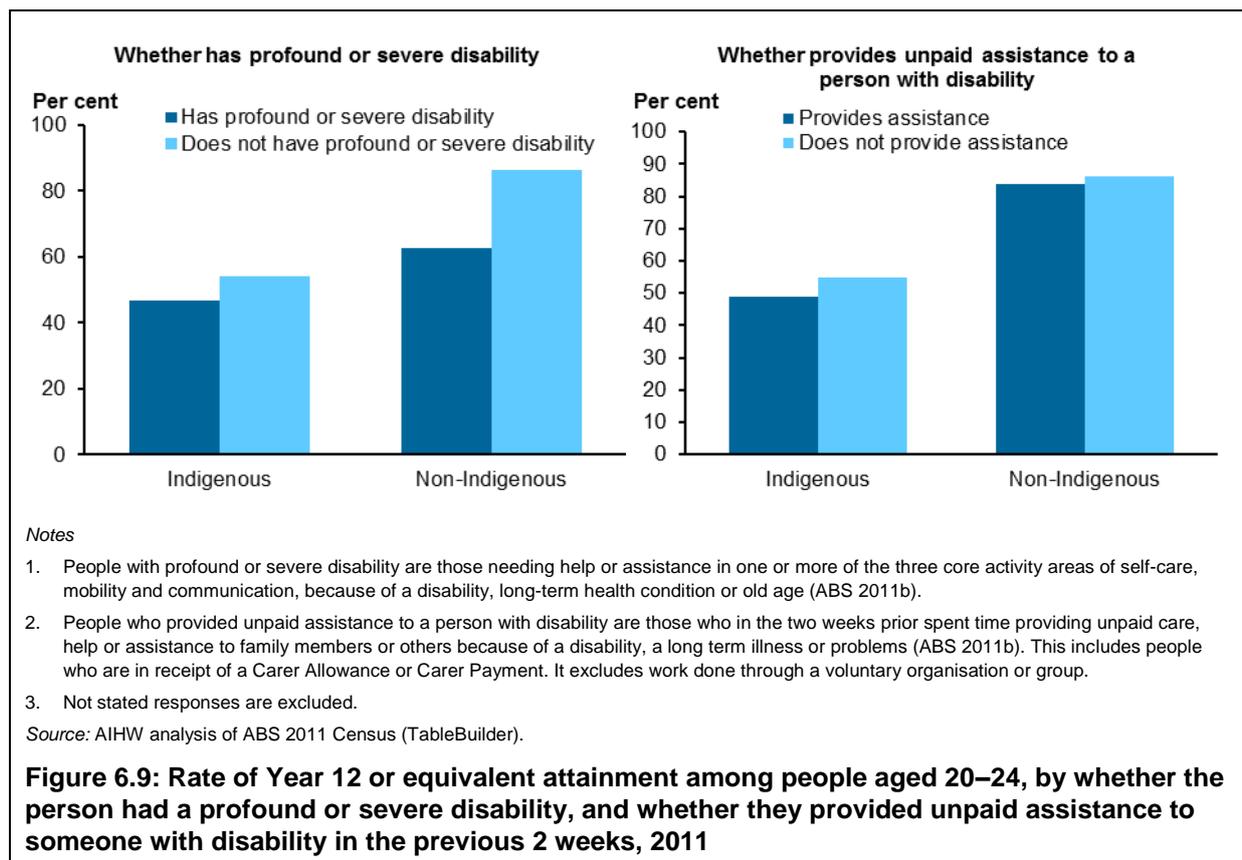
See Chapter 5 for further information about reading and numeracy achievement and the associated COAG target.

Attainment by disability and carer status

Based on the 2011 Census:

- 3.0% of Indigenous Australians aged 20–24 (about 1,300 people) were living with profound or severe disability—that is, they needed assistance in their daily lives with at least one of the core activities of self-care, mobility or communication because of disability, a long-term health condition or old age. Indigenous Australians aged 20–24 were more likely to have profound or severe disability than non-Indigenous Australians of this age (3.0%, compared with 1.4%). (Data exclude those who did not respond to the relevant Census question.)
- for both Indigenous and non-Indigenous Australians aged 20–24, the rate of Year 12 or equivalent attainment was lower among those with profound or severe disability than among those without profound or severe disability
- 47% of Indigenous Australians aged 20–24 with profound or severe disability had attained Year 12 or equivalent, compared with 54% of those without profound or severe disability (Figure 6.9; AIHW analysis of 2011 Census).

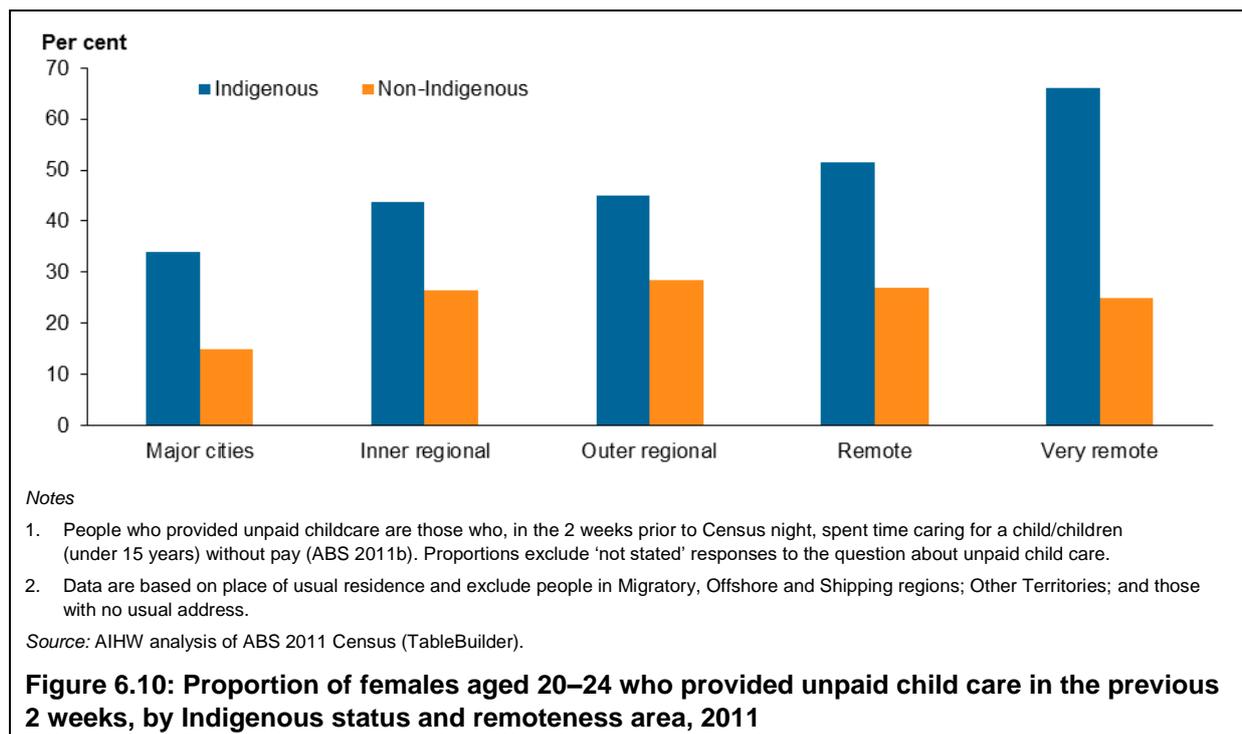
In the 2 weeks prior to Census night in 2011, just over 1 in 10 Indigenous Australians aged 20–24 reported providing unpaid assistance to someone with disability (10.9%, or about 4,500 people), compared with about 1 in 20 non-Indigenous Australians (5.5%). Among Indigenous Australians aged 20–24, those who provided assistance were slightly less likely to have attained Year 12 or equivalent than those who did not (49% compared with 55%) (Figure 6.9).



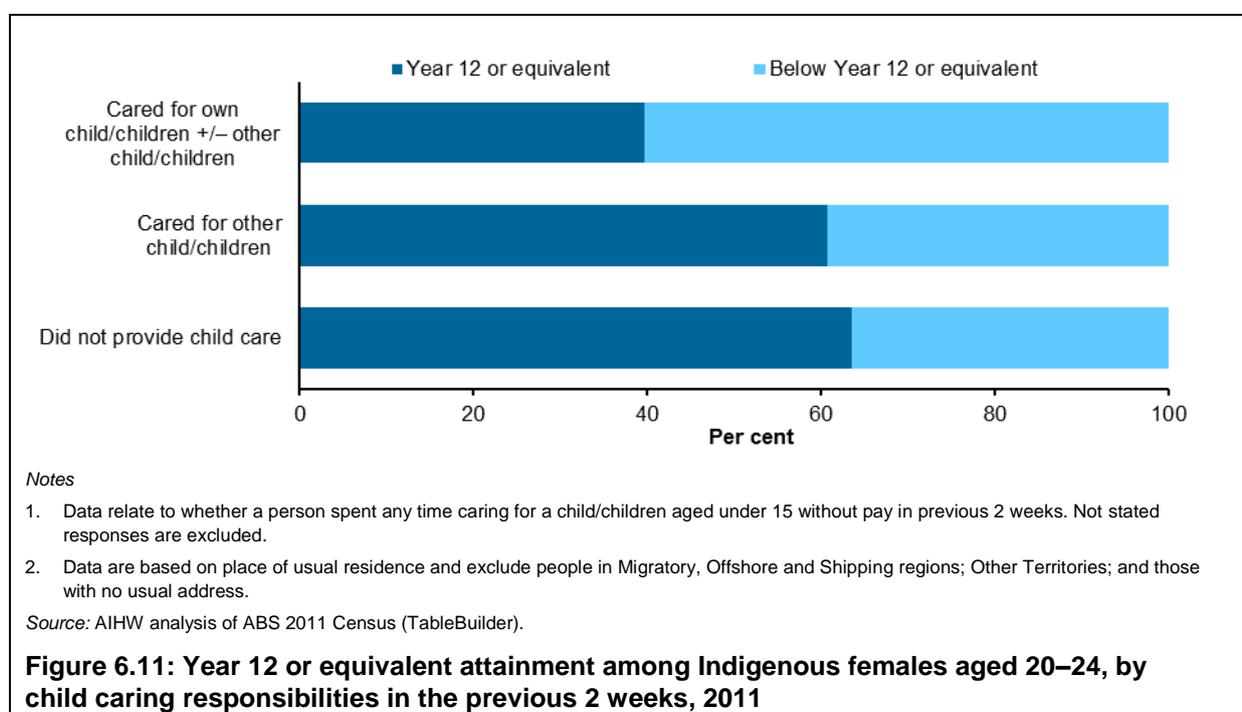
Attainment by child caring responsibilities

On average, Indigenous women have children at a younger age than non-Indigenous women. In 2015, the age-specific fertility rate for Indigenous women aged 15–19 was nearly 6 times that for non-Indigenous women (59 compared with 10 per 1,000 women, respectively) (AIHW analysis of ABS 2016).

The Indigenous fertility rate was highest among those aged 20–24, while for non-Indigenous women the rate peaked 10 years later, among those aged 30–34. In 2011, 45% of Indigenous females aged 20–24 had spent time caring for their own or other children in the 2 weeks before Census night, compared with 18% of non-Indigenous females (AIHW analysis of 2011 Census). For Indigenous females, the proportion caring for children is higher in *Remote* and *Very remote* areas (Figure 6.10). The proportion of males caring for children was smaller—among those aged 20–24, 23% of Indigenous males and 8% of non-Indigenous males had cared for their own or other children in the previous 2 weeks.



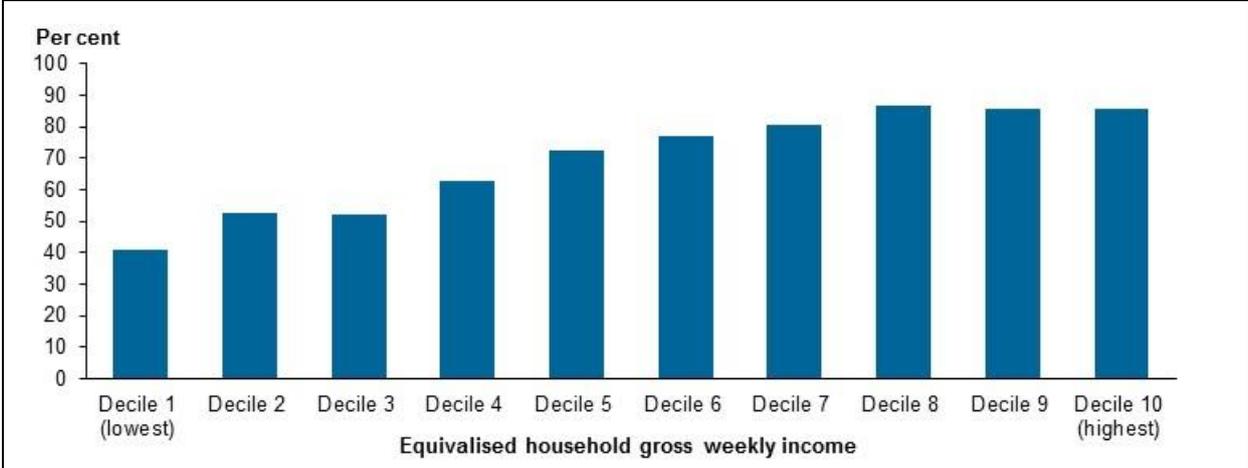
Among Indigenous females aged 20–24, 40% of those who had cared for their own children (or for both their own children and the children of others) in the previous 2 weeks had attained Year 12 or equivalent (Figure 6.11). In comparison, the attainment rate among those who had not provided childcare was over 20 percentage points higher, with 64% having attained Year 12 or equivalent. The rate of attainment among those who cared for other children (but not their own) was similar to those who did not provide child care.



There was a similar pattern among Indigenous males aged 20–24; however, the difference in attainment rates between those who had cared for their own children (or both their own children and the children of others) and those who had not provided any child care was somewhat smaller (15 percentage points). Also, males were less likely than females to report child care responsibilities. For example, 15% of males aged 20–24 reported caring for their own children, or both their own children and the children of others, in the previous 2 weeks compared with 33% of females (AIHW analysis of 2011 Census).

Attainment by household income

Data from the NATSISS show that, among Indigenous Australians aged 20–39, the rate of Year 12 or equivalent attainment was generally higher among those living in households with a higher equivalised household income (Figure 6.12).



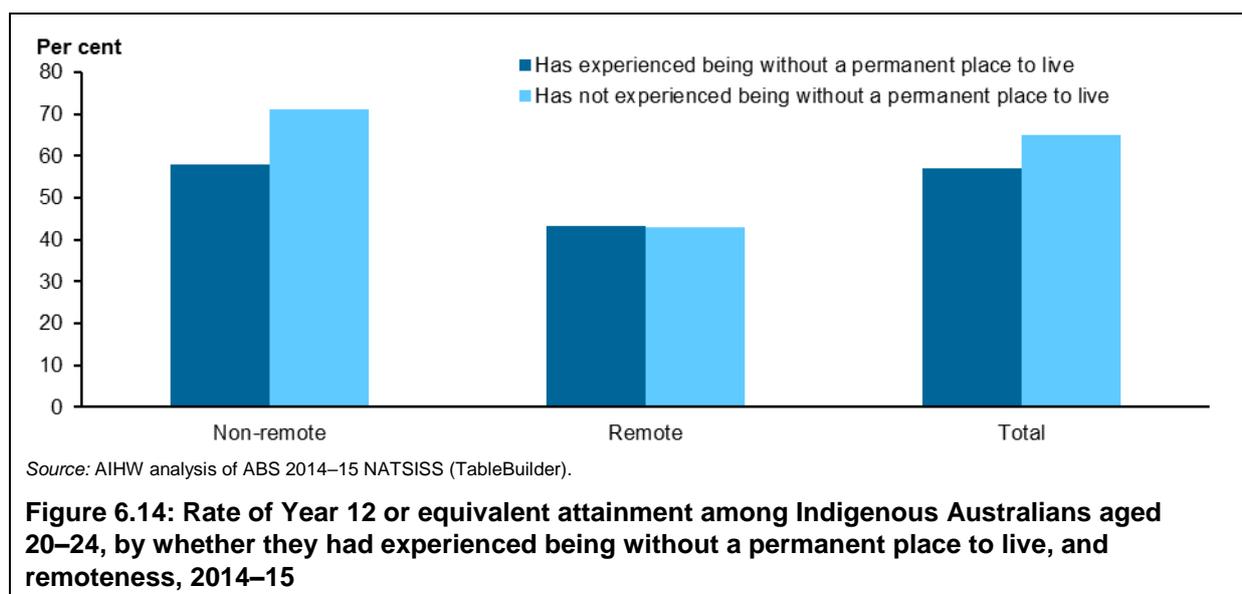
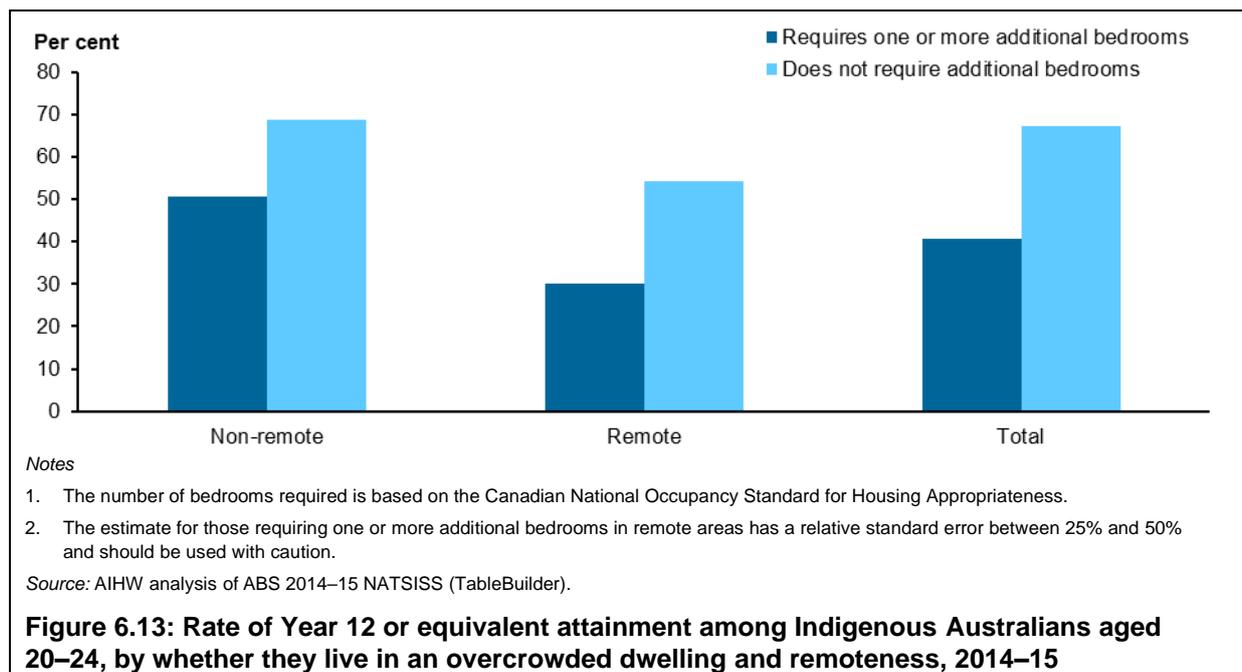
Source: AIHW analysis of ABS 2014–15 NATSISS (TableBuilder).

Figure 6.12: Rate of Year 12 or equivalent attainment among Indigenous Australians aged 20–39, by equivalised household gross weekly income (deciles), 2014–15

Attainment by overcrowding and homelessness

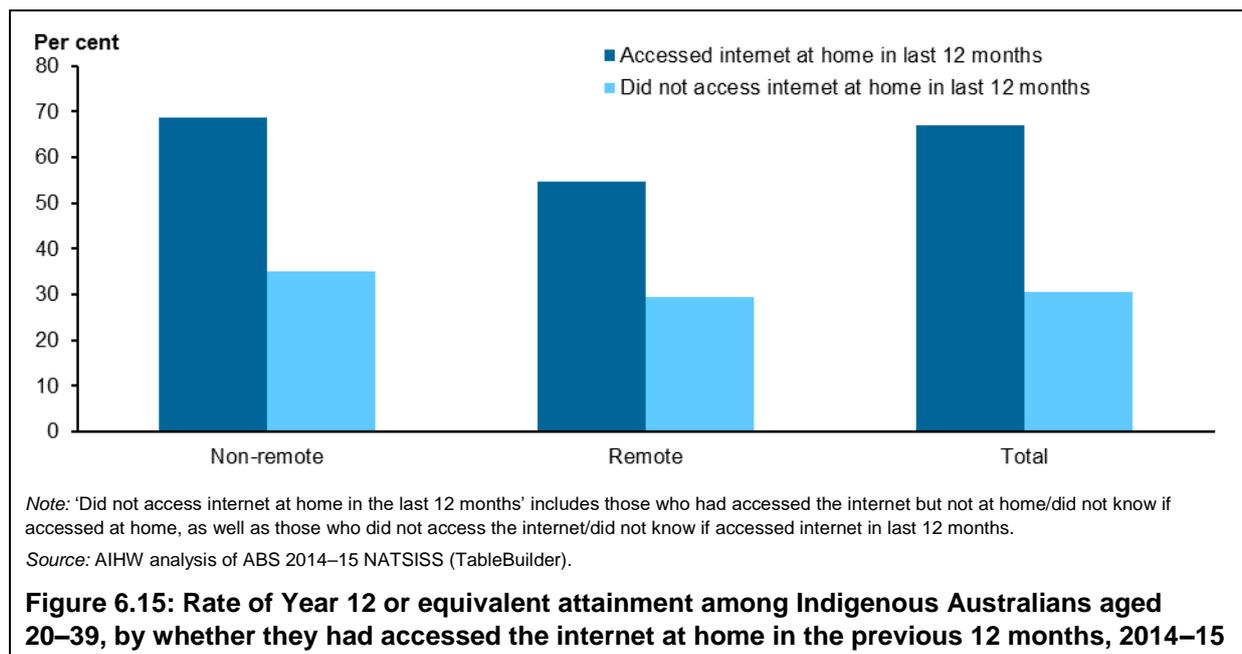
Based on data from the 2014–15 NATSISS, about one-quarter (26%) of Indigenous Australians aged 20–24 were living in a dwelling that was overcrowded—that is, a dwelling requiring at least one additional bedroom, based on the Canadian National Occupancy Standard for Housing Appropriateness (AIHW analysis of 2014–15 NATSISS). Among those Indigenous Australians, 41% had completed Year 12 or a Certificate II or above; this was lower than the attainment rate among those who were not living in an overcrowded dwelling (67%) (Figure 6.13). In remote areas, 32% of Indigenous Australians aged 20–24 living in overcrowded dwellings had completed Year 12 or equivalent, compared with 54% of those who were not.

The NATSISS also collected information about past experiences of being without a permanent place to live. In non-remote areas, those who had experienced being without a permanent place to live were less likely to have completed Year 12 or equivalent than those who had not experienced being without a place to live (58% compared with 71%, respectively); however, this was not observed in remote areas (Figure 6.14).

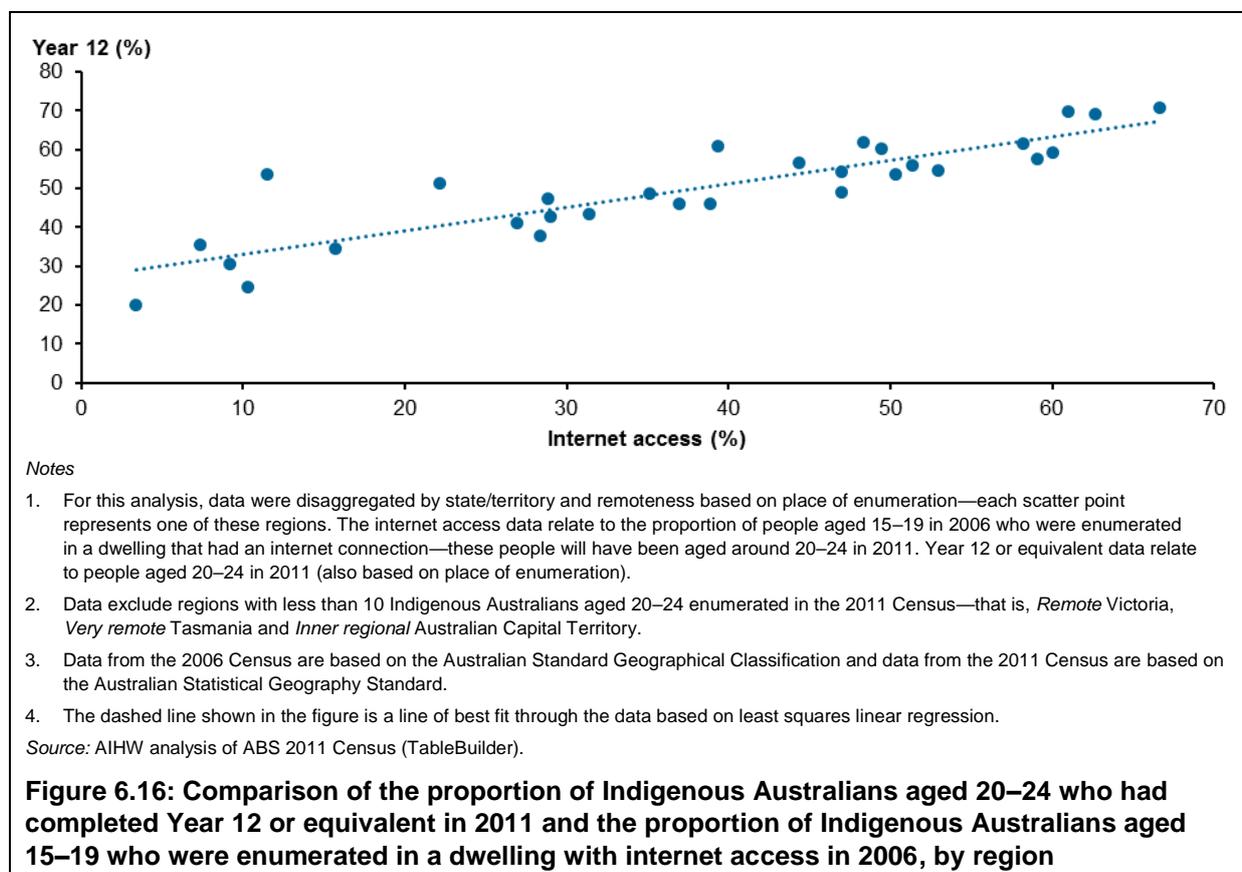


Attainment by internet access

In 2014–15, among Indigenous Australians aged 20–39, 83% had accessed the internet at home in the last 12 months (AIHW analysis of 2014–15 NATSISS). Those living in non-remote areas were more likely to have accessed the internet at home in the last 12 months than those in remote areas (92% compared with 52%). Among Indigenous Australians aged 20–39 who had accessed the internet at home in the last 12 months, 67% had completed Year 12 or equivalent, compared with 31% of those who had not accessed the internet at home (Figure 6.15).



Data from the 2006 and 2011 Censuses enable a comparison between internet access in 2006 and Year 12 attainment in 2011 in specific areas. These data indicate that regions with higher rates of Year 12 or equivalent attainment among Indigenous Australians aged 20-24 in 2011, the proportion of Indigenous Australians aged 15-19 who were in dwellings with an internet connection in 2006 was also generally higher (Figure 6.16).

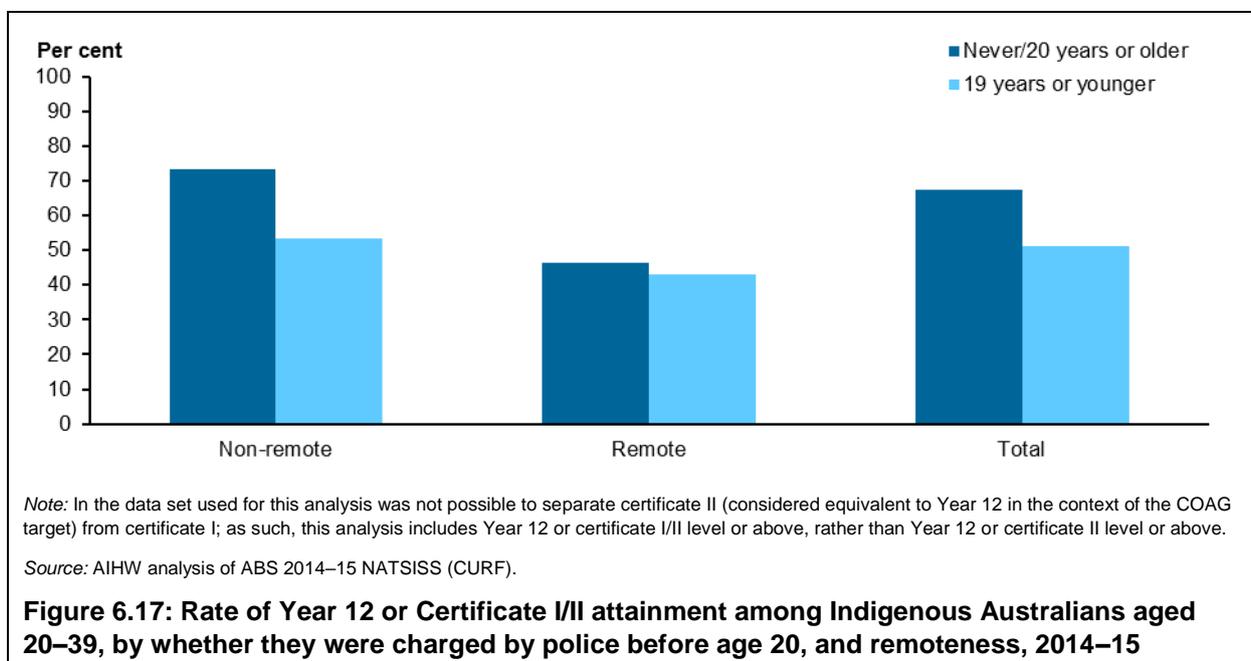


Attainment and contact with the justice system

Data from the NATSISS indicate higher rates of contact with the criminal justice system among people who had not completed Year 12 or equivalent than among those who had. In 2014–15, among people aged 20–39:

- 30% of those who had not completed Year 12 or equivalent reported that they had been arrested by police in the last 5 years, compared with 14% who had attained this level of qualification
- 12% of those who had not completed Year 12 or equivalent had been incarcerated at some point in their lifetime, compared with 5% of those who had attained this level of qualification (AIHW analysis of 2014–15 NATSISS using TableBuilder).

Indigenous Australians aged 20–39 who had been charged by police before age 20 were less likely to have attained Year 12 or Certificate I/II or above than those who were charged at 20 years or older or had never been charged (Figure 6.17). The data suggest that there is a weaker relationship between being charged before age 20 and completion of Year 12 in remote areas than in non-remote areas.



Attainment and student perspectives

Aspirations and post-school plans

Data from Mission Australia's Youth Survey provide information on the aspirations of young people aged 15–19 in relation to education, training and work. In 2016, nearly 1,300 survey participants were Indigenous (6% of all respondents) (Mission Australia 2017a). According to this survey, among those still at school:

- 93% of Indigenous respondents intended to complete school; compared with 97% of non-Indigenous respondents
- 46% of Indigenous respondents planned to go to university, compared with 70% of non-Indigenous respondents

- Indigenous respondents were more likely than non-Indigenous respondents to report plans to get a job (40% compared with 32%), to get an apprenticeship (18% compared with 8%), or go to Technical and Further Education or college (17% compared with 12%)
- Indigenous males were more than twice as likely as Indigenous females to say that they did not intend to complete Year 12—9.8% compared with 3.9% (Mission Australia 2017a).

Those who were still at school were also asked to indicate (from a selection) what influenced their post-school plans. The top three influences reported by Indigenous students were parents, other family members, and friends; for non-Indigenous students, parents, and other family members were the top two responses, followed by the internet (Mission Australia 2017a).

The 2016 Youth Survey also collected information on young people's perceived potential barriers to achieving their post-school plans (work or study). For young Indigenous Australians, financial difficulty, academic ability, and family responsibilities were the top three barriers. For non-Indigenous young people, the top three barriers were academic ability, financial difficulty and lack of jobs (Mission Australia 2017b).

Assistance to support school completion

The 2014–15 NATSISS collected information from students who were currently studying at a secondary school on what types of assistance they thought would help them continue going to school until they had completed Year 12 (for those aged under 15, information was collected from proxies—usually the parent—rather than the individual students).

For students aged under 15 currently attending secondary school, the most commonly reported type of assistance that would help them complete school was 'support from family, friends and school' (85%) (Table 6.6). The next most common responses were 'more individual tutoring' (43%) and 'career guidance' (39%).

There were some differences by remoteness in the types of assistance reported (Figure 6.18). For example, for students aged under 15, encouragement from Elders and council was more commonly reported for those in remote areas than for those in non-remote areas (39% compared with 21%), as was having a relative to support them if going away to boarding school (37% compared with 6%) and schools suitable for culture and/or beliefs (24% compared with 16%).

Table 6.6: Types of assistance that would help child^(a) complete Year 12, by sex, Indigenous children currently attending secondary school, 2014–15^(b)

Types of assistance	Males		Females		Total	
	Number	%	Number	%	Number	%
Support from family, friends and school	17,338	82.8	19,059	89.2	36,110	85.2
More individual tutoring	9,520	45.4	8,544	40.0	18,064	42.6
Career guidance	7,547	36.0	9,058	42.4	16,482	38.9
Provision of coaches or mentors	8,267	39.5	6,023	28.2	14,152	33.4
Support networks	7,166	34.2	7,147	33.5	14,170	33.4
Subsidies or grants to help affordability	6,401	30.6	5,522	25.8	11,618	27.4
Encouragement from elders and council	5,628	26.9	4,046	18.9	9,992	23.6
Greater access to apprenticeships	4,954	23.6	3,575	16.7	8,851	20.9

(continued)

Table 6.6 (continued): Types of assistance that would help child^(a) complete Year 12, by sex, Indigenous children currently attending secondary school, 2014–15^(b)

Types of assistance	Males		Females		Total	
	Number	%	Number	%	Number	%
Schools suitable for culture and/or beliefs	2,993†	14.3	4,127	19.3	7,120	16.8
Suitable or reliable transport	2,868	13.7	4,098	19.2	6,970	16.4
More discipline	3,751	17.9	2,728	12.8	6,459	15.2
A relative to support if goes away to boarding school	2,641	12.6	2,193	10.3	4,903	11.6
Accessible secondary schools	1,754	8.4	2,727†	12.8†	4,454	10.5
Assistance for students with disability	2,153	10.3	1,176†	5.5†	3,455	8.2
Other reason	260‡	1.2‡	414‡	1.9‡	551‡	1.3‡
Total^(c)	20,951	100.0	21,364	100.0	42,378	100.0

† Numbers and percentages have a relative standard error between 25% and 50% and should be used with caution.

‡ Numbers and percentages have a relative standard error greater than 50% and are considered too unreliable for general use.

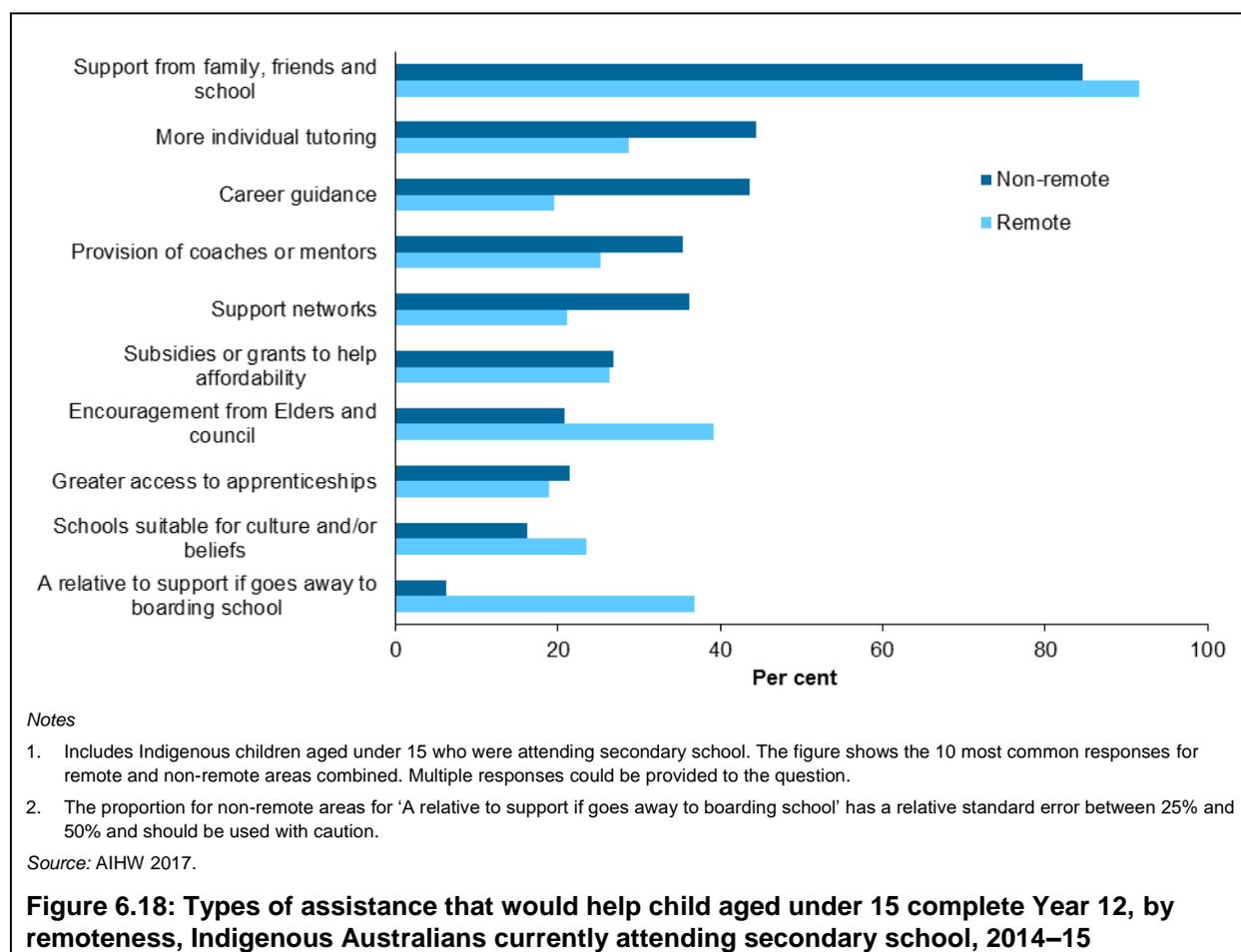
(a) Includes Indigenous children aged under 15 who were attending secondary school.

(b) Data are from the 2014–15 NATSISS. Numbers have been randomly adjusted by the ABS to avoid the release of confidential data; these may not match data published elsewhere.

(c) Multiple response item. Sum of components may be greater than the total.

Note: Excludes not applicable and people who do not usually attend school, and people who are not currently attending secondary school.

Source: AIHW 2017.



In 2014–15, among students aged 15–19 who were currently attending secondary school full-time, 8 in 10 (80%) reported that support from family, friends and schools would help them complete Year 12, and nearly half (44%) indicated that career guidance would be of assistance (Table 6.7). The next most common responses were more individual tutoring (28%) and greater access to apprenticeships (25%).

Table 6.7: Types of assistance that would help Indigenous Australians aged 15–19 who are currently attending secondary school full-time to complete Year 12, by remoteness, 2014–15^(a)

Type of assistance	Non-remote		Remote		Total	
	Number	%	Number	%	Number	%
Support from family, friends and school	23,582	81.9	4,087	76.1	27,634	79.7
Career guidance	14,019	48.7	1,496†	27.9†	15,296	44.1
More individual tutoring	8,391	29.2	1,256†	23.4†	9,839	28.4
Greater access to apprenticeships	7,476	26.0	912†	17.0†	8,667	25.0
Schools suitable for culture and/or beliefs	5,115	17.8	943†	17.6†	6,307	18.2
Subsidies or grants to help affordability	4,773	16.6	803†	15.0†	6,071	17.5
Encouragement from elders and council	4,066	14.1	1,246†	23.2†	5,712	16.5
Provision of coaches/mentors	3,608	12.5	1,015†	18.9†	5,335	15.4
Suitable or reliable transport	4,069	14.1	499†	9.3†	4,677†	13.5†
Support networks	2,738	9.5	804†	15.0†	3,609	10.4
A relative to support if goes away to boarding school	1,771†	6.2†	1,434†	26.7†	2,977†	8.6†
Assistance for students with a disability	1,618†	5.6†	168‡	3.1‡	1,954†	5.6†
Accessible secondary schools	1,314†	4.6†	495‡	9.2‡	1,817†	5.2†
Other reason/s	1,718†	6.0†	592‡	11.0‡	2,295†	6.6†
Total^(b)	28,777	100	5,368	100.0	34,674	100.0

† Numbers and percentages have a relative standard error between 25% and 50% and should be used with caution.

‡ Numbers and percentages have a relative standard error greater than 50% and are considered too unreliable for general use.

(a) Data are from the 2014–15 NATSISS. Numbers have been randomly adjusted by the ABS to avoid the release of confidential data; these may not match data published elsewhere.

(b) Multiple response item. Sum of components may be greater than total.

Note: Excludes people who are not currently studying full-time at secondary school and not stated responses.

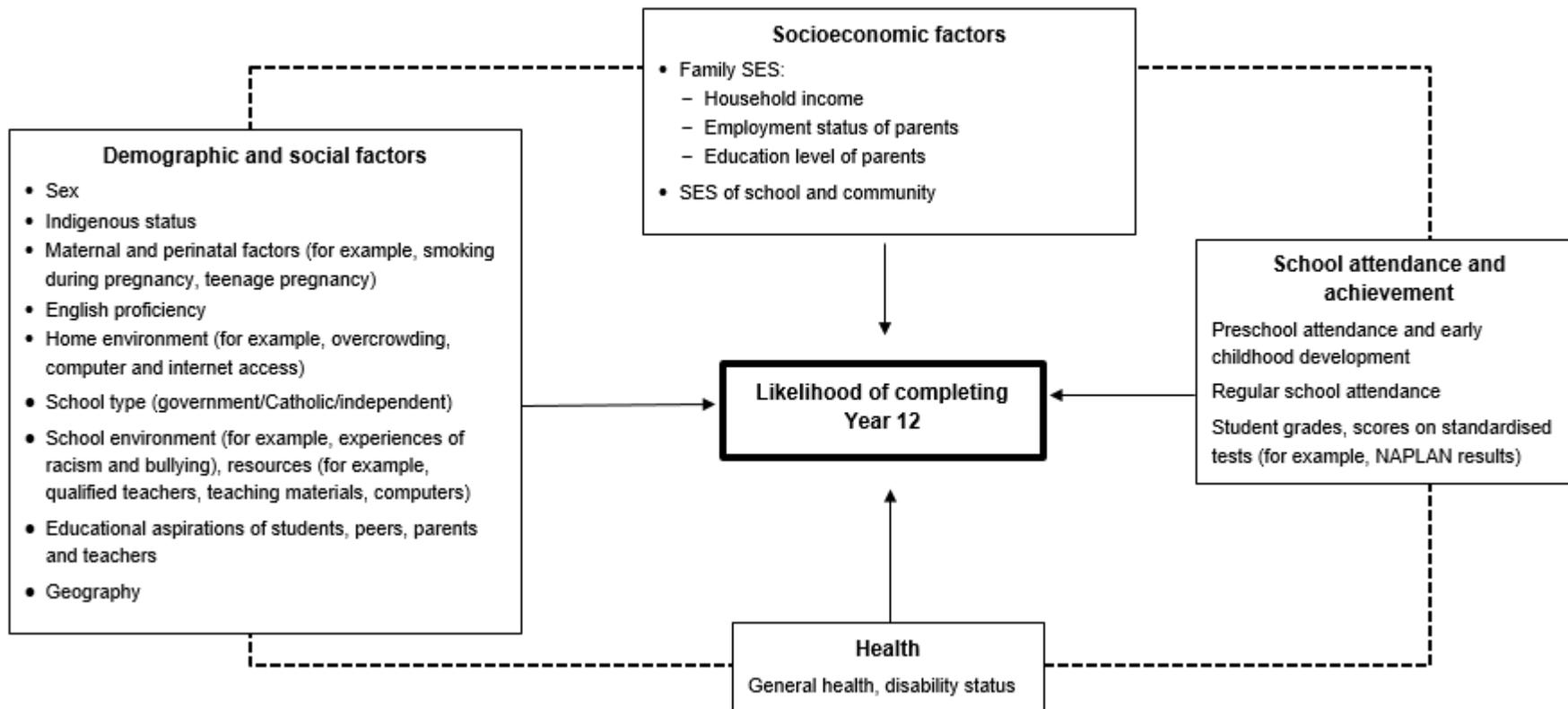
Source: AIHW analysis AIHW 2017.

6.3 Key drivers of Year 12 attainment

The scope of this section is not exhaustive—it highlights key relationships identified in the literature (including previously published AIHW material) and presents new modelling related to Year 12 attainment. The modelling results are limited by the coverage of the variables in the data sets used.

Many factors are associated with Year 12 attainment, but the relative importance of these is unclear. A key issue is that most data sets capture only a small subset of variables thought to influence Year 12 attainment. As well, many of the associated factors are interrelated, which makes it difficult to disentangle correlations from causal pathways.

Figure 6.19 provides an overview of factors associated with Year 12 attainment, either directly or through intermediate influences, based on the available data and literature. Note that this figure is not meant to demonstrate causal pathways, and is also not an exhaustive list of all possible influences.



Note: This figure shows many factors that available data and/or literature suggests are associated with Year 12 attainment (either directly, or through influences on key drivers of Year 12 attainment such as prior school achievement). However, it is not meant to demonstrate causal pathways, and many of the factors shown are interrelated. It is also not an exhaustive list of all possible influences.

Figure 6.19: Direct and indirect factors associated with Year 12 attainment

The available evidence indicates that prior school achievement, SES and aspirations to complete school are key drivers of Year 12 attainment. The remainder of this section presents more detailed information from the literature and from analysis of NATSISS data on key drivers of Year 12 attainment.

Although not considered in this chapter, changes in school policy may also influence rates of Year 12 attainment; for example, changes in the minimum school leaving age (see Box 6.2) are likely to have contributed to improvements in school retention and hence Year 12 attainment over time.

Box 6.2: Changes to minimum school leaving age

Prior to 2010, the minimum school leaving age in most Australian states and territories was 15 or 16. In January 2010, the National Youth Participation Requirement, agreed by COAG, came into effect. This includes a mandatory requirement for all young people to participate in schooling until they complete Year 10 and to participate in full-time (at least 25 hours per week) education, training or employment, or a combination, until age 17.

Similar requirements had already been introduced in Queensland (from 2006), South Australia (2007), Western Australia and Tasmania (both 2008). From 2010, this requirement also applied in the other 4 states and territories (New South Wales, Victoria, the Australian Capital Territory and the Northern Territory), effectively lengthening the period of compulsory education for young people in these states and territories.

From 2014 the age requirement was lifted further in Western Australia, with students required to remain at school or undertake an approved combination of training and employment until the end of the year in which they turn 17 years and 6 months, or until they turn 18 (whichever occurs first).

Sources: ACARA 2013, 2017; Department of Education 2016.

6.3.1 Evidence from literature

Relatively few studies have examined specific factors affecting Year 12 attainment specifically, therefore this section also draws on studies that have looked at factors affecting school achievement more generally (as this is a key driver of Year 12 attainment).

Most of the literature presented in this section relates to all Australians, rather than focusing specifically on Indigenous Australians.

Prior school achievement

Evidence from the literature suggests that prior school achievement is a key driver of Year 12 attainment, for example:

- A Victorian study using linked NAPLAN and Victorian Certificate of Education data found that, among all students, performance in Year 9 national standardised tests was the strongest influence on students reaching Year 12, with socioeconomic background having a much smaller effect after accounting for prior student achievement (Marks 2014).
- Analysis of LSAY data indicate that, after controlling for academic achievement at age 15, there was no significant difference in subsequent educational outcomes (including Year 12 completion, intention to go to university, participation in university, and participation in vocational education) between Indigenous and non-Indigenous students (Mahuteau et al. 2015). Differences in achievement at age 15 were found to be partly

due to differences in socioeconomic background and other background variables, as well as to differences in schools, although a large gap remained even after accounting for these factors.

Social and other determinants

A student's socioeconomic background is an important influence on school achievement and attainment (Chesters & Daly 2017; Considine & Zappala 2002; Lamb et al. 2004), for example:

- Lamb et al. (2015) describe the key role played by SES (including parental education) in achieving various educational milestones—students from the lower socioeconomic backgrounds or whose parents did not attain Year 12 were less likely to be ready for school, to perform well in the middle years, or to complete Year 12.
- Based on survey data for around 4,000 Australian youth aged 18, as well as administrative information on parental income support history, Barón (2009) found that the probability of completing Year 12 was lower among youth from disadvantaged families; for example, the probability of completing Year 12 was about 23 percentage points lower among youth who grew up in heavily disadvantaged families (defined as those in which parents received income support for more than 6 years), compared with those who had been unexposed to disadvantage. This analysis also indicated that being disadvantaged earlier in life had a slightly larger impact on educational outcomes. Another finding of this research, consistent with other literature, was that parental education is associated with a higher probability of completing Year 12.
- Using NAPLAN scores as the outcome (rather than Year 12 attainment), ABS analysis of linked data from the Census of Population and Housing, the Queensland AEDC and the Queensland NAPLAN showed that parental employment status had a positive effect on a child's NAPLAN scores, regardless of household income. These data also showed that students with no internet at home were less likely to meet the NAPLAN NMS, as were those with lower English proficiency, and those living in more disadvantaged areas (ABS 2014a).

Other factors identified in the literature as being associated with school achievement and/or Year 12 attainment include: sex (with girls being more likely to complete school than boys), geographic location; access to secondary education (such as physical, cultural and economic barriers), and school resources (such as school size, and supply of qualified teachers, teaching materials, and computers) (Barón 2009; Biddle & Cameron 2012; Biddle & Meehl 2016; Helme & Lamb 2011; Lamb et al. 2004; Marks 2014; Song et al. 2014).

Research indicates that student aspirations are also associated with educational attainment. Analysis of data from the LSAY found that student aspirations at age 15 for completing Year 12 and for studying at university are strong predictors for doing so, with effects of 20–25 percentage points and 15–20 percentage points, respectively (Homel & Ryan 2014). Importantly, it was also found that these effects were consistent across socioeconomic and demographic backgrounds (including Indigenous status). LSAY data also indicate that the factors with the strongest positive influence on aspirations to complete Year 12 included academic performance and parental expectations of students to continue to university (Gemici et al. 2014). Location becomes an important factor among those with poor academic performance, with those in metropolitan areas more likely to aspire to complete Year 12 than those in remote and regional areas.

6.3.2 Evidence from new AIHW analysis of NATSISS data

Some additional insights can be gained by modelling 2014–15 NATSISS data. Logistic regression modelling was used to examine the influence of a range of different factors on the rate of Year 12 or equivalent attainment among Indigenous Australians—see Appendix C for further information on logistic regression and Box 6.3 for key limitations of the analysis in this chapter. In the available data set, it was not possible to separate Certificate II from Certificate I; as such, this regression analysis looks at the odds of attaining a qualification at Year 12 or Certificate I/II level or above, rather than Year 12 or Certificate II level or above.

Models were fitted for the following three subgroups of the population:

- Indigenous Australians aged 20–24; the age group specified in the COAG target
- Indigenous Australians aged 20–39; expanding the age group increases the sample size, and thus greater statistical power to identify significant associations
- Indigenous Australians aged 20–39 living in remote areas; people living in remote areas have lower levels of Year 12 attainment, thus it is of interest to examine the factors affecting Year 12 attainment within remote areas.

For each of these subgroups, two different models were fitted—one including a larger set of explanatory variables (Model A), and the second, a more limited set (Model B).

Box 6.3: Logistic regression modelling of Year 12 attainment—key limitations

Important limitations of the logistic regression analysis presented in this chapter including:

- Many characteristics that influence Year 12 attainment, only a subset are available in the NATSISS data. For example, NATSISS data do not describe school achievement or parental education. As well, some relevant data are not captured for the age group of interest (such as school attendance and experiences at school, which are available for people currently attending school, rather than those who have already left school).
- NATSISS is a cross-sectional survey and cannot be used to determine causation. Most data items relate to current circumstances among 20–24-year-olds (or 20–39-year-olds), rather than in their childhood. Hence, to some extent, the models reflect outcomes rather than determinants. For example, being from a more disadvantaged background is associated with a lower rate of Year 12 completion, but those who do not complete Year 12 are also more likely to be socioeconomically disadvantaged.
- The relationship between explanatory variables may be difficult to disentangle; where strong associations exist, the importance of one variable may not be observed in the regression results. In addition, this analysis has not considered possible interactions between variables.

Table 6.8 shows the results of a logistic regression analysis used to determine the effect of selected variables on the attainment of Year 12 or Certificate I/II or above among Indigenous Australians aged 20–24 in 2014–15. Among Indigenous Australians aged 20–24, and after adjusting for all other factors included in the analysis (Model A):

- the odds of having completed Year 12 or Certificate I/II or above were significantly lower in remote than non-remote areas (odds ratio 0.5)
- the odds of having completed Year 12 or Certificate I/II or above were significantly lower among who lived in an overcrowded household (that is, a household requiring at least one additional bedroom) compared with those who did not (odds ratio 0.4).

When the age group in Model A was expanded, to look at those aged 20–39—as well as remoteness, and overcrowding—equivalised household income, and having been charged by police before age 20, also had a significant influence on Year 12 attainment. Specifically:

- the odds of having completed Year 12 or Certificate I/II or above were 4.9 times higher among Indigenous Australians living in households in the 3 highest deciles of equivalised household incomes than among those in the lowest 3 deciles
- the odds of having completed Year 12 or Certificate I/II or above were 2.1 times higher among Indigenous Australians living in households with an equivalised income in the middle 4 deciles than among those in the lowest 3 deciles
- the odds of having completed Year 12 or Certificate I/II or above among those who had been charged by police before they turned 20 was 40% lower than among those who had not been charged by police, or had been charged after age 20 (odds ratio 0.6).

Model B attempts to find other variables that may be influencing the attainment of Year 12 that have been masked in Model A (by excluding remoteness, equivalised household income, need for additional bedrooms, or major structural problems from the analysis). No further variables were found to be significant among 20–24-year-olds. In the 20–39-year-old sample, having been incarcerated, having difficulty communicating in English and having a high or very high psychological distress score were significantly associated with decreased odds of having completed Year 12 or Certificate I/II or above.

Both models were also applied to responses from those in remote areas with no further significant variables being identified except for living in a house with major structural problems (which was associated with lower odds of having completed Year 12 or Certificate I/II or above).

To examine potential differences in factors affecting Year 12 attainment by sex, Model A was also run separately for males and females aged 20–39. For males, lower household equivalised income and being charged by police before age 20 were negatively associated with having completed Year 12, after accounting for other factors included in the model. Lower household equivalised income was also associated with lower odds of having completed Year 12 among females, while being charged by police before age 20 was not. For females, overcrowding and living in remote areas were also negatively associated with attainment of Year 12 or Certificate I/II or above; this may partly reflect the higher proportion of Indigenous females who have caring responsibilities in remote areas (see Section 6.2.3).

Table 6.8: Multivariate logistic regression analysis: odds ratios of having completed Year 12 or Certificate I/II^(a), Indigenous Australians aged 20–39 and various subsets of this population, 2014–15

Explanatory variable (and reference group)	Level	Total Australia						Remote areas only ^(b)	
		Model A				Model B		Model A	Model B
		20–24 years	20–39 years	20–39 years		20–24 years	20–39 years		
				Males	Females			20–39 years	
Remoteness (ref: Non-remote)	Remote	0.52*	0.62*	0.66	0.59*	..	..	..	..
Equivalised household income – deciles (ref: First to third)	Eight to tenth	3.48	4.95*	4.63*	5.74*	..	..	4.50*	..
	Fourth to seventh	1.50	2.14*	2.19*	2.16*	..	..	1.76*	..
Additional bedrooms required in house (ref: No)	Yes	0.42*	0.64*	0.93	0.51*	..	..	0.71	..
Living in house with major structural problem (ref: No)	Yes	0.61	0.76	0.72	0.81	..	..	0.69*	..
Experienced being without a permanent place to live (ref: No)	Yes	0.71	1.02	1.31	0.86	0.80	1.09	0.93	0.90
Age first charged by police (ref: 20 years and over or never)	19 years or less	0.71	1.02	1.31	0.86	0.80	1.09	0.93	0.90
Ever charged by police (ref: No)	Yes	0.47	0.63*	0.46*	0.80	0.45	0.65*	0.58	0.48*
Ever incarcerated in lifetime (ref: No)	Yes	1.01	0.95	1.06	0.92	1.06	0.85	0.91	0.96
Ever removed from natural family (ref: No)	Yes	1.65	0.76	0.59	1.06	0.70	0.57*	0.77	0.73
Difficulty communicating in English (ref: No/main language not an Indigenous language) ^(c)	Yes	1.07	0.89	0.98	0.89	0.87	0.79	0.92	0.80
Psychological distress score (ref: Low/moderate)	High / very high	0.67	0.69	0.81	0.59	0.35	0.30*	1.94	1.58
Lifetime (long-term) alcohol risk (ref: Did not exceed guidelines)	Exceeded guidelines	0.82	0.91	1.10	0.86	0.75	0.67*	0.81	0.61*

.. = not applicable

* Significant at the $p < 0.05$ level.

(a) In the available data set, it was not possible to separate Certificate II (considered equivalent to Year 12) from Certificate I; as such, this regression analysis looks at the odds of attaining a qualification at Year 12 or Certificate I/II level or above, rather than Year 12 or Certificate II level or above.

(b) Refers to *Remote* and *Very remote* areas combined.

(c) People whose main language spoken at home was an Aboriginal or Torres Strait Islander language were asked about any difficulties they may have had when they went places where only English was spoken. In this explanatory variable, people whose main language spoken at home was an Aboriginal and Torres Strait Islander language and who had difficulty understanding English speakers and/or being understood by English speakers are included in the 'yes' category; all other respondents (including those whose main language is not an Australian Indigenous language) are included in the 'no' reference category.

Note: People whose response to a relevant survey question was 'not stated' have been excluded from the analysis.

Source: AIHW analysis of ABS 2014–15 NATSISS (CURF).

Using the odds ratios shown in Table 6.8 alone, it is not possible to compare the relative importance of the effects of the explanatory variables. To assess the relative importance, the logistic regression results of Model A for 20–39 year olds have been used to estimate the change in the probability of having completed Year 12 or Certificate I/II or above associated with a change from the reference level of each of the explanatory variables. The relative importance of the explanatory variables is then based on the absolute size of the associated changes in probability (see Appendix C for details). Based on this ranking method, of the variables that were statistically significant, equivalised household income had a relatively larger impact on Year 12 or Certificate I/II completion than remoteness, being charged by police before 18, and household overcrowding.

6.4 Data limitations and measurement issues

Measurement of Year 12 attainment among Indigenous Australians requires accurate and timely data. Key data issues are discussed in this section.

6.4.1 Frequency of data

More frequent data on Year 12 or equivalent attainment among Indigenous Australians would facilitate better monitoring of changes over time. Due to the resources required, relevant data from the Census are only available every 5 years, and survey data approximately every 3 years, which limits the ability to track changes in Year 12 attainment over time. Ideally, information on Year 12 attainment among Indigenous Australians would be available annually.

6.4.2 Census data (main data source)

Missing data on educational attainment creates some uncertainty around the accuracy of the Census-based estimates. In the calculations for this target, people for whom Year 12 or equivalent attainment status cannot be determined (that is, due to not stated and/or inadequately described responses) are excluded. The level of missing information on educational status varies geographically, and also disproportionately affects Indigenous data. For example, in 2011:

- relevant responses were not stated and/or inadequately described for 12% of Indigenous Australians aged 20–24, compared with 3% of non-Indigenous Australians
- the proportion of Indigenous Australians that were excluded from the calculations for the target was lowest in the Australian Capital Territory and Victoria (both 6%) and highest in the Northern Territory (17%) (SCRGSP 2012).

If those for whom educational attainment could not be determined have a different rate of Year 12 or equivalent attainment than those for whom it could, this could impact on the representativeness of the data.

6.4.3 Survey data (supplementary data source)

Year 12 attainment survey data for Indigenous and non-Indigenous Australians are taken from different collections. Data for Indigenous Australians are sourced from the NATSISS and AATSIHS while data for non-Indigenous Australians are sourced from the SEW.

The sampling error associated with survey data limits the extent to which data can be disaggregated and the ability to assess if differences over time or between populations are statistically significant. For example, at the national level, the NATSISS estimate for Year 12

attainment among Indigenous Australians in 2014–15 was 61.5%; the 95% confidence interval for this estimate is 55.3% to 67.7%.

6.4.4 Apparent retention rates

The retention rate between one school year and another is the proportion of students progressing from one year to the other (for example, the proportion of Year 10 students who have stayed at school until Year 12). Although not a measure of successful completion of Year 12, retention rates provide a measure of school participation, and so relate to trends in attainment. Available data on retention however, only allow for calculation of an *apparent* rate, using aggregate data, and may generate results that differ from actual rates (ABS 2017). These differences may be due to, students progressing faster/slower than expected, students moving interstate or overseas, students changing between full-time and part-time study and changes in enrolment policies. Also, when calculating apparent retention rates on small populations (including Indigenous Australians), relatively small changes in student numbers may lead to large changes in apparent retention rates (ABS 2017).

6.4.5 Identifying drivers of Year 12 attainment

Available data sets with information on Year 12 attainment only capture a subset of variables thought to influence Year 12 attainment, and most are cross-sectional and cannot be used to determine causation. For example, 2014–15 NATSISS data showed that Indigenous Australians aged 20–24 who were living in overcrowded dwellings had a lower rate of Year 12 or equivalent attainment than those living in dwellings that were not overcrowded, while data from the 2011 Census showed that attainment rates were lower among Indigenous Australians aged 20–24 with child caring responsibilities. However, as these data relate to current circumstances for 20–24-year-olds, using these data it is not possible to determine if these factors are key determinants of Year 12 attainment.

Identification of key drivers is also limited by sample size, and much of the available data is for all Australians, rather than specifically for Indigenous Australians.

Greater use of data linkage could be explored across states and territories for identifying key determinants of Indigenous Year 12 attainment. A lot of information is currently routinely collected on students and schools, and data linkage could enable the analysis of pathways through schooling for Indigenous Australians and factors influencing outcomes at each stage. For example, although not focused on Indigenous Australians, linkage of NAPLAN and Year 12 Certificate data among students in Victoria has provided insights into factors affecting whether students reach Year 12 (see, for example, Marks 2014).

6.4.6 Administrative data on educational attainment

Given some of the limitations with existing data, the use of administrative data for measuring Year 12 or equivalent attainment for Indigenous Australians could be investigated for COAG target reporting. A range of administrative data is already routinely collected and reported, for example:

- Year 12 certification—data on attainment of Year 12 certificates nationally and by state/territory are published in the Report on Government Services for all Australians (that is, not by Indigenous status) (see SCRGSP 2017). Some data by Indigenous status have been published by states and territories (see for example, NSW Department of Education 2016 for Higher School Certificate data)

- Australian Tertiary Admission Rank (ATAR) scores—data on university entrance scores are available by Indigenous status both nationally and by state and territory (for example, see SCRGSP 2016)
- vocational education—the National Centre for Vocational Education Research (NCVER) collects and publishes a wide range of administrative data on vocational education, by Indigenous status (for example, see NCVER 2016).

There are some issues with the comparability of administrative data across states and territories (for example, varying criteria for obtaining a Year 12 certificate), and work may be required to define appropriate denominators. Despite these issues, it would be useful to assess the feasibility of using administrative data to provide more timely measurement of Year 12 attainment and related outcomes for Indigenous Australians.

6.4.7 Components of Year 12 or equivalent attainment

Measurement of Year 12 or equivalent attainment captures a broad range of school outcomes. For example, a student completing Year 12 may have:

- successfully met the requirements for a Year 12 certificate
- successfully met the requirements for a Year 12 certificate and also be eligible for an ATAR
- completed Year 12 but not be eligible for either a certificate or an ATAR (Productivity Commission 2015).

Students may also have attained non-school qualifications at Certificate II level or above (with or without completing Year 12).

Measurement of these specific sub-components of Year 12 or equivalent attainment may provide additional useful information on school outcomes. For example, in 2015, 8.5% of the Indigenous potential Year 12 population achieved an ATAR of 50 or above (usually the minimum score required for entry into university, although institutions may look beyond academic results for applications); this was an increase from 5.7% in 2007 (SCRGSP 2016). Research by Biddle and Cameron (2012), found that Indigenous students who received an ATAR score were as likely as non-Indigenous students to go to university (Productivity Commission 2015).

6.5 Bringing it together

6.5.1 An overview

The COAG target for Year 12 or equivalent attainment is to halve the gap for Indigenous Australians aged 20–24 in Year 12 or equivalent attainment rates by 2020.

National rates of Year 12 attainment among Indigenous Australians have improved since the COAG target was set, and the gap between Indigenous and non-Indigenous Australians has narrowed. Analysis of available data indicates that progress towards the 2020 target is on track.

There are substantial variations in Indigenous Year 12 attainment rates across population subgroups, for example by sex and geographic areas, with females and those living in non-remote areas more likely to attain Year 12 or equivalent.

Based on available literature and new AIHW analysis of the 2014–15 NATSISS, key drivers of Year 12 attainment include prior school achievement, socioeconomic characteristics of the

family such as parental education and parental employment status, and aspirations to complete school.

6.5.2 Examples of opportunities for further progress

Drawing from the analyses presented in this chapter, examples of opportunities for further progress are provided in this section. There is however a need for more evidence on what works best to improve educational outcomes among Indigenous Australians (Helme & Lamb 2011; Productivity Commission 2015, 2016).

Improve support and resources

Based on self-reported data presented in Section 6.2.3, responses suggested that community and school support, career guidance and tutoring/mentoring would assist Indigenous students in secondary school to complete Year 12. There is limited evidence for the types of programs that might work. One program that has been found strengthen school and post-school aspirations is the Australian Indigenous Mentoring Experience program (Bodkin-Andrews et al. 2013; Harwood et al. 2013). In 2015, nearly 4,900 Indigenous students participated in this program (AIME 2017).

Song et al. (2014) found that Indigenous students were more likely than non-Indigenous students to attend schools reporting greater shortages of instructional materials, computers and qualified teachers. In addition to better resourcing of schools, technology and access to the internet could help facilitate access to educational resources in more remote areas (Lamb et al. 2015).

Improved access and sustained support for non-school qualifications at Certificate II level or above, particularly among early school leavers, may also help improve the rate of Year 12 or equivalent attainment.

Young people who are not fully engaged in education, employment or training are considered to be highly vulnerable. Non-participation among young people has been linked to future unemployment, lower incomes and employment insecurity (Pech et al. 2009), placing young people at risk of social and economic disadvantage, and social exclusion. See Appendix E for an analysis of labour force participation among those young people not fully engaged in education, employment or training.

As shown in Section 6.2.3, Indigenous females aged 15–19 and 20–24 are more likely than non-Indigenous females to have children; child care responsibilities may create barriers to education. Understanding how the caring responsibilities of young Indigenous Australians impact on educational attainment and the type of support needed to address these barriers needs further investigation.

Focus on the most socioeconomically disadvantaged groups

Socioeconomic disadvantage is associated with lower levels of educational attainment. Indigenous Australians are over-represented among socioeconomically disadvantaged groups, therefore, a focus on improving the academic achievement of students in lower socioeconomic groups will have a relatively greater influence on overall Indigenous students' performance (Mahuteau et al. 2015).

Focus on drivers of early disadvantage

Evidence from the literature indicates that prior school achievement is a key driver of Year 12 attainment. The gap in educational disadvantage appears in the earlier years of schooling (Biddle & Cameron 2012). Indigenous children are less likely than non-Indigenous children to

attend preschool (see also Chapter 3), more likely to be identified as being developmentally vulnerable than non-Indigenous children in their first year of school, have lower rates of school attendance (see also Chapter 4), and have lower literacy and numeracy scores on standardised testing throughout school (see also Chapter 5). Identifying and providing additional support to children who are falling behind at earlier milestones (such as school readiness) increase their chances of completing Year 12.

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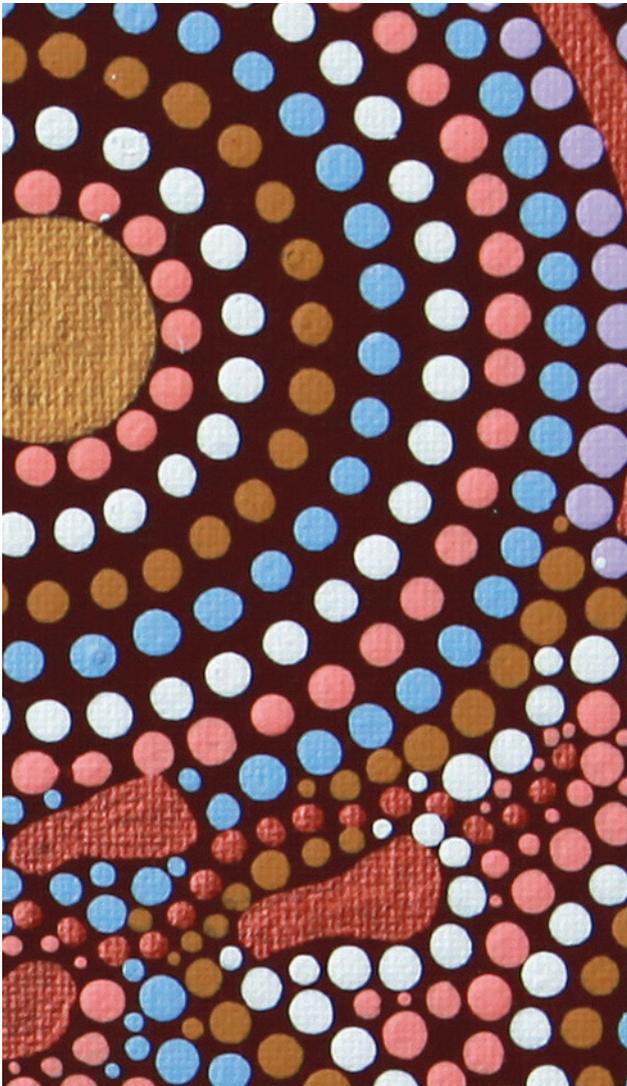
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Chapter 7

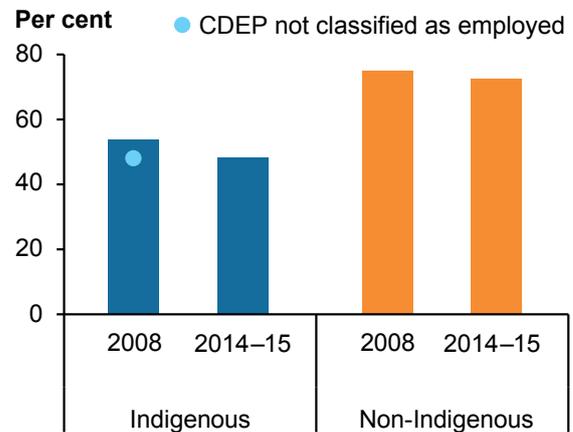
Employment target



COAG target: Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade (by 2018).

Current picture

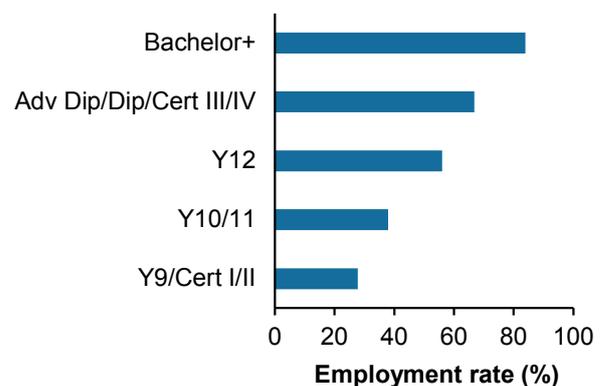
- In 2014–15, the Indigenous employment rate for 15–64-year-olds was 48.4%, while the non-Indigenous rate was 72.6% (Figure 7a), resulting in an employment gap of 24.2 percentage points. This is not statistically different to the 2008 baseline gap of 21.2 percentage points.
- Taking the Indigenous population size into account, estimates of the contribution of specific geographic areas to the national gap show that:
 - non-remote areas contributed 15 percentage points of the 24.2 percentage point national gap, and remote areas 9.3 percentage points
 - Queensland contributed 6.5 percentage points of the 24.2 percentage point national gap, New South Wales 5.4 percentage points, the Northern Territory 4.5 percentage points, Western Australia 4.4 percentage points, Victoria 1.3 percentage points, South Australia 1.3 percentage points and Tasmania/Australian Capital Territory 0.8 percentage points.
- Education plays a major role in both the employment rate and employment gap: in 2014–15 there was a steady increase in the Indigenous employment rate with increasing education (Figure 7b). There was also a general reduction of the employment gap for Indigenous groups with higher levels of education.
- Indigenous Australians with education levels of Year 11 or below contributed almost two-thirds of the national employment gap.



Note: In the calculation of 2008 Indigenous baseline data for this target, CDEP participants were classified as employed. The Indigenous employment rate when CDEP participants are not classified as employed is also indicated in the figure.

Source: AIHW analysis of 2008 and 2014–15 NATSISS and 2007 and 2014 SEW.

Figure 7a: Employment rates among people aged 15–64, by Indigenous status, 2008 and 2014–15



Source: AIHW analysis of 2014–15 NATSISS.

Figure 7b: Employment rate among Indigenous Australians aged 15–64, by level of highest education, 2014–15

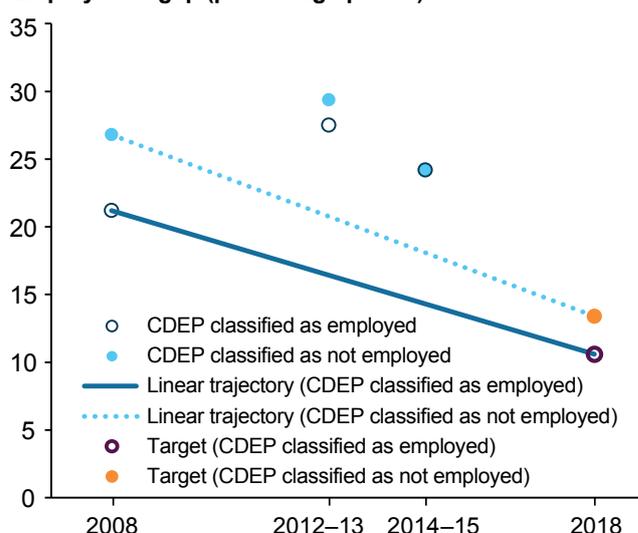
Has there been progress?

- Between 2008 and 2014–15 (and classifying CDEP participants as employed):
 - the Indigenous employment rate changed from 53.8% to 48.4%
 - the non Indigenous rate fell from 75.0% to 72.6%.
 - the change in the employment gap between 2008 and 2014–15 (from 21.2 to 24.2 percentage points) was not statistically significant (Figure 7c).
- When CDEP participants are classified as not employed, the Indigenous employment rate remains steady between 2008 and 2014–15 (at around 48%).
- Based on 2014–15 data (irrespective of how the 2008 CDEP participants are classified) the target is not on track. Since finalising the analysis for this report, 2016 data have become available and also indicate that progress towards the target is not on track.

Additional analysis and key drivers

- A major driver of employment for all Australians is the macroeconomic environment. This is especially true for Indigenous Australians, as they tend to have lower levels of education/skills.
- Other key drivers include education, English language proficiency, health, family considerations, and contact with the criminal justice system.
- Analysis of the 2014–15 NATSISS shows that the drivers of Indigenous employment that have a relatively larger impact are education, family considerations, health and justice. These four areas have been captured by a number of variables in the regression analysis (Table 7a). These findings are consistent with the literature.

Employment gap (percentage points)



Source: AIHW analysis of 2008 and 2014–15 NATSISS, 2012–13 AATSIHS, and 2007, 2012 and 2014 SEW.

Figure 7c: Employment gap between Indigenous and non-Indigenous Australians aged 15–64, 2008 to 2014–15, and trajectory to COAG target

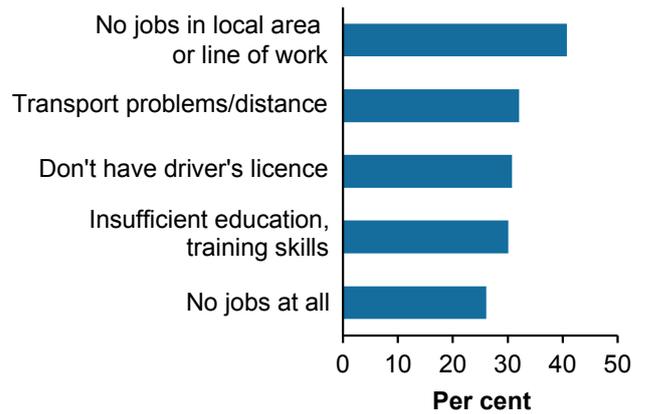
Table 7a: Odds ratios of being employed, working age (15–64) Indigenous population, selected variables, 2014–15

Variable	Level	Odds ratio
Disability status (ref: No disability/restrictive longer term condition)	Severe/profound	0.26
	Mild disability/restrictive long-term condition	0.70
Marital status (ref: not married)	Married	2.30
Number of children under 15 in household (ref: None)	1–2	0.68
	3–4	0.41
Difficulties with English (ref: No)	5 or more	0.24
	Yes	0.54
Education (ref: Y12)	Bachelor or above	3.28
	Advanced Diploma/Diploma/Certificate III/IV	1.38
	Year 10/11	0.47
	Year 9 or below/Certificate I/II	0.38
Arrested in past 5 years (ref: No)	Yes	0.50

Note: Odds ratios are based on multivariate logistic regression modelling. This table shows selected variables only that are statistically significant—see Table 7.1 for full results.

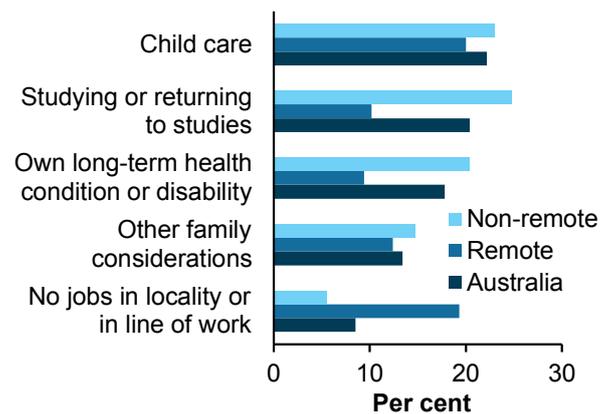
Source: AIHW analysis of 2014–15 NATSISS.

- Although having a relatively smaller impact, other factors with statistically significant associations with being employed included having been removed from natural family, having avoided situations due to past discrimination and living in remote areas (all associated with a lower likelihood of being employed).
- The five most commonly mentioned difficulties unemployed Indigenous Australians faced when seeking employment (allowing for multiple responses) related to three areas: a lack of opportunities, logistical reasons, and a lack of skills (Figure 7d).
- The reasons Indigenous Australians not in the labour force gave for not looking for a job revolved around family (for example, child care), health, education and the availability of jobs (Figure 7e).



Source: AIHW analysis of 2014-15 NATSISS.

Figure 7d: Five most common difficulties unemployed Indigenous Australians aged 15 and over reported facing when trying to find a job, 2014-15



Source: AIHW analysis of 2014-15 NATSISS.

Figure 7e: Five most common reasons Indigenous Australians aged 15-64 not in the labour force gave for not looking for a job, by remoteness, 2014-15

Data limitations and measurement issues

There are several key data issues affecting the ability to monitor the employment target.

Frequency of estimates

Relevant data are available from Indigenous specific surveys on a 3-yearly basis and supplementary data are available from the Census on a 5-yearly basis. The lack of more frequent data collections limit the ability to more accurately track changes in Indigenous employment over time. Ideally, information on Indigenous employment would be available annually.

Use of employment rates

This target measure focuses on employment rates. As this only covers part of the picture for employment outcomes it may also be useful to look more broadly. For example: the number of hours worked; the share of employment income to total income (including government payments); the transition of young people between education and employment and differences in employment rates among various population subgroups.

7.1 Background

Employment is a major contributor to general living standards and many aspects of health and welfare through increased disposable income for individuals, families and communities. Employment can improve self-esteem, provide opportunities for self-development, and promote interaction with family and community, while reducing social alienation. The COAG employment target to halve the gap in employment rates between Indigenous and non-Indigenous Australians between 2008 and 2018 recognises this importance.

The COAG employment target is measured by the employment to population ratio for the working age population (aged 15–64)—see Box 7.1. In addition, two supporting measures relate to Indigenous unemployment and labour force participation.

In order to make progress towards the target, it is key to understand the drivers of Indigenous employment outcomes, and how these vary across Indigenous subgroups and over time.

This chapter provides detailed information on employment, including:

- current outcomes and progress towards the COAG target
- differences by geographic areas and other characteristics
- identification of key drivers based on evidence from the literature and new AIHW data analysis
- a discussion of data limitations and measurement issues.

Box 7.1: Employment—Closing the Gap target and data sources

The COAG target for employment is to: halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade (by 2018).

The measure for this target is the employment-to-population ratio for the working age population (that is, those aged 15–64)—for context, based on preliminary 2016 population estimates, the working age population accounted for 61% of the Indigenous population and 66% of the non-Indigenous population (ABS 2017a).

For the Indigenous population, the key data sources for measuring progress towards the target are: the ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS) for 2008 and 2014–15, and the ABS Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) 2012–13.

For the non-Indigenous population, the key data sources for measuring progress towards the target are: the ABS Survey of Education and Work (SEW) 2008, 2012 and 2014. However, for this chapter, where analysis required more detailed data breakdowns:

- 2007 SEW data were used, as 2008 SEW data were unavailable as a confidentialised unit record file (CURF)
- data for all Australians were used as a proxy for non-Indigenous Australians due to limited data availability (as footnoted under relevant figures).

(continued)

Box 7.1 (continued): Employment—Closing the Gap target and data sources

Data from the ABS Census of Population and Housing are included as a supplementary data source in COAG performance measurement towards this target. However, as these data are not the main measure, nor the most recent available at the time of this analysis, these have not been included in this chapter.

See Appendix F for further information on these data sources.

The definitions used to track progress towards the employment target are standard labour force definitions (see ABS 2013). Briefly, a person is: 'employed' if, in the reference week, they participated in employment for at least one hour, or had a job but were not at work for a variety of reasons such as taking leave; a person is 'unemployed' if they were not employed, were available to start work in the reference week, and actively sought work in the previous 4 weeks; otherwise, a person is defined as 'not in the labour force'.

One of the main issues in accurate measurement of Indigenous employment is the labour force classification of participants in the Community Development Employment Projects (CDEP) program (see Box 7.2 for further information).

Research into determinants of Indigenous employment is constrained by the limitations of available data. A lack of large-scale longitudinal labour market surveys of Indigenous Australians means there is a limited understanding of the underlying causes of Indigenous labour market disadvantage and, consequently, of the policies that will be most successful in reducing this disadvantage.

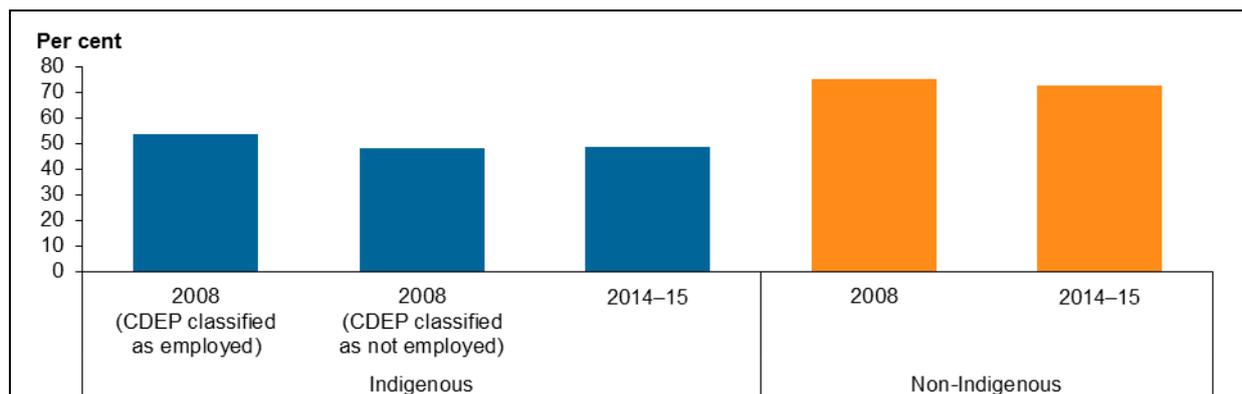
7.2 Current picture and progress

The following sections present the most recent data on employment and progress towards the COAG target (Section 7.2.1) and an analysis of employment by various characteristics (Section 7.2.2).

Estimates of the contribution of subgroups to the national employment gap are also presented—taking into account the relative Indigenous population sizes. These contributions were estimated by calculating how much the national gap would change if Indigenous Australians within a given subgroup had the same employment rate as non-Indigenous Australians within that same subgroup (see Appendix C for further information).

7.2.1 National data on employment

At the time of analysis, 2014–15 NATSISS data were the most recent available. Based on these data, in 2014–15, the employment rate for Indigenous Australians aged 15–64 was 48.4%, while the rate for non-Indigenous Australians was 72.6%, resulting in an employment gap between the two populations of 24.2 percentage points (Figure 7.1). In comparison, in 2008, the employment rate for Indigenous Australians was 53.8% and for non-Indigenous Australians 75.0%, resulting in an employment gap of 21.2 percentage points. Overall, this resulted in a 3.0 percentage point increase in the gap between 2008 and 2014–15.



Sources: SCRGSP 2009, 2016a.

Figure 7.1: Employment rate for persons aged 15–64, by Indigenous status, 2008 and 2014–15

As detailed in Box 7.2, participants in the CDEP program were classified as ‘employed’ in the 2008 baseline data for the target. However, if participants in this program are instead classified as ‘not employed’ (that is, included in the unemployed/not in the labour force category), the employment gap between Indigenous and non-Indigenous Australians in 2008 is 26.8 percentage points (based on the 2008 Indigenous employment rate of 48.2%). When CDEP participants are not classified as employed, the data indicate a decrease in the gap between 2008 and 2014–15 of 2.6 percentage points.

Box 7.2: The Community Development Employment Projects (CDEP) program

The CDEP program assisted unemployed Indigenous Australians to find and keep jobs. It worked through two streams: work readiness services (which helped job seekers develop skills, improve the chances of getting a job and move to employment outside CDEP); and community development (which focused on supporting and developing Indigenous communities and organisations). CDEP participants were paid wages derived from income support. In the context of the labour market, the CDEP program was designed as a way to incentivise employers to hire Indigenous Australians (that is, labour demand), and improve labour supply through education and training while removing barriers.

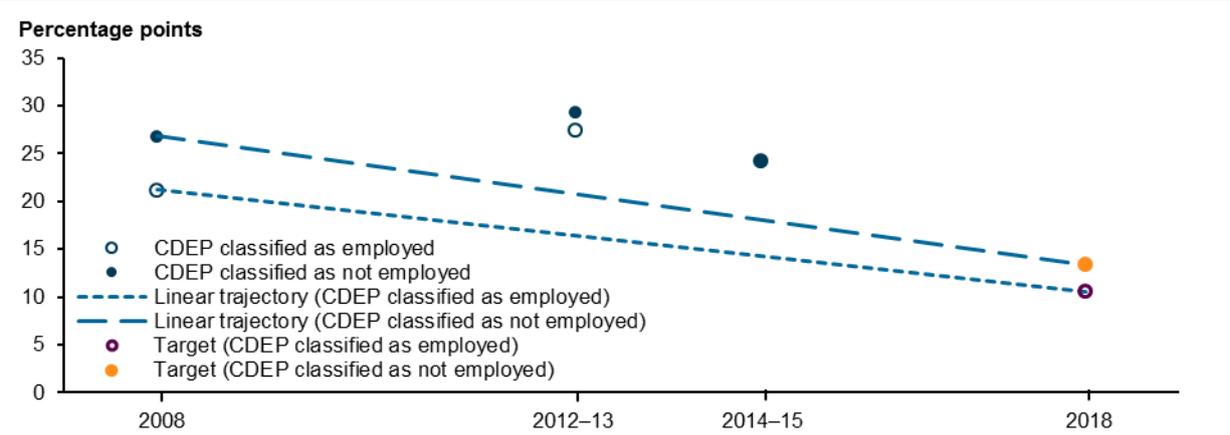
Before July 2009, CDEP participants were classified as employed in labour force surveys; in 2008, this constituted around 17,500 participants. From July 2009, the CDEP program operated mainly in remote areas, with non-remote areas serviced by other programs, such as jobactive and Disability Employment Services. Starting in July 2013, the CDEP program was phased out entirely and replaced by the Remote Jobs and Communities Program (RJCP). In the 2014–15 NATSISS, participants in the RJCP were either classified as unemployed or not in the labour force, as opposed to employed (ABS 2017b).

Changes to the CDEP program mean caution must be used when comparing 2008 and 2014–15 Indigenous employment rates. Specifically, CDEP participants in 2008 were classified as employed, while in 2014–15 the CDEP had ceased to exist, and participants in comparable programs were no longer classified as employed.

There is debate about how to classify the employment status of CDEP participants. The employment rate for Indigenous Australians may be overestimated when CDEP participants are included. The Office of Evaluation and Audit (2009) found that, in 2007–08, 11% of CDEP participants were placed into non-CDEP employment, and only 3% remained in that employment after 26 weeks. Therefore, this chapter includes an analysis of employment rates classifying CDEP participants as not employed, but also includes rates where CDEP participants are classified as employed (as per the COAG target reporting).

As noted earlier, the employment gap in 2014–15 was 24.2 percentage points. Irrespective of whether CDEP participants were classified as employed in 2008 (and taking into account statistical uncertainties in the two surveys used to estimate employment rates), the employment gap in 2014–15 is outside that required for the gap to be halved by 2018 (Figure 7.2). That is, based on 2014–15 data, the target is not on track (PM&C 2017).

Since finalising the analysis for this report, data based on the 2016 Census have become available; these newly available data, reported in the *Closing the Gap Prime Minister’s Report 2018* (PM&C 2018), indicate that progress towards this target is still not on track.

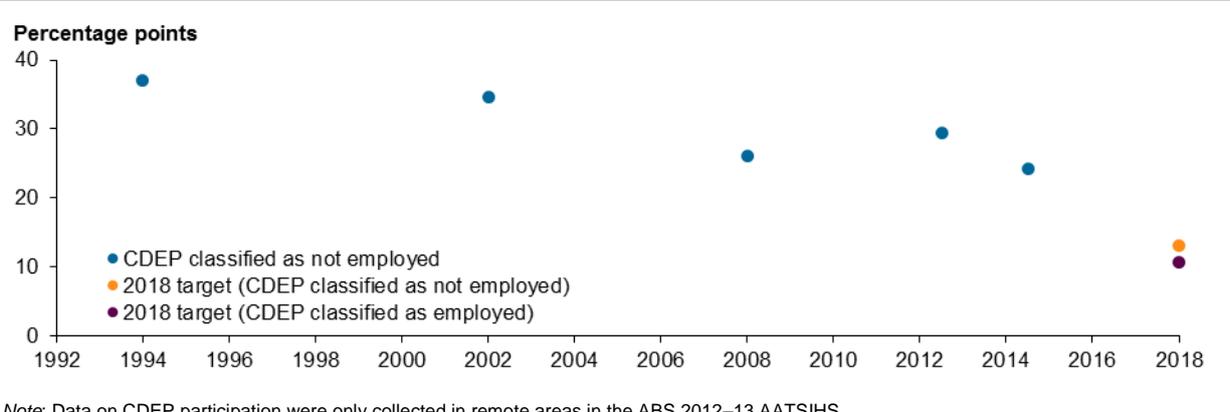


Note: Data on CDEP participation were only collected in remote areas in the 2012–13 AATSIHS.

Sources: AIHW analysis of ABS 2012–13 AATSIHS (CURF), ABS 2008 and 2014–15 NATSISS (CURFs), ABS 2007 SEW (CURF), ABS 2012 SEW (CURF), ABS 2014 SEW (CURF); SCRGSP 2009, 2016a; PM&C 2017.

Figure 7.2: Employment gap between Indigenous and non-Indigenous Australians aged 15–64, 2008 to 2014–15, and trajectory to COAG target

The trend between 1994 and 2014–15 shows a general decline in the employment gap between Indigenous and non-Indigenous for the working age population when CDEP participants are not classified as employed (Figure 7.3). This period is also associated with economic growth, interrupted by the global financial crisis starting around 2008.



Note: Data on CDEP participation were only collected in remote areas in the ABS 2012–13 AATSIHS.

Sources: AIHW analysis of ABS 2012–13 AATSIHS (CURF), ABS 2012 SEW (CURF), ABS 1994, ABS 2002; SCRGSP 2009, 2016a; PM&C 2017.

Figure 7.3: Employment gap between Indigenous and non-Indigenous Australians aged 15–64, 1994 to 2014–15 and 2018 target points

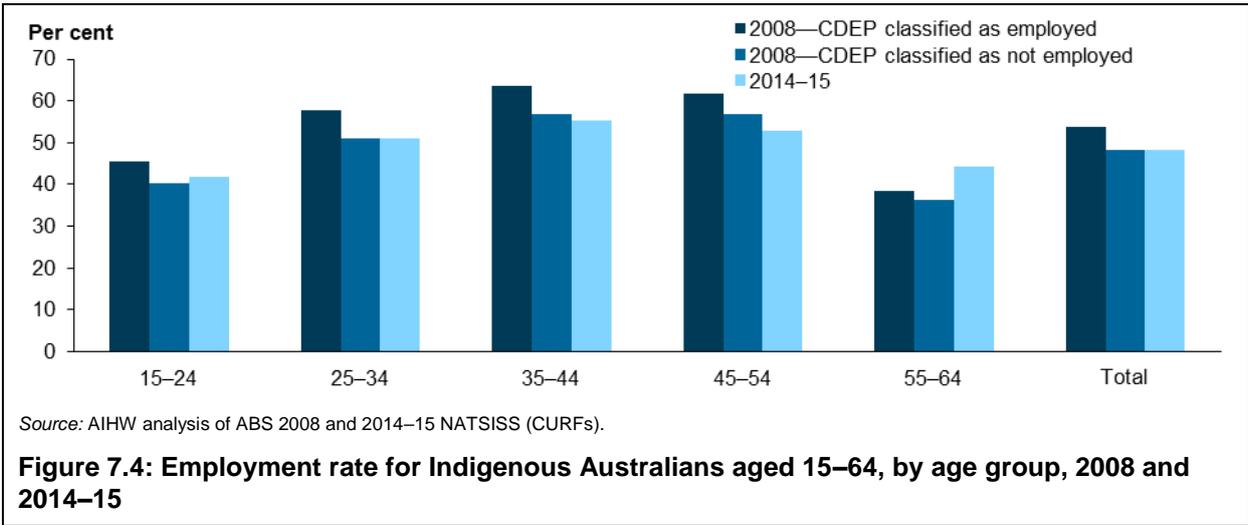
7.2.2 Patterns of employment

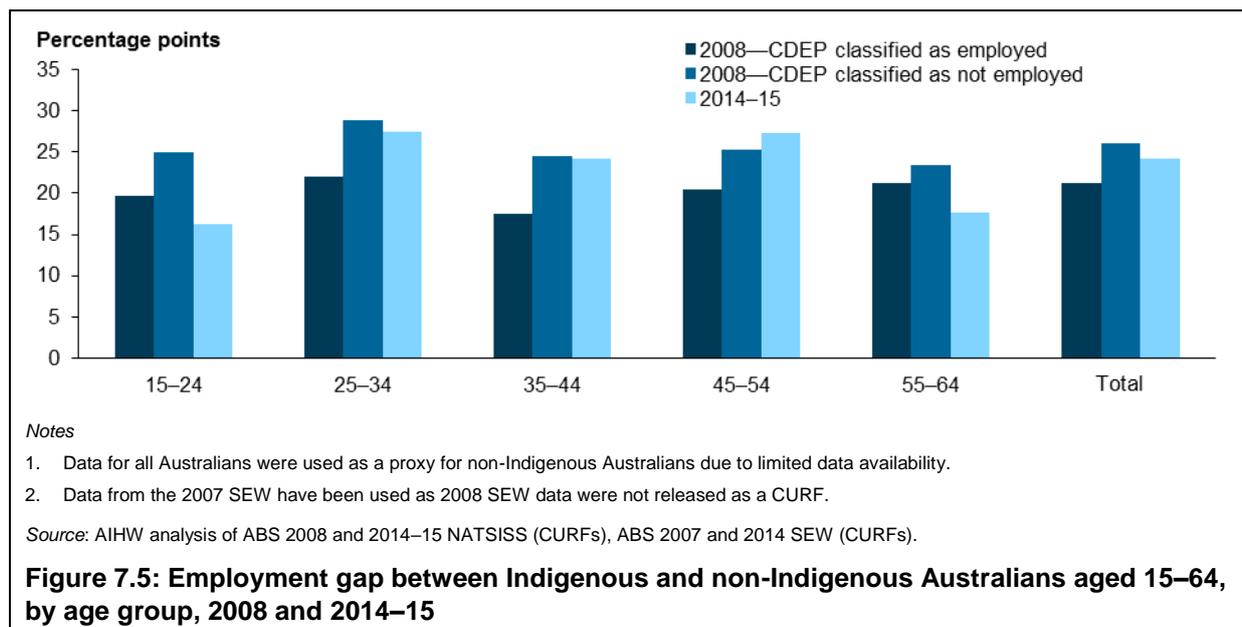
Employment by age

High youth unemployment, together with a generally increasing relationship between employment and age among those in the pre-retirement years, is often observed in employment data. For example, in Organisation for Economic Co-operation and Development (OECD) countries, the average employment rate over the decade to 2014 for people aged 15–24 was around 35 percentage points lower than for those aged 25–54 (OECD 2017). Consistent with OECD data, in 2014–15, the Indigenous Australian employment rate was highest between the ages of 25 and 54, with lower rates among younger and older ages (Figure 7.4).

From 2008 to 2014–15:

- classifying CDEP participants as employed—the employment rate decreased in all but the 55–64 age group (Figure 7.4). The employment gap increased over time for all but the youngest and oldest age groups, with a resultant net increase (Figure 7.5)
- classifying CDEP participants as not employed—the Indigenous employment rate varied across age groups, despite the overall rate remaining unchanged (Figure 7.4):
 - for those aged 15–24 the Indigenous employment rate increased, and the employment gap narrowed, both encouraging signs of potential generational change
 - the gap decreased across age groups (except those aged 45–54), resulting in an overall decrease in the gap.





The contribution of specific education levels to the national gap in employment is affected not only by differences in rates, but also by the size of the Indigenous population in that subgroup. Estimates on the contribution of each age group to the national employment gap between Indigenous and non-Indigenous Australians are shown in Figure 7.6 (for method used see Appendix C).

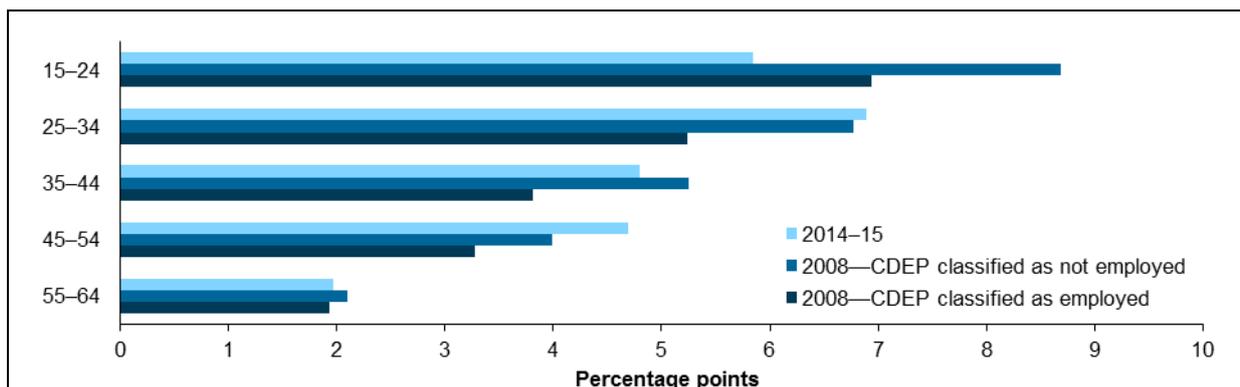
Broadly, the contribution to the national employment gap decreases with increasing age. In 2014-15:

- those aged 25-34 contributed the most to the national gap (6.9 percentage points of the 24.2 percentage point national gap), and were also the group with the largest gap in employment rates
- those aged 15-24, despite having the smallest employment rate gap, were the second largest contributor to the national employment gap (5.8 percentage points)—this is related to the young age profile of the Indigenous Australian population.

Analysing the contribution to the change in the gap over the period 2008 to 2014-15 shows that, if CDEP participants are classified as:

- employed—despite the gap increasing by 3.0 percentage points, those aged 15-24 reduced their contribution to the national gap by 1.1 percentage point
- not employed—those aged 15-24 reduced their contribution to the national gap by 2.8 percentage points (with the national gap falling by 2.6 percentage points).

Figure 7.7 shows the contribution of different age groups to the national employment gap for males and females. In 2014-15 females aged 15-24 and 25-34 were the 2 largest contributors to the national employment gap (3.3 and 4.2 percentage points, respectively of the 24.2 percentage point national gap). The contribution of females aged 25-34 to the national gap increased between 2008 and 2014-15, but the contribution of those aged 15-24 decreased (irrespective of how CDEP participants are classified). The next two largest contributors to the national gap were males aged 15-24 and 25-34 (2.6 and 2.7 percentage points, respectively). Classifying CDEP participants as not employed, the contribution to the gap decreased over time for both these groups.

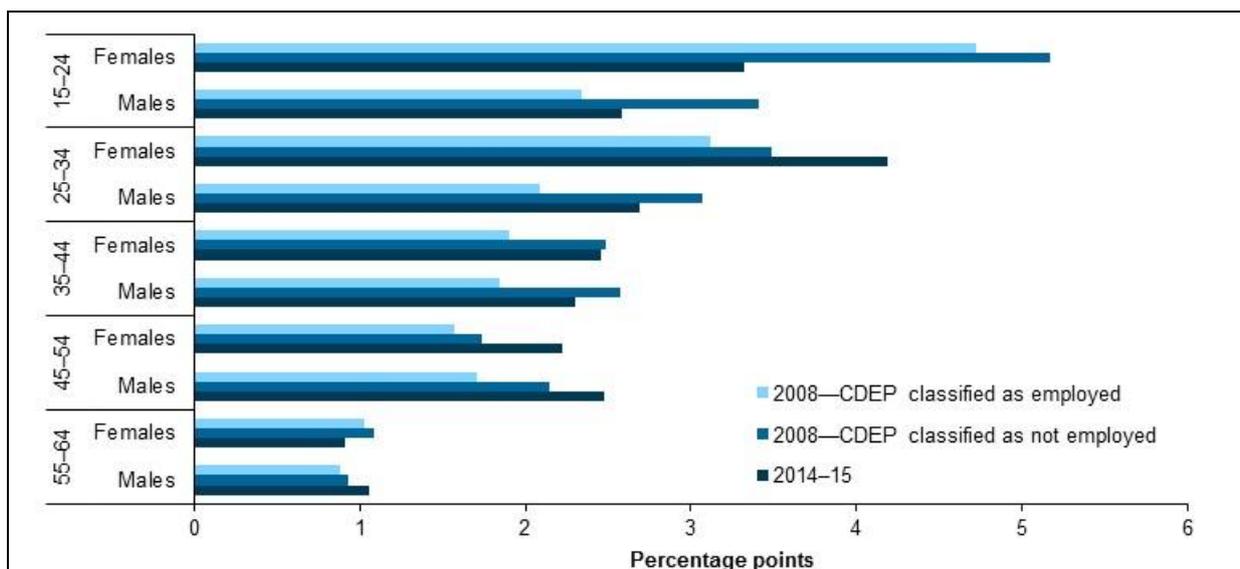


Notes

1. Data for all Australians were used as a proxy for non-Indigenous Australians due to limited data availability.
2. Data from the 2007 SEW have been used as 2008 SEW data were not released as a CURF.
3. These proportions relate to how much the national gap would change if Indigenous Australians had the same employment rate as non-Indigenous Australians within the given subgroup; the method used is discussed in Appendix C.

Source: AIHW analysis of ABS 2008 and 2014-15 NATSISS (CURFs), ABS 2007 and 2014 SEW (CURFs).

Figure 7.6: Contribution of age groups to the national employment gap between Indigenous and non-Indigenous Australians aged 15-64, 2008 and 2014-15



Notes

1. Data for all Australians were used as a proxy for non-Indigenous Australians due to limited data availability.
2. Data from the 2007 SEW have been used as 2008 SEW data were not released as a CURF.
3. These proportions relate to how much the national gap would change if Indigenous Australians had the same employment rate as non-Indigenous Australians within the given subgroup; the method used is discussed in Appendix C.

Source: AIHW analysis of ABS 2008 and 2014-15 NATSISS (CURFs), ABS 2007 and 2014 SEW (CURFs).

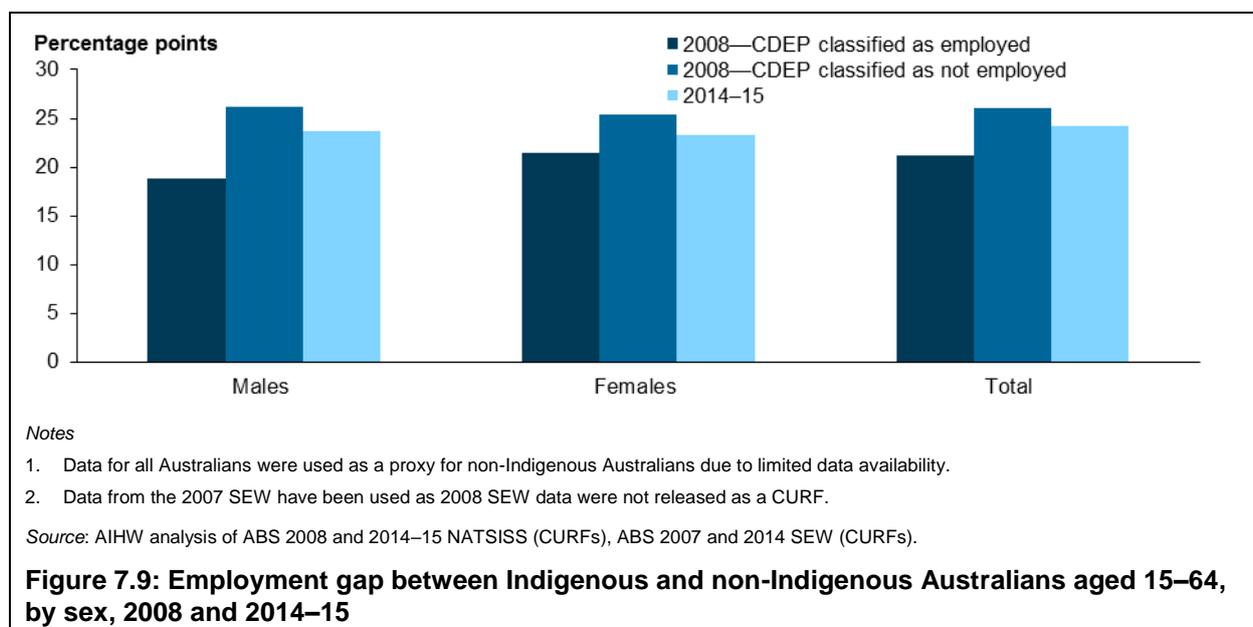
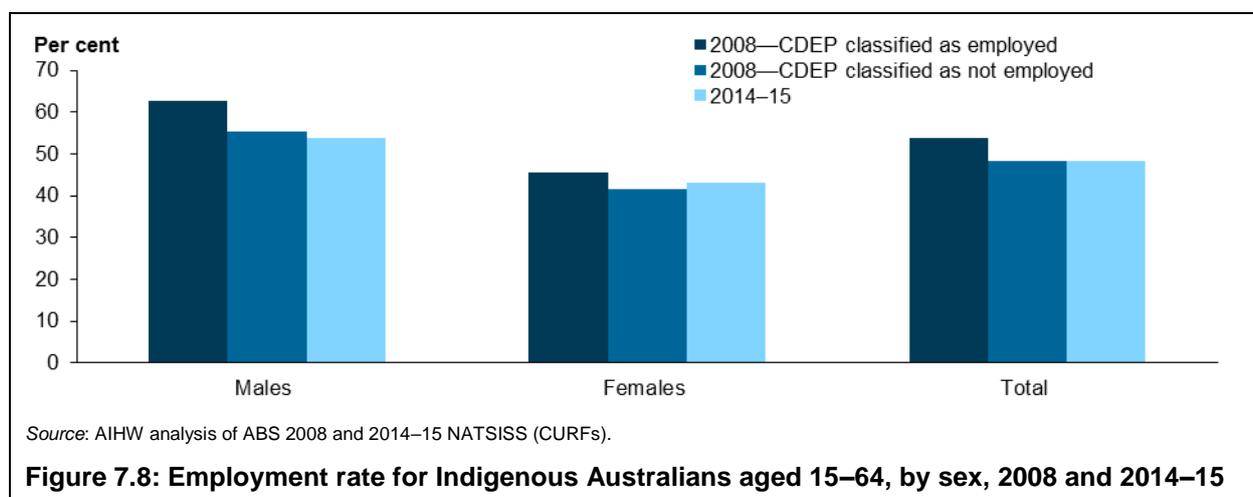
Figure 7.7: Contribution to the national employment gap between Indigenous and non-Indigenous Australians aged 15-64, by age group and sex, 2008 and 2014-15

Employment by sex

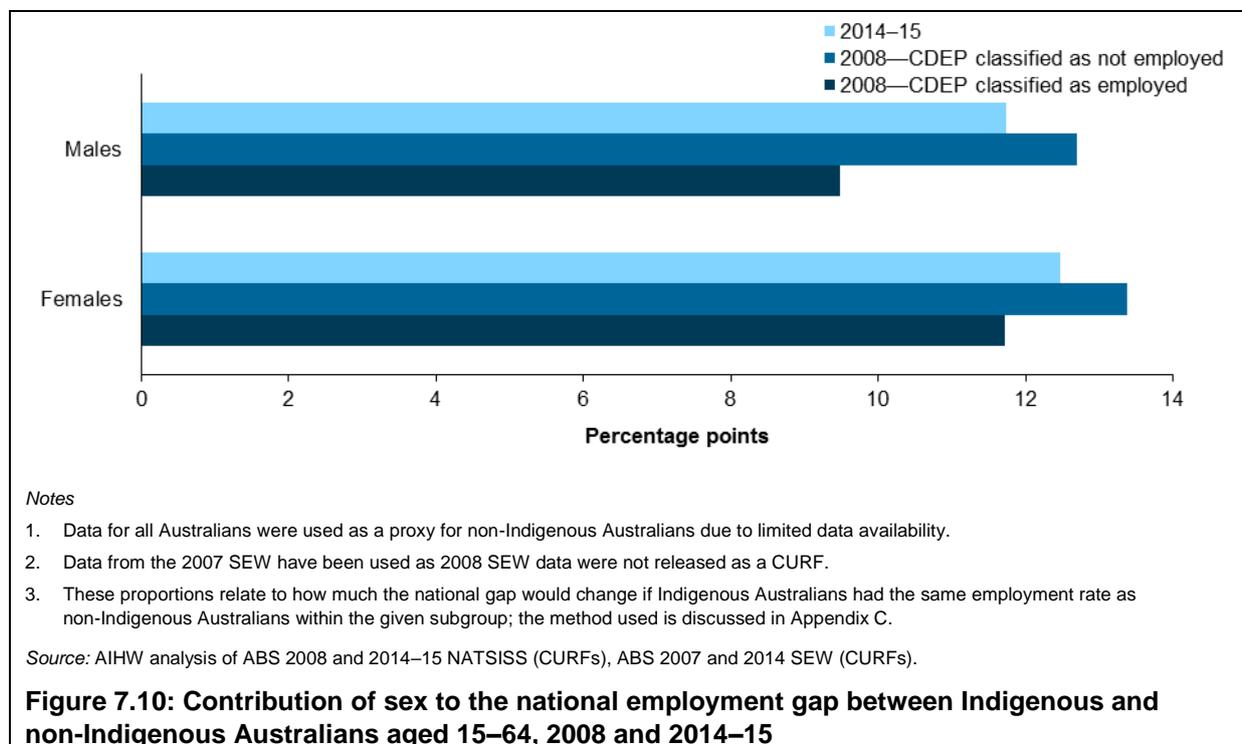
Over the decade to 2014, males in OECD countries had a higher average employment rate than females (a difference of 17 percentage points) (OECD 2017). Differences in employment rates by sex are also evident in the Australian labour market both across Indigenous and non-Indigenous Australians. In 2014–15, Indigenous males had a higher rate of employment than Indigenous females.

Between 2008 and 2014–15, when classifying CDEP participants as not employed, there was a decrease in the employment rate for Indigenous males; this was offset by an increase for Indigenous females, resulting in relatively little change in the total employment rate for Indigenous Australians (Figure 7.8).

The employment gap between Indigenous and non-Indigenous Australians was similar for males and females in both 2008 and 2014–15 (Figure 7.9).



Estimates of the contributions of males and females to the national employment gap between Indigenous and non-Indigenous Australians is shown in Figure 7.10 (for method used see Appendix C). In 2014–15, females contributed slightly more than males to the national gap (12.5 and 11.7 percentage points, respectively); this pattern was also observed in 2008.



Looking at the contribution by sex to the change in the national gap from 2008 and 2014–15, when classifying CDEP participants as:

- not employed—both sexes contributed around 1.3 percentage points to the 2.6 percentage point narrowing of the national gap
- employed—males contributed 2.2 percentage points and females contributed 0.8 percentage points to the increased national gap of 3.0 percentage points.

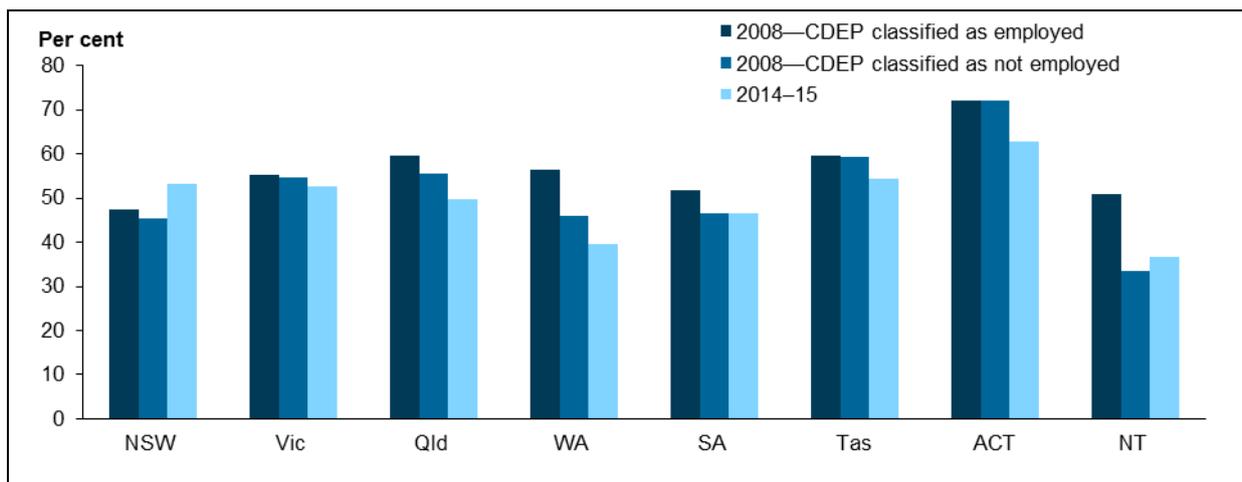
Employment by state and territory

Employment rates also vary by state and territory for both Indigenous and non-Indigenous Australians. In 2014–15, the employment rates among Indigenous Australians were:

- highest in the Australian Capital Territory (63%) followed by Tasmania (54%) and Victoria (53%)
- lowest in the Northern Territory (37%) followed by Western Australia (40%) (Figure 7.11).

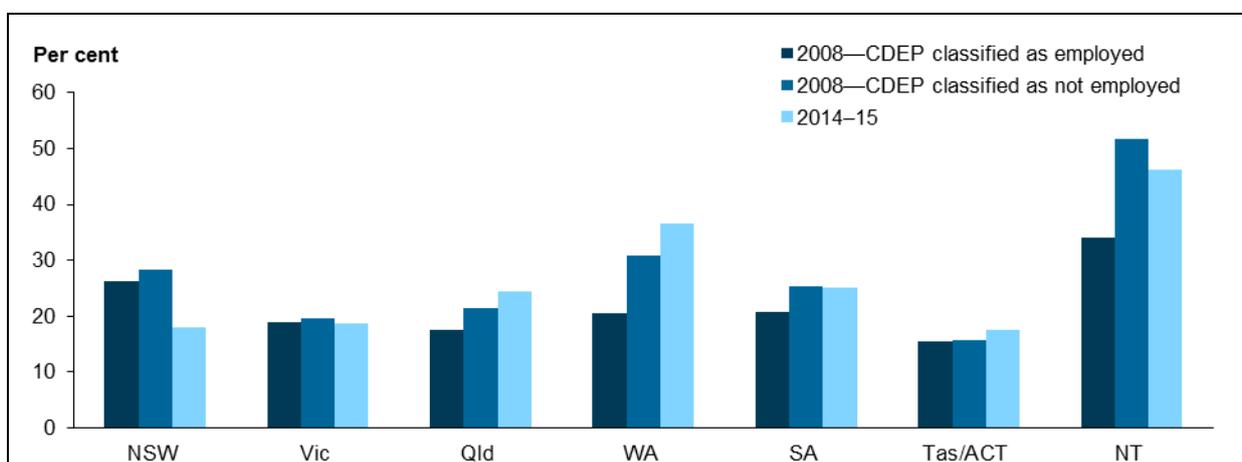
Classifying CDEP participants as employed, changes in the Indigenous employment rate between 2008 and 2014–15 in Victoria, South Australia, Tasmania and the Australian Capital Territory were not statistically significant. In Queensland, Western Australia and the Northern Territory, employment rates decreased significantly. However, when CDEP participants were classified as not employed, there was no statistically significant change in the employment rate for these states and territories (PM&C 2017).

In 2014–15, the employment gap between Indigenous and non-Indigenous Australians was largest in the Northern Territory, followed by Western Australia, South Australia and Queensland (Figure 7.12).



Source: PM&C 2017.

Figure 7.11: Employment rate for Indigenous Australians aged 15–64, by state and territory, 2008 and 2014–15



Notes

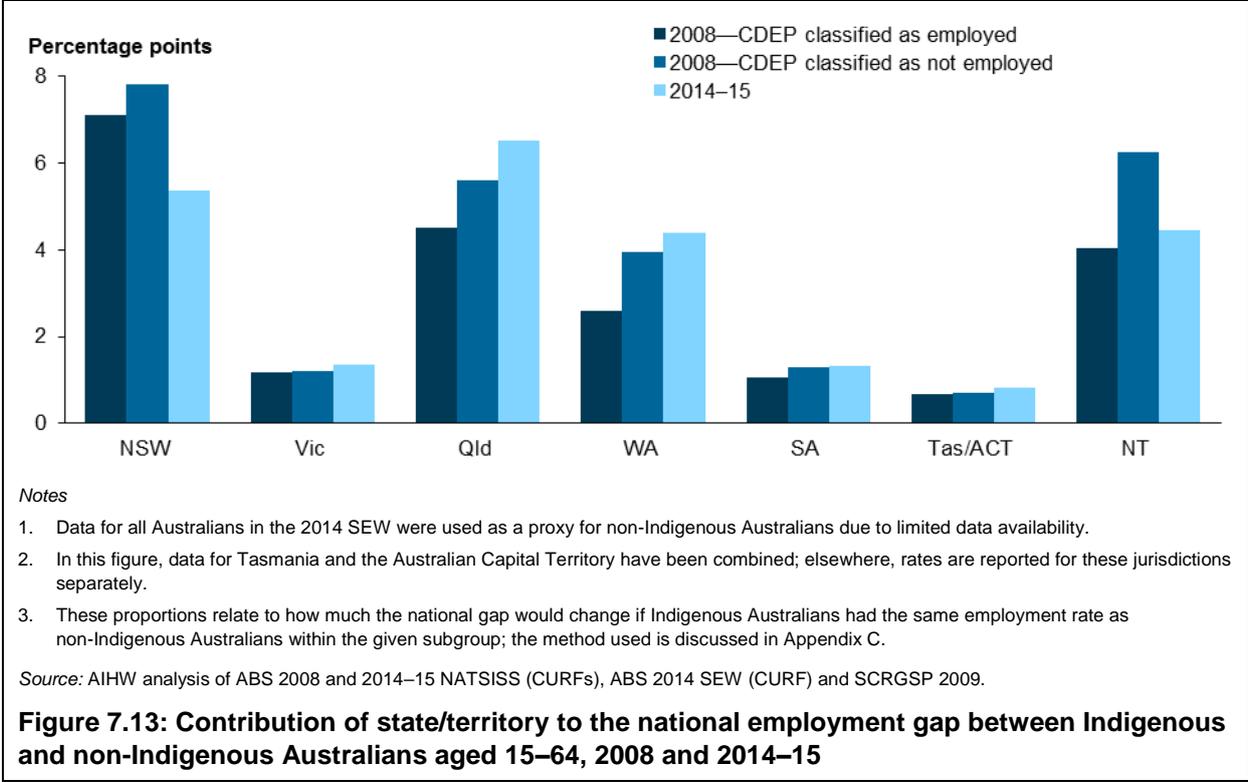
1. Data for all Australians in the 2014 SEW were used as a proxy for non-Indigenous Australians due to limited data availability.
2. In this figure, data for Tasmania and the Australian Capital Territory have been combined; elsewhere, rates are reported for these jurisdictions separately.

Source: AIHW analysis of ABS 2008 and 2014–15 NATSISS (CURFs), ABS 2014 SEW (CURF) and SCRGSP 2009.

Figure 7.12: Employment gap between Indigenous and non-Indigenous Australians aged 15–64, by state and territory, 2008 and 2014–15

Attributing the national employment gap to states and territories results in those with large Indigenous populations influencing the national gap the most. In 2014–15, the contribution to the 24.2 percentage point national gap was largest in Queensland (6.5 percentage points), New South Wales (5.4 percentage points), the Northern Territory (4.5 percentage points) and Western Australia (4.4 percentage points) (Figure 7.13).

Between 2008 and 2014–15, classifying CDEP participants as not employed, the decline in the national gap from 26.8 to 24.2 percentage points was driven by the reduction in the contribution to the national gap by New South Wales (2.4 percentage point) and the Northern Territory (1.8 percentage point).



Employment by remoteness

Education and employment opportunities differ depending on where people live—impacting on both labour supply and demand. For example, undertaking further studies in remote areas is generally more difficult, and both the availability and types of jobs differ between remote and non-remote areas. This is particularly important for Indigenous Australians, as about one-fifth live in remote areas (compared with about 2% of non-Indigenous Australians) (see Appendix A).

In 2014–15, the employment rate for Indigenous Australians in non-remote areas was higher than in remote areas—51% compared with 37%, respectively (Figure 7.14).

In 2008, when CDEP participants were classified as not employed, a similar pattern was seen with a substantially higher Indigenous employment rate in non-remote areas than remote areas (53% compared with 33%). However, the CDEP program had a large effect on employment rates in remote areas—classifying CDEP participants as employed reduces the difference between remote and non-remote areas (54% compared with 52%) (Figure 7.14).

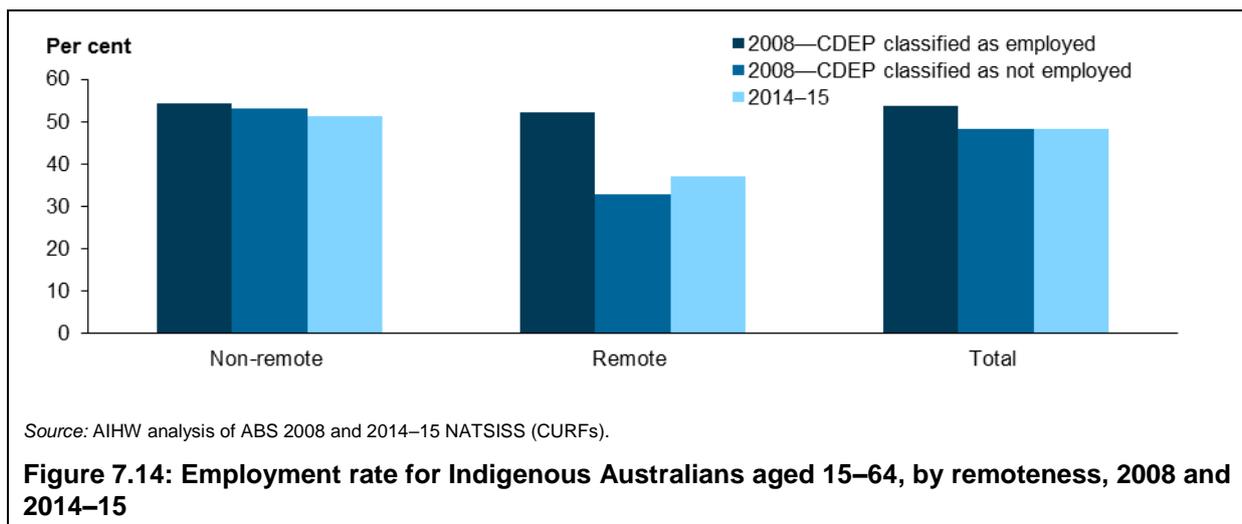
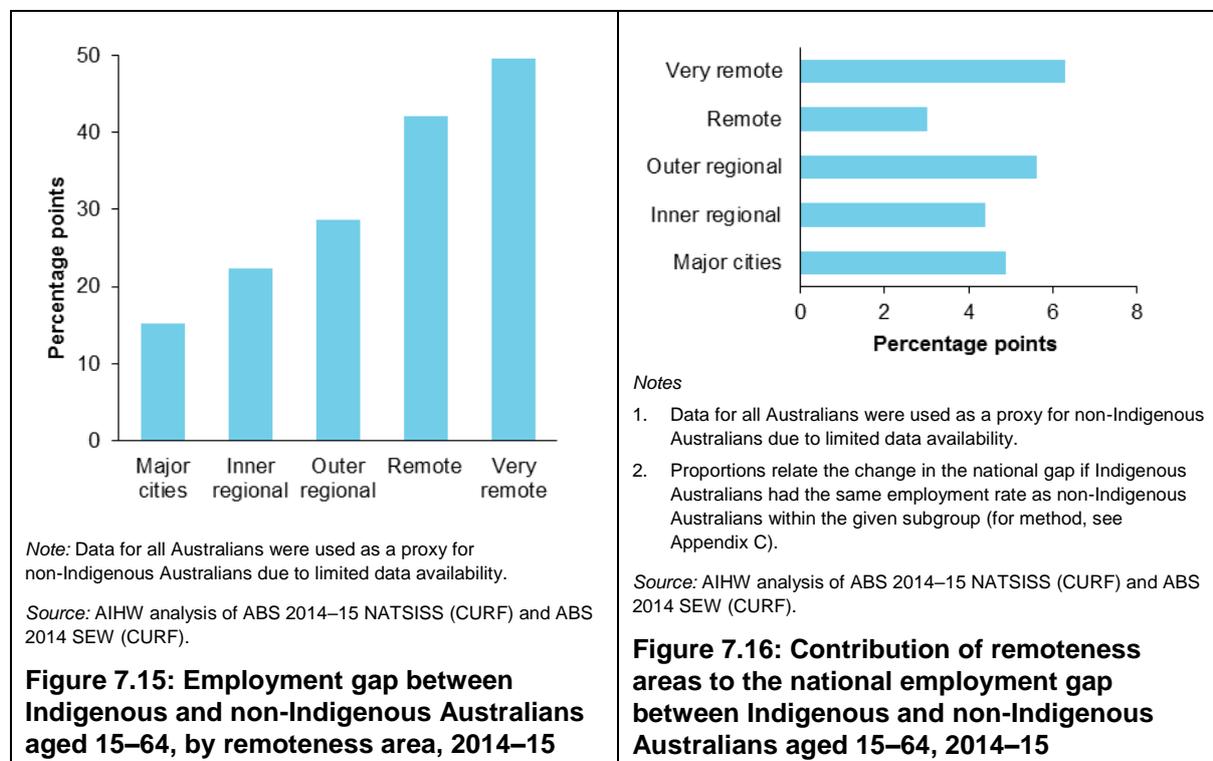


Figure 7.14: Employment rate for Indigenous Australians aged 15–64, by remoteness, 2008 and 2014–15

Analysis of more detailed 2014–15 remoteness categories shows that the employment gap between Indigenous and non-Indigenous Australians increased with increasing remoteness. For example, the gap in *Very remote* areas was over 3 times that in *Major cities* (50 compared with 15 percentage points, respectively) (Figure 7.15).

Estimates of the contributions of remoteness areas to the national employment gap between Indigenous and non-Indigenous Australians are shown in Figure 7.16 (for method used see Appendix C). In 2014–15, of the 24.2 percentage point national gap, *Major cities*, *Inner regional* and *Outer regional* areas combined contributed 15 percentage points, while *Remote* and *Very remote* areas combined contributed 9.3 percentage points. This result is due to the larger number of Indigenous Australians living in non-remote areas.



Employment by highest level of education

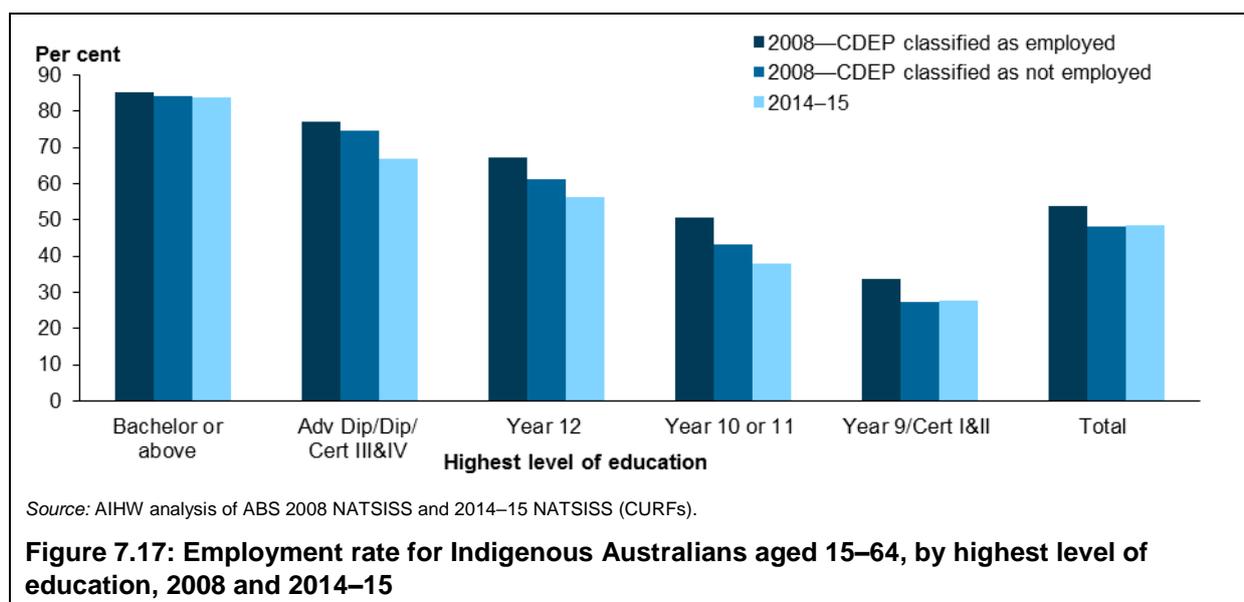
Across countries and over time, higher levels of education are consistently associated with better employment outcomes. For example, in 2016, the average employment rate in OECD countries was highest for people with a tertiary education (84% among those aged 25–64), compared with those with an upper secondary school education (75%) or those with an education level below upper secondary school (57%) (OECD 2017).

Australian research has shown that relatively lower levels of educational attainment are an important factor in explaining the employment gap between Indigenous and non-Indigenous Australians (Biddle 2006; Biddle & Yap 2010; Gray et al. 2012; Stephens 2010; Thapa et al. 2012). Both secondary education and post-secondary education for Indigenous Australians have been found to be related to increased likelihood of employment (Biddle 2006; Crawford & Biddle 2017; Stephens 2010).

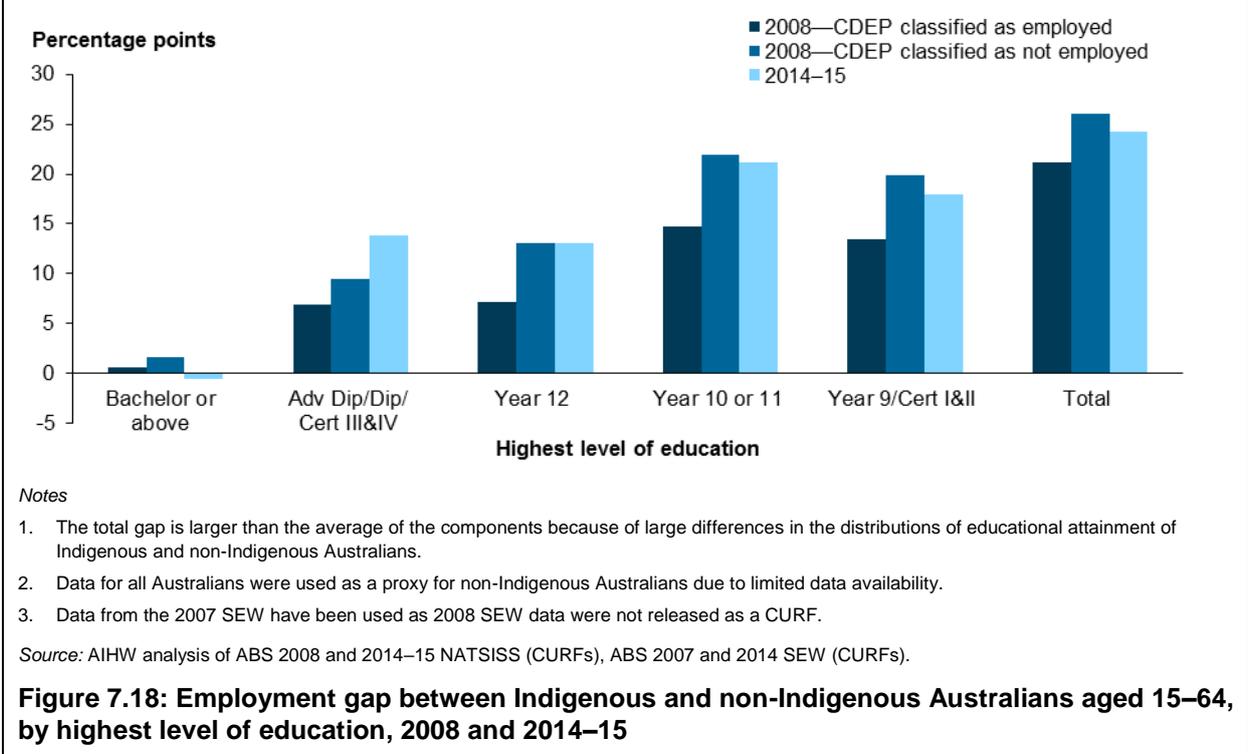
In this analysis the highest level of education is grouped as follows:

- Bachelor degree or above, which consists of Bachelor degrees, Graduate Diplomas, Master degrees and Doctorates
- Advanced Diploma/Diploma/Certificate III and IV (Adv Dip/Dip/Cert III&IV), which consists of Advanced Diplomas, Diplomas and Certificates III and IV
- Year 12
- Year 10 or 11
- Year 9 or below/Certificate I and II (Year 9/Cert I&II) which consists of Year 9 or below, Certificates I and II, Certificate not further defined, and never attended school.

The Indigenous Australian employment rate for different levels of education is shown in Figure 7.17. The employment rate increases with an increasing level of education. This pattern is observed in both remote and non-remote areas (see Appendix D, Figure D2). Excluding CDEP participants, the national employment rate for Indigenous Australians was unchanged between 2008 and 2014–15; however, the employment rates for individual levels of education were more variable over the two time periods.



The employment gap between Indigenous and non-Indigenous Australians generally shows a decline with increasing education levels (Figure 7.18). At lower levels of education, the gap is substantial; however, for the group of people with a Bachelor degree or above, the employment rates for Indigenous and non-Indigenous Australians were similar.

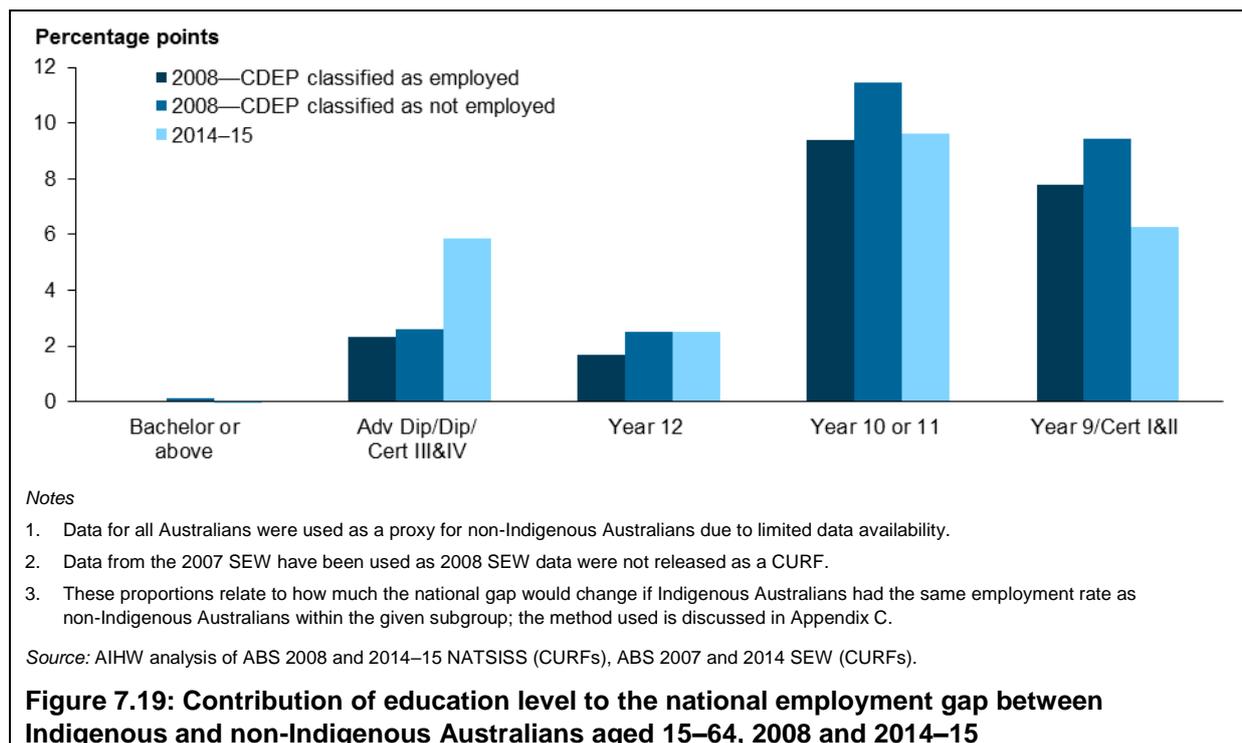


Results from the Australian Government 2016 Graduate Outcomes Survey show that:

- 4 months after graduating Indigenous graduates had a higher full-time employment rate (75%) than non-Indigenous graduates (71%)
- Indigenous graduates had higher median salaries immediately upon graduation than non-Indigenous graduates (\$59,200 compared with \$57,900, respectively) (GOS 2016). These results need to be considered in the context of a range of variables on differences in the circumstances of the different graduation groups (for example, age at graduation and employment status prior to study).

Taking the Indigenous population size into account, estimates of the contribution of each level of education to the national employment gap are shown in Figure 7.19 (for method used see Appendix C). This analysis shows that in 2014–15, Indigenous Australians with a Year 11 education or below contributed most to the national gap (15.9 percentage points of the 24.2 percentage point national gap).

Between 2008 and 2014–15, classifying CDEP participants as not employed, Indigenous Australians whose highest level of education was Year 9, Certificate I or II or below contributed most to the decline in the national gap.



The contributions of each level of education to the national employment gap was largely consistent across males and females. In 2014–15:

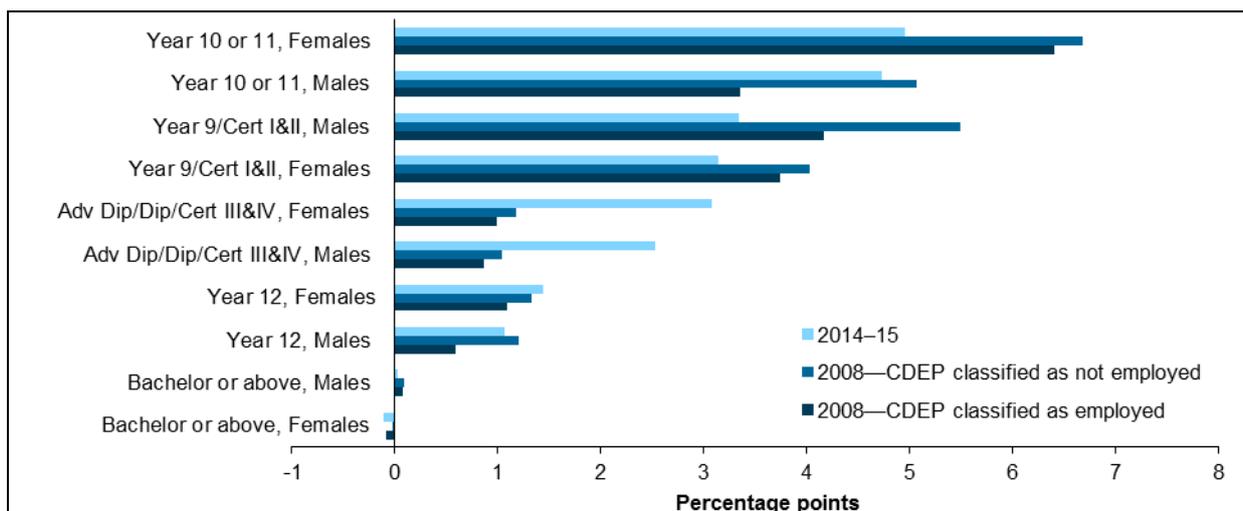
- the two largest contributors to the national employment gap were Indigenous females with Year 10 or 11 as their highest level of education, followed by Indigenous males with same level of education (5.0 and 4.7 percentage points, respectively of the 24.2 percentage point national gap)
- the next two largest contributors were Indigenous males with Year 9 or below/Certificate I and II, and females with Year 9 or below/Certificate I and II (3.3 and 3.1 percentage points, respectively) (Figure 7.20).

These four groups constituted about two-thirds (16.2 percentage points) of the 24.2 percentage point national gap in 2014–15.

Analysis of 2014–15 data by age and highest education level showed that:

- Indigenous Australians aged 25–34 with Year 10 or 11 education were the largest contributors to the national gap (contributing 3.3 percentage points of 24.2 percentage point national gap), followed by those aged 45–54 with Year 10 or 11 (2.2 percentage points)
- the third largest contributor to the national gap was those aged 35–44 with Certificate III to Advanced Diplomas (contributing 2.1 percentage points of the 24.2 percentage point national gap). This was a larger contribution than some lower levels of education for this age group—an unexpected result requiring further exploration (Figure 7.21).

Additionally, three of the top 5 largest contributors in 2014–15 had a Year 10 or 11 education and were between the ages of 25 and 54.

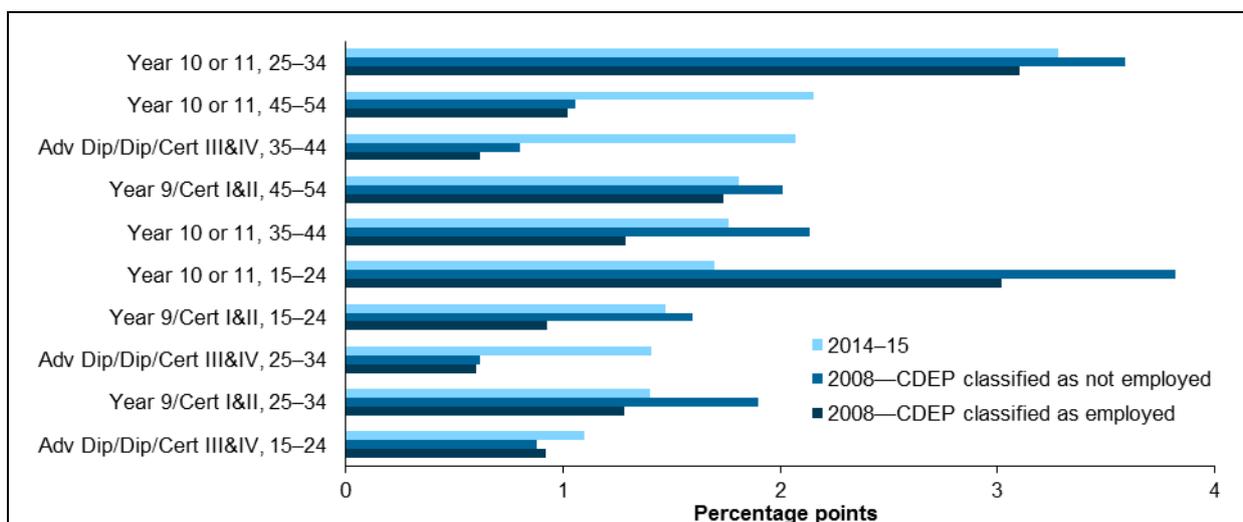


Notes

1. Data for all Australians were used as a proxy for non-Indigenous Australians due to limited data availability.
2. Data from the 2007 SEW have been used as 2008 SEW data were not released as a CURF.
3. These proportions relate to how much the national gap would change if Indigenous Australians had the same employment rate as non-Indigenous Australians within the given subgroup; the method used is discussed in Appendix C.

Source: AIHW analysis of ABS 2008 and 2014–15 NATSISS (CURFs), ABS 2007 SEW and 2014 SEW (CURFs).

Figure 7.20: Contribution to the national employment gap between Indigenous and non-Indigenous Australians aged 15–64, by education level and sex, 2008 and 2014–15



Notes

1. Only the 10 most influential groups are shown, which in 2014–15 covered 18.1 percentage points of the 24.2 percentage point gap.
2. Data for all Australians were used as a proxy for non-Indigenous Australians due to limited data availability.
3. Data from the 2007 SEW have been used as 2008 SEW data were not released as a CURF.
4. These proportions relate to how much the national gap would change if Indigenous Australians had the same employment rate as non-Indigenous Australians within the given subgroup; the method used is discussed in Appendix C.

Source: AIHW analysis of ABS 2008 and 2014–15 NATSISS (CURFs), ABS 2007 and 2014 SEW (CURFs).

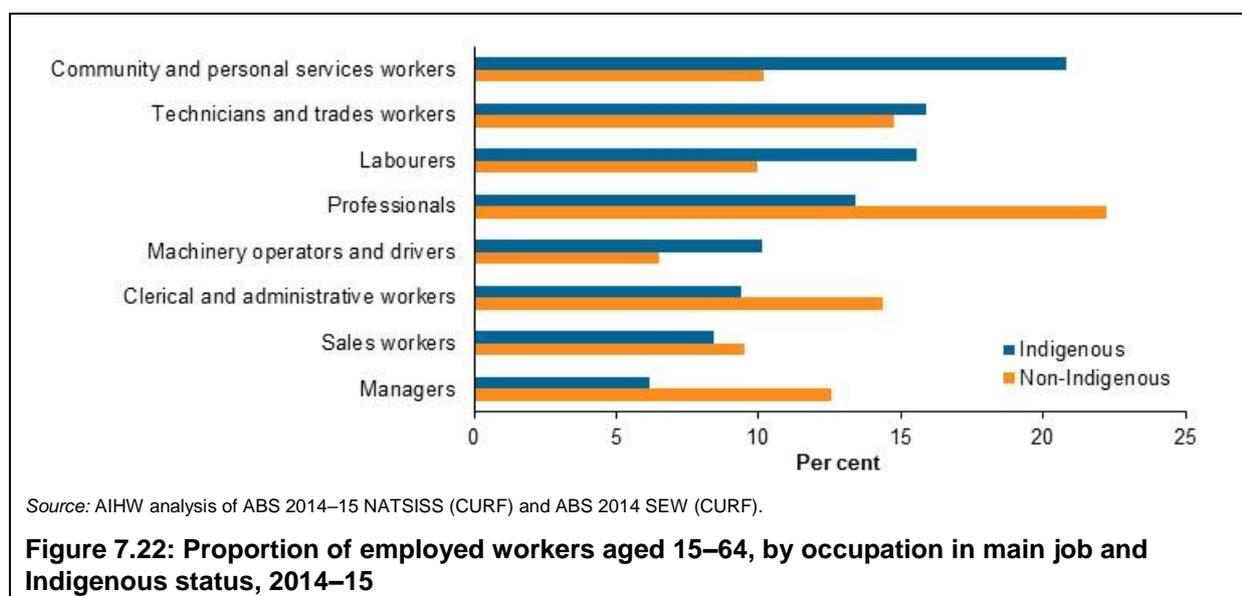
Figure 7.21: Contribution to the national employment gap between Indigenous and non-Indigenous Australians aged 15–64, by education level and age group, 2008 and 2014–15

Employment by occupation

It is useful to consider the distribution of Indigenous employment by occupation type to understand where there may be opportunities for improvement. Figure 7.22 compares the occupations of Indigenous and non-Indigenous Australians in 2014–15. These data show that:

- for Indigenous Australians, the most common occupation type was community and personal services workers (for example, workers in child care) (21%), followed by technicians and trades workers, and labourers (both 16%)
- for non-Indigenous Australians, the most common occupation type was professionals (22%) followed by technicians and trade workers (15%), and clerical and administrative workers (14%).
- there tended to be a lower proportion of Indigenous Australians in occupations requiring higher levels of education (such as professionals) and a higher proportion in occupations requiring lower levels of education (such as labourers, machinery operators and drivers).

In 2012–13, the proportion of employed Indigenous Australians working in the public sector was higher than that for non-Indigenous Australians—26% compared with 16% (AHMAC 2017).

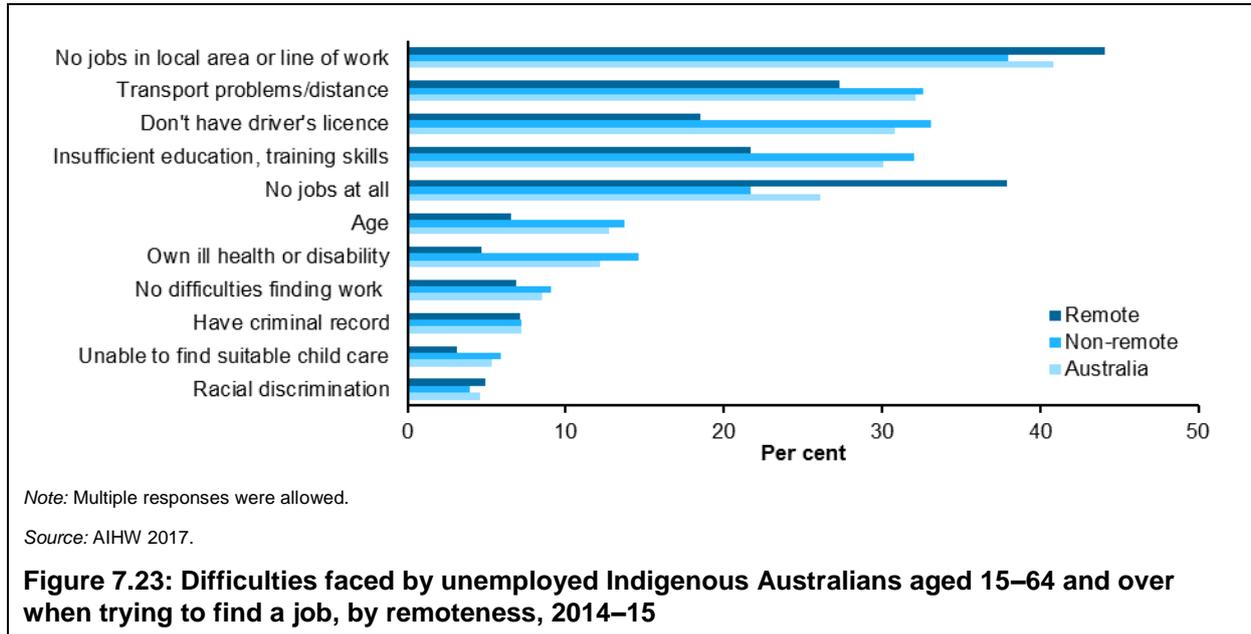


7.3 Key drivers of Indigenous employment

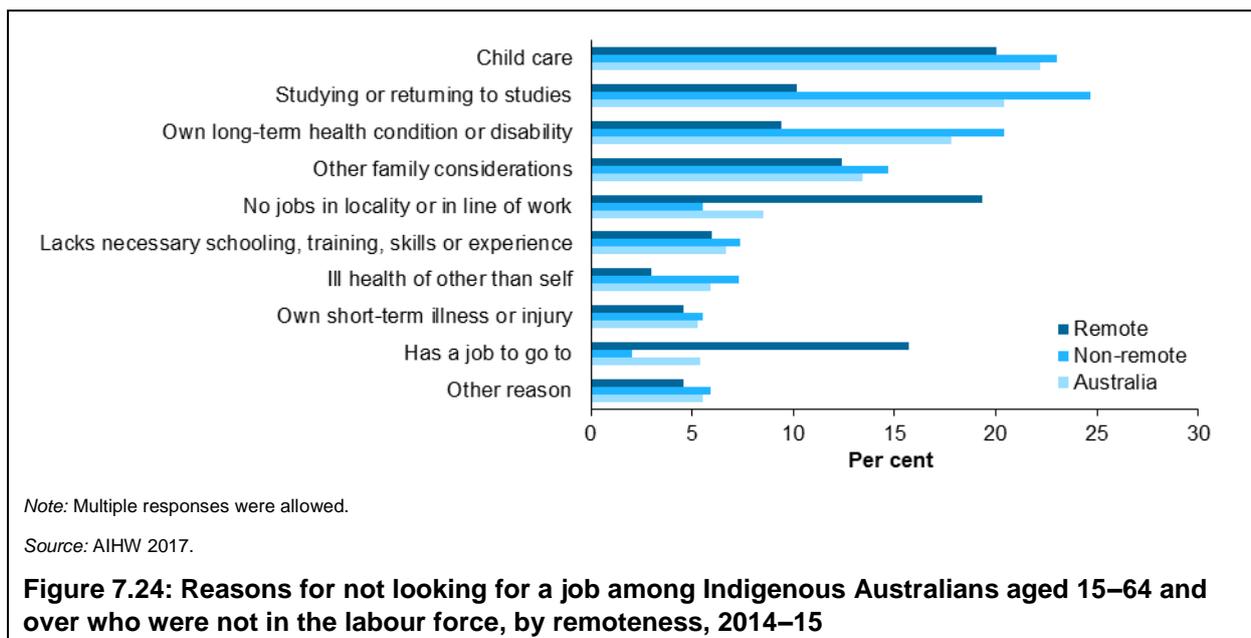
This section looks at both sides of the labour market: factors affecting the supply of labour (for example, education level) and factors affecting the demand for labour (for example, jobs availability and discrimination). The impact of some factors can be argued to affect both sides of the labour market (for example, contact with the criminal justice system).

Self-reported information on the obstacles Indigenous Australians face in the labour market are presented for 2014–15. The most common difficulties unemployed Indigenous Australians reported facing when trying to find a job included: lack of opportunities (no jobs in local area or in line of work), logistical reasons (transport problems, distance, no driver's license) and insufficient education, training or skills (Figure 7.23). The lack of opportunities is an issue on the demand side of the labour market, the lack of skills is an issue on the supply side, and logistical reasons are a market barrier to potentially matching workers with jobs.

Barriers to employment may be reduced by improving skills and transport related to employment opportunities.



The 2014–15 NATSISS also asked Indigenous Australians not in the labour force about the reasons for not looking for a job. The main reasons revolved around family (for example, child care), undertaking studies, health or disability and the availability of jobs (Figure 7.24). Reasons for not looking for work differed among Indigenous Australians living in remote and non-remote areas (Figure 7.24). In particular, non-remote respondents who were not in the labour force were more likely to indicate the reasons of studying or having a long-term health condition/disability, while respondents in remote areas were more likely to indicate either the lack of availability of jobs or having a job to go to.



Discrimination has also been found to be a barrier to employment of Indigenous Australians (Biddle et al. 2013; Hunter 2010). For example, a 2010 employment survey revealed that 12%–15% of employers agreed or strongly agreed that Indigenous employees would have trouble fitting into their workplace, despite many of them having policies to recruit Indigenous Australians (Karmel et al. 2014).

The remainder of this section highlights key relationships identified in the literature and presents new modelling data related to employment. The modelling results are limited by the coverage of the variables in the data set used and by the fact that only cross-sectional data are used.

7.3.1 Key drivers in the literature

Among all Australians, a major driver of employment is the macroeconomic environment—that is, the performance of the economy as a whole. Although research for Indigenous Australians on the impact of macroeconomic factors is limited, a serious economic downturn may have a bigger negative impact on the employment of Indigenous Australians than for other population groups, due to Indigenous Australians on average having lower levels of education and working in lower skilled occupations (see Section 7.2.2) (Gray et al. 2012; Hunter 2009). Due to a lack of time-series data on employment among Indigenous Australians, the influence of this factor is not analysed in this section.

A number of studies have looked at relationships between characteristics of Indigenous Australians and their employment status:

- Biddle (2010) used the 2006 Census to look at factors associated with the employment rate in Indigenous areas. The Indigenous employment rate in a given Indigenous area was positively associated with higher rates of Year 12 completion (and other qualifications), higher proportion of those aged 0–24 and 55 and over, and higher rates of marriage.
- Biddle and Yap (2010) analysed the factors associated with the probability of employment for Indigenous Australians. Factors affecting the probability of employment included: the interaction of age and sex; education; difficulties with English; marital status; and disability.
- Stephens (2010) provided a review of variables previously found to be related to the labour force status of Indigenous Australians. These include geography, age, family characteristics, education, health, culture, crime and housing. Stephens also presented analysis on the labour force status of Indigenous Australians using the 2002 NATSISS, and found major differences in the determinants of labour force status between remote and non-remote areas.
- Ross (2006) used the 2002 NATSISS to model the effect of health on employment, showing that long-term disability and poor self-assessed health status had significant negative impacts on a person's likelihood of being employed.
- Using the 2008 NATSISS, Thapa et al. (2012) looked at factors determining employment outcomes for Indigenous Australians. Among other factors, they found that higher levels of education, better health, having fewer dependents, and speaking an Indigenous language at home were positively associated with employment.

7.3.2 Evidence from new AIHW analysis

Logistic regression modelling of 2014–15 NATSISS data was used to determine the effect of a range of variables on the employment status of Indigenous Australians. This analysis looks

at factors associated with employment, but cannot be used to determine causation as the NATSISS is a cross-sectional survey.

In addition to the full working age population (15–64), Section 7.2 provides an analysis of selected Indigenous subgroups, chosen based on their relatively high contribution to the national employment gap. Separate regressions were undertaken on the odds of being employed (compared with not employed) across a range of explanatory variables for each of the following groups of the Indigenous population:

- young people (total aged 15–24 and 25–34 and females aged 15–34)
- those living in non-remote areas
- those with a highest level of education of Year 10 or 11.

Indigenous Australians in the labour force were also analysed separately—showing the likelihood of being employed versus unemployed.

For each of these models the choice of explanatory variables was largely based on evidence from the literature (for example, Biddle 2010; Ross 2006; Stephens 2010; Thapa et al. 2012). The relationship between explanatory variables may be difficult to disentangle; where strong associations exist, the importance of one variable may not be observed in the regression results. In addition, this analysis has not considered possible interactions between variables.

The odds ratios presented in Table 7.1 are the odds of employment ('employed' to 'not employed') of one group relative to the odds of employment of a reference group. For example, in the 'working age population' the odds of a male being employed is 1.7 times the odds of a female being employed (the reference group).

Regression results—working age population (aged 15–64)

Based on the regression model for the Indigenous working age population, the odds of employment were higher for individuals who:

- had a higher level of education
- had a good self-assessment of their health
- were male
- were aged 35–54
- were married.

For this same population group, the odds of employment were lower for people:

- with disability, more so for those with severe or profound disability
- living in a household with more children aged under 15
- who have been removed from their natural family
- who have been arrested in the previous 5 years
- living in remote areas
- who have difficulties with English
- who have avoided situations due to past discrimination.

Using the odds ratios shown in Table 7.1 alone, it is not possible to compare the relative importance of the effects of the explanatory variables. To assess the relative importance, the logistic regression results have been used to estimate the change in the probability of being employed associated with a change from the reference level of each of the explanatory variables. The relative importance of the explanatory variables is based on the absolute size

of the associated changes in probability (see Appendix C for details). Based on this ranking method, the explanatory variables with relatively larger impacts on employment include highest level of education, difficulties with English, health, family considerations (that is, the number of children under 15 in the household, marital status) and justice (that is, whether arrested in the past 5 years). Other factors such as discrimination and removal from family, although significant, have lower impact on employment outcomes.

The general patterns observed in this analysis of the working age population are also observed for the working age population excluding full-time students and those permanently unable to work (AIHW analysis of the 2014–15 NATSISS). The results for the working age population are also largely consistent with those found in other previous studies, including:

- Biddle and Yap (2010), who found education had a positive effect on the odds of employment of Indigenous Australians
- Biddle and Yap (2010) also found a negative association between employment and numbers of dependants (similar to AIHW regression variable of number of children aged under 15 in the household)
- Ross (2006), who found poorer health is associated with lower levels of employment
- Borland and Hunter (2000), who found, using the 1994 NATSISS, that having been arrested was negatively associated with employment.

Regression results—additional cohorts

Regressions for a further six cohorts, in addition to the entire working age population, are presented in Table 7.1. The results show that for:

- young Indigenous Australians aged 15–24, the results were consistent with the broader working age cohort for many factors—for example, those living in remote areas had lower odds of employment. However marital status, being arrested, disability status and difficulties with English were no longer significant. These results are not unexpected due to the lower representation of Indigenous younger people in these groups
- young Indigenous females aged 15–34—with a Bachelor degree or above had a relatively larger impact on higher employment rates than for the broader working age population
- Indigenous Australians in non-remote areas—there was little difference in the results from that of the whole working age population. This is not an unexpected result as the majority of Indigenous Australians live in non-remote areas
- Indigenous Australians in the labour force (that is, those employed or unemployed but looking for work)—age had a larger effect on employment relative to the effect for the working age population. The weaker effect of age in the working age population may be due to differences in participation rates; for example, young people in full-time study, people taking time out of the labour force to care for children, and those taking up early retirement

Relative to the working age population, limiting the analysis to those in the labour force results in a number of variables no longer being significant including disability status, sex, difficulties with English and removal from natural family.

An additional group of interest is Indigenous Australians aged 17–24 who are not fully engaged in employment, education or training. In 2014–15, around 58% of Indigenous 17–24 year olds were classified as not being fully engaged, a decrease from the 62% reported in the 2008 NATSISS (SCRGSP 2016b).

These young people who are not fully engaged can be divided into those in (part-time) work/education or unemployed (who are part of the labour force), and those not actively looking for work (defined as being outside the labour force). An AIHW analysis of 2014–15 NATSISS data for this population was undertaken to explore the impact of different factors on the likelihood of being in the labour force. Factors with relatively larger impacts on whether these young Indigenous Australians were in the labour force included having more children in the household, having a severe/profound disability, having low education and having been removed from their natural family (see Appendix E for further information). These results are broadly consistent with those of Table 7.1 (which looked at factors affecting employment among the working age population).

Table 7.1: Multivariate logistic regression analysis: odds ratios of being employed^(a), Indigenous working age population (aged 15–64) and various subsets of this population, 2014–15

Explanatory variable and reference group	Level	Odds ratio						
		Total working age	Ages 15–24	Ages 25–34	Females aged 15–34	Non-remote	Year 10 or 11	Labour force ^(a)
Age (ref: 15–24)	25–34	1.22	..	..	..	1.18	0.87	1.69*
	35–44	1.61*	..	..	..	1.61*	1.54	1.92*
	45–54	1.43*	..	..	..	1.24	1.03	3.23*
	55–64	0.84	..	..	..	0.69	1.09	5.15*
Sex (ref: Females)	Males	1.66*	1.14	2.87*	..	1.73*	1.26	1.06
Remoteness (ref: Non-remote)	Remote	0.71*	0.62*	0.70	0.88	..	0.62*	0.72*
Disability status (ref: No disability or restrictive longer term condition)	Severe/profound	0.26*	0.64	0.28*	0.86	0.26*	0.37*	0.56
	Mild disability/restrictive long-term condition	0.70*	0.82	0.82	0.71	0.63*	0.93	0.79
Marital status (ref: Not married)	Married	2.30*	1.23	2.31*	1.27	2.69*	2.72*	1.83*
Number of children under 15 in household (ref: None)	1–2	0.68*	0.55*	0.69	0.46*	0.64*	0.51*	0.67*
	3–4	0.41*	0.24*	0.41*	0.20*	0.34*	0.30*	0.64*
	5 or more	0.24*	0.53	0.19*	0.20*	0.16*	0.08*	0.40*
Difficulties with English ^(b) (ref: No)	Yes	0.54*	0.44	0.77	0.69	0.42	0.43*	0.73
Highest level of education (ref: Year 12)	Bachelor or above	3.28*	3.53	9.43*	9.95*	3.44*	..	3.89*
	Advanced Diploma/Diploma/Certificate III/IV	1.38*	1.49	1.97*	2.30*	1.34	..	1.07
	Year 10 or 11	0.47*	0.49*	0.41*	0.71	0.48*	..	0.52*
	Year 9 or below/Certificate I/II	0.38*	0.29*	0.47*	0.39*	0.38*	..	0.53*

(continued)

Table 7.1 (continued): Multivariate logistic regression analysis: odds ratios of being employed^(a), Indigenous working age population (aged 15–64) and various subsets of this population, 2014–15

Explanatory variable and reference group	Level	Total working age	Ages 15–24	Ages 25–34	Females aged 15–34	Non-remote	Year 10 or 11	Labour force ^(a)
		Odds ratio						
Torres Strait Islander, Qld only (ref: No) ^(c)	Yes	1.16	1.51	1.22*	2.60*	1.19	1.10	0.83
Arrested in the last 5 years (ref: No)	Yes	0.50*	0.89	0.40*	0.70	0.49*	0.57*	0.45*
Avoided situations due to past discrimination (ref: No)	Yes	0.71*	0.81	0.59*	0.64	0.68*	0.75	0.50*
Threatened physical violence (ref: Never exp.)	Experienced	0.94	0.94	0.92	0.96	0.95	1.23	0.87
Self-assessed health status (ref: Fair/poor)	Excellent/ very good/good	1.93*	1.91*	1.53	1.98*	1.80*	2.33*	1.42*
Recognises homelands (ref: Yes)	No	0.96	1.11	0.74	1.04	0.96	1.00	1.15
Removed from natural family (ref: No)	Yes	0.68*	0.54	0.65	0.61	0.59*	0.52*	0.72
Whether house is of acceptable standard (ref: Yes)	No	0.87	1.03	0.86	0.90	0.91	0.98	0.88
Number of observations		6,199	1,413	1,490	1,713	4,009	1,805	3,661

. . = not applicable

* Significant at the $p < 0.05$ level.

- (a) For the population subgroup 'those in labour force' the odds ratios show the likelihood of being employed versus unemployed, while for the other subgroups it is the likelihood of being employed versus unemployed/not in the labour force.
- (b) People whose main language spoken at home was an Aboriginal or Torres Strait Islander language were asked about any difficulties they may have had when they went places where only English was spoken. In this explanatory variable, people whose main language spoken at home was an Aboriginal and Torres Strait Islander language and who had difficulty understanding English speakers and/or being understood by English speakers are included in the 'yes' category for this variable; all other respondents (including those whose main language is not an Australian Indigenous language) are included in the 'no' reference category.
- (c) The 2014–15 NATSISS sample for Queensland was designed to allow for the release of data on the Torres Strait Islander population in that state. In this explanatory variable, people in Queensland who identified as Torres Strait Islander or both Aboriginal and Torres Strait Islander origin are included in the 'yes' category; all other respondents (including those outside of Queensland) are included in the 'no' reference category.

Source: AIHW analysis of ABS 2014–15 NATSISS (CURF).

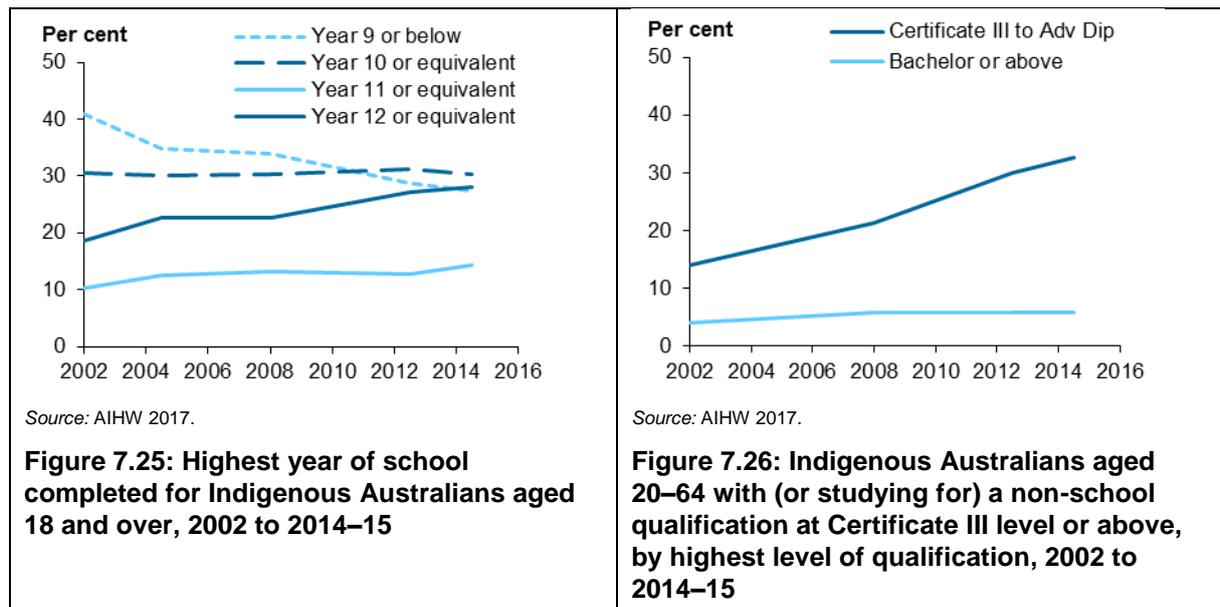
7.3.3 Trends in Indigenous employment drivers

Drawing from the analyses earlier in this section, key drivers found to be important for employment include education level, the health and disability status of the individual, family considerations (for example, child care) and criminal justice (for example, arrests). This section looks at the trends of each of these drivers.

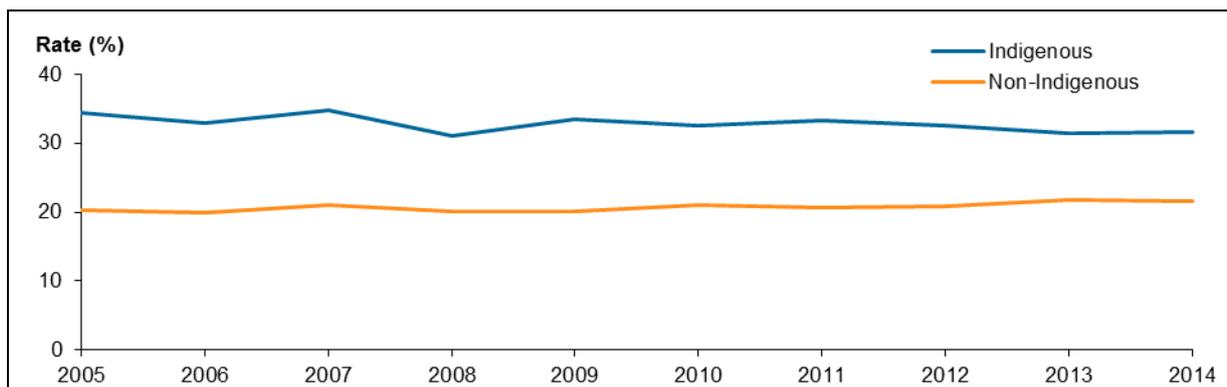
Education

Education was identified as a major driver of employment. Figure 7.25 shows the highest year of school completed by Indigenous Australians between 2002 and 2014–15. Year 11 and 12 completion rates have been rising, while the Year 9 or below rate has been falling, and the Year 10 rate has remained relatively unchanged. (Chapter 6 also contains information on rates of Year 12 attainment, including equivalent non-school qualifications.)

Looking at level of highest non-school qualification, the proportion of Indigenous Australians with a Bachelor degree or above has remained steady since 2008, but the proportion with a Certificate III/IV, Diploma or Advanced Diploma more than doubled between 2002 and 2014–15 (Figure 7.26).

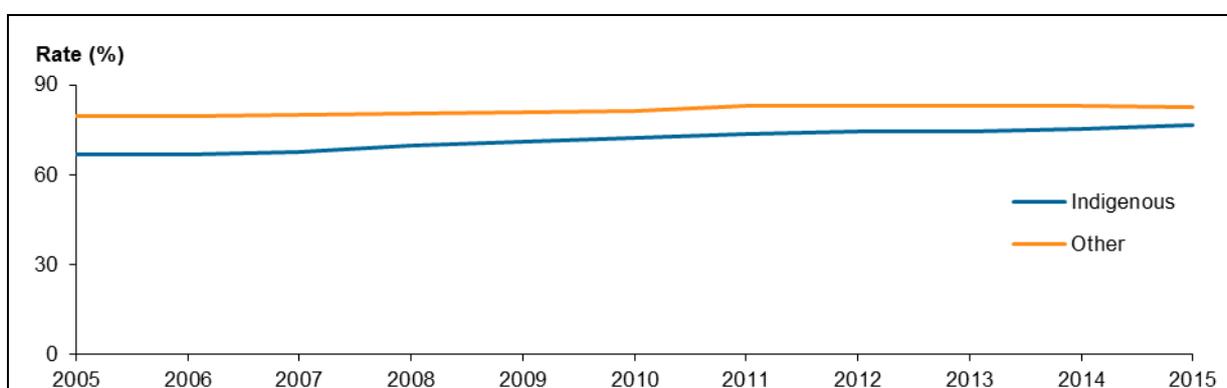


The rate at which Indigenous Australians fail to complete or return to a course in higher education (that is, the attrition rate) is substantially higher than for non-Indigenous Australians and, despite falling modestly since 2005, has somewhat plateaued (Figure 7.27). Similarly, the proportion of the load undertaken and passed by Indigenous Australians in vocational education and training (VET) (that is, the load pass rate) has increased since 2005, but is still lower than for other Australians (Figure 7.28).



Source: AIHW 2017.

Figure 7.27: Higher education attrition rate, by Indigenous status, 2005 to 2014



Note: Other category includes students whose Indigenous status is unknown.

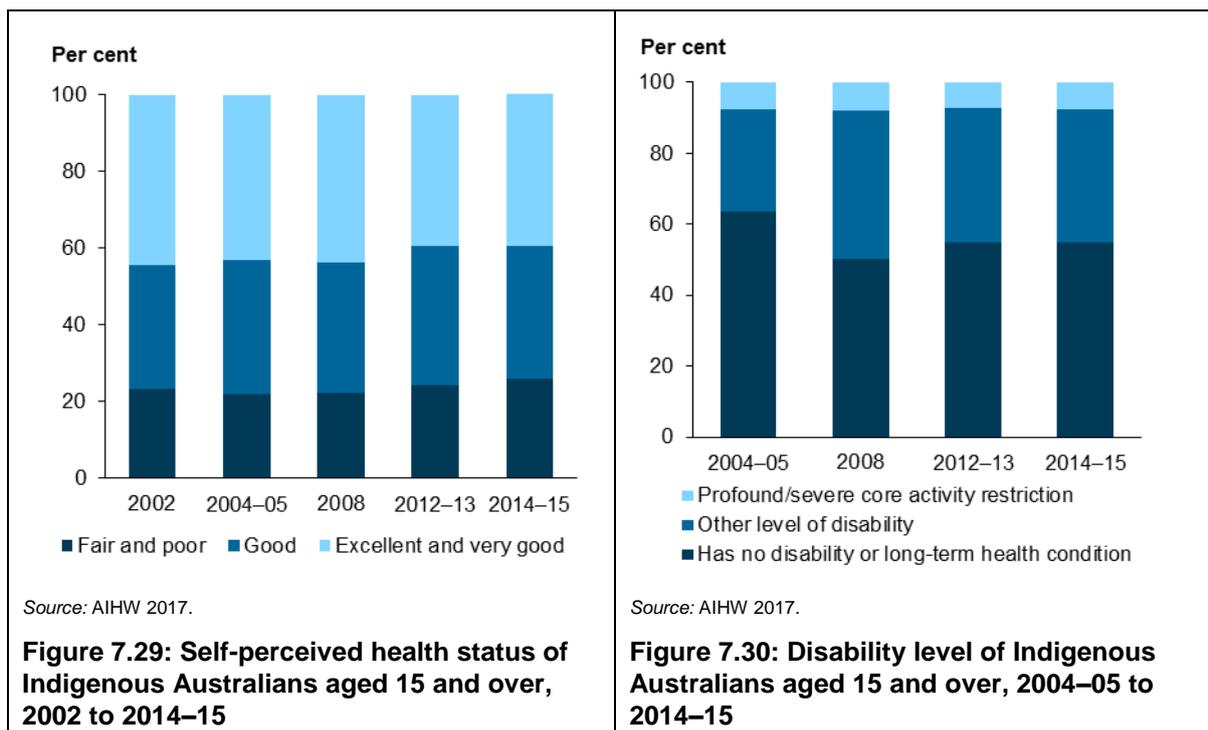
Source: AIHW 2017.

Figure 7.28: VET load pass rate for students aged 15–64, by Indigenous status, 2005 to 2014

Health and disability

Between 2002 and 2014–15, with some variability, there has been a decrease in the proportion of Indigenous Australians perceiving their health as very good or excellent, and an increase in those reporting it as poor or fair (Figure 7.29).

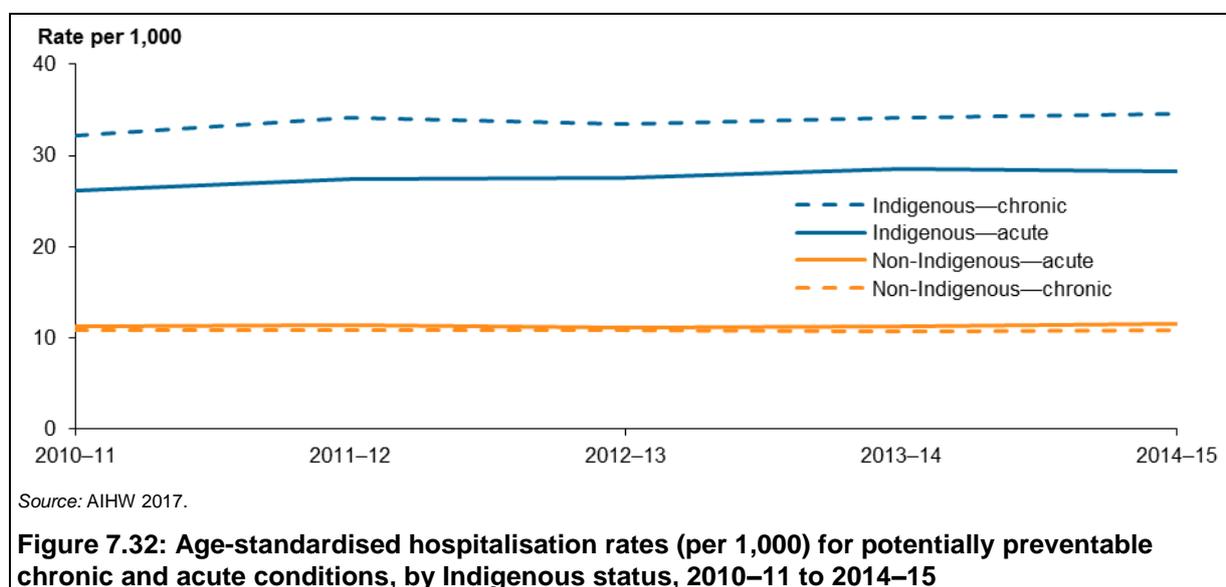
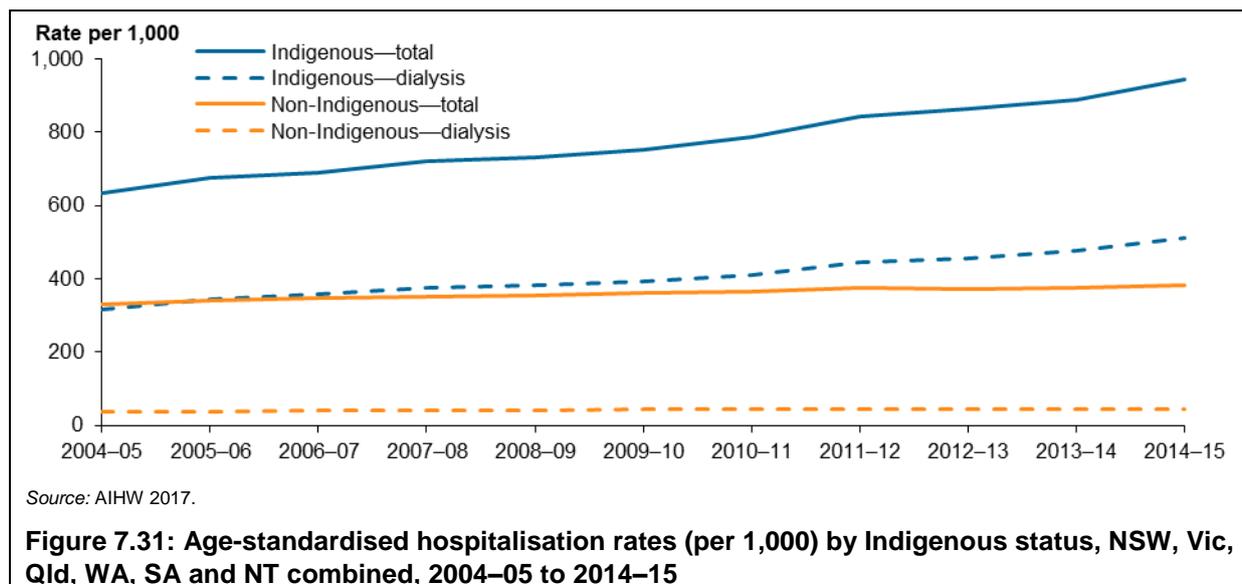
Between 2004–05 and 2014–15, the proportion of Indigenous Australians reporting some form of disability or restrictive long-term health condition increased from 37% to 45%, with the 2014–15 figure lower than the 50% high in 2008 (Figure 7.30). The proportion of Indigenous Australians with a severe or profound core activity limitation (that is, needing help with self-care, mobility or communication) remained relatively unchanged between 2004–05 and 2014–15, while the proportion with other levels of disability increased.



Burden of disease analysis combines estimates of years of life lost due to premature death and years lived with ill health or disability to count the total years of healthy life lost from disease and injury. In 2011, Indigenous Australians experienced a burden of disease that was 2.3 times the rate of non-Indigenous Australians (AIHW 2016). Between 2003 and 2011, there was a 5% reduction in the rate of total burden in the Indigenous population. Most of this improvement came from decreases in the rate of fatal burden (11%), by preventing or delaying deaths from particular diseases or injuries. There was, however, a 4% increase in the rate of non-fatal burden for Indigenous Australians between 2003 and 2011. This was mainly due to increases in people living with chronic diseases such as diabetes, anxiety and depressive disorders, and asthma; and from the non-fatal effects of injuries such as falls. Between 2003 and 2011, the overall gap in total disease burden between Indigenous and non-Indigenous Australians remained relatively stable, however the gap in non-fatal burden increased by 15% while the gap in fatal burden decreased by 9%.

Hospitalisations data show that over the period 2004–05 to 2014–15, there was a larger increase in the age-standardised rate of hospitalisation for Indigenous Australians compared with the rate for non-Indigenous hospitalisations (Figure 7.31). Data on potentially preventable hospitalisations (both acute and chronic) show that rates for Indigenous Australians were much higher than for non-Indigenous Australians (Figure 7.32). Over the 5 years to 2014–15, there was an increase in the rates for both acute and chronic potentially preventable hospitalisations for Indigenous Australians, while the rates have remained relatively unchanged for the non-Indigenous population.

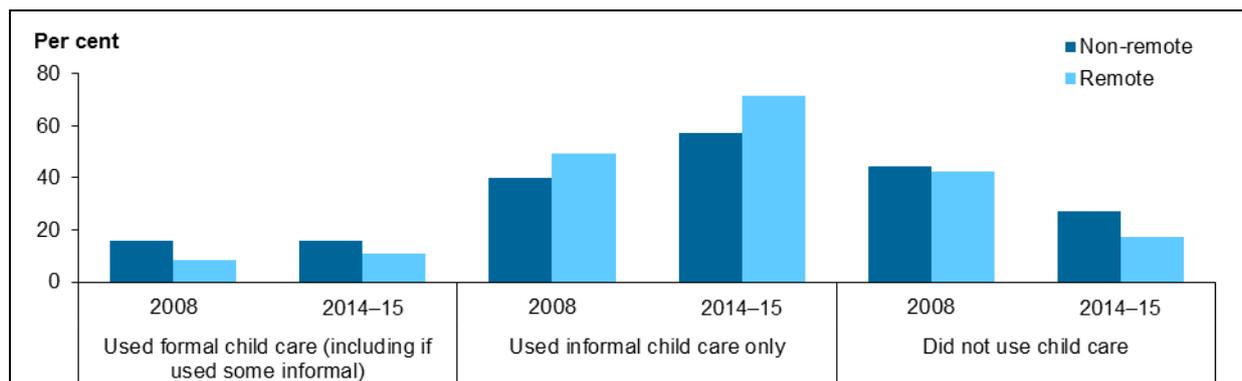
Changes in hospitalisation rates may reflect an increase in the prevalence of underlying diseases, improved access to treatment, or improved Indigenous identification in hospitalisation data.



Family considerations

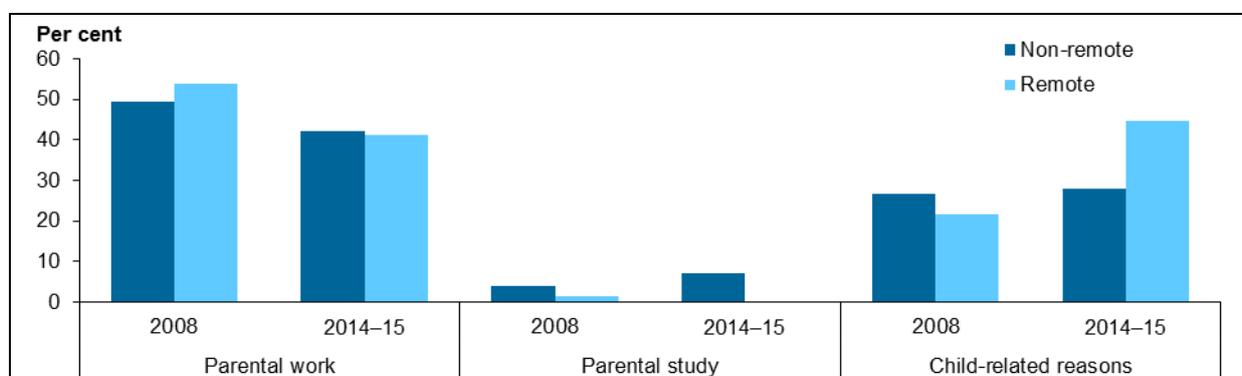
Family considerations, such as child care responsibilities, were associated with a lower rate of employment among Indigenous Australians. Between 2008 and 2014–15, the use of formal child care for Indigenous children aged 0–12 has remained relatively unchanged, but using informal child care as the only source of child care has substantially increased (Figure 7.33). Further, the use of informal child care as the only source of care is more common for Indigenous children living in remote areas than in non-remote areas.

The main reasons for the use of formal care for Indigenous children aged 0–12 were parental work and child-related reasons in both 2008 and 2014–15 (Figure 7.34). Between 2008 and 2014–15, there was a decrease in the proportion of Indigenous children in formal care in both remote and non-remote areas because their parents worked.



Source: AIHW analysis of ABS 2014-15 NATSISS (CURF).

Figure 7.33: Use of child care by Indigenous children aged 0-12, by type of care and remoteness, 2008 and 2014-15



Note: Child-related reasons include 'a good way to prepare (child) for school', 'good for child's intellectual or language development' and 'good for child's social development'. Categories not presented in this chart include 'to give parents a break or time alone' and 'other reasons'.

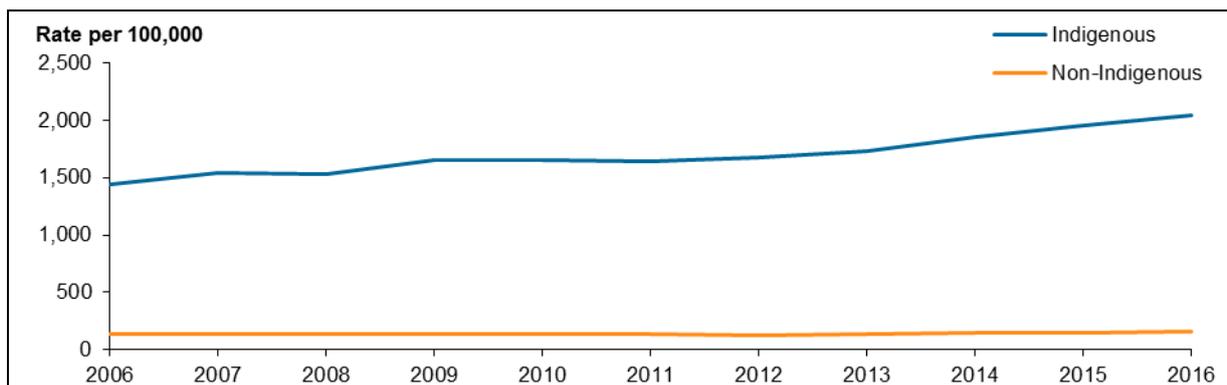
Source: AIHW analysis of ABS 2014-15 NATSISS (CURF).

Figure 7.34: Main reason for formal child care use by Indigenous children aged 0-12, selected reasons, by remoteness, 2008 and 2014-15

Criminal justice

Being arrested in the previous 5 years was associated with lower rates of employment among Indigenous Australians. The proportion of Indigenous Australians aged 15-64 who had been arrested in the previous 5 years was similar in both 2008 and 2014-15 (16% and 15%, respectively) (AIHW analysis of 2008 and 2014-15 NATSISS).

Between 2006 and 2016, the age-standardised imprisonment rate among Indigenous adults increased by 37%, and the gap between the rates for Indigenous and non-Indigenous Australians widened (Figure 7.35).



Source: AIHW 2017.

Figure 7.35: Age-standardised imprisonment rate (per 100,000 adult population), by Indigenous status, 2006 to 2015

7.4 Data limitations and measurement issues

Measurement of employment rates among Indigenous Australians requires accurate and timely data. Key data issues are discussed in this section.

7.4.1 Frequency of Indigenous employment data

Relevant data about employment for Indigenous Australian are available from Indigenous specific surveys on a 3-yearly basis and supplementary data are available from the Census on a 5-yearly basis. The lack of more frequent data collections limits the ability to more accurately track changes in Indigenous employment over time. Ideally, information on Indigenous employment would be available annually.

7.4.2 Use of employment rates

The measure for this COAG target relates specifically to the employment-to-population ratio of the working age population. This only covers part of the picture for employment outcomes.

The NIRA performance indicators track progress on two supporting measures—the Indigenous unemployment rate and the Indigenous labour force participation rate—however, these are not included as formal COAG target measures. Tracking these as part of the target may show the Indigenous employment picture more holistically.

In addition, it could be useful to also track:

- number of hours worked among those who are employed
- share of employment income to total income (including government payments)
- transition of young people between education and employment—the concept of working age (traditionally defined as people aged 15–64) is more fluid than in the past; for example, extended engagement in formal education results in delayed entry into the labour force for many young people. As well, at the other end of the age spectrum, an increasing proportion of older Australians remain engaged in paid employment beyond the traditional retirement age, while at the same time, a considerable number retire before age 65
- contribution of various age groups—for example, changes in youth employment are a better indicator of the extent to which generational change is occurring (rather than using a population average). The contribution for other age groups (such as those of prime

working age) may also be useful to understand employment trends. Further work is required to determine the groups that would provide the most useful insights.

- structural changes in the jobs market may have different effects on employment rates in different population groups (for example, if demand for low skilled labour decreases this may reduce employment rates more for those with lower education levels).

7.5 Bringing it together

7.5.1 An overview

The COAG target for employment is to halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade (by 2018).

For people aged 15–64:

- in 2014–15, there was an Indigenous to non-Indigenous employment gap of 24.2 percentage points (an employment rate of 48.4% for Indigenous Australians and 72.6% for non-Indigenous Australians)
- in 2008, when classifying CDEP participants as:
 - employed—there was an Indigenous to non-Indigenous employment gap of 21.2 percentage points
 - not employed—there was an Indigenous to non-Indigenous employment gap of 26.8 percentage points.

Irrespective of whether CDEP participants were classified as employed in 2008 (and accounting for statistical uncertainties across two surveys used), the employment gap in 2014–15 is outside that required for the gap to be halved by 2018. The employment gap has not changed significantly and the target is not on track (PM&C 2017).

Since finalising the analysis for this report, data based on the 2016 Census have become available; these newly available data, reported in the *Closing the Gap Prime Minister's Report 2018* (PM&C 2018), indicate that progress towards this target is still not on track.

In order to make progress towards the target, it is essential to understand the drivers of Indigenous employment, as well as how these vary across Indigenous subgroups and over time. Based on the available literature and new AIHW analysis of the 2014–15 NATSISS, key drivers include education, English language proficiency, health, family considerations, and contact with the criminal justice system.

7.5.2 Examples of opportunities for further progress

Drawing from the analyses presented in this chapter, examples of opportunities for further progress are provided in this section. The evidence presented in this chapter demonstrates that both demand and supply side factors impact Indigenous employment outcomes.

There is however a need for more evidence on what works best to improve employment rates among Indigenous Australians (Productivity Commission 2015).

The main drivers of Indigenous employment on the supply side of the labour market include:

- education, especially in areas of skill shortages in the local labour market
- family considerations, including the availability and cost of child care when transitioning to, and in, employment

- the health of Indigenous Australians
- support for Indigenous Australians during and after they have had contact with the criminal justice system.

Indigenous job seekers may benefit from alternative, complementary pathways and assistance in finding employment, such as small business support, literacy and numeracy education, environmentally-focused work experience, cultural mentoring and inclusion in the roll-out of government programs. For example, when rolling out government programs that offer employment opportunities, Indigenous job seekers could be transitioned into such positions by including on-the-job and formal training.

Strong attachment to culture for Indigenous Australians is associated with greater wellbeing and better performance against a range of socioeconomic indicators, including employment (Dockery 2010). Art and cultural production offer considerable potential for contributing to the economy in a manner that also enhances cultural sustainability and resilience, particularly in remote towns, settlements, homelands and outstations across Australia (Throsby & Petetskaya 2015).

Consideration could also be given to how job seeking behaviours may differ between Indigenous and non-Indigenous Australians—for example, Gray & Hunter (2005) found that a higher proportion of unemployed Indigenous Australians relied on their friends and relatives to find employment, compared with non-Indigenous Australians (71% and 47%, respectively).

While this chapter focused on the supply side of the labour market, demand-side factors—for example, location of jobs, employer discrimination—may also present opportunities for further progress. An example of a demand-side initiative in the labour market is the Indigenous Procurement Policy, introduced in July 2015. This program seeks to increase the share of goods and services delivered by Indigenous-owned businesses in Australian Government procurement. In the first 18 months of its operation, 708 Indigenous businesses have won over \$434 million in contracts across a range of industries (PM&C 2017). The focus of this program is as a demand-side initiative aimed at improving overall Indigenous employment; this occurs because Indigenous-owned businesses employ a substantially higher share of Indigenous workers than non-Indigenous businesses (Hunter 2014).

7.6 References

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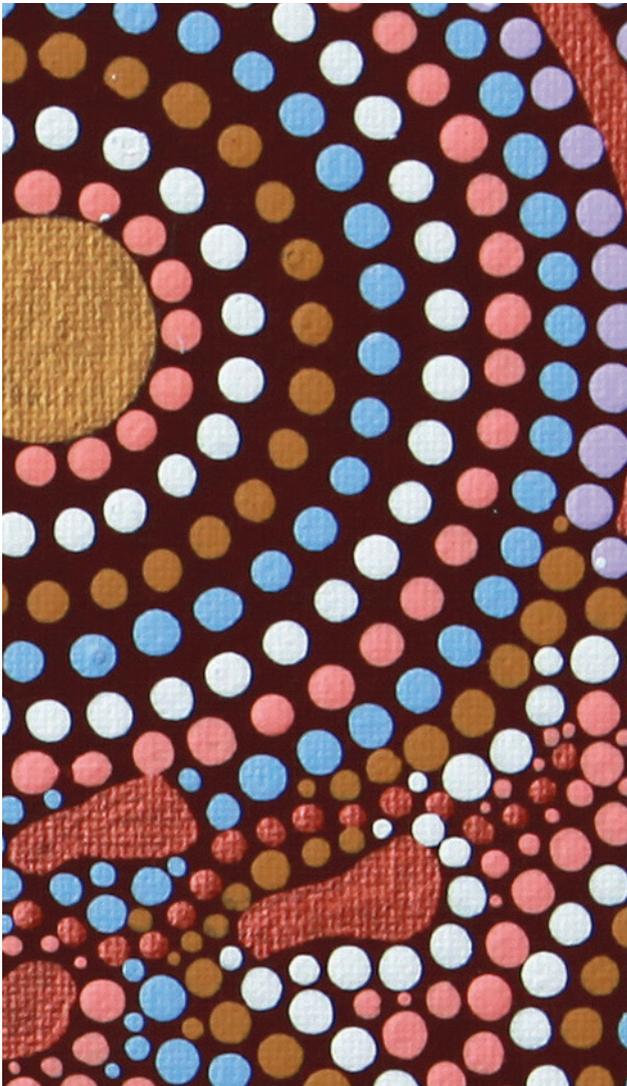
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Chapter 8

Life expectancy target

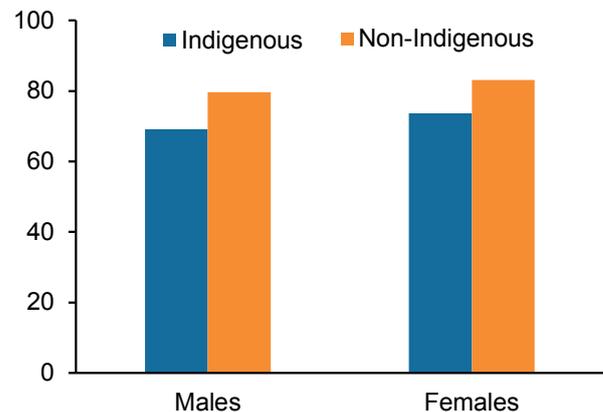


COAG target: Close the gap in life expectancy between Indigenous and non-Indigenous Australians within a generation (by 2031).

Current picture

- In 2010–2012, Indigenous life expectancy at birth was 69.1 years for males and 73.7 years for females.
- The gap between Indigenous and non-Indigenous life expectancy was 10.6 years for males, and 9.5 years for females (estimates for non-Indigenous life expectancy were 79.7 years for males and 83.1 years for females) (Figure 8a).
- Indigenous life expectancy is estimated to be lower in the Northern Territory than in the three other jurisdictions of sufficient population size and with adequate quality of deaths data to calculate Indigenous estimates (New South Wales, Queensland and Western Australia) (Figure 8b).
- During the period 2011–2015, in the five jurisdictions with adequate quality data (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory), the overall age-standardised mortality rate for Indigenous Australians was 1.7 times the rate for non-Indigenous Australians.
- In 2010–2012, deaths in the 55–74 age group contributed most to the life expectancy gap for both males (42% of the gap) and females (45% of the gap). The very young (0–14) and very old (75 and over) made a much smaller contribution to the life expectancy gap (5–15%).

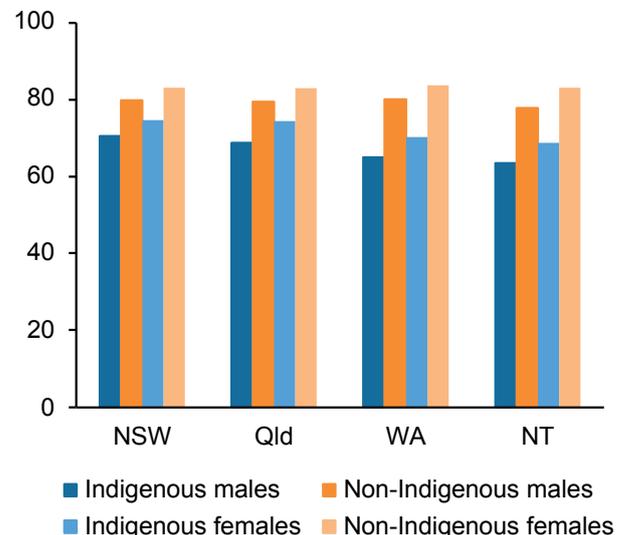
Life expectancy (years)



Source: ABS 2013b.

Figure 8a: Life expectancy at birth, by Indigenous status and sex, 2010–2012

Life expectancy (years)

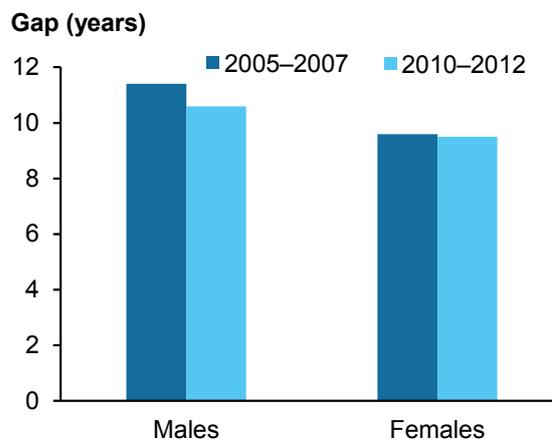


Source: ABS 2013b.

Figure 8b: Life expectancy at birth, by state and territory, Indigenous status and sex, 2010–2012

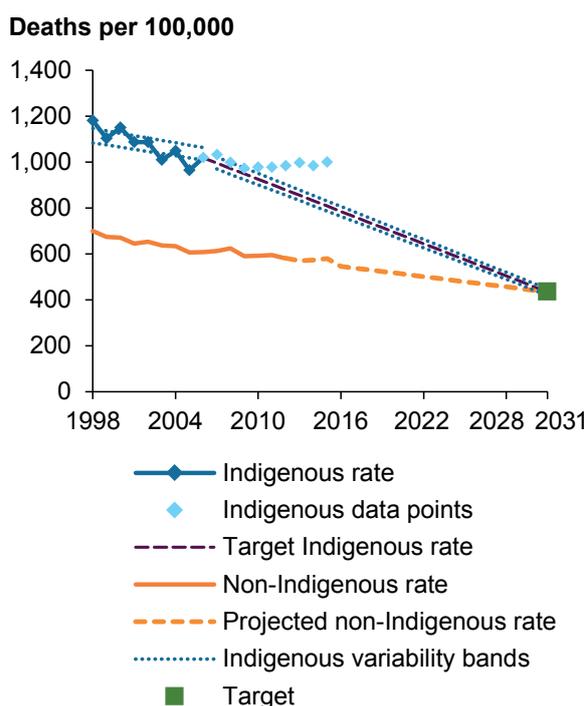
Has there been progress?

- The gap in life expectancy is a relative measure; its size is influenced by changes in life expectancy in both the Indigenous and non-Indigenous populations.
- Between 2005–2007 and 2010–2012, the life expectancy gap decreased slightly for both males and females (Figure 8c).
- Based on current estimates, life expectancy for Indigenous males has increased by 0.32 years per year since 2005–2007, and by 0.12 years per year for Indigenous females. This pace is not sufficient to meet the target.
- Over the period from 1998 to 2015, the overall Indigenous mortality rate declined significantly, by 15%, but there was no significant change in the gap between Indigenous and non-Indigenous mortality rates (Figure 8d).
- Over this same period, there were significant declines in the Indigenous mortality rate for circulatory (43%) and respiratory diseases (24%), and a significant increase for cancer (21%).
- Based on data for 2010–2012, the target is not on track.



Source: ABS 2013b.

Figure 8c: Gap in life expectancy at birth between Indigenous and non-Indigenous Australians, by sex, 2005–2007 and 2010–2012

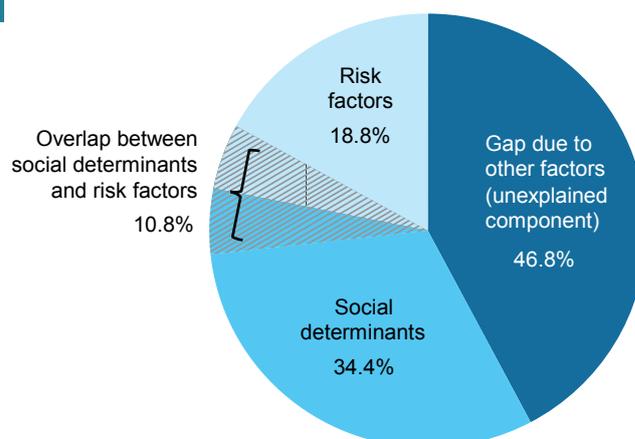


Source: AHMAC 2017.

Figure 8d: All cause age-standardised mortality rates, projections and target rates, by Indigenous status, NSW, Qld, WA, SA and the NT combined, 1998 to 2031

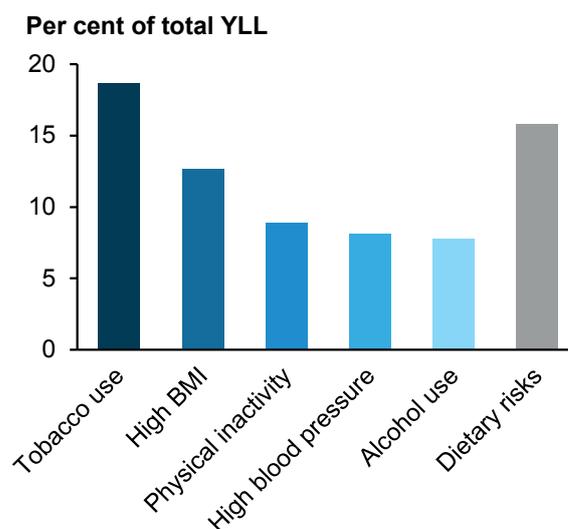
Additional analysis and key drivers

- Health outcomes and life expectancy are influenced by a variety of factors, acting both singularly and through complex interactions. Available evidence suggests that key drivers include socioeconomic status and other social determinants, risk factors (for example, tobacco use), availability and cultural competency of health services.
- Analyses of the 2011–13 Australian Health Survey estimated that selected social determinants—such as education, employment status, and household income—accounted for around one-third (34%) of the gap in health outcomes between Indigenous and non-Indigenous adults aged 15 to 64. Risk factors, including smoking, obesity, alcohol use and diet, accounted for around one-fifth (19%) of the gap (Figure 8e).
- Differences in access to health care also affect gaps in health outcomes, but due to a lack of comparable data the contribution of this component cannot currently be measured. In 2012–13, 30% of Indigenous Australians reported that they needed to, but did not, see a health care provider in the previous 12 months. Barriers to seeking care included cost and waiting time.
- The 2011 Australian Burden of Disease Study included estimates for 29 modifiable risk factors grouped into four broad categories: behavioural, metabolic, environmental, and dietary risks. The joint effect of all 29 risk factors accounted for 47% of the fatal burden experienced by Indigenous Australians. The individual risk factors contributing most to fatal burden among Indigenous Australians were tobacco use (19%), high body mass (13%) and physical inactivity (9%) (Figure 8f). Dietary factors as a group contributed 16% of the total fatal burden experienced by Indigenous Australians.



Source: AHMAC 2017 (based on AIHW analyses).

Figure 8e: Proportion of the health gap explained by differences in social determinants and risk factors between Indigenous and non-Indigenous Australians, 2011–13



Note: Dietary risks is the joint effect of 13 dietary risk factors.

Source: AIHW analyses of Burden of Disease database.

Figure 8f: Proportion of fatal burden (YLL) attributable to leading risk factors, Indigenous Australians, 2011

Data limitations and measurement issues

There are several key data issues affecting the ability to monitor the life expectancy target.

Deaths and population data issues

- There are problems with the quality of Indigenous identification in the deaths data; Indigenous deaths data are reported only for five jurisdictions (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory).
- The quality of Indigenous identification in both deaths data and in Census data (used to derive the population denominator) has changed over time, leading to challenges in accurately monitoring trends.

Frequency of estimates

- The ABS uses Census deaths linked data to compile Indigenous life tables, therefore official Indigenous life expectancy estimates based on this method can be produced only every 5 years.
- Different and more regular methods for estimating life expectancy could be explored.

8.1 Background

Life expectancy at birth is widely used internationally as a measure of the general health of populations. It measures the average number of years that a group of newborn babies would be expected to live if current death rates at each age cohort remained the same.

Over the last 125 years, life expectancy at birth for the Australian population has increased by more than 30 years, to 80.4 years for males and 84.5 for females in 2013–2015 (up from 47 years for males and 51 for females in 1885) (ABS 2014, 2016). However, life expectancies for Indigenous Australians are considerably shorter than life expectancies for non-Indigenous Australians.

The COAG has committed to closing the gap in life expectancy between Indigenous and non-Indigenous Australians within a generation (by 2031)—see Box 8.1.

Box 8.1: Life expectancy—Closing the Gap target and data sources

The COAG target for life expectancy is: Close the gap in life expectancy between Indigenous and non-Indigenous Australians within a generation (by 2031).

Data sources for COAG target

The ABS uses linked Census and deaths data to compile Indigenous life tables and produce official life expectancy estimates every 5 years. At the time of this analysis, the most recent life expectancy estimates available for inclusion in this chapter were for 2010–2012. Indigenous under-identification in deaths registrations was accounted for in life table calculations using adjustment factors derived from the ABS Census Data Enhancement Indigenous Mortality Study (2011–12) (ABS 2013b). The ABS adjustment factors take into account under-identification in both the numerator (deaths) and the denominator (population).

Progress for the life expectancy target is also tracked annually using mortality rates. At the time of analysis the most recent deaths data available for inclusion in this chapter were for 2015. Deaths data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the ABS. The data are maintained by the AIHW in the National Mortality Database (NMD). In this chapter, Indigenous deaths are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined. These five jurisdictions have adequate levels of Indigenous identification in their mortality data; the remaining jurisdictions have lower levels of identification and a small number of Indigenous deaths. The denominators for the mortality rates are from the ABS estimated resident population (ERP).

Other data sources used in this chapter

This chapter also draws on data from the 2011 Australian Burden of Disease Study (AIHW 2016a).

See Appendix F for further information on these data sources.

This chapter provides detailed information on life expectancy, including:

- the latest available data and progress towards the COAG target
- differences by state and territory, remoteness, age and causes of death, and an analysis of the diseases that contribute most to the fatal burden
- identification of key drivers based on evidence from the literature
- a discussion of data limitations and measurement issues.

Note that the gap in life expectancy is a relative measure; the size of the gap and trend are influenced by changes not only in Indigenous life expectancy, but also in the life expectancy of the non-Indigenous population.

8.2 Current picture and progress

8.2.1 National life expectancy

The latest life expectancy data show a 10.6 year gap between Indigenous and non-Indigenous males and a 9.5 year gap between Indigenous and non-Indigenous females (Table 8.1). In 2010–2012, the life expectancy at birth for Indigenous Australians was estimated to be 69.1 years for males and 73.7 for females. By comparison, the life expectancy at birth for non-Indigenous Australians was 79.7 years for males and 83.1 for females.

Table 8.1: Life expectancy at birth, by Indigenous status and sex, 2005–2007 and 2010–2012

Year	Indigenous		Non-Indigenous		Difference (years)	
	Males	Females	Males	Females	Males	Females
2005–2007	67.5	73.1	78.9	82.6	11.4	9.6
2010–2012	69.1	73.7	79.7	83.1	10.6	9.5

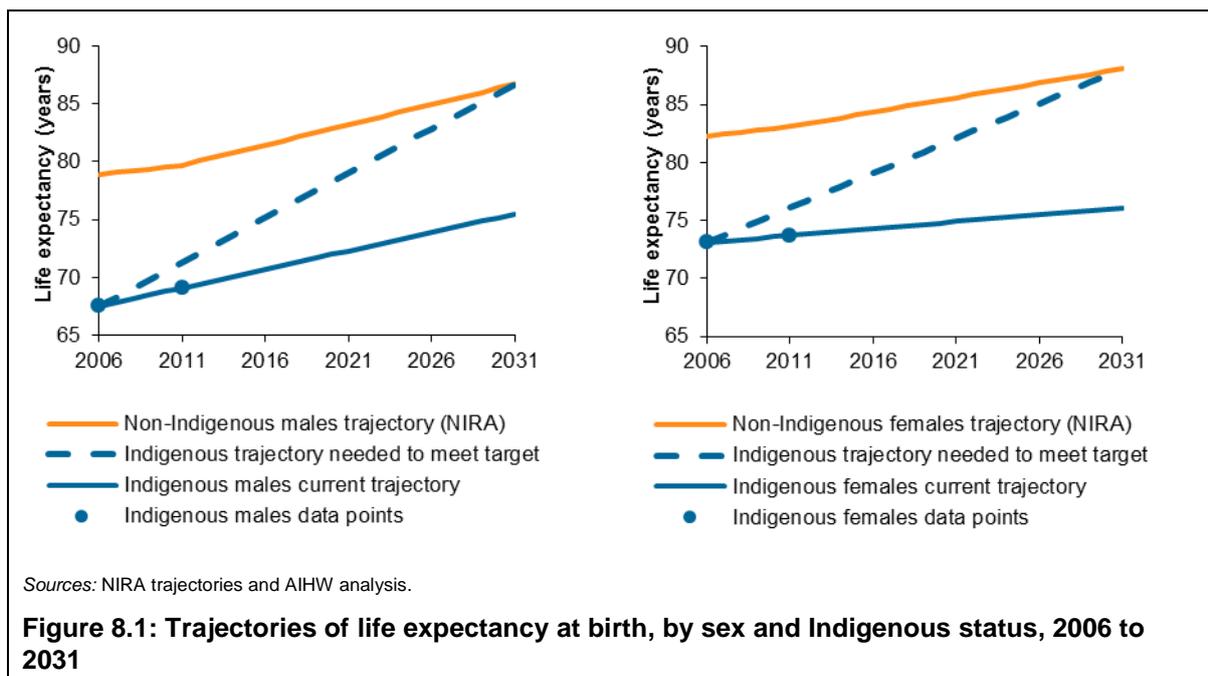
Source: ABS 2013b.

Between 2005–2007 and 2010–2012, the gap in life expectancy between Indigenous and non-Indigenous Australians decreased from 11.4 to 10.6 years for males, and from 9.6 to 9.5 for females. Although the life expectancy of Indigenous Australians is slowly improving, the current rate of progress indicates that the target is not on track. Meeting the target is made more challenging as non-Indigenous life expectancy is expected to increase over the coming years (PM&C 2016).

Based on the estimates of life expectancy at birth for 2005–2007 and 2010–2012, life expectancy for Indigenous males has increased by an average of 0.32 years per year since 2005–2007, and by 0.12 years per year for Indigenous females. This is well below what would be required to close the gap in life expectancy between Indigenous and non-Indigenous Australians by 2031 (Figure 8.1).

Life expectancy estimates move slowly, currently at around 0.25 years per year for the Australian population. Globally, over the period 1950–55 to 2002, average life expectancy at birth increased by almost 20 years (from 46.5 to 65.2 years), representing a global average increase of approximately 0.33 years per year (WHO 2003).

Including the projected gains in non-Indigenous life expectancy, in order to close the gap there would need to be a 15–19 year increase in Indigenous life expectancy in the 25-year period 2006 to 2031. Based on historical long-term changes in life expectancy (ABS 2014), it has taken over 70 years to see equivalent increases for the total Australian population. This provides contexts on the difficulty in closing the gap in life expectancy between Indigenous and non-Indigenous Australians over a 25-year time period.



8.2.2 Life expectancy by jurisdiction and remoteness

Life expectancy by state and territory

Currently four Australian jurisdictions have populations of sufficient size and adequate quality of deaths data to calculate Indigenous life expectancy estimates: New South Wales, Queensland, Western Australia and the Northern Territory. Indigenous life expectancy was lower in the Northern Territory than in the three other jurisdictions. Differences in life expectancy between Indigenous and non-Indigenous Australians in 2010–2012 were largest for males in Western Australia (15.1 years) and for females in the Northern Territory (14.4 years) (Figure 8.2; Table 8.2).

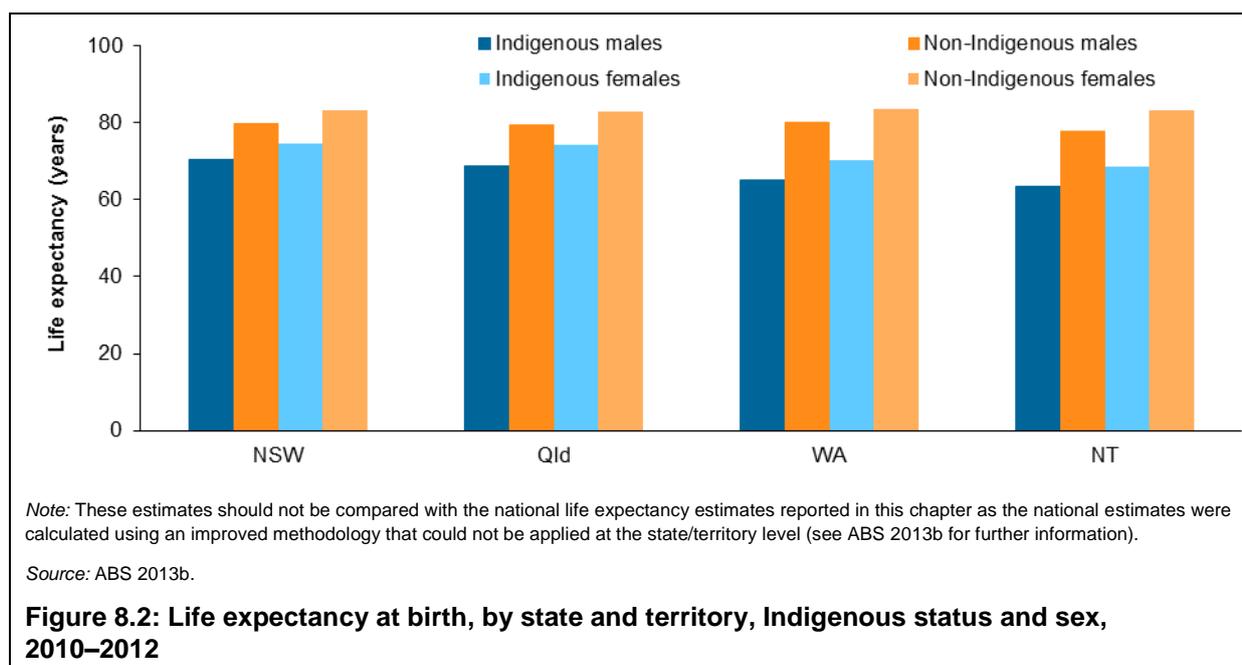


Table 8.2: Life expectancy at birth, by state and territory, Indigenous status and sex, 2005–2007 and 2010–2012

State/territory	Indigenous		Non-Indigenous		Difference (years)	
	Males	Females	Males	Females	Males	Females
2005–2007						
New South Wales	68.3	74.0	78.8	82.6	10.5	8.6
Queensland	67.1	72.7	78.8	82.7	11.8	10.0
Western Australia	64.5	70.0	79.2	82.9	14.7	12.9
Northern Territory	61.5	69.4	75.5	81.0	14.0	11.6
2010–2012						
New South Wales	70.5	74.6	79.8	83.1	9.3	8.5
Queensland	68.7	74.4	79.4	83.0	10.8	8.6
Western Australia	65.0	70.2	80.1	83.7	15.1	13.5
Northern Territory	63.4	68.7	77.8	83.1	14.4	14.4

Note: These estimates should not be compared with the national life expectancy estimates reported in this chapter as the national estimates were calculated using an improved methodology that could not be applied at the state/territory level (see ABS 2013b for further information).

Source: ABS 2013b.

Life expectancy by remoteness

Life expectancy estimates by remoteness area are available for two grouped areas: *Major cities and inner regional* combined and *Outer regional, remote and very remote* combined. In 2010–2012, Indigenous males and females living in *Major cities and inner regional* areas had slightly higher life expectancy estimates than Indigenous males and females living in *Outer regional, remote and very remote* areas (Table 8.3); however, the differences were not significant (ABS 2013b). For males, differences in life expectancy between Indigenous and non-Indigenous Australians were largest in *Major cities and inner regional* areas (11.9 years). For females, the largest difference was observed in *Outer regional, remote and very remote* areas (10.2 years).

Table 8.3: Life expectancy at birth, by Indigenous status, sex and remoteness, 2010–2012

Remoteness areas	Indigenous		Non-Indigenous		Difference (years)	
	Males	Females	Males	Females	Males	Females
Major cities and inner regional combined	68.0	73.1	79.9	83.0	11.9	9.9
Outer regional, remote and very remote combined	67.3	72.3	78.5	82.5	11.2	10.2

Note: These estimates should not be compared with the national life expectancy estimates reported in this chapter as the national estimates were calculated using an improved methodology that could not be applied at the remoteness area level (see ABS 2013b for further information).

Source: ABS 2013b.

8.2.3 Mortality patterns and trends

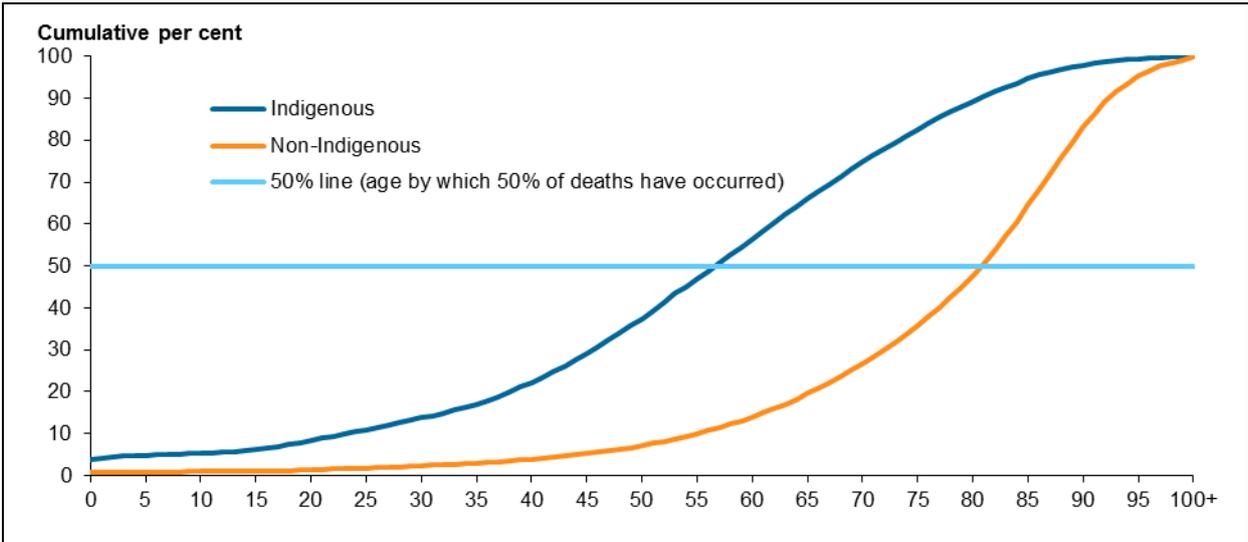
The ABS uses Census deaths linked data to compile Indigenous life tables. Therefore, official Indigenous life expectancy estimates based on this method can be produced only every 5 years. Given the time lag between life expectancy estimates, mortality rates are used as a proxy measure to track progress towards the life expectancy target, with mortality data available on an annual basis.

Mortality data are presented for the 5-year period 2011–2015 because, at the time of analysis, this was the period for which the most recent data were available (5 years of deaths data are combined for reporting of Indigenous mortality to overcome the relatively small number of Indigenous deaths from some conditions and for some age groups each year). All of the mortality data included in this section relate to the five jurisdictions for which the quality of Indigenous identification is considered to be of acceptable quality for reporting: New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.

Mortality by age

Much of the gap between Indigenous and non-Indigenous life expectancy is due to the earlier age at death of Indigenous Australians compared with non-Indigenous Australians. Most deaths for Indigenous Australians occur in the middle age groups. In contrast, most deaths for non-Indigenous Australians occur in the older age groups.

Figure 8.3 shows the differences between the Indigenous and non-Indigenous populations in terms of the ages when death occurs. The differences are very small at very young ages, but become larger at later ages of death. The gap between the Indigenous and non-Indigenous curves represent the gap in mortality that must be bridged to close the gap in life expectancy between Indigenous and non-Indigenous Australians. In 2011–2015, over half of Indigenous deaths occurred before age 60, whereas 50% of non-Indigenous deaths did not occur until around age 81. These results partly reflect the younger age profile of the Indigenous population.



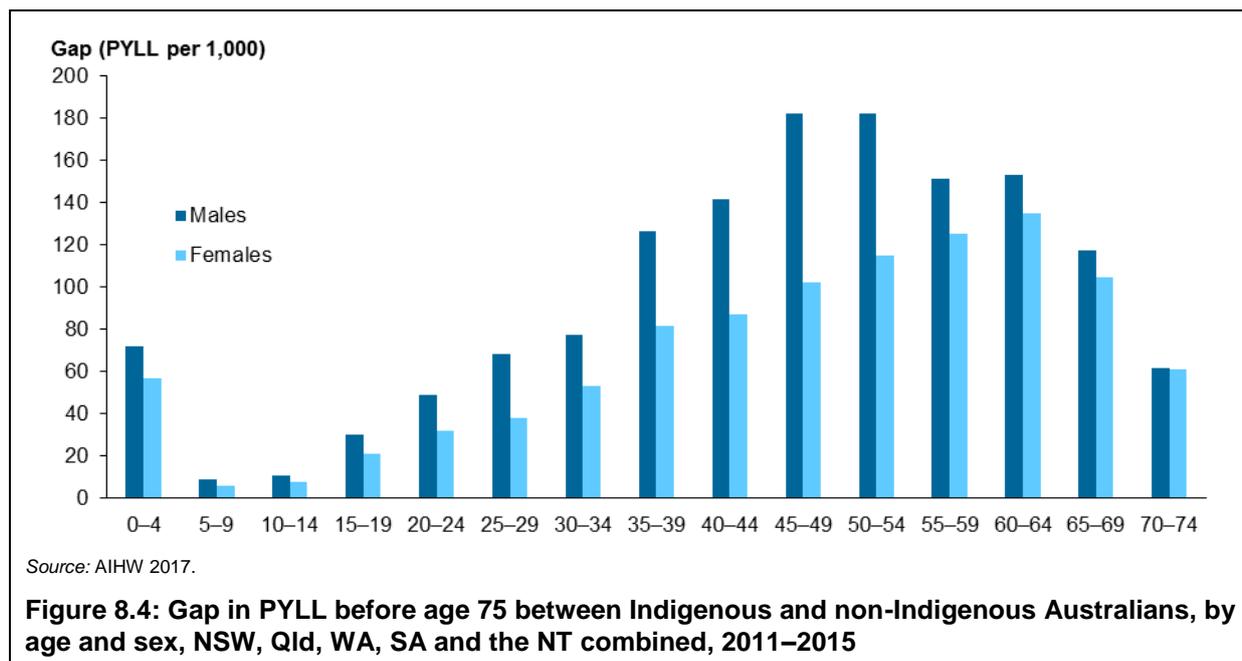
Source: AIHW analysis of NMD.

Figure 8.3: Cumulative percentage of deaths occurring at specified ages, by Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015

Potential years of life lost

Potential years of life lost (PYLL) is a measure of premature or untimely death. It represents the total number of years of life lost before a given age (for example, 75). PYLL give greater weight to deaths in younger age groups. The impact that these early deaths have at the population level can be measured by the PYLL rate, which totals all the PYLL for all the deaths at each age group divided by the number of people in that age group.

In 2011–2015, based on PYLL rates, the largest gaps between Indigenous and non-Indigenous Australians were in the 45–64 age groups (Figure 8.4). For all age groups, the PYLL gap was higher for males than females.



Which age groups contribute most to the life expectancy gap?

Previous analysis by the AIHW (2016b) examined which age groups contribute most to the life expectancy gap between Indigenous and non-Indigenous Australians. The results showed that deaths in the 55–74 age group contributed most to the life expectancy gap in 2010–2012 for both males and females, with each 5-year age group contributing around 1 year to the life expectancy gap (Table 8.4). This age group contributed 42% to the total life expectancy gap for males and 45% to the total life expectancy gap for females. The 35–54 age group made the second largest contribution to the life expectancy gap for both males and females (31% and 26%, respectively). The very young and very old made a smaller contribution to the gap.

Table 8.4: Contribution to the life expectancy gap, by age and sex, 2010–2012

Age group (years)	Life expectancy gap (years)		Life expectancy gap (%)	
	Males	Females	Males	Females
0–14	0.5	0.5	4.7	5.3
15–34	1.3	0.8	12.3	8.4
35–54	3.3	2.5	31.1	26.3
55–74	4.4	4.3	41.5	45.3
75+	1.0	1.4	9.4	14.7
Total	10.6	9.5	100.0	100.0

Note: Components may not sum to totals due to rounding.

Source: AIHW 2016b (based on AIHW analysis of NMD and ABS 2013b).

Mortality by broad cause of death

This section provides an overview of the main causes of death for Indigenous Australians. Data are presented for the broad causes of death as defined by the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) chapter levels. See Table 8.5 for a description of the ICD-10 chapter levels that are the main broad causes of death for Indigenous Australians.

In the 5-year period 2011–2015, the top three broad causes of death among Indigenous Australians were circulatory diseases (24%, 3,148 deaths), cancer and other neoplasms (21%, 2,799 deaths) and external causes (15%, 1,995 deaths) (Figure 8.5). Circulatory diseases and cancer were also the most common causes of death among non-Indigenous Australians. After adjusting for differences in the age structures of the two populations, circulatory diseases were the largest contributor to the gap in deaths rates between Indigenous and non-Indigenous Australians, contributing 24% of the gap. This was followed by endocrine disorders (including diabetes) (19% of the gap) and cancer and other neoplasms (15%) (Table 8.6). During the period 2011–2015, in the five jurisdictions with adequate quality data (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory), the overall age-standardised mortality rate for Indigenous Australians was 1.7 times the rate for non-Indigenous Australians.

Overall, the top five broad causes of death for Indigenous males and females were the same; however, external causes accounted for a larger proportion of deaths for males (18% for Indigenous males, 11% for Indigenous females) (Figure 8.6).

Table 8.5: Description of the main broad causes of death for Indigenous Australians, based on ICD-10 chapter levels

ICD-10 chapter	Description and examples (not exhaustive list)	ICD-10 codes
Certain infectious and parasitic diseases	Diseases generally recognised as communicable or transmissible, including tuberculosis, human immunodeficiency virus/acquired immune deficiency syndrome, influenza, gastrointestinal infections and measles.	A00–B99
Cancer and other neoplasms	Includes both malignant neoplasms (cancers) and benign, in situ and uncertain neoplasms. Includes diseases such as breast cancer, stomach cancer, bowel cancer and pancreatic cancer.	C00–D48
Endocrine disorders (including diabetes)	Includes diabetes (excluding gestational diabetes), disorders of the thyroid gland, nutritional disorders and conditions affecting metabolic processes.	E00–E90
Mental and behavioural disorders	Encompasses a broad range of conditions including major depressive disorder, dysthymia, bipolar disorder, anxiety disorders, alcohol and drug use disorders, schizophrenia and dementia.	F00–F99
Diseases of the nervous system	Includes diseases and disorders of the central and peripheral nervous system, such as epilepsy, Parkinson disease, multiple sclerosis and motor neurone disease.	G00–G99
Circulatory diseases	Includes conditions affecting the heart and blood vessels, such as coronary heart disease, stroke, rheumatic heart disease and cardiomyopathy.	I00–I99

(continued)

Table 8.5 (continued): Description of the main broad causes of death for Indigenous Australians, based on ICD-10 chapter levels

ICD-10 Chapter	Description and examples (not exhaustive list)	ICD-10 codes
Respiratory diseases	Respiratory diseases are those that affect the air passages, including the nasal passages, the bronchi and the lungs; acute illnesses such as influenza, bronchitis and pneumonia, or chronic illnesses such as asthma.	J00–J99
Digestive system diseases	Includes acute and chronic disorders of the digestive system, such as diseases of the oesophagus, stomach, liver, gallbladder and pancreas. Also includes oral disorders such as dental caries, periodontal disease and diseases of the salivary glands, lips and tongue.	K00–K93
Diseases of the genitourinary system	Includes a range of diseases, such as chronic kidney disease, enlarged prostate, kidney stones, cystitis and endometriosis.	N00–N99
Symptoms, signs and abnormal clinical findings, n.e.c.	Categories in this chapter include less well-defined conditions and symptoms and include cases for which no specific diagnosis can be made. Includes AIDS.	R00–R99
External causes	Includes environmental events and circumstances that led to the injury; for example, road traffic accident injuries, suicide, self-inflicted injuries, falls or poisoning (such as the toxic effects of medicinal or other substances).	V00–Y98

n.e.c. = not elsewhere classified

Source: WHO 2014.

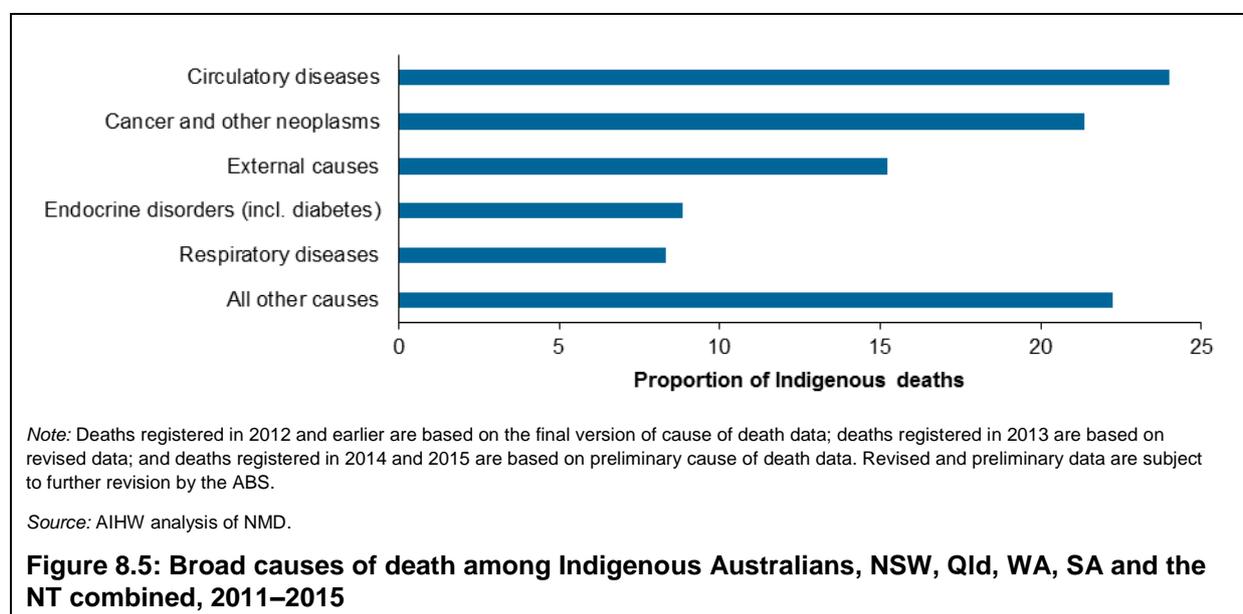


Table 8.6: Broad causes of death (based on ICD-10 chapters), by Indigenous status, NSW, Qld, WA, SA and the NT combined, 2011–2015

Broad cause of death	Indigenous		Non-Indigenous		Rate difference ^(b)	Rate difference % ^(c)
	Number of deaths	Rate (per 100,000) ^(a)	Number of deaths	Rate (per 100,000) ^(a)		
Circulatory diseases	3,148	271.4	155,970	173.3	98.1	23.8
Cancer and other neoplasms	2,799	232.1	155,640	171.6	60.6	14.7
External causes	1,995	81.3	32,111	38.4	42.9	10.4
Endocrine disorders (incl. diabetes)	1,158	100.6	20,205	22.5	78.1	19.0
Respiratory diseases	1,092	100.6	45,387	50.3	50.3	12.2
Digestive system diseases	716	46.0	18,139	20.2	25.8	6.3
Diseases of the nervous system	333	26.1	25,579	28.6	-2.5	-0.6
Certain infectious and parasitic diseases	322	20.8	9,181	10.3	10.6	2.6
All other causes	1,543	112.8	57,632	64.8	48.0	11.7
Total	13,106	991.7	519,844	580.0	411.7	100.0

(a) Directly age-standardised using the 2001 Australian standard population, by 5-year age groups up to 75+.

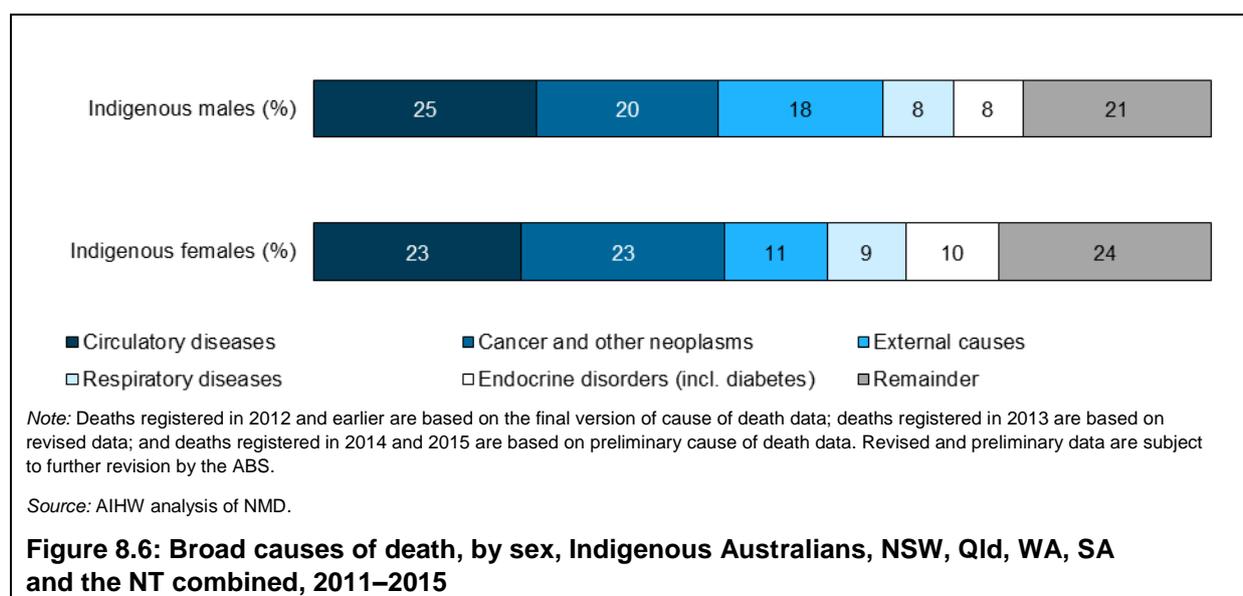
(b) Rate difference is the mortality rate for Indigenous Australians minus the mortality rate for non-Indigenous Australians.

(c) Rate difference per cent is the rate difference for each broad cause divided by the rate difference for all causes.

Notes

1. Components may not sum to totals due to rounding.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW 2017.



What causes of death contribute most to the life expectancy gap?

Previous analysis by the AIHW examined which broad causes of death contributed most to the life expectancy gap (AIHW 2016b). The analysis was based on life expectancy estimates and broad cause of death data during the 3-year period 2010–2012.

The results of this analysis showed that the largest contributors to the life expectancy gap for males were circulatory diseases (2.9 years), external causes (1.9 years) and cancer and other neoplasms (1.5 years). For females, the largest contributors were also circulatory diseases (2.7 years), cancer and other neoplasms (1.6 years) and external causes (1.3 years).

The largest contributors to the gap differed across the age groups. For the 0–14 age group, the main causes of death contributing to the gap were conditions originating in the perinatal period. External causes contributed most to the gap in life expectancy in the 15–34 age group for both males and females. For age groups 35–54, 55–74 and 75 and over, circulatory diseases contributed most to the gap in life expectancy for both males and females.

The findings suggest that chronic diseases, which usually occur in the 35–74 age group in the Indigenous population, are responsible for the majority of the life expectancy gap (AIHW 2016b). In comparison, the relative contribution of infant and child deaths to the gap is small.

Detailed causes of death by age

For the remainder of this section, the focus is on ages 15 and over, as a previous analysis (AIHW 2016b) indicate that the age group 0–14 makes the smallest contribution to the life expectancy gap between Indigenous and non-Indigenous Australians. See Chapter 2 for analysis of causes of death for infants and young children.

In the 5-year period 2011–2015, external causes of death dominated as the leading broad cause of death in the young adult and early working life age groups (15–24, 25–34, 35–44) for both Indigenous and non-Indigenous Australians, although the proportional contribution of external causes decreased with age (Table 8.7). Circulatory diseases and cancer and other neoplasms were ranked in the top three broad causes of death for both Indigenous and non-Indigenous Australians for all age groups from age 25, and their contribution to the proportion of deaths within each age group generally increased with age.

For young adults aged 15–24, the more detailed causes of death data show that intentional self-harm and car accident injuries were the two leading sub-chapter causes of death for both Indigenous and non-Indigenous Australians (Table 8.8). Intentional self-harm by hanging, strangulation and suffocation accounted for the highest number of deaths within the intentional self-harm sub-chapter (94% of Indigenous young adults who died from intentional self-harm, 234 of 250 deaths; 71% for non-Indigenous young adults, 760 of 1,071 deaths).

Intentional self-harm continued to appear in the top three sub-chapter causes of deaths for Indigenous and non-Indigenous adults aged 25–34 and 35–44, but in smaller proportions than for young adults (Table 8.8). Ischaemic heart diseases appeared in the top three sub-chapter causes of death for Indigenous Australians from age 25, but did not appear in the top three causes for non-Indigenous Australians until age 45–64. Chronic ischaemic heart disease (coronary heart disease) and acute myocardial infarctions (heart attacks) were the leading causes of death within this sub-chapter for both Indigenous and non-Indigenous Australians (Table 8.9).

Diabetes appeared in the top three sub-chapter causes of death for Indigenous Australians from age 45–64, but did not appear in the top three for any age group for non-Indigenous Australians (Table 8.8). Deaths due to non-insulin-dependent diabetes mellitus accounted for around half the deaths within the diabetes sub-chapter cause for those age groups from 45–64 (Table 8.10).

Table 8.7: Top three broad causes of deaths (based on ICD-10 chapter level) by age group and Indigenous status, persons aged 15 and over, NSW, Qld, WA, SA and the NT combined, 2011–2015

Age group (years)	Indigenous			Non-Indigenous		
	Broad cause of death	No. of deaths	% of deaths in age group	Broad cause of death	No. of deaths	% of deaths in age group
15–24	External causes	447	75.6	External causes	2,547	69.0
	Circulatory diseases	33	5.6	Cancer and other neoplasms	367	9.9
	Cancer and other neoplasms	27	4.6	Diseases of the nervous system	218	5.9
	<i>Total deaths in age group</i>	<i>591</i>	<i>100.0</i>	<i>Total deaths in age group</i>	<i>3,691</i>	<i>100.0</i>
25–34	External causes	449	57.3	External causes	3,681	61.2
	Circulatory diseases	110	14.0	Cancer and other neoplasms	898	14.9
	Cancer and other neoplasms	43	5.5	Circulatory diseases	438	7.3
	<i>Total deaths in age group</i>	<i>783</i>	<i>100.0</i>	<i>Total deaths in age group</i>	<i>6,015</i>	<i>100.0</i>
35–44	External causes	401	27.1	External causes	4,296	40.0
	Circulatory diseases	364	24.6	Cancer and other neoplasms	2,830	26.3
	Cancer and other neoplasms	181	12.3	Circulatory diseases	1,487	13.8
	<i>Total deaths in age group</i>	<i>1,477</i>	<i>100.0</i>	<i>Total deaths in age group</i>	<i>10,742</i>	<i>100.0</i>
45–64	Circulatory diseases	1,307	27.2	Cancer and other neoplasms	32,753	47.2
	Cancer and other neoplasms	1,277	26.5	Circulatory diseases	12,941	18.7
	Endocrine disorders (including diabetes)	511	10.6	External causes	7,536	10.9
	<i>Total deaths in age group</i>	<i>4,810</i>	<i>100.0</i>	<i>Total deaths in age group</i>	<i>69,335</i>	<i>100.0</i>
65–74	Cancer and other neoplasms	715	33.0	Cancer and other neoplasms	38,563	47.9
	Circulatory diseases	531	24.5	Circulatory diseases	17,222	21.4
	Respiratory diseases	310	14.3	Respiratory diseases	7,226	9.0
	<i>Total deaths in age group</i>	<i>2,165</i>	<i>100.0</i>	<i>Total deaths in age group</i>	<i>80,544</i>	<i>100.0</i>
75 and over	Circulatory diseases	784	31.3	Circulatory diseases	123,604	35.9
	Cancer and other neoplasms	537	21.4	Cancer and other neoplasms	79,889	23.2
	Respiratory diseases	283	11.3	Respiratory diseases	34,361	10.0
	<i>Total deaths in age group</i>	<i>2,505</i>	<i>100.0</i>	<i>Total deaths in age group</i>	<i>344,602</i>	<i>100.0</i>

Notes

1. Components may not sum to totals due to rounding.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

Table 8.8: Top three sub-chapter specific causes of death by age group and Indigenous status, persons aged 15 and over, NSW, Qld, WA, SA and the NT combined, 2011–2015

Indigenous			Non-Indigenous		
Detailed cause of death	No. of deaths	% of deaths in age group	Detailed cause of death	No. of deaths	% of deaths in age group
15–24 years					
Intentional self-harm	250	42.3	Intentional self-harm	1,071	29.0
Car occupant injured in transport accident	73	12.4	Car occupant injured in transport accident	570	15.4
Assault	39	6.6	Accidental poisoning by noxious substances	188	5.1
<i>Top three causes in 15–24 age group</i>	<i>362</i>	<i>61.3</i>	<i>Top three causes in 15–24 age group</i>	<i>1,829</i>	<i>49.6</i>
Total deaths in 15–24 age group	591	100.0	Total deaths in 15–24 age group	3,691	100.0
25–34 years					
Intentional self-harm	185	23.6	Intentional self-harm	1,563	26.0
Accidental poisoning by noxious substances	69	8.8	Accidental poisoning by noxious substances	690	11.5
Ischaemic heart diseases	61	7.8	Car occupant injured in transport accident	432	7.2
Assault	61	7.8	Cancer of digestive organs	214	3.6
<i>Top four causes in 25–34 age group</i>	<i>376</i>	<i>48.0</i>	<i>Top four causes in 25–34 age group</i>	<i>2,899</i>	<i>48.2</i>
Total deaths in 25–34 age group	783	100.0	Total deaths in 25–34 age group	6,015	100.0
35–44 years					
Ischaemic heart diseases	212	14.4	Intentional self-harm	1,880	17.5
Intentional self-harm	136	9.2	Accidental poisoning by noxious substances	1,058	9.8
Diseases of liver	126	8.5	Cancer of digestive organs	732	6.8
<i>Top three causes in 35–44 age group</i>	<i>474</i>	<i>32.1</i>	<i>Top three causes in 35–44 age group</i>	<i>3,670</i>	<i>34.2</i>
Total deaths in 35–44 age group	1,477	100.0	Total deaths in 35–44 age group	10,742	100.0
45–64 years					
Ischaemic heart diseases	835	17.4	Cancer of digestive organs	9,469	13.7
Diabetes mellitus	446	9.3	Ischaemic heart diseases	7,329	10.6
Cancer of digestive organs	384	8.0	Cancer of respiratory organs	6,817	9.8
<i>Top three causes in 45–64 age group</i>	<i>1,665</i>	<i>34.6</i>	<i>Top three causes in 45–64 age group</i>	<i>23,615</i>	<i>34.1</i>
Total deaths in 45–64 age group	4,810	100.0	Total deaths in 45–64 age group	69,335	100.0
65–74 years					
Ischaemic heart diseases	287	13.3	Cancer of digestive organs	10,549	13.1
Chronic lower respiratory diseases	249	11.5	Cancer of respiratory organs	9,313	11.6
Diabetes mellitus	238	11.0	Ischaemic heart diseases	9,045	11.2
<i>Top three causes in 65–74 age group</i>	<i>774</i>	<i>35.8</i>	<i>Top three causes in 65–74 age group</i>	<i>28,907</i>	<i>35.9</i>
Total deaths in 65–74 age group	2,165	100.0	Total deaths in 65–74 age group	80,544	100.0

(continued)

Table 8.8 (continued): Top three sub-chapter specific causes of death by age group and Indigenous status, persons aged 15 and over, NSW, Qld, WA, SA and the NT combined, 2011–2015

Detailed cause of death	Indigenous		Non-Indigenous		
	No. of deaths	% of deaths in age group	Detailed cause of death	No. of deaths	% of deaths in age group
75 years and over					
Ischaemic heart diseases	339	13.5	Ischaemic heart diseases	53,873	15.6
Diabetes mellitus	225	9.0	Cerebrovascular diseases	32,679	9.5
Cerebrovascular diseases	218	8.7	Organic mental disorders (incl. dementia)	26,715	7.8
<i>Top three causes in 75+ age group</i>	<i>782</i>	<i>31.2</i>	<i>Top three causes in 75+ age group</i>	<i>113,267</i>	<i>32.9</i>
Total deaths in 75+ age group	2,505	100.0	Total deaths in 75+ age group	344,602	100.0
Total deaths aged 15 and over	12,331	100.0	Total deaths aged 15 and over	514,929	100.0

Notes

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Source: AIHW analysis of NMD.

Table 8.9: Detailed cause of death within ischaemic heart diseases sub-chapter, by age group and Indigenous status, persons aged 25 and over, NSW, Qld, WA, SA and the NT combined, 2011–2015

Detailed cause of death	Indigenous		Non-Indigenous	
	No. of deaths	% of deaths in age group	No. of deaths	% of deaths in age group
25–34 years				
Chronic ischaemic heart disease (coronary heart disease)	31	50.8	76	66.1
Acute myocardial infarction (heart attack)	30	49.2	39	33.9
Total ischaemic heart diseases in 25–34 age group^(a)	61	100.0	115	100.0
35–44 years				
Chronic ischaemic heart disease (coronary heart disease)	130	61.3	462	72.5
Acute myocardial infarction (heart attack)	81	38.2	171	26.8
Total ischaemic heart diseases in 35–44 age group^(a)	212	100.0	637	100.0
45–64 years				
Chronic ischaemic heart disease (coronary heart disease)	540	64.7	4,598	62.7
Acute myocardial infarction (heart attack)	288	34.5	2,652	36.2
Total ischaemic heart diseases in 45–64 age group^(a)	835	100.0	7,329	100.0
65–74 years				
Chronic ischaemic heart disease	169	58.9	4,952	54.7
Acute myocardial infarction (heart attack)	114	39.7	3,978	44.0
Total ischaemic heart diseases in 65–74 age group^(a)	287	100.0	9,045	100.0

(continued)

Table 8.9 (continued): Detailed cause of death within ischaemic heart diseases sub-chapter, by age group and Indigenous status, persons aged 25 and over, NSW, Qld, WA, SA and the NT combined, 2011–2015

Detailed cause of death	Indigenous		Non-Indigenous	
	No. of deaths	% of deaths in age group	No. of deaths	% of deaths in age group
75 years and over				
Chronic ischaemic heart disease	176	51.9	27,811	51.6
Acute myocardial infarction (heart attack)	161	47.5	25,129	46.6
Total ischaemic heart diseases in 75+ age group^(a)	339	100.0	53,873	100.0

(a) As well as causes listed, total also includes angina pectoris, subsequent myocardial infarction, certain current complications following acute myocardial infarction and other acute ischaemic heart diseases.

Note: Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

Table 8.10: Detailed causes of death within diabetes mellitus sub-chapter, by age group, Indigenous Australians aged 45 and over, NSW, Qld, WA, SA and the NT combined, 2011–2015

Detailed cause of death	45–64 years		65–74 years		75 years and over	
	No. of deaths	% of deaths in age group	No. of deaths	% of deaths in age group	No. of deaths	% of deaths in age group
Non-insulin-dependent diabetes mellitus	227	50.9	131	55.0	112	49.8
Unspecified diabetes mellitus	207	46.4	96	40.3	105	46.7
Insulin-dependent diabetes mellitus	12	2.7	10	4.2	8	3.6
Total diabetes mellitus^(a)	446	100.0	238	100.0	225	100.0

(a) As well as causes listed, total also includes detailed causes of malnutrition-related diabetes mellitus and other specified diabetes mellitus.

Note: Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

Intentional self-harm by sex

In the 5-year period 2011–2015, intentional self-harm appeared in the top three sub-chapter causes of deaths for Indigenous and non-Indigenous Australians aged 15–24, 25–34 and 35–44. For both Indigenous and non-Indigenous Australians, males accounted for the majority of intentional self-harm deaths (Table 8.11).

Table 8.11: Number and proportion of intentional self-harm deaths by Indigenous status, age group and sex, persons aged 15 and over, NSW, Qld, WA, SA and the NT combined, 2011–2015

Age group (years)	Number			Per cent		
	Males	Females	Total	Males	Females	Total
Indigenous						
15–24	173	77	250	69.2	30.8	100.0
25–34	137	48	185	74.1	25.9	100.0
35–44	96	40	136	70.6	29.4	100.0
Total (all ages)	476	187	663	71.8	28.2	100.0
Non-Indigenous						
15–24	772	299	1,071	72.1	27.9	100.0
25–34	1,226	337	1,563	78.4	21.6	100.0
35–44	1,420	460	1,880	75.5	24.5	100.0
Total (all ages)	6,874	2,229	9,103	75.5	24.5	100.0

Notes

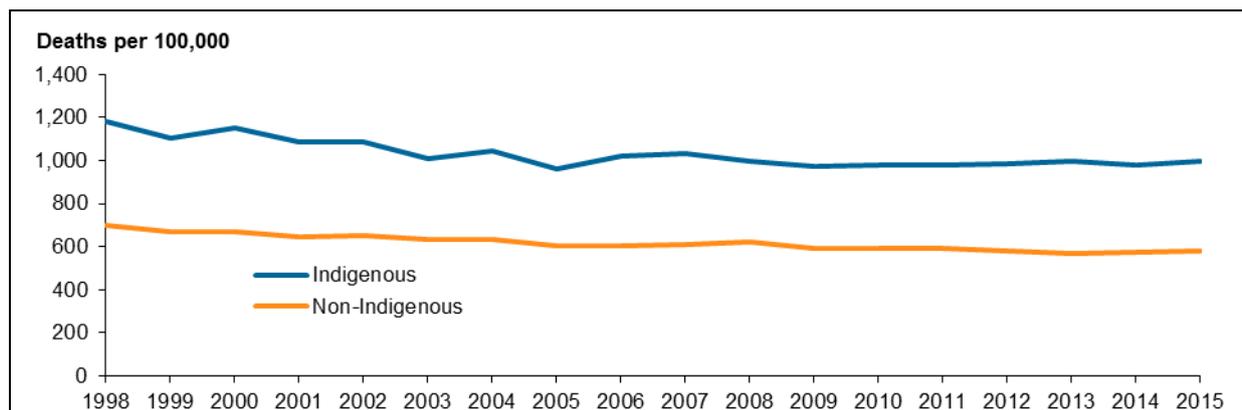
1. Components may not sum to totals due to rounding.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Source: AIHW analysis of NMD.

Mortality trends

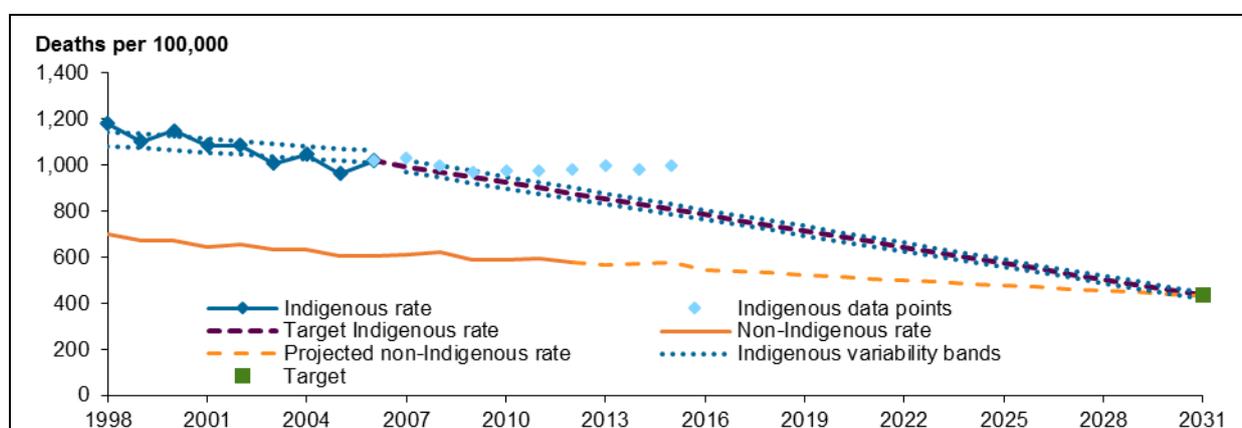
While official life expectancy estimates are available only every 5 years, progress for the life expectancy target is tracked annually using mortality rates. Over the period 1998 to 2015, the overall Indigenous mortality rate declined significantly by 15%. Non-Indigenous death rates also declined over this period, but there was no significant change in the gap between Indigenous and non-Indigenous mortality rates (Figure 8.7). Despite these long-term improvements, there has been no significant change in the Indigenous mortality rate between the 2006 baseline and 2015 (AIHW 2017). Figure 8.8 shows that the current Indigenous mortality rate is not on track to meet the 2031 target.

Since finalising the detailed analysis in this report, mortality data for 2016 have become available; these newly available data, reported in the *Closing the Gap Prime Minister's Report 2018* (PM&C 2018), indicate that that progress towards the target is still not on track.



Source: AIHW 2017.

Figure 8.7: All cause age-standardised mortality rates by Indigenous status, NSW, Qld, WA, SA and the NT combined, 1998 to 2015



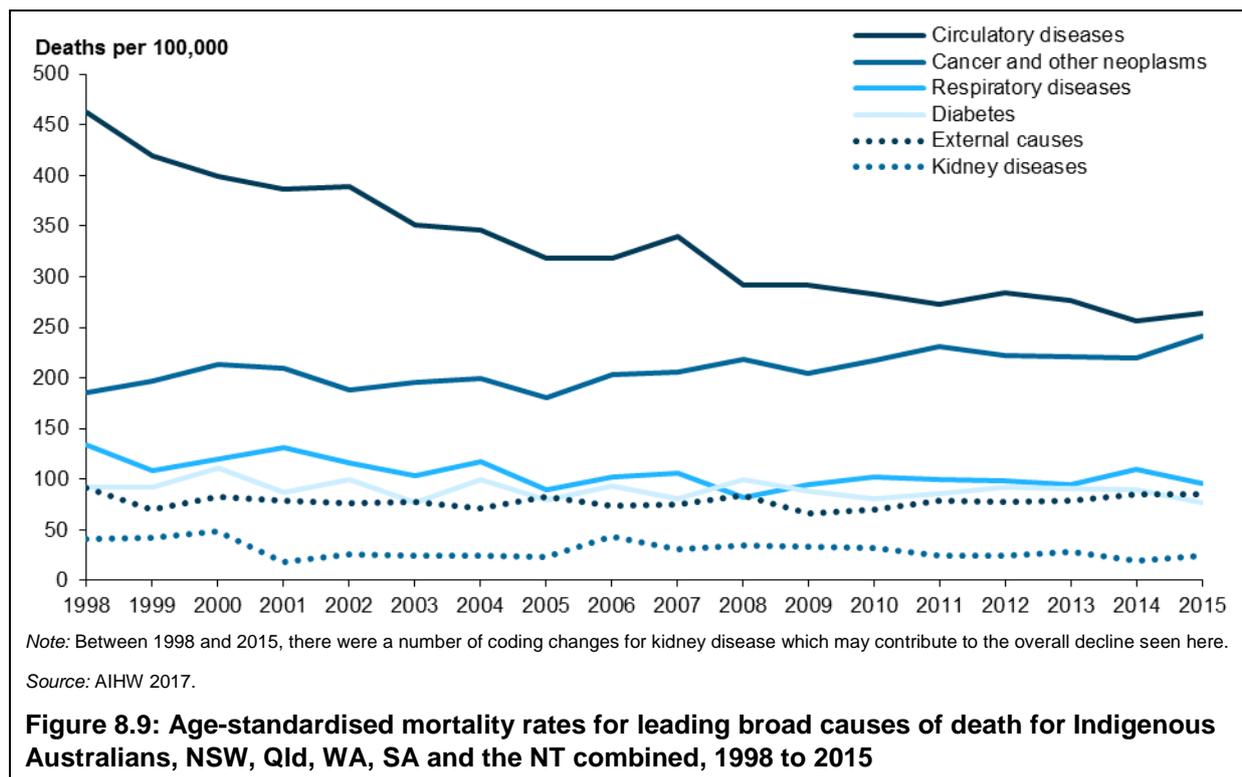
Source: AHMAC 2017.

Figure 8.8: All cause age-standardised mortality rates and projected target, by Indigenous status, NSW, Qld, WA, SA and the NT combined, 1998 to 2031

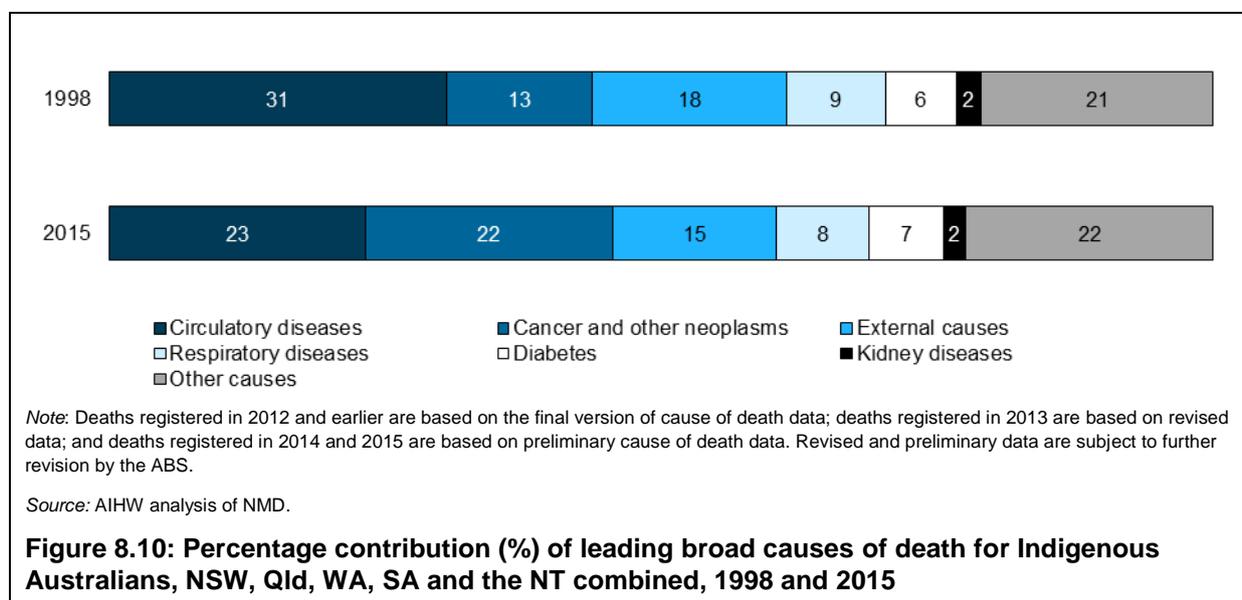
Trends in leading causes of death

Among the leading causes of death for Indigenous Australians, there were significant declines between 1998 and 2015 in the mortality rate for circulatory diseases (43%) and respiratory diseases (24%) (Figure 8.9). Over the same period, there was a significant increase in the Indigenous mortality rate for cancer and other neoplasms (21%).

Between the 2006 baseline and 2015, there were significant declines in the Indigenous mortality rate for kidney diseases (47%) and circulatory diseases (20%). Over the same period, there was a significant increase in the Indigenous mortality rate for cancer and other neoplasms (14%).

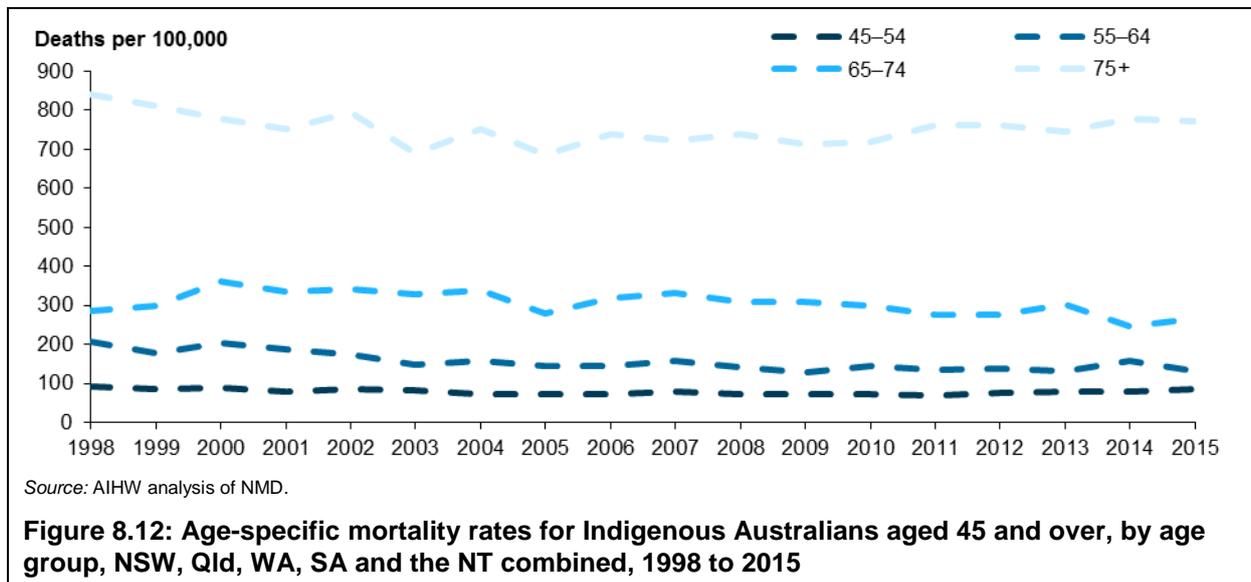
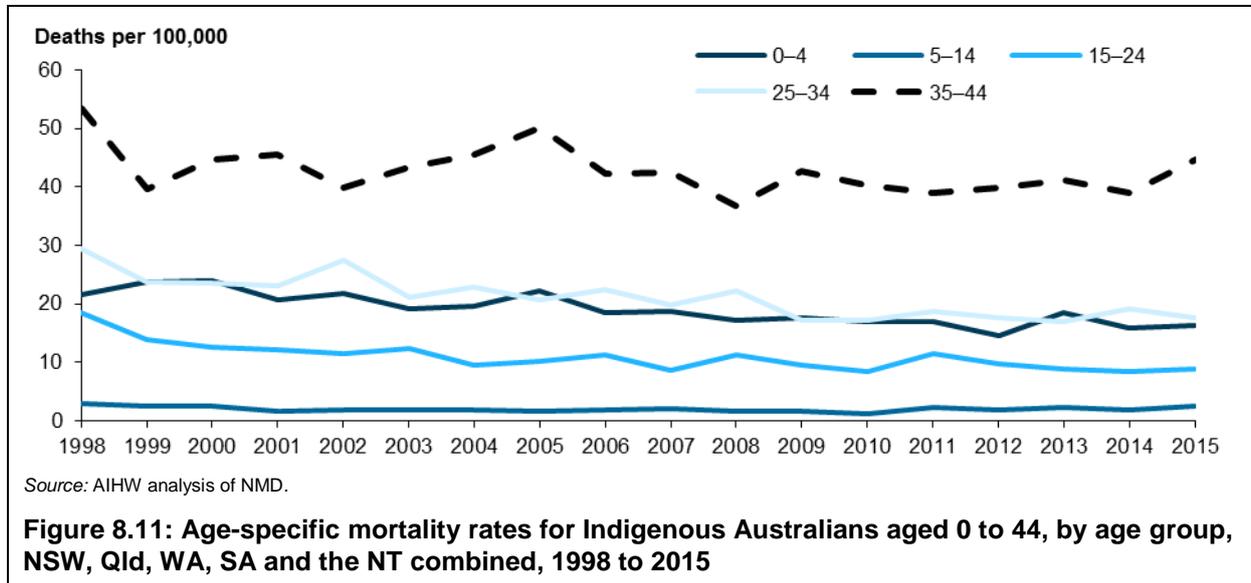


Based on the percentage of total Indigenous deaths, the leading three broad causes of death in both 1998 and 2015 were circulatory diseases, cancer and other neoplasms and external causes, although the contributions of each differed between the 2 years (Figure 8.10). Between 1998 and 2015, the contribution of circulatory diseases decreased from 31% to 23%, whereas the contribution of cancer and other neoplasms increased from 13% to 22%.



Mortality trends by age

Over the period 1998 to 2015, the overall Indigenous mortality rate declined significantly in the 0–4, 15–24, 25–34, 55–64 and 65–74 age groups (figures 8.11 and 8.12). The largest declines were seen in the 15–24 and 25–34 age groups (43% and 37% decline, respectively).



8.2.4 Fatal burden of disease

Burden of disease analysis combines estimates of years of life lost (YLL) due to premature death and years lived with ill health or disability to count the total years of healthy life lost from disease and injury. In 2011, Indigenous Australians experienced a burden of disease that was 2.3 times the rate of non-Indigenous Australians (AIHW 2016a). This section focuses on the fatal burden estimates for Indigenous Australians from the 2011 Australian Burden of Disease Study (ABDS).

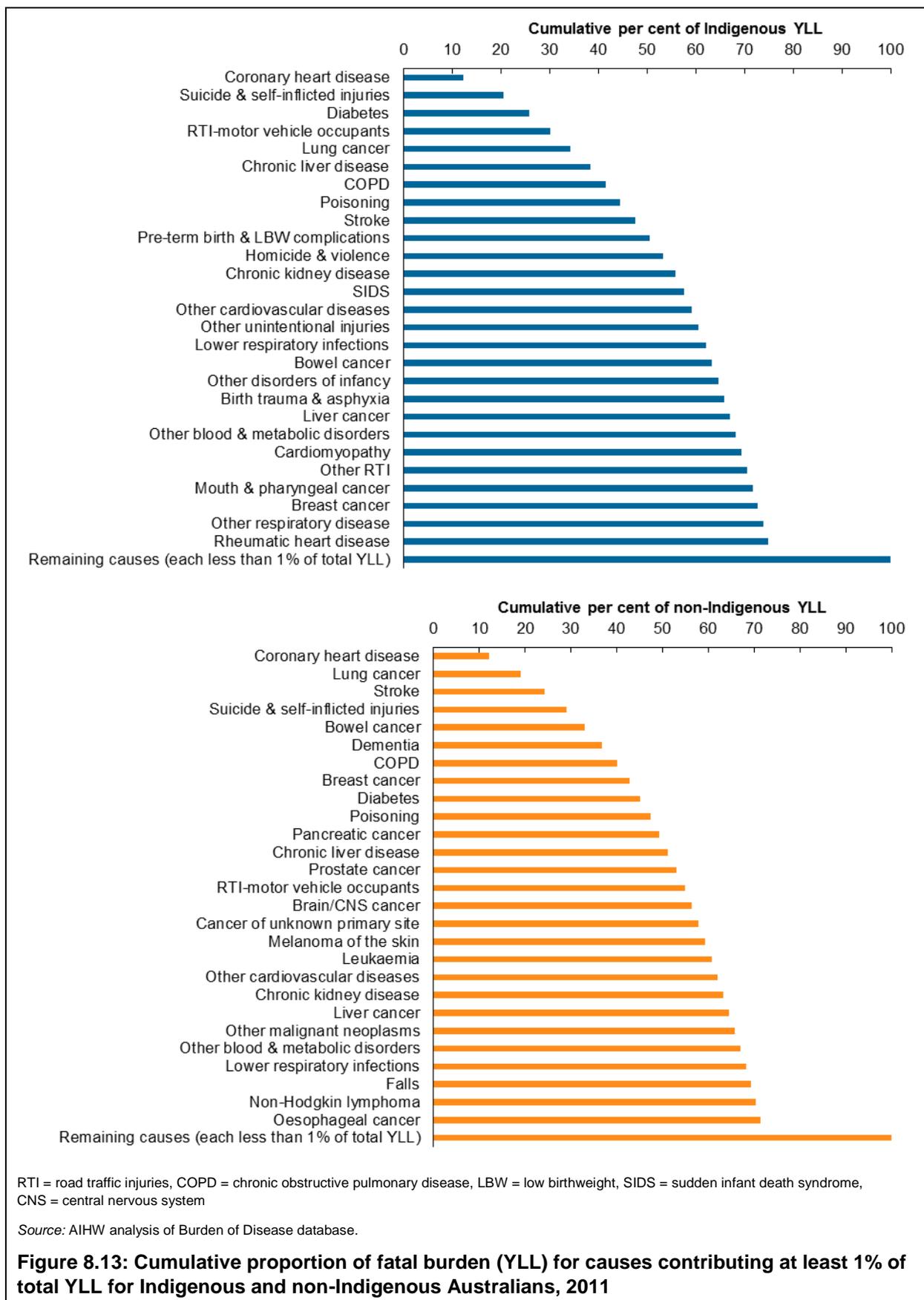
Life expectancy estimates are derived from mortality data using age specific death rates. However, the fatal burden of disease estimates take into account both the number of deaths and the age at which deaths occur. A small number of deaths in younger ages can contribute substantially to the fatal burden owing to the large average loss of remaining years of life from an 'ideal' life expectancy (in the 2011 ABDS the 'ideal' life expectancy at birth used was 86 years); in older age groups, a large number of deaths can contribute large amounts of fatal burden, even though the average loss of remaining years is relatively small. In 2011, Indigenous Australians experienced fatal burden at 2.7 times the rate of non-Indigenous Australians after taking into account differences in population age structure (AIHW 2016a).

Fatal burden by cause

The 2011 ABDS included burden estimates at a broad disease group level, as well as at a more detailed disease-specific level. Disease-level burden estimates are useful to inform policy and research. In the 2011 ABDS, the burden was estimated for nearly 200 diseases.

Figure 8.13 shows the causes contributing at least 1% of the fatal burden for Indigenous and non-Indigenous Australians in 2011. Coronary heart disease was the leading cause of life lost for both Indigenous and non-Indigenous Australians in 2011, contributing 12% of the fatal burden for both groups.

The five leading causes of fatal burden among Indigenous Australians were coronary heart disease (12.2% of YLL), suicide & self-inflicted injuries (8.4%), diabetes (5.2%), injuries from motor vehicle accidents (4.3%) and lung cancer (4.2%). These five causes accounted for around one-third (34%) of total fatal burden among Indigenous Australians in 2011 (AIHW 2016a).



Fatal burden by cause and age group

Injuries accounted for all five leading causes of life lost among Indigenous Australians in the 15–24 age group in 2011, with suicide and self-inflicted injuries accounting for the largest proportion (38%) of life lost in this age group (Figure 8.14). Coronary heart disease was the fourth leading cause of fatal burden among Indigenous Australians in the 25–34 age group, behind three types of injury: suicide and self-inflicted injuries, poisoning, and injuries from motor vehicle accidents. From the age group 35–44 onwards, coronary heart disease was the leading cause of fatal burden among Indigenous Australians, although suicide and self-inflicted injuries and poisoning also appeared in the top five leading causes in the 35–44 age group. For the remaining age groups, chronic diseases were the major causes of fatal burden, dominated by coronary heart disease, diabetes, lung cancer and chronic obstructive pulmonary diseases.

		Age group (years)					
		15–24	25–34	35–44	45–64	65–74	75+
Rank	1st	Suicide/ self-inflicted injuries (38%)	Suicide/ self-inflicted injuries (23%)	Coronary heart disease (16%)	Coronary heart disease (18%)	Coronary heart disease (16%)	Coronary heart disease (16%)
	2nd	RTI - motor vehicle occupants (19%)	Poisoning (11%)	Chronic liver disease (9.3%)	Diabetes (8.3%)	Lung cancer (10%)	Stroke (8.9%)
	3rd	Homicide/ violence (7.6%)	RTI - motor vehicle occupants (9.6%)	Suicide/ self-inflicted injuries (9.1%)	Lung cancer (6.9%)	Diabetes (9.2%)	Diabetes (8.0%)
	4th	Poisoning* (4.4%)	Coronary heart disease (8.7%)	Poisoning (6.1%)	Chronic liver disease (6.6%)	COPD (9.0%)	Dementia (7.7%)
	5th	Other RTI* (2.5%)	Homicide/ violence (8.2%)	Diabetes (4.5%)	COPD (4.5%)	Chronic kidney disease (4.6%)	COPD (7.6%)
Top 5		71.8%	60.9%	44.7%	44.4%	49.1%	48.4%

2011 ABDS disease groups key

	Cancer and other neoplasms		Injuries
	Cardiovascular diseases		Kidney and urinary conditions
	Endocrine disorders		Respiratory diseases
	Gastrointestinal disorders		Neurological conditions

* Indicates number of Indigenous deaths used in YLL calculations is less than 10

RTI = road traffic injuries; COPD = chronic obstructive pulmonary disease

Note: The 2011 ABDS disease groups are not equivalent to ICD-10 chapter levels; see AIHW 2016a for more information.

Source: AIHW analysis of Burden of Disease database.

Figure 8.14: Leading detailed causes contributing to fatal burden (proportion of total YLL in each age group), by age group, Indigenous Australians aged 15 and over, 2011

8.3 Key drivers of mortality and life expectancy

The scope of this section is not exhaustive—it highlights key relationships identified in the literature (including previously published AIHW material) related to life expectancy and health outcomes.

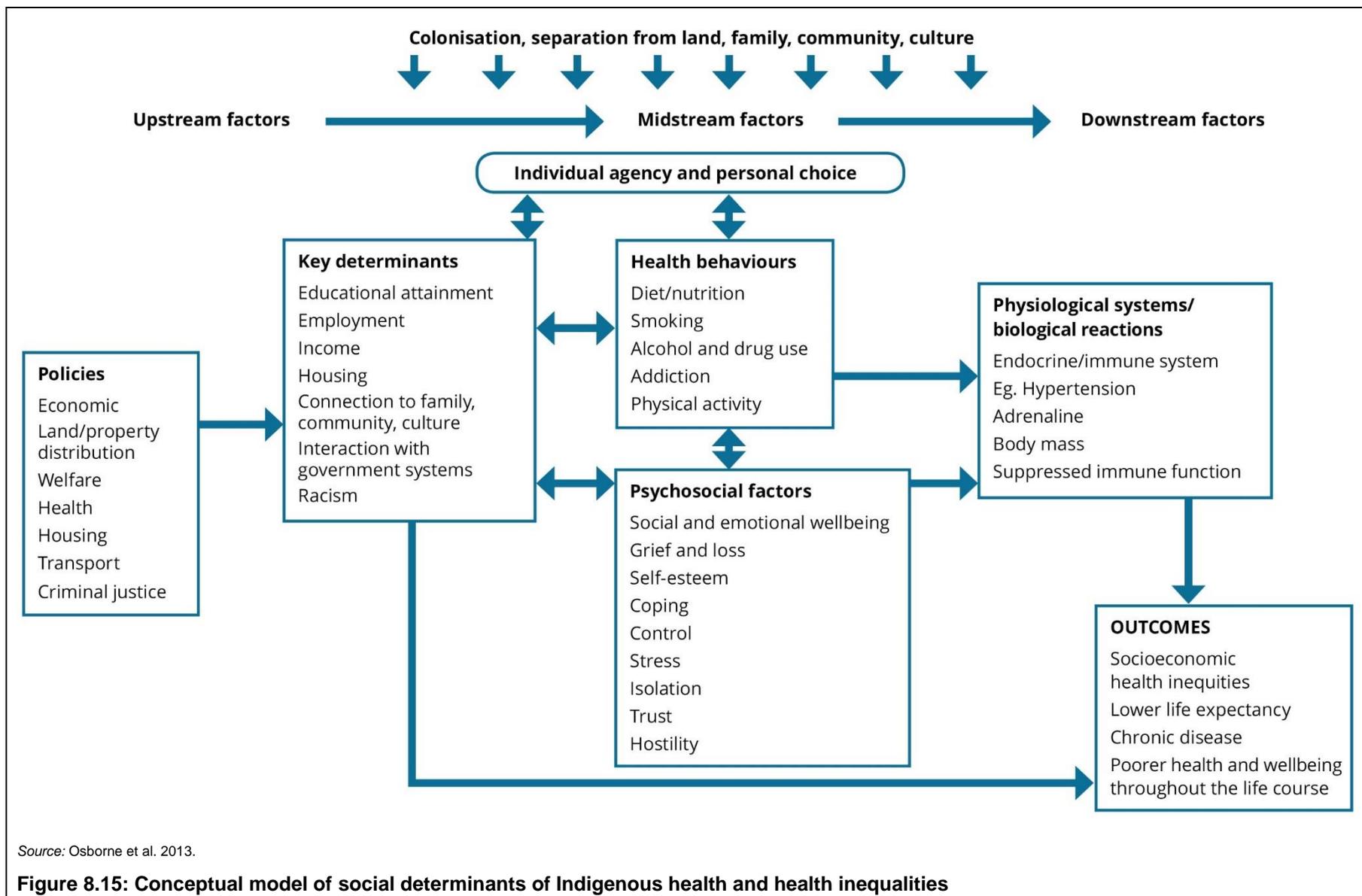
Health outcomes and life expectancy are influenced by a variety of factors, which include behavioural and socioeconomic components, both singularly and through complex interactions (Figure 8.15). Distal determinants such as the long-term effects of colonisation, the disruption of ties to land and culture, marginalisation and racism all have impact on Indigenous Australian's socioeconomic and psychosocial wellbeing (Osborne et al. 2013; Reading & Wien 2009). A number of studies have attempted to quantify the contribution of the various types of determinants to life expectancy. Hart et al. (2017) discussed evidence that points to potential gains of 10 to 12 years in life expectancy due to improving educational attainment. Further, a study in the Northern Territory estimated that socioeconomic disadvantage accounted for one-third to one-half of the gap in life expectancy between Indigenous and non-Indigenous Australians (Zhao et al. 2013).

Given the evidence, it is recognised that life expectancy differentials cannot be eliminated by health initiatives alone. Health promotion activities can help individuals modify their behaviours to reduce risk factors. Meanwhile, health services can reduce mortality through prevention, early detection, early intervention and treatment of diseases. Nevertheless, the capacity of health services alone to compensate for socioeconomic disadvantage is limited and compromised because of the relationship between socioeconomic disadvantage and lower usage of health services.

8.3.1 Social determinants and risk factors

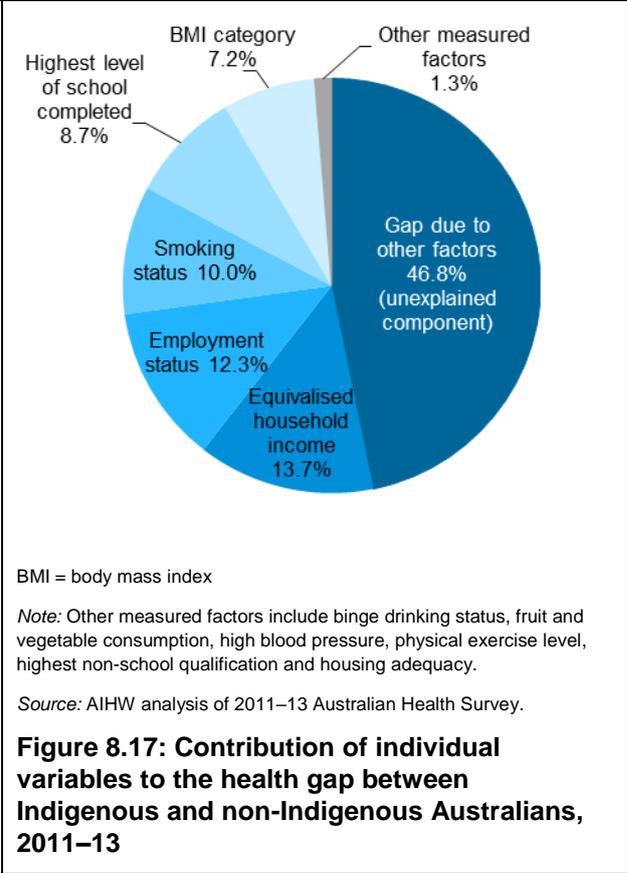
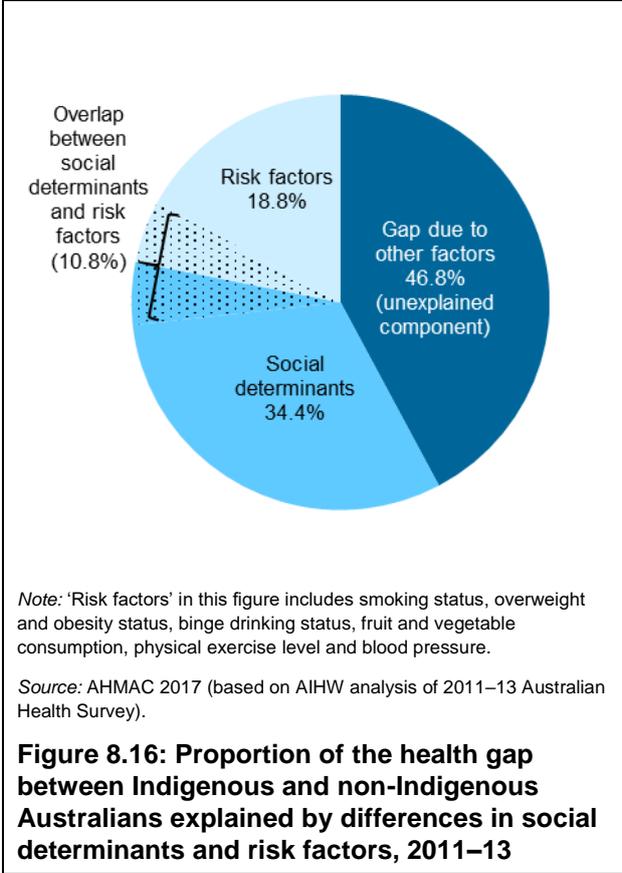
In recent years, the importance of social factors in determining health outcomes has been increasingly recognised. This has been the result of much work by Michael Marmot, which has described the extent of socioeconomic differences in health outcomes in much of the world by income, occupation and place of residence (Marmot 2010). In Australia, large differentials in health outcomes between Indigenous and non-Indigenous people raise the question of how these are influenced by social determinants.

The ABS Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) is a continuum of disadvantage to advantage of geographic areas. It is based on variables relating to a range of factors, such as income, employment, education, occupation, internet connection, housing, family structure, marital status and disability. Using data ranked by the IRSAD, in 2011, over one-third (37%) of Indigenous Australians lived in the most disadvantaged decile (the bottom 10%) compared with 9% of non-Indigenous Australians (AIHW 2017). Only 1.8% of Indigenous Australians lived in the most advantaged decile (the top 10%).



AIHW analysis of the 2011–13 Australian Health Survey found that selected social determinants, such as education, employment status, overcrowding and household income, accounted for around one-third (34%) of the gap in health outcomes between Indigenous and non-Indigenous adults aged 15 to 64; risk factors, including smoking, obesity, alcohol use and diet, accounted for around one-fifth (19%) of the gap (AHMAC 2017) (Figure 8.16).

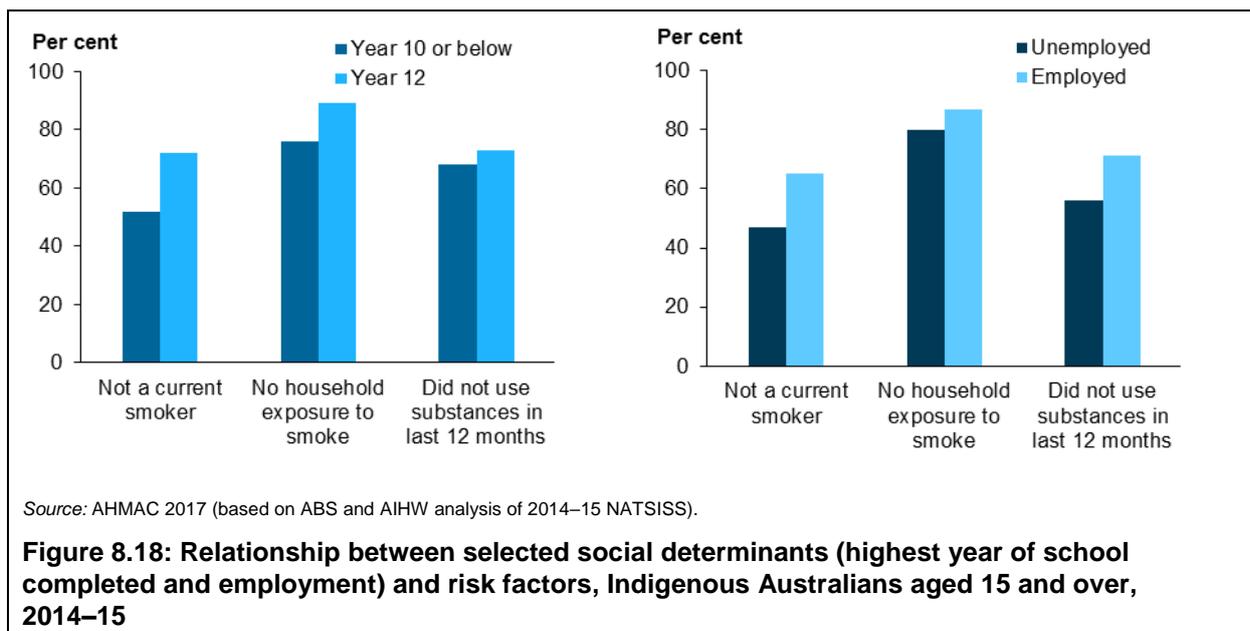
The individual variable making the largest contribution to the explained component of the health gap was household income. This variable contributed to almost 14% of the overall health gap (and to around 26% of the explained component of the health gap) (Figure 8.17). Other significant variables were employment status and school education, which on their own, explained another 12.3% and 8.7%, respectively, of the overall health gap. Among the risk factors, the greatest contribution made to the overall health gap was smoking status (10.0%), followed by body mass index (BMI) category (7.2%).



Relationships between social determinants and risk factors

Social determinants of health, such as education and household overcrowding, and modifiable risk factors, such as smoking and physical inactivity, are interconnected. That is, social determinants affect risk factors, and vice versa. The AIHW analysis estimated that around 11% of the health gap can be attributed to the interactions or the overlap between the social determinants and risk factors (Figure 8.16).

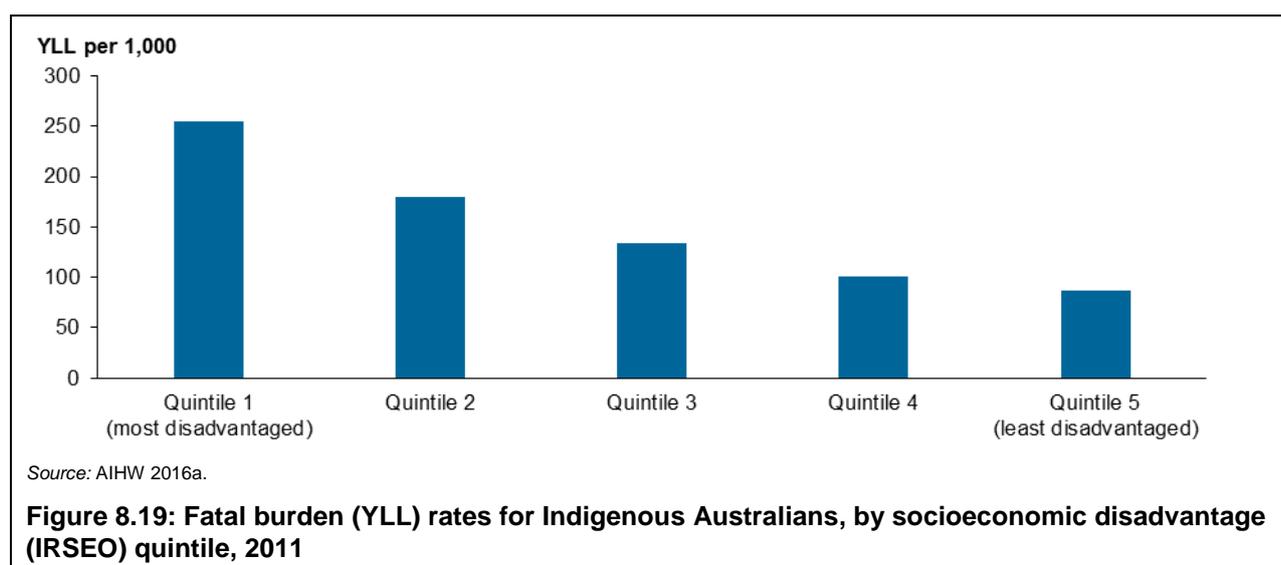
Examples of the relationships between social determinants and risk factors can be seen in results from analysis of the 2014–15 NATSISS. A higher proportion of Indigenous Australians who completed Year 12 were non-smokers compared with those whose highest year of schooling was Year 10 or below (Figure 8.18). Similarly, those who were employed were more likely to be non-smokers than those who were unemployed.



Fatal burden of disease by socioeconomic group

In the 2011 ABDS, socioeconomic groups for Indigenous burden estimates were based on an Indigenous-specific index of socioeconomic disadvantage (the IRSEO). This index reflects the level of socioeconomic disadvantage experienced by Indigenous Australians living in each Indigenous Area in Australia and is determined by factors such as household income, employment and education level (Biddle 2009, 2013).

Analysis of the 2011 ABDS found a trend of increasing rates of fatal burden as socioeconomic disadvantage increased (Figure 8.19). Indigenous Australians living in areas with the most socioeconomic disadvantage experienced the highest rate of fatal burden (255 YLL per 1,000), almost 3 times the rate of fatal burden in areas with the least socioeconomic disadvantage (88 YLL per 1,000).



Racism and health

The link between self-reported perceptions or experiences of racism and poorer physical and mental health is well established (Kelaher et al. 2014 and Ferdinand et al. 2012, cited in AHMAC 2017). Racism can lead to reduced access to resources that are associated with health outcomes, such as education, employment, housing and medical care. Studies have also found a strong association between experiences of racism and ill health and psychological distress, mental health conditions and risk behaviours such as substance use (Paradies et al. 2013, cited in AHMAC 2017).

In 2014–15, over one-third (35%) of Indigenous Australians aged 15 and over felt they had been treated unfairly in the past 12 months because they were Indigenous (AIHW 2017). Rates of psychological distress were higher for this group (44%) than for those who reported they had not been treated unfairly (27%).

8.3.2 Contribution of risk factors to the fatal burden

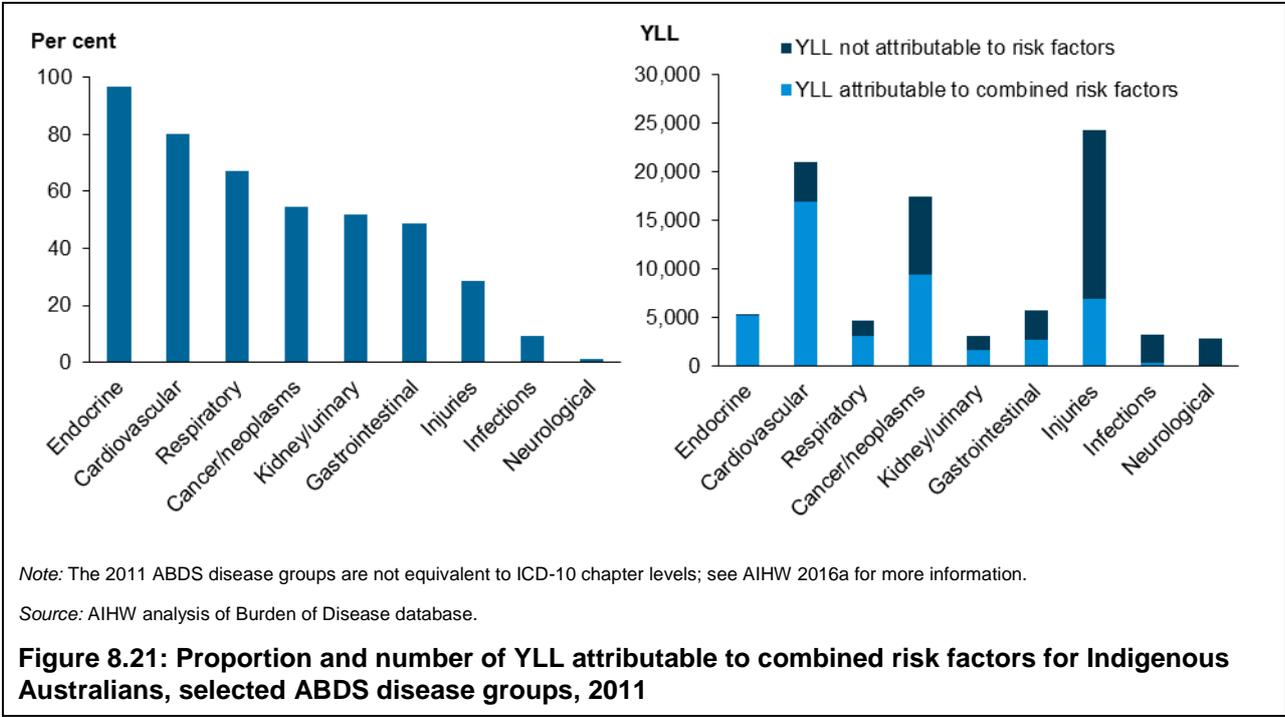
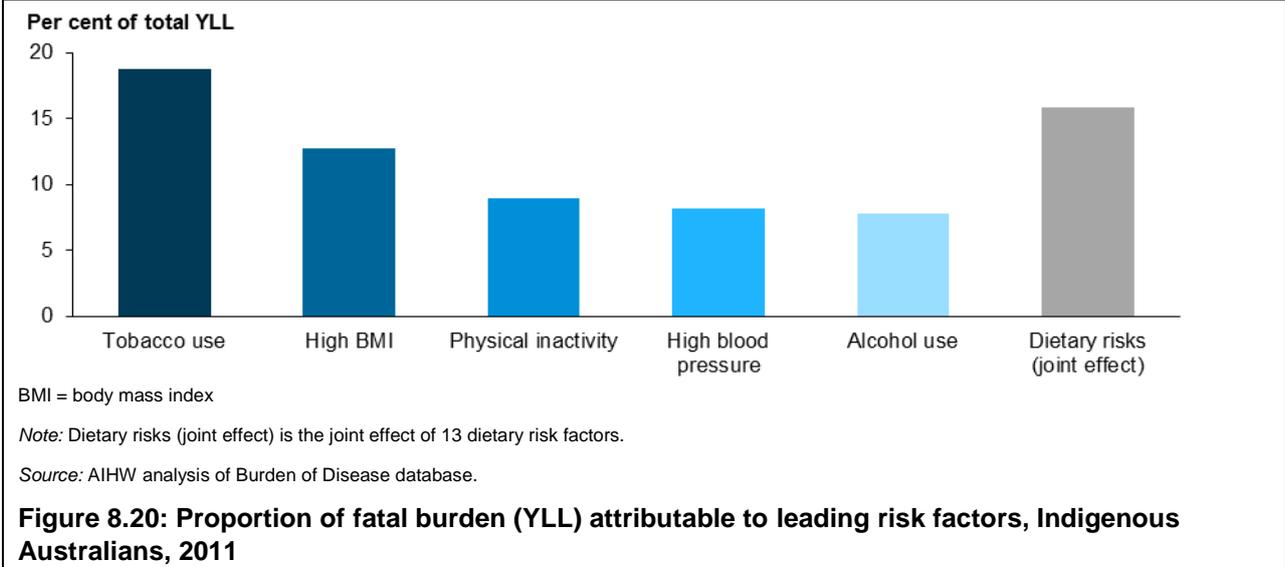
The 2011 ABDS included estimates for 29 modifiable risk factors grouped into four broad categories: behavioural, metabolic, environmental and dietary risks. The social determinants of health were not included as risk factors in the 2011 ABDS due to the resources needed to undertake the large and complex body of work that would be required, such as developing appropriate definitions directly related to health and sourcing disease-specific relative risks (AIHW 2016a).

The 2011 ABDS estimated that the 29 modifiable risk factors included explained 37% of the total burden of disease experienced by Indigenous Australians. Together, the 29 risk factors explained just over half (51%) of the gap in total disease burden between Indigenous and non-Indigenous Australians (AIHW 2016a).

In relation to the fatal burden, the 2011 ABDS estimated that 47% of the fatal burden experienced by Indigenous Australians could be attributed to the joint effect of the 29 risk factors included in the study (unpublished AIHW analysis of 2011 ABDS). The individual risk factors that contributed most to fatal burden among Indigenous Australians were tobacco use (19%), high BMI (13%) and physical inactivity (9%) (Figure 8.20). While the individual contribution of each of the 13 dietary risk factors was relatively small, their joint effect was responsible for 16% of the fatal burden experienced by Indigenous Australians.

Due to the complex pathways and interactions between risk factors, it is not possible to simply add or combine the estimated impact of each risk factor. As part of the 2011 ABDS, combined risk factor analyses were conducted for all risk factors, and for the combined dietary factors, to estimate the joint effect of the combined risk factors (see AIHW 2016a for more information).

All the risk factors combined (the joint effect) contributed greatly to the fatal burden of endocrine disorders (97%), cardiovascular diseases (80%) and cancer and other neoplasms (54%) (Figure 8.21).

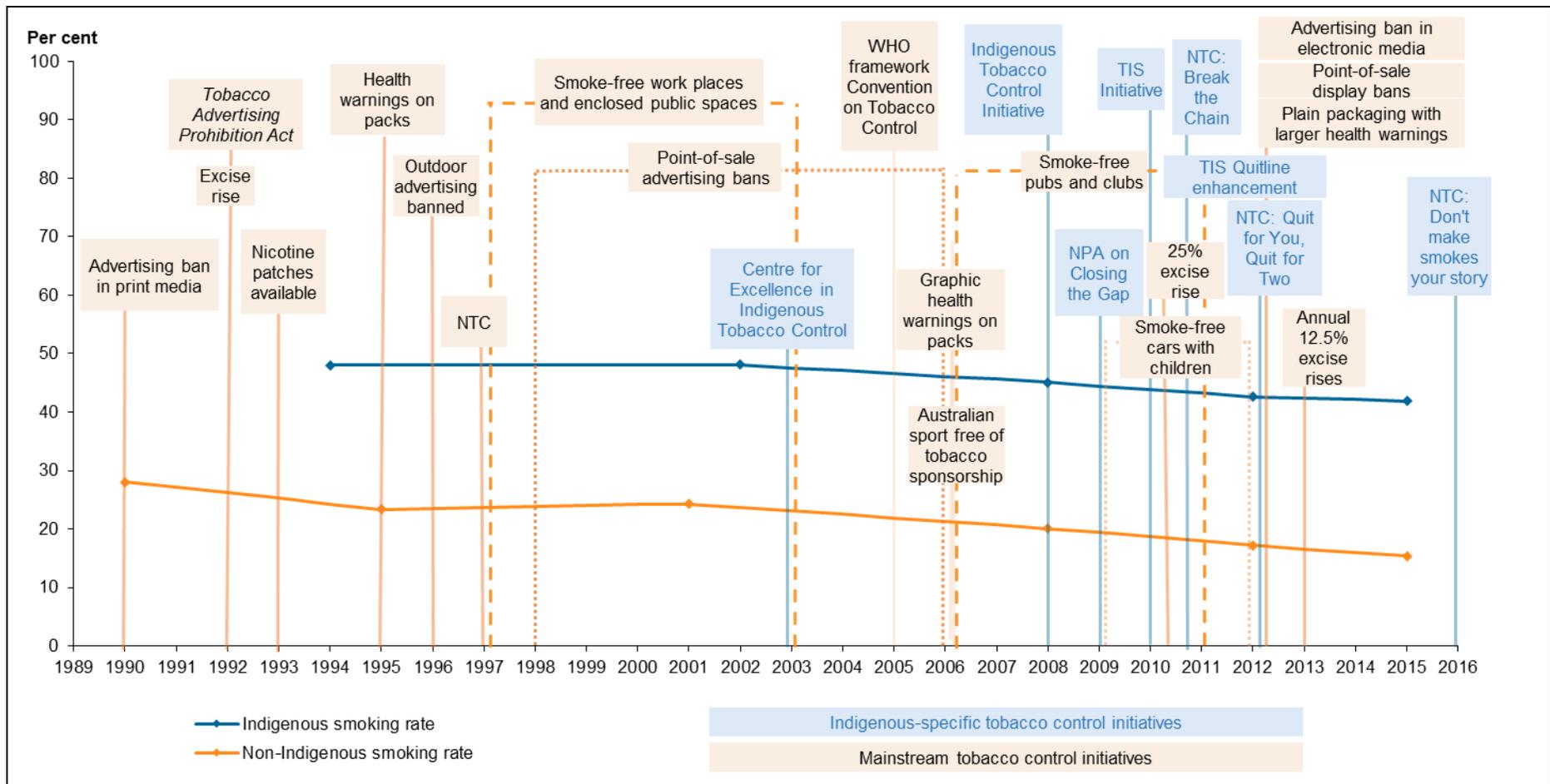


Smoking

Successfully quitting smoking can result in many health benefits including an increase in life expectancy, and stopping earlier is associated with greater benefits (WHO 2017). In 2014–15, Indigenous Australians aged 15 and over were 2.7 times as likely as non-Indigenous Australians to report being a current smoker (AHMAC 2017).

Australia has been successful in reducing overall population smoking rates over many years using many strategies (IGCD 2013). These have included advertising bans, bans on smoking indoors and (increasingly) in outdoor public spaces, plain packaging, price increases, restrictions on sales to minors, and public education and media campaigns (IGCD 2013; MCDS 2011). Figure 8.22 shows a timeline of key smoking-related policies and programs, along with available trends on age-standardised rates of smoking for Indigenous and non-Indigenous Australians aged 15 and over.

Between 2002 and 2014–15, the rate of current smokers among Indigenous Australians aged 15 and over declined from 51% to 42%. Over the same period, smoking rates also declined for non-Indigenous Australians; however, there has been no improvement in the gap (AHMAC 2017).



NTC = National Tobacco Campaign, WHO = World Health Organization, NPA = National Partnership Agreement, TIS = Tackling Indigenous Smoking

Source: AHMAC 2017.

Figure 8.22: Smoking prevalence rates, people aged 15 and over by Indigenous status and key tobacco control measures implemented in Australia since 1990

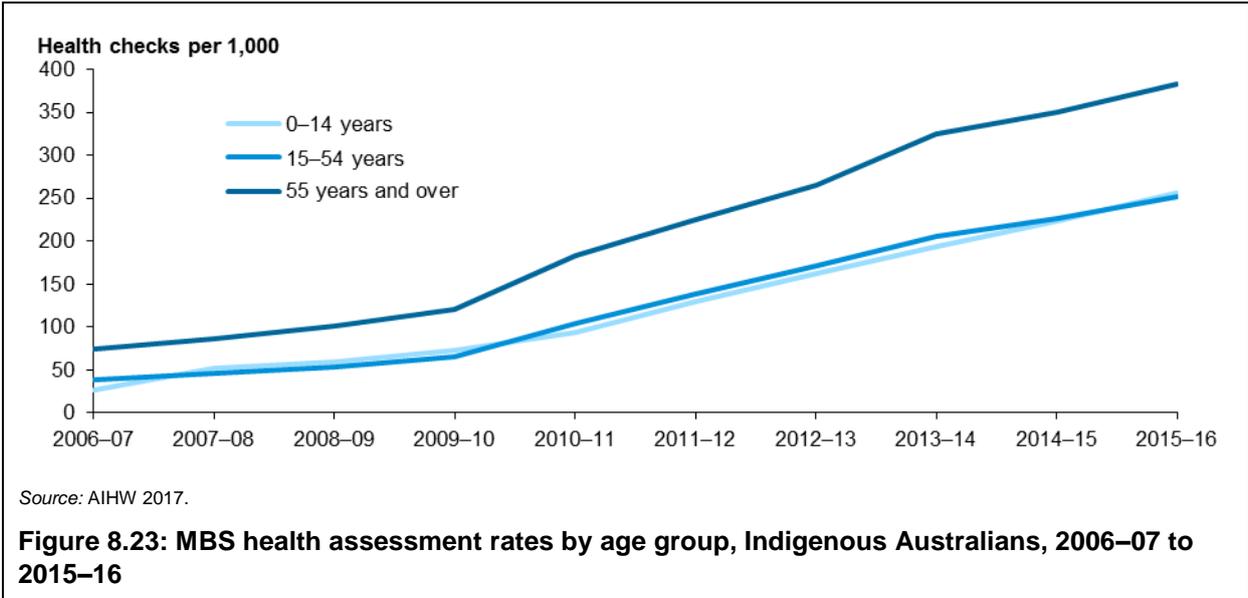
8.3.3 Health system interventions

Although health-care interventions alone are insufficient to completely close the gap in life expectancy between Indigenous and non-Indigenous Australians, evidence from Australia and internationally indicates that health care is an important contributor to closing the gap (Griew 2008, cited in AHMAC 2017). The health system can assist with preventing illness and injury: through population health programs; by providing an immediate response to acute illness or injury; and by protecting good health through screening, early intervention and treatment (Dwyer et al. 2004, cited in AHMAC 2017). Access to health care when needed is therefore essential to closing the gap in life expectancy.

Since Indigenous Australians currently experience substantially poorer health than non-Indigenous Australians, rates of access to health services can therefore be expected to be 2 to 3 times the rate for non-Indigenous Australians (AHMAC 2017). Service access rates vary by type of care. Relative to non-Indigenous Australians, Indigenous Australians have similar rates of general practitioner care (2015–16 rate ratio 1.1), higher rates for hospital care (2014–15 rate ratio 1.3) and lower rates of specialist care (2015–16 rate ratio 0.6) (AIHW 2017).

MBS health checks

Medicare Benefits Schedule (MBS) health assessment items for Indigenous Australians aim to encourage early detection, diagnosis and intervention for common and treatable conditions. Measures to increase the uptake of health assessments by Indigenous Australians were introduced in 2009–10 (PM&C 2017). Between 2009–10 and 2015–16, the rate of MBS health assessments for Indigenous Australians increased significantly for all ages (the rates have more than tripled) (Figure 8.23). In 2015–16, around 63,800 health assessments were undertaken for Indigenous children aged 0–14, representing around 26% of children in this age group for Indigenous Australians. There were around 103,600 health assessments for Indigenous Australians aged 15–54 (25% of this population) and 29,400 for Indigenous Australians aged 55 and over (representing 38% of this population).

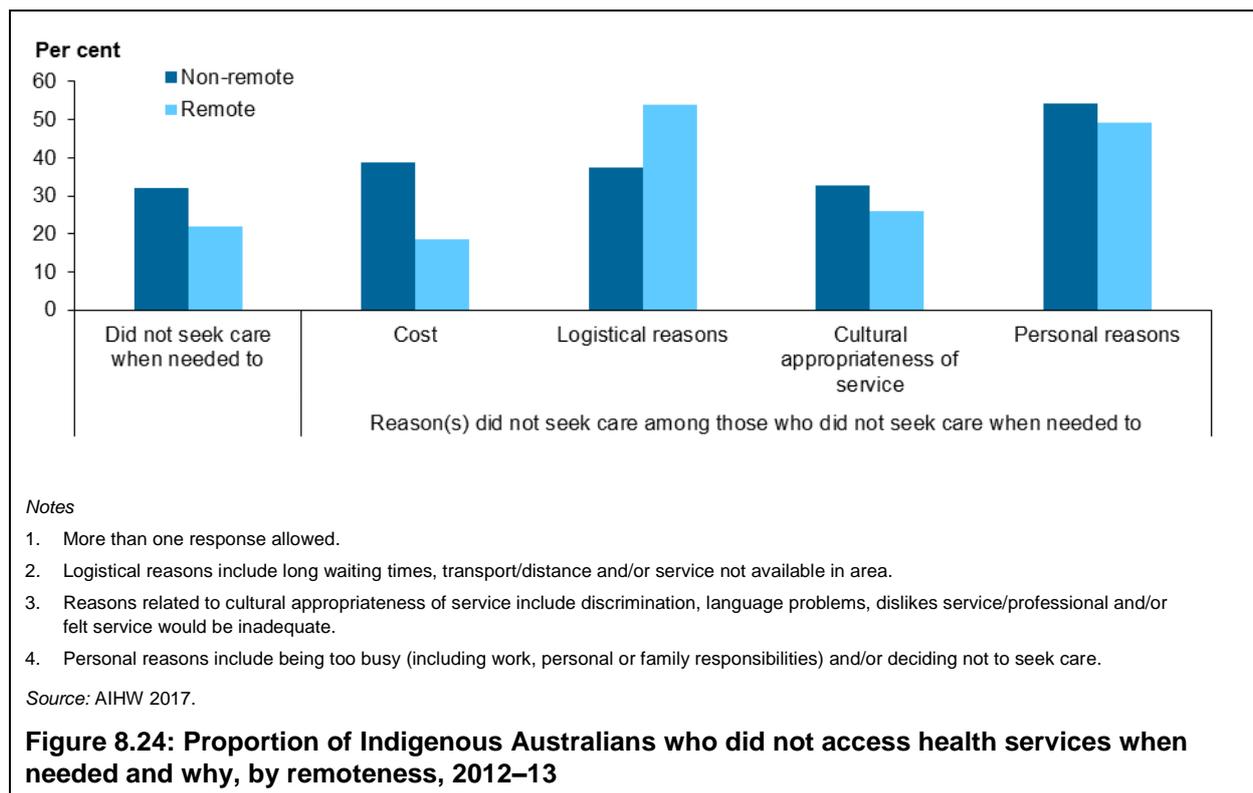


Barriers to accessing health care

Cultural barriers including racism and a lack of cultural awareness are important issues in accessing selected services and are considered a structural determinant of Indigenous health inequality in Australia. Cultural education is an important strategy to reduce the adverse impact from racism (Awofeso 2011).

In addition, for health-care services to be accessible they need to be available, affordable, appropriate and acceptable (Ware 2013, cited in AHMAC 2017). In 2012–13, 30% of Indigenous Australians (190,000 people) reported that they needed to, but did not, see a health-care provider in the previous 12 months (AIHW 2017). Reasons for not seeking care varied by type of service—cost was the main reason for some services, for others, waiting time was more of a barrier. Barriers to accessing care also varied between remote and non-remote areas—Indigenous Australians living in non-remote areas were more likely to report not seeking care when needed than those living in remote areas (32% and 22%, respectively) (Figure 8.24). These findings suggest that strategies designed to encourage access to health care may be most effective if they are context-specific and adapted for local circumstances (AHMAC 2017).

AIHW analysis of access to health services relative to need shows that, for Indigenous Australians, the need for primary health care increases with remoteness, but access decreases (AIHW 2014).



8.4 Data limitations and measurement issues

Measurement of life expectancy and mortality among Indigenous Australians requires accurate and timely data. Key data issues are discussed in this section, a number of which overlap with those presented against the child mortality target in Section 2.4.

8.4.1 Deaths and population data

There are a range of issues affecting the count of Indigenous deaths and the development of life expectancy estimates including:

- Indigenous estimates of life expectancy are not produced separately for Victoria, South Australia, Tasmania or the Australian Capital Territory due to the small number of Indigenous deaths reported in these jurisdictions (ABS 2013b).
- There are problems with the quality of Indigenous identification in the deaths data; Indigenous deaths data are reported only for five jurisdictions (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory) and do not reflect the national picture. The remaining jurisdictions have lower levels of identification and a small number of Indigenous deaths. More work is needed to assess the potential feasibility of using adjustment factors to enable accurate estimates of Indigenous mortality data for all states and territories to inform a national mortality estimate (see, for example, AIHW 2012).
- The quality of Indigenous identification in deaths data over time has changed, resulting in challenges in accurately monitoring trends; improved identification over time makes it appear as if Indigenous deaths rates are increasing, when it is the accuracy of reporting that is increasing. In order to dissociate improvements in Indigenous identification from improvements in mortality rates, scenario modelling that accounts for different levels of Indigenous identification can be used.
- More work is needed to assess the potential feasibility of re-calculating the historical mortality rates to deal with the issues of under-identification of Indigenous deaths in the NMD in the past.
- There have been changes in Indigenous identification over time in the population denominator. For example, between the 2006 and 2011 Censuses the count of Indigenous people (on which the ERP denominators are based) increased by 21%, of which about one-third cannot be explained by demographic factors (such as births and deaths). An increased propensity to identify as Indigenous is thought to have contributed to part of the increase (ABS 2013a).

8.4.2 Frequency of Indigenous life expectancy estimates

There are data delay issues which impact the ability to monitor progress towards the life expectancy target. The ABS uses Census deaths linked data to compile Indigenous life tables. Therefore, official Indigenous life expectancy estimates based on this method can be produced only every 5 years. Given the time lag between life expectancy estimates, annual mortality rates are used as a proxy measure. Different and more regular methods for estimating life expectancy could be explored.

8.5 Bringing it together

8.5.1 An overview

The COAG target for life expectancy is to close the gap in life expectancy between Indigenous and non-Indigenous Australians within a generation (by 2031).

The latest life expectancy data, for 2010–2012, show a 10.6-year gap between Indigenous and non-Indigenous males and a 9.5-year gap between Indigenous and non-Indigenous females. In 2010–2012, the life expectancy at birth for Indigenous Australians was estimated to be 69.1 years for males and 73.7 for females. By comparison, the life expectancy at birth for non-Indigenous Australians was 79.7 years for males and 83.1 for females

The evidence presented in this chapter shows that although Indigenous mortality rates declined significantly between 1998 and 2015, progress towards the target to close the gap in life expectancy by 2031 is not on track.

The analyses presented in this chapter demonstrate that the life expectancy gap cannot be eliminated by health initiatives alone. Available evidence suggests that key drivers include socioeconomic status and other social determinants, risk factors (for example, tobacco use), availability and cultural competency of health services.

8.5.2 Examples of opportunities for further progress

Drawing from the analyses presented in this chapter, examples of opportunities for further progress are provided in this section. There is, however, a need for more robust evaluation of health-specific programs including both Indigenous-specific and mainstream services (Productivity Commission 2015).

A focus on main contributors to burden of disease

Disease-level burden estimates provide an opportunity to inform areas for policy focus. In 2011, the five leading causes of fatal burden among Indigenous Australians were coronary heart disease, suicide and self-inflicted injuries, diabetes, injuries from motor vehicle accidents and lung cancer. These five causes accounted for around one-third (34%) of total fatal burden experienced by Indigenous Australians (see Section 8.2.4).

The individual risk factors that contributed most to fatal burden among Indigenous Australians in 2011 were tobacco use, high body mass and physical inactivity. Nearly one-fifth of the fatal burden experienced by Indigenous Australians was due to tobacco use. Quitting smoking can result in an increase in life expectancy and stopping earlier is associated with greater benefits (WHO 2017). There are a number of programs that aim to reduce tobacco use among Indigenous Australians; for example, through the Indigenous Australians Health Programme, the Government is funding the Tackling Indigenous Smoking program.

Address socioeconomic factors

AIHW analysis of the 2011–13 Australian Health Survey found that selected social determinants—such as education, employment status, overcrowding and household income—accounted for around one-third (34%) of the gap in health outcomes between Indigenous and other Australians (see Section 8.3.1). The individual factor making the greatest contribution to the explained component of the health gap was household income.

Improve access to health services

Due to the relatively poorer health levels experienced by Indigenous Australians, rates of access to health services are expected to be 2 to 3 times the rate for non-Indigenous Australians (AHMAC 2017) (see Section 8.3.3). However, evidence shows that:

- service access rates vary by type of care; relative to non-Indigenous Australians, Indigenous Australians have similar rates of general practitioner care (2015–16 rate ratio 1.1), higher rates for hospital care (2014–15 rate ratio 1.3) and lower rates of specialist care (2015–16 rate ratio 0.6) (AIHW 2017)
- for Indigenous Australians the need for primary health care increases with remoteness, but access to general practitioner care decreases (AIHW 2014).

Cultural barriers, including racism and a lack of cultural awareness, are important issues for Indigenous Australians in accessing selected health services. Cultural education is an important strategy to reduce the adverse impact of racism (Awofeso 2011). For example, a defined set of values and principles, and demonstrated behaviours, attitudes, policies and structures can enable organisations to work effectively cross-culturally (Dudgeon et al. 2010; Durey & Thompson 2012).

8.6 References

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Appendix A: Indigenous demographic context

In the 2016 Census, 649,171 individuals identified as being of Aboriginal and Torres Strait Islander origin—an increase of 18% from the 2011 Census count (ABS 2017c). These data are Census counts, which are different from the official measure of the population of Australia, the estimated resident population (ERP). The ERP is based on Census counts with adjustments made to account for people who were missed in the Census.

2016 Census-based preliminary ERP

Based on the 2016 Census, the preliminary Indigenous ERP at 30 June 2016 was 798,381 (ABS 2017b). Note that this estimate may differ slightly from the final 2016 Indigenous ERP, which is due for release by the ABS in August 2018.

Based on preliminary 2016 ERP data (and 2011 Census ERP data for 2006 and 2011):

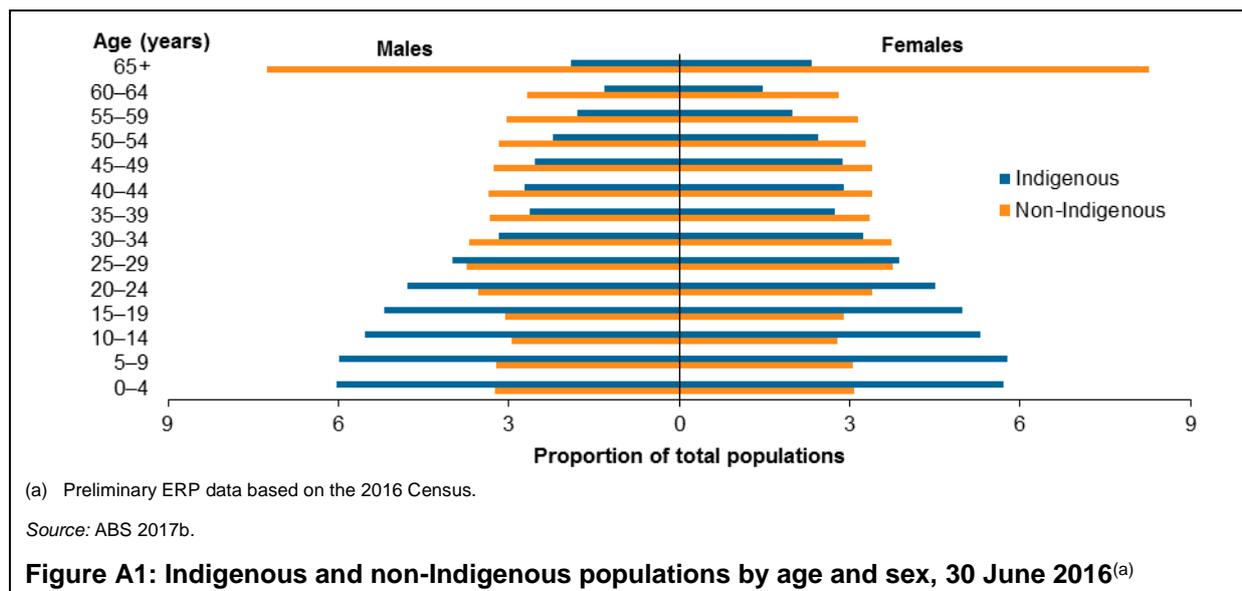
- between 2011 and 2016, the Indigenous population increased by 19%, compared with an 8% increase for the non-Indigenous population (ABS 2017b). The proportion of the Australian population that was Indigenous increased from 3.0% in 2011 to 3.3% in 2016
- as a proportion of the total Australian population, the Indigenous population varied between jurisdictions—from 0.9% in Victoria to 30% in the Northern Territory (Table A1)
- in 2016, 33% of Indigenous Australians lived in New South Wales, 28% lived in Queensland, 13% in Western Australian and 9% in the Northern Territory
- the age structure of the Indigenous population is younger than the non-Indigenous population. In 2016, more than half (54%) of Indigenous Australians were aged under 25, compared with 31% of non-Indigenous Australians (Figure A1)
- while the Indigenous population is young relative to the non-Indigenous population, it is also gradually ageing. Between 2006 and 2016, the proportion of the Indigenous population aged under 15 decreased from 38% to 34%, while the proportion aged 65 and over increased from 3.0% to 4.3%.

Table A1: Indigenous population, by state and territory, 30 June 2016^(a)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Indigenous population	265,600	57,782	221,398	100,509	42,256	28,539	7,524	74,509	798,381
Proportion of total Indigenous population (%)	33.3	7.2	27.7	12.6	5.3	3.6	0.9	9.3	100.0
Proportion of total state/territory population (%)	3.4	0.9	4.6	3.9	2.5	5.5	1.9	30.3	3.3

(a) Preliminary ERP data based on the 2016 Census.

Source: AIHW analysis of ABS 2017b.



2016 Census counts

Census counts for 2016 enable more detailed analyses than are possible with the preliminary 2016 ERP data. Table A2 shows the breakdown of the 2016 Indigenous and non-Indigenous Census counts by age groups relevant to the COAG targets.

Table A2: Indigenous and non-Indigenous Census counts by age, 2016

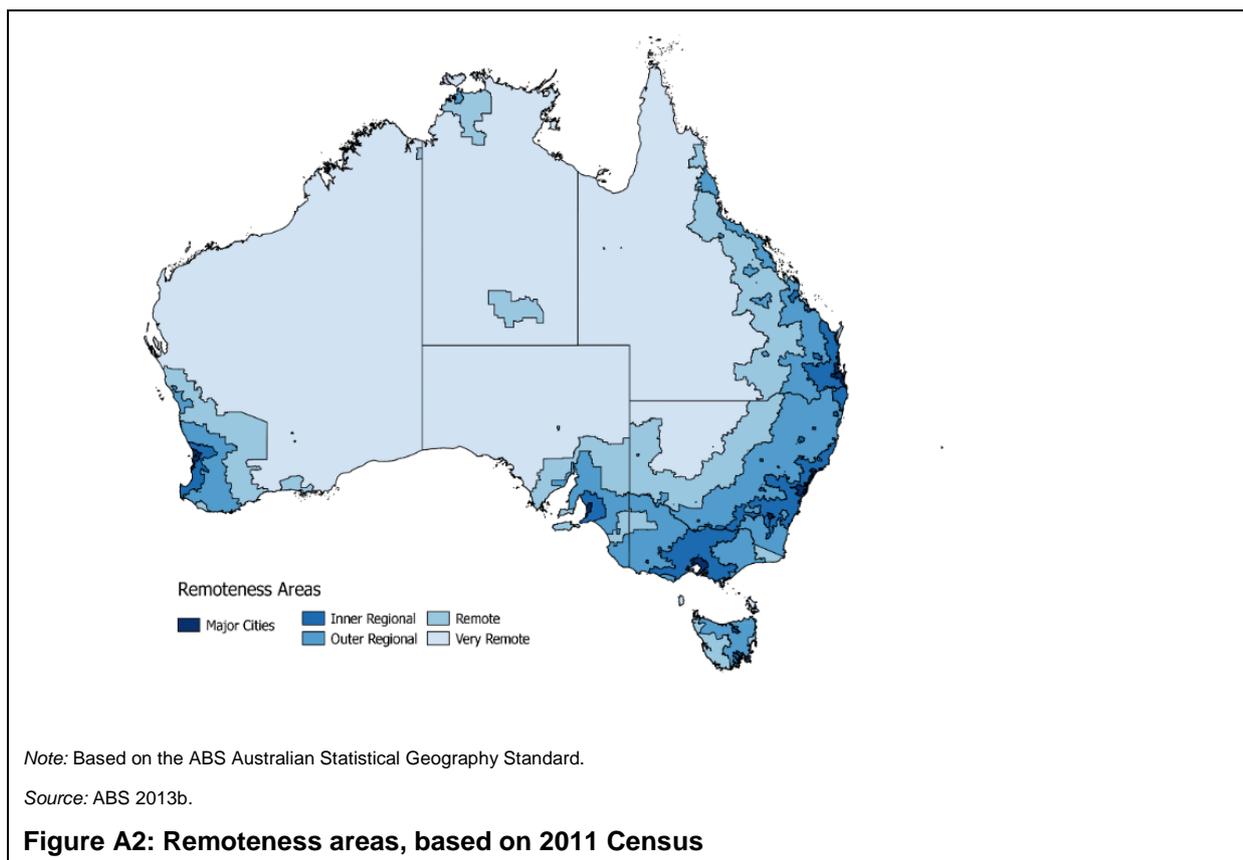
Age group (years)	Indigenous (%)	Non-Indigenous (%)	Relevant chapter
0–4	11.3	6.1	Child mortality (Chapter 2)
4–5	4.6	2.5	Early childhood education (Chapter 3)
6–9	9.4	5.1	School attendance (Chapter 4)
10–14	11.0	5.9	School attendance (Chapter 4)
20–24	8.9	6.6	Year 12 attainment (Chapter 6)
15–64	61.3	65.8	Employment (Chapter 7)
Total count (all ages)	649,171	21,341,231	

Source: AIHW analysis of ABS 2017a.

In 2016, 80% of households in which an Indigenous Australian lived were family households, compared with 71% for households of other households. Indigenous households were less likely to be a person living alone (15%, compared with 25%), and more likely to be households with more than one family living together (5.1% compared with 1.8%) (ABS 2017c). Households in which an Indigenous Australian lived were, on average, larger than non-Indigenous households (3.2 compared with 2.6 persons) (ABS 2017c).

2011 Census-based ERP by remoteness

Data in this section are based on 2011 Census results, as 2016 Census data by remoteness were not available at the time of analysis. Details of the boundaries of the remoteness area classification used for this analysis are shown in Figure A2.



While most Indigenous Australians live in non-remote areas, a relatively high proportion of the population in remote areas is Indigenous. In 2011, 79% of Indigenous Australians lived in *Major cities*, *Inner regional* or *Outer regional* areas, compared with 98% of non-Indigenous Australians. While only 14% of Indigenous Australians lived in *Very remote* areas, they made up 45% of Australians living in *Very remote* areas (Table A3).

Table A3: Population by remoteness area and Indigenous status, 30 June 2011^(a)

Remoteness area	Number of Indigenous Australians	Indigenous as a % of total population	% of Indigenous population	% of non-Indigenous population
Major cities	233,146	1.5	34.8	71.3
Inner regional	147,683	3.6	22.0	18.3
Outer regional	146,129	7.2	21.8	8.7
Remote	51,275	16.3	7.7	1.2
Very remote	91,648	45.1	13.7	0.5
Total	669,881	3.0	100.0	100.0

(a) ERP data based on the 2011 Census.

Source: AIHW analysis of ABS 2013c.

Appendix B: Summary of COAG target data, by state and territory

Table B1: COAG target data, by state and territory, various years^(a)

Target		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia	Total ^(b)
Child mortality rate (0–4 years) (deaths per 100 000), 2011–2015 ^(b)	Indigenous	110.5	n.a.	162.7	188.9	167.3	n.a.	n.a.	332.9	..	164.9
	Non-Indigenous	80.6	n.a.	97.0	53.7	68.7	n.a.	n.a.	93.2	..	80.1
	Gap	30.0	n.a.	65.7	135.2	98.6	n.a.	n.a.	239.7	..	84.8
Proportion enrolled in early childhood education (%), 2015	Indigenous	77	94	85	>100	>100	94	>100	84	87	..
	Non-Indigenous	86.8	87.1	85.6	76.6	81.1	88.2	85.4	68.6	83.4	..
School attendance rate (Years 1–10 combined) (%), 2016	Non-Indigenous	93.2	93.3	93.0	92.9	92.4	92.2	92.6	91.8	93.1	..
	Gap	6.4	6.2	7.4	16.3	11.3	4.0	7.2	23.2	9.7	..
	Indigenous	87.6	87.3	85.2	71.3	74.7	91.1	84.2	42.2	80.6	..
School achievement rate, proportion of Year 3 students meeting NMS for reading, 2016	Non-Indigenous	96.4	96.0	96.3	95.5	94.5	94.2	96.7	93.4	96.0	..
	Gap	8.8	8.7	11.1	24.2	19.8	3.1	12.5	51.2	15.4	..
	Indigenous	62.7	68.5	67.5	58.4	81.0	76.4	82.7	29.7	61.5	..
Year 12 attainment rate (%), 20–24 years 2014–15	Non-Indigenous	87.4	88.6	86.2	83.3	81.9	79.6	93.4	88.7	86.4	..
	Gap	24.7	20.1	18.7	24.9	0.9	3.2	10.7	59.0	24.9	..
	Indigenous	53.1	52.7	49.6	39.5	46.6	54.4	62.9	36.7	48.4	..
Employment rate (%), 15–64 years 2014–15	Non-Indigenous	71.2	71.5	74.0	76.1	71.6	70.2	76.6	83.0	72.6	..
	Gap	18.1	18.8	24.4	36.6	25.0	15.8	13.7	46.3	24.2	..
	Indigenous (M); (F)	70.5; 74.6	n.a.	68.7; 74.4	65.0; 70.2	n.a.	n.a.	n.a.	63.4; 68.7	69.1; 73.7	..
Life expectancy (years) (M = Male, F = Female) 2010–2012	Non-Indigenous (M); (F)	79.8; 83.1	n.a.	79.4; 83.0	80.1; 83.7	n.a.	n.a.	n.a.	77.8; 83.1	79.7; 83.1	..
	Gap (M); (F)	9.3; 8.5	n.a.	10.8; 8.6	15.1; 13.5	n.a.	n.a.	n.a.	14.4; 14.4	10.6; 9.5	..

n.a. = not available; .. = not applicable

(a) Based on the most recent data available at the time of analysis for this report.

(b) Aggregate 5-year combined data at the jurisdiction level have been included in this table for child mortality target. This total will differ from the 5-jurisdictions total reported for the COAG target as the latter is only a single-year estimate not reported at jurisdiction level.

Sources: AIHW 2017; SCRGSP 2016.

Appendix C: Technical information

Analysis of contributions to the national gap

This report includes estimates on the extent to which the national gap for a given target can be attributed to observed differences between Indigenous and non-Indigenous Australians at specific subgroups of the population (for example, by remoteness areas).

There is no unique method for this calculation, but the main method used in this report estimates how much the national gap would change if the Indigenous population in that subgroup had the same level of the outcome measure as the non-Indigenous population *at the national level*. That change in the national gap can then be interpreted as the contribution of that specific region or subgroup to the national gap. See Productivity Commission (2016) for use of this method to derive the contribution to the national gap on NAPLAN performance-related measures between Indigenous and non-Indigenous primary school children.

Another method calculates the change in the national gap if Indigenous Australians within a given subgroup had the same level of the outcome measure as non-Indigenous Australians within that *same subgroup*. This compares the same Indigenous and non-Indigenous subgroups (for example, Indigenous people in remote areas compared with non-Indigenous people in remote areas). The individual contributions from this method do not necessarily add up to the national gap, and so the sum of the contributions must be normalised to the national gap. Chapter 7 attributes the national gap using this method due to unique characteristics of the data.

Results reported for the contribution to the national gap should be interpreted with caution due to assumptions made about the hypothetical scenario.

Logistic regression analyses

Logistic regression modelling has been used to examine the influence of a range of different factors across several of the COAG target areas. A range of models have been estimated using unit record data from the 2014–15 NATSISS and the LSIC.

Regression results presented in this report describe statistical associations, rather than causal effects, between the selected explanatory variables (potential drivers) and the Indigenous outcome measures.

Logistic regression modelling involves calculating the odds of an event occurring (represented by the binary dependent variable) for varying levels of a characteristic in a study population. In each instance, the dependent variable is assigned a value of 1 if that condition is met; otherwise, it is coded as a 0 value (for example, being employed is coded as 1 and not being employed as 0). The odds are related to the probability of observing the event represented by the binary dependent variable (for instance, the probability of a person with specific characteristics being employed). The odds of an event are represented as the probability of that event occurring divided by the probability of that same event not occurring (which is 1 minus the probability of the event occurring).

The logistic regression model estimates the odds ratio (that is, the ratio of two odds) attributed to each explanatory variable used in the model. For categorical explanatory variables, such as remoteness areas, one category is assigned as the reference category. Odds ratios are then estimated in reference to the odds of being in a particular category

relative to the odds in the reference category. For a continuous explanatory variable, the odds ratio represents the effect on the odds of that event occurring when there is a one-unit change in that continuous dependent variable.

The statistical inference related to an odds ratio is whether it is significantly different from a value of 1. When the estimated odds ratio for a specific variable or category is close to 1, this means that variable does not have any effect on changing the odds of that event occurring. Variables or categories that increase the odds will have estimated odds ratios significantly greater than 1, while variables that lower the odds of an event occurring will have an estimated odds ratio significantly less than 1.

Relative importance of explanatory variables

The odds ratios from the logistic regression models in this report should not be used to compare the relative importance of the effects of the explanatory variables. The estimated values of the odds ratios are dependent on the choice of the reference subgroup for each categorical variable. There is no generally accepted technique to rank the importance of different categorical explanatory variables in a logistic regression model because there isn't an agreed single criterion on which to make this assessment. Unlike the case for ordinary least squares regression models with continuous dependant variables, the relative importance of explanatory variables cannot be related directly to the contribution each variable makes to the total variance of the dependant variable.

Several approaches have been proposed for ranking variables in a logistic model, including simple measures, such as standardized coefficients, p-values of the Wald Chi-square statistics and full information methods utilizing the model log-likelihood and other components of the information matrix (Menard 2004). Given the intended use of the rankings in this report to approximate the general factors or areas of importance that drive COAG target measures—rather than to precisely quantify the specific role of the way the subgroups of a variable have been defined—a 'marginal effects' approach has been chosen. This approach relies on converting the logistic regression coefficients (from which the odds ratio is derived) into changes in the probability of the outcome occurring, given a change away from the reference category of each categorical explanatory variable (or a one-unit change in a continuous variable). In logistic regression modelling this implied change in the probability of the outcome represented by the dependent variable is the most intuitive way to understand the regression results. The rankings based on the marginal effects were found to be similar to alternative ranking methods, such as the use of standardised coefficients.

The 'marginal effects', or changes in the probability of the outcome represented by the dependent variable being observed, are computed in relation to an individual who is in the reference category of all the categorical explanatory variables (or mean value of any continuous variable). Despite this being the standard approach to calculating marginal probabilities for binary (and categorical) explanatory variables (Wooldridge 2015), the ranking is still dependent on the choice of the reference category.

The absolute size of the change in probability is the basis for ranking relative importance of the explanatory variables. The ranking is made only among variables that had a statistically significant logistic regression coefficient. This method ignores the differences that sometimes occur between the statistical significance of the estimated logistic regression coefficient and the statistical significance of the associated change in probability, or marginal effect. The latter have not been derived for this report.

Since the intended use of the rankings in this report is to identify in an approximate way the general factors of importance that drive COAG targets, the estimated values of the marginal effects have not been reported. In this report, the results of the ranking exercise have been

reported by identifying a subset of variables that have the relatively larger estimated marginal effects without resorting to a rank ordering for each variable. This grouped ranking approach has been adopted given that the values of the marginal effects used for ranking are sensitive to the non-linearity of the logistic model results, the specific sample data point at which they are computed, and the choice of reference groups. It is likely that the ranking based on a grouped approach will be less sensitive to these variations in the computed marginal effects than a strict rank ordering of all regression variables.

The marginal effect calculations are sensitive to the model specification. Marginal effects can differ when some other variables are included or excluded from the model, or if there is not strict independence among the regressors. This assumption has not been tested in this report and this is another reason for grouping the ranking results.

While several explanatory factors were found to be associated with many of the COAG target measures, the causality of these associations and relative impact remain difficult to establish. The available data capture only a subset of variables thought to influence each target. Most data sets capture information that are cross-sectional, which makes it difficult to establish causal relationships. Both the statistical significance and size of the estimated marginal effects of the explanatory variables can change with alternative versions of the estimated models, and with alternative data sets. The regression results and ranking of the effects of the explanatory variables in this report should be interpreted in this context.

Measuring ‘the gap’

There are two methods commonly used for measuring the gap between Indigenous Australians and non-Indigenous Australians in the outcome of interest—the rate difference and the rate ratio.

Depending on the context, the rate difference can be either the rate for Indigenous Australians minus the rate for non-Indigenous Australians, or the reverse. For easier reading, the rate difference for a given target is defined so as to generally result in a positive gap. The rate difference enumerates the magnitude of the change required to close the gap. All COAG targets related to a gap measure use rate differences to monitor trends.

Rate ratios compare two rates by dividing one by another. Calculated as the rate for Indigenous Australians divided by the rate for non-Indigenous Australians, a rate ratio of greater than 1 indicates higher prevalence in the Indigenous population, while a ratio of less than 1 indicates lower prevalence in the Indigenous population. A rate ratio of 1 indicates that the rates are the same in both populations.

Appendix D: Additional data tables and figures

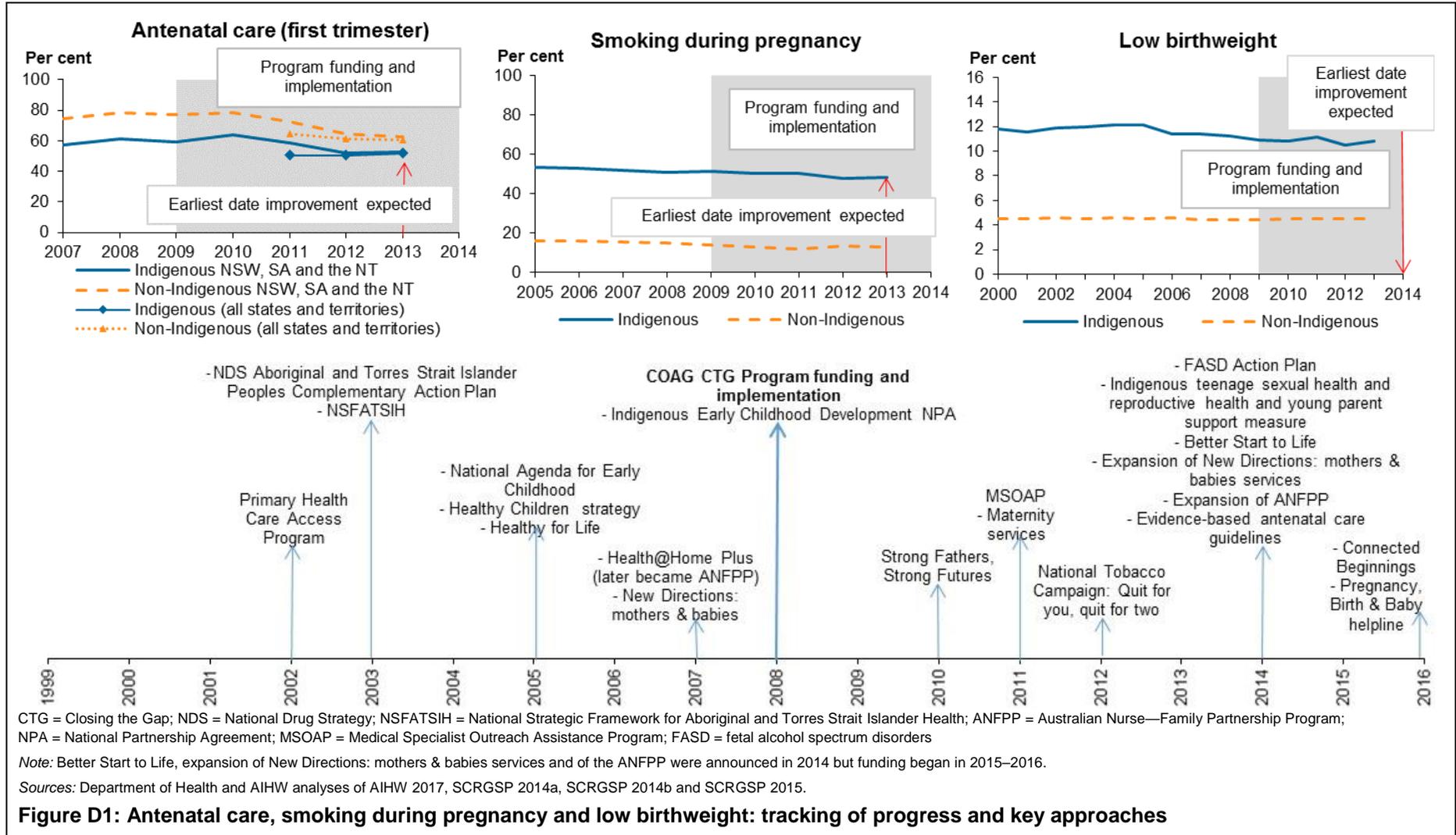


Table D1: Summary table of Indigenous-specific programs achieving improvements in child mortality and its key risk factors

Intervention/program	Scale of the program^(a)	Published improvement in outcome^(b)	Length of intervention	Time lag between implementation and first signs of improvement	What does national data show?
Increase the number of antenatal care visits					
Congress Alukura	Small	42%	10 years	6 years	3% increase, 1998–2009
Increase the likelihood of attending antenatal care in first trimester					
Healthy for Life	Large	4%	3 years	2+ years	No significant change over 4-year period for which data are available
Aboriginal Maternal Infant Health Strategy	Medium	13%	2 years	2 years	
Congress Alukura	Small	15%	10 years	6 years	
Increase the number of antenatal clients					
Aboriginal Midwifery Access Program	Small	55%	2 years	<1 year	n.a.
Mt Isa Shared Antenatal Care	Small	60%	1 year	<1 year	
Decrease alcohol use during pregnancy					
Healthy for Life	Large	2%	4 years	2+ years	National data on trends not available
Ord Valley Aboriginal Health Service FASD program	Small	14%	1 year	<1 year	
Decrease smoking during pregnancy					
Healthy for Life	Large	1%	4 years	2+ years	No significant change over 4-year period for which data are available
Decrease incidence of low birthweight					
Healthy for Life	Large	2%	4 years	2+ years	7% decline over 9 years (2001–2009)
Aboriginal Maternal Infant Health Strategy	Small	1%	2 years	2 years	
Aboriginal Midwifery Access Program	Small	19%	2 years	<1 year	
Strong Women, Strong Babies, Strong Culture	Small	8%	4 years	1–3 years	
Ngnampa Health Council	Small	6%	12 years	1–5 years	
Increase mean birthweight					
Healthy for Life	Large	116 grams	3 years	2+ years	n.a.
Strong Women, Strong Babies, Strong Culture	Medium	171 grams	4 years	1–3 years	
Ngnampa Health Council	Small	103 grams	12 years	1–5 years	
Townsville Mums and Babies Program	Small	199 grams	3 years	1–3 years	
Congress Alukura	Small	100 grams	10 years	6 years	

(continued)

Table D1 (continued): Summary table of Indigenous-specific programs achieving improvements in child mortality and its key risk factors

Intervention/program	Scale of the program ^(a)	Published improvement in outcome ^(b)	Length of intervention	Time lag between implementation and first signs of improvement	What does national data show?
Decrease incidence of pre-term births					
Aboriginal Maternal Infant Health Strategy	Medium	9%	2 years	2 years	
Townsville Mums and Babies Program	Small	8%	3 years	1–3 years	n.a.
Decrease perinatal mortality					
Aboriginal Maternal Infant Health Strategy	Medium	13.6 per 1000 reduction	2 years	2 years	6 per 1,000 reduction over 10 years (2001–2010)
Ngnampa Health Council	Small	36.6 per 1000 reduction	12 years	1–5 years	
Decrease infant mortality					
Cherbourg	Small	184	30 years	Unknown	3.7 per 1,000 reduction over 10 years (2001–2010)

n.a. = not available

(a) Large-scale programs are programs rolled out nationally; medium-scale programs are offered state-wide; and small-scale programs are locally-based programs within state programs.

(b) Sources of these published estimates for improvement can be found in tables 3.2, 3.3 and 3.5 of AIHW 2014c.

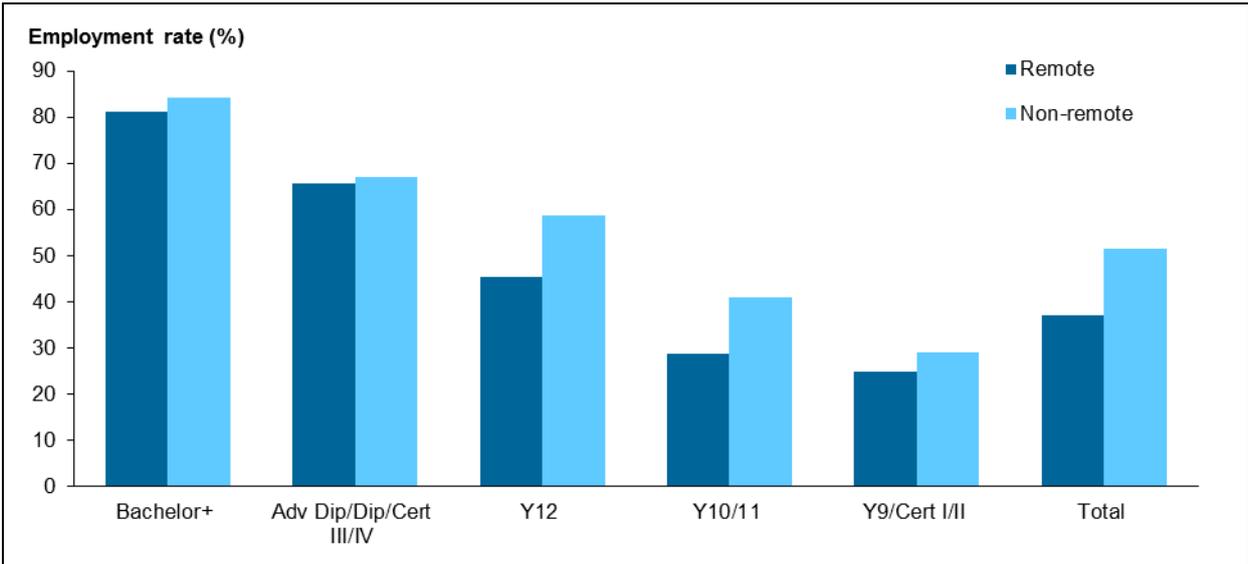
Source: AIHW 2014c.

Table D2: ECE programs in Australia, as at 30 June 2016^(a)

State/territory	Program name	Age of entry—preschool program	Age of entry—school
NSW	Preschool	Generally aged 4 and 5	5 by 31 July
Vic	Kindergarten	4 by 30 April	5 by 30 April
Qld	Kindergarten	4 by 30 June	5 by 30 June
WA	Kindergarten	4 by 30 June	5 by 30 June
SA	Preschool	4 by 1 May	5 by 1 May
Tas	Kindergarten	4 by 1 January	5 by 1 January
ACT	Preschool	4 by 30 April	5 by 30 April
NT	Preschool	4 by 30 June in urban areas and 3 for Aboriginal and Torres Strait Islander children in remote areas	5 by 30 June

(a) Preschool programs can be delivered by services other than a stand-alone preschool—for example, in some jurisdictions the majority of preschool programs are delivered by long day care centres.

Source: Productivity Commission 2017.



Source: AIHW analysis of the 2014–15 NATSISS.

Figure D2: Employment rate among Indigenous Australians aged 15–64 in remote and non-remote areas, by level of highest education, 2014–15

Appendix E: Not fully engaged in employment, education or training

For the purposes of this report, the population of people ‘not fully engaged in employment, education or training’ is defined as those aged 17–24 and not engaged in full-time work, full-time study, or part-time work and part-time study combined. Based on the 2014–15 NATSISS, about 6 in 10 (58%) Indigenous Australians aged 17–24 meet this definition. The proportion of Indigenous Australians who are not fully engaged is higher for females than males (60% compared with 55%) and for those living in remote areas compared with those in non-remote areas (80% compared with 52%).

A logistic regression analysis on Indigenous Australians not fully engaged in employment, education or training, with the outcome variable being whether an individual is part of the labour force, is presented in Table E1. A stronger labour market attachment can be a critical factor affecting the transition away from being not fully engaged. This model seeks to identify differences between: those in work/education or unemployed (who are part of the labour force); and those not actively looking for work (defined as being outside the labour force).

Table E1: Multivariate logistic regression: odds ratios of being in the labour force among Indigenous Australians not fully engaged in employment, education or training, 2014–15

Explanatory variable and reference group	Level	Odds ratio
Sex (ref: Females)	Males	1.81*
Remoteness (ref: Non-remote)	Remote	0.74*
Disability status (ref: no disability/restrictive longer-term condition)	Severe/profound	0.33*
	Mild	0.84*
Marital status (ref: Not married)	Married	0.96
Number of children under 15 in household (ref: None)	1–2	0.47*
	3 or more	0.32*
Difficulties with English (ref: No)	Yes	0.83*
Education (ref: Year 12)	Advanced Diploma/ Diploma/ Certificate III/IV	1.34*
	Year 10 or 11	0.73*
	Year 9 or below/Certificate I/II	0.57*
Torres Strait Islander status (Qld only) (ref: No)	Yes	2.18*
Arrested in the last 5 years (ref: No)	Yes	0.69*
Avoided situations due to past discrimination (ref: No)	Yes	1.45*
Threatened/physical violence (ref: Never experienced)	Experienced	0.82*
Self-assessed health status (ref: Fair/poor)	Excellent/very good/good	1.10*
Recognise homelands (ref: Yes)	No	1.06*
Removed from natural family (ref: No)	Yes	0.58*
Whether house is of acceptable standard (ref: Yes)	No	0.86*

* Significant odds ratio at the 95% confidence level.

Notes

1. The reference population is Indigenous Australians aged 17–24 who are working part-time (and not studying), studying part-time (and not working) or not working nor studying. It excludes individuals enrolled in a school institution.
2. The outcome variable is whether or not the individual is in the labour force—that is, employed part-time, or is unemployed and looking for work.

Source: AIHW analysis of the 2014–15 NATSISS.

Using the odds ratios shown in Table E1 alone, it is not possible to compare the relative importance of the effects of the explanatory variables. To assess the relative importance, the logistic regression results have been used to estimate the change in the probability of being employed associated with a change from the reference level of each of the explanatory variables. The relative importance of the explanatory variables is based on the absolute size of the associated changes in probability (see Appendix C for details). Based on this method—among those Indigenous Australians who are not fully engaged—the explanatory variables with relatively larger impacts on whether these young people are in the labour force include: having more children in the household; having a severe/profound disability; having low education; and having been removed from their natural family.

Appendix F: Main data sources

Australian Early Development Census

The Australian Early Development Census data collection covers all children in their first year of full-time schooling.

The main purpose of the AEDC collection is the assessment of these children, usually aged 5, against five domains of early childhood development: physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, and communication skills and general knowledge. As part of the AEDC collection, teachers are also asked to report whether the assessed student attended a preschool program in the year before starting full-time schooling. AEDC data are based on information reported by teachers, and are widely used as a valuable measure of early child development and school readiness (DET 2016). The AEDC has been conducted every 3 years since 2009, with the latest round in 2015.

ABS Australian Aboriginal and Torres Strait Islander Health Survey

The ABS 2012–13 AATSIHS was designed to obtain national benchmark information on a range of health-related issues and to enable monitoring over time of the health of Indigenous people (ABS 2013b). The survey was conducted between April 2012 and February 2013, and collected information on a range of health-related issues, including health status, risk factors and demographic and socioeconomic characteristics.

Further information is available at

<<http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4727.0.55.002Main%20Features12012-13?opendocument&tabname=Summary&prodno=4727.0.55.002&issue=2012-13&num=&view=>>>.

Census of Population and Housing

The ABS Census of Population and Housing collects information relating to each person and household in Australia on Census night. It aims to measure the number and key characteristics of Australia's people and the dwellings in which they live, including providing data for small geographic areas and small population groups (ABS 2009).

Further information is available at

<<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2008.02011?OpenDocument>>.

Life tables for Aboriginal and Torres Strait Islander Australians

Estimates of life expectancy are drawn from life tables published by the ABS. The ABS collection contains state, territory and Australian life tables for males and females for the reference period. It also contains life expectancy at birth estimates. A life table is a statistical model used to represent mortality of a population. In its simplest form, a life table is

generated from age-specific death rates, and the resulting values are used to measure mortality, survivorship and life expectancy (ABS 2013d).

Further information is available at
<<http://www.abs.gov.au/ausstats/abs@.nsf/mf/2011.0.55.001>>.

Longitudinal Study of Indigenous Children

The Longitudinal Study of Indigenous Children (LSIC) is funded and managed by the Australian Government Department of Social Services (DSS) and began in 2008. Findings in this report based on LSIC data should not be attributed to DSS or the Indigenous people and the communities involved in LSIC.

LSIC includes two groups of Indigenous children, B cohort (those aged 6 to 18 months at the start of the study) and K cohort (those aged 3½ to 5 at the start of the study). The study covers topics relating to the child's health, learning and development, family, and community. Data are collected from interviews conducted with the parents and carers of the study children, the study children themselves, and their school teachers (DSS 2015).

Further information is available at <www.dss.gov.au/lxic>.

National Aboriginal and Torres Strait Islander Social Survey

The 2014–15 NATSISS is the fourth social survey of Aboriginal and Torres Strait Islander Australians conducted by the ABS. The survey was conducted in all states and territories and information was collected on a range of demographic, social, environmental and economic characteristics (ABS 2016a). The previous NATSISS was conducted in 2008 and the first survey, the National Aboriginal and Torres Strait Islander Survey was conducted in 1994.

Further information is available at
<<http://www.abs.gov.au/ausstats/abs@.nsf/0/AD174BBF36BA93A2CA256EBB007981BA?Opendocument>>.

National Assessment Program—Literacy and Numeracy

Literacy and numeracy achievement results for school children are available from the NAPLAN. NAPLAN tests are conducted every year for school children in Years 3, 5, 7 and 9. Student achievement rates are reported by band levels for Indigenous and non-Indigenous students, by test-domain, year level and jurisdiction. This collection also reports on the percentage of student who are at or above the NMS in each NAPLAN test. Data are compiled by the Australian Council for Educational Research and provided to ACARA for reporting in the national annual report (ACARA 2016).

Further information is available at <<http://www.nap.edu.au/naplan>>.

National Early Childhood Education and Care Collection

Data for the National Early Childhood Education and Care Collection (NECECC) are collected on an annual basis and provided by all service providers delivering a preschool program to enrolled children aged 3 to 6. All state and territory governments of Australia and the Australian Government contribute to the collection (ABS 2014).

Further information is available at
<<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4240.0.55.001>>.

National Mortality Database

The National Mortality Database includes information on deaths and causes of death, age at death, place of death, country of birth, and where applicable, the circumstances of death.

Deaths data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the ABS. The data are maintained by the AIHW in the National Mortality Database (NMD). Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 are based on revised data; and deaths registered in 2014 and 2015 are based on preliminary cause of death data. Revised and preliminary data are subject to further revision by the ABS.

Further information is available

- for all causes at
<<http://abs.gov.au/ausstats/abs@.nsf/0/C67A858BA00CB846CA2568A9001393C6?OpenDocument>>
- for cause of death at
<<http://www.abs.gov.au/AUSSTATS/abs@.nsf/ProductsbyCatalogue/47E19CA15036B04BCA2577570014668B?OpenDocument>>.

National Perinatal Data Collection

The National Perinatal Data Collection (NPDC) is a national collection of data on pregnancy and childbirth. Data are based on births reported to the perinatal data collection in each state and territory and provided to the AIHW for reporting. Notification forms at birth are obtained from midwives, birth attendants, mothers and hospitals (AIHW 2016).

Further information is available at
<<http://meteor.aihw.gov.au/content/index.phtml/itemId/657522>>.

National Student Attendance collection

School attendance data are collected by the Australian Curriculum Assessment and Reporting Authority. Data are recorded and stored by schools, and also collected and reported by state and territory education authorities (for government schools) and by the Department of Education and Training (for non-government schools). The data collection includes all full-time students enrolled in Years 1–10 in all government, Catholic and independent schools in all jurisdictions (ACARA 2016).

Further information is available at <https://acaraweb.blob.core.windows.net/acaraweb/docs/default-source/assessment-and-reporting-publications/2016115-national-standards-for-student-attendance-reporting.pdf?sfvrsn=2>.

Survey of Education and Work

The Survey of Education and Work provides data on educational participation, highest attainment, transition from education to work, and labour force and demographic characteristics. Data are collected through the annual ABS household survey program (ABS 2016b).

Further information is available at <http://www.abs.gov.au/ausstats/abs@.nsf/0/556A439CD3D7E8A8CA257242007B3F32?Opendocument>.

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This report provides detailed information and analyses on the Closing the Gap targets, including the key drivers of change underpinning these targets. This report provides context for policy debate and discussion for the Closing the Gap Refresh, a joint initiative of the Council of Australian Governments (COAG).

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