



7.4 Closing the gap in education

Good health and wellbeing throughout life depend to a considerable extent on sound education. For Aboriginal and Torres Strait Islander Australians, in particular, education can provide opportunities to avoid the several disadvantages they face (ABS 2011; Biddle 2006; Biddle & Cameron 2012).

The Council of Australian Governments (COAG) is committed to a number of Closing the Gap targets for education (Box 7.4.1); this article reviews the progress made against these. It also analyses, for Indigenous people, several other aspects of school and tertiary educational attainment and transitions from school to work, as well as education related employment outcomes. In addition, it assesses the patterns of early childhood development and school readiness for Indigenous (and non-Indigenous) children from the most recent 2015 Australian Early Development Census (AEDC).

Box 7.4.1: COAG Closing the Gap targets related to education

- Ensure that 95% of all Indigenous 4-year-olds are enrolled in early childhood education by 2025.
- Close the gap between Indigenous and non-Indigenous school attendance within five years (by 2018).
- Halve the gap for Indigenous children in reading, writing and numeracy achievements within a decade (by 2018).
- Halve the gap for Indigenous Australians aged 20–24 in Year 12 (or equivalent) attainment rates (by 2020).

Source: PM&C 2017.

Of the education related targets, the 2020 target on Year 12 attainment is on track to be met, but not the 2018 target on reading and numeracy; and progress will need to accelerate for the 2018 school attendance target to be met (PM&C 2017). It is too early to properly assess progress on the new 2025 target on early childhood education. The previous 2013 early childhood education target expired unmet (PM&C 2017).

Early childhood development (school readiness)

Indigenous disadvantage has an early onset. Many Indigenous children fall behind, even on the earliest measures of childhood development. This is usually related to Indigenous households generally being in lower socioeconomic areas, with children inheriting the disadvantage of the families into which they are born (Daly and Smith 2005; Guthridge et al. 2016). Indigenous children also face several other unique developmental constraints not generally shared by the wider population. Common among these are multiple early life stressors—from deaths and adult imprisonment occurring more often in their families, from having severe illnesses and accidents, from experiencing discrimination (Shepherd and Zubrick 2012) and from the intergenerational effects of forced separation (Silburn et al. 2006).





A key marker of early childhood development in Australia is available through the AEDC assessments (Box 7.4.2). The AEDC assessments have been validated as a valuable measure of school readiness and have strong potential to predict later-stage school learning outcomes for the individual child (Brinkman et al. 2013).

Box 7.4.2: Australian Early Development Census

- The AEDC is a census type data collection. It has been conducted every 3 years since 2009 for all children in their first year of full-time schooling, usually when aged 5.
- School teachers assess these children on five domains of early childhood development:
 - physical health and wellbeing
 - social competence
 - emotional maturity
 - language and cognitive skills
 - communication skills and general knowledge.
- The assessments are based on teacher observations; the children do not participate in tests.
- For each of the five AEDC domains, children are given a score between 0 and 10. The distribution of scores achieved is quite skewed, with most children receiving high domain scores (towards 10). Such a distribution, with greater sensitivity at the lower end of the scale, is reasonable for a measure focused on levels of vulnerability in child development.
- The numerical scores of the AEDC assessments are used to classify all assessed children into three categories: 'developmentally vulnerable', 'developmentally at risk' and 'developmentally on track'.
- In the first data collection (2009), a series of cut-off scores were set for each of the five domains to convert numerical scores into these three categories. Children falling below the 10th percentile were categorised as 'developmentally vulnerable'. Children ranked between the 10th and 25th percentile were categorised as 'developmentally at risk', and all other children were categorised as 'developmentally on track'.
- The cut-off scores set in 2009 for these classifications remain the same across the three collection cycles.
- Two additional summary assessments of vulnerability are made of whether a child is assessed as developmentally vulnerable on any one or more of the five domain(s), and on two or more domains.
- The AEDC recently introduced a new measure of early childhood development, the Multiple Strength Indicator, that focuses on the more advanced skills and competencies of the assessed children (Gregory and Brinkman 2016a). Results on this Indicator are not presented in this chapter.
- The AEDC data collection instrument has been validated to measure developmental vulnerability for Indigenous children in the Australian context (Silburn et al. 2009).

Source: DET 2016b.



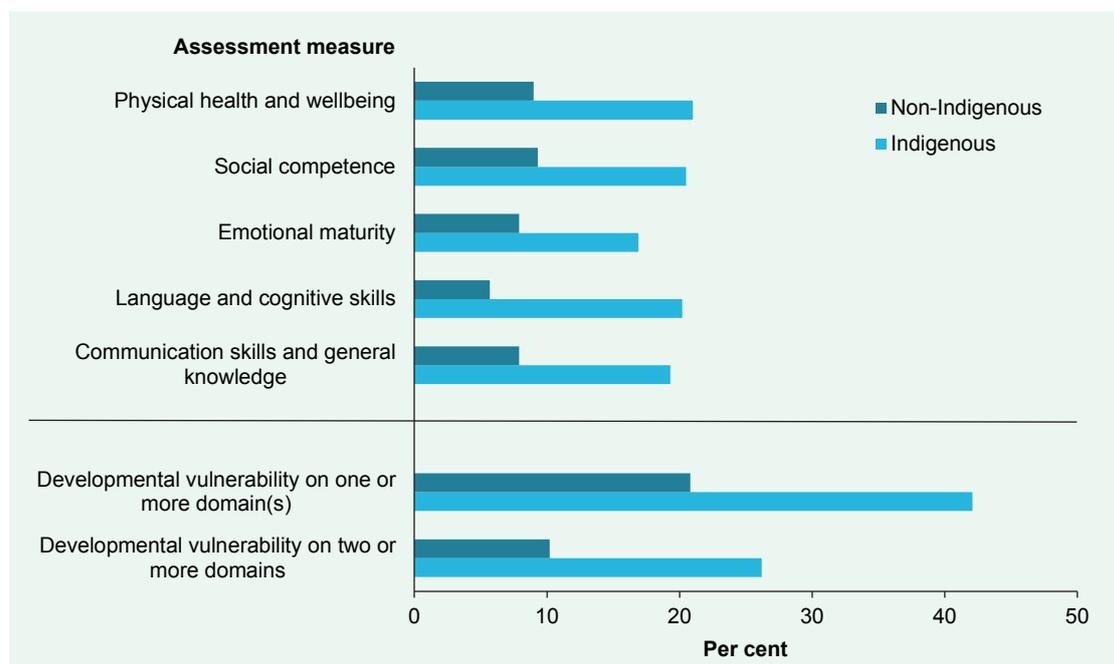


The three collections of the AEDC (2009, 2012 and 2015) show that gaps in child development between Indigenous and non-Indigenous children have, on average, formed even at this early age. In all three collections, Indigenous children were more than twice as likely as non-Indigenous children to be assessed as developmentally vulnerable. This was the case for the result on each of the five specific test domains and for both the vulnerability summary indicators used in AEDC data reporting (vulnerable on one or more of the five domain(s), and vulnerable on two or more of the five domains).

2015 AEDC results

The latest AEDC collection (2015) assessed around 302,000 children (of whom about 17,300, or 5.7%, were Indigenous). The results showed that, nationally, around 42% of all Indigenous children were categorised as developmentally vulnerable on one or more of the five AEDC domain(s), compared with 21% of all non-Indigenous children (Figure 7.4.1). As well, 26% of Indigenous children were assessed as vulnerable on two or more of the five domains, compared with the non-Indigenous rate of 10% (DET 2016b).

Figure 7.4.1 also shows the proportion of children assessed as vulnerable on each of the five AEDC domains. The Indigenous rates were at least 2 times higher than the non-Indigenous rates for all domains, with the smallest gap (still 2.1 times as vulnerable) in the emotional maturity domain. The largest gap (3.5 times as vulnerable) was in the language and cognitive skills domain.



Source: DET 2016b.

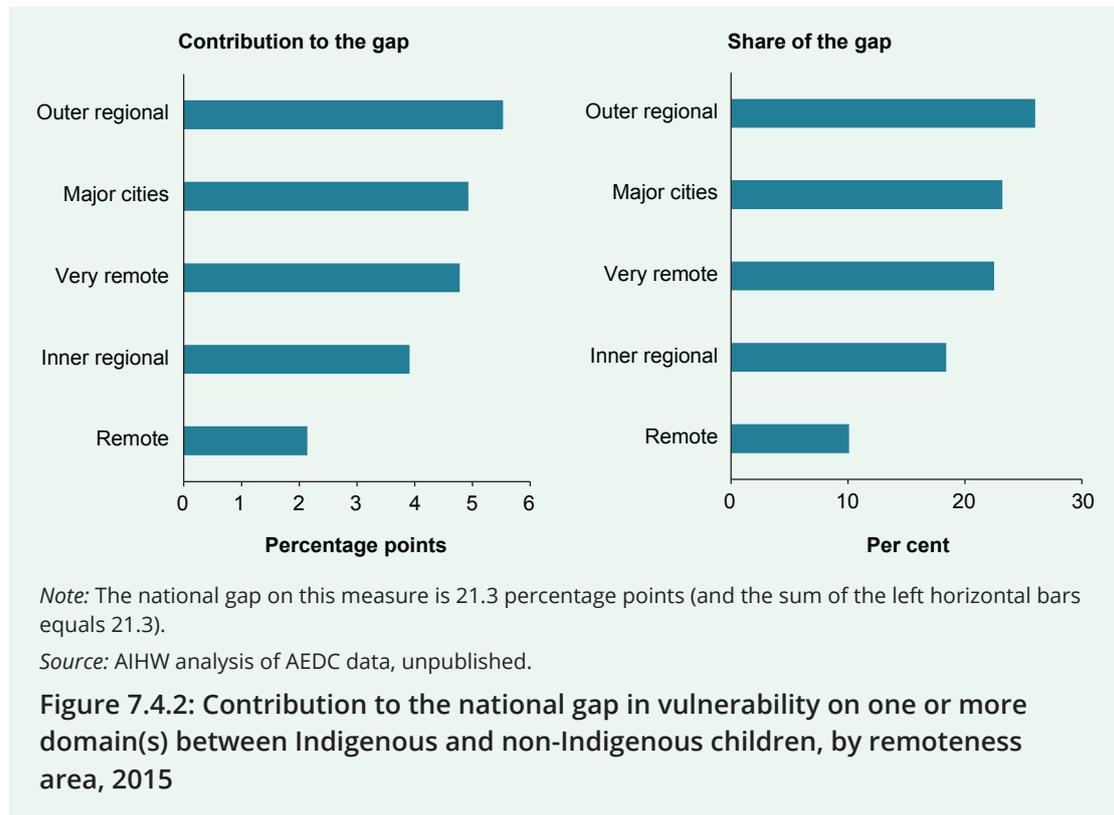
Figure 7.4.1: Proportion of developmentally vulnerable children in each of the five domains and on vulnerability summary measures, by Indigenous status, 2015





A contributing factor to the higher vulnerability rate of Indigenous children at the national level is that Indigenous children who live in *Remote* and *Very remote* areas have much higher levels of vulnerability, and more Indigenous children live in these areas, as a share of all Indigenous children, than is the case for non-Indigenous children. In 2015, about two-thirds (66%) of Indigenous children living in *Very remote* areas were assessed as vulnerable on one or more domain(s), as were 52% of Indigenous children in *Remote* areas (AIHW analysis of 2015 AEDC data, unpublished).

The *Very remote* and *Remote* areas jointly contribute to around one-third of the national gap between Indigenous and non-Indigenous children in the proportion vulnerable on one or more domain(s); the *Very remote* areas alone contribute to 22% of the national gap (Figure 7.4.2). The majority of Indigenous children, however, live in *Major cities* and *Inner and Outer regional* areas, so these regions contribute to the major share (two-thirds) of the national gap. The highest single-region contribution to the national gap is *Outer regional* areas (26%), followed by *Major cities* (23%) and *Inner regional* areas (18%) (AIHW analysis of 2015 AEDC data, unpublished).



At the national level, encouraging progress has been made to reduce the gap in early childhood development outcomes between Indigenous and non-Indigenous children. The proportion of Indigenous children assessed as vulnerable on one or more domain(s) decreased from 47% in 2009 to 43% in 2012, and to 42% in 2015. This was a larger decrease than for non-Indigenous children over this period for whom this proportion decreased from 22% in 2009 to 21% in 2015 (DET 2016a).





The AEDC results for Indigenous children also vary by sex. A consistently lower proportion of Indigenous girls were assessed as vulnerable on each of the five domains, and on the two vulnerability summary measures. This pattern was also seen for non-Indigenous children. For instance, in the 2015 AEDC assessments, 34% of Indigenous girls were assessed as vulnerable on one or more of the five domain(s), compared with 50% of Indigenous boys. The biggest relative difference by sex was on the emotional maturity domain: only 10% of Indigenous girls were assessed as vulnerable compared with 24% for Indigenous boys, making boys almost 2.5 times more likely to be assessed as vulnerable on this domain (AIHW analysis of 2015 AEDC data, unpublished).

Trends in AEDC results by remoteness areas

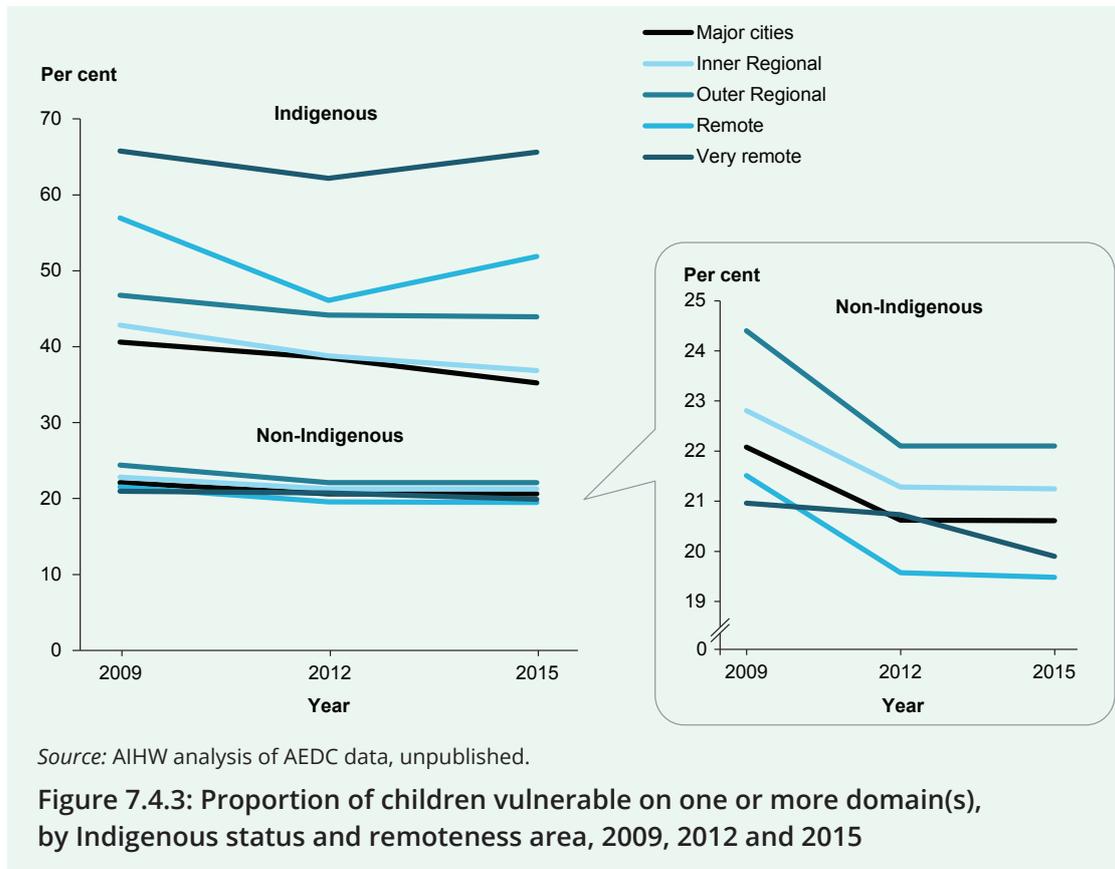
The results presented in this sub-section are based on unpublished AIHW analyses of the unit record AEDC data. Over time, changes have been uneven across remoteness areas in the proportion of Indigenous children assessed as vulnerable on one or more domain(s) (Figure 7.4.3). Between 2009 and 2015, this vulnerability rate decreased most in *Inner regional* areas (from 43% to 37%) and in *Major cities* (from 41% to 35%); both changes were significant, based on the critical difference method recommended in Gregory and Brinkman (2016b). However, when comparing changes between the two most recent AEDC collections (2012 and 2015), the vulnerability rate for Indigenous children increased significantly in *Remote* and *Very remote* areas and decreased significantly in *Major cities* and *Inner regional* areas. There was no change for Indigenous children living in *Outer regional* areas.

In *Very remote* areas, the proportion of Indigenous children assessed as vulnerable on one or more domain(s) increased by 3.5 percentage points (from 62% in 2012 to 66% in 2015); the 2015 vulnerability rate was almost the same as in the first collection of 2009, offsetting almost all the decrease observed between 2009 and 2012 (Figure 7.4.3).

Around 18% of all Indigenous children in the 2015 AEDC collection lived in *Remote* or *Very remote* areas (DET 2016b). The uneven pattern in developmental vulnerability across remoteness areas over time means that Indigenous children in *Remote* and *Very remote* areas are falling further behind (increasing gaps) in their early development. This comparison applies not just with non-Indigenous children in these areas, but also with Indigenous children living in *Major cities* and *Inner and Outer regional* areas.

The high rate of developmental vulnerability of Indigenous children in *Remote* and *Very remote* areas is not due mainly to the effect of geographical location. A similar pattern is not observed for non-Indigenous children. A smaller population of non-Indigenous children live in these areas, but their development vulnerability is not higher than in other areas. Indeed, in the 2015 AEDC collection, non-Indigenous children living in *Remote* and *Very remote* areas had the lowest and second lowest rate of vulnerability on one or more domain(s) among all non-Indigenous children (Figure 7.4.3 inset).





Progress in the Closing the Gap targets in education (and student achievements in PISA)

Early childhood education

In December 2015, the COAG agreed to a new target on access to quality early childhood education for 4-year-old Indigenous children. The previous target expired unmet in 2013. The new target is to ensure that 95% of all Indigenous 4-year-olds are enrolled in early childhood education by 2025. The new target extends beyond the original focus on Indigenous children living in remote communities; it aims to increase the participation of all Indigenous children in high-quality early childhood programs nationally (PM&C 2017).

This target has two measures of progress:

- (a) the proportion of children enrolled in a preschool program in the year before full-time schooling
- (b) the proportion of children attending a preschool program in the year before full-time schooling.





Baseline data for this target for 2015 have been recently released, using a revised method to calculate the numerators and the denominators of both measures (SCRGSP 2016a). The revised baseline data are derived from the National Early Childhood Education and Care Collection, which is managed by the Australian Bureau of Statistics. The revised method used in the new baseline takes account of the variation in school starting ages by jurisdiction, and how this interacts with population estimates. Also, the attendance rates reported for measure (b) are calculated as a percentage among children enrolled in a preschool program, rather than as a percentage of the relevant population of children, as was reported previously (SCRGSP 2016a).

The new baseline data for 2015 are therefore not comparable with previously reported data. Progress against this target should be assessed only in relation to the revised 2015 baseline and using future data releases consistent with the new methodology.

The revised baseline data for 2015 show a total of 14,200 Indigenous children enrolled in a preschool program in the year before full-time schooling. Expressed as a ratio of the potential population of children (taking account of the different rules on school starting ages in each state and territory), this represents a rate of 87% of all Indigenous children enrolled in a preschool program in the year before full-time schooling. The comparable non-Indigenous rate was 98% (SCRGSP 2016a).

The 2015 preschool enrolment rate for Indigenous children in the year before full-time schooling varied considerably across jurisdictions. To highlight some continuing misalignment of the numerator and denominator counts—even within the revised baseline methodology—the enrolment rate for Indigenous children exceeds 100%, as presently computed, in three jurisdictions (Western Australia, South Australian and the Australian Capital Territory). The lowest rate was 77% in New South Wales, followed by 84% in the Northern Territory, 85% in Queensland and 94% in Victoria (SCRGSP 2016a).

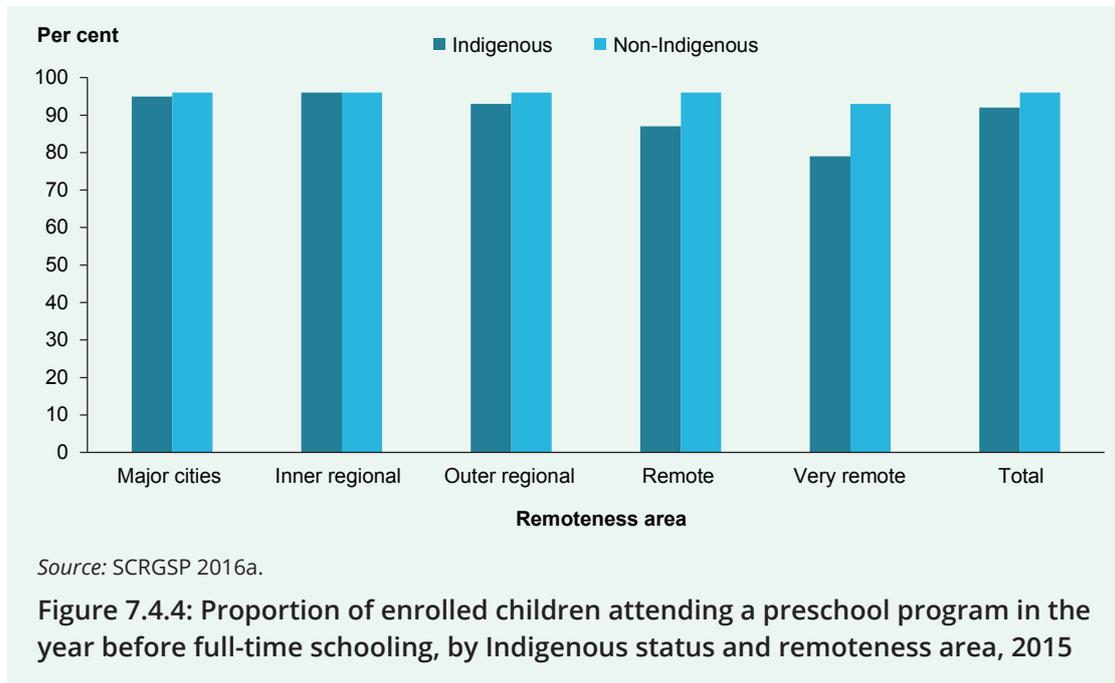
For preschool attendance, the revised 2015 baseline data show a total of 12,900 Indigenous children attending at least 1 hour of preschool (in the reference week of the National Early Childhood Education and Care Collection). As a proportion of Indigenous children enrolled in preschool, the national Indigenous preschool attendance rate in 2015 was 92%. The equivalent attendance rate for non-Indigenous children was 96%. There is significant variation across jurisdictions in the estimated preschool attendance rates for Indigenous children (expressed as a proportion of children enrolled) in the year before full-time schooling. Five jurisdictions recorded rates of 95% or higher (New South Wales, Queensland, South Australian, Tasmania and the Australian Capital Territory), with a low of 73% in the Northern Territory, followed by 88% in Western Australia and 92% in Victoria (SCRGSP 2016a).

There was also significant variation across remoteness areas in preschool attendance rates in the year before full-time schooling for Indigenous children (Figure 7.4.4). In 2015, *Major cities* and *Inner regional* areas recorded attendance rates of 95% or higher, and *Very remote* areas had the lowest rate, of 79%. For comparison, preschool attendance rates for non-Indigenous children varied little by remoteness areas, ranging from 93% attendance in *Very remote* areas to 96% attendance in all other areas.





Australia's welfare 2017



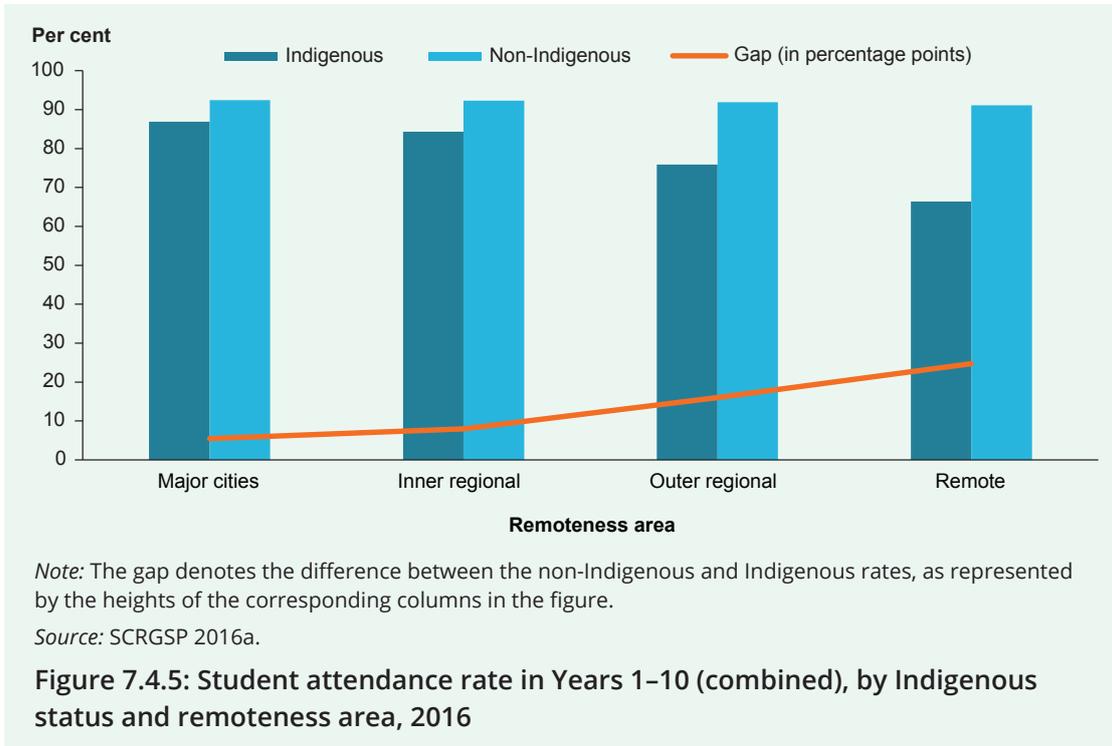
School attendance (Year 1 to Year 10)

In May 2014, COAG agreed to a new target to close the gap in school attendance rates between Indigenous and non-Indigenous students by the end of 2018. The baseline data for this new target were developed for 2014. The baseline and progress measures for this target calculate the school attendance rate for Indigenous and non-Indigenous students in each grade from Year 1 to Year 10 (using Semester 1 data), as well as a combined attendance rate for Year 1 to Year 10.

In 2016, the attendance rate for Indigenous students was 83% (about the same rate as in 2014), and for non-Indigenous students, 93%. The gap in attendance rates of 10 percentage points in 2016 was the same as in 2014. Progress will need to accelerate for this target to be met (PM&C 2017).

The overall school attendance rate in 2016 for Indigenous students was highest in *Inner regional* areas (87%) and *Major cities* (86%), declining steadily with increasing remoteness (to 66% in *Very remote* areas) (Figure 7.4.5). Attendance rates for non-Indigenous students varied little across remoteness areas (ranging from 93% in *Major cities* to 91% in *Very remote* areas). The largest gap in attendance rates between non-Indigenous and Indigenous students was in *Very remote* areas (25 percentage points), and the smallest gap was in *Inner regional* areas (5.5 percentage points).





The attendance rate for Indigenous students also varies greatly between primary and secondary schools. For instance, in 2016, the average attendance rate for Indigenous students in primary school (Years 1-6) was 86%, and 79% in secondary school (Years 7-10). The lowest attendance rate among all Indigenous students in Years 1-10 was 75%, in Year 10 (SCRGSP 2016a).

The school attendance target has two supplementary measures associated with it:

- proportion of students who attend school 90% or more of the time, by Indigenous status
- number and proportion of schools achieving 90% or more average school attendance, by Indigenous status.

Table 7.4.1 shows data for these additional measures.

Table 7.4.1: Students attending school 90% or more of the time and schools achieving 90% or greater average attendance, by Indigenous status, 2016

	Proportion of students attending school 90% or more of the time (%)	Proportion of schools achieving 90% or greater average attendance (%)
Indigenous students	49	48
Non-Indigenous students	79	86

Note: Government schools in New South Wales are excluded from the additional measure for proportion of students attending school 90% or more of the time due to lack of data.

Sources: PM&C 2017; SCRGSP 2016a.





Literacy and numeracy

The COAG target is to halve the gap in school achievements in reading, writing and numeracy between Indigenous and non-Indigenous students by 2018. The gap is assessed by measuring the difference between the proportion of Indigenous and non-Indigenous students who are at or above the National Minimum Standard (NMS) in the National Assessment Program—Literacy and Numeracy (NAPLAN) test results (see Box 7.4.3 and Box 7.4.4 for further details). Progress on this measure since the 2008 baseline year has been mixed. Consistent trends are not usually found, due to the variability in the NAPLAN results from year to year for Indigenous students.

Box 7.4.3: About National Assessment Program—Literacy and Numeracy

- The NAPLAN tests are conducted every year for all students across Australia in Years 3, 5, 7 and 9. Each year, over 1 million students nationally sit the NAPLAN tests.
- Assessments are made on three main domains (reading, writing, and numeracy), and two other language-related sub-domains (spelling, and grammar/punctuation).
- The Australian Curriculum, Assessment and Reporting Authority (ACARA) prepares national reports on each year's NAPLAN results. Student achievements are reported in two ways—a scaled score, and in performance bands.
- The scaled scores are constructed so that a given score represents the same level of achievement over time on a domain. This means these scores are consistent across the test for Years 3, 5, 7 and 9. Increases in the scaled score for the same student tested over a period of years (that is, in Years 3, 5, 7 and 9) show comparable improvements in the ability of that student.
- The conversion of scaled scores into performance bands provides an extra indicator of whether a particular child's achievement level on a specific test is at or above a pre-agreed NMS set for each test and year level.
- Every year, a small proportion of students are exempted 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; but they are excluded from the calculation of the mean scores.
- 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.
- A higher proportion of Indigenous students are regularly exempted, withdrawn or absent from the NAPLAN tests than non-Indigenous children. The combined proportion of Indigenous students exempted, withdrawn or absent is also generally higher in higher grades (SCRGSP 2016a). This can affect comparability of results for the same group of students over time.

Source: ACARA 2016.





Box 7.4.4: NAPLAN results and methods used to measure progress against the COAG target

- Progress against the Closing the Gap targets in reading, writing and numeracy is assessed using data on increases since the 2008 baseline in the proportion of Indigenous students who are at or above the NMS (not in reference to the mean scaled scores of Indigenous and non-Indigenous students).
- The target to halve the gap by 2018 has been converted into an agreed trajectory between 2008 (the baseline year) and 2018 (the target year) on the proportion of Indigenous students meeting the NMS (COAG 2012).
- The trajectories are a guide to measure progress from baseline performance to achievement of the target. They are, however, only indicative, with the national trajectories developed from those that each state and territory has adopted to measure its own progress.
- Achieving the annual trajectory progress points are neither requirements nor guarantees that the final target point will be reached. Still, it is customary to use the agreed annual trajectory points as a basis for assessing whether the latest calendar year's NAPLAN results are on track to meet the target by 2018.
- The annual trajectory points for assessing progress were developed for the three main NAPLAN test domains (reading, writing and numeracy). The original trajectories for the writing test (COAG 2012), however, are not currently valid, due to changes in the genre of the writing test.
- The NAPLAN writing tests have two alternate genres—narrative writing and persuasive writing. From 2008 to 2010, the test genre was narrative and from 2011 to 2015 it was persuasive. In 2016, the writing test switched back to narrative, and new analytical methods were developed to place scores for the narrative task and the persuasive task on the same scale. Results for both genres of the writing test are therefore comparable over time, but only from 2011 onwards.
- There are no agreed Closing the Gap trajectories for writing using the new combined scale from 2011 onwards. Therefore, assessment of progress against the COAG Closing the Gap target on literacy and numeracy is confined to the NAPLAN reading and numeracy domains, in Years 3, 5, 7 and 9 (a total of 8 test-year and test-domain combinations).
- As well as the COAG endorsed measures of progress against this target, other measures of progress reported on the achievements of Indigenous students are changes over time in their mean NAPLAN test scores, and gains in mean score made by the same cohort of students as they are tested in higher school grades.

Source: ACARA 2016.





Progress against the annual trajectory

The usual way to assess progress against this literacy and numeracy target is to compare the latest calendar year NAPLAN results with the national trajectory points for that year. Among the 8 test-year and test-domain combinations with an agreed trajectory point for 2016 (see Box 7.4.4), the 2016 results on the proportion of Indigenous students meeting the NMS showed that only numeracy in Year 9 was on track to meet the 2018 target.

Figure 7.4.6 tracks the annual performance of Indigenous and non-Indigenous students in the NAPLAN reading and numeracy tests between 2008 and 2016; the agreed trajectory points consistent with meeting the target in 2018 are also shown. In 2016, apart from Year 9 numeracy, the achievement levels by Indigenous students are below the agreed trajectory points for 2016. Achievements below the 2016 trajectory levels signal that progress achieved by 2016 is not on track to meet the 2018 target levels for Indigenous students. (The Year 3 reading achievement in 2016 is very close to the agreed trajectory point, with the deficit being only 1.8 percentage points).

Figure 7.4.6 also shows the large variability in the proportion of Indigenous students who meet the NMS across different calendar years in NAPLAN tests. The 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 children tested. Yet, for Indigenous students, there is unexpected variability in the results on the proportion meeting the NMS across different years, such as the one-off large increase in 2013 Year 5 reading results.

These large and unexplained fluctuations in the Indigenous NMS results across years suggest that, in assessing progress against this target, a narrow focus looking only at the latest calendar year results may not be appropriate. Using the 2015 NAPLAN results for Indigenous children, instead of the latest 2016 results, the assessment of progress against the target is quite different.

The 2015 results for the proportion of Indigenous students meeting the NMS (also in Figure 7.4.6) show that for half of the measures (4 of the 8), progress was on track to meet the 2018 target in Years 5, 7 and 9 numeracy and in Year 7 reading. By the same token, if results in a future year improved, showing an increase in the number of measures on track, the general variability of NMS results for Indigenous students means that they would also need to be treated with some caution.

Indigenous NAPLAN results and gaps by remoteness areas

The proportion of Indigenous students who achieve the NMS declines substantially with increasing remoteness, while there is little variation by remoteness for non-Indigenous students. There are large gaps not only between Indigenous and non-Indigenous students but also within Indigenous students by region of residence. For instance, in Year 9 reading in 2016, the gap in the proportion achieving the NMS between Indigenous and non-Indigenous students in *Very remote* areas was 57 percentage points. There was also an almost equally large gap of 48 percentage points in Year 9 reading results between Indigenous students in *Very remote* areas and *Major cities* (Figure 7.4.7).





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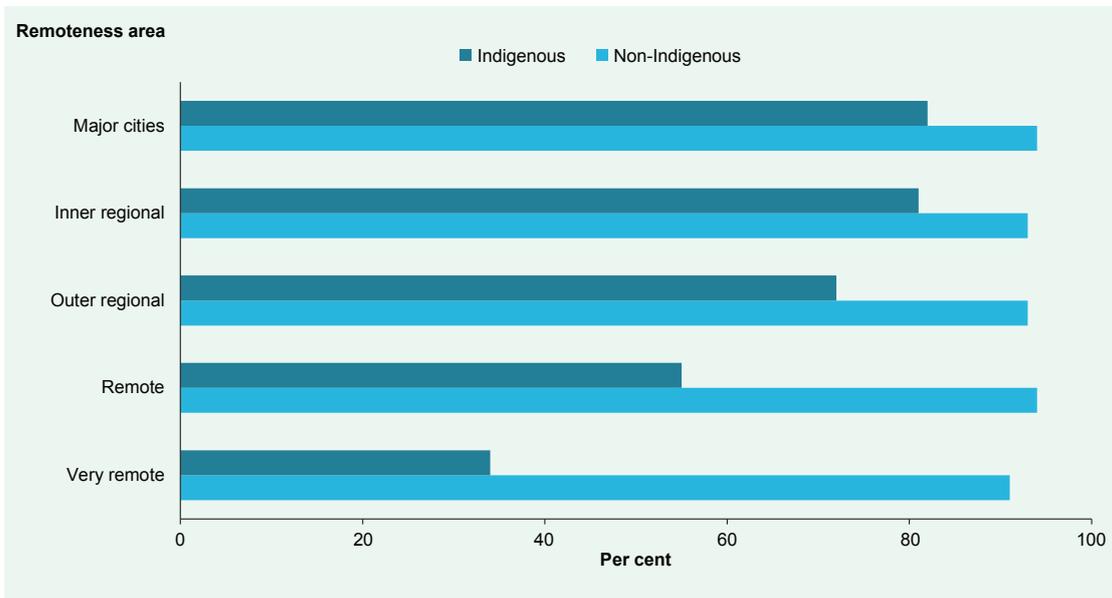
Note: The annual trajectory points shown are for Indigenous student results. They represent achievements consistent with halving the gap between 2008 and 2018, and were developed through the National Indigenous Reform Agreement process. These trajectory points are given in Schedule G of COAG (2012).
Sources: AIHW analyses of NAPLAN data in ACARA 2016 and previous NAPLAN national reports; COAG 2012.

Figure 7.4.6: NAPLAN performance in reading and numeracy, by Indigenous status and year level, and trajectories for Indigenous achievements (percentage meeting the NMS), 2008 to 2016





Australia's welfare 2017



Source: AIHW analysis of NAPLAN data in ACARA 2016.

Figure 7.4.7: Proportion of students meeting the NMS in Year 9 Reading, by Indigenous status and remoteness area, 2016

The substantially poorer NAPLAN performance of Indigenous students living in *Remote* and *Very remote* areas is a major concern as it contributes significantly to the national gap, even though the overwhelming majority of Indigenous students live in non-remote areas. Using data from an earlier 2014 NAPLAN testing round for Year 5 reading, the Productivity Commission (2016) estimated that *Very Remote* areas accounted for one-third of the national gap in the NMS percentage for Year 5 reading. This one-third share in the national gap is substantially disproportionate to the share of Indigenous students in *Very remote* areas (only 12% in 2014) because of the considerably larger gaps in NAPLAN achievements that occur there.

Indigenous students in metropolitan and provincial areas, accounting for a large majority of the Indigenous student population, still contributed more than half (55%) to the national gap in 2014 Year 5 reading. But the contributions of the *Remote* and *Very remote* areas were also significant (adding up to 45%). The Productivity Commission (2016) concluded that, to be effective and equitable, approaches to closing the gap on literacy and numeracy need to improve the educational outcomes of Indigenous students in all regions—metropolitan, provincial, remote and very remote areas (as well as across all states and territories).

Improvements in Indigenous results since the baseline of 2008

Improvements in achieving the NMS

As well as checking if annual trajectory points are met, progress against the reading, writing and numeracy targets is assessed through improved NAPLAN performance of Indigenous students—that is, by comparing the proportion of Indigenous students achieving the NMS in the 2008 baseline year with the latest year of results (point to point comparisons).





Between 2008 and 2016, there were statistically significant increases in the proportion of Indigenous children who achieved the NMS in:

- 4 of 8 measures of the reading and numeracy test domains (reading in Years 3 and 5 and numeracy in Years 5 and 9)
- 4 of 8 measures in the spelling and grammar/punctuation tests in Years 3, 5 and 7 (both tests in Year 3, and grammar/punctuation in Years 5 and 7)
- 1 of 4 measures of the writing results (Year 3, comparing results of 2011 with 2016).

Improvements in mean NAPLAN scores

The NAPLAN annual reports also report the mean scores achieved by Indigenous students in the NAPLAN tests over time. This measure is not formally agreed to by COAG to assess progress against this target.

Using 2008 data as the baseline, almost half (7 of the 16 measures, excluding writing) showed statistically significant increases in the mean NAPLAN test scores achieved by Indigenous students in 2016. These were in Years 3 and 5 in reading; Year 5 in numeracy; Year 3 in spelling; and in Years 3, 5 and 7 in grammar/punctuation. For the writing test, the mean score was not statistically higher in 2016 than the revised baseline of 2011 for any year level.

Gaps in school achievements—perspective from the Programme for International Student Assessment

Australia has participated in the Programme for International Student Assessment (PISA) since its inception. PISA is administered to 15-year-old students (who are usually in Years 9, 10 or 11) (see Box 7.4.5 for further details on the PISA). PISA results are a valuable indicator of the school achievements of Indigenous students, even though the PISA is not a formal measure related to the COAG target on literacy and numeracy.

Like for NAPLAN, PISA results consistently show significant gaps in the average achievements of Indigenous and non-Indigenous students. Several of these gaps have been reduced over time, however, more noticeably in the latest results for 2015, because of declines in the PISA performance of non-Indigenous students. However, the gap in performance of Indigenous students remains substantial. Indigenous students tend to be under-represented at the higher proficiency levels and over-represented at the lower proficiency levels in all domains in PISA tests.

PISA 2015 results

Australia's results from the PISA 2015 show that Indigenous students continue to achieve significantly lower scores than non-Indigenous students in all three major test domains.

In 2015, the mean score achieved by Indigenous students in reading literacy was 435 points, compared with a mean score of 506 points by non-Indigenous students. (This resulted in a gap of 71 points.) This level of difference in the mean scores indicates that Indigenous students, on average, were behind by around 2.3 years of schooling in reading literacy, compared with non-Indigenous students (Thomson et al. 2016).





In 2015, the mean score attained by Indigenous students in mathematical literacy was 427 points, compared with a mean score of 497 points for non-Indigenous students. (This represents a gap of 70 points.) The mean scores in scientific literacy for Indigenous and non-Indigenous students were 437 and 513 points, respectively (that is, a gap of 76 points). The gap of 70 points in the mean score in mathematical literacy indicates Indigenous students, on average, were behind by around 2.3 years of schooling; correspondingly, the gap of 76 points in scientific literacy indicates they were, on average, behind by around 2.5 years of schooling (Thomson et al. 2016).

Comparisons of PISA results over time

Time trends for the Australian PISA test results on the mean scores of Indigenous and non-Indigenous students on the three core domains show that the gaps in these mean scores have narrowed slightly mainly due to significant declines in the mean performance of non-Indigenous students (Figure 7.4.8).

The starting point for the comparisons in Figure 7.4.8 is the PISA test cycle in which a particular test domain was the major domain for the first time. The recommendation that the most reliable way to establish a trend for PISA results is to compare major domain results (Thomson et al. 2016) could not be followed here as it would severely reduce the number of data points for comparison. Instead, the latest 2015 results (in which scientific literacy was the major domain) are compared with the first instance in which a particular domain was the major domain (2000 for reading, 2003 for mathematical literacy, and 2006 for scientific literacy.) The first full assessment of each domain as the major domain sets the scale of assessment and provides a valid starting point for future comparisons (Thomson et al. 2016).

All three core domains show that for non-Indigenous students the mean scores in 2015 are lower than the first point of comparison with a major domain assessment. For Indigenous students, there was a significant decline in performance in mathematical literacy but no change in results for reading or scientific literacy. In all instances, the relative decline in mean scores for non-Indigenous students has been greater which has led to a small reduction in the gap between Indigenous and non-Indigenous mean scores. In general, though, this is not a desirable way to reduce the school achievement gaps.





Box 7.4.5: About the Programme for International Student Assessment

- PISA is a standardised test of the knowledge and skills administered to 15-year-olds by the Organisation for Economic Co-operation and Development in over 70 countries. It tests young people's ability to apply their knowledge and skills to real-life problems and situations, rather than how well a specific curriculum is learned.
- This means that PISA results can be consistently compared, both across countries and across time (OECD 2015).
- International results from the PISA are used regularly by many participating countries to evaluate the effectiveness of their school education systems.
- The PISA has been administered triennially since 2000. Australia has participated in all cycles of the PISA, and six sets of results for Australian students are now available.
- In 2015, over half a million students (representing 28 million 15-year-olds in 72 countries and economies) took the 2-hour PISA test. Students were assessed against three core domains (scientific, mathematical and reading literacy) as well as in collaborative problem solving. Australian students also took part in an optional assessment of financial literacy.
- Since the first cycle, the PISA has focused on the three core domains, but one domain is selected as the major domain in each test cycle. A substantial part of the total test time is devoted to the major domain.
- The distinction between major and minor domains matters. The recommended most reliable way to establish a trend for results in an assessment domain is to compare results between cycles when that assessment domain was the major domain.
- PISA testing in Australia has consistently ensured that enough Indigenous students are sampled to allow for reliable reporting of results by Indigenous status.
- In Australia, PISA results are reported as mean scores achieved in each of the three domains at the national and jurisdictional level. Results are also reported for each domain by selected demographic groups at the national level.
- In some test cycles, the sample of Australian students who sit for the PISA are also invited to become part of the Longitudinal Surveys of Australian Youth (LSAY), and to be interviewed regularly until age 25. The LSAY is a valuable longitudinal data resource covering the critical periods of school completion and transitions to employment or further education and training (NCVER n.d.).
- PISA test scores are important markers of students' cognitive ability around the end of compulsory schooling. Analyses of LSAY data in the Australian context show that PISA test scores are reliable predictors of later educational and employment outcomes (for example see Mahuteau et al. 2016; Nguyen 2010).

Source: Thomson et al. 2016.

A welcome feature in the trends in Figure 7.4.8 is that the Indigenous mean scores increased in 2015 compared with 2012 in two domains—by 7 points in reading literacy, and by 10 points in mathematical literacy. Both increases are statistically significant.

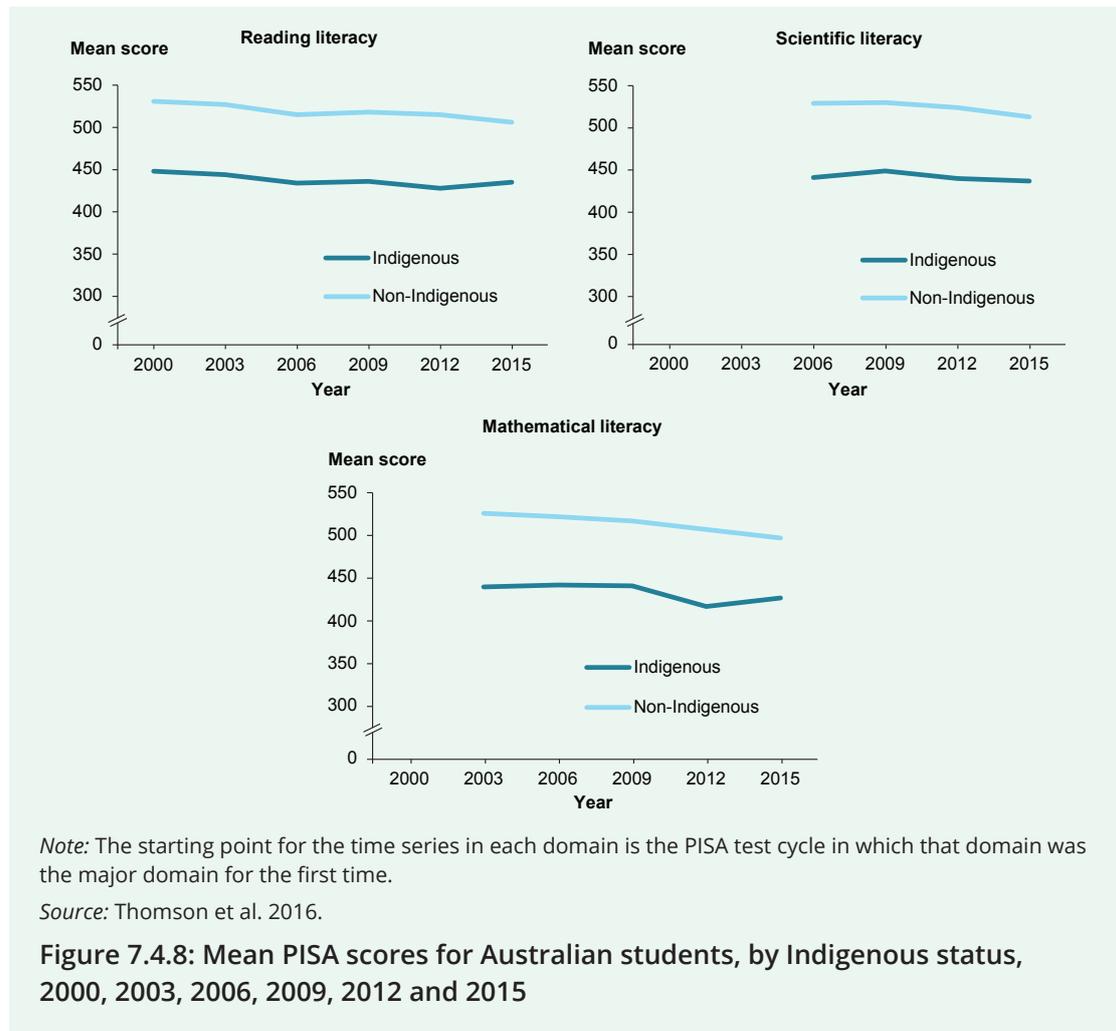




In reading literacy between 2000 and 2015, there was a 13-point decline in the mean score of Indigenous students (not statistically significant). A larger decline of 25 points in the scores of non-Indigenous students over this period was statistically significant. This results in a reduction in the gap in reading literacy between Indigenous and non-Indigenous students of 12 points (from 83 points in 2000 to 71 points in 2015). (Statistical significance of changes in the gap cannot be readily assessed.)

In mathematical literacy between 2003 and 2015, there also was a 13-point decline in the mean score of Indigenous students (from 440 points in 2003 to 427 points in 2015). This decline is statistically significant. Despite this decline, the gap in mathematical literacy was reduced by 16 points (from 86 points in 2003 to 70 points in 2015), again due to a larger (and statistically significant) decline in the performance of non-Indigenous students.

In scientific literacy since 2006, the mean score of Indigenous students has not changed significantly. It ranges from 441 in 2006 to 437 in 2015. There has, however, been a significant reduction of 16 points in the mean score for non-Indigenous students. The gap in the mean score in scientific literacy between Indigenous students and non-Indigenous students has decreased by 12 points (from 88 points in 2006 to 76 points in 2015).





PISA results and subsequent education outcomes

Analyses of the longitudinal link between the PISA sample of students and LSAY follow-up till age 25 in some of the Australian PISA test cycles show that PISA test scores are a good predictor of later employment and educational outcomes. Analyses of the 2003 PISA/LSAY cohort found that higher PISA scores in reading and mathematical literacy were linked with higher Year 12 completion and post-school university enrolment for both Indigenous and non-Indigenous students (Nguyen 2010).

A later more detailed analysis (Mahuteau et al. 2016) focusing on the educational outcomes of Indigenous students who participated in the PISA cohorts in 2006 and 2009 showed that:

- there was only a very modest improvement in the PISA results of Indigenous students at age 15 between the 2006 and the 2009 cohorts, once other background characteristics of the students in the two cohorts were controlled for
- a large part of the gap (50% to 63%) in the mean PISA scores of Indigenous and non-Indigenous students in these cohorts could be attributed to differences in their socioeconomic area and other background variables, and to differences in the schools that Indigenous students attend. However, a sizeable part of the gap still remains unexplained by these socioeconomic and school-related factors
- there was no significant difference between the subsequent educational outcomes of Indigenous and non-Indigenous students after taking account of their academic achievement at age 15, as reflected in the PISA scores. For example, the Year 12 completion rate and subsequent university enrolment rates were similar for Indigenous and non-Indigenous students who had similar PISA test scores.

A key implication of this last finding is that remedial efforts to advance Indigenous educational outcomes need to begin much earlier than age 15. At this age, gaps in academic achievement have already been set, and are shown to largely determine future outcomes. This reinforces the well-understood evidence from the international child development literature that early investment in the lives of disadvantaged children will help to reduce inequality in outcomes, in both the short and long term (Cunha and Heckman 2007).

However, it is noteworthy that given the same levels of ability developed by age 15 (as represented by the PISA scores), Indigenous students appear not to be further disadvantaged in subsequent educational outcomes. 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 at age 15.

If sustained advances can be made in early childhood development vulnerability and school learning outcomes for future cohorts of Indigenous children, it would be very likely that they can attain the same rates of subsequent educational outcomes as non-Indigenous children—for both Year 12 completion and participation in tertiary education. The international literature on PISA assessments has found that 15-year-old PISA students who had attended at least 1 year of pre-primary school scored better on the PISA tests, particularly for mathematical literacy in 2015, than students who did not go to preschool (Sparks 2017).





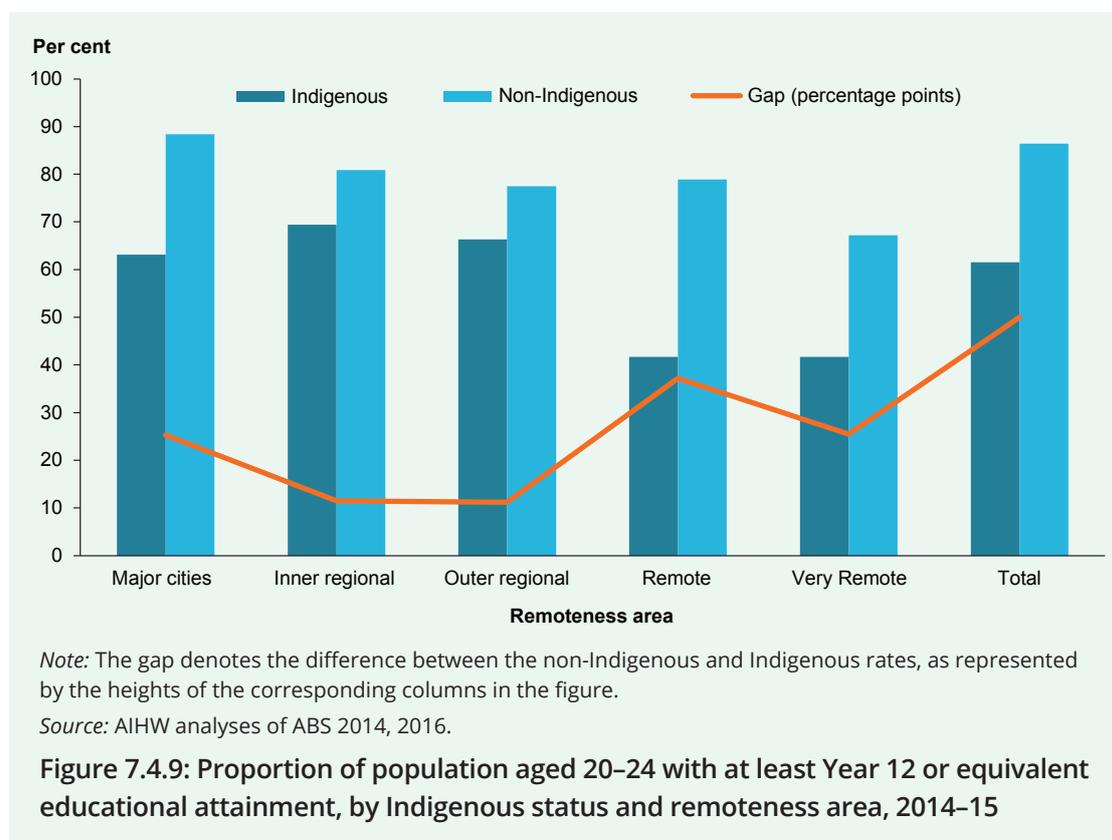
Year 12 attainment

Progress on the Year 12 attainment target can be measured from either Census or survey data. While the Census is the preferred official data source, the most recent Indigenous data for this target are from the 2014–2015 National Aboriginal and Torres Strait Islander Social Survey. Those data show this target is on track to be met (PM&C 2017).

In 2008 (survey baseline data), the Year 12 attainment gap between Indigenous and non-Indigenous 20–24-year-olds was 40 percentage points (attainment rates of 45% and 85%, respectively). The COAG target is to halve that gap by 2020.

The proportion of Indigenous 20–24-year-olds who have attained a Year 12 or equivalent level of education has increased significantly, from 45% in 2008 to 62% in 2014–2015; in 2014–15, the gap between Indigenous and non-Indigenous 20–24-year-olds decreased to 25 percentage points (with 62% and 86% attainment rates, respectively) (PM&C 2017). This shows that in relation to the survey-based estimates of this target measure, about two-thirds of the final reduction of the gap needed by 2020 has already been achieved by 2014–15.

In 2014–15, Year 12 attainment among Indigenous 20–24-year-olds was substantially higher in non-remote areas than in remote areas. It ranged from the highest rate of 69% in *Inner regional* areas to 42% in both *Remote* and *Very remote* areas (Figure 7.4.9).



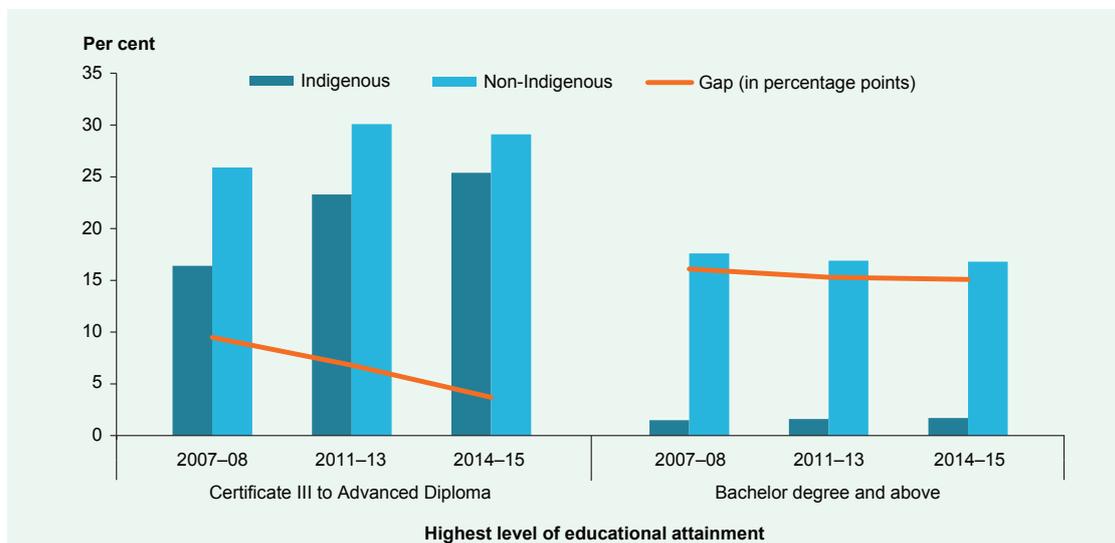


Post-school education and training

Post-school qualifications

Post-school qualifications are those obtained through successful completion of vocational education and training and/or higher education at universities. They include postgraduate/bachelor/diploma/certificate degrees from universities, and certificates in vocational education. Post-school qualifications are often classified as Certificate level III or higher in vocational education programs. That convention is adopted for the data reported in this section. Some individuals may complete post-school qualifications without having completed Year 12 in school; and some may take vocational educational courses while still enrolled in school. All of the latter category are excluded from the analyses in this section, irrespective of the Certificate level enrolled in, because they are still in school.

In 2014–15, slightly more than one-quarter (27%) of Indigenous 20–24-year-olds had obtained a post-school qualification (Certificate level III or higher)—double the rate (13%) in 2002 (SCRGSP 2016b). (These proportions exclude individuals still studying at any level). In 2014–15, the majority of Indigenous 20–24-year-olds with a post-school qualification had completed a Certificate III to an advanced diploma (25% of all 20–24-year-olds), and 1.7% had a Bachelor degree or higher. In 2014–15, Indigenous 20–24-year-olds had almost caught up with their non-Indigenous counterparts in attainment rates for a Certificate III to an advanced diploma, but a large gap remained in attaining a Bachelor degree or higher (Figure 7.4.10).



Note: The gap denotes the difference between the non-Indigenous and Indigenous rates, as represented by the heights of the corresponding columns in the figure.

Source: SCRGSP 2016b.

Figure 7.4.10: Post-school qualifications at Certificate III level to Advanced Diploma, and Bachelor degree and above for people aged 20–24, by Indigenous status, 2007–08, 2011–13 and 2014–15





Among all Indigenous persons aged 20–64, in 2014–15, 39% had obtained a post-school qualification—an increase from 18% in 2002 (SCRGSP 2016b). However, over time, there has not been a narrowing of the gap between the Indigenous and non-Indigenous population because post-school qualifications have also increased at about the same pace for the non-Indigenous population of 20–64-year-olds.

The rate of post-school attainment for Indigenous adults aged 20–64 decreases with remoteness area of residence. In *Major cities*, half of Indigenous 20–64-year-olds have attained a Certificate III level or above (including Bachelor and above). This rate decreases progressively with remoteness (50% in *Major cities*, 43% in *Inner regional areas*, 36% in *Outer regional areas*, 28% in *Remote areas* and 19% in *Very remote areas*).

Higher education enrolments

The number of Indigenous students enrolled in higher education has increased steadily over time. Between 2006 and 2015, enrolments increased by more than 80% (from 8,800 to 16,100) (DET 2016c). However, Indigenous students are still under-represented in tertiary enrolments, accounting for only 1.1% of all higher education domestic enrolments in 2015 (DET 2016a).

Participation in vocational education and training

In Australia, a wide range of agencies provide vocational education and training (VET) services. Their funding models vary from being fully publicly funded to fully privately funded. Data collected on Australia's VET services are reported on an annual basis for the total level of VET activity, and quarterly for only government-funded activity. Indigenous trainees feature prominently in both types of data collections.

Total VET activity

In 2015, around 4.5 million students were enrolled in vocational training, with 4,277 Australian providers. Of these students, about 165,500 (3.6%) were reported as Indigenous, 3.7 million (81%) as non-Indigenous and 698,900 (15%) did not report their Indigenous status (NCVER 2016a).

In 2015, there were 170,100 VET program enrolments for Indigenous students. Among these, 89% were in Australian Qualifications Framework (AQF) programs and the rest (11%) in non-AQF programs. These Indigenous students were enrolled in 1.3 million specific VET subjects.

Government-funded VET activity

In the first 9 months to 30 September 2016, there were 1.1 million students enrolled in the government-funded VET system, of whom 69,900 (6.5%) were Indigenous (NCVER 2016b). Indigenous students have a higher share in total enrolment for government-funded VET places than in total VET activity; this share has increased from 5.4% in 2011 (SCRGSP 2017).

The number of Indigenous students undertaking government-funded training in the first 9 months of 2016 increased by 14% over that for the corresponding period in 2015. This was a larger increase than the 4% increase in government-funded VET enrolments for non-Indigenous students over the same period.





Expressed as a proportion of the relevant Indigenous total population, Indigenous participation in government-funded VET has decreased slightly, from 12% in 2011 to 10% in 2015. Among Indigenous 18–24-year-olds, in 2015, almost one-quarter (24%) participated in a government-funded VET program, compared with 16% of non-Indigenous people in the same age group. The Indigenous participation rate in government-funded VET among 18–24-year-olds has, however, decreased slightly from 27% in 2011 (SCRGSP 2017).

Load pass rate of Indigenous students

The VET load pass rate has improved for Indigenous students, from 65% in 2004 to 77% in 2015. The VET load pass rate for Indigenous students has increased 3.5 percentage points since 2011 and 10.7 percentage points since 2006. Accordingly, the gap between Indigenous and non-Indigenous students in the VET load pass rate has reduced by half to 6.5 percentage points in 2015 compared to 13 percentage points in 2006 (SCRGSP 2016b). (The VET load pass rate is the ratio of hours studied by students who passed their subject(s) to the total hours committed to by all students who passed, failed or withdrew).

Transition from school to work

The transition from school to work or further education and training is an important milestone for young people. A commonly used measure of the lack of success in this transition is expressed as the proportion of 17–24 year olds who, after leaving school, are not 'fully engaged' in employment or further education and/or training (that is, the total time spent either separately, or in combination, in employment and further education/training is less than what constitutes a normal 'full-time' basis of involvement; note this is different to 'NEET'; see Chapter 3.1 'Pathways through education and training').

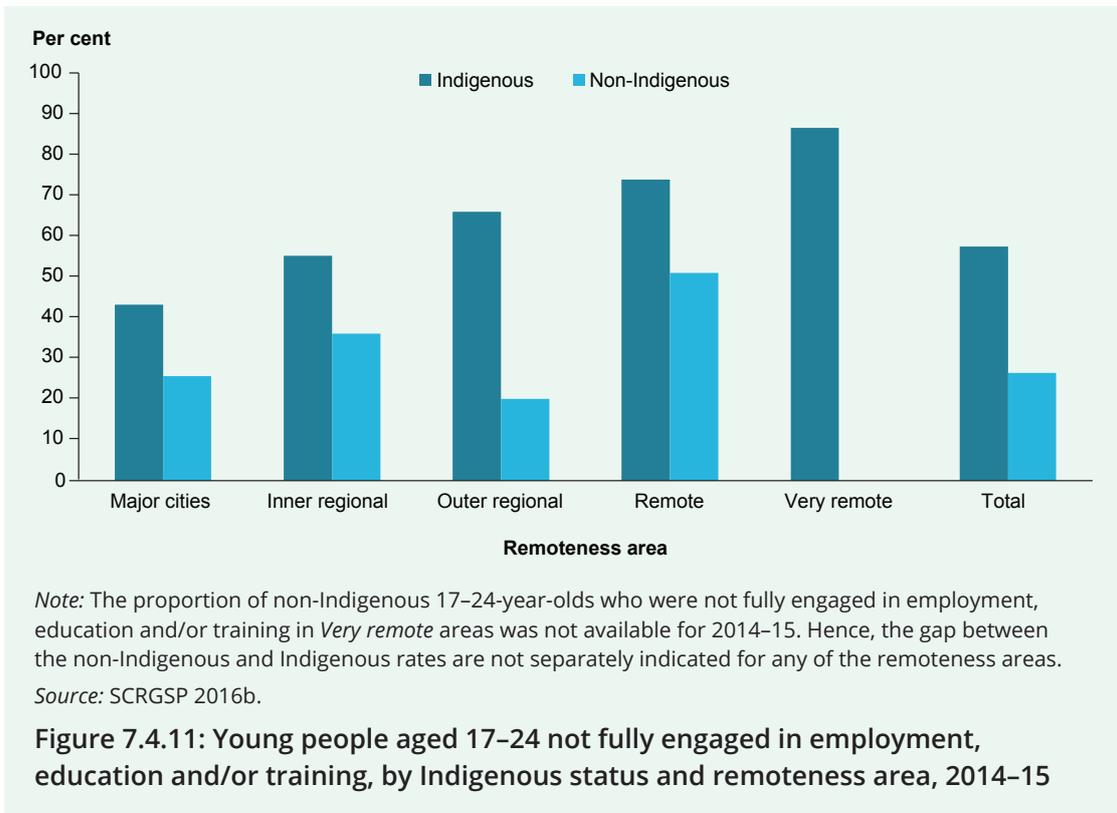
Indigenous young people aged 17–24 are more likely not to be fully engaged than non-Indigenous Australians of the same age. In 2002, more than two-thirds (68%) of young Indigenous Australians were not fully engaged. This proportion declined to 57% in 2014–15. In contrast, the proportion of young non-Indigenous Australians not fully engaged in employment, education and/or training increased slightly over the same period (from near-stable rates of around 25% between 2002 and 2012–13 to 26% in 2014–15) (SCRGSP 2016b). This led to a narrowing of the gap between Indigenous and non-Indigenous 17–24-year-olds between 2002 and 2014–2015 (from 43 to 31 percentage points).

The proportion of young Indigenous people not fully engaged in employment, education and/or training increases with remoteness of residence. In 2014–15, this rate ranged from 43% in *Major cities* to 87% in *Very remote* areas. However, the greatest gap in this rate between Indigenous and non-Indigenous 17–24-year-olds was in *Outer regional* areas (46 percentage points). The gaps in other regions were less than half the gap in the *Outer regional* areas (Figure 7.4.11).

Education and employment outcomes

The educational outcomes for many Indigenous youth and working age adults have generally improved over time. This is likely to continue, but there is still a long way to go before the remaining gap between the Indigenous and non-Indigenous populations for educational outcomes is closed. The gaps in educational qualifications are salient because they often are the sources of later gaps in employment and other socioeconomic indicators and health status (ABS 2011; Karmel et al. 2014).

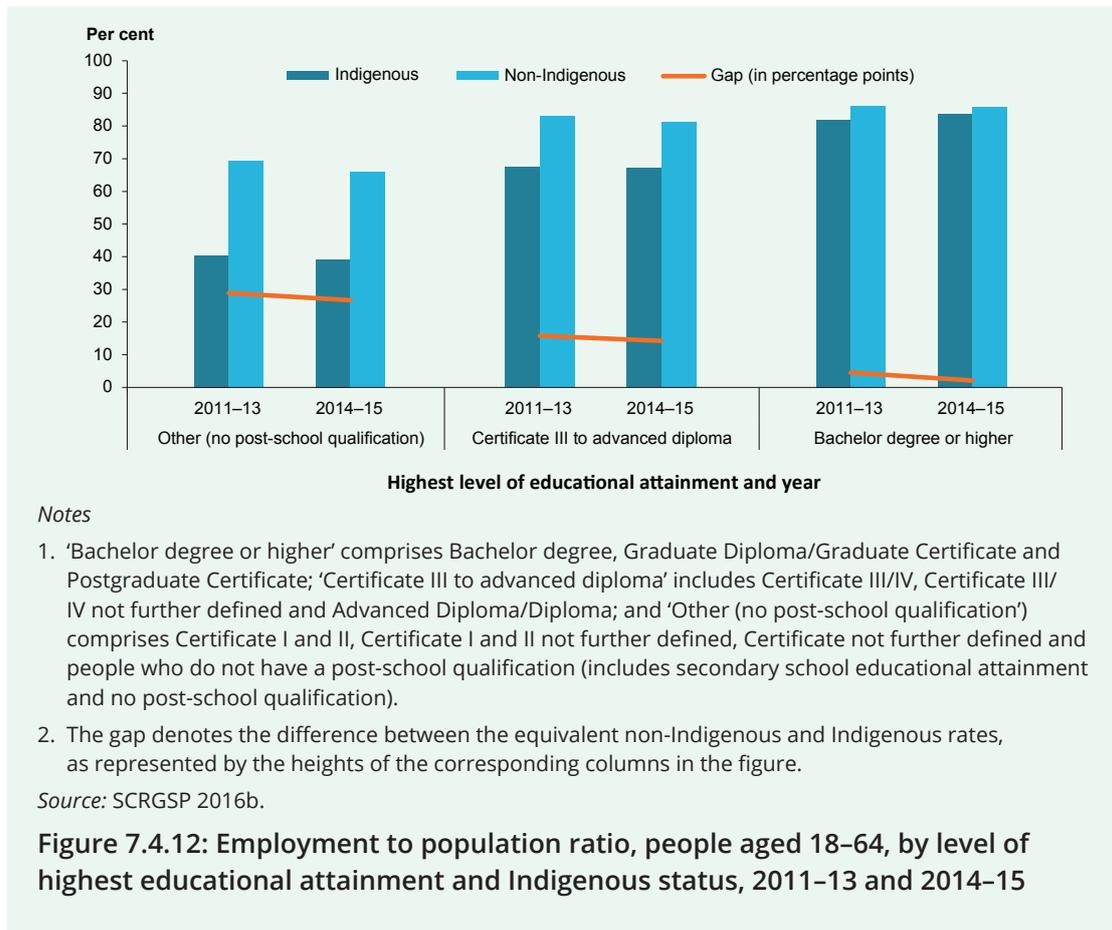




The key role of education as a ‘leveler’ of some of the other related gaps is clearly shown by the links between the highest level of post-school qualifications and the gaps in employment status. Not many Indigenous people aged 18–64 have a Bachelor degree or higher level of qualification. However, once they achieve that level of qualification, they consistently report high levels of employment (expressed as an employment ratio) of more than 80%. There also are only minimal gaps when compared with the employment to population ratio for non-Indigenous people aged 18–64 who have a Bachelor degree or higher level of qualification.

In 2014–15, the employment to population ratio for Indigenous people aged 18–64 varied greatly by the level of post-school qualifications (Figure 7.4.12). Among people with only a Certificate I or II (or lower), only 39% were employed. The employment ratio increased substantially to 69% for people with a Certificate III to an advanced diploma. The employment ratio increased further to 84% for people with a Bachelor degree or higher. The gap in the employment to population ratio between Indigenous and non-Indigenous persons aged 18–64 with only a Certificate I or II (or lower) was 27 percentage points in 2014–15. This gap was lower by almost half (14 percentage points) for people with a Certificate III to an advanced diploma. The employment ratio gap almost disappears (only 2 percentage points) for people with a Bachelor degree or higher level of qualification.





As shown in Figure 7.4.13, the boosts for employment of attaining a Certificate III or above is clear, for both Indigenous men and women.

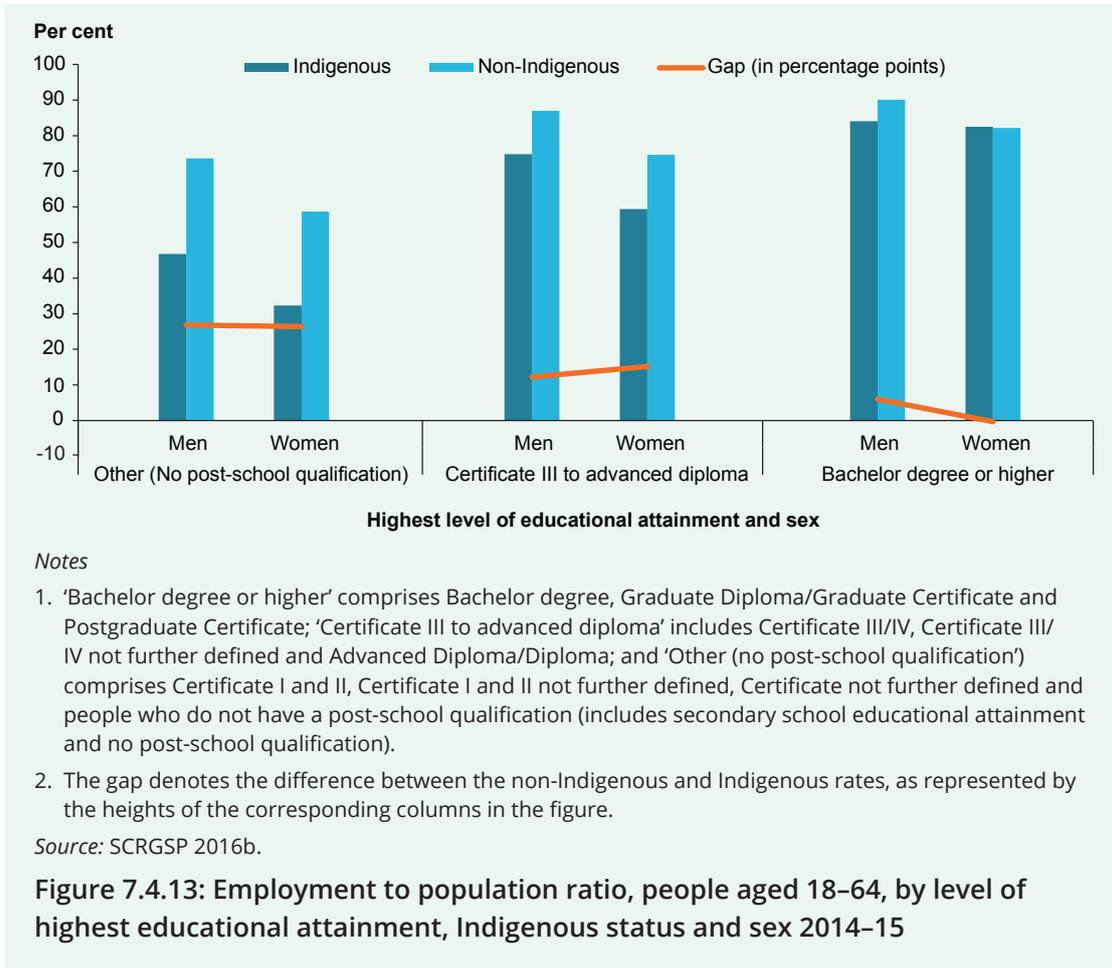
The employment to population ratio for Indigenous men increased from 47% for men without a post-school qualification to 75% for men with a Certificate III to advanced diploma. This ratio increased further to 84% for Indigenous men with a Bachelor degree or higher.

For Indigenous women, the increases in the employment to population ratio were similar: from 32% for women without a post-school qualification to 59% for women with a Certificate III to advanced diploma, and 83% for women with a Bachelor degree or higher.

The gaps between the proportions of Indigenous and non-Indigenous adults employed are high for both men and women with education levels below Certificate III (shown as 'Other' in Figure 7.4.13). For people with a Bachelor degree or higher, Indigenous employment rates are consistently high (above 80%) for both men and women, and the gaps with non-Indigenous employment are much smaller. A gap does not exist for Indigenous women with a Bachelor degree or higher (both employment rates are between 82% and 83%).

A qualification at the level of Certificate level III is thus seen as the critical threshold level of education that greatly improves the employment prospects of Indigenous workers and reduces the employment gaps between them and equivalently qualified non-Indigenous working age adults. This is a consistent pattern seen in other time periods (Karmel et al. 2014; SCRGSP 2016b).





What is missing from the picture?

The Closing the Gap agenda and its early learning and education measures have helped to substantially improve our understanding of the early onset of gaps in child development and learning outcomes for many Indigenous children. Family background, school characteristics and remote locations play important contributing roles.

Much less is known, however, about the origins and trends in the development of non-cognitive skills of Indigenous children. The child development literature stresses that cognitive and non-cognitive skills work together to produce successful adult outcomes, and that one helps to develop the other. Further analyses are needed on how Indigenous (and non-Indigenous) children from disadvantaged backgrounds can be helped to acquire non-cognitive skills—such as perseverance, motivation and self-esteem—that are vital in producing successful adult outcomes, including in education. This requires developing further, as well as making greater use of, any existing data on children linked over different services and outcome measures.





Where do I go for more information?

Early learning and care and achievements in school literacy and numeracy are part of the regular reporting by the AIHW on Children's Headline Indicators. These are disaggregated by Indigenous status, remoteness area and socioeconomic area (see AIHW [Children's Headline Indicators](#) for more information).

More information about the AEDC results is provided in the national reports prepared for each collection [2015 AEDC National Report](#), and community level report cards and maps are available online at 2015 AEDC Community Profiles.

Detailed annual national reports on the NAPLAN tests are produced by ACARA; see NAPLAN—[National reports](#) by year. As well, trends in NAPLAN results over time by Indigenous status and remoteness area (among others) are available at [ACARA NAPLAN time series data](#).

A fuller discussion of the gaps in educational outcomes and other broader measures related to education are reported regularly in the Overcoming Indigenous Disadvantage Reports prepared by the Steering Committee for the Review of Government Service Provision. The latest report was released in November 2016; see [Overcoming Indigenous Disadvantage: Key Indicators 2016](#).

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