

Analysis of Year 12 or Certificate II attainment of Indigenous young people – Stage 1

A report prepared for the

Council of Australian Governments Reform Council

John Ainley
Sarah Buckley
Adrian Beavis
Sheldon Rothman
Alice Tovey



Australian Council *for* Educational Research

February 2011

Contents

Contents	iii
List of Tables	v
List of Figures.....	vi
Background.....	1
Context	1
Data	2
A statistical overview of educational attainments and participation	3
Apparent retention rates to Year 12 or equivalent	3
Issues in interpreting apparent retention rates.....	3
Numbers of Indigenous students in Year 12	4
Apparent retention rates from Year 7/8 to Year 12	5
Apparent retention rates from Year 7/8 to Year 10	8
Apparent retention rates from Year 10 to Year 12	13
Summary of apparent retention rates to Year 12.....	14
VET attainment	15
Historical time series data	15
Student and courses	20
Overview VET participation	21
Multivariate analyses of influences on attainment	22
Model 1: The effects of background characteristics and achievement on attainment	25
Modelling for all participants	25
Modelling for Indigenous and non-Indigenous participants	26
Model 2: The effects of educational intentions, background characteristics and achievement on attainment	27
Modelling for all participants	28
Modelling for Indigenous and non-Indigenous participants	29
Mediation analyses	30
Overview.....	32
Review of literature.....	33
Background	33
Factors impacting on educational outcomes of Indigenous students	35
Overview	41
Conclusion.....	41
Apparent retention rates.....	41
VET attainment	42

Multivariate analyses of influences on attainment	42
Literature review	42
Proposed model of attainment.....	42
References.....	45
Appendix A	49
Appendix B.....	50
Appendix C.....	51
Appendix D	53
Appendix E.....	57
References (to Appendix E)	60

List of Tables

Table 1	Numbers of Indigenous and non-Indigenous students enrolled in Year 12 in 2001, 2006 and 2009	4
Table 2	Apparent retention rates from Year 7/8 to Year 12 by jurisdiction and time .	6
Table 3	Apparent retention rates from Year 7/8 to Year 10 by jurisdiction and time	10
Table 4	Apparent retention rates from Year 10 to Year 12 by jurisdiction and time.	12
Table 5	Numbers of Indigenous and non-Indigenous students completing a VET qualification in 1996 and 2008 by state and territory (‘000).....	16
Table 6	Highest current qualification level of enrolment for Indigenous and non-Indigenous persons aged 15-19, and 20-24 years, 2002-2009	20
Table 7	Percentage of the population by current qualification enrolment for Indigenous and non-Indigenous persons aged 15 to 19 and 20 to 24 years in 2006.....	21
Table 8	Count of participants according to attainment measures and Indigenous status, gender, location and language spoken at home	23
Table 9	Count of participants according to attainment measures and parental education level.....	24
Table 10	Means (and standard deviations) for achievement and socioeconomic status (ESCS) according to attainment	24
Table 11	Multivariate logistic modelling (model 1) of the two attainment measures for all LSAY Y06 participants	26
Table 12	Multivariate logistic modelling (model 1) of Year 12 attainment for Indigenous and non-Indigenous LSAY Y06 participants	27
Table 13	Multivariate logistic modelling (model 2) of the two attainment measures for all LSAY Y06 participants	29
Table 14	Multivariate logistic modelling (model 2) of Year 12 attainment for Indigenous and non-Indigenous LSAY Y06 participants	30
Table 15	Multivariate logistic modelling of educational intentions for all LSAY Y06 participants, Indigenous participants and non-Indigenous participants.....	31
Table 16	Total Indigenous student and percentage of student population by school level and age, 2006	33

List of Figures

Figure 1	Apparent retention rates for Indigenous students from Year 7/8 to Year 12 by jurisdiction and time	7
Figure 2	Apparent retention rates for non-Indigenous students from Year 7/8 to Year 12 by jurisdiction and time	7
Figure 3	Apparent retention rates for Indigenous students from Year 7/8 to Year 10 by jurisdiction and time	11
Figure 4	Apparent retention rates for Indigenous students from Year 10 to Year 12 by jurisdiction and time	13
Figure 5	Qualification completions for Indigenous students by state and territory, 1996–2008.....	15
Figure 6	Percentage increase in qualification completions for Indigenous and non-Indigenous students, from 1996 to 2008.....	17
Figure 7	Percentage increase in qualification completions for Indigenous and non-Indigenous students, from 2000 to 2008.....	17
Figure 8	Percentage increase in qualification completions for Indigenous and non-Indigenous students, from 1996 to 2008, for selected jurisdictions and all Australia	19
Figure 9	Modelling the effect of educational intentions, background characteristics and achievement on attainment	28
Figure 10	Modelling educational intentions as a mediator between background achievement and attainment.....	31

Background

The purpose of this paper is to assist the Council of Australian Governments (COAG) Reform Council to analyse performance information relating to the Year 12 or Certificate II attainment of Indigenous young people and to understand better variations in performance across jurisdictions. As part of these analyses variations over time within each jurisdiction have been reported. The analyses use existing data sources. No new data have been collected. There are four strands to this work:

- i. a statistical overview of educational attainments and participation;
- ii. multivariate analyses of influences on attainment;
- iii. a review of literature intended to inform an understanding of trends and patterns in attainment; and
- iv. the development of a model of influences on attainment based on the quantitative analyses and informed by perspectives from the literature.

The COAG Reform Council's approach to investigating performance and good practice typically involves two stages. In Stage 1, a detailed analysis is undertaken of performance information in selected areas of each National Agreement. The purpose of this is to better understand variations in performance across jurisdictions and within jurisdictions over time. These analyses also refer to the role of background and contextual factors that appear to affect jurisdictional performance in the area. In Stage 2, jurisdictions with higher relative performance, or where there has been improvement over time, are studied so as to identify good practices (strategies or interventions) that are associated with improved outcomes.

As the first stage of a two-stage project, this paper focuses on quantitative analyses of data but with an orientation to providing a basis for the second stage that will focus upon strategies and interventions associated with improved outcomes.

Context

While some gains have been made in recent years in Indigenous student performance, on a range of indicators – including literacy and numeracy, attendance, retention, and post-school transitions – Indigenous children's performance in relation to that of their non-Indigenous peers continues to be of concern (MCEEDYA 2010). For example, results from the Programme of International Student Assessment (PISA) indicate that Indigenous students have performed at a significantly lower average level in reading, mathematical and scientific literacy than their non-Indigenous peers across all PISA cycles (De Bortoli & Thomson, 2010). These findings are supported by 2008, 2009 and 2010 NAPLAN data, which show that Indigenous student literacy and numeracy is significantly lower than that of non-Indigenous students in all areas tested and across all jurisdictions.

Additionally, PISA findings in relation to attitudes, engagement, motivation and beliefs show that, compared to non-Indigenous students, Indigenous students reported significantly lower levels of interest and engagement in reading, self-efficacy and self-concept (De Bortoli & Thomson, 2010). Poor school attendance appears to be a correlate of the gap in academic performance between Indigenous and non-Indigenous students (Zubrick et al. 2006).

The 1996 National School English Literacy Survey results, for example, show that Indigenous students were absent from school an average of 17.9 days per year compared with 6.2 days per year in the general student population (Management Committee for the National Schools Literacy Survey 1997). Western Australian Aboriginal Child Health Survey results indicate that the median number of days absent for Indigenous students was 26 days, with nearly half of all Indigenous students in the study having 10 or more unexplained days absent from school during the year (Zubrick et al. 2006). School attendance rates for Indigenous students as they move through formal schooling are lower than for non-Indigenous students.

The Productivity Commission's 2010 *Overcoming Indigenous Disadvantage* report notes that there is a direct relationship between the number of days absent from school and academic performance. The report indicates that Indigenous children are less likely to be enrolled in school and, even if enrolled, are less likely to attend regularly (Steering Committee for the Review of Government Service Provision 2009). Educational disadvantage for Indigenous Australians is compounded over time with Indigenous students also being less likely to attain a Year 12 or equivalent qualification or to participate in full time employment, education or training after leaving school (Council of Australian Governments (COAG) 2010).

Data

Data used and reported upon include:

- PISA (2009)
- Longitudinal Surveys of Australian Youth (LSAY), 2006 cohort data collected in 2009
- Australian Bureau of Statistics, National Schools Statistics Collection (NSSC):
 - *Table 64a - Apparent Retention Rates (ARR) - by States and Territories, Affiliation, Sex, Grade Range and Years (1993 to 2009), released 6 July 2010, and*
 - *Table 40a Full-time students - by States and Territories, Affiliation, Sex, Grade, Age, Indigenous Status and Years (1996 to 2010), released 22 February 2011*
- Australian Bureau of Statistics, (2010), *Population Characteristics, Aboriginal and Torres Strait Islander Australians, 2006*, Catalogue number 4713.0., reissue released 4 May 2010.
- *Historical time series of vocational education and training in Australia from 1981* and the *Students and courses data* held at the National Centre for Vocational Education Research (NCVER).

In the data available to the study, attainment is not always measured directly. Some indicators used, such as retention rates are proxies for attainment. Others, for example LSAY, provide direct measures¹.

These data do not necessarily reflect the full impact of recent initiatives under the *National Indigenous Reform Agreement* and other National Partnership agreements in areas such as education, skills and health. This is especially the case for outcomes that refer to the status of people in the 20 to 24 year-old age group but it is also the case for apparent retention rates for 2009 (the most recent available), which possibly reflect educational provisions from previous years.

¹ However, it is important to note that in LSAY, 'attainment' means enrolled at the time of the survey – the end of the year. The award of a certificate may not be automatic. End of the year as equivalent to attainment is not consistently applied across jurisdictions.

A statistical overview of educational attainments and participation

This section of the report provides a statistical picture of the proportions of Indigenous (and non-Indigenous) young people who have attained Year 12 or Certificate II (or higher). The analysis of the attainment of Year 12 allows the magnitude of changes over time and differences between jurisdictions at each time to be gauged. Combining data on Year 12 attainment with Certificate II and above attainment proved to be difficult because of differences in data sources (school authorities compared with a range of providers), collection techniques (annual census or other) and reference times for data collections.

Apparent retention rates to Year 12 or equivalent

The Council of Australian Governments (COAG) adopted a number of targets to improve the lives of Indigenous Australians. Among these targets was one directed to ‘halving the gap for Indigenous students in Year 12 attainment or equivalent attainment rates by 2020’ (Council of Australian Governments (COAG) 2009, A-21). This section of the paper provides a statistical picture of the proportions of Indigenous (and non-Indigenous) young people who have attained Year 12 or Certificate II (or higher).

COAG has identified performance indicators to measure progress towards the Closing the Gap targets. Among the performance measures outlined for the goal of halving the gap for Year 12 or its equivalent are apparent secondary school retention rates from Year 7/8 to: a) Year 10, and b) Year 12. The specified source for these data is the MCEECDYA National Schools Statistics Collection and the baseline is 2006. In the analyses that follow in this section data reported in *Schools Australia 2009* (Australian Bureau of Statistics (ABS) 2010) and its more detailed tables from the National Schools Statistics Collection (Australian Bureau of Statistics (ABS) 2010) are used. These analyses identify changes over time and differences between jurisdictions. In conducting these analyses the section draws on the methods used in research previously reported by (Long 2009). We extend those analyses over a longer time period, add some indicators of change and look separately at apparent retention rates to Year 10 and apparent retention rates from Year 10 to 12 (as the components of retention to Year 12).

Issues in interpreting apparent retention rates

Apparent retention rates to Year 12 are a widely used estimate of school attainment at aggregate level. Apparent retention rates are grade ratios expressed as a percentage. They are calculated by dividing the number of students in Year 12 in a given year by the number of students in the corresponding commencing year of secondary school. For example, for a school system in which the first year of secondary school was Year 7 the Apparent Retention Rate to Year 12 in 2009 would be computed by dividing the Year 12 enrolment in 2009 by the Year 7 enrolment in 2004 and expressing it as a percentage. Although there is a number of issues surrounding the interpretation of apparent retention rates as indicators of attainment (see Long 2009)² they have the virtue of being based on administrative data collections from school systems that cover the whole population. This is important in relation to estimates of attainments of

² These issues are mainly concerned with the effects of grade repetition, students returning to Year 12 study after a period not in school, ungraded classes, studying Year 12 in non-school institutions and the effects of migration between jurisdictions during the course of secondary school (for jurisdictional estimates).

Indigenous students because Indigenous students are a relatively small proportion of the population. In many sample surveys the numbers of Indigenous students are too small to provide reliable estimates of attainment.

Long (2009) notes that some issues such as the effect of being classified as ‘secondary-ungraded’ are more prevalent for Indigenous than non-Indigenous students. He also points out there is a problem in that Indigenous students may not be consistently identified as Indigenous across different Years in the National Schools Statistics Collection. For example, students may not identify as Indigenous in Year 7 but are more likely to be identified as Indigenous in later years. Long suggests that apparent retention rates for Indigenous students may overestimate school attainment for this reason.

Numbers of Indigenous students in Year 12

Over the past eight years there has been a substantial increase in the numbers of Indigenous young people enrolled in Year 12. Data in Table 1 indicate that from 2001 to 2009 the numbers of Indigenous students in Year 12 increased by 2440 from 2620 to 5060 (a greater than 90% increase). Over the same period the numbers of non-Indigenous students in Year 12 increased from 188,110 to 206,526 (an increase of less than 10%).

Table 1 Numbers of Indigenous and non-Indigenous students enrolled in Year 12 in 2001, 2006 and 2009

	2001		2006		2009	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
NSW	608	56,988	814	60,239	1,163	62,160
Vic	135	48,304	193	50,785	248	52,093
Qld	1,138	39,468	1,542	41,434	1,986	45,385
SA	143	13,352	203	14,128	379	15,402
WA	302	19,545	493	20,028	708	21,340
Tas	146	4,929	161	4,324	167	4,290
NT	120	1,245	285	1,381	352	1,555
ACT	28	4,279	39	4,263	57	4,301
Total	2,620	188,110	3,730	196,582	5,060	206,526

Source: Australian Bureau of Statistics, National Schools Statistics Collection (NSSC), Table 40a Full-time students - by States and Territories, Affiliation, Sex, Grade, Age, Indigenous Status and Years (1996 to 2010), released 22 February 2011.

Table 1 also indicates the wide variation in the size of the Year 12 Indigenous population in each of the jurisdictions. The largest Indigenous Year 12 cohort is in Queensland (with just a little fewer than 2,000 students) and the smallest is in the Australian Capital Territory (only 57 students). This wide disparity in cohort size means that an index that is independent of cohort size is needed to facilitate comparisons among jurisdictions in holding power. Apparent retention rates as described below provide such an index. However, the small size of the cohort in some jurisdictions means that there is potential for instability in trends from one year to the next.

Apparent retention rates from Year 7/8 to Year 12

Table 2 records the apparent retention rates from Year 7 or 8 (whichever is the first year of secondary school in the jurisdiction) to Year 12 for each year from 1995 to 2009 and for each jurisdiction. The apparent retention rates are shown separately for Indigenous and non-Indigenous students. These data have been obtained from the National Schools Statistics Collection (NSSC)³. Data in Table 2 for Indigenous students have also been represented in Figure 1. In Figure 1 the graphs have been smoothed using third-order polynomial functions. Figure 2 shows the corresponding graphs for changes in apparent retention rates for non-Indigenous students.

Table 2 also includes some derived indicators. One of these is the slope of the line of best fit representing the change in apparent retention rates over the time period for which data are available. These values indicate the average change per year in apparent retention rates. A second derived indicator is the gap between the apparent retention rates for Indigenous and non-Indigenous students for selected years. A third derived indicator is the ratio of the apparent retention rate for Indigenous students to the apparent retention rate for non-Indigenous students.

These data suggest that nationally there has been a relative improvement in Year 12 attainment for Indigenous students over the period from 1995 to 2009. The average annual increase in apparent retention rates for Indigenous students has been 1.2 percentage points per year compared to an average annual increase of 0.3 percentage points for non-Indigenous students. Nationally, the trend for increased Year 12 attainment among Indigenous students has been fairly smooth with just two dips (in 1996 and 2009). The general relative improvement is illustrated by comparing the gap of 43 percentage points that existed in 1995 with the gap of 32 percentage points in 2009 (it was 29 points in 2008).

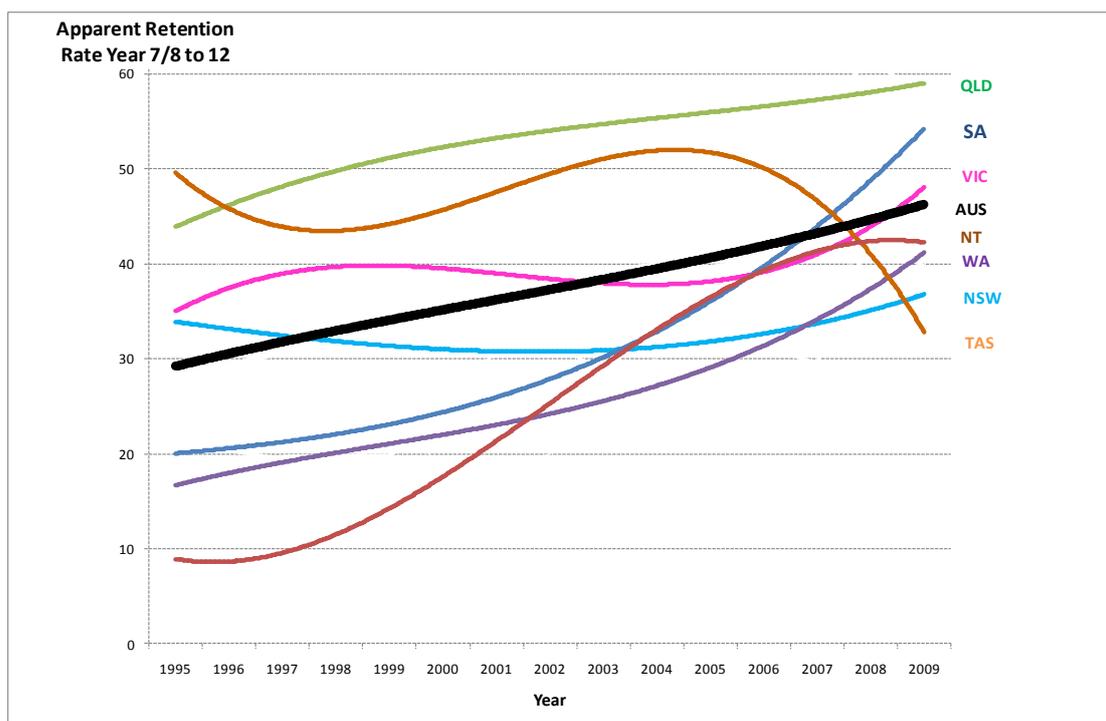
Trends in apparent retention rates for Indigenous students for jurisdictions show more fluctuations from year to year, especially in jurisdictions with small numbers of Indigenous students, but the general pattern is one of improvement. Improvements appear to have been greatest in those jurisdictions where apparent retention rates for Indigenous students were lowest in 1995. Consequently, the differences among jurisdictions are smaller in 2009 than they were in 1995.

³ From Table 64a - Apparent Retention Rates (ARR) - by States and Territories, Affiliation, Sex, Grade Range and Years (1993 to 2009). The years 1993 and 1994 have not been included because the Indigenous data for those years are not complete.

Table 2 Apparent retention rates from Year 7/8 to Year 12 by jurisdiction and time

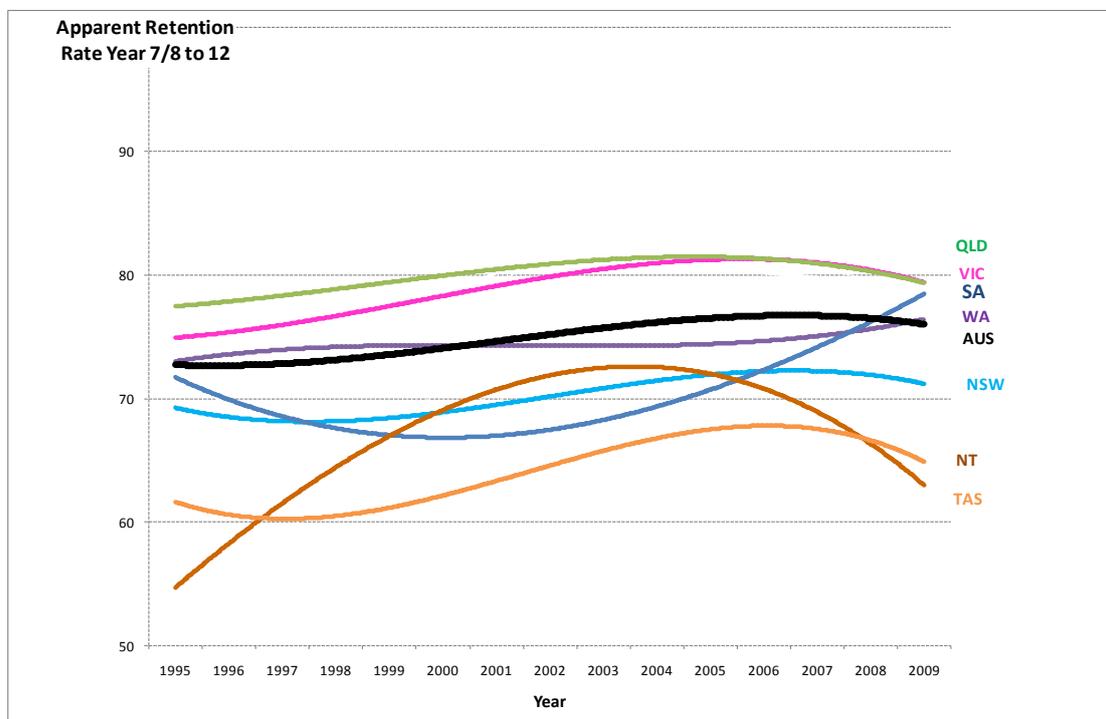
Year	Jurisdiction								
	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Indigenous									
1995	35.7	31.8	44.8	18.0	22.4	57.5	92.0	7.2	30.7
1996	31.0	35.2	45.6	16.0	20.3	35.4	58.3	8.5	29.2
1997	32.1	46.6	47.2	19.7	19.5	48.9	90.3	9.4	30.9
1998	31.4	42.6	50.3	19.8	18.4	35.6	100.0	11.4	32.1
1999	30.4	43.7	50.8	19.9	21.7	44.4	96.7	23.0	34.7
2000	33.9	33.7	52.3	23.1	24.2	44.0	61.4	18.9	36.4
2001	30.3	36.5	52.1	23.3	31.0	47.6	47.5	18.6	35.7
2002	30.6	34.8	55.9	24.9	32.0	56.8	69.5	20.0	38.0
2003	31.9	37.1	55.9	26.3	28.5	55.8	67.1	25.6	39.1
2004	31.7	36.5	56.7	27.0	34.1	59.0	88.3	30.2	39.8
2005	31.1	41.4	54.1	28.8	33.3	47.8	60.3	37.9	39.5
2006	30.6	38.4	54.3	31.3	37.5	40.1	59.1	40.5	40.1
2007	34.0	46.1	56.5	29.5	43.9	45.5	59.8	45.9	42.9
2008	36.1	46.4	61.3	42.7	48.2	36.7	53.1	49.7	47.2
2009	36.7	43.4	58.0	39.7	56.0	39.7	69.5	34.5	45.4
<i>Average yearly change</i>	<i>0.16</i>	<i>0.46</i>	<i>0.97</i>	<i>1.59</i>	<i>2.33</i>	<i>-0.24</i>	<i>-1.93</i>	<i>2.90</i>	<i>1.17</i>
Non-Indigenous									
1995	69.7	75.1	77.7	73.6	72.3	59.8	91.1	62.2	73.2
1996	68.4	75.5	77.8	73.2	69.3	53.6	91.5	58.9	72.4
1997	67.9	76.5	79.1	74.0	67.8	58.8	91.7	62.0	72.9
1998	67.9	76.1	78.4	73.5	67.7	63.2	90.9	60.1	72.7
1999	68.4	76.3	78.6	74.0	68.0	67.6	92.5	62.3	73.2
2000	68.3	77.5	78.4	73.7	66.3	70.8	87.4	59.6	73.3
2001	69.1	79.5	80.2	74.4	67.2	69.6	89.8	62.5	74.5
2002	70.9	81.2	82.5	76.2	67.6	73.5	88.3	65.0	76.3
2003	71.5	81.7	82.8	73.5	68.1	76.0	90.1	67.1	76.5
2004	72.3	81.4	82.4	75.1	69.0	77.3	88.5	69.3	76.9
2005	72.3	80.9	81.3	75.1	71.8	68.2	87.9	66.7	76.6
2006	71.8	80.2	80.2	74.2	72.4	66.3	89.2	66.0	76.0
2007	70.9	80.4	79.8	72.9	73.6	66.7	85.6	68.3	75.6
2008	70.8	79.7	79.1	75.8	75.2	66.8	85.8	64.8	75.6
2009	72.6	80.5	81.0	77.3	79.3	65.4	87.2	66.2	77.3
<i>Average yearly change</i>	<i>0.31</i>	<i>0.44</i>	<i>0.22</i>	<i>0.16</i>	<i>0.53</i>	<i>0.69</i>	<i>-0.39</i>	<i>0.55</i>	<i>0.33</i>
<i>Gap (1995)</i>	<i>34.0</i>	<i>43.4</i>	<i>32.9</i>	<i>55.6</i>	<i>50.0</i>	<i>2.3</i>	<i>-0.9</i>	<i>55.0</i>	<i>42.5</i>
<i>Gap (2001)</i>	<i>38.8</i>	<i>43.0</i>	<i>28.1</i>	<i>51.2</i>	<i>36.2</i>	<i>22.1</i>	<i>42.4</i>	<i>43.9</i>	<i>38.8</i>
<i>Gap (2006)</i>	<i>41.2</i>	<i>41.8</i>	<i>25.9</i>	<i>42.9</i>	<i>35.0</i>	<i>26.2</i>	<i>30.1</i>	<i>25.5</i>	<i>35.8</i>
<i>Ratio (2006)</i>	<i>0.43</i>	<i>0.48</i>	<i>0.68</i>	<i>0.42</i>	<i>0.52</i>	<i>0.61</i>	<i>0.66</i>	<i>0.61</i>	<i>0.53</i>
<i>Gap (2009)</i>	<i>35.9</i>	<i>37.1</i>	<i>23.0</i>	<i>37.6</i>	<i>23.3</i>	<i>25.8</i>	<i>17.7</i>	<i>31.7</i>	<i>31.9</i>
<i>Ratio (2009)</i>	<i>0.51</i>	<i>0.54</i>	<i>0.72</i>	<i>0.51</i>	<i>0.71</i>	<i>0.61</i>	<i>0.80</i>	<i>0.52</i>	<i>0.59</i>

Source: Australian Bureau of Statistics, National Schools Statistics Collection (NSSC) Table 64a - Apparent Retention Rates (ARR) - by States and Territories, Affiliation, Sex, Grade Range and Years (1993 to 2009), released 6 July 2010.



Note: Data for the ACT are not shown in Figure 1. These data are recorded in Table 2.

Figure 1 Apparent retention rates for Indigenous students from Year 7/8 to Year 12 by jurisdiction and time



Note: Data for the ACT are not shown in Figure 2. These data are recorded in Table 2.

Figure 2 Apparent retention rates for non-Indigenous students from Year 7/8 to Year 12 by jurisdiction and time

The increases in apparent retention rates to Year 12 for Indigenous students were greater in the Northern Territory, South Australia and Western Australia than in other jurisdictions. In Queensland where apparent retention rates for Indigenous students were already high there was an increase similar to the national increase.

These data indicate an encouraging trend in terms of improved Year 12 attainment among Indigenous students. If the rate of improvement continued at the average rate of improvement over the period from 1995 to 2009, the apparent retention rate to Year 12 for Indigenous students in 2020 would be approximately 59 per cent. If the apparent retention rate for non-Indigenous students increased at the rate for the period from 1995 to 2009 it would reach 80 per cent by 2020. Hence the gap would then be 21 percentage points. Halving the gap from 2006 would require that the gap be reduced to 14 percentage points and the apparent retention rate for Indigenous students reach 66 per cent. For Australia as a whole the apparent retention rate for Indigenous students was just over 60 per cent of the retention rate for non-Indigenous students.

It can be seen in Table 2 that in 2008 the gap in apparent retention rates for the Northern Territory was already down to 15 percentage points and the gap for Queensland was already reduced to 18 percentage points. This means that in these two jurisdictions apparent retention rates are just under 80 per cent of those for non-Indigenous students. For South Australia the corresponding gap was 27 percentage points. In other jurisdictions the gaps in 2008 were 30 (Tasmania), 33 (Victoria and the Australian Capital Territory), 35 (New South Wales) and 38 (Western Australia) percentage points respectively.

An overall conclusion from these data is that there has been steady improvement in apparent retention rates for Indigenous students, relative to the smaller improvement for non-Indigenous students, but that the rate of improvement needs to be increased if the target for 2020 is to be reached. There is also a caution to be noted in that the 2009 apparent retention rate was a little lower than that for 2008.

Apparent retention rates from Year 7/8 to Year 10

One way of looking at retention to Year 12 is to consider the retention of students to Year 10 and then the retention of Year 10 students to Year 12. These correspond to the completion of International Standard Classification of Education (ISCED)⁴ levels 2 and 3 in school programs. In earlier times they were referred to as the end of compulsory and post-compulsory school years respectively. In most jurisdictions they represent different patterns of curricular, and sometimes school, organisation.

⁴ ISCED was designed by UNESCO in the early 1970's to serve 'as an instrument suitable for assembling, compiling and presenting statistics of education both within individual countries and internationally'. It was approved by the International Conference on Education (Geneva, 1975), and was subsequently endorsed by UNESCO's General Conference (see http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm, viewed February, 2011). ISCED has six levels:

- Level 0 - Pre-primary education
- Level 1 - Primary education or first stage of basic education
- Level 2 - Lower secondary or second stage of basic education
- Level 3 - (Upper) secondary education
- Level 4 - Post-secondary non-tertiary education
- Level 5 - First stage of tertiary education
- Level 6 - Second stage of tertiary education.

Table 3 records the apparent retention rates for Indigenous and non-Indigenous students from Year 7 or 8 (whichever is the first year of secondary school in the jurisdiction) to Year 10 for each year from 1995 to 2009 and for each jurisdiction. Figure 3 shows these data for Indigenous students in a graphical form with smoothing based on third order polynomial functions. The data in Table 3 show some of the problems with apparent retention rates in the case of Tasmania and the ACT where rates in excess of 100 are recorded⁵.

Overall the data in Table 3 show an improvement in the apparent retention rate to Year 10 for Indigenous students over the period from 1995 to 2009. On average this apparent retention rate increased by just over one percentage point per year compared to an increase of one-fifth of a percentage point year for non-Indigenous students. The gap between the apparent retention rates for Indigenous and non-Indigenous students was 21 percentage points in 1995 (when the apparent retention rate for Indigenous students was 76%) and was just ten percentage points in 2008 (when the apparent retention rate for Indigenous students was 90%). However, one should be cautious about extrapolating the apparent retention rate to Year 10 for Indigenous students on the basis of the average yearly change up to 2009 because the apparent retention has been steady at about, or just above 90 per cent, since 2006.

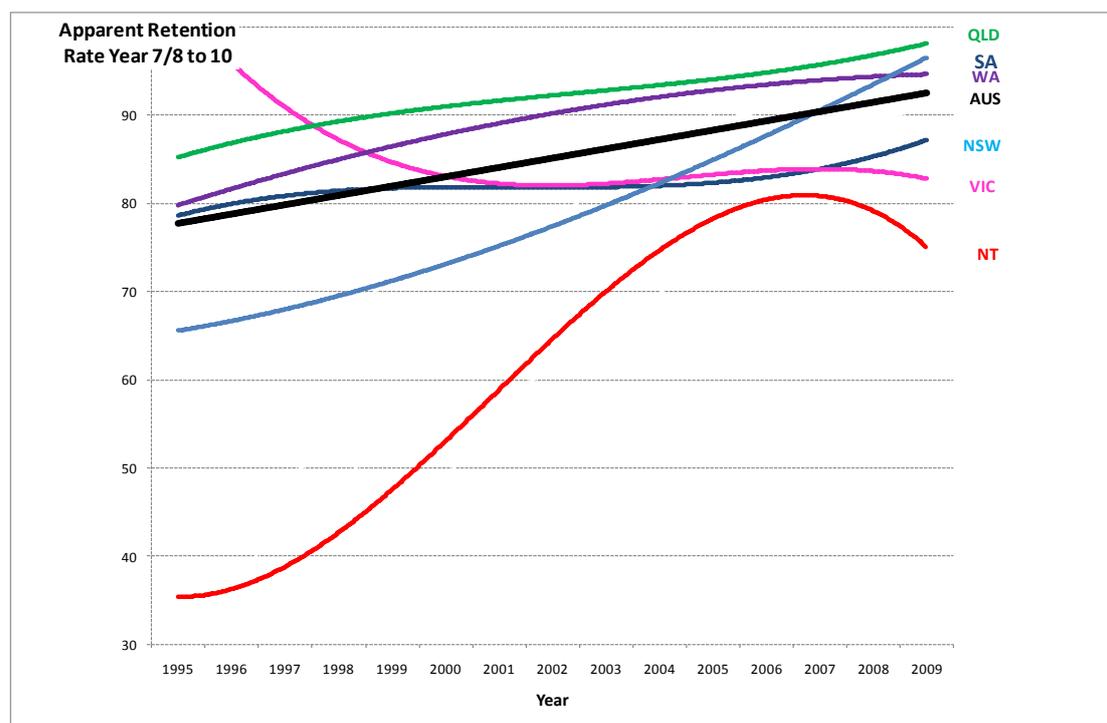
The data for jurisdictions show a substantial increase in the attainment of Year 10 by Indigenous students in the Northern Territory from 1995 to 2005 (to 91%), followed by a substantial decline from 2005 to 2008 (to 72%). In 2008 the gap in apparent retention rates to Year 10 between Indigenous and non-Indigenous students was 24 percentage points in the Northern Territory. For South Australia there was also a substantial, but more regular, increase in the apparent retention rate to Year 10 among indigenous students. In 1995 this figure was 70 per cent and by 2009 the rate had risen to 98 per cent. In 2008 the gap in apparent retention rates to Year 10 between Indigenous and non-Indigenous students was six percentage points. For Western Australia the apparent retention rate to Year 10 for Indigenous students increased from 82 to 95 per cent between 1995 and 2008 and the gap in apparent retention rates to Year 10 between Indigenous and non-Indigenous students in 2008 was just eight percentage points. For Queensland the apparent retention rate to Year 10 for Indigenous students increased from 87 per cent in 1995 to 97 per cent in 2008 (and 98% in 2009). In 2008 the gap in apparent retention rates to Year 10 between Indigenous and non-Indigenous students was five percentage points.

⁵ It is not possible to infer why these problems arise in Tasmania and the ACT without further investigation of the enrolment data on which these rates are based. One factor that could contribute to Apparent Retention Rates greater than 100 could arise from undercounting Indigenous enrolments in Year 7 but correctly counting Indigenous enrolments in Year 10. The effect is possibly more evident when the absolute number of Indigenous enrolments is small.

Table 3 Apparent retention rates from Year 7/8 to Year 10 by jurisdiction and time

Year	Jurisdiction								AUS
	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	
Indigenous									
1995	80.4	100.9	87.1	82.2	69.5	134.2	100.0	30.6	76.2
1996	79.2	94.2	83.2	83.3	63.1	109.3	105.7	33.0	75.8
1997	76.3	94.7	89.9	81.0	67.5	108.3	120.0	48.7	80.6
1998	84.8	88.9	89.5	82.0	65.1	106.8	87.7	53.1	83.1
1999	81.6	83.0	88.0	86.5	72.3	115.3	88.1	43.4	82.0
2000	80.7	85.2	92.7	85.8	74.0	95.3	88.1	48.6	83.0
2001	83.1	83.4	91.9	89.7	78.0	105.1	84.1	57.7	85.7
2002	83.7	81.5	93.3	89.8	77.1	108.3	118.3	61.3	86.4
2003	82.1	74.8	94.9	94.0	83.5	105.8	91.2	61.0	87.2
2004	81.2	81.1	90.2	90.2	81.9	107.0	98.5	68.9	85.8
2005	80.2	81.2	91.8	92.8	86.7	103.2	101.2	91.2	88.3
2006	83.7	91.1	96.9	96.6	82.0	100.7	88.9	89.4	91.3
2007	84.0	88.3	95.8	96.2	87.6	99.8	102.4	81.8	90.5
2008	85.1	81.7	97.3	94.5	95.6	103.5	78.4	71.9	89.8
2009	87.6	80.4	97.8	91.2	98.0	107.3	97.4	75.0	90.9
<i>Average yearly change</i>	<i>0.41</i>	<i>-0.94</i>	<i>0.81</i>	<i>1.06</i>	<i>2.24</i>	<i>-1.08</i>	<i>-0.71</i>	<i>3.72</i>	<i>1.06</i>
Non-Indigenous									
1995	96.1	95.5	100.5	99.0	94.8	95.4	99.7	89.2	96.9
1996	96.6	96.0	100.2	99.9	94.3	96.2	98.3	91.9	97.3
1997	97.1	96.8	99.4	100.9	94.3	96.3	99.9	92.1	97.6
1998	97.0	97.0	98.7	100.6	94.8	96.7	98.2	88.5	97.5
1999	97.4	97.2	99.5	100.8	95.9	96.7	95.8	91.0	97.9
2000	96.9	97.6	100.6	100.5	95.1	97.0	98.2	91.5	98.0
2001	97.3	98.3	100.5	101.3	95.2	97.7	99.6	90.5	98.4
2002	97.6	97.9	100.8	100.8	95.5	99.7	99.9	84.6	98.5
2003	97.6	98.2	101.1	100.7	98.5	98.5	99.4	93.7	98.9
2004	97.1	97.5	100.9	101.2	98.7	99.1	99.8	93.1	98.5
2005	96.8	98.1	100.4	101.6	99.5	100.0	99.1	95.5	98.6
2006	96.8	98.3	100.9	102.4	100.6	99.8	98.8	90.9	98.9
2007	97.4	98.8	101.4	102.4	101.7	99.6	97.8	91.4	99.4
2008	97.8	99.0	102.1	102.9	101.8	100.1	99.3	96.3	99.9
2009	97.6	100.2	101.7	103.3	103.0	99.2	99.3	97.1	100.1
<i>Average yearly change</i>	<i>0.07</i>	<i>0.24</i>	<i>0.15</i>	<i>0.24</i>	<i>0.66</i>	<i>0.34</i>	<i>0.03</i>	<i>0.38</i>	<i>0.20</i>
<i>Gap (1995)</i>	<i>15.7</i>	<i>-5.4</i>	<i>13.4</i>	<i>16.8</i>	<i>25.2</i>	<i>-38.8</i>	<i>-0.3</i>	<i>58.6</i>	<i>20.8</i>
<i>Gap (2001)</i>	<i>14.3</i>	<i>14.9</i>	<i>8.6</i>	<i>11.6</i>	<i>17.2</i>	<i>-7.4</i>	<i>15.5</i>	<i>32.8</i>	<i>12.8</i>
<i>Gap (2006)</i>	<i>13.1</i>	<i>7.2</i>	<i>3.9</i>	<i>5.8</i>	<i>18.7</i>	<i>-0.8</i>	<i>9.9</i>	<i>1.5</i>	<i>7.6</i>
<i>Gap (2009)</i>	<i>10.0</i>	<i>19.8</i>	<i>3.9</i>	<i>12.1</i>	<i>5.0</i>	<i>-8.1</i>	<i>2.0</i>	<i>22.1</i>	<i>9.2</i>

Source: Australian Bureau of Statistics, National Schools Statistics Collection (NSSC) Table 64a - Apparent Retention Rates (ARR) - by States and Territories, Affiliation, Sex, Grade Range and Years (1993 to 2009), released 6 July 2010.



Note: Data for the ACT and Tasmania are not shown in Figure 3. These data are recorded in Table 3.

Figure 3 Apparent retention rates for Indigenous students from Year 7/8 to Year 10 by jurisdiction and time

For New South Wales and Victoria there appears to have been less of an improvement in the apparent retention rate to Year 10 for Indigenous students (even after allowing for the anomalous figure in 1995 for Victoria and looking at the change from 1996 onwards). In 2008 the gaps in apparent retention rates to Year 10 between Indigenous and non-Indigenous students were 13 and 17 percentage points respectively.

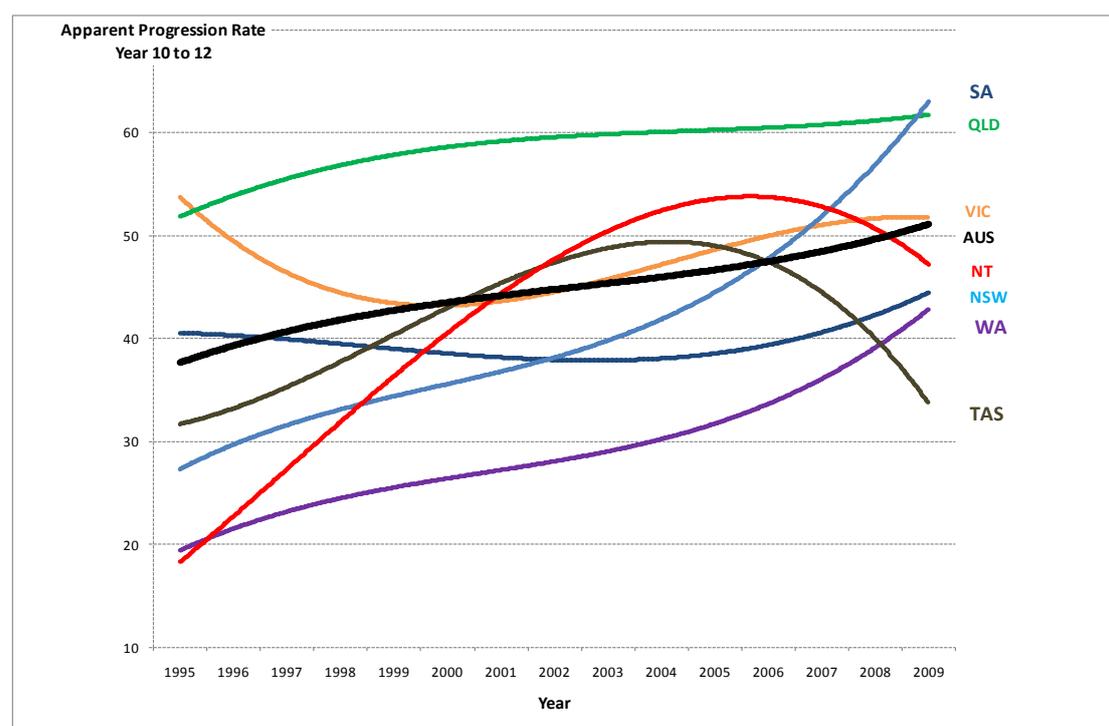
Data for Tasmania and the Australian Capital Territory have not been represented in Figure 3. It is difficult to interpret trends in the data for Tasmania and the Australian Capital Territory because of incongruities in the data for Tasmania and substantial yearly fluctuations in the Australian Capital Territory.

The flattening of the growth in retention of Indigenous students to Year 10 since 2006 has a consequence of generating a smaller base from which students might progress to Years 11 and 12. Noting that the Year 10 enrolments in 2006 provided the base from which Year 12 enrolments in 2008 were derived, this means one would expect little improvement in retention to Year 12 in 2010 or 2011. However, the data for Queensland and South Australia indicate that it should be possible to sustain retention rates to Year 10 for Indigenous students consistently well above 90 per cent.

Table 4 Apparent retention rates from Year 10 to Year 12 by jurisdiction and time

Year	Jurisdiction								AUS
	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	
Indigenous									
1995	42.1	45.4	53.6	20.5	30.4	38.7	76.7	17.4	39.1
1996	37.7	60.8	51.2	19.8	29.7	25.7	67.7	18.2	37.1
1997	39.9	46.2	54.2	24.0	28.1	36.5	90.3	30.8	40.6
1998	39.6	45.2	60.4	23.8	29.2	32.6	94.6	34.5	42.4
1999	39.8	46.1	56.5	24.5	32.1	41.0	80.6	47.3	43.1
2000	39.9	37.9	58.4	28.1	37.2	41.2	70.0	35.7	43.8
2001	37.1	44.0	59.1	26.9	42.8	41.2	53.8	42.9	43.6
2002	38.0	40.9	60.3	29.0	43.3	59.7	78.8	41.1	45.8
2003	38.4	44.4	60.8	29.3	36.6	53.1	79.7	44.3	45.7
2004	37.8	44.7	60.8	30.1	44.2	54.5	74.6	49.2	46.0
2005	37.9	55.4	57.0	30.7	39.9	45.2	66.1	62.2	45.3
2006	37.7	47.4	60.2	34.6	45.7	37.5	60.0	58.8	46.8
2007	42.4	56.7	61.5	31.8	50.6	44.1	59.0	50.3	48.5
2008	43.1	50.9	63.3	44.2	58.8	36.4	59.7	55.6	51.7
2009	43.7	49.1	60.6	41.3	63.9	39.8	67.9	42.2	50.1
<i>Average yearly change</i>	<i>0.14</i>	<i>0.25</i>	<i>0.59</i>	<i>1.42</i>	<i>2.21</i>	<i>0.65</i>	<i>-1.47</i>	<i>2.38</i>	<i>0.84</i>
Non-Indigenous									
1995	71.3	77.1	76.2	73.1	73.1	61.0	93.0	68.3	74.1
1996	70.6	78.9	77.4	73.0	72.2	55.3	92.8	66.8	74.3
1997	70.7	80.0	78.7	74.7	71.6	61.7	92.0	69.5	75.2
1998	70.4	79.2	78.2	73.6	71.8	65.7	92.5	65.4	74.8
1999	70.5	78.8	79.1	73.3	72.1	70.2	92.6	67.6	75.0
2000	70.4	79.9	79.5	73.3	70.0	73.3	88.9	67.4	75.2
2001	71.0	81.8	80.6	73.9	70.1	72.1	93.7	68.7	76.2
2002	73.2	83.1	82.0	75.9	71.1	75.8	89.9	71.0	77.8
2003	73.4	83.1	82.4	72.5	71.5	77.8	90.5	74.2	77.7
2004	74.1	83.2	81.8	74.5	72.2	77.5	88.6	81.9	78.1
2005	74.1	82.4	80.3	74.5	72.8	69.2	88.4	71.2	77.5
2006	73.9	82.3	79.5	73.4	73.4	66.9	89.3	70.9	77.1
2007	73.3	82.0	79.5	71.8	73.9	66.7	86.4	71.5	76.6
2008	73.1	81.1	78.4	74.1	74.7	67.0	86.8	71.3	76.5
2009	74.5	81.4	79.8	75.5	77.9	65.7	89.2	72.4	77.7
<i>Average yearly change</i>	<i>0.30</i>	<i>0.30</i>	<i>0.18</i>	<i>0.04</i>	<i>0.27</i>	<i>0.51</i>	<i>-0.43</i>	<i>0.47</i>	<i>0.25</i>
<i>Gap (1995)</i>	<i>29.2</i>	<i>31.7</i>	<i>22.7</i>	<i>52.6</i>	<i>42.7</i>	<i>22.3</i>	<i>16.3</i>	<i>50.9</i>	<i>35.1</i>
<i>Gap (2001)</i>	<i>33.9</i>	<i>37.9</i>	<i>21.4</i>	<i>47.0</i>	<i>27.3</i>	<i>30.8</i>	<i>39.9</i>	<i>25.8</i>	<i>32.6</i>
<i>Gap (2006)</i>	<i>36.3</i>	<i>34.9</i>	<i>19.3</i>	<i>38.7</i>	<i>27.7</i>	<i>29.4</i>	<i>29.3</i>	<i>12.1</i>	<i>30.3</i>
<i>Ratio (2006)</i>	<i>0.51</i>	<i>0.58</i>	<i>0.76</i>	<i>0.47</i>	<i>0.62</i>	<i>0.56</i>	<i>0.67</i>	<i>0.83</i>	<i>0.61</i>
<i>Gap (2009)</i>	<i>30.8</i>	<i>32.3</i>	<i>19.3</i>	<i>34.2</i>	<i>14.0</i>	<i>25.9</i>	<i>21.3</i>	<i>30.2</i>	<i>27.6</i>
<i>Ratio (2009)</i>	<i>0.59</i>	<i>0.60</i>	<i>0.76</i>	<i>0.55</i>	<i>0.82</i>	<i>0.61</i>	<i>0.76</i>	<i>0.58</i>	<i>0.65</i>

Source: Australian Bureau of Statistics, National Schools Statistics Collection (NSSC) Table 64a - Apparent Retention Rates (ARR) - by States and Territories, Affiliation, Sex, Grade Range and Years (1993 to 2009), released 6 July 2010.



Note: Data for the ACT are not shown in Figure 4. These data are recorded in Table 4.

Figure 4 Apparent retention rates for Indigenous students from Year 10 to Year 12 by jurisdiction and time

Apparent retention rates from Year 10 to Year 12

The previous section of this paper focussed on ISCED level 2 (the retention of students to Year 10). This section focuses on the retention of Year 10 students to Year 12 (i.e. ISCED level 3) in school programs. Apparent retention rates are grade ratios expressed as a percentage. They are intended to indicate the proportions of students in a given Year level (e.g. Year 10) who progress to a later Year level (e.g. Year 12). Apparent retention rates from Year 10 to Year 12 are calculated by dividing the number of students in Year 12 in a given year by the number of students in Year 10 two years earlier. For example, the apparent retention rate from Year 10 to Year 12 in 2009 would be computed by dividing the Year 12 enrolment in 2009 by the Year 10 enrolment in 2007 and expressing it as a percentage. Similar issues surround the use of apparent retention rates as were noted in the case of apparent retention rates, although because the time lag is smaller these might be expected to have less impact.

Table 4 records the apparent retention rates for Indigenous and non-Indigenous students from Year 10 to Year 12 for each year from 1995 to 2009 and for each jurisdiction. Figure 4 shows these data for Indigenous students in a graphical form with smoothing based on third order polynomial functions.

Overall the data in Table 4 show an improvement in the apparent retention rate from Year 10 to Year 12 for Indigenous students over the period from 1995 to 2009. On average this apparent retention rate increased by four fifths of a percentage point per year compared to an increase of one quarter of a percentage point per year for non-Indigenous students. The gap between the apparent retention rates for Indigenous and non-Indigenous students was 35 percentage points in 1995 (when the apparent retention rate for Indigenous students was 39 per cent) and was 25 percentage points in 2008 (when the apparent retention rate for Indigenous students was 52 per cent).

Over the period from 1995 to 2008 the corresponding retention rate for non-Indigenous students increased from 74 to 76 per cent. There appears to have been a small dip in the retention rate for Indigenous students from Year 10 to Year 12 between 2008 and 2009.

The retention rate data for jurisdictions show substantial increases in the retention rates from Year 10 to Year 12 by Indigenous students in the Northern Territory, South Australia and Western Australia. In South Australia the increase appeared to be fairly steady from 30 to 59 per cent with a further rise to 64 per cent in 2009. In the Northern Territory there was a rise from 17 per cent in 1995 to 62 per cent in 2005 and a fall to 42 per cent in 2009. In Western Australia there was a rise from 21 per cent in 1995 to 44 per cent in 2008 (41% in 2009).

There were increases over the period from 1995 to 2008 in the apparent retention rate from Year 10 to Year 12 in Queensland and Victoria of ten and five percentage points respectively. In New South Wales there was little change over the same time period. For Tasmania and the Australian Capital Territory it is hard to provide an interpretation of the data.

In 2008 the gaps in the apparent retention rate from Year 10 to Year 12 between Indigenous and non-Indigenous students were smallest in Queensland (15 percentage points), South Australia (16 percentage points) and the Northern Territory (16 percentage points). The gap was 27 percentage points in the Australian Capital Territory and 30 to 31 percentage points in the remaining jurisdictions. The national gap in the apparent retention rate from Year 10 to Year 12 between Indigenous and non-Indigenous students was 25 percentage points.

Summary of apparent retention rates to Year 12

Over the period from 1995 to 2009 there was an increase in the apparent retention rate for Indigenous students from the first year of secondary school from 31 to 45 per cent. Over the same time the corresponding apparent rate for non-Indigenous students increased from 73 to 77 per cent. If this closing of the gap continued at the same rate it would not be sufficient to meet the COAG target for Year 12 attainment in 2020. However, the overall target that includes attainment through completion of VET courses equivalent to Year 12 might be reached if there was a larger increase in equivalent VET attainment. Equivalent VET attainment is discussed in a later section of the paper.

Retention to Year 12 can be looked at as being made up of retention to Year 10 and retention from Year 10 to Year 12. The analyses in this section suggest that both have contributed to the overall increase in retention to Year 12. Over the period from 1995 to 2009 there has been an increase in the percentage of Indigenous students remaining at school from the first year to Year 10 from 76 to 91 per cent. The evidence from three jurisdictions suggests that this figure can be improved further to close the gap with non-Indigenous retention rates but the scope for using this as a basis for improved retention to Year 12 will be limited as universal Year 10 completion is approached.

Retention from Year 10 to Year 12 among Indigenous students has increased from 39 per cent to 50 per cent over the period from 1995 to 2009 compared to a corresponding increase from 74 to 78 per cent for non-Indigenous students.

VET attainment

The *Historical time series of vocational education and training in Australia from 1981*⁶ and the *Student and courses*⁷ data were used to examine Certificate II and other VET attainment.

Historical time series data

The historical time series data showed the number of qualification completions for Indigenous and non-Indigenous students from 1996 to 2008. These data were chosen because they provide an opportunity to investigate the rate of growth of Indigenous student completions in VET compared with other students. These data could not be disaggregated in ways which permitted Certificate II for Indigenous and non-Indigenous students to be examined. In other words, the VET data describe total VET completions, not just Certificate II completions.

Figure 5 shows the growth in numbers of Indigenous students completing VET qualifications for the years 1996 to 2008 in each jurisdiction. In 1996, there were 1,400 Indigenous students completing a VET qualification throughout Australia; by 2008, there were 10,800. This represents an increase from 1996 of 690 per cent. The overall percentage increases for Indigenous and non-Indigenous students from 1996 to 2008, represented by the lines in Figure 5, are shown in Table 5. These percentages are not adjusted for increases in the population of Indigenous young people.

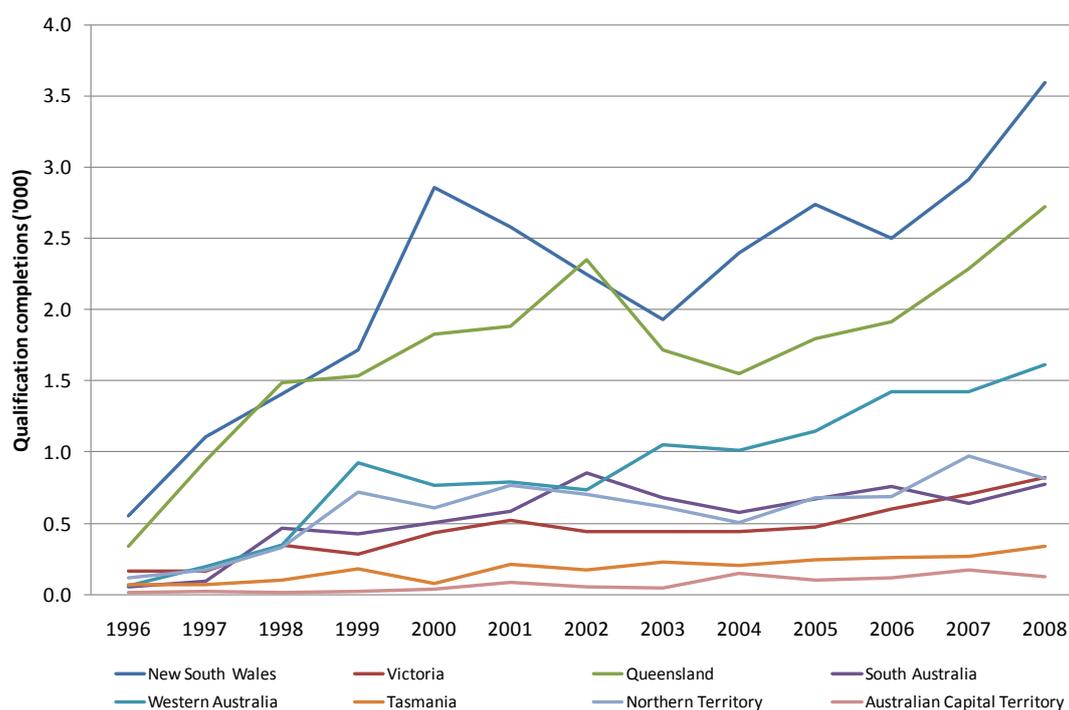


Figure 5 Qualification completions for Indigenous students by state and territory, 1996–2008

⁶ <http://www.ncver.edu.au/publications/2244.html> viewed February 2011

⁷ <http://www.ncver.edu.au/statistic/21053.html> viewed February 2011

Table 5 Numbers of Indigenous and non-Indigenous students completing a VET qualification in 1996 and 2008 by state and territory ('000)

Jurisdiction	Indigenous status	1996	2008	Per cent increase
New South Wales	Indigenous	0.6	3.6	549.7
	Non-Indigenous	44.1	106.7	142.2
Victoria	Indigenous	0.2	0.8	403.7
	Non-Indigenous	21.9	85.6	291.3
Queensland	Indigenous	0.3	2.7	699.1
	Non-Indigenous	14.5	65.4	349.9
South Australia	Indigenous	0.1	0.8	1423.5
	Non-Indigenous	6.7	27.4	310.9
Western Australia	Indigenous	0.1	1.6	2426.6
	Non-Indigenous	11.2	36.2	222.1
Tasmania	Indigenous	0.1	0.3	400.0
	Non-Indigenous	2.6	10.0	278.5
Northern Territory	Indigenous	0.1	0.8	611.4
	Non-Indigenous	0.6	2.6	351.4
Australian Capital Territory	Indigenous	0.0	0.1	785.7
	Non-Indigenous	2.6	7.0	163.0
<i>Australia</i>	<i>Indigenous</i>	<i>1.4</i>	<i>10.8</i>	<i>690.3</i>
	<i>Non-Indigenous</i>	<i>104.2</i>	<i>340.8</i>	<i>226.9</i>

Source: NCVET Students and courses data

Notes: (1) Students not stated have been included as non-Indigenous in this and other tables.

(2) It is possible for a student to complete more than one qualification in a given year so that these data may over estimate numbers of students.

In some instances, the percentages shown in Table 5 are based on a small number of students in 1996. This is particularly the case for South Australia, which recorded a 1,424 per cent increase, and Western Australia, which recorded a 2,427 per cent increase. This should be taken into account when examining these data. (The annual data are provided in Appendix C.)

The data in Table 6 show that the national trend has been for growth in the numbers of Indigenous students completing a VET qualification. In addition those data show that the increase for Indigenous is greater than for non-Indigenous students. Figure 6 shows that this growth, nationally, has fluctuated across the period 1996 to 2008. The rate of increase has been greater for Indigenous than non-Indigenous students at most, but not all, times.

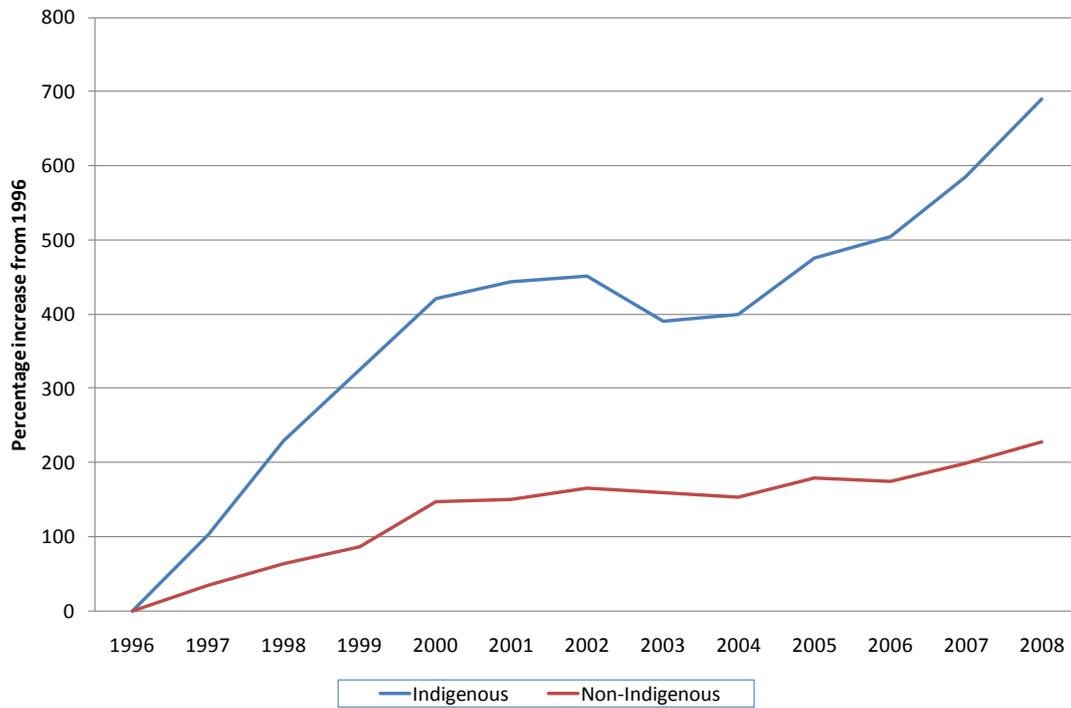


Figure 6 Percentage increase in qualification completions for Indigenous and non-Indigenous students, from 1996 to 2008⁸

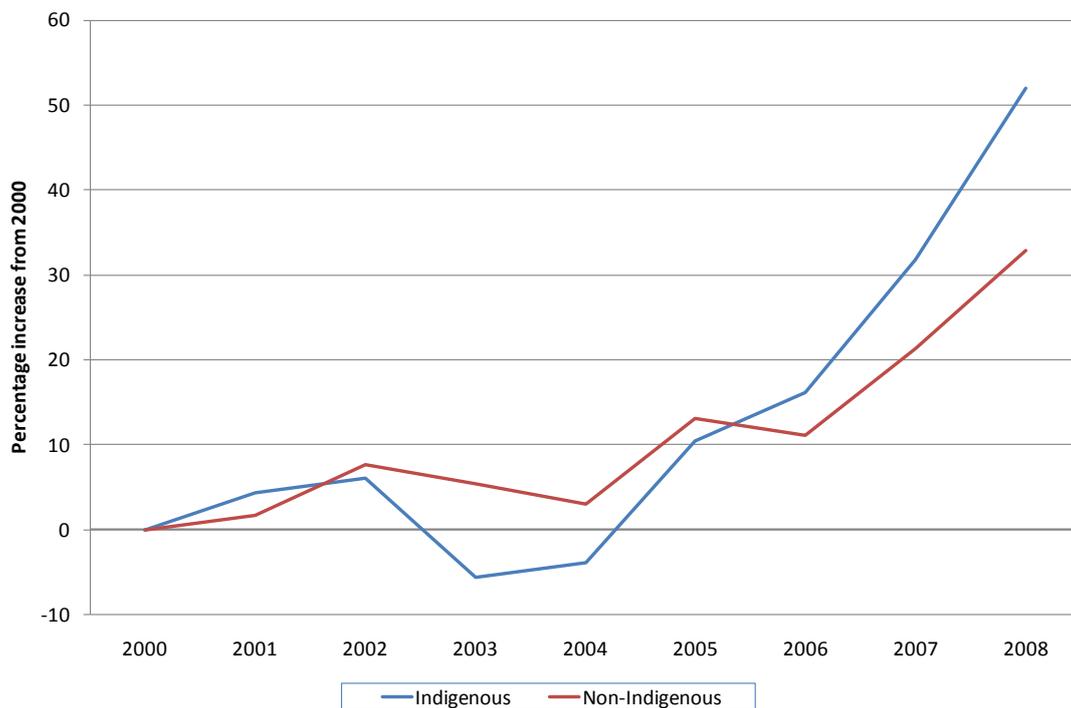


Figure 7 Percentage increase in qualification completions for Indigenous and non-Indigenous students, from 2000 to 2008⁹

⁸ Compiled from data taken from Table 14, <http://www.ncver.edu.au/publications/2244.html>

⁹ Compiled from data taken from Table 14, <http://www.ncver.edu.au/publications/2244.html>

Some caution is required when examining Figure 6 because the relatively small number of Indigenous students with qualification completions in 1996 may exaggerate the differences seen over time. To illustrate this, Figure 7 uses the year 2000 as the baseline. By that year, the number of Indigenous qualification students had increased in Australia to 7,100.

Figure 6 shows that Indigenous Australians are completing certificate qualifications at a higher rate than non-Indigenous Australians are, and that the difference in the rate of completions between Indigenous and non-Indigenous Australians is widening. When using the base year of 2000, the difference in the rates is smaller than when using the year 1996 as the base. (Note also that Figure 6 and Figure 7 have very different scales on the vertical axis.)

Figure 8 shows the rate of growth in VET qualification completions for jurisdictions with the largest populations of Indigenous Australians — Queensland, New South Wales, South Australia, Western Australia and the Northern Territory — and for all of Australia. These graphs have a common scale. There appears to be considerable volatility in the rates of growth in some jurisdictions, and considerable variation between them. However, all show a higher rate of growth in qualification completions for Indigenous students than for non-Indigenous students.

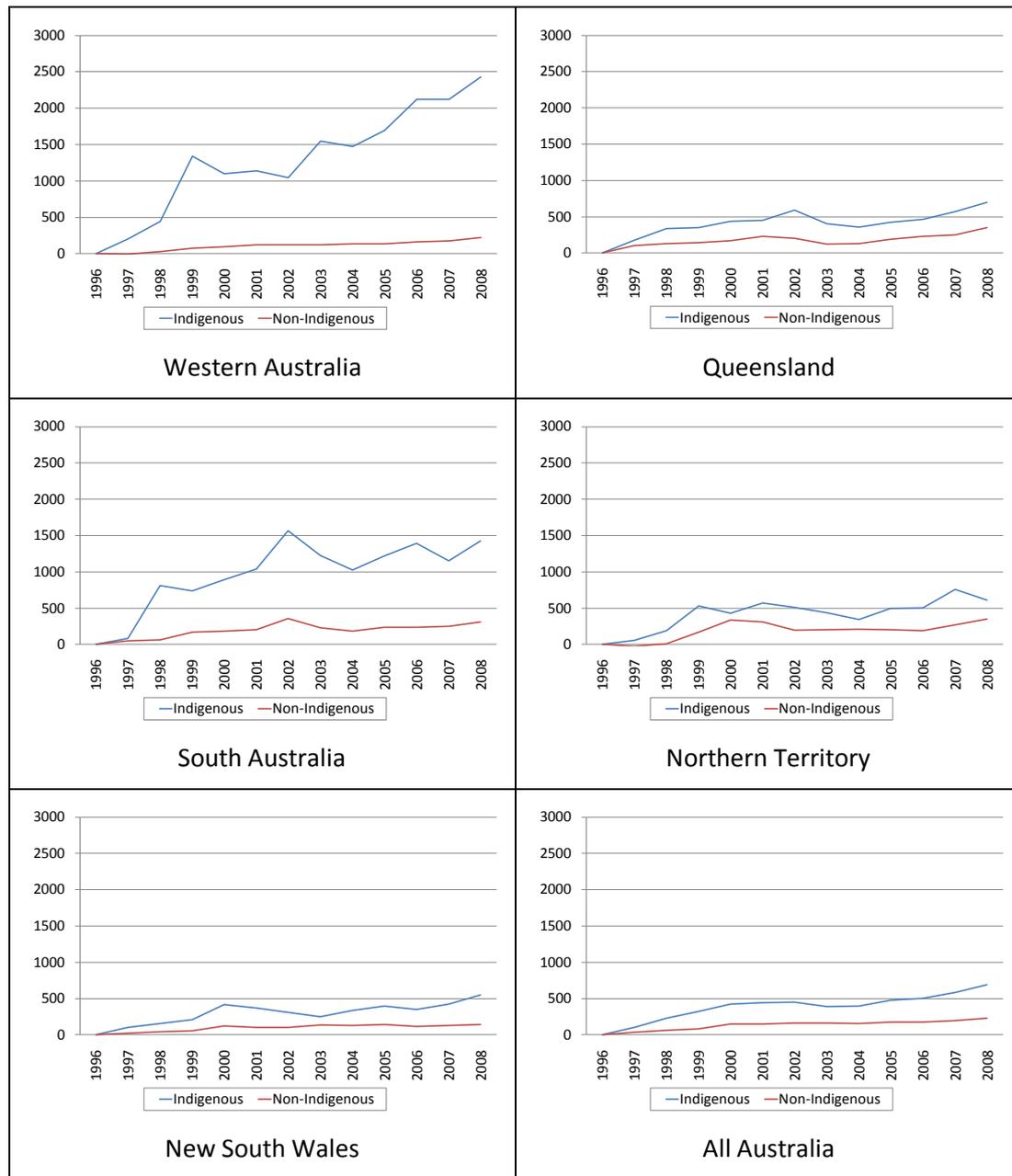


Figure 8 Percentage increase in qualification completions for Indigenous and non-Indigenous students, from 1996 to 2008, for selected jurisdictions and all Australia¹⁰

¹⁰ Compiled from data taken from Table 14, <http://www.ncver.edu.au/publications/2244.html>

Student and courses

The *Students and courses* dataset was interrogated using the *Superweb* facility. The numbers of persons studying for a Certificate II qualification or for a Certificate II or higher qualification (up to Diploma level) are shown in Table 6. This shows that among Indigenous 15 to 19 year-olds, enrolments in Certificate II courses increased from 5,340 in 2002 to 8,535 in 2009 and in Certificate II and higher, from 9,501 in 2002 to 15,279 in 2009. These figures represent increases of 60 per cent at Certificate II and 61 per cent at Certificate II and above. Among non-Indigenous 15 to 19 year-olds, there were increases of 48 per cent for Certificate II only and 39 per cent for Certificate II and above. Over the same period, there were decreases in enrolments at Certificate II among both Indigenous (9%) and non-Indigenous (19%) 20 to 24 year-olds, but increases at all levels from Certificate II to Diploma (14% for Indigenous and 24% for non-Indigenous students). Overall, participation in VET courses at Certificate II and above has been increasing from 2002 to 2009.

Table 6 Highest current qualification level of enrolment for Indigenous and non-Indigenous persons aged 15-19, and 20-24 years, 2002-2009

Age group	Year	Numbers with designated highest qualification enrolment			
		Indigenous		Non-Indigenous	
		Certificate II only	Total Cert II to Diploma	Certificate II only	Total Cert II to Diploma
15 to 19 years	2002	5,340	9,501	77,076	225,714
	2003	5,310	9,418	77,907	234,976
	2004	5,522	9,642	77,649	239,743
	2005	5,805	10,347	82,223	252,783
	2006	6,916	12,022	115,113	292,242
	2007	7,513	13,499	114,602	302,411
	2008	8,252	14,806	114,871	311,218
	2009	8,535	15,279	113,878	312,991
	20 to 24 years	2002	3,018	7,129	31,794
2003		2,618	6,728	29,902	181,748
2004		2,575	6,640	26,759	178,655
2005		2,498	6,763	24,820	186,204
2006		2,482	7,176	26,313	194,349
2007		2,379	7,288	23,700	198,425
2008		2,569	7,843	23,268	204,213
2009		2,746	8,141	25,900	216,145
15 to 24 years		2002	8,358	16,630	108,870
	2003	7,928	16,146	107,809	416,724
	2004	8,097	16,282	104,408	418,398
	2005	8,303	17,110	107,043	438,987
	2006	9,398	19,198	141,426	486,591
	2007	9,892	20,787	138,302	500,836
	2008	10,821	22,649	138,139	515,431
	2009	11,281	23,420	139,778	529,136

Source: *Students and Courses*, NCVET

In 2006, the Census estimated 54,727 Indigenous persons aged 15 to 19 years and 44,560 Indigenous persons aged 20 to 24 years, and 1,359,939 non-Indigenous 15 to 19 year olds, and 1,424,872 20 to 24 year olds. Table 7 shows that approximately 13 per cent of the 15 to 19 age group of Indigenous young people were enrolled for a Certificate II level qualification in 2006 compared to 9 per cent of non-Indigenous 15 to 19 year-olds. Thus, among 15 to 19 year-olds, Indigenous persons were enrolled in Certificate II courses at a rate almost 1.5 times that for non-Indigenous persons of the same age. Among 20 to 24 year-olds, enrolments rates were lower, yet Indigenous persons were enrolled for courses at Certificate II at three times the rate of non-Indigenous persons of the same age.

Table 7 Percentage of the population by current qualification enrolment for Indigenous and non-Indigenous persons aged 15 to 19 and 20 to 24 years in 2006

	Indigenous		Non-Indigenous	
	Certificate II only	Total Certificate II to Diploma	Certificate II only	Total Certificate II to Diploma
15 to 19 years	12.6	22.0	8.5	21.5
20 to 24 years	5.6	16.1	1.8	13.6
<i>15 to 24 years</i>	<i>10.8</i>	<i>19.8</i>	<i>7.3</i>	<i>18.3</i>

Table 7 also shows that 55 per cent of Indigenous 15 to 24 year-olds in all courses at Certificate II or above are enrolled in Certificate II courses. Among non-Indigenous 15 to 24 year-olds enrolled at Certificate II or above, 40 per cent are studying at Certificate II level. Thus, while participation in VET certificate courses has been increasing for Indigenous young people at a faster rate than for non-Indigenous young people, Indigenous students are studying at lower levels than non-Indigenous students are.

Overview VET participation

Total VET attainments – that is, all VET students and not just Certificate II (and above) – as indexed by enrolments for the period 1996 to 2008 show a pattern of increasing enrolments, for Indigenous and non-Indigenous students, irrespective of the jurisdiction in which the students reside. The rate of growth for Indigenous students has been higher. This finding needs to be qualified by two observations:

- These results are based on figures which are not adjusted for population growth.
- The base numbers for Indigenous qualification completions in 1996 were often small.

The *Student and courses* data from the NCVET database suggest that, at least in 2006, the proportion of Indigenous and non-Indigenous persons enrolled for a Certificate II through to Diploma level qualification was roughly similar in both groups. For Certificate II only, there was a higher proportion of Indigenous persons enrolled for this qualification.

Multivariate analyses of influences on attainment

This section of the report builds on the previous investigation by focusing on attainment data rather than retention or attendance statistics. Using Year 12 and Certificate II (and above) completion rates from a representative sample of Australian students, this section explores different influences on Indigenous (and non-Indigenous) attainment levels. The multivariate analyses conducted were designed to identify key factors that direct Indigenous students' educational intentions and, furthermore, contribute to the completion or non-completion of Year 12 and Certificate II (and above) qualifications.

The multivariate analyses conducted used the most recent Longitudinal Study of Australian Youth (LSAY) cohort (Y06) data. The Australian 2006 PISA sample became the commencing cohort for the Y06 LSAY cohort. In 2006 there were 14,190 respondents to LSAY but by 2009 this number had dropped to 7,300. Data were weighted to make the LSAY Y06 sample representative of the 15-year-old population of Australian students.

Although these data are nationally representative they do not include students from very remote locations so there are limitations on the extent to which that influence on attainment can be investigated. The data over-sampled Indigenous students in the selected schools but there was a significant attrition in Indigenous participation over time.

Four types of variables were used:

- a) *attainment* variables, which were measured in 2009¹¹ and included¹²:
 - Year 12 attainment
 - Certificate II (and above) attainment
- b) *educational intentions*, which were measured by asking participants if they planned to complete Year 12. Although this question did not specifically relate to Certificate II (and above) completion, it was used as a general indicator of future education plans. This variable was dichotomous with participants who responded positively (that is, who reported intentions to complete Year 12) acting as the reference group for the analyses. Participants in the other category for this variable either had no intention of completing Year 12 or were unsure.
- c) *achievement*, which was represented by the students' performance in PISA 2006. Participants score in reading literacy was used. Reading was a minor domain for the PISA 2006 cycle, and while achievement scores in major and minor domains are typically highly and positively correlated (see Thomson & De Bortoli, 2007), reading performance was chosen as it is central to many policy considerations.
- d) *background characteristics*, which were measured as part of the PISA 2006 study and included:

¹¹ Note that these levels of attainment were measured towards the end of 2009 and are measures of enrolment rather than true qualification completion.

¹² A previous set of analyses also included a third attainment variable, completion of Year 12 or Certificate II (and above). However, results demonstrated that the direction of the relationships between key variables (e.g. achievement and ESCS) and attainment worked in opposite directions for Year 12 completion versus Certificate II completion. Therefore, the combined attainment variable was discarded.

- Indigenous status (Indigenous or non-Indigenous)
- Gender (female or male)
- Socioeconomic status or Educational, Social and Cultural Status (ESCS)¹³
- Parental education level¹⁴
- Location (metropolitan or non-metropolitan¹⁵)
- Language spoken at home (English or non-English).

All variables except ESCS and parental educational level were dichotomous. For the dichotomous variables, the second category given in the list above was the reference group for the multivariate analyses (that is, the non-Indigenous, male, non-metropolitan and non-English speaking background categories were the reference groups).

Table 8 Count of participants according to attainment measures and Indigenous status, gender, location and language spoken at home

		Year 12		Certificate II	
		Attained	Not-Attained	Attained	Not-Attained
Indigenous	Indigenous	4,672	1,860	595	5,938
	Non-Indigenous	173,203	55,065	14,838	213,569
Gender	Female	92,987	21,075	9,722	104,479
	Male	84,889	35,850	5,711	115,027
Location	Metropolitan	131,102	22,310	10,450	155,389
	Non-metropolitan	46,774	34,615	4,938	64,118
Language	English	159,206	53,317	14,325	19,8337
	Other	18,409	3,386	1,,087	20,709

Prior to the modelling analyses, descriptive statistics were calculated for all variables. Table 8 presents the count of participants¹⁶ who completed the two attainment measures according to background characteristics. Frequencies across rows of Table 8 demonstrate patterns. For instance, more Indigenous students completed Year 12 than did not.

Table 9 displays attainment frequencies according to parental education level. The levels range from incomplete primary (level 0) to postgraduate degree (level 6). For Year 12 attainment, the highest number of participants was recorded in the highest parental education level category.

¹³ ESCS is an index of economic, social and cultural capital and is used as an indicator of socioeconomic status for Australia's national PISA reports and in International reports.

¹⁴ Parental educational level is incorporated into the ESCS index variable; however, it was included as an additional variable in these analyses to investigate any unique effects it might have on attainment.

¹⁵ Initial analyses involved dummy coding the location variable to create three categories (metropolitan, provincial and remote); however, due to multicollinearity effects the variable had to be restricted to two categories (metropolitan and non-metropolitan).

¹⁶ Note that cumulative frequencies may not match across the three attainment measures due to missing data. Also note that data in all frequency tables were weighted to represent the population of 15-year-olds in Australia in 2006.

Table 9 Count of participants according to attainment measures and parental education level

Parental educational level	Year 12		Certificate II	
	Attained	Not-Attained	Attained	Not-Attained
0	1,465	894	167	2,191
1	691	67	51	706
2	14,581	7,678	1,509	20,751
3	5,238	2,142	609	6,771
4	53,788	20,017	5,972	67,907
5	24,677	8,987	2,839	30,825
6	74,923	14,835	3,826	85,998

Table 10 presents mean and standard deviation statistics for the two continuous variables used in the analyses – achievement and socioeconomic status (ESCS). For consistency, and to aid interpretation of the size of coefficients, the reading literacy achievement variable was transformed so that it had a mean of 0 and a standard deviation of 1. ESCS was originally scaled on this metric. Table 10 shows that participants who completed Year 12 had higher mean scores for both variables than participants who did not complete Year 12. For reading literacy achievement the difference was substantial: almost 0.7 standard deviations. For socioeconomic status the difference was smaller but still moderate: around 0.4 standard deviations. On the other hand, participants who completed Certificate II (and above) had lower mean scores of achievement and socioeconomic status than those who did not complete these qualifications. The difference in reading literacy achievement scores between those without and those with a certificate was 0.3 standard deviations. The difference in the socioeconomic status scores between those without and those with a certificate II was just under 0.3 standard deviations.

Table 10 Means (and standard deviations) for achievement and socioeconomic status (ESCS) according to attainment

		Year 12		Certificate II	
		Attained	Not-Attained	Attained	Not-Attained
Reading literacy achievement	Mean	0.50	-0.17	0.06	0.37
	SD	0.81	0.88	0.76	0.87
Educational, social and cultural status	Mean	0.38	0.06	0.06	0.32
	SD	0.74	0.76	0.73	0.76

Multivariate logistic modelling was conducted for all analyses using the computer application *HLM* (version 6.08). The results of these analyses show the unique contribution of each predictor variable to the outcome whilst taking into account the contribution of other variables included in the model. For example, if females are shown to be more likely to complete Year 12, this is net of all other predictor variables used in the model. In other words, gender has an influence over and above the influence of other background characteristics and achievement variables included in the analysis.

Two types of models were considered. The first set examined the effects of background characteristics and achievement on attainment. The second set of models also considered the influence of educational intentions¹⁷. For both types of models, the analyses were conducted in two steps:

- Modelling for all participants
- Modelling for Indigenous and non-Indigenous participants¹⁸

Model 1: The effects of background characteristics and achievement on attainment

The first set of analyses was designed to investigate the effects of background characteristics and achievement on attainment. For these models, attainment represented the outcome variable while achievement and background characteristics were predictor variables.

Modelling for all participants

Two models were analysed, one for each of the attainment variables. Results of the modelling are presented in Table 11. For each independent variable, the associated regression coefficient (B) and standard error (S.E.) are given, as well as an odds ratio value. Statistically significant coefficients are shown in bold. In general, for variables with a statistically significant coefficient, the larger the value of an odds ratio beyond 1, the greater the effect of that variable in increasing the likelihood of positive attainment outcomes. On the other hand, an odds ratio value below 1 for an independent variable indicates a reduced likelihood of attainment associated with that variable. Another way to distinguish between these two types of effects is to examine the magnitude of the regression coefficient – positive coefficients demonstrate a positive association with attainment (for example, completion of Year 12) and negative coefficients demonstrate a negative association with attainment (for example, non-completion of Year 12).

Model 1 for all participants is shown in Table 11. These results show that for both attainment measures there was no net statistically significant effect of Indigenous status or parental education level. Gender was a significant predictor across all models with females being more likely to complete Year 12 or Certificate II (and above) than males.

¹⁷ Another set of analyses were conducted with model 1 and model 2 including participants' science performance in PISA 2006 as the achievement variable. Model results were similar irrespective of the types of achievement variable used. In two instances the ESCS variable significantly predicted Year 12 attainment (for all participants and non-Indigenous participants) when science was the indicator of achievement; however this effect was not carried across for ESCS when reading was the achievement variable. This is likely because of the positive correlation between achievement and the ESCS index. The analyses reported focused on reading performance as it is the more policy relevant achievement indicator.

¹⁸ Analyses were conducted for participants across Australia. State-based analyses were not possible due to sample size limitations.

Table 11 Multivariate logistic modelling (model 1) of the two attainment measures for all LSAY Y06 participants

	Year 12 attainment		Certificate II (and above) attainment	
	B (S.E.)	Odds ratio	B (S.E.)	Odds ratio
<u>Background</u>				
Indigenous status	0.42 (0.28)	1.52	0.04 (0.25)	1.04
Gender	0.36 (0.07)	1.48	0.76 (0.12)	2.15
ESCS	0.17 (0.08)	1.19	-0.24 (0.10)	0.79
Parental education	0.05 (0.04)	1.05	0.02 (0.05)	1.02
Location	0.41 (0.11)	1.51	-0.07 (0.16)	0.93
Language at home	-0.66 (0.15)	0.52	0.49 (0.21)	1.63
<u>Achievement</u>	0.81 (0.05)	2.25	-0.37 (0.07)	0.69

For Year 12 attainment, the odds of completion were increased for participants who attended schools in metropolitan locations. Also for this attainment measure, being from a non-English speaking background and having a higher socioeconomic status (ESCS) was linked to improved odds of completion. The largest effect was recorded for achievement – participants with a reading literacy score one standard deviation higher than the mean were more than twice as likely to complete Year 12.

Background characteristics and achievement had a different impact on Certificate II completion. Higher socioeconomic status and higher achievement were associated with reduced odds for completion, while participants with English speaking backgrounds were more likely to complete a Certificate II.

Modelling for Indigenous and non-Indigenous participants

The next step in the analyses for model 1 involved investigating Indigenous and non-Indigenous young people separately. These analyses were designed to provide a clearer account of the factors that impact on attainment for Indigenous students. A limitation of these analyses was the decreased sample size of LSAY Indigenous participants in the 2009 wave of data collection (the sample of 1,080 students in 2006 dropped to 349 students in 2009). However, as analyses for all participants had yielded no distinguishing results for Indigenous students (that is, when Indigenous status was included as an independent variable), modelling the two samples of participants separately was required.

Table 12 Multivariate logistic modelling (model 1) of Year 12 attainment for Indigenous and non-Indigenous LSAY Y06 participants

	Indigenous		Non-Indigenous	
	B (S.E.)	Odds ratio	B (S.E.)	Odds ratio
<u>Background</u>				
Gender	0.28 (0.32)	1.33	0.41 (0.08)	1.50
ESCS	-0.29 (0.33)	0.75	0.19 (0.08)	1.21
Parental education	0.13 (0.16)	1.14	0.05 (0.04)	1.05
Location	-0.66 (0.41)	0.52	0.46 (0.11)	1.59
Language at home	0.33 (0.51)	1.39	-0.71 (0.15)	0.49
<u>Achievement</u>	0.61 (0.14)	1.83	0.83 (0.05)	2.28

Table 12 shows the results of the analyses for Year 12 attainment. For Indigenous participants, higher achievement was the only statistically significant predictor of Year 12 completion. This effect was stronger for non-Indigenous participants but for both Indigenous and non-Indigenous models the impact of achievement was substantial. For non-Indigenous participants, in addition to achievement, female participants, or participants with a higher socioeconomic status, who went to a metropolitan school, were more likely to complete Year 12. Also, participants who came from non-English speaking backgrounds were more likely to complete the qualification, other things equal.

The reduced Indigenous 2009 sample of participants resulted in difficulties analysing an Indigenous model for the Certificate II (and above) attainment variable. Results for non-Indigenous participants are shown in Appendix A. The pattern of results for the non-Indigenous model was similar to the results in the previous section for all participants.

Model 2: The effects of educational intentions, background characteristics and achievement on attainment

The second set of analyses was designed to build on model 1 by including educational intentions as a potential predictor of attainment along with background characteristics and achievement. For these models, attainment represented the outcome variable while educational intentions, achievement and background characteristics were predictor variables. Figure 9 shows a graphical display of the model.

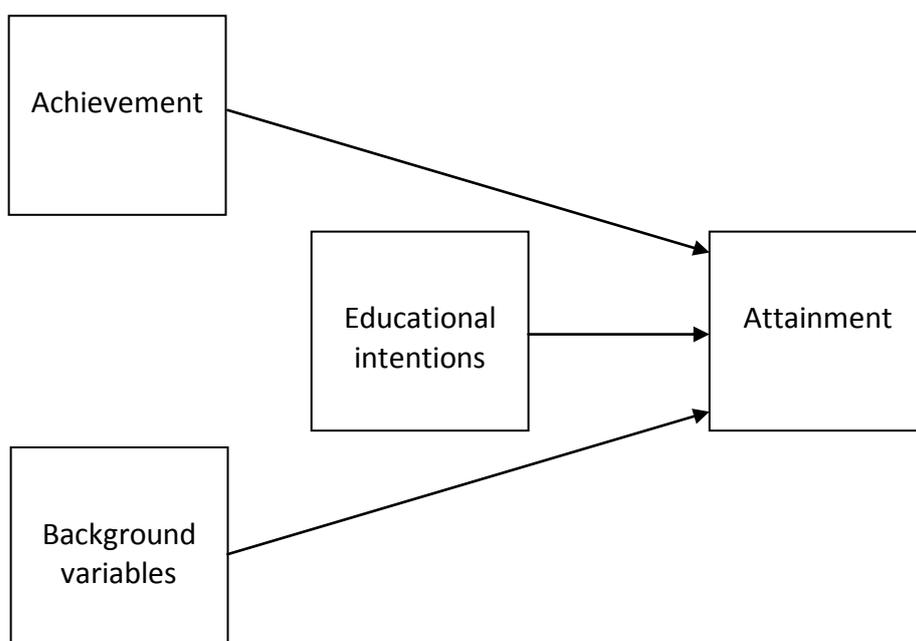


Figure 9 Modelling the effect of educational intentions, background characteristics and achievement on attainment

Modelling for all participants

Consistent with model 1 findings, Table 13 shows that for both attainment measures there was no net statistically significant effect of Indigenous status or parental education level. Gender, however, was a significant predictor across all models with females being more likely to complete Year 12 or Certificate II (and above) than males.

For Year 12 attainment, the odds of completion were slightly increased for participants with higher achievement scores, who went to school in a metropolitan location or who came from non-English speaking backgrounds. By far the greatest impact was educational intentions – participants who planned to complete Year 12 were more than six times as likely to achieve this as participants who did not have this intention.

Characteristics associated with a reduced likelihood of Certificate II (or above) attainment were gender, higher achievement, higher socioeconomic status and having a plan to complete Year 12. This last factor possibly operates because students who intend to complete a Certificate II do not need to complete Year 12, and may have chosen alternative pathways to pursue a Certificate II qualification.

Table 13 Multivariate logistic modelling (model 2) of the two attainment measures for all LSAY Y06 participants

	Year 12 attainment		Certificate II (and above) attainment	
	B (S.E.)	Odds ratio	B (S.E.)	Odds ratio
<u>Background</u>				
Indigenous status	0.39 (0.35)	1.47	0.08 (0.28)	1.08
Gender	0.29 (0.09)	1.33	0.82 (0.12)	2.15
ESCS	0.13 (0.08)	1.14	-0.22 (0.10)	0.80
Parental education	-0.00 (0.04)	1.00	0.04 (0.05)	1.04
Location	0.34 (0.12)	1.41	-0.02 (0.16)	0.98
Language at home	-0.38 (0.15)	0.68	0.38 (0.22)	1.46
<u>Achievement</u>	0.61 (0.05)	1.83	-0.26 (0.07)	0.77
<u>Plan Yr12</u>	1.83 (0.10)	6.23	-0.89 (0.15)	0.41

Modelling for Indigenous and non-Indigenous participants

The next step in the model 2 analyses considered Indigenous and non-Indigenous young people separately. Table 14 presents the results for the Year 12 attainment model for the two groups of participants – Indigenous and non-Indigenous. The table shows that for Indigenous participants, achievement and educational intentions were the only significant predictors. Higher achievement scores were associated with higher odds for Year 12 completion. For both the Indigenous and non-Indigenous models, there was a greater likelihood that participants with positive educational intentions would complete Year 12, with this effect being larger for non-Indigenous participants. Gender and location also had significant positive effects for non-Indigenous participants with females and participants from metropolitan schools more likely to complete Year 12. Non-Indigenous participants from non-English speaking backgrounds were also more likely to complete the qualification than participants from English speaking backgrounds.

Table 14 Multivariate logistic modelling (model 2) of Year 12 attainment for Indigenous and non-Indigenous LSAY Y06 participants

	Indigenous		Non-Indigenous	
	B (S.E.)	Odds ratio	B (S.E.)	Odds ratio
<u>Background</u>				
Gender	0.09 (0.36)	1.09	0.31 (0.09)	1.36
ESCS	-0.31 (0.31)	0.74	0.15 (0.08)	1.16
Parental education	0.09 (0.15)	1.09	0.01 (0.03)	0.99
Location	-0.63 (0.44)	0.53	0.40 (0.12)	1.49
Language at home	0.57 (0.52)	1.78	-0.43 (0.15)	0.65
<u>Achievement</u>				
Plan Yr12	1.33 (0.59)	3.77	1.86 (0.10)	6.39

Again, as it had for model 1 analyses, the reduced Indigenous 2009 sample of participants resulted in difficulties analysing an Indigenous model for the Certificate II (and above) attainment variable for model 2. The model for non-Indigenous participants is shown in Appendix A. The pattern of results for the non-Indigenous model was similar to the results in the previous section for all participants.

Mediation analyses

Model 2 analyses demonstrated the significant impact of educational intentions on Year 12 attainment, over and above the influence of background characteristics and achievement. To investigate this further, the mediating role of educational intentions was explored. Figure 10 illustrates how intentions might act as a mediator within the relationships previously considered. In this diagram, the effects of achievement and background variables on attainment are carried directly to attainment and via educational intentions.

To begin the mediation analysis, it was necessary to examine if achievement and the background factors studied impacted directly on educational intentions. For this analysis, educational intentions acted as the outcome variable with achievement and background characteristics as predictor variables. This model was run for all participants, Indigenous participants only, and non-Indigenous participants only. The results are presented in Table 15.

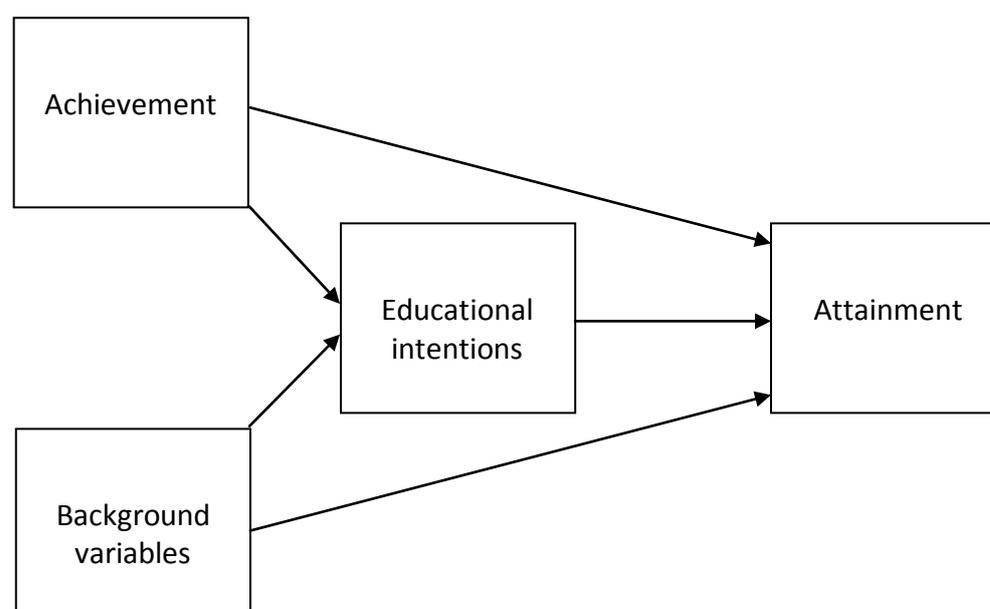


Figure 10 Modelling educational intentions as a mediator between background achievement and attainment

Table 15 Multivariate logistic modelling of educational intentions for all LSAY Y06 participants, Indigenous participants and non-Indigenous participants

	All participants		Indigenous participants		Non-Indigenous participants	
	B (S.E.)	Odds ratio	B (S.E.)	Odds ratio	B (S.E.)	Odds ratio
<u>Background</u>						
Indigenous status	0.20 (0.15)	1.22	NA	NA	NA	NA
Gender	0.47 (0.06)	1.60	0.54 (0.23)	1.72	0.46 (0.06)	1.59
ESCS	0.18 (0.06)	1.19	-0.29 (0.18)	0.75	0.20 (0.06)	1.22
Parental education	0.13 (0.03)	1.12	0.28 (0.09)	1.33	0.11 (0.03)	1.12
Location	0.44 (0.10)	1.55	0.04 (0.25)	1.04	0.42 (0.09)	1.53
Language at home	-1.29 (0.13)	0.27	-0.48 (0.44)	0.62	-1.36 (0.14)	0.26
<u>Achievement</u>	0.96 (0.04)	2.62	0.54 (0.08)	1.72	0.99 (0.04)	2.69

Previous analyses demonstrated that gender was not a predictor of educational attainment with Indigenous participants; however, it had a positive impact on educational intentions with Indigenous females almost twice as likely to report plans to complete Year 12 as Indigenous males. This pattern for gender was also found in the models for all participants and non-Indigenous participants. Across all three models, higher achievement was also associated with higher odds for planning to complete Year 12. Interestingly, parental education was a significant factor for all

models whereas it had not been for the attainment analyses. Participants with parents who possessed higher parental education levels had a greater likelihood of reporting positive educational intentions, yet this effect of parental education did not carry on to the attainment of Year 12 or to Certificate II (and above) qualifications.

Socioeconomic status and location were significant factors in the model for all participants with higher socioeconomic status and attending a metropolitan school linked to a higher likelihood of having Year 12 completion plans. The same pattern was found for these variables for non-Indigenous participants. Moreover for the all participants and the non-Indigenous models, participants from non-English speaking backgrounds were more likely to report positive educational intentions than participants from English speaking backgrounds.

A series of mediation tests were conducted with the results from Table 15 and the results from modelling in previous analyses. Mediation analyses were conducted in line with Baron and Kenny's (1986) recommended approach and the Sobel test was used to assess if the drop in variance after entering the mediator into the regression equation was significant (see Appendix B for all mediation statistics). Within the models for all Y06 LSAY participants, educational intentions (that is, planning to complete Year 12) mediated the relationships between: (i) gender and Year 12 or Certificate II attainment (and above); (ii) socioeconomic status and Year 12 attainment or Certificate II (and above) attainment; (iii) location and Year 12 attainment; (iv) language at home and Year 12 attainment or Certificate II (and above) attainment and; (v) achievement and Year 12 attainment or Certificate II (and above) attainment. The same mediating relationships were found in models for non-Indigenous participants. For Indigenous participants, educational intentions mediated the relationship between achievement and Year 12 attainment. These analyses demonstrate that the effects of the background variables gender, location, language spoken at home and socioeconomic status on non-Indigenous participants' attainment could, in part, be accounted for by educational intentions. In other words, these background variables helped to determine what students' educational intentions would be when they were 15-years-old, and once they were formed these intentions then directed students towards completion or non-completion. For all models, educational intentions mediated the relationship between achievement and Year 12 attainment.

Overview

Model 1 analyses revealed that background characteristics and achievement had effects on attainment for all participants including non-Indigenous participants. However, achievement was the only variable that significantly predicted attainment outcomes for Indigenous participants.

Model 2 analyses demonstrated that positive educational intentions have a significant impact on attainment for both Indigenous and non-Indigenous participants. When a student is 15 years old, having a plan to complete Year 12 is clearly an important predictor of Year 12 attainment. In turn, for Indigenous participants, the intention to complete Year 12 was more likely to be made by girls and by participants with a parent of a high education level. Further analyses suggested that educational intentions may act as a mediator in the relationship between attainment and background characteristics and achievement.

Review of literature

A review of literature of research on existing programs for Indigenous students and other policy initiatives was undertaken. This review is designed to aid in the interpretation of results from the analyses reported below. The review is based on resources available at the ACER library, the Australian Education Index (which is maintained by ACER) and the *Closing the Gap Clearinghouse* maintained by the Australian Institute of Health and Welfare (AIHW)¹⁹ as well as additional material sourced from experts in the field. The review also includes a brief analysis of patterns of achievement in *National Assessment Program in Literacy and Numeracy* (NAPLAN) (MCEECDYA, 2009).

Background

Census derived estimates for 2006 indicates that at that time there were around 517,000 Indigenous people living in Australia. Of these, 29 per cent lived in NSW, 28 per cent in Queensland, and 15 per cent lived in Western Australia. Thirteen per cent lived in the Northern Territory. Around 32 per cent lived in major cities, 43 per cent lived in regional areas, and 25 per cent lived in remote or very remote locations (Australian Bureau of Statistics 2010). The proportion of Indigenous persons living in metropolitan areas has been increasing over the last two decades (Fordham and Schwab 2007). A total of about 140,000 Indigenous people were enrolled as students. Their distribution across age groups can be seen in Table 16. About 75 per cent of Australian schools have one or more Indigenous students enrolled (Doyle and Hill no date).

Table 16 Total Indigenous student and percentage of student population by school level and age, 2006

	Primary school	Secondary school	Total	% of Indigenous student population
12 years and younger	90,396	5,666	96,062	68.4
13 years	598	11,504	12,102	8.6
14 years	18	11,225	11,243	8
15 years		9,683	9,683	6.9
16 years		6,690	9,990	4.8
17 years		3,560	3,560	2.6
18 years		723	723	0.5
19 years and older		318	318	0.2
Total	91,102	49,369	140,381	100
Percentage students	64.8	35.2	100	

Source: (Australian Bureau of Statistics 2006)

¹⁹The search terms were: (aboriginal students OR aboriginal youth) AND (student attrition OR dropout* OR school holding power OR attendance OR truancy) AND publication date > 1999

These terms are all subject thesaurus terms so the search was limited to the subject field. The search retrieved 120 records of which 52 were initially selected as relevant to this study. Very few evaluations of programs were found among the articles.

The age structure of the Indigenous population is markedly younger than for the non-Indigenous population. This can be seen in Figure 11.²⁰ Indigenous children under the age of 15 constitute 40 per cent of the Indigenous population. Children aged up to 15 years make up 20 per cent of the non-Indigenous population (Ministerial Council on Education Employment Training and Youth Affairs and Curriculum Corporation 2006, p15). The higher rate of population growth for the Indigenous population also suggests that the numbers of Indigenous students in schools may increase (Ministerial Council on Education Employment Training and Youth Affairs and Curriculum Corporation 2006, p15). This means that issues associated with the attainment of Year 12 or its equivalent will increasingly apply to a larger number of students. As noted previously in this paper the apparent retention rate of Indigenous students to Year 12 is considerably lower than that of non-Indigenous students.

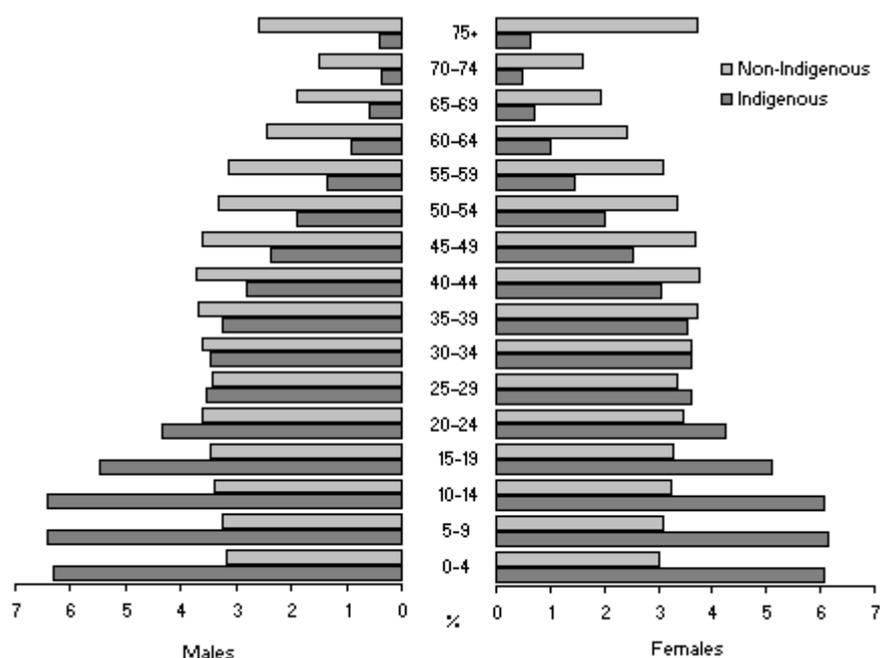


Figure 11 Estimated resident population by age contrasting non-Indigenous and Indigenous populations by gender, 2006

Source: Australian Bureau of Statistics (2010)

Further, the change in the Australian age structure as a whole means that there are likely to be skill shortages at a time when the proportion of Indigenous young people is increasing. This presents an opportunity for Indigenous populations to more fully participate in education and the world of work (Ministerial Council on Education Employment Training and Youth Affairs and Curriculum Corporation 2006, p15).

Two sources of data concerned with other aspects of development provide perspectives that are relevant to educational attainment. Firstly, data from the Australian Early Development Index (AEDI) has shown that there are higher proportions of Australian Indigenous children developmentally vulnerable on each of the AEDI domains compared to non-Indigenous children (Centre for Community Child Health and Telethon Institute for Child Health Research 2009, p12). Secondly, the academic performance of Indigenous students, as measured by NAPLAN is, on average, well below that of other students. For example, in 2009, the national mean

²⁰<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/DAD13E1C4B3C29D7CA257718002A7214?opendocument> viewed February 2011

scale score for Indigenous students was 327.4 in Year 3, 414.4 in Year 5, 473.2 in Year 7 and 510.2 in Year 9. These are statistically significantly lower than the national mean scale scores for non-Indigenous students in all Years for Reading. (The ACT, Tasmania and Victoria had the highest Indigenous student mean scale scores for all Year levels in Reading, and the Northern Territory had the lowest Indigenous student mean scale score for all Year levels in Reading.) Only in a limited number of cases was there evidence of significantly closing the gap between the performance of Indigenous and non-Indigenous students from 2008 to 2009. However, nationally there was a tendency for the gap to be smaller in 2009 than 2008 for Year 3 and Year 5 students.²¹ Appendix D provides charts (with confidence intervals) showing how the average scores of Indigenous and non-Indigenous students varies by state and territory.

In addition, the Productivity Commission (Steering Committee for the Review of Government Service Provision 2009, p6.1) reported that for 2007, attendance rates in government schools for Years 1–10 were lower for Indigenous students than non-Indigenous students, in all states and territories. These rates declined from Year 1 to 10 for Indigenous and other students, but the rate of decline was greater for Indigenous (2 to 14 percentage points) compared with others (3 to 7 points).

Factors impacting on educational outcomes of Indigenous students

Purdie and Buckley (2010) provide an overview of research into attendance and retention of Indigenous students in Australia. They point out:

- a combination of home, school and individual factors predict absence from school, but the relative importance of each is contested
- that programs which aim to address attendance or retention can do so either directly (for example, by providing incentives) or indirectly (for example by improving literacy)
- there are few high quality, empirical evaluations or programs in this area.²² For example, Purdie and Buckley (2010) list five programs which provide financial or other support – the Australian Indigenous Education Foundation, Cape York Institute Higher Expectations Program, the Yalari Foundation, The Catherine Freeman Foundation and the Future Footprints Program – none of which appear to have been evaluated
- a common feature of successful programs is “creative collaboration” between agencies, parents and the community.

Mellor and Corrigan (2004) argue that research concerned with Indigenous education has often been limited to case studies on “problems” without sufficient attention to context, has focused on specific subsets of the population and the uniqueness of the Indigenous experience and has been isolated from the broader research discourses in education and other disciplines. They proposed a significant National Research Agenda including the collection of systematic data on attainment and the correlates of attainment.

Doyle and Hill (no date) identify four levels to a model that they hypothesise will influence the educational outcomes of Indigenous students:

²¹ Statistical testing for the significance of differences in mean scale scores was sourced from the NAPLAN report 2009.

²² This point was also strongly made by Mellor and Corrigan (2004, p2ff and 47ff), although the focus of their concern is more on the quality of data to be collected to monitor population changes in educational attainment among Indigenous young people.

- social or community context (income, financial stability, access to services, health, nutrition, housing, safety); there is considerable evidence that a disproportionate number of Indigenous young people have poorer access to services, poorer health and nutrition and housing than their non-Indigenous counterparts (see especially the ARACY Wellbeing Report Card, The Allen Consulting Group 2008)
- home context (stability, mobility, parenting, early childhood development, parental education and labour force status, support levels for learning, language and culture)
- school context (access, learning environment, curriculum, teaching, family and community involvement)
- student context (basic material needs met, engagement, adequate support for learning and for vocational development).

The authors stress the cross-generational impact of these factors – a point also made by Rigney, Rigney and Hughes (1998, p21). They review a wide range of literature, much of it drawing upon surveys and administrative data but it was not possible to assemble data that would provide a basis for statistical testing.

The Centre for Aboriginal Economic Policy Research, based at The Australian National University, produced a report in 2007 which summarised findings from research conducted by the centre over the previous two decades (Fordham & Schwab, 2007). Key findings related to retention of Indigenous students in schools included:

- Being placed in a juvenile detention centre has a substantial effect on school completion (p.81)
- Indigenous young people appear to have different aspirations from non-Indigenous young people, leading them to view the benefits of school completion and post school study differently (principally, they do not see this education as the acquisition of capital which can be realised in the labour market)
- Post school study seems to involve choice of areas which are linked to community benefits, rather than to benefits localised to the individual
- Indigenous TAFE students tend to be older when they commence and complete their courses than non-Indigenous students.

Long and North (2009) show that Indigenous Australians who complete Year 12 are far less likely to be engaged in full-time study, work or combinations of both than non-Indigenous Australians who complete Year 12. For example in 2006, there was a 26 percentage point difference between Indigenous and non-Indigenous persons aged 15-19 years. This suggests the perceptions that Indigenous students have about the value or benefits of completing Year 12 or equivalent (see Fordham & Schwab, 2007, above) may reflect the diminished chances available to them.

Since 1996 there has been an increase in the percentage of Indigenous young people who are fully engaged in work or study. In 1996, 54 per cent of 15 to 19 year-old Indigenous young people were fully engaged. By 2001 this had slightly increased to 56 per cent, and by 2006 it had reached 61 per cent. During the same period non-Indigenous young people of the same age increased their full-time engagement from 84 per cent in 1996 to 85 per cent in 2001 and 86 per cent in 2007 (Long & North, 2009). As Long and North (2009) note, this points to a small closing of the gap between the two groups. However, for older age groups, for example, 25 to 29 year olds the gap slightly widened over the same period.

A report prepared in South Australia, using data drawn from interviews with students in senior levels of schooling indicated that a major factor in Indigenous student retention was racism. Of particular concern to the students interviewed was the racism of peers and of teachers (Rigney, Rigney & Hughes, 1998). This points to a need for culturally safe and responsive classrooms, a factor reported elsewhere in the literature (for example, see David Unaipon College of Indigenous Education and Research, 2009).

In a review of the literature related to racism and Indigenous educational outcomes prepared for this report by Bodkin-Andrews (see Appendix E), evidence is provided showing that racism can affect young Indigenous people in communities and schools. In the broader community, increased exposure to racism is associated with an increased risk of poor physical and mental health outcomes on Indigenous Australians (see, for example, Larson et al. (2007), Zubrick et al. (2006) and Paradies and Cunningham, (2009, 2010)). As Zubrick (2006) shows, mental and physical health is linked to school retention. Lester (2000) found that racism within the workforce and the school was an important inhibitor of career expectations for Indigenous students.

Craven & Tucker (2003), highlighted difficulties in peer relationships for Indigenous students, largely stemming from racist attitudes directed towards them. Parente, et al. (2003) reported that all 83 Indigenous students in their study identified racism as a major barrier to achieving their life goals. Howard (2002) interviewed 52 Indigenous adolescents and reported that overt discrimination was a key reason for early school leaving.

Bodkin-Andrews et al. (2010) found with a sample of 305 Indigenous students, that racism was significantly associated with poorer test results. Racism uniquely accounted for six per cent of the variance in spelling, and eight per cent of the variance in mathematics test scores. In another set of analyses, Bodkin-Andrews et al. (2010), with a sample of 278 Indigenous Australian students found that racial discrimination was negatively associated with teacher-reported grades for English, Mathematics, and Science. The variance uniquely explained by racism was six per cent, six per cent and nine per cent respectively. It was also found that racism explained 13 per cent of the variance in academic disengagement. These studies suggest that racism is important for understanding the educational decisions of Indigenous students.

The evaluation of the National Evaluation of National Indigenous English Literacy and Numeracy Strategy (NIELNS) (Hugh Watson Consulting 2003) points out another problem which besets evaluations of most programs, including those targeting Indigenous educational outcomes. The report notes:

Some caution in the use of data and results of this evaluation is necessary. Results in the NIELNS program should not be extrapolated to the various education systems at large or to the Indigenous population as a whole...(p.9)

The report goes on to argue that the NIELNS program is but one of a multiplicity of activities related to Indigenous educational outcomes and so it is difficult to ascribe the unique contribution of the program to any changes in these outcomes. Despite these concerns, the report identified the following success factors:

- there is community support and involvement in the education of children
- the children could access the school
- the children have good health and nutrition
- the school is welcoming

- the principal is supportive of the program
- teachers are empathetic, enthusiastic, knowledgeable and resilient. They also understand the different needs of Indigenous children
- the teachers expect Indigenous children to succeed
- the teachers had support and professional development
- teachers and support staff had undertaken PD [professional development] in curriculum and methods that support, value and represents Aboriginal culture' (Hugh Watson Consulting 2003, p10).

This list, except perhaps the last point in it, describes the characteristics of an effective school. This begs two key questions:

- are there unique or critical factors that shape Indigenous educational outcomes, or is it simply a question of ensuring the schools Indigenous children attend are effective?
- If there are unique factors, what are they?

Adding to this complexity is the apparent instability within jurisdictions of some key indicators, for example, attendance (see COAG Reform Council, 2010, especially Table 7.1.) That is, there is evidence of sudden changes within jurisdictions, which may reflect problems with data, or volatility that remains unexplained, or both.

Bourke, Rigby and Burden (2000), in examining the attendance of Indigenous students at school, note the similarity in explanations across the literature, but extend the argument a little by asserting that school-based factors are more important than family or community factors. The effect of this argument is to shift the problem from the individual student, their family or their community, to the schools and education systems. This is a point also made by Purdie and Buckley (2010).

Szirom, Jaffe and MacKenzie (2001) evaluated the Full Service Schools Program, which was designed to encourage young people under 18 years to return to or remain at school until the end of Year 12. This program funded 65 clusters of schools across Australia. It included individual support strategies, curriculum initiatives, school organisational changes, community engagement activities, as well as systemic changes. While the program was seen to have been successful, only one site related to Indigenous students explicitly. (This one site focussed on building links between the schools' local communities.) Some of the factors identified by Szirom et al. included:

- the development of a whole of school approach
- creating strong and lasting partnerships with the local community and parents
- developing a culture of enterprise and innovation, which included having flexibility in curriculum design and implementation as well as in the use of school resources.

In general, they found that it is the quality of relationships which engage young people in school – between school staff and students and between students and their peers (Szirom et al, 2001, p.3) – that was important. This is a view also argued by Purdie and Buckley (2010).

Robinson et al. (2009) evaluated The National Accelerated Literacy Program in the Northern Territory for the period 2004 to 2008. This study used multivariate analytic techniques. The program targeted 100 primary and secondary schools in the NT, and was designed to improve the literacy levels of Indigenous students. (Hence it does not

directly touch on retention.) They found that student attendance was not associated with accelerated progress in literacy when controlling for the influence of a range of other factors. They also found that for reading achievement, remoteness was not an important factor but reading age at the time of first assessment and having English as a second language (Robinson et al. 2009) were important. Their recommendations focused on teachers and professional development, implying they saw teachers as a pivotal factor. This is a view advocated by a range of stakeholders and researchers (see for example, Harms, 2001; Muir, 2008; Robinson, 2008).

One of the most systematic and powerful analyses found by the review was the study conducted by Zubrick et al. (2006). Analysing data from the WA Aboriginal Child Health Survey, using logistic regression, the authors were able to identify 15 factors that uniquely contributed to the risk of an Indigenous student not attending school²³ (Zubrick et al. 2006). These included:

- age (the younger, the greater the risk, odds ratio of 0.53²⁴ with a confidence interval (CI) of 0.40-0.71. The contrast was students aged 8 to 11 with those aged 4 to 7 years)
- language spoken in the school playground (speaking an Indigenous language school increased the risk sixfold, odds ratio 6.09 CI 2.20-16.80. Those who spoke Aboriginal English increased the risk twofold, odds ratio 1.98 CI 1.31-2.99)
- whether the student had ever been in day care (never having been in day care increased the risk, odds ratio 1.57 CI 1.19-2.14)
- trouble getting enough sleep (lack of sleep increased the risk, odds ratio 1.75 CI 1.19-2.56)
- academic performance (low performance increased the risk, odds ratio 1.63 CI 1.27-2.09)
- risk of clinically significant emotional or behavioural difficulties (having difficulties increased the risk, odds ratio 1.76 CI 1.25-2.46)
- carers seeing the principal because of problems at school (increased the risk, odds ratio 1.80 CI 1.28-2.53)
- education status of the primary carer (the higher the education level, the lower the risk, specifically, students whose primary carer had completed Years 11-12 were less likely to be absent compared with those with a carer who had completed Year 10 only, odds ratio 0.71 CI 0.53-0.95)
- labour force status of the primary carer (having the primary carer unemployed or not looking for work increased the risk, odds ratio 1.53 CI 1.18-1.99)
- home ownership (living in rented accommodation increased the risk, odds ratio 1.95 CI 1.45-2.64)
- frequency of reading to the child at home (less frequent reading increased the risk, for example, hardly ever reading a book gave an odds ratio of 1.56 CI 1.05-2.30)

²³ Specifically, the analyses tested the likelihood of a child having missed 26 or more days at school in a school year.

²⁴ The odds ratio is used to measure effect size when the outcome variable consists of two categories. In general, the larger the value of an odds ratio beyond 1, the greater the effect of a variable in increasing the likelihood of an outcome. On the other hand, an odds ratio value below 1 for an independent variable indicates a reduced likelihood of that outcome. For example, if the odds ratio equals 2.0 then outcome is twice as likely.

- number of life stress events (higher number increased the risk, for seven life stress events, odds ratio 1.90 CI 1.34-2.68)
- proportion of students in the school who are Aboriginal (the risk increased if the proportion was in the range of 10-20 per cent, odds ratio 1.71 CI 1.15-2.55)
- presence of an Aboriginal and Islander Education Officer (AIEO) in the school (having an AIEO increased the risk, odds ratio 0.55 CI 0.39-0.78). Zubrick et al suggest that this may be a consequence of AIEOs being appointed in schools where there is the greatest need or because of other factors associated with these positions.
- the socioeconomic status of the school community. Students at schools ranked in the highest quartile of the school socio-economic index (SEI) were almost three times as likely (odds ratio 2.82; CI: 1.66–4.79) to have been absent from school for 26 days or more than students in schools ranked in the lowest quartile of school SEI (p.128). This is a counter-intuitive finding and may be a consequence of having already included in the multivariate analyses variables that reflect socioeconomic status. Another possible reason is that high SEI schools can afford to hire an AEIO worker and hand over their responsibilities for any real engagement with Indigenous students and their families.²⁵

The authors also found a range of factors independently associated with low academic performance of Indigenous students. The three most powerful were:

- i. poor school attendance
- ii. low education level of the primary carer
- iii. students at high risk of clinically significant emotional or behavioural difficulties.

The finding about the negative impact of AIEOs appears to be contradicted by Herbert (2002), who argues, based upon data drawn from case studies in Queensland, that Aboriginal Education Workers make a positive contribution to engaging Indigenous students. Rigney, Rigney and Hughes (1998) also argue for the positive effect of Aboriginal Education Workers.

There are many other studies which point to various other factors that might explain the retention and attendance of Indigenous students. Three recent studies are:

- The Productivity Commission, which reported on a DEEWR study conducted in 2006²⁶ that identified three factors related to school attendance: parental insistence that the child attend school, teacher quality and bullying and teasing (Steering Committee for the Review of Government Service Provision, 2009, p.64).
- Storry (2007), who identified three strategies that appeared to be increasing retention: (i) remedial skills based programs, (ii) secondary school readiness programs, and (iii) secondary boarding schools. She cited various remedial programs – mostly related to literacy conducted in South Australia, Western Australia and the Northern Territory, for example, Scaffolding Literacy and Making up Lost Time in Literacy (MULTILIT).

²⁵ Personal communication from Steve Zubrick, January, 2011.

²⁶ DEWR (Department of Employment and Workplace Relations) 2006, *Halls Creek Engaging Families Trial February–July 2006 — Evaluation Report*, Australian Government, Canberra.

- Nguyen (2010), using LSAY data, found that participation in VET was associated with increased likelihood of intending to stay at school although this did not necessarily lead to increased Year 12 retention. While there has been an increase in the number of Indigenous students enrolling in VET subjects and courses, there has been concern expressed that this may be directing some students away from university. (Implicit in this argument, however, is a possibly contentious presumption that university is a ‘better’ destination.)²⁷

Overview

This survey of some of the recent literature suggests that the poor attendance and retention of Indigenous students at school has no simple answer (Purdie & Buckley, 2010). There does appear to be some consensus about the importance of four factors – the student, their family, their school and their community. However their relative importance and the extent to which this varies according to the setting of the students is unclear or contested. It is also unclear which aspects of these factors, if any, specifically explain the attendance or retention of Indigenous students. Some writers point to racism as a factor which can come from within schools or the community.

The difficulty in identifying what works or more fully understanding the problem of poor attendance and retention is increased by inadequate or few data. Even where data may be strong, there remains the perennial problem of attributing a causal effect to a program. Typically a program targeting either attendance or retention is only one of many activities in a class, school, community or system, any of which could impact on a program’s intended outcomes.

Conclusion

Apparent retention rates

Over the period from 1995 to 2009 there was an increase in the apparent retention rate for Indigenous students from the first year of secondary school from 31 to 45 per cent. Over the same time the corresponding apparent rate for non-Indigenous students increased from 73 to 77 per cent. If these rates of change were to continue, the COAG target for Year 12 attainment in 2020 would not be met.

Retention to Year 12 can be looked at as being made up of retention to Year 10 and retention from Year 10 to Year 12. Both have contributed to the overall increase in retention to Year 12. Over the period from 1995 to 2009 there has been an increase in the percentage of Indigenous students remaining at school from the first year to Year 10 from 76 to 91 per cent. The scope for using this as a basis for improved retention to Year 12, however, will be limited as universal Year 10 completion is approached.

Retention from Year 10 to Year 12 among Indigenous students has increased from 39 per cent to 50 per cent over the period from 1995 to 2009 compared to a corresponding increase from 74 to 78 per cent for non-Indigenous students. Although the gap has been substantially reduced, the rate of change is insufficient if the COAG

²⁷ The review has focussed upon attendance and retention, which has excluded some good quality literature from detailed consideration. In particular, the recent review of PISA cycles between 2000 and 2006 by De Bortoli and Thomson (2010) is valuable. For example, it found that some gender differences in attitudinal variables for non-Indigenous students were not apparent for Indigenous students. For instance, non-Indigenous females reported significantly higher levels of mathematics anxiety in the PISA 2003 cycle than non-Indigenous males, while there were no gender differences in anxiety for Indigenous students. In the multivariate analyses these differences are picked up using LSAY data.

targets for 2020 are to be reached. Therefore, additional actions are needed. Jurisdictions where there have been the largest increases in retention to Year 12 may be a useful starting point for identifying these actions.

VET attainment

Analysis of VET statistics on enrolments in certificate courses and on qualifications received between 1996 and 2008 shows that there was an increase for Indigenous persons at rates higher than those for non-Indigenous persons. For example, the number of Indigenous persons completing a qualification at Certificate II level increased by nearly 700 per cent compared to a 227 per cent increase among non-Indigenous persons.

How these data relate to the numbers of Indigenous and non-Indigenous persons is not clear, as comparisons with population data are not available. One indicator shows that the proportion of 15 to 24 year-olds enrolled in VET courses at Certificate II and above is greater among Indigenous persons than among non-Indigenous persons. However, Indigenous 15 to 19 year-olds are more likely to be enrolled in courses at Certificate II than at higher levels, compared to non-Indigenous 15 to 19 year-olds, which may indicate that Indigenous young people are leaving school to study with VET providers. The higher enrolment rate in Certificate II courses among Indigenous young people helps to reduce the gap between Indigenous and non-Indigenous young people in the attainment of Year 12 or Certificate II, although the difference does not fully compensate for the lower apparent retention rates and consequent attainment of Year 12 experienced by Indigenous school students. Of related concern is that the courses in which Indigenous young people are enrolled tend to be at lower certificate levels.

Multivariate analyses of influences on attainment

Multivariate analyses of the LSAY Y06 cohort demonstrated that background characteristics and achievement have varying effects on attainment depending on whether Year 12 or Certificate II is the desired outcome. Furthermore, the effects of these factors differed for Indigenous and non-Indigenous participants. Results also showed that positive educational intentions have a significant impact on future completion of Year 12. For Indigenous students, educational intentions were predicted by gender, parental education level and achievement.

Literature review

The review conducted for the report was hindered by a paucity of studies that used or had access to good quality data. There does appear, however, to be some consensus that the following factors need to be taken into account: individual student characteristics, teacher characteristics, school characteristics, family and community characteristics.

It remains unclear however, which of these factors, or which elements of these factors uniquely explain Indigenous attendance, retention and attainment. The multivariate analyses conducted using the LSAY data endeavoured to address this concern, but had limited capacity to do so. Only a few relevant variables were available in the LSAY dataset.

Proposed model of attainment

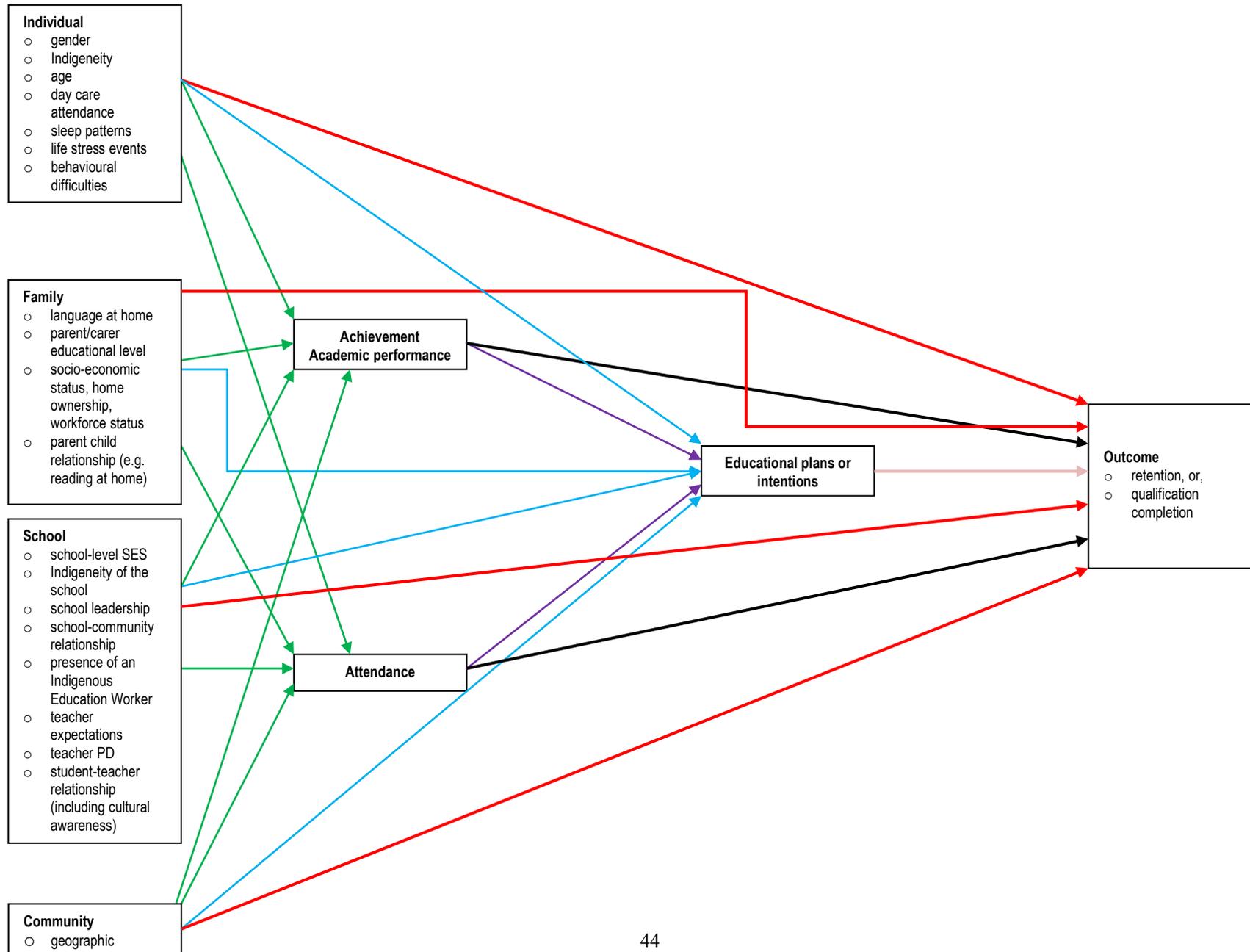
Using the information gathered from the literature review and the multivariate analyses, a visual depiction of the relationships between variables that explain

educational outcomes for Indigenous students is presented on the next page. The model proposes four background factors, namely:

- student characteristics
- family characteristics
- school characteristics
- community characteristics.

These factors were derived from the literature review. Next in the model, student achievement or academic performance and attendance are proposed as predictors of educational plans and of the final outcome. It is not clear from either the literature or the analyses reported here if these two variables predict or are the outcome of having educational plans. One approach to solving this problem would be to examine empirically the extent to which the relationship is two-way. Next in the model, having educational plans to complete Year 12 is included. This is based upon the results of the analyses reported above.

Colour coding of arrows is also designed to assist in viewing the diagram. If data were to be gathered to test this model, the ideal set would involve at least two collections at different times. This would allow change over time to be examined in detail, and would make claims for causal connexions stronger.



References

- Australian Bureau of Statistics (2006). *Population Distribution, Aboriginal and Torres Strait Islander Australians* (ABS 4705.0). Canberra, ABS.
- Australian Bureau of Statistics (2010). *Population Characteristics, Aboriginal and Torres Strait Islander Australians, 2006*. (ABS 4713.0), Canberra, ABS, reissue released 4 May 2010.
- Australian Bureau of Statistics (ABS) (2010). *National Schools Statistics Collection (NSSC). (Table 64a - Apparent Retention Rates (ARR) - by States and Territories, Affiliation, Sex, Grade Range and Years (1993 to 2009))*. Downloaded from www.abs.org.au.
- Australian Bureau of Statistics (ABS) (2010). *Schools Australia: 2009*. Catalogue Number 4221.0. Canberra, Australian Bureau of Statistics.
- Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 51, 1173-1182.
- Bodkin-Andrews, G. H., Denson, N. & Craven., R. (2011, in press). *Looking Past Positivity for Indigenous Australian Students: A preliminary investigation of racial discrimination and the illusion of resiliency in academia*. Paper presented at the AARE 2010 International Education Research Conference – Melbourne, November 29, 2010 – December 2, 2010.
- Bodkin-Andrews, G. H., Seaton, M., Nelson, G. F. Craven, R. G. & Yeung, A. S. (in press, July 2010). Questioning the General Self-Esteem Vaccine: General Self-Esteem, Racial Discrimination, and Standardised Achievement across Indigenous and Non-Indigenous Students. *Australian Journal of Guidance and Counselling*, 20(1), 1-21.
- Bodkin-Andrews, G., O'Rourke, V., Grant, R., Denson, N., and Craven, R.G. (2010). Validating racism and cultural respect: testing the psychometric properties and educational impact of perceived discrimination and multiculturalism for Indigenous and non-Indigenous students, *Educational Research and Evaluation*, 16(6), 471- 493.
- Bourke, C. J., Rigby, K. & Burden, J. (2000). *Better Practice in School Attendance: improving the school attendance of Indigenous students*, Clayton, Monash University.
- Centre for Community Child Health and Telethon Institute for Child Health Research (2009). *A Snapshot of early Childhood Development in Australia. AEDI National Report*. Canberra, Australian Government.
- COAG Reform Council (2010). *National Education Agreement: Performance Report for 2009*. Sydney, Council of Australian Governments.
- Council of Australian Governments (COAG) (2009). *National Indigenous Reform Agreement (Closing the Gap)*. Sydney, Council of Australian Governments.
- Council of Australian Governments (COAG) (2010). *National Indigenous Reform Agreement: Baseline performance report 2008-2009*. Canberra, COAG Reform Council, Commonwealth of Australia.
- David Unaipon College of Indigenous Education and Research (2009). *Review of 'Australian Directions in Indigenous Education 2005-2008* for the Ministerial Council for Education, Early Childhood Development and Youth Affairs, University of South Australia.

- De Bortoli, L. & Thomson, S. (2010). *Contextual factors that influence the achievement of Australia's Indigenous students*. Camberwell, Australian Council for Educational Research.
- De Bortoli, L., & Thomson, S. (2010). *Contextual factors that influence the achievement of Australia's Indigenous students*, Programme for International Student Assessment (PISA). Camberwell: Australian Council for Educational Research.
- Doyle, L. & Hill, R. (no date). *Our Children, Our Future - achieving improved primary and secondary education outcomes for Indigenous students*, AMP Foundation, Effective Philanthropy, Social Ventures Australia.
- Fordham, A. & Schwab, R. (2007). *Education, Training and Indigenous Futures, CAEPR Policy Research: 1990-2007*, Centre for Aboriginal Economic Policy Research, The Australian National University.
- Fordham, A., & Schwab, R. (2007). *Education, Training and Indigenous Futures CAEPR Policy Research: 1990-2007*. Centre for Aboriginal Economic Policy Research, The Australian National University.
- Harms, A. (2001). *The Secondary Pathways Project*. Collingwood, Victoria, What Works National Office.
- Herbert, J. (2002). Completion of twelve years of schooling or its equivalent. *Proceedings of the Australian Association for Research in Education (AARE)*, Brisbane, Australia.
- Hugh Watson Consulting (2003). *Final report of the National Evaluation of National Indigenous English Literacy and Numeracy Strategy (NIELNS)*, Department of Education, Science and Training.
- Larson, A., Gillies, M., Howard, P. J., & Coffin, J. (2007). It's enough to make you sick: the impact of racism on the health of Aboriginal Australians. *Australian and New Zealand Journal of Public Health*, 31(4), 322-329
- Long, M. (2009). Indigenous students and completion of Year 12. *Proceeding of the 13th Annual National Conference of the Centre for Economics of Education and Training: Education and training in an era of economic uncertainty*. Clayton, Monash University.
- Long, M., & North, S. (2009). *How Young Indigenous People are Faring: Reconciliation Australia and the Dusseldorp Skills Forum*.
- Management Committee for the National Schools Literacy Survey (1997). *Mapping literacy achievement: results of the 1996 National School English Literacy Survey*. Canberra, Department of Employment, Education, Training and Youth Affairs.
- Mellor, S., & Corrigan, M. (2004). *The Case for Change - a review of contemporary research on Indigenous education outcomes*, Camberwell, Victoria: Australian Council for Educational Research.
- Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCEECDYA) (2010). *Indigenous Education Action Plan Draft 2010-2014*. Carlton, Vic: Ministerial Council for Education Early Childhood Development and Youth Affairs.
- Ministerial Council on Education, Early Childhood Development and Youth Affairs (MCEECDYA) (2010). *Indigenous Education Action Plan Draft 2010-2014*. Carlton, Vic, Ministerial Council for Education, Early Childhood Development and Youth Affairs.
- Ministerial Council on Education, Early Childhood Development and Youth Affairs (MCEECDYA) (2009). *National Assessment Program—Literacy and Numeracy:*

- Achievement in Reading Writing, Language Conventions and Numeracy 2009*. Carlton, MCEECDYA
- Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2006). *Australian Directions in Indigenous Education 2005-8*. (Australian Education Systems Officials Committee (AESOC) Senior Officials Working Paper on Indigenous Education), Curriculum Corporation, Carlton.
- Muir, W. (2008). Indigenous education - imagining the future, the role of educators. ACER Research Conference.
- Nguyen, N. (2010). *The Impact of VET in schools on the intentions and achievements of young people*. Longitudinal Surveys of Australian Youth, Adelaide NCVET.
- Paradies, Y., & Cunningham, J. (2009). Experiences of racism among urban Indigenous Australians: Findings from the DRUID study. *Ethnic and Racial Studies*, 32(3), 548-573.
- Paradies, Y., & Cunningham, J. (2009). The DRUID study: exploring mediating pathways between racism and depressive symptoms among Indigenous Australians. *Social Psychiatry and Psychiatric Epidemiology*, Dec, 1-9.
- Parente, A., Craven, R.G., & Munns, G. (2003). What do Indigenous students say about their aspirations? *Journal of Aboriginal Studies Association*, 12, 11- 22.
- Purdie, N. & Buckley, S. (2010). *School Attendance and Retention of Indigenous Australian students. Issues Paper*, Closing the Gap Clearinghouse, Canberra, Australian Institute for Health and Welfare.
- Rigney, D., Rigney, L. I. & Hughes, P. (1998). *Report on Aboriginal Students and the South Australian Certificate of Education (SACE)*, Adelaide, Senior Secondary Assessment Board of South Australia.
- Rigney, D., Rigney, L. I., & Hughes, P. (1998). *Report on Aboriginal Students and the South Australian Certificate of Education (SACE)*. Adelaide: Senior Secondary Assessment Board of South Australia.
- Robinson, C. (2008). Some reforms to better equip young people for tomorrow's world. *Proceedings of the Australian Council for Educational Research's annual research conference*, Brisbane, Australia.
- Robinson, G., Rivalland, J., Tyler, W., Lea, T., Bartlett, C., Morrison, P., Cooper, J., Emmett, S. & Dunn, B. (2009). *The National Accelerated Literacy Program in the Northern Territory 2004 to 2008: Implementation and Outcomes Final Evaluation Report*, School for Social and Policy Research, Charles Darwin University, Darwin.
- Steering Committee for the Review of Government Service Provision. (2009). *Overcoming Indigenous Disadvantage: Key Indicators 2009*. Canberra: Productivity Commission.
- Steering Committee for the Review of Government Service Provision (2009). *Overcoming Indigenous Disadvantage: Key Indicators 2009*. Canberra, Productivity Commission.
- Storry, K. (2007). *What is working in good schools in remote Indigenous communities. Issue Analysis*, Sydney, Centre for Independent Studies.
- Szirom, T., Jaffe, R. & MacKenzie, D. (2001). *National Evaluation Report: Full Service Schools Program 1999 and 2000*. from <http://www.detya.gov.au/schools/publicat.htm>.
- The Allen Consulting Group (2008). *The Wellbeing of Young Australians - Technical Report*, Australian Research Alliance for Children and Youth.
- Thomson, S. & De Bortoli, L. (2007). *Exploring scientific literacy: How Australia measures up*. Melbourne, ACER.

Zubrick, S., Silburn, S.R., De Maio J.A., Shepherd, C., Griffin, J.A., Dalby, R.B., Mitrou, F.G., Lawrence, D.M., Hayward, C., Pearson, G., Milroy, H., Milroy, J. & Cox, A. (2006). *The Western Australian Aboriginal Child Health Survey: Improving the Educational Experiences of Aboriginal Children and Young People*. Perth, Curtin University of Technology and Telethon Institute for Child Health Research.

Appendix A

Multivariate logistic modelling (model 1) of Certificate II (and above) attainment for non-Indigenous LSAY Y06 participants

	Non-Indigenous	
	B (S.E.)	Odds ratio
<u>Background</u>		
Gender	0.75 (0.12)	2.12
ESCS	-0.26 (0.10)	0.77
Parental education	0.02 (0.05)	1.03
Location	-0.01 (0.16)	0.99
Language at home	0.62 (0.21)	1.85
<u>Achievement</u>	-0.39 (0.07)	0.68

Multivariate logistic modelling (model 2) of Certificate II (and above) attainment for non-Indigenous LSAY Y06 participants

	Non-Indigenous	
	B (S.E.)	Odds ratio
<u>Background</u>		
Gender	0.80 (0.13)	2.24
ESCS	-0.23 (0.10)	0.79
Parental education	0.04 (0.05)	1.04
Location	0.04 (0.16)	1.04
Language at home	0.46 (0.22)	1.59
<u>Achievement</u>	-0.27 (0.07)	0.77
<u>Plan Year 12</u>	-0.91 (0.15)	0.40

Appendix B

Mediation statistics and associated significance levels

	Sobel statistic	Significance level
ALL PARTICIPANTS		
Year 12 attainment		
Gender	7.22	p < .001
ESCS	2.96	p < .01
Location	4.28	p < .001
Language at home	-8.76	p < .001
Achievement	14.70	p < .001
Certificate II		
Gender	-4.73	p < .001
ESCS	-2.68	p < .01
Language at home	5.09	p < .001
Achievement	-5.76	p < .001
INDIGENOUS PARTICIPANTS		
Year 12 attainment		
Achievement	2.14	p < .05
NON-INDIGENOUS PARTICIPANTS		
Year 12 attainment		
Gender	7.09	p < .001
ESCS	3.28	p < .01
Location	4.63	p < .001
Language at home	-8.61	p < .001
Achievement	14.87	p < .001
Certificate II		
Gender	-4.76	p < .001
ESCS	-2.92	p < .01
Language at home	5.15	p < .001
Achievement	-5.89	p < .001

Appendix C

Numbers of Indigenous and non-Indigenous students completing VET qualifications, 1996-2008, by jurisdiction ('000s)

Jurisdiction	Status	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
New South Wales	Indigenous	0.6	1.1	1.4	1.7	2.9	2.6	2.2	1.9	2.4	2.7	2.5	2.9	3.6
	Non-Indigenous	44.1	54.5	61.2	68.2	98.9	90.2	90.4	103.2	101.5	107.9	94.9	101.6	106.7
Victoria	Indigenous	0.2	0.2	0.3	0.3	0.4	0.5	0.4	0.4	0.4	0.5	0.6	0.7	0.8
	Non-Indigenous	21.9	28.6	42.3	40.9	65.4	62.1	72.4	73.1	70.0	76.1	74.1	86.2	85.6
Queensland	Indigenous	0.3	0.9	1.5	1.5	1.8	1.9	2.3	1.7	1.6	1.8	1.9	2.3	2.7
	Non-Indigenous	14.5	29.9	33.0	35.0	39.5	47.6	43.6	32.2	33.3	41.6	47.7	51.0	65.4
South Australia	Indigenous	0.1	0.1	0.5	0.4	0.5	0.6	0.9	0.7	0.6	0.7	0.8	0.6	0.8
	Non-Indigenous	6.7	9.8	11.0	17.8	18.7	20.3	30.3	22.1	18.6	22.6	22.6	23.1	27.4
Western Australia	Indigenous	0.1	0.2	0.3	0.9	0.8	0.8	0.7	1.1	1.0	1.1	1.4	1.4	1.6
	Non-Indigenous	11.2	11.0	14.3	19.7	22.3	25.1	25.4	24.7	26.7	26.4	29.9	31.2	36.2
Tasmania	Indigenous	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
	Non-Indigenous	2.6	1.9	4.1	7.3	5.4	8.2	7.2	8.0	6.3	7.2	8.0	8.1	10.0
Northern Territory	Indigenous	0.1	0.2	0.3	0.7	0.6	0.8	0.7	0.6	0.5	0.7	0.7	1.0	0.8
	Non-Indigenous	0.6	0.4	0.6	1.5	2.5	2.3	1.7	1.7	1.8	1.7	1.6	2.1	2.6
Australian Capital Territory	Indigenous	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1
	Non-Indigenous	2.6	3.4	2.8	2.9	3.9	4.9	5.2	5.4	5.9	6.7	6.3	7.8	7.0
Australia	Indigenous	1.4	2.8	4.5	5.8	7.1	7.4	7.5	6.7	6.8	7.9	8.3	9.4	10.8
	Non-Indigenous	104.2	139.5	169.4	193.3	256.6	260.7	276.2	270.4	264.1	290.1	285.1	311.2	340.8

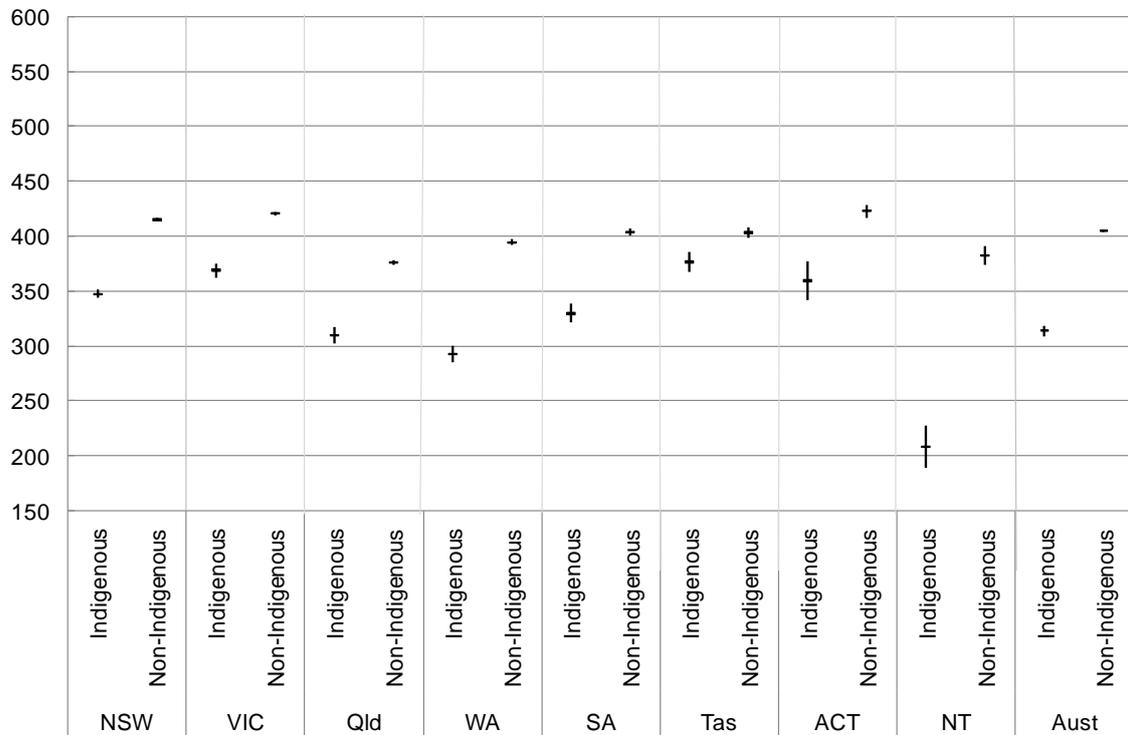
Percentage increase in qualification completions for Indigenous and non-Indigenous students by jurisdiction, from 1996 to 2008

Jurisdiction	Status	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
New South Wales	Indigenous	0	100	154	211	416	367	307	249	334	395	352	426	550
	Non-Indigenous	0	24	39	55	124	105	105	134	130	145	115	131	142
Victoria	Indigenous	0	1	110	72	166	221	169	171	169	191	268	329	404
	Non-Indigenous	0	31	94	87	199	184	231	234	220	248	239	294	291
Queensland	Indigenous	0	175	337	350	435	452	589	403	355	426	462	571	699
	Non-Indigenous	0	106	127	141	172	228	200	122	129	186	228	251	350
South Australia	Indigenous	0	84	810	737	894	1039	1567	1227	1024	1220	1390	1149	1424
	Non-Indigenous	0	47	65	168	181	205	354	231	180	239	239	247	311
Western Australia	Indigenous	0	203	442	1342	1098	1136	1042	1548	1475	1692	2120	2123	2427
	Non-Indigenous	0	-2	27	75	98	123	126	120	138	135	166	178	222
Tasmania	Indigenous	0	4	46	164	19	218	157	242	204	264	282	296	400
	Non-Indigenous	0	-27	55	175	105	211	171	203	139	172	202	207	278
Northern Territory	Indigenous	0	53	189	531	432	571	513	438	344	498	504	755	611
	Non-Indigenous	0	-25	7	170	340	307	197	204	210	202	190	266	351
Australian Capital Territory	Indigenous	0	36	7	57	150	486	257	229	964	650	736	1107	786
	Non-Indigenous	0	30	7	10	46	85	98	103	124	153	137	195	163
Australia	Indigenous	0	102	228	324	420	443	451	391	400	475	504	585	690
	Non-Indigenous	0	34	63	86	146	150	165	159	153	178	174	199	227

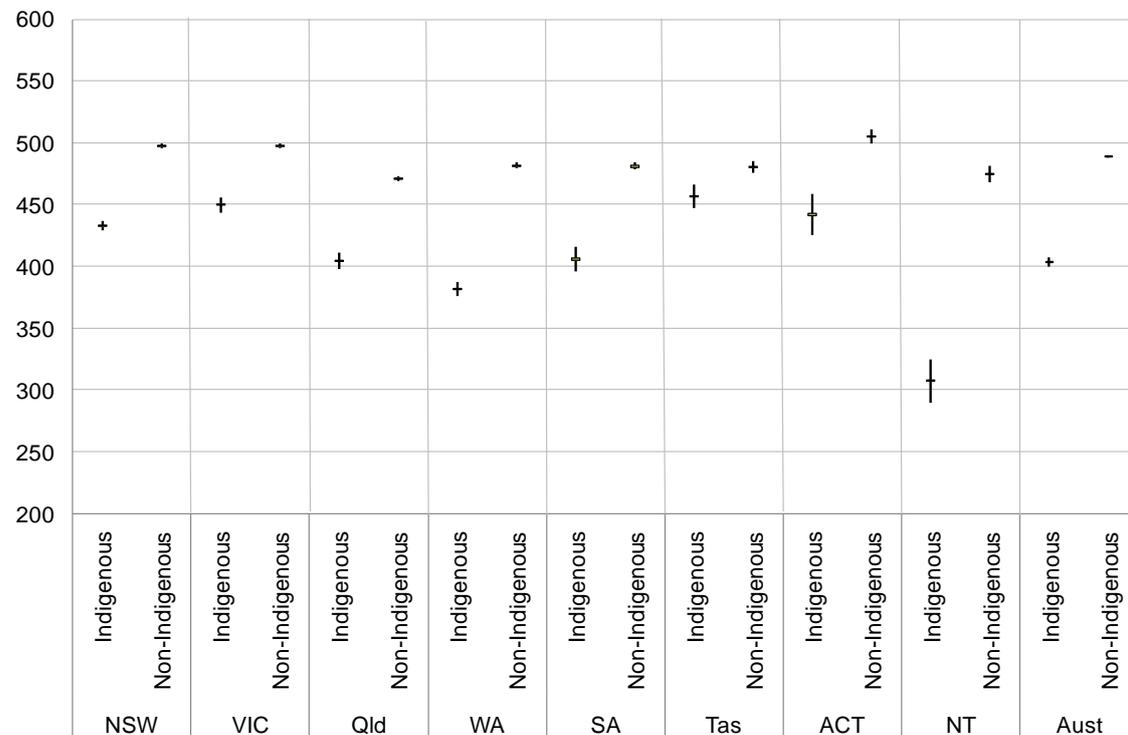
The percentages are rounded to the nearest whole number.

Appendix D

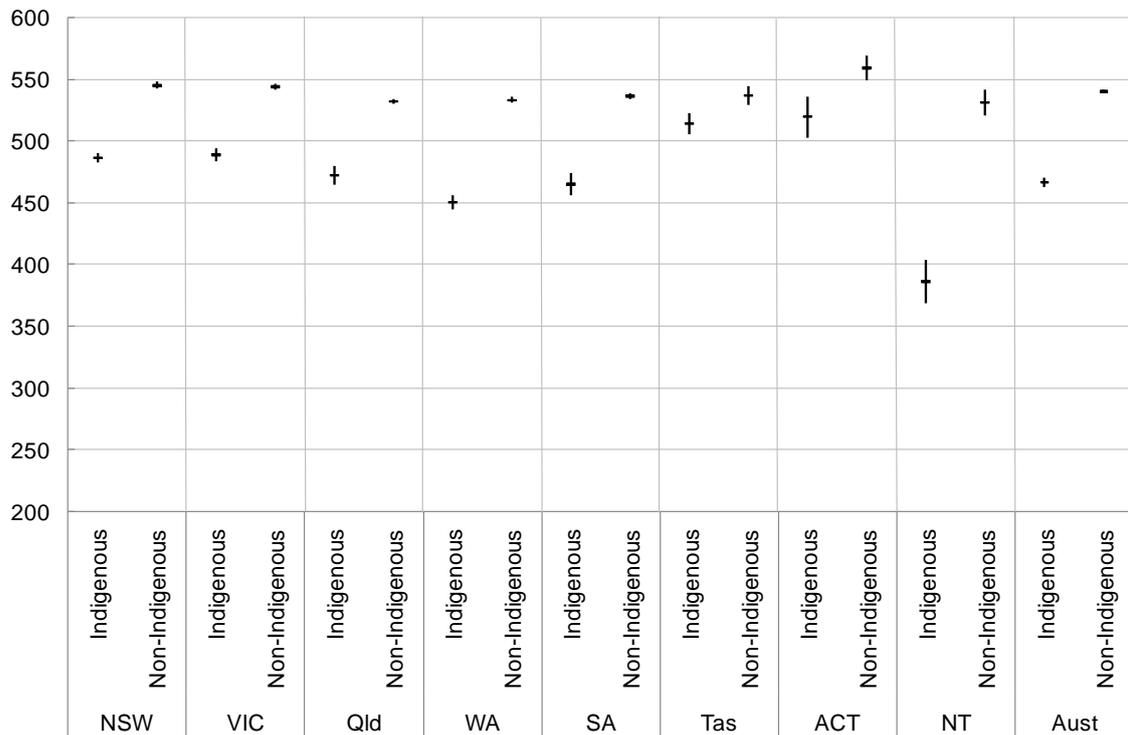
Achievement of Year 3 Students in reading, by Indigenous status, by State and Territory, 2008



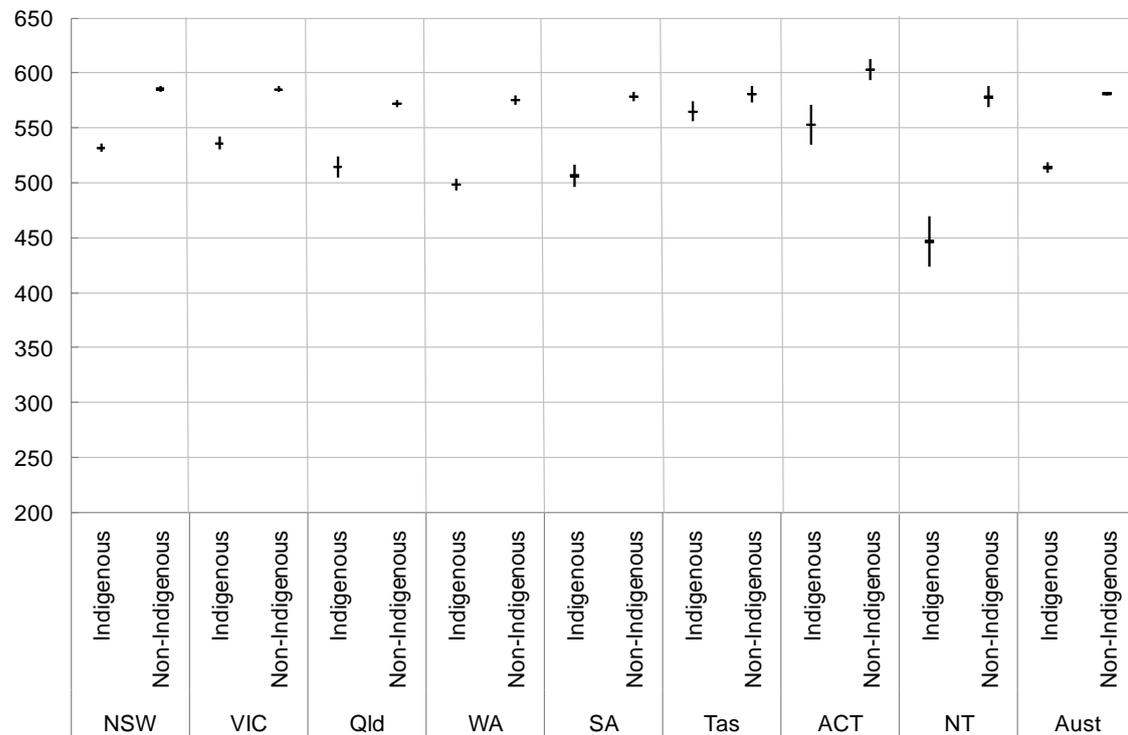
Achievement of Year 5 Students in reading, by Indigenous status, by State and Territory, 2008



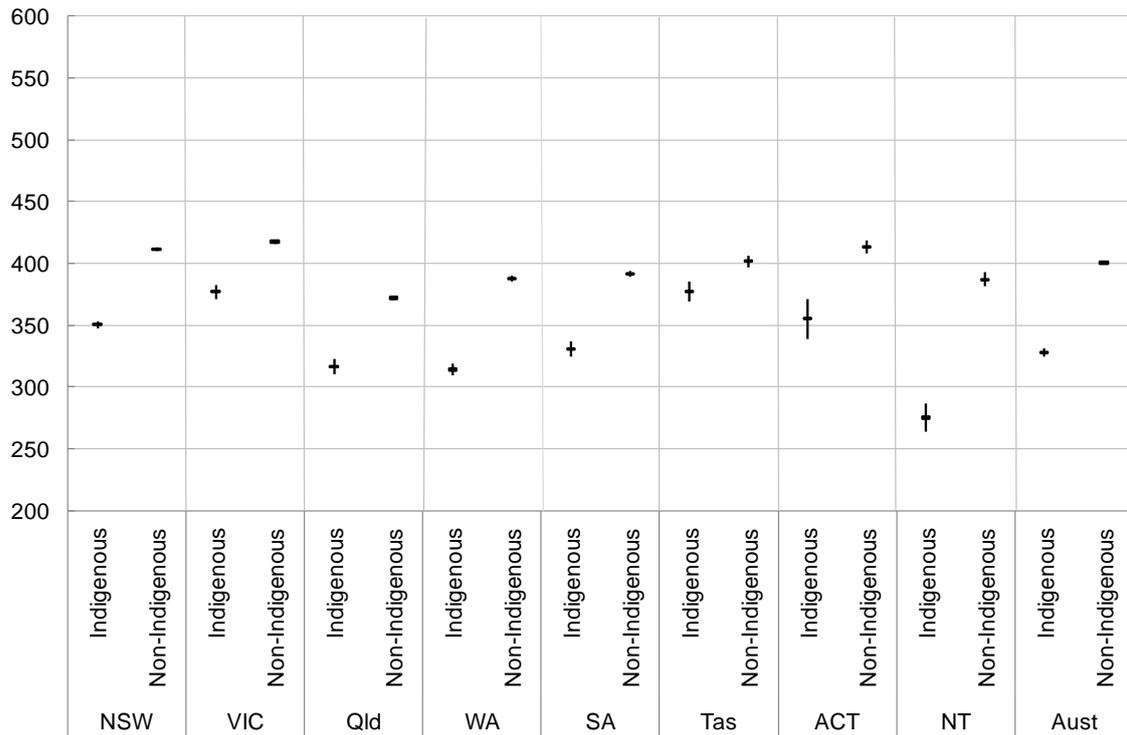
Achievement of Year 7 Students in reading, by Indigenous status, by State and Territory, 2008



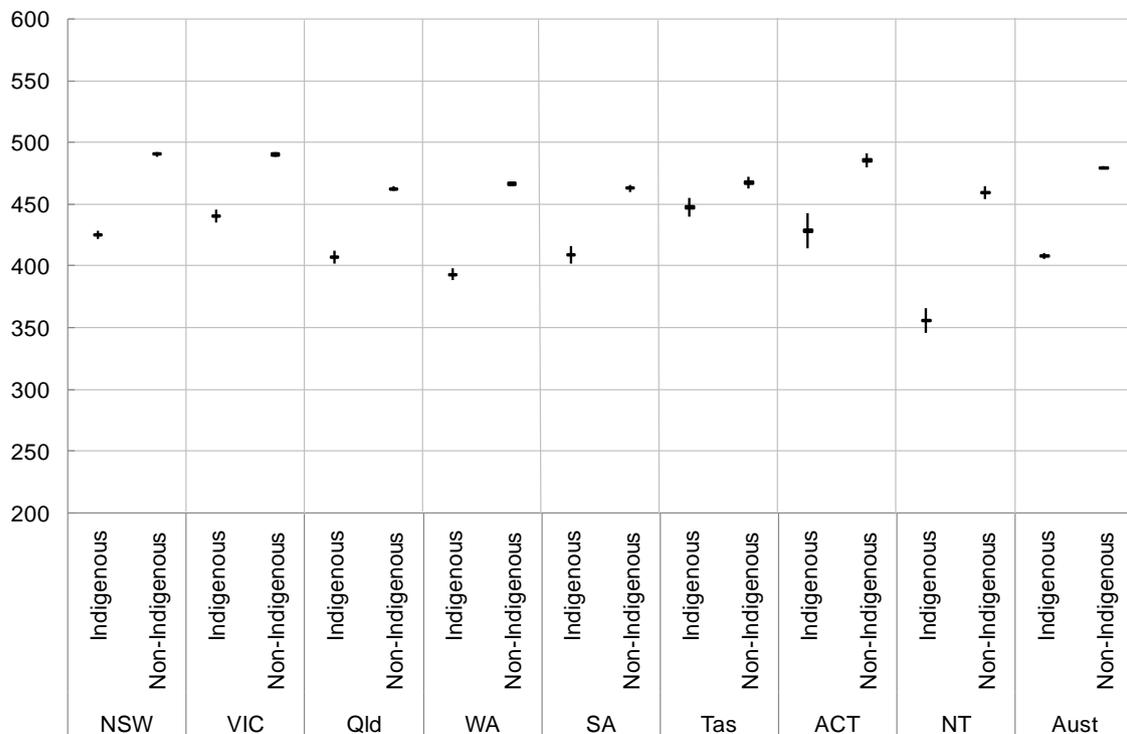
Achievement of Year 9 Students in reading, by Indigenous status, by State and Territory, 2008



Achievement of Year 3 Students in numeracy, by Indigenous status, by State and Territory, 2008



Achievement of Year 5 Students in numeracy, by Indigenous status, by State and Territory, 2008



Achievement of Year 7 Students in numeracy, by Indigenous status, by State and Territory, 2008

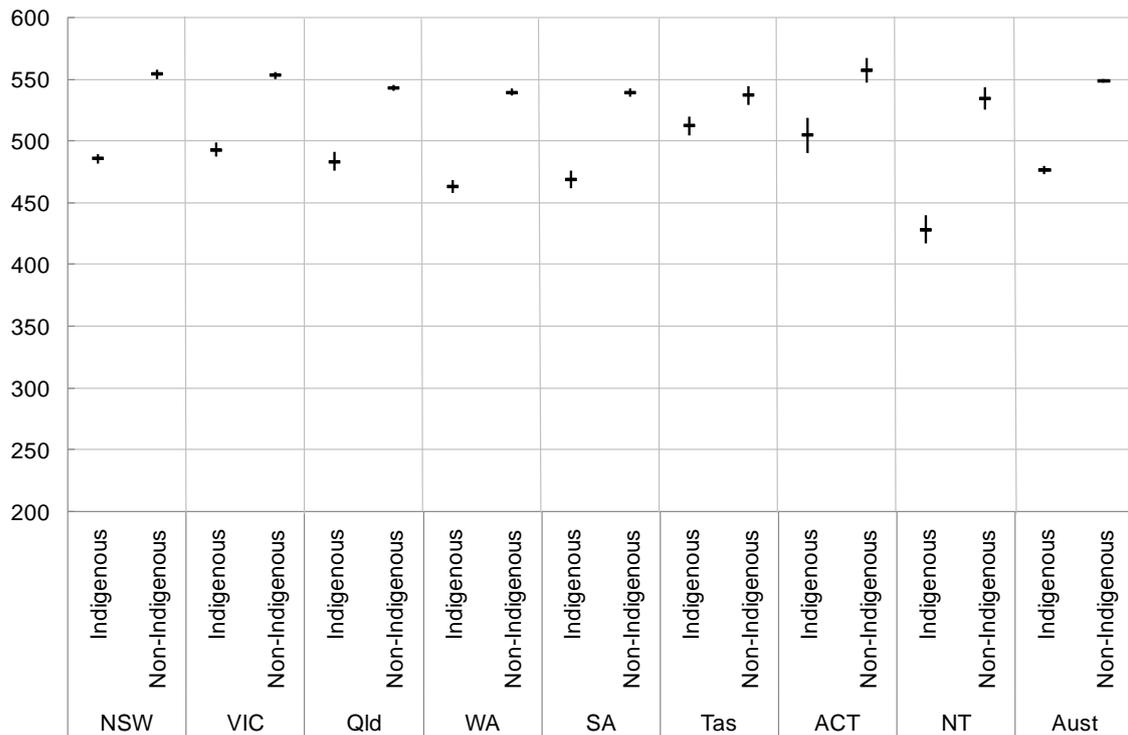
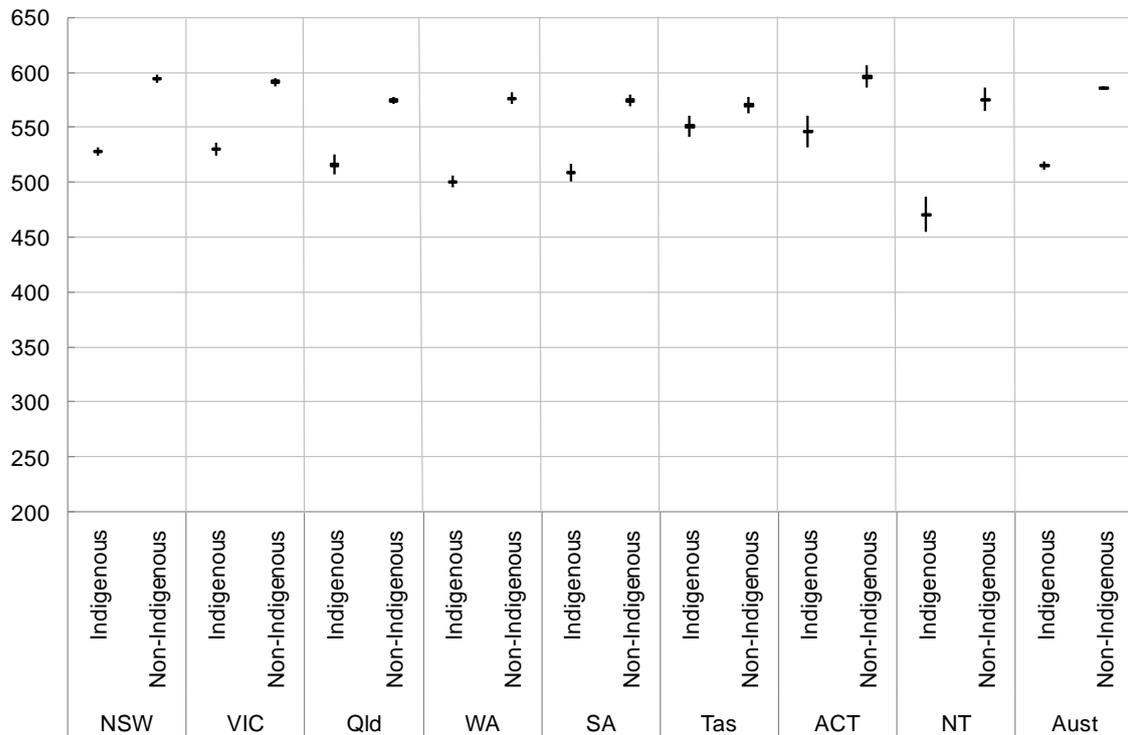


Table X Achievement of Year 9 Students in numeracy, by Indigenous status, by State and Territory, 2008



Appendix E

REVIEW OF RESEARCH ON RACISM AND ITS IMPACT ON EDUCATIONAL RETENTION AND ATTAINMENT OF INDIGENOUS YOUNG PEOPLE IN AUSTRALIA

Gawaian Bodkin-Andrews

*Educational Excellence and Equity (E3) Research Program, Centre for Educational
Research, University of Western Sydney*

Within ACER's review – *Analysis of Year 12 or Certificate II attainment of Indigenous young people* – a number of overarching factors are identified including individual characteristics, educational characteristics (teacher and school), and family and community characteristics. All of these may impact upon the educational retention and achievement patterns of Indigenous Australian students. Within each of these factors, however are complex arrays of variables that may also have both direct and indirect effects on educational outcomes. One is racism and discrimination. This has been consistently raised as a potentially significant concern for Indigenous youth and adults across mental, physical, social, and educational health domains (Aboriginal Torres Strait Islander Social Justice Commissioner, 2002; Groome & Hamilton, 1995; Swan & Raphael, 1995; Zubrick, et al., 2006). Unfortunately, empirical research identifying the impact of racism on Indigenous Australians, although widely acknowledged, has until recently been limited.

This limitation in the data, though, does not mean that the issue of racism directed at Indigenous Australians has been ignored. There is literature, for example, that is macro-orientated towards social justice and policy contexts (McConnochie, Hollinsworth, & Pettman, 1989). Another stream in the literature focuses on the attitudes of those who may discriminate against Indigenous Australians (Pedersen & Walker, 1997). Unfortunately, these research directions may severely underestimate not only the prevalence of racism today, but also the personal and detrimental impact racism may have on the livelihood of Indigenous Australians. An example is findings suggesting that the willingness to express old-fashioned forms of racism have diminished substantially within Australia (Pedersen, Griffiths, Consos, Bishop, & Walker, 2000; Pedersen & Walker, 1997). Although it is important to note that such findings are consistent with a substantial body of international literature (Pettigrew & Meertens, 1995), they may not reflect the actual experiences of Indigenous Australians. This was highlighted in the work of Mellor (2003), who conducted a series of semi-structured and open-ended interviews with 34 Indigenous Australian adults. Mellor found they experienced a diversity of discriminative events, ranging from verbal racism (e.g., name calling, jokes), behavioural racism (e.g., avoidance, assault), overt discrimination (e.g., denial of services, over-application of punishment) and macro-discrimination (e.g., media misinformation, selective views on history). The frequency with which the participants experienced these forms of racism led Mellor to conclude that:

The argument that there is a cultural norm against racism, contemporary racism is predominately subtle, or symbolic may thus be misleading, at least in the Australian context. Not only was it the norm for participants in this study to have experienced racism in their daily lives but much of the racism experienced was one-on-one, blatant, old fashioned racism. The overt nature of so much of the racism reported... suggests

that the notions of symbolic, modern, and aversive racism are only new strings on the racist's bow rather than a new bow (p. 483).

With the implications of such findings in mind, it is critical that we more carefully understand the impact of racism on Indigenous Australians. It is only recently that such research has begun to emerge.

Larson, Gillies, Howard, and Coffin (2007) examined the reported perceptions of racial discrimination of 184 Indigenous Australian adults and 41 non-Indigenous Australian adults within a West Australian town. They found that Indigenous Australians were over three times more likely to experience racism when compared to the non-Indigenous participants. Also, focussing on the perceptions of the Indigenous participants, they found that increased levels of racism were associated with increased likelihood of lowered levels of physical health (3.6 times more likely), and mental health scores (9.2 times more likely) when compared to Indigenous participants who did not report racism. Such findings were also reflected in the large-scale study by Zubrick and colleagues (2006), who found that perceived racism was significantly associated with increased levels of health risk behaviours such as alcohol consumption, cigarette and marijuana use, in addition to significantly increasing the likelihood of reporting clinically significant emotional or behavioural difficulties and experiencing suicidal thoughts. Paradies and Cunningham, (2009, 2010), with a sample of over 300 Indigenous Australian participants from the Northern Territory, also found that racism was associated with significantly increased levels of physical stress symptoms (for example, headache, upset stomach), and depression.

Although these findings are not directly related to the educational outcomes of Indigenous Australian students, it is important to note that mental health variables are often associated with educational attainment and completion rates (Doll & Hess, 2001). This was highlighted within the ACER review, where the work of Zubrick et al. (2006) is cited, linking clinical emotional and behavioural difficulties – which was also linked with racism – with non-attendance at school for Indigenous students.

Consistent with the lack of quality empirical research concerning Indigenous Australians, research directly targeting associations between experiences of racism and schooling outcomes is also limited. This is not to say that racism has not been considered by previous Indigenous educational research. For example, Lester (2000), in focus group discussions with Indigenous community members, found that the single largest obstacle inhibiting career expectations for Indigenous students was racism within the workforce and the school system. Craven & Tucker (2003), highlighted difficulties in peer relationships for Indigenous students, largely stemming from racist attitudes directed towards them.

In a qualitative study aimed at identifying Indigenous high school students' aspirations and perceived barriers to these aspirations, Parente, Craven, and Munns (2003) reported that all 83 Indigenous students in the study identified racism as a major barrier to achieving their life goals. A qualitative study by Howard (2002) of 52 Indigenous adolescents also highlighted the extreme impact experiences and expectations of discrimination may have as overt discrimination was cited as a key reason for why Indigenous students left school before completing Year 12.

There are also some studies which seek to quantify the impact of perceived racism on Indigenous high-school students' educational outcomes. Bodkin-Andrews, Seaton et al. (2010) found with a sample of 305 Indigenous students, that perceived racism was significantly associated with poorer test results. It accounted for 5.6 per cent of the

variance in a spelling test, and 8.1 per cent of the variance in a mathematics test.²⁸ In another set of analyses, Bodkin-Andrews et al. (2010) found that across a sample of 278 Indigenous Australian students, and after controlling for the effects of gender, home educational resources (e.g., a desk to study at, educational software), their own ratings of their academic ability when compared to other students, and the extent they felt their culture was respected by others, perceived racial discrimination was negatively associated with their teacher-reported grades across English, Math, and Science. The variance in these grades explained by racism was 6.3 per cent, 5.8 per cent and 9.2 per cent respectively. Arguably the most important finding to emerge from this study (at least within the context of this paper) was that perceived racism explained 12.7 per cent of the variance in academic disengagement. This finding strongly suggests that racism plays an important role in limiting the retention of Indigenous students at school.

Given the negative impact of racism over schooling outcomes for Indigenous students, Bodkin-Andrews, Denson, and Craven (2011) sought to test whether a series of positive psychology constructs (e.g., motivation, identity, self-concept) were able to buffer or protect Indigenous students from the detrimental effects of racism. It was found that none of these constructs were able to buffer the Indigenous students from the negative effects of perceived racism, and in some instances these negative effects were exacerbated (for example, for Indigenous students who held a higher sense of cultural identity, the impact of racism was greater over mathematics achievement when compared to Indigenous students who held a less positive sense of cultural identity).

Given the findings reviewed here, there are reasonable grounds for arguing that racism is a substantial threat to the physical and mental health of Indigenous Australian students and a significant barrier to academic achievement and engagement.

In addition, it is important to recall past social justice orientated research. This research reminds us of the effects of previous policies identified as being racist. These policies may still have an effect on Indigenous youth. This was alluded to in the findings of Mellor (2003, p. 483), who wrote that

Two hundred years of colonization, dispossession, genocide, and cultural imperialism, as well as everyday racism, left little doubt in the minds of the participants that their experiences in day-to-day life are tinged by racism. The reduced life chances, such as an increased chance of being unemployed, having to leave school before completing one's education, difficulty in obtaining housing, and high rates of imprisonment are further evidence of the pervasiveness of racism.

Indeed, recent research has supported the cross-generational effects of racism. For example, De Maio et al. (2005) found that that Indigenous children, brought up by carers who were forcibly removed from their homes as children, were significantly more likely to be at high risk of clinically significant emotional or behavioural difficulties. Priest et al. (2010) also found that Indigenous carers who experienced racism were significantly more likely to report illness in their children (aged 7 years or less), independent of background variables (the child's sex, age, time spent in day care, and time spent breast-feeding).

²⁸ The help interpret the magnitude of this effect, the proportion of variance explained by perceived racism in the mathematics test is roughly the same as socio-economic status on student achievement. (In Australia, socio-economic status accounted for 12.7 per cent of variance in PISA reading scores. (Thomson & de Bortoli, 2010).

In summary, what the above research suggests is that for Indigenous Australian students, racism may directly and indirectly put them at risk of poorer educational commitment and outcomes, for as argued by Lester (2000, p.15)

Racism is pervasive across all areas of community activity and the education domain is not exempt from its destructive forces... racism is still a major stumbling block to any program development in any Indigenous education and training.

References (to Appendix E)

- Aboriginal Torres Strait Islander Social Justice Commissioner (2002). *Social Justice Report 2002*. Sydney: Human Rights and Equal Opportunity Commission.
- Bodkin-Andrews, G. H., Denson, N. & Craven., R. (2011, in press). Looking Past Positivity for Indigenous Australian Students: A preliminary investigation of racial discrimination and the illusion of resiliency in academia. Paper presented at the *AARE 2010 International Education Research Conference – Melbourne*, November 29, 2010 – December 2, 2010.
- Bodkin-Andrews, G., O'Rourke, V., Grant, R., Denson, N., and Craven, R.G. (2010). Validating racism and cultural respect: testing the psychometric properties and educational impact of perceived discrimination and multiculturalisation for Indigenous and non-Indigenous students, *Educational Research and Evaluation*, 16(6), 471- 493.
- Bodkin-Andrews, G. H., Seaton, M., Nelson, G. F. Craven, R. G. & Yeung, A. S. (in press, July 2010). Questioning the General Self-Esteem Vaccine: General Self-Esteem, Racial Discrimination, and Standardised Achievement across Indigenous and Non-Indigenous Students. *Australian Journal of Guidance and Counselling*, 20(1), 1-21.
- Craven, R. G., & Tucker, A. (2003). *Enhancing self-concept and educational outcomes for Indigenous students: AECG members' views and suggestions for strategic research directions*. NSW: NSW Aboriginal Education Consultative Group.
- De Maio, J. A., Zubrick, S. R., Silburn, S. R., Lawrence, D. M., Mitrou, F. G., Dalby, R. B., Blair, E. M., Griffin, J., Milroy, H., & Cox, A. (2005). *The Western Australian Aboriginal Child Health Survey: Measuring the social and emotional wellbeing of Aboriginal children and intergenerational effects of forced separation*. Perth: Curtin University of Technology and Telethon Institute for Child Health Research.
- Doll, B., & Hess, R. S. (2001). Through a new lens: Contemporary psychological perspectives on school completion and dropping out of high school. *School Psychology Quarterly*, 16, 351– 356.
- Groome, H., & Hamilton, A. (1995). *Meeting the educational needs of Aboriginal adolescents*. Canberra: National Board of Employment, Education and Training.
- Larson, A., Gillies, M., Howard, P. J., & Coffin, J. (2007). It's enough to make you sick: the impact of racism on the health of Aboriginal Australians. *Australian and New Zealand Journal of Public Health*, 31(4), 322-329
- Lester, J. (2000). *Evaluative research into the Office of the Board of Studies', Aboriginal Careers Aspiration Program for Aboriginal students in NSW high schools*. Sydney: Board of Studies (NSW).
- McConnochie, K., Hollingsworth, D., & Pettman, J. (1988). *Race and Racism in Australia*. Wentworth Falls, NSW: Social Science Press.

- Mellor, D. (2003). Contemporary racism in Australia: The experiences of Aborigines. *Personality and Social Psychology Bulletin*, 29(4), 474-486.
- Paradies, Y., & Cunningham, J. (2009). Experiences of racism among urban Indigenous Australians: Findings from the DRUID study. *Ethnic and Racial Studies*, 32(3), 548-573.
- Paradies, Y., & Cunningham, J. (2009). The DRUID study: exploring mediating pathways between racism and depressive symptoms among Indigenous Australians. *Social Psychiatry and Psychiatric Epidemiology*, Dec, 1-9.
- Parente, A., Craven, R.G., & Munns, G. (2003). What do Indigenous students say about their aspirations? *Journal of Aboriginal Studies Association*, 12, 11- 22.
- Pedersen, A., & Walker, I. (1997). Prejudice against Australian Aborigines: Old-fashioned and modern forms. *European Journal of Social Psychology*, 27, 561-587.
- Pedersen, A., Griffiths, B., Contos, N., Bishop, B., & Walker, I. (2000). Attitudes toward Aboriginal Australians in city and country settings, *Australian Psychologist*, 35, 109–117.
- Pettigrew, T.F., & Meertens R.W. (1995). Subtle and blatant prejudice in western Europe. *European Journal of Social Psychology*, 25, 57-75
- Priest, N., Paradies, Y., Stevens, M. & Bailie, R. (2010). Exploring relationships between racism, housing and child illness in remote Indigenous communities. *Journal of Epidemiology & Community Health*, 30, 1-8.
- Swan, P., & Raphael, B. (1995). *Ways forward: National Aboriginal and Torres Strait Islander mental health policy – National consultancy report*. Canberra: Australian Government Publishing Service.
- Thomson, S., De Bortoli, L., Nicholas, M., Hillman, K., & Buckley, S. *Challenges for Australian Education: results from PISA 2009*. Camberwell, Victoria: Australian Council for Educational Research.
- Zubrick S. R., Silburn S. R., De Maio J. A., Shepherd C., Griffin J. A., Dalby R. B., Mitrou F. G., Lawrence D. M., Hayward C., Pearson G., Milroy H., Milroy J., & Cox A. (2006). *The Western Australian Aboriginal Child Health Survey: Improving the Educational Experiences of Aboriginal Children and Young People*. Perth: Curtin University of Technology and Telethon Institute for Child Health Research.