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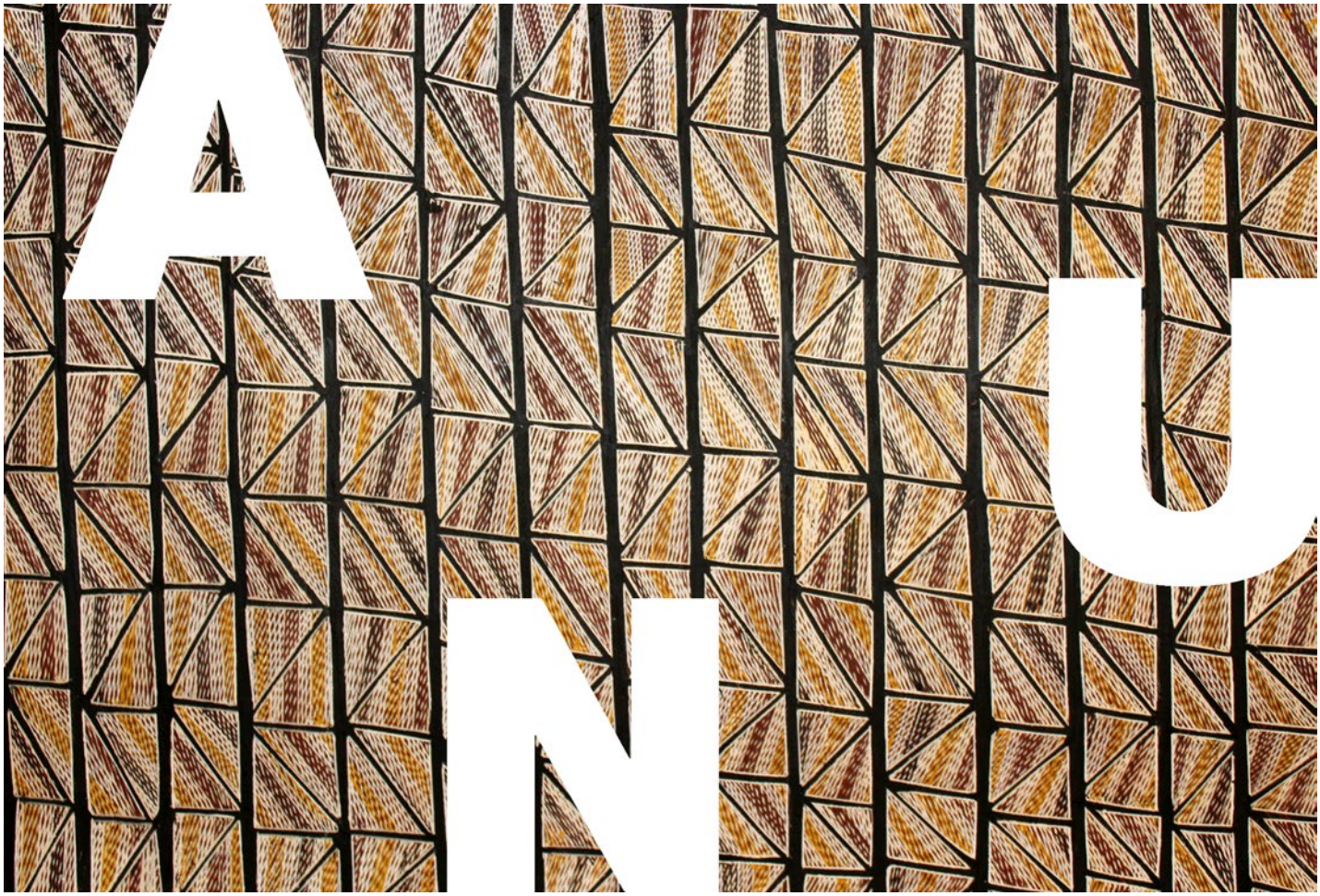

VOCATIONAL EDUCATION PARTICIPATION AND ATTAINMENT AMONG ABORIGINAL AND TORRES STRAIT ISLANDER AUSTRALIANS: TRENDS 2002–15 AND EMPLOYMENT OUTCOMES

H CRAWFORD AND N BIDDLE

Centre for Aboriginal Economic Policy Research
ANU College of Arts & Social Sciences

CAEPR WORKING PAPER NO. 114/2017

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February 2017

Vocational education participation and attainment among Aboriginal and Torres Strait Islander Australians: trends 2002–15 and employment outcomes

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Working Paper No. 114/2017
ISSN 1442-3871

ISBN 978-1-925286-13-7

An electronic publication downloaded from <caepr.anu.edu.au>.

For a complete list of CAEPR Working Papers, see <caepr.anu.edu.au/publications/working.php>.

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Abstract

This report examines trends in participation in vocational education and training, and attainment of vocational qualifications, among Aboriginal and Torres Strait Islander people during 2002–15. The report also investigates whether Aboriginal and Torres Strait Islander people with a higher-level vocational qualification are more likely to subsequently gain employment than those with a lower-level vocational qualification. Our analysis uses data from the Australian Census of Population and Housing, and the Australian Census Longitudinal Dataset; national social surveys of the Indigenous population conducted in 2002, 2008 and 2014–15; and annual vocational education and training statistics produced from administrative collections and related surveys managed by the National Centre for Vocational Education Research.

The percentage of Aboriginal and Torres Strait Islander people aged 15–64 years who had a Certificate III or higher-level qualification increased substantially from 15% in 2002 to 34% in 2014–15. Most of the increase occurred at the Certificate III or IV level; among Indigenous women aged 15–64 years, the percentage with a qualification at this level more than tripled from 6% in 2002 to 22% in 2014–15.

Our analyses confirm that, among the Aboriginal and Torres Strait Islander population, those with any level of education beyond compulsory schooling are more likely to subsequently gain employment than those without a

post-school qualification. There is weak evidence to suggest that, in major cities, having a higher-level vocational qualification confers an employment advantage compared with lower-level vocational qualifications (after controlling for other observable characteristics), perhaps reflecting both the higher demand for, and supply of, skilled labour in metropolitan areas. In contrast, in regional areas, there is no significant difference between the employment outcomes of those with higher-level vocational qualifications and those with lower-level vocational qualifications.

Human welfare studies and services, and business and management-related courses were among the most common fields of study undertaken by Aboriginal and Torres Strait Islander women and men completing Certificate III qualifications in each year from 2010 to 2014.

Our findings are discussed with reference to changes in the Australian labour market during the past two decades.

Keywords: Indigenous education, vocational education, Indigenous employment

Acknowledgments

Funding for this report was provided through the Strategic Research Project, a three-year agreement between the Centre for Aboriginal Economic Policy Research (CAEPR) and the Australian Government Department of the Prime Minister and Cabinet. A number of comments on this paper were received from and/or collated by members of the steering committee of the Indigenous Populations Project, and were much appreciated. Georgina Windley from the National Centre for Vocational Education Research, and Deirdre-Howard Wagner and Jerry Schwab from CAEPR provided valuable comments and suggestions, and their contribution is greatly appreciated. The authors would also like to thank Jean Mackinder for her meticulous editorial review.

Acronyms

ABS	Australian Bureau of Statistics
ACLD	Australian Census Longitudinal Dataset
ANU	The Australian National University
CAEPR	Centre for Aboriginal Economic Policy Research
CDEP	Community Development Employment Projects
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NCVER	National Centre for Vocational Education Research
VET	vocational education and training

Contents

Tables and figures

Executive summary

The percentage of Aboriginal and Torres Strait Islander people aged 15–64 years who had a Certificate III or higher-level qualification increased substantially from 15% in 2002 to 34% in 2014–15. Most of the increase occurred at the Certificate III or IV level; among Indigenous women aged 15–64 years, the percentage with a qualification at this level more than tripled from 6% in 2002 to 22% in 2014–15.

Not surprisingly, vocational education appears to be more accessible than higher education to young Aboriginal and Torres Strait Islander people living in regional or remote areas. Aboriginal and Torres Strait Islander students enrolled in, and completing, Certificate III or IV programs were slightly younger on average than their non-Indigenous counterparts, and the geographical distribution of Indigenous vocational students reflected the geographical distribution of the population. In contrast, Aboriginal and Torres Strait Islander university students tended to be older than their non-Indigenous counterparts, and were more likely to be residing in major cities than the Indigenous population as a whole, perhaps having relocated to undertake study (Crawford & Biddle 2015).

Among Aboriginal and Torres Strait Islander women and men who had completed a Certificate III in each of the five years from 2010 to 2014, common fields of study included 'human welfare studies and services' – a broad category that includes the growth industries of children's services and aged care – and business and management-related studies.

The regions where the largest percentages of the Indigenous population aged 15–64 years had attained a Certificate III or IV were mostly on the urban eastern seaboard and in Victoria, but also included the Broome region.

The employment rate among Indigenous people aged 15–64 years was higher among those with higher levels of education. The overall employment rate for the Indigenous population aged 15–64 years remained stable over time (2008 to 2014–15), even though the employment rates within each broad category of educational qualification decreased during this period. This stability over time in the overall employment rate among working-age Indigenous people was underpinned by the change in the educational composition of the Indigenous population – that is, the influx into higher-qualification categories in which employment rates remain relatively higher (despite decreasing over time) than in lower-qualification categories.

Our multivariate analysis using the Australian Census Longitudinal Dataset (ACLD) confirmed that Aboriginal and Torres Strait Islander people with an educational qualification of any type beyond compulsory schooling were significantly more likely to gain employment than those with no post-school qualification. Among Aboriginal and Torres Strait Islander people aged 15–54 years who were living in major cities in 2006, there is weak evidence[1] to suggest that those with a Certificate III or IV were more likely to have moved into employment five years later (when aged 20–59 years) than those with a Certificate I or II. In comparison, in regional areas, having a Certificate III or IV did not increase the probability of moving into employment relative to having a Certificate I or II. This likely reflects differences in the labour markets in regional and metropolitan areas (in general), with demand for, and supply of, skilled labour being greater in metropolitan areas.

The ACLD, which links data from the 2006 and 2011 censuses, predates recent substantial increases in vocational attainment among the Indigenous population. We therefore also used data from the Student Outcomes Survey managed by the National Centre for Vocational Education Research, which provides annual information to 2015, to examine employment outcomes of more-recent graduates. Relatively simple bivariate analyses indicated that, among Aboriginal and Torres Strait Islander graduates who were not employed when they began a vocational program, the percentage who reported gaining a job as a result of their training was larger (and increasing) among those with a Certificate III or IV than among those who attained a Certificate I or II (whose job prospects appeared to be declining over time).

Given the dynamic state of Indigenous educational participation and attainment, this report provides a basis for monitoring future developments and undertaking more detailed analyses, which will be supported by the forthcoming release of data from the 2016 Census and the next wave of the ACLD. More detailed analyses of regional labour markets, and regional migration and employment outcomes would be particularly valuable in informing place-based education and employment initiatives.

Introduction

Background

Despite recent dramatic increases in the proportion of the Aboriginal and Torres Strait Islander population who have attained higher-level vocational qualifications, there is little research reflecting on this trend, and examining whether this increased level of educational attainment is associated with better employment and other outcomes.

This report has two main aims. The first aim is to examine in more detail recent increases in the attainment of higher-level vocational qualifications among the Aboriginal and Torres Strait Islander population, comparing results by gender, and for nonremote and remote areas. The second aim is to examine links between education and employment. We examine how the employment rate among Aboriginal and Torres Strait Islander people aged 15–64 years has changed as the proportion with higher-level vocational qualifications has increased. We then use multivariate analysis to examine whether having higher-level vocational qualifications increases the probability that an individual will subsequently obtain employment.

The 2008 Bradley Review of Australian Higher Education argued that a more highly educated population is critical for maintaining 'our high standard of living, underpinned by a robust democracy and a civil and just society' (Bradley et al. 2008). Although there is a long-established body of literature on the relationship between education and earnings (e.g. see Doyle & Skinner 2016), recent research indicates that education also has positive effects on health and wellbeing that cannot be attributed solely to economic benefits such as income (Cutler & Lleras-Muney 2006, Lochner 2011, Böckerman & Maczulskij 2016). Education also has a range of social benefits, such as greater civic participation, social inclusion and crime reduction (Lochner 2011, Heckman et al. 2016).

One way of boosting the proportion of the Australian population with higher-level educational qualifications, the Bradley Review argues, is to focus on increasing participation among groups who are currently underrepresented. One of these groups is Aboriginal and Torres Strait Islander people. The Behrendt Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People identified increasing participation in higher education as an important means of reducing disadvantage, and providing Aboriginal and Torres Strait Islander Australians with professional skills that meet the needs of their communities, leading to greater autonomy and empowerment (Behrendt et al. 2012).

Education also provides a pathway to employment, which has been shown to be significantly associated with a range of health and wellbeing outcomes among Aboriginal and Torres Strait Islander Australians, particularly in nonremote areas (e.g. see Biddle 2012a, Cunningham & Paradies 2012, Shepherd et al. 2012, Biddle 2014, Crawford & Biddle 2016). 'Halving the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade [from December 2007]' is one of the Australian Government's Closing the Gap targets (COAG 2009). 'Employment outcomes' are measured in the Prime Minister's annual reports by the employment to population ratio or 'employment rate' among those aged 15–64 years (e.g. see DPMC 2016a). Previous research has shown that the relationship between education and employment is stronger among Aboriginal and Torres Strait Islander people than among the non-Indigenous population, and that the biggest increase in employment comes from acquiring any post-school qualification (Taylor et al. 2012).

The link between education and employment is implicit in the name of the vocational education and training (VET) sector, and in its primary role: 'to provide skills and knowledge for work' (NCVER 2016). The National Agreement for Skills and Workforce Development (the National Agreement) spells out Australian governments' aims to achieve a VET system that 'delivers a more productive and highly skilled workforce' (COAG 2012). One aim of the National Agreement is to increase the proportion of the working-age Australian population with 'higher-level qualifications', defined as Certificate III and above. Certificate III is considered to be the minimum level of education that provides the best foundation for further education and training, and improves employment prospects (SCRGSP 2014).

The National Agreement notes the commitment of the Council of Australian Governments to addressing social inclusion, including Indigenous disadvantage, and specifies the following targets (relating to the entire Australian working-age population, not specifically the Aboriginal and Torres Strait Islander population):

- halve the proportion of Australians aged 20–64 without qualifications at Certificate III level and above between 2009 and 2020
- double the number of higher-level qualification completions (diploma and advanced diploma) between 2009 and 2020 (COAG 2012).

Getting a job is not the only reason for participating in education. Although a study of Indigenous Australians in VET found that getting a job was one of the main reasons for their participation, other common motivations included 'to improve knowledge', 'to improve confidence', 'to help in the community' and 'to get skills for community/voluntary work'. Participants reported personal benefits even if they did not get paid work straight away (O'Callaghan 2005). Those already in employment may be motivated to undertake VET by new industry requirements for qualifications, or individual aspirations for promotion or a change of career. In such cases, there may be other benefits of training, such as increased job security, higher pay, improved working conditions or greater job satisfaction. These are important benefits, and, although beyond the scope of this report, further research into these aspects would be informative.

Finally, labour supply – people who are employed (or seeking employment) and their characteristics – is only part of the equation. Labour demand is also important, and demand for particular levels or fields of education can change over time and across regions, as old industries and occupations decline, and new ones emerge. The value of an educational qualification of any type tends to vary in different labour markets. This issue is relevant to the results of our analysis examining the relative benefit of a higher-level vocational qualification in major cities compared with regional areas. The insights provided by this analysis are just a starting point. A wide range of complex and dynamic factors affect the relationship between education and employment, including regional variation and change over time; individual employment-related mobility; changes in technology that enable people to work independently of a particular location; and demographic and social changes, such as population ageing, migration, increasing participation of women and older people in the labour market, and changes in educational participation among young people. An analysis of Australian labour market changes over the two decades from 1993 to 2013 (Wilkins & Wooden 2014) identified the major changes during that time as the declining significance of goods-producing industries and the rise of service industries, with growth concentrated in professional, scientific and technical services, and health care and social assistance; and growth in higher-skill jobs (but also growth in the relatively low-skill caring occupations, driven by population ageing and increased female participation in the labour force). Wilkins and Wooden flag the 'critical importance of ongoing investment in education and training' (2014:429–430) to meet the challenge of maintaining an educated labour force that is large and productive enough to support an ageing population. This analysis provides useful context for our analysis of trends in Indigenous VET.

Vocational education and training in Australia

Defining 'vocational education and training' in Australia is not a simple matter (Moodie 2002, 2010; Karmel 2011). Approaches to distinguishing types of education extending beyond compulsory schooling include by institution (universities deliver higher education; institutions such as technical and further education colleges deliver vocational education and training) or by program (qualification). Neither of these approaches is entirely satisfactory (as Moodie and Karmel explain) because boundaries are blurred: some universities offer vocational programs, and some vocational education providers offer higher-education programs (Moodie 2010). Similarly, in relation to a program-based approach, Karmel points out that the purpose of many bachelor degrees is 'occupation-specific training', whereas much training in higher-level 'vocational' programs (e.g. Certificate III and IV) is fairly generic (Karmel 2011:5).

Our primary interest is in the increasing participation in, and attainment of, qualifications at the Certificate III to the advanced diploma level among Indigenous people, especially given that the Council of Australian Governments regards Certificate III as a strong foundation for employment and further education. We therefore take a program- or qualification-based perspective. Standards for Australian qualifications are mapped out in the Australian Qualifications Framework (AQF), using a structure based on learning outcomes (AQFC 2013). According to the AQF, Certificates I and II equip people with basic factual, technical or procedural knowledge or skills in defined areas of work. Certificates III and IV, on the other hand, equip people with a greater breadth of knowledge (including theoretical) across broader areas, and qualify people to undertake more skilled work and apply knowledge in various contexts, including responding to unpredictable problems (AQFC 2013:14–15). Most trade and craft occupations are at the Certificate III level (Knight 2012).

It is important to be aware of how the available data align with this definitional approach, and the strengths and the limitations of the data for our purposes. The Census and Australian Bureau of Statistics surveys

provide information about the level and field of educational qualification, but no information about the type of institution where these qualifications were obtained; vocational education and training statistics from the National Centre for Vocational Education Research are based on administrative data from registered training organisations (NCVER 2016). The comparison of results from these different sources is one of the strengths of our analysis, providing the opportunity to examine whether different data sources are pointing to similar patterns and trends.

In recent years, there have been substantial increases in the percentage of Aboriginal and Torres Strait Islander people attaining higher-level vocational education qualifications, despite little change in the percentage attaining university-level qualifications. In a little more than a decade, the percentage of Aboriginal and Torres Strait Islander people aged 15–64 years with an educational qualification at Certificate III level or higher has more than doubled, increasing from 15% in 2002 to 34% in 2014–15.

The Behrendt Review cited evidence that Aboriginal and Torres Strait Islander students have often been steered into VET without higher education being presented as an option. Even so, VET can provide a pathway to higher education, as well as fulfilling its primary purpose of providing job-related knowledge and skills (Bradley et al. 2008, Behrendt et al. 2012).

Terminology

Throughout this report, 'Indigenous' is used interchangeably with 'Aboriginal and Torres Strait Islander', as it encompasses both Aboriginal people and Torres Strait Islander people. Although the term 'Indigenous' is widely used, we acknowledge that it is not universally accepted. We recognise that the Indigenous population is made up of people living in diverse circumstances, and with connections to diverse regional and language groups. Our analysis relates to the Indigenous population as a whole or in fairly broad geographic categories; although it yields some valuable insights and pointers to other potentially fruitful lines of inquiry, we acknowledge that there is likely to be much variation according to specific regional and other contexts.

Data sources and methods

Introduction

In this paper we draw on data from different types of sources, partly for cross-verification and partly because some sources contain more up-to-date or more detailed data. The data sources used are population censuses, the Australian Census Longitudinal Dataset (ACLD), VET statistical collections managed by the National Centre for Vocational Education Research (NCVER), and the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) conducted by the Australian Bureau of Statistics (ABS). This section contains a brief summary of these data sources.

A key aspect of these collections is that a person's Aboriginal and/or Torres Strait Islander status is self-identified. That is, respondents who answer affirmative to the census (or equivalent) question 'Is the person of Aboriginal or Torres Strait Islander origin?' are recorded as being Indigenous. No distinction is made within this population, apart from between Aboriginal people and Torres Strait Islander people. As has been shown in previous research, responses to this question are likely to vary across the lifecourse and the circumstances under which the survey takes place (Biddle & Crawford 2015). In this paper, we take the individual's response at that point in time as the best reflection of their Indigenous status.

Australian Census of Population and Housing

The Australian Census of Population and Housing, conducted five-yearly, is an important source of information about the Aboriginal and Torres Strait Islander population. Even though the census undercounts the Aboriginal and Torres Strait Islander population (ABS 2012), it yields a sufficient number of observations to support many detailed quantitative analyses, including analyses for reasonably small geographical areas. The census is conducted in the remote areas where about 20% of the Indigenous population live, unlike most other Australian household-based surveys (with the exception of the national Aboriginal and Torres Strait Islander health and social surveys conducted by the ABS, which are also conducted in remote areas).

Australian Census Longitudinal Dataset

The ACLD was released by the ABS in late 2013. According to the ABS (2013:4), 'a sample of almost one million records from the 2006 Census (wave 1) was brought together with corresponding records from the

2011 Census (wave 2) to form the largest longitudinal dataset in Australia'.

To produce the ACLD, 5% of individual records from the 2006 Census were linked with available data from the 2011 Census. The methods used to link these records were probabilistic and deterministic. Essentially, both these types of linkage yield the most likely match, based on the level of agreement between variables common to two datasets (in this case, selected variables common to the 2006 and 2011 censuses). The quality of linkages resulting from probabilistic or deterministic methods is poorer than that of linkages resulting from processes based on matching name and address (for more detailed information, see ABS 2013). Although the ABS concluded that the linkage methods used 'would yield a dataset of sufficient quality for longitudinal analysis' (ABS 2013:5), a minority of linked pairs will not, in reality, be the same individual. This needs to be kept in mind when making conclusions based on the data. However, for the first time in Australia, we have a large dataset with information on a person's Indigenous status, and their socioeconomic and demographic characteristics, at more than one point in time (in both 2006 and 2011).

Statistical collections of the National Centre for Vocational Education Research

The NCVER is an independent, not-for-profit organisation owned by Australian, state and territory government ministers responsible for VET. It manages national administrative data collections and surveys for VET. These statistical sources provide a comprehensive picture of the Australian VET sector and its performance (NCVER 2016). Our analysis draws on data about the number of program enrolments and completions from the National VET Provider Collection. The data are obtained from administrative records held by the state and territory training authorities, and other relevant bodies (NCVER 2016). We used data on government-funded students and courses, which are available as a time series covering 2003–14. (From 2015, the National VET Provider Collection expanded to include all nationally recognised VET.) We also used data from the Student Outcomes Survey, which is an annual self-completion survey of VET graduates (and subject completers) (NCVER 2016). The Student Outcomes Survey includes information about students' employment status before undertaking vocational education or training, and job-related benefits of the program.

These administrative data sources provide valuable information about those participating in VET, but, by definition – because the data are sourced from information provided by participants – do not contain information about nonparticipants (e.g. barriers to participation). Some information of this nature can be obtained from the NATSISS, described in the following section.

National Aboriginal and Torres Strait Islander Social Survey

Following the first National Aboriginal and Torres Strait Islander Survey (NATSIS), which was conducted in 1994 in response to a recommendation of the Royal Commission into Aboriginal Deaths in Custody (e.g. see Gray 2012), the NATSISS has been conducted six-yearly since 2002. Like the census, the NATSISS provides information about the stock of educational qualifications held by the Indigenous population. Household-based sample surveys such as the NATSISS typically collect a wider range of detailed information than population-wide censuses, and the NATSISS focuses on information relevant to the circumstances of the Indigenous population. Because the NATSISS is based on a national sample of the entire Indigenous population, it can also include questions relevant to those not currently participating in vocational education, such as future educational intentions and barriers to participation. Such information is beyond the scope of the NCVER collections, which are drawn from administrative records of participants. The NATSISS is therefore an important source of qualitative information that may provide insights into Indigenous people's reasons for not participating in VET.

Methods and interpretation

Most of the analysis presented in this report is descriptive, examining changing percentages in participation in, and attainment of, higher-level vocational education qualifications among the Aboriginal and Torres Strait Islander population over time. Although such analyses based on repeated cross-sections over time give a reasonable picture of net changes in the characteristics of a population, they reveal less about underlying changes in individual circumstances. Longitudinal data – that is, information for the same individuals over a period of time – support analyses that provide a better understanding of individual changes. We used multivariate analysis, drawing on the ACLD, to examine the extent to which having a higher-level vocational education qualification was a predictor of subsequently gaining employment, controlling for other observable characteristics that are potentially associated with employment.

Although we make some comparisons between nonremote and remote areas, most of our analysis refers to the whole population or to those living in nonremote areas. The ACLD Aboriginal and Torres Strait Islander sample for remote areas was too small for multivariate analysis to yield meaningful results.

Another relevant issue to consider is change in Indigenous identification (for more information, see Biddle [2012b] and Biddle & Crawford [2015]). In the 2011 Census, a large number of people were identified as Indigenous who had not been identified as Indigenous in the 2006 Census (Biddle 2012b, Biddle & Crawford 2015). Although there was also identification change in the opposite direction, in net terms, the Indigenous population increased by more than would be suggested by births and deaths alone. Biddle and Crawford (2015) found that those whose identification changed to Indigenous had higher socioeconomic status and were more likely to live in urban areas than those who were identified as Indigenous in both periods. This identification change might be a contributing factor to the increasing rate of attainment of higher-level educational qualifications among the Aboriginal and Torres Strait Islander population, although a substantial percentage of identification change occurred in younger age groups, including those who would not yet have turned 15 by 2011. One strength of our multivariate analysis using the longitudinal ACLD is that it controls for Indigenous identification change: for our analysis, we include people identified as Indigenous in 2006 and examine the outcomes of the same people (noting the earlier statements about linkage quality), whether or not they were identified as Indigenous in 2011. Using cross-sectional or point-in-time datasets, we can only compare Indigenous populations at different points in time, and it is difficult to quantify the extent to which changes in socioeconomic and other indicators are affected by identification change.

Trends in vocational education attainment and participation

Percentage with vocational qualifications, 2002–15

From 2002 to 2014–15, the estimated number of Aboriginal and Torres Strait Islander people aged 15–64 years with a post-school educational qualification of any type increased from 69 000 to 191 000. This represents a dramatic increase in a little more than a decade in the percentage of the Indigenous population aged 15–64 who had attained a post-school educational qualification, from just over one-quarter (26%) in 2002 to almost half (47%) in 2014–15. The increase was largely driven by an increase in the number of Indigenous people aged 15–64 with qualifications at the Certificate III or IV level, from 24 000 in 2002 to 97 000 in 2014–15. That equates to an increase in the percentage of the Indigenous population aged 15–64 with Certificate III or IV–level qualifications from 9% to 24%. The growth in Certificate III and IV–level qualifications was somewhat greater among Indigenous women than among Indigenous men (Table 1).

Fig. 1 illustrates the growth in attainment of qualifications at the Certificate III or IV level, which has outstripped that for Certificate I or II among Indigenous women and men aged 15–64 years, particularly among women. In 2002, the percentage of Indigenous women in this age group with a Certificate III or IV was 6%. By 2014–15, the percentage of working-age Indigenous women with a Certificate III or IV had more than tripled to 22%, compared with a much smaller increase in the percentage with a Certificate I or II (from 10% to 13% over the same period).

Vocational education enrolments and completions, 2003–14

NCVER data sourced from the administrative records of VET providers give a more detailed picture of changes over time, based on the numbers of students enrolled in programs at different levels and the number who completed a qualification each year. The NCVER data provide consistent annual measures of the number of program enrolments and completions at different levels. The data provide more definitive information about level and field of qualification because the information is drawn from administrative records rather than being self-reported.

Percentages of Indigenous men and women enrolling in, and completing, higher-level vocational education qualifications increased between 2003 and 2014 (Figs 2 and 3). The percentage of Indigenous men aged 15–64 years enrolled in a Certificate III program increased fairly steadily during the decade to 2015. Among Indigenous women in this age group, the percentage enrolled at Certificate III level increased between 2003 and 2011, and then remained stable between 2011 and 2015. Although there were slight declines in the percentages of Indigenous men and women enrolled in Certificate IV programs in recent years following previous increases, the percentages enrolled in diploma or higher-level programs increased in recent years, particularly among Indigenous women. In contrast,

TABLE 1. Highest level of educational attainment for Indigenous people aged 15–64 years, 2002 to 2014–15 (percentage)

Characteristic	2002	2006[a]	2008	2011[a]	2014–15
Indigenous males					
With tertiary educational qualifications	26	25	30	29	45
Bachelor degree or higher	3	3	4	4	4
Diploma or advanced diploma	2	3	3	3	4
Certificate III or IV	12	16	15	19	26
Certificate I or II	7	2	6	2	10
Certificate (level not determined)	3	1	2	1	1
No tertiary educational qualifications	74	75	70	71	55
Total	100	100	100	100	100
Indigenous females					
With tertiary educational qualifications	26	24	32	31	48
Bachelor degree or higher	4	6	5	7	6
Diploma or advanced diploma	4	5	5	6	6
Certificate III or IV	6	9	13	13	22
Certificate I or II	10	3	7	4	13
Certificate (level not determined)	2	2	2	2	1
No tertiary educational qualifications	74	76	68	69	52
Total	100	100	100	100	100
Indigenous people					
With tertiary educational qualifications	26	24	31	30	47
Bachelor degree or higher	3	4	5	5	5
Diploma or advanced diploma	3	4	4	4	5
Certificate III or IV	9	12	14	16	24
Certificate I or II	9	2	6	3	11
Certificate (level not determined)	2	2	2	2	1
No tertiary educational qualifications	74	76	69	70	53
Total	100	100	100	100	100

a Excludes cases where the level of educational qualification was unable to be determined.
Source: Australian Bureau of Statistics – tables generated from the 2006 and 2011 censuses using Tablebuilder; and the 2002, 2008 and 2014–15 National Aboriginal and Torres Strait Islander Social Survey using expanded confidentialised unit record files and Tablebuilder

the percentages of Indigenous men and women enrolled in a Certificate I program have declined since at least 2010, and the percentages enrolled in Certificate II have declined since a peak in 2012.

As a result of these changes, the percentage of Indigenous women and men enrolling in any vocational program at Certificate III level or higher has increased markedly since 2009 (Fig. 4).

The increasing enrolments in higher-level vocational education programs are reflected in increases in the percentage completing higher-level vocational education qualifications during the same period (Fig. 5).

To summarise, the percentage of Indigenous people who enrolled in and completed higher-level VET programs increased dramatically during the past decade or so. The percentage of the Indigenous population aged 15–64 years holding a Certificate III or higher-level vocational qualification more than doubled from 15% in 2002 to 34% in 2014–15. This has substantially boosted the educational stocks of the Indigenous population.

Notes on the data

Table 1 shows the percentage of the Indigenous population aged 15–64 years with a post-school educational qualification at each level. Certificate I and Certificate II are combined, as are Certificate III and Certificate IV. This is partly because of data collection and coding issues, and partly because this is the greatest level of detail that can be presented consistently over time, drawing on the publicly available data sources.

With regard to data collection and coding issues, in household-based collections such as the Census and NATSISS, educational qualifications are coded based on respondent description. Both these sources contain records for which the response provided was insufficient to accurately classify the educational qualification. Some records can be assigned to a broader category (e.g. 'Certificate I or II not further defined' or 'Certificate not further defined'), but the percentages of such cases are small (and the effect is reduced by combining categories).

With regard to data availability, on the publicly available confidentialised unit record files from the 2002 and 2008 NATSISS, Certificate I and Certificate II are combined in a single category, as are Certificate III and Certificate IV. These groupings fit with the main purpose of this report, which is to distinguish between higher-level vocational qualifications (Certificate III and above) – which provide the best foundation for further education, training or employment – and those at a lower level. Combined categories have been used in Table 1 to present a consistent time series. Elsewhere, more detailed categories have been used, where available and relevant.

Another data quality issue affects census data (because these are self-reported) but not NATSISS data (collected by survey interviewers). This is the number of cases where the level of education was unable to be determined at all, because education questions were not answered ('not stated') or the qualification was 'inadequately described'. Table A2 in the appendix shows that, according to 2011 Census data, 4% of all respondents were in the 'not stated' categories. Among those identified as Indigenous, the percentage was markedly higher, at 12–13%.

Table 1 highlights some discrepancies between census and survey data, with much lower percentages in the Certificate I or II category in the census data. Table A1 in the appendix, which contains the underlying numbers, shows that the census population totals are lower than would be expected, compared with the survey population totals. This is due to census undercount; survey population totals are benchmarked to population estimates that adjust for census undercount. It suggests that a larger share of the census undercount is among those with lower levels of education – that is, in the categories of Certificate I or II and 'no tertiary educational qualifications' – because the census numbers in these categories are lower than the survey estimates coming before and after them. In other categories, the census and survey data appear to be more coherent. For this reason, some of our analyses focus on NATSISS data.

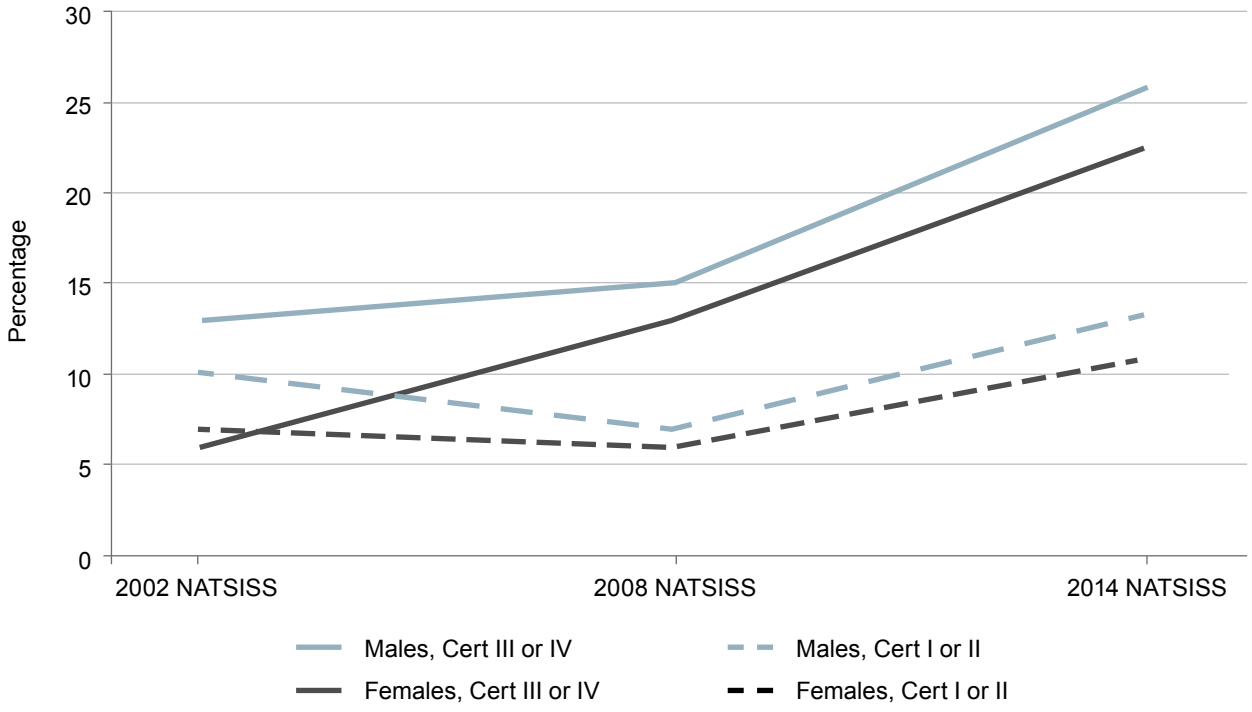
Profiles of recent vocational education graduates

This section presents profiles of Indigenous and non-Indigenous students enrolled in, and completing, Certificate I or II and Certificate III or IV qualifications using the most recent available administrative data (Table 2). These data refer to all nationally recognised (accredited) VET activity, not just government-funded activity.

Indigenous people enrolled in, and completing, vocational education in 2014, particularly at the Certificate III or IV level, were slightly younger on average than their non-Indigenous counterparts. This differs from the profiles of Indigenous higher-education (university) students, who have tended to be older on average than their non-Indigenous counterparts (Crawford & Biddle 2015).

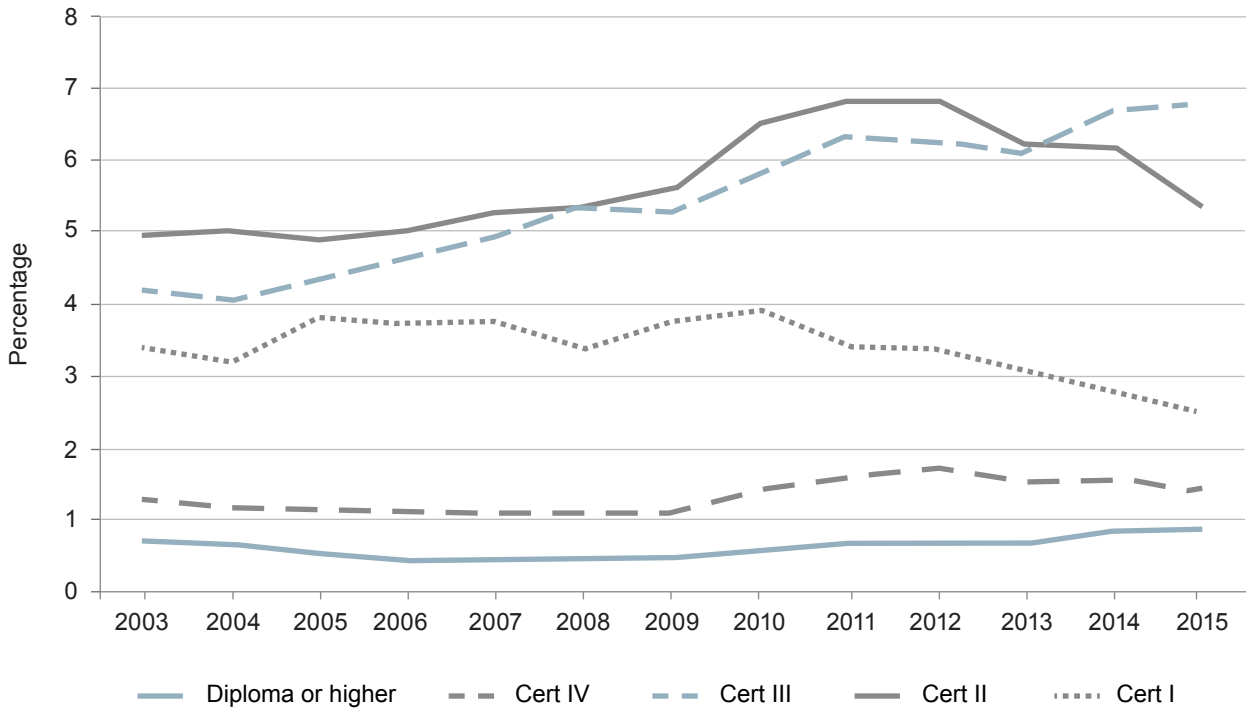
The other noticeable difference by Indigenous status is that much larger percentages of Indigenous students are from regional or remote areas, compared with non-Indigenous students. The data broadly correspond with the different population distributions of the Indigenous and non-Indigenous populations. Again, this differs from the profile of Indigenous people with degrees, who are more likely to be living in major cities than the Indigenous population in general (Crawford & Biddle 2015). It supports the argument that vocational education is more geographically available than higher education.

FIG. 1. Percentage of Indigenous population aged 15–64 years whose highest educational qualification was Certificate I or II, or Certificate III or IV, 2002 to 2014–15



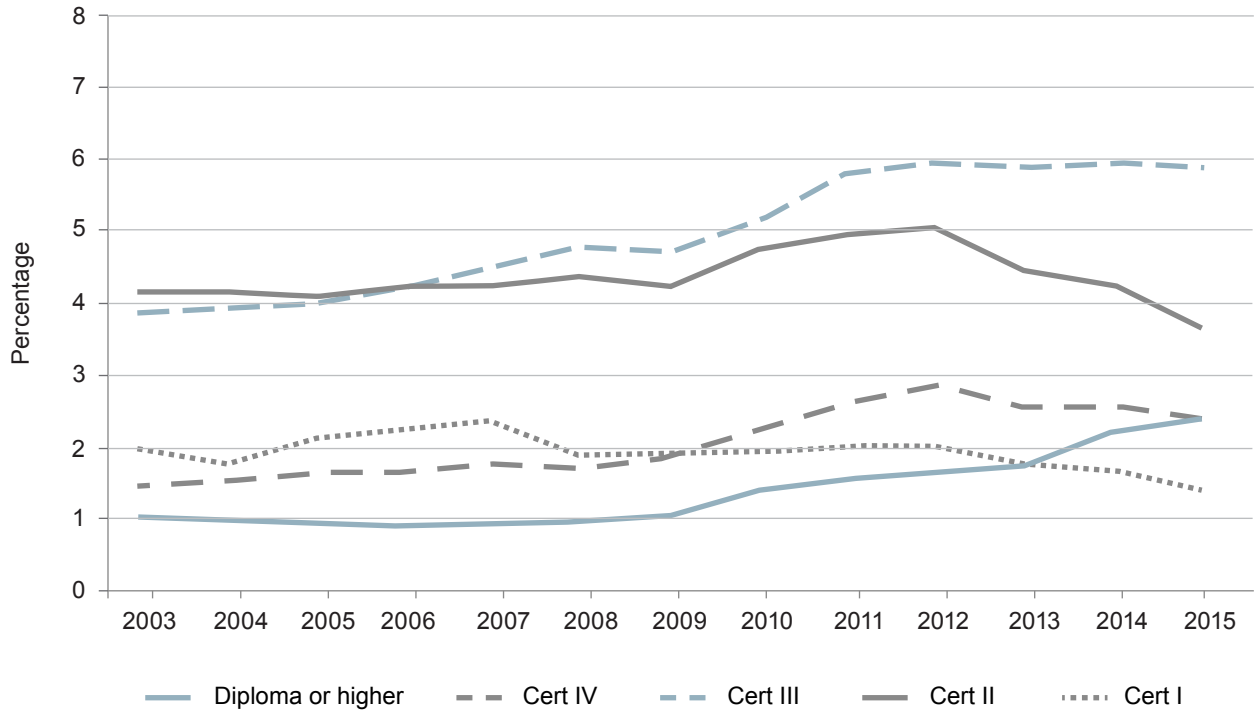
NATSISS = National Aboriginal and Torres Strait Islander Social Survey
Source: Australian Bureau of Statistics – tables generated from the 2002, 2008 and 2014–15 NATSISS using expanded confidentialised unit record files and Tablebuilder

FIG. 2. Percentage of Indigenous males aged 15–64 years who were enrolled in vocational education, by level, 2003–15



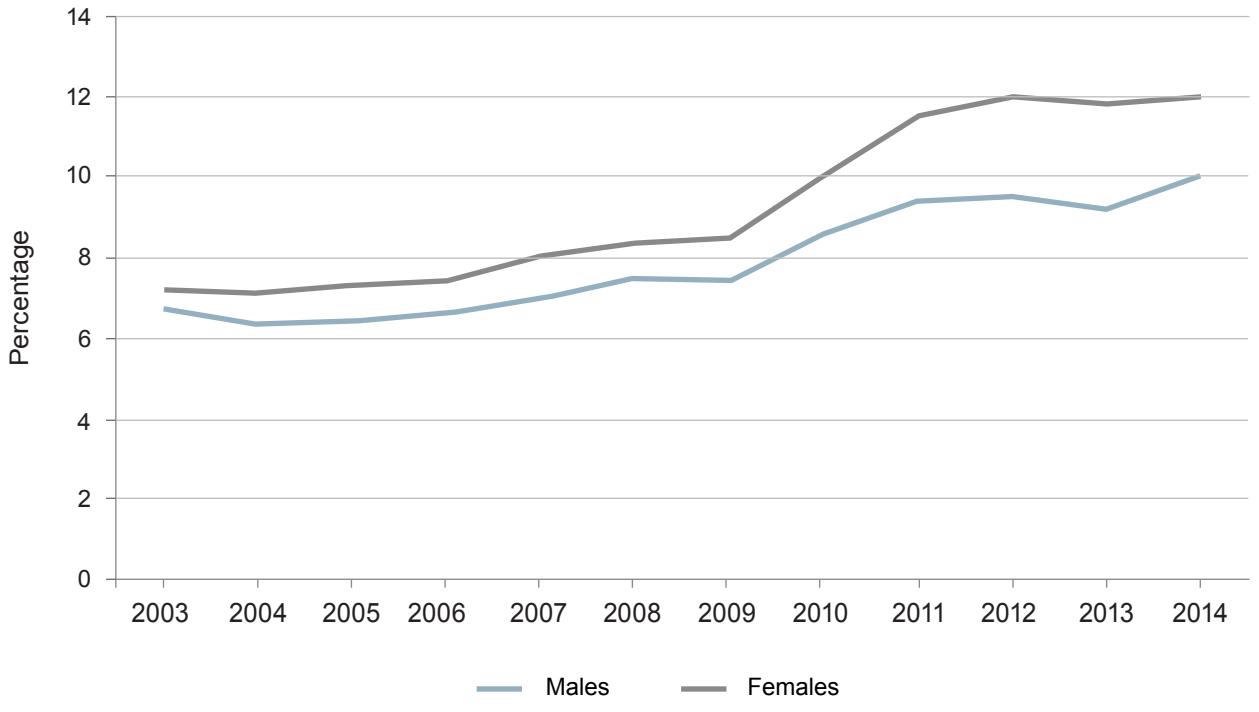
Source: National Centre for Vocational Education Research, National VET Provider Collection using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016; and Australian Bureau of Statistics estimates of the Aboriginal and Torres Strait Islander population (ABS 2014)

FIG. 3. Percentage of Indigenous females aged 15–64 years who were enrolled in vocational education, by level, 2003–15



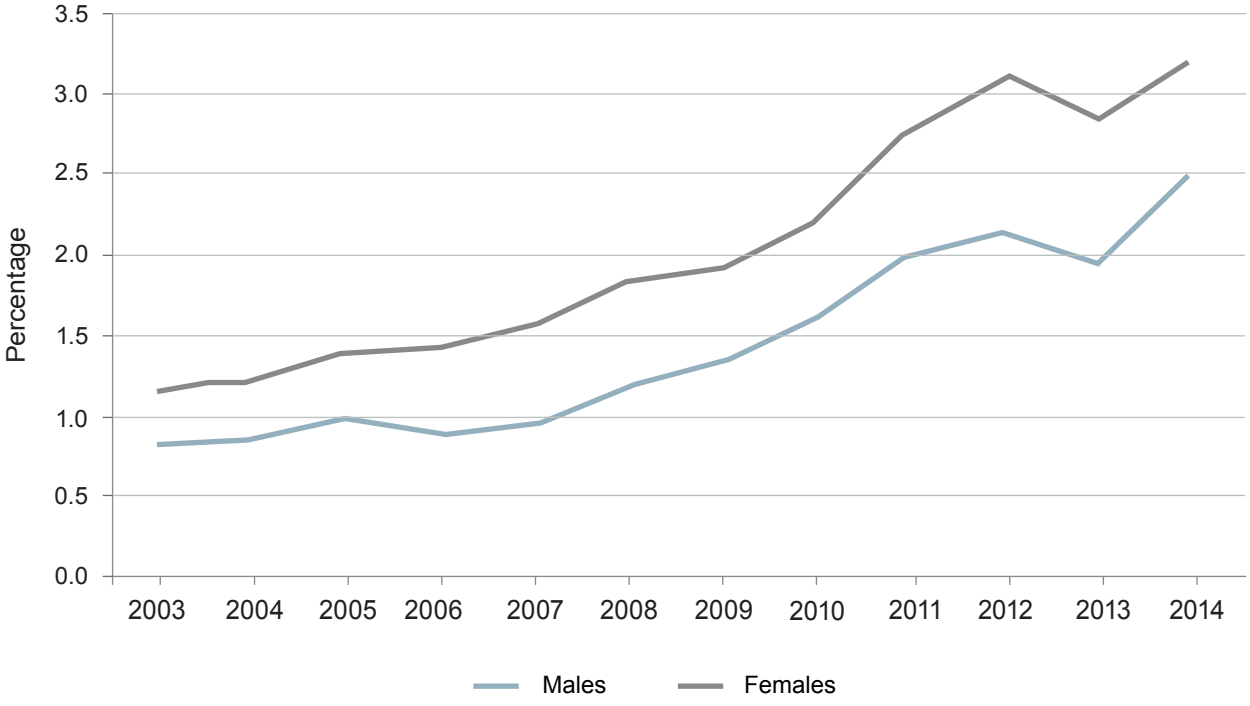
Source: National Centre for Vocational Education Research, National VET Provider Collection using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016; and Australian Bureau of Statistics estimates of the Aboriginal and Torres Strait Islander population (ABS 2014)

FIG. 4. Percentage of Indigenous population aged 15–64 years who were enrolled in Certificate III or higher-level program, 2003–14



Source: National Centre for Vocational Education Research, National VET Provider Collection using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016; and Australian Bureau of Statistics estimates of the Aboriginal and Torres Strait Islander population (ABS 2014)

FIG. 5. Percentage of Indigenous population aged 15–64 years who completed a Certificate III or higher-level qualification, 2003–14



Source: National Centre for Vocational Education Research, National VET Provider Collection using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016; and Australian Bureau of Statistics estimates of the Aboriginal and Torres Strait Islander population (ABS 2014)

TABLE 2. Enrolments and completions of vocational courses by Indigenous and non-Indigenous students, by level, 2014 (percentage)

	Enrolments				Completions			
	Indigenous		Non-Indigenous		Indigenous		Non-Indigenous	
Characteristic	Cert I or II	Cert III or IV	Cert I or II	Cert III or IV	Cert I or II	Cert III or IV	Cert I or II	Cert III or IV
Gender								
Male	60	48	58	54	58	54	56	49
Female	40	52	42	46	42	46	44	51
Age (years)								
15–24	65	49	64	41	65	39	65	36
25–34	16	22	13	24	15	25	13	24
35–44	11	15	10	17	11	18	10	19
45–54	6	10	8	12	7	13	7	14
55 and over	2	4	5	6	2	5	5	7
Remoteness area								
Major cities	29	36	60	65	33	36	65	68
Regional areas	46	48	37	33	45	42	32	30
Remote areas	25	16	3	2	21	22	3	2
Total	100	100	100	100	100	100	100	100

Source: National Centre for Vocational Education Research, National VET Provider Collection using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 9 January 2017

Field of study

To understand the relationship between education and employment, it is useful to examine the fields of study being undertaken, as well as the level of educational qualification.

The following analysis of detailed fields of study focuses on Certificate III completions, because this is the category in which most growth has occurred during the past decade among the Indigenous population. We looked at the five most common fields of study for male and female Indigenous students during the decade 2005–14. Tables 3 and 4 summarise this analysis.

The analysis shows that, among female Indigenous students, there has been greater concentration in fewer fields of study than for male Indigenous students. For female Indigenous students, the top five fields of study accounted for 60–67% of Certificate III enrolments from 2005 to 2014, and just eight different fields appeared in the top five list for female students during this period. 'Human welfare studies and services' alone accounted for one-third (33%) of Certificate III enrolments among female Indigenous students in 2014 (an increase from 25% in 2005) and was consistently the most common field of study among this group during the decade. 'Food and hospitality' appeared to be emerging as a more common field of study among female Indigenous Certificate III students, appearing in the top five fields of study in 2013 and 2014.

In contrast, the top five fields of study for male Indigenous students accounted for 35–45% of enrolments from 2005 to 2014, and 12 different fields appeared in the top five list during this period. There was also more change over time, with 'business and management' and 'other management and commerce' together accounting for 18% of male Indigenous enrolments, and 'building' – the most common field of study among male Indigenous Certificate III students between 2005 and 2008, accounting for 10–13% of their enrolments during these years – falling down the ranking in 2014, with 7% of enrolments.

Regional differences in educational attainment

Introduction

This section presents information about regional differences in the attainment of vocational qualifications among the Indigenous population aged 15–64 years. For this analysis, we drew on data at the Indigenous region level. Indigenous regions are aggregations of more detailed Indigenous areas, which correspond as far as possible to discrete Indigenous communities.

TABLE 3. Certificate III completions by Indigenous males, percentage in five most common fields of study, 2010–14

2010		2011		2012		2013		2014	
Human welfare studies and services	9	Human welfare studies and services	9	Human welfare studies and services	11	Human welfare studies and services	10	Other management and commerce	11
Building	9	Business and management	7	Teacher education	10	Business and management	8	Human welfare studies and services	9
Business and management	8	Building	7	Building	8	Building	7	Business and management	7
Environmental studies	7	Environmental studies	7	Business and management	7	Civil engineering	5	Building	7
Mechanical and industrial engineering and technology	6	Teacher education	6	Sport and recreation	5	Mechanical and industrial engineering and technology	5	Civil engineering	7
Completions in these fields as percentage of total	39	Completions in these fields as percentage of total	35	Completions in these fields as percentage of total	41	Completions in these fields as percentage of total	37	Completions in these fields as percentage of total	41

Source: National Centre for Vocational Education Research, National VET Provider Collection using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016

TABLE 4. Certificate III completions by Indigenous females, percentage in five most common fields of study, 2010–14

2010		2011		2012		2013		2014	
Human welfare studies and services	32	Human welfare studies and services	30	Human welfare studies and services	32	Human welfare studies and services	32	Human welfare studies and services	33
Business and management	11	Office studies	11	Business and management	11	Office studies	11	Office studies	12
Office studies	11	Business and management	11	Office studies	9	Business and management	11	Business and management	10
Other education	7	Teacher education	7	Teacher education	8	Teacher education	5	Food and hospitality	6
Public health	5	Public health	6	Public health	6	Food and hospitality	5	Teacher education	4
Completions in these fields as percentage of total	66	Completions in these fields as percentage of total	65	Completions in these fields as percentage of total	67	Completions in these fields as percentage of total	65	Completions in these fields as percentage of total	64

Source: National Centre for Vocational Education Research, National VET Provider Collection using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016

More details about Indigenous regions are available in the geographical standard for the publication and analysis of statistics about the Indigenous population of Australia (ABS 2016a). In the 2011 edition of this geographical standard, there were 39 Indigenous regions corresponding to spatial Australian territories (i.e. excluding the nonspatial categories 'no usual address' and 'migratory–offshore–shipping'). In the following analysis, we excluded the 'other territories' Christmas Island and the Cocos (Keeling) Islands, and combined Jervis Bay with the Indigenous region South-Eastern New South Wales, so data are presented for 37 regions.

Vocational education attainment by region

The map in Fig. 6 shows the percentage of the Indigenous population in each Indigenous region whose highest educational qualification was a Certificate I or II, while the map in Fig. 7 shows the percentage whose highest education was a Certificate III or IV. This analysis indicates regional differences in the attainment of higher-level vocational qualifications among Indigenous Australians. The percentage with Certificate III or IV–level qualifications is largest in major cities and tends to decline with increasing remoteness.

The regions where relatively larger percentages of the Indigenous population aged 15–64 years had a Certificate I or II as their highest educational qualification in 2011 were Cape York, Broome, the Jabiru–Tiwi and Katherine regions of the Northern Territory, and Torres Strait (Fig. 6). The regions that had among the largest percentages with a Certificate III or IV were mostly on the eastern seaboard and in Victoria (Fig. 7). At this broad regional level, there were a number of regional areas where 10–15% of the Indigenous population had a Certificate III or IV–level qualification as their highest qualification. Broome was also among these areas.

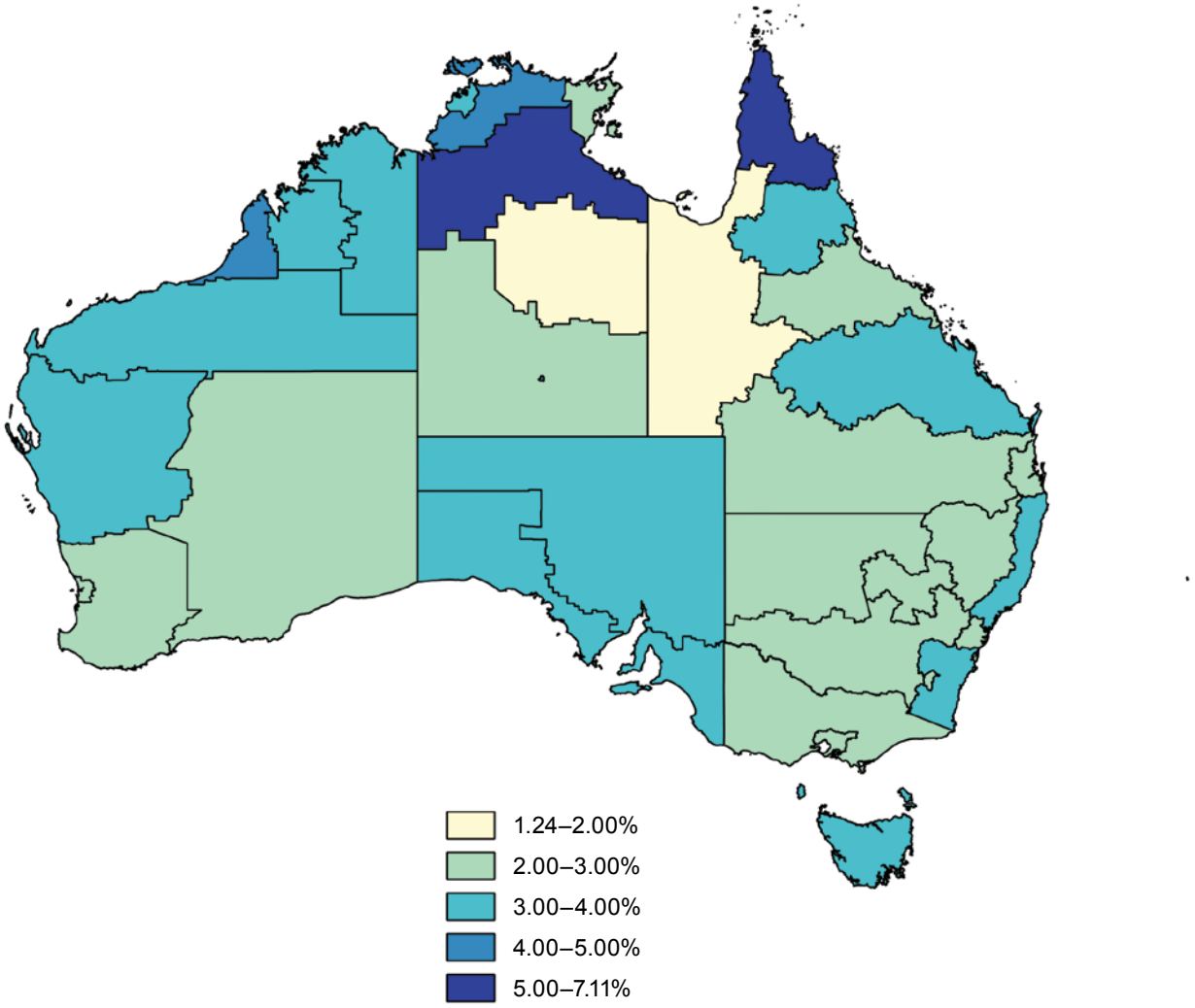
Employment rates by level of educational attainment

Introduction

We now examine the relationship between vocational education and employment. In this section, we examine changes in the employment to population ratio for different categories of educational attainment, between 2002 and 2014–15. This analysis draws on data from the 2002, 2008 and 2014–15 NATSISS.

In 2002 and 2008, the Community Development Employment Projects (CDEP) scheme – essentially an Australian Government program that provided job opportunities for Indigenous people, particularly those living in remote communities – was still in operation; by 2014–15, it had effectively ceased. It is beyond the scope of this report to describe CDEP in detail. Information about the history of CDEP policy and assessments of the policy's efficacy are available in recent publications from the Centre for Aboriginal Economic Policy Research (Jordan 2016, Jordan & Fowkes 2016).

FIG. 6. Percentage of Indigenous people aged 15–64 years in each region whose highest educational qualification is Certificate I or II



Source: Australian Bureau of Statistics, generated from the 2006 and 2011 censuses using Tablebuilder; map produced by the authors using the QGIS geographic information system (www.qgis.org) (QGIS Development Team 2017)

For the following analysis, including comparisons with non-Indigenous employment rates, we focus on non-CDEP employment.

Non-CDEP employment to population ratios by education level

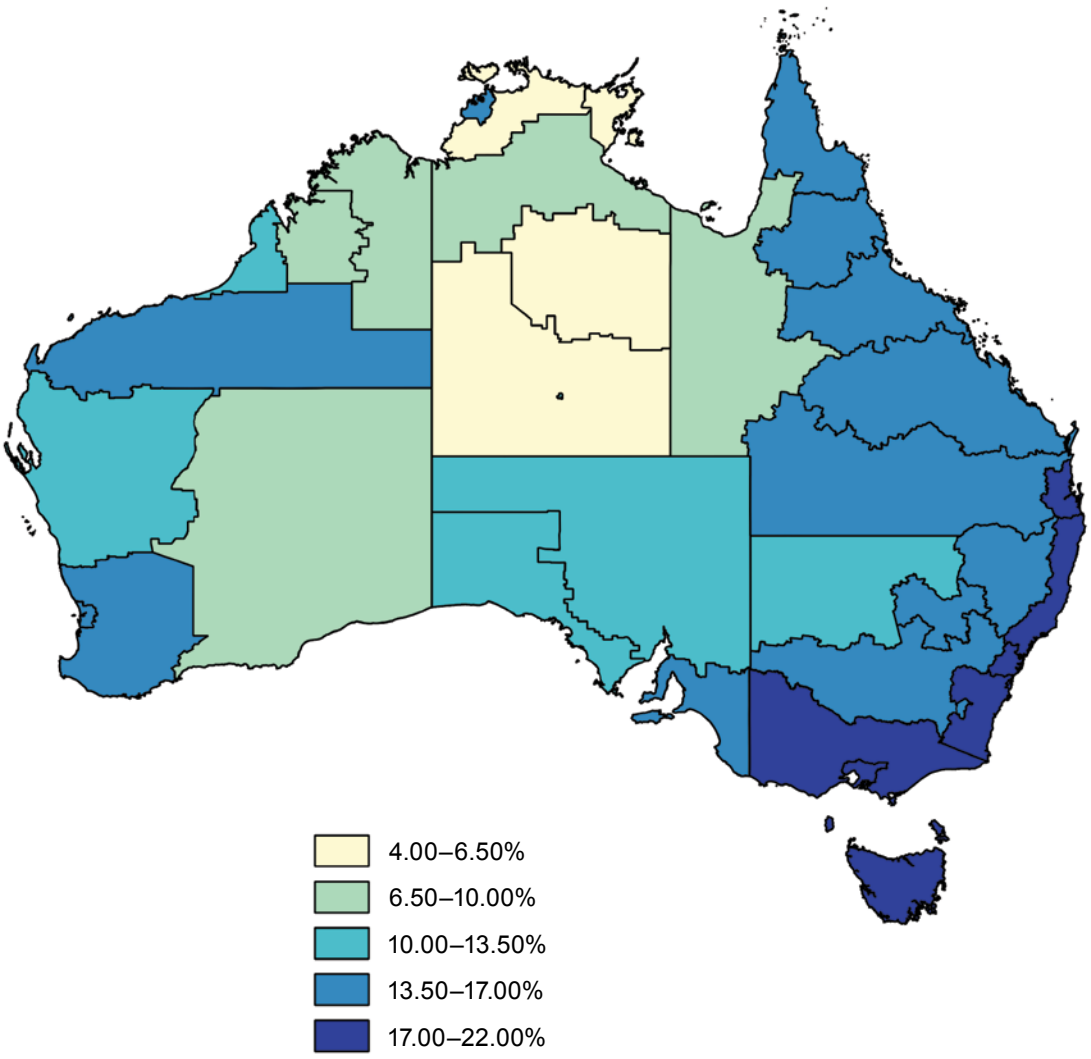
The analysis presented in Table 5 provides three key findings of interest.

First, the percentage of the Indigenous population aged 15–64 years in employment increases with increasing level of education. The employment rate among Indigenous people in this age group with a Certificate III or IV was higher than the employment rate among those with a Certificate I or II. The difference was reasonably consistent across gender, remoteness category and time, ranging from 18 to 27 percentage points.

Second, between 2002 and 2008, the percentage employed increased in almost every educational category (including among those with no post-school qualification). The one exception was Indigenous women living in nonremote areas with a diploma or higher qualification. For this group, the percentage employed remained stable between 2002 and 2008. For Indigenous Australians aged 15–64 nationally, the employment to population ratio increased from 35% to 48% between 2002 and 2008.

Third, between 2008 and 2014–15, despite a declining employment rate among the Australian population overall and declining employment rates within each educational category among Indigenous Australians, the employment to population ratio for the total Indigenous population remained stable at 48%, as a result of considerable change in the underlying educational composition of the Indigenous population.

FIG. 7. Percentage of Indigenous people aged 15–64 years in each region whose highest educational qualification is Certificate III or IV



Source: Australian Bureau of Statistics, generated from the 2006 and 2011 Censuses using Tablebuilder; map produced by the authors using the QGIS geographic information system (www.qgis.org) (QGIS Development Team 2017)

The relative contributions to the overall employment rate of the population in each educational category can be calculated by multiplying the employment rate in each category by the proportion of the population in the corresponding category. The results of this analysis are provided in Fig. 8, which illustrates stability in the Indigenous employment rate between 2008 and 2014–15, against the background of a slight decline in the employment rate for Australia as a whole.

Among those with a Certificate III or IV, the percentage employed decreased compared with earlier time periods. However, the large influx of people into this category that has led to an increase in the percentage of Indigenous Australians with higher-level qualifications, along with the relatively higher rates of employment among those with higher-level qualifications, combined to increase the relative contribution to the overall employment rate by those with Certificate III or IV–level qualifications between 2008 and 2014–15. Similarly, an increase in the percentage of the population with Certificate I or II–level qualifications offset the decrease in the employment rate within this group. The size of the group with no post-school qualifications as a percentage of the total Indigenous population – among whom the employment rate was lowest – has declined substantially over time, from 74% in 2002 to 53% in 2014–15 (Table 1), so the higher employment rates in other growing educational categories made a greater contribution to the overall employment rate in the most recent data.

TABLE 5. Non-CDEP employment of Indigenous people aged 15–64 years, 2002 to 2014–15 (percentage)

	Nonremote			Remote			Total Australia		
Characteristic	2002	2008	2014–15	2002	2008	2014–15	2002	2008	2014–15
Indigenous males									
Diploma or higher	72	86	77	49	82	87	70	86	78
Certificate III or IV	76	82	76	58	74	65	73	81	74
Certificate I or II	48	62	53	32	53	39	44	59	50
No post-school qualification	39	54	46	16	29	29	32	47	41
Total	47	62	58	21	36	39	40	56	54
Indigenous females									
Diploma or higher	75	75	70	72	81	79	75	76	71
Certificate III or IV	51	67	59	56	71	60	51	68	59
Certificate I or II	28	49	33	37	44	41	29	49	34
No post-school qualification	31	35	35	13	20	24	25	31	32
Total	36	46	45	19	29	34	31	42	43
Indigenous people									
Diploma or higher	74	79	73	67	81	81	73	80	73
Certificate III or IV	67	75	59	57	73	60	65	75	68
Certificate I or II	35	55	33	35	49	41	35	53	40
No post-school qualification	35	44	35	15	24	24	29	39	36
Total	41	53	45	20	33	34	35	48	48

CDEP = Community Development Employment Projects
Note: CDEP participants in 2002 and 2008 were not classified as employed for the purpose of this analysis.
Source: Australian Bureau of Statistics – tables generated from the 2002, 2008 and 2014 National Aboriginal and Torres Strait Islander Social Survey using expanded confidentialised unit record files and Tablebuilder

These broad patterns, although informative, do not control for the effects of other observed characteristics such as remoteness, age and gender. Another issue is that, when using cross-sectional or point-in-time data, it is not possible to determine the direction of any causal influence between education and employment. Although higher education may increase people's chances of obtaining employment, it may also be that people who already have a job participate in training as part of their employment, or to help them gain a promotion or change jobs. A final limitation of using repeated cross-sectional datasets (such as the 2006 and 2011 censuses) to examine change over time in outcomes for the Indigenous population is the issue of changing Indigenous identification. Previous analysis using the ACLD has shown that many people not identified as Indigenous in 2006 were identified as Indigenous in 2011, and vice versa (Biddle & Crawford 2015). Changes in identification might therefore be contributing to any observed change in average outcomes for the population, resulting in misleading conclusions about whether outcomes really are improving or worsening. In the next section, we present the results of multivariate analysis using the ACLD, which addresses these limitations.

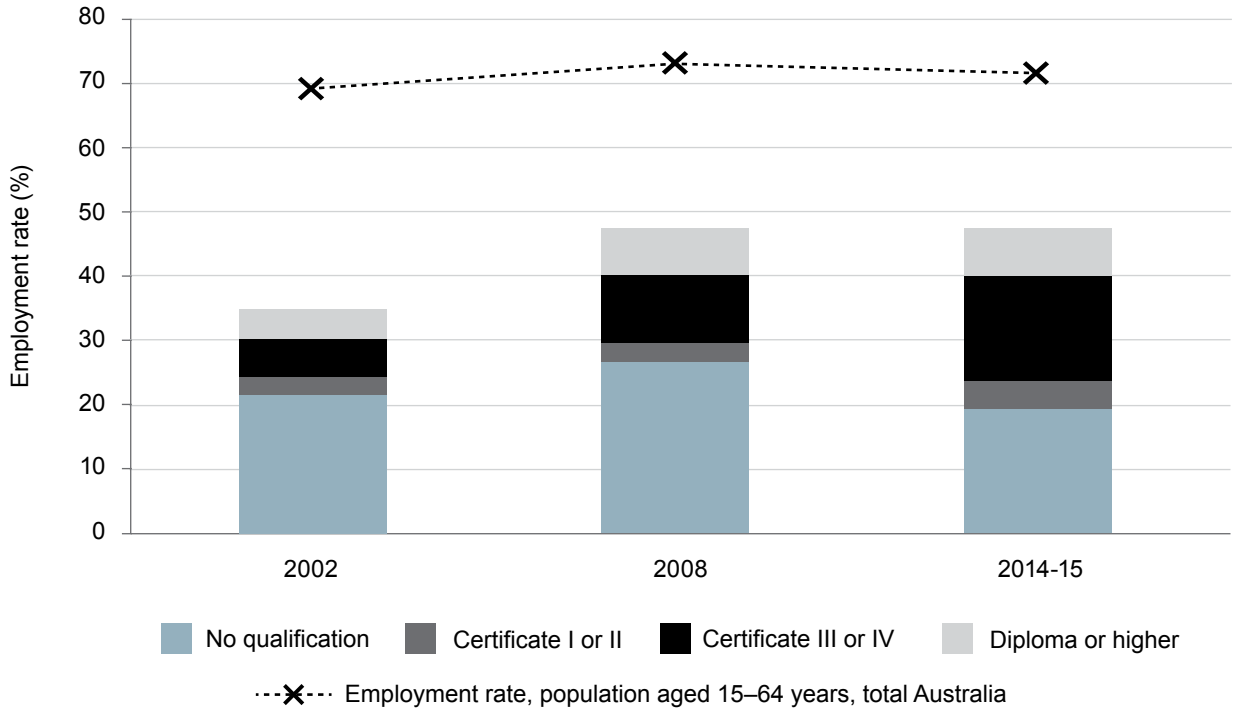
Vocational education and employment outcomes

Multivariate analysis using the Australian Census Longitudinal Dataset

We now examine the relationship between higher-level vocational education qualifications and the transition from being 'not employed' in 2006 to being 'employed' in 2011. Specifically, we were interested in finding out whether having a Certificate III or IV–level qualification in 2006 increased the likelihood of being employed in 2011, compared with having a Certificate I or II–level qualification. Currently the ACLD is the only available source of data that can be used for such analyses because it contains a wide range of sociodemographic information about the adult Indigenous population nationally, including in remote areas, and information for the same group of respondents (those in the linked sample) at more than one point in time.

The ACLD enables modelling of associations between a characteristic at a particular point in time (e.g. in 2006) and a subsequent outcome (e.g. in 2011). Although analysis using longitudinal data does not constitute proof

FIG. 8. Employment rates for the Indigenous population aged 15–64 years and relative contribution of employment in each category of educational attainment, 2002, 2008 and 2014–15



Source: Australian Bureau of Statistics – tables generated from the 2002, 2008 and 2014 National Aboriginal and Torres Strait Islander Social Survey using expanded confidentialised unit record files and Tablebuilder; and ABS labour force estimates (ABS 2016b)

of a causal relationship, it is a stronger form of evidence than analysis of cross-sectional (single point-in-time) data collections (even if repeated over time) because it can identify antecedents that are significantly associated with later outcomes among the population group of interest. By focusing on people identified as Indigenous in the 2006 Census, we can control for the potentially confounding effects of changing Indigenous identification in repeated cross-sectional analyses.

We conducted multivariate analyses using the Probit model (Greene 2003), a type of regression used to model the probability of a particular outcome occurring or not (i.e. the dependent or outcome variable is binary). When the explanatory variables are categorical, as in our models, the results need to be interpreted in relation to a reference person (or 'base case') defined by the categories of the explanatory variables omitted from the model. The results are presented as marginal effects. The marginal effect is the difference in the predicted probability of the outcome occurring among a group with the characteristics compared with the base case, while holding all else constant. It should be noted that the total sample is much larger than the Indigenous sample. In larger samples, even associations with relatively small effects can be found to be statistically significant, whereas statistical significance is more difficult to establish in very small samples.

The sample used in our analysis comprised people who were aged 15–54 years in 2006 (therefore, 20–59 years in 2011) and were not employed at that time.

The dependent variable was whether or not a person in this sample was employed in 2011.

The explanatory variables used were as measured in 2006, so that they were antecedent to the 2011 outcome. We first estimated a model for the total population, and included Indigenous status as an explanatory variable. We also included a number of other observable sociodemographic factors that are associated with employment, including geographical location, gender, age, educational attainment, income, disability status and caring responsibilities (Card et al. 2010). Specifically, the explanatory variables included in our model were:

- area of usual residence – major cities (base case), regional, remote
- gender – male (base case), female
- age group – 15–24 years (base case), 25–34 years, 35–44 years, 45–54 years

- whether had completed Year 12 – had not completed Year 12 (base case), had completed Year 12
- highest level of post-school education – bachelor degree or higher, diploma or advanced diploma, Certificate III or IV, Certificate I or II (base case), no post-school qualification
- equivalised household income – less than $400 per week, $400–999 per week (base case), $1000 or more per week
- disability status – no need for assistance with core activities (base case), need for assistance with core activities
- whether spent time caring for own children – spent time caring for own children in the two weeks before the census, did not spend time caring for own children (includes those without children) (base case)
- whether provided care to someone with a disability – provided unpaid assistance to someone because of a disability, problems associated with old age, or a long-term health condition in the two weeks before the census; did not provide such assistance (base case).

Because these factors have different distributions in the Indigenous and non-Indigenous populations, we then analysed the Indigenous and non-Indigenous samples separately to find out whether the characteristics relevant to attainment of educational qualifications differed in the two populations.

Focusing on nonremote Australia (which comprises major cities and regional areas), we repeated the analysis for the whole of nonremote Australia, and then for major cities and regional areas separately. The sample within remote Australia was too small to yield meaningful results for that level of geography.

The results of this analysis are presented in Tables 6–9.

TABLE 6. Marginal effects on the probability of employment in 2011 for Australian population aged 15–54 years who were not employed in 2006, total population

	Total sample (*n* = 72 241)		Indigenous sample (*n* = 2015)		Non-Indigenous sample (*n* = 70 226)	
Explanatory variables (2006)	Marginal effect	Significance	Marginal effect	Significance	Marginal effect	Significance
Indigenous	–0.13	***	na	na	na	na
Living in a regional area	0.02	***	0.02	ns	0.02	***
Living in a remote area	0.05	***	0.06	*	0.06	***
Female	–0.08	***	–0.12	***	–0.08	***
Aged 25–34 years	–0.17	***	–0.05	ns	–0.18	***
Aged 35–44 years	–0.19	***	–0.03	ns	–0.20	***
Aged 45–54 years	–0.37	***	–0.12	**	–0.37	***
Had completed Year 12	0.05	***	0.12	***	0.05	***
Had a bachelor degree or higher	0.04	***	0.02	ns	0.05	***
Had a diploma or advanced diploma	0.02	ns	0.04	ns	0.02	ns
Had a Certificate III or IV	0.03	**	–0.02	ns	0.03	**
No post-school qualification	–0.05	***	–0.17	**	–0.05	***
Lower household income	–0.06	***	–0.15	***	–0.06	***
Higher household income	0.02	***	0.11	ns	0.02	***
Disability	–0.28	***	–0.29	***	–0.28	***
Caring for own children	0.02	***	0.02	ns	0.02	***
Caring for a person with a disability	–0.04	***	–0.07	*	–0.04	***

na = not applicable; ns = not significant; * = significance level (greater numbers of asterisks indicate higher levels of significance)
Notes:
1. Predicted probabilities of base case are 0.765 (total sample), 0.687 (Indigenous sample), 0.763 (non-Indigenous sample).
2. The base case is a male aged 18–24 years living in a major city who had not completed Year 12, had a Certificate I or II as their highest post-school qualification, was living in a household with an equivalised household income of $400–999 per week, had no need for assistance with core activities, and, in the two weeks before the census, did not spend time caring for their own children or assisting someone with a disability.

Source: Author calculations generated from the Australian Census Longitudinal Dataset using the Australian Bureau of Statistics Data Laboratory

The main focus of our analysis was to find out whether an Indigenous person aged 15–54 years who was not employed in 2006 but had a Certificate III or IV–level educational qualification at that time had a better chance of being employed in 2011 than an Indigenous person with similar characteristics but with a lower-level post-school educational qualification (Certificate I or II). This is of particular policy relevance given that recent dramatic increases in rates of attainment of Certificate III or IV–level qualifications among the Indigenous population raise the question of whether these increased levels of education are contributing to better employment outcomes, such as the Closing the Gap target.

Our analysis confirmed that Indigenous people aged 15–54 years in 2006 who were not employed but had a post-school qualification of any type (including a Certificate I or II) at that time were significantly more likely to be employed in 2011 than those who did not have any post-school qualification.

We did not find strong evidence that having a Certificate III or IV conferred an employment advantage over having a Certificate I or II among the Indigenous population overall. However, there were clear differences between major cities and regional areas. In major cities, for the Indigenous sample, there was a positive marginal effect (although not statistically significant) of having a Certificate III or IV relative to a Certificate I or II, whereas in regional areas the marginal effect of having a Certificate III or IV was negative (although, again, not statistically significant). This suggests that Certificate III or IV qualifications have a differential association with employment compared with Certificate I or II qualifications in major cities, but not in regional areas.

TABLE 7. Marginal effects on the probability of employment in 2011 for Australian population aged 15–54 years who were not employed in 2006, nonremote areas

	Total sample (*n* = 71 014)		Indigenous sample (*n* = 1546)		Non-Indigenous sample (*n* = 69 468)	
Explanatory variables (2006)	Marginal effect	Significance	Marginal effect	Significance	Marginal effect	Significance
Indigenous	–0.12	***	na	na	na	na
Living in a regional area	0.02	***	0.03	ns	0.02	***
Female	–0.08	***	–0.11	***	–0.08	***
Aged 25–34 years	–0.17	***	–0.07	*	–0.18	***
Aged 35–44 years	–0.19	***	–0.06	ns	–0.20	***
Aged 45–54 years	–0.37	***	–0.16	***	–0.37	***
Had completed Year 12	0.05	***	0.13	***	0.05	***
Had a bachelor degree or higher	0.04	***	0.05	ns	0.05	***
Had a diploma or advanced diploma	0.02	ns	0.07	ns	0.02	ns
Had a Certificate III or IV	0.03	**	0.01	ns	0.04	**
No post-school qualification	–0.05	***	–0.16	*	–0.05	***
Lower household income	–0.06	***	–0.14	***	–0.06	***
Higher household income	0.03	***	0.13	ns	0.03	***
Disability	–0.28	***	–0.35	***	–0.28	***
Caring for own children	0.02	***	–0.01	ns	0.02	***
Caring for a person with a disability	–0.04	***	–0.07	ns	–0.04	***

na = not applicable; ns = not significant; * = significance level (greater numbers of asterisks indicate higher levels of significance)

Notes:

1. Predicted probabilities of base case are 0.764 (total sample), 0.693 (Indigenous sample), 0.762 (non-Indigenous sample).
2. The base case is a male aged 18–24 years living in a major city who had not completed Year 12, had a Certificate I or II as their highest post-school qualification, was living in a household with an equivalised household income of $400–999 per week, had no need for assistance with core activities, and, in the two weeks before the census, did not spend time caring for their own children or assisting someone with a disability.

Source: Author calculations generated from the Australian Census Longitudinal Dataset using the Australian Bureau of Statistics Data Laboratory

Part of the explanation for this appears to be employment disadvantage among Indigenous people with Certificate I or II qualifications in major cities, compared with their non-Indigenous counterparts. It is interesting to note that, in major cities, Indigenous people with a Certificate I or II had a much lower probability of moving into employment (0.642) than their non-Indigenous counterparts (0.777) (keeping other factors constant). In comparison, in regional areas, Indigenous people with a Certificate I or II had a slightly higher probability of moving into employment (0.761) than their non-Indigenous counterparts (0.743), and having a Certificate III or IV did not appear to be associated with a higher probability of moving into employment. Overall, this suggests that higher-level vocational education qualifications are required to compete in the more highly educated labour markets of major cities, but that this is less of an issue in regional areas. Aboriginal and Torres Strait Islander people may encounter a range of employment barriers (Biddle & Lahn 2016), and those 'living as dispersed minorities in urban areas are likely to experience racism and discrimination differently from those living in small communities where they form the majority, rather than the minority, of the population' (Zubrick et al. 2010). The availability of more national-level data sources with information about discrimination (even though specific measures tend to be inconsistent across data sources) provides the opportunity for more detailed analysis of the extent to which the experience of discrimination by Indigenous people varies in different types of location.

In the next section, we present results of our analysis of the Student Outcomes Survey, looking at more recent trends in the employment outcomes of Indigenous vocational education graduates.

TABLE 8. Marginal effects on the probability of employment in 2011 for Australian population aged 15–54 years who were not employed in 2006, major cities

	Total sample (*n* = 51 258)		Indigenous sample (*n* = 647)		Non-Indigenous sample (*n* = 50 611)	
Explanatory variables (2006)	Marginal effect	Significance	Marginal effect	Significance	Marginal effect	Significance
Indigenous	–0.12	***	na	na	na	na
Female	–0.08	***	–0.13	**	–0.08	***
Aged 25–34 years	–0.18	***	–0.04	ns	–0.18	***
Aged 35–44 years	–0.20	***	–0.06	ns	–0.20	***
Aged 45–54 years	–0.38	***	–0.11	ns	–0.38	***
Had completed Year 12	0.05	***	0.15	**	0.05	***
Had a bachelor degree or higher	0.04	**	0.14	ns	0.04	**
Had a diploma or advanced diploma	0.01	ns	0.12	ns	0.01	ns
Had a Certificate III or IV	0.03	*	0.06	ns	0.03	*
No post-school qualification	–0.05	***	–0.12	ns	–0.05	***
Lower household income	–0.06	***	–0.13	**	–0.06	***
Higher household income	0.02	***	0.21	*	0.02	***
Disability	–0.28	***	–0.35	***	–0.27	***
Caring for own children	0.01	ns	–0.03	ns	0.01	*
Caring for a person with a disability	–0.04	***	–0.12	ns	–0.03	***

na = not applicable; ns = not significant; * = significance level (greater numbers of asterisks indicate higher levels of significance)
Notes:
1. Predicted probabilities of base case are 0.776 (total sample), 0.642 (Indigenous sample), 0.777 (non-Indigenous sample).
2. The base case is a male aged 18–24 years living in a major city who had not completed Year 12, had a Certificate I or II as their highest post-school qualification, was living in a household with an equivalised household income of $400–999 per week, had no need for assistance with core activities, and, in the two weeks before the census, did not spend time caring for their own children or assisting someone with a disability.

Source: Author calculations generated from the Australian Census Longitudinal Dataset using the Australian Bureau of Statistics Data Laboratory.

TABLE 9. Marginal effects on the probability of employment in 2011 for Australian population aged 15–54 years who were not employed in 2006, regional areas

	Total sample (*n* = 19 756)		Indigenous sample (*n* = 899)		Non-Indigenous sample (*n* = 18 857)	
Explanatory variables (2006)	Marginal effect	Significance	Marginal effect	Significance	Marginal effect	Significance
Indigenous	–0.12	***	na	na	na	na
Female	–0.07	***	–0.08	*	–0.07	***
Aged 25–34 years	–0.15	***	–0.09	*	–0.16	***
Aged 35–44 years	–0.17	***	–0.06	ns	–0.17	***
Aged 45–54 years	–0.33	***	–0.18	**	–0.34	***
Had completed Year 12	0.04	***	0.11	**	0.04	***
Had a bachelor degree or higher	0.06	**	–0.05	ns	0.07	***
Had a diploma or advanced diploma	0.02	ns	0.02	ns	0.03	ns
Had a Certificate III or IV	0.03	ns	–0.03	ns	0.04	*
No post-school qualification	–0.05	*	–0.19	*	–0.04	ns
Lower household income	–0.06	***	–0.15	***	–0.06	***
Higher household income	0.04	**	0.01	ns	0.04	**
Disability	–0.28	***	–0.33	**	–0.28	***
Caring for own children	0.04	***	0.00	ns	0.04	***
Caring for a person with a disability	–0.03	***	–0.02	ns	–0.03	***

na = not applicable; ns = not significant; * = significance level (greater numbers of asterisks indicate higher levels of significance)

Notes:

1. Predicted probabilities of base case are 0.751 (total sample), 0.761 (Indigenous sample), 0.743 (non-Indigenous sample).
2. The base case is a male aged 18–24 years living in a major city who had not completed Year 12, had a Certificate I or II as their highest post-school qualification, was living in a household with an equivalised household income of $400–999 per week, had no need for assistance with core activities, and, in the two weeks before the census, did not spend time caring for their own children or assisting someone with a disability.

Source: Author calculations generated from the Australian Census Longitudinal Dataset using the Australian Bureau of Statistics Data Laboratory

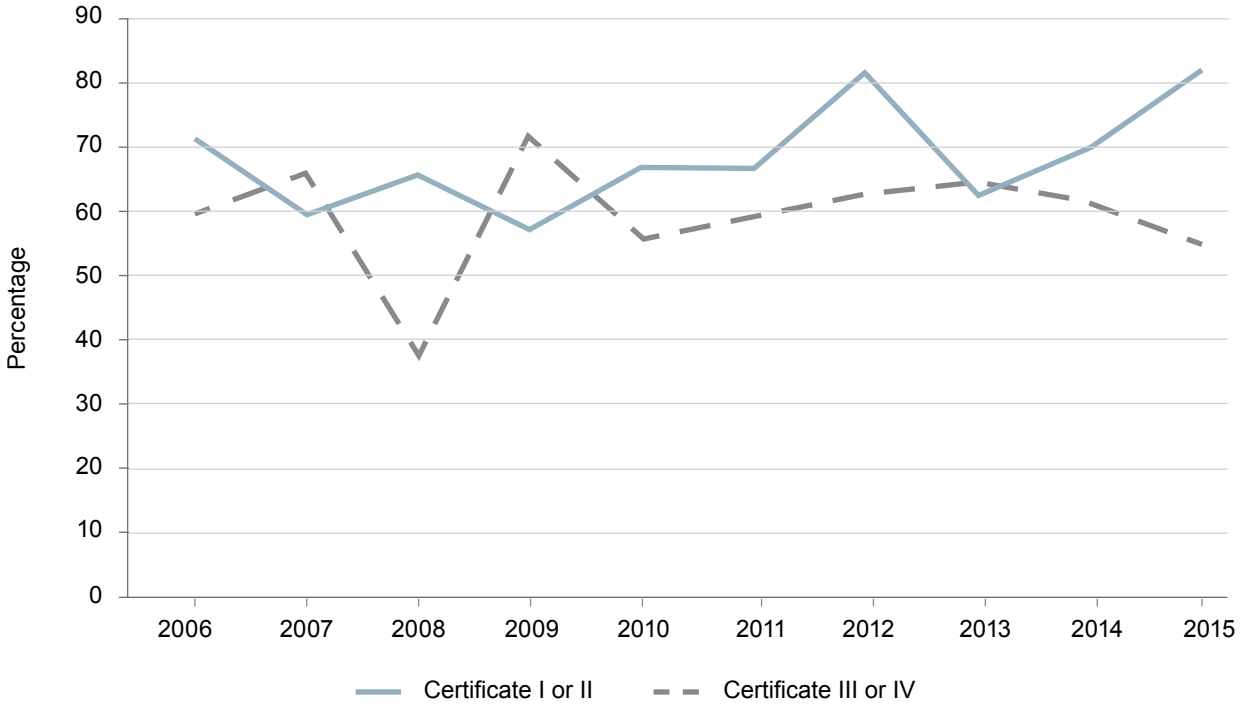
Analysis of results from annual Student Outcomes Survey

The Student Outcomes Survey yields annual data about people who completed a vocational education qualification ('graduates'), as well as 'subject completers'. The Student Outcomes Survey dataset includes information about graduates' qualification level, their employment status before undertaking training, whether they identified 'getting a job' as one of the benefits of undertaking the training, Indigenous status and age (and various other characteristics). Using the ACLD, it is not possible to focus on recent graduates, because the census does not collect information about when a qualification was completed. In contrast, the Student Outcomes Survey covers recent graduates and includes information about employment outcomes with reference to the training undertaken. Analysis of data from this source therefore provides more contemporary information about employment outcomes attributed by the graduates to their training. However, the size of the responding sample is too small to meaningfully compare major cities with regional areas.

Figs 9 and 10 present information about Indigenous and non-Indigenous graduates aged 15–54 years who were not employed before undertaking training and who reported that 'getting a job' was one of the benefits of undertaking training (by program level). Not surprisingly, given the much smaller numbers, there is more variability from year to year in the Indigenous population than in the non-Indigenous population.

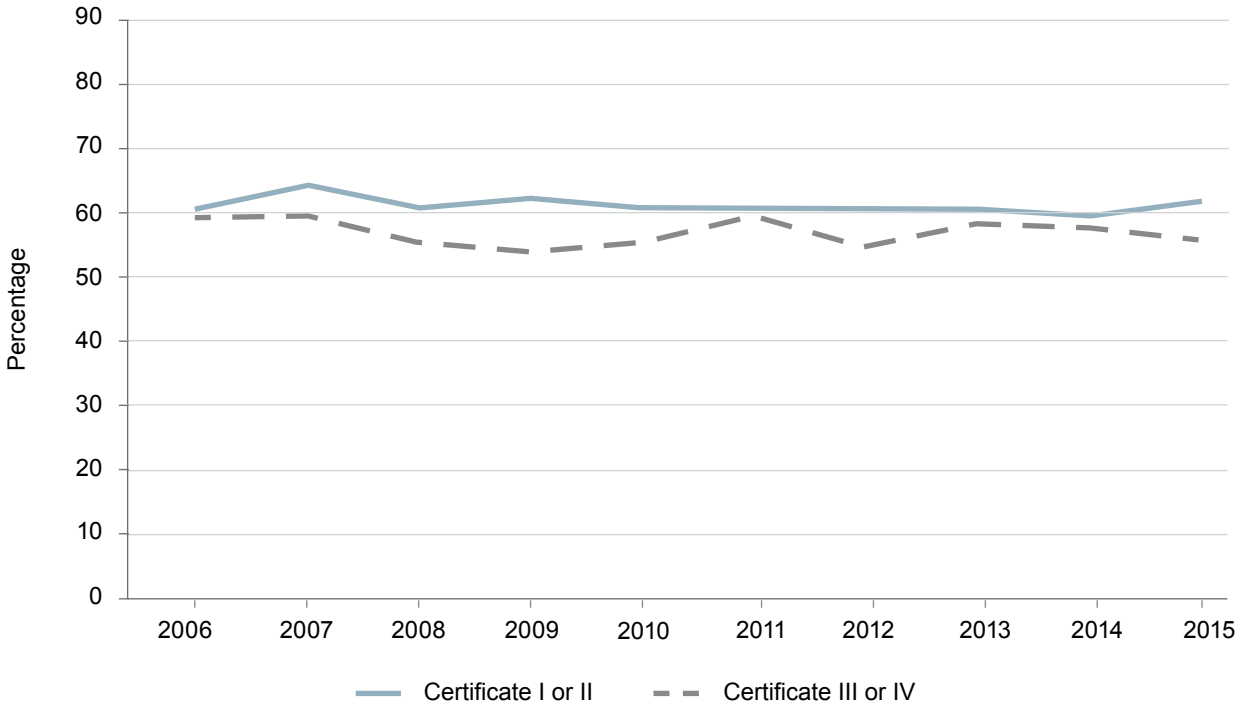
For both Indigenous and non-Indigenous graduates who had obtained a Certificate III or IV qualification, and were not employed before undertaking training, the percentage who reported gaining a job as a result of their training was generally above about 60% during the decade to 2015. For those who had obtained a Certificate I or II, the percentage was always at least a little lower for the non-Indigenous population, but not always lower for the Indigenous population. Since 2013, however, for both

FIG. 9. Percentage of Indigenous vocational education graduates aged 15–54 years who were not employed before undertaking training and got a job as a result of undertaking training, by level of qualification, 2006–15



Source: Student Outcomes Survey using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016

FIG. 10. Percentage of Non-Indigenous vocational education graduates aged 15–54 years who were not employed before undertaking training and got a job as a result of undertaking training, by level of qualification, 2006–15



Source: Student Outcomes Survey using VOCSTATS (www.ncver.edu.au/resources/vocstats.html), extracted on 13 September 2016

Indigenous and non-Indigenous vocational graduates who were not employed before undertaking training, the percentage who reported gaining a job as a result of their training has been increasing among those obtaining a Certificate III or IV qualification and decreasing among those obtaining a Certificate I or II qualification. This suggests that recent graduates (whether Indigenous or non-Indigenous) who have obtained a Certificate III or IV qualification are relatively advantaged in terms of their employment outcomes, compared with graduates obtaining a Certificate I or II.

In summary, our multivariate analysis of outcomes from 2006–11 using the ACLD did not provide strong evidence that Indigenous people with a Certificate III or IV were more likely than those with a Certificate I or II to gain employment, although in major cities having such qualifications may offset employment disadvantage experienced by Indigenous people with lower-level qualifications, compared with their non-Indigenous counterparts. But this may be changing: our analysis of the Student Outcomes Survey indicates that, since 2013, a larger percentage of those (previously not employed) who had attained a Certificate III or IV reported gaining a job as a result of their training, compared with those who had attained a Certificate I or II.

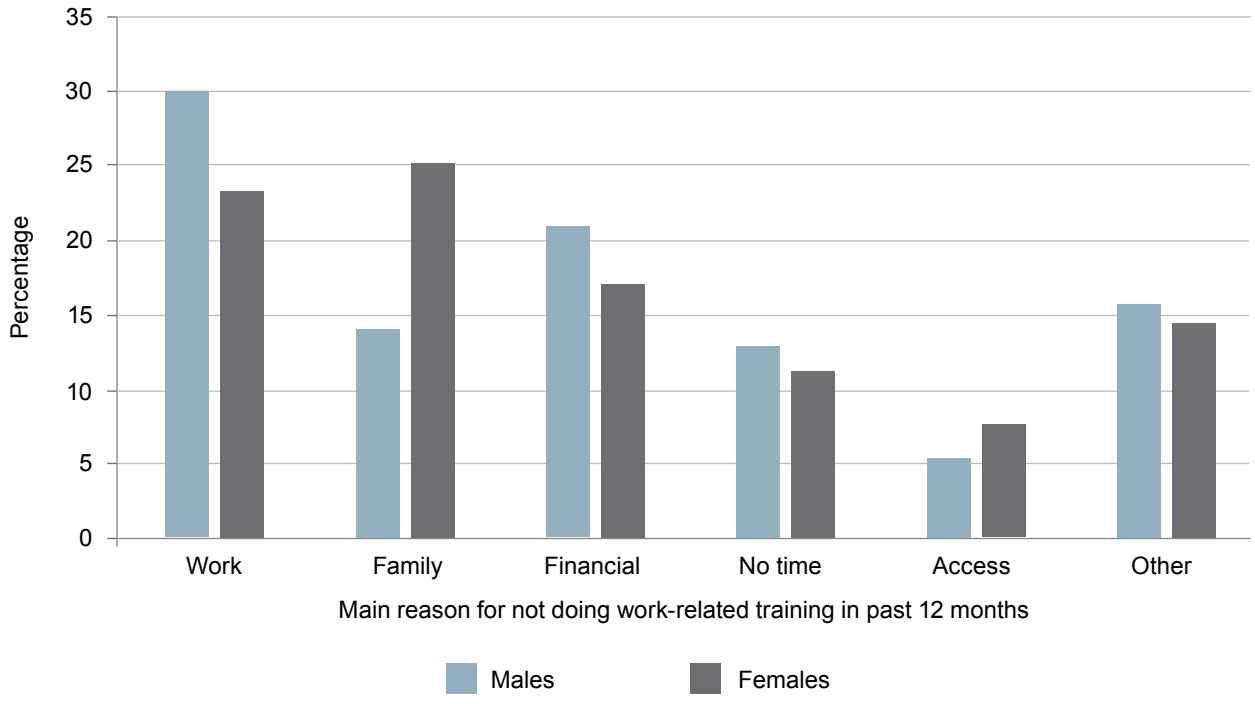
Barriers to participation in education

The 2014–15 NATSISS asked survey participants whether they had been able to attend all the work-related training they wanted to in the previous 12 months, and, if not, why not. The analysis presented here does not distinguish between those who were employed and those who were not.

Overall, an estimated 62 100 Indigenous people aged 15–64 years (nearly 15% of this population) said that they had not been able to do all the work-related training that they wanted to; this group was made up of almost equal numbers of women and men.

Fig. 11, which shows the main reasons for being unable to undertake work-related training, despite wanting to, illustrates gender differences in reported barriers to participation in vocational education. It shows that, for Indigenous men aged 15–64, the most frequently reported main reason was work related, including 'lack of employer support', 'too much work' and 'other work-related reasons'. In contrast, among Indigenous women in this age group, personal or family reasons, including 'caring for family members' and 'personal or other family reasons', were most frequently reported as the main reason they were unable to undertake all the work-related training they wanted to do.

FIG. 11. Reasons for Indigenous people aged 15–64 years being unable to do all the work-related training they wanted to in the previous 12 months, 2014–15



Source: Australian Bureau of Statistics – tables generated from the 2014–15 National Aboriginal and Torres Strait Islander Social Survey using Tablebuilder

Discussion and conclusion

Our report shows that, overall, the educational stocks of the Indigenous population have increased substantially over the past decade, with particularly noticeable increases in the percentage of the population with a Certificate III–level qualification. Among those with any level of post-school educational qualification, the employment rate was higher than among those with no post-school qualification.

Drawing on NATSISS data from 2002, 2008 and 2014–15, we found that the employment rate for the Indigenous population aged 15–64 years remained stable between 2008 and 2014–15, despite a decline in the employment rate for the total Australian population in the same age group. We showed that, in 2014–15, a greater contribution to the employment rate came from the Certificate III or IV category, reflecting both the influx of people into this category and the higher employment rate in this category compared with lower educational categories. This suggests that the increased educational attainment of Aboriginal and Torres Strait Islander people may have provided a buffer against the declining employment rate that occurred among the total Australian population. More detailed analysis accounting for differences in the regional, age and gender composition of the Indigenous and non-Indigenous populations would be informative. For example, previous work has shown that employment among Indigenous youth in remote areas differed from that among Indigenous youth in nonremote areas, but employment among older Indigenous people in remote areas did not differ as much from those in nonremote areas (Gray et al. 2014).

We then looked at whether having a Certificate III or IV in 2006 was associated with an increased probability of moving into employment by 2011 (compared with having a Certificate I or II), drawing on the ACLD. The main finding from this analysis was that having a Certificate III or IV appeared to increase the probability of moving into employment among Indigenous people living in major cities (partly because the employment prospects of those with a Certificate I or II were markedly lower than for the comparable non-Indigenous group). However, among those living in regional areas, where non-Indigenous people with a Certificate III or IV had a greater probability of moving into employment by 2011, this was not the case among Aboriginal and Torres Strait Islander people with a Certificate III or IV. This finding merits further investigation, which will be supported by the addition of another wave to the ACLD following the 2016 Census.

A forthcoming report by the NCVER notes that, in very remote areas of Australia, 'the expectations of VET as a vehicle for transition to employment or higher education have not been realised', mainly because of high rates of attrition in lower-level courses (Guenther et al. forthcoming). Presenting research based on a number of case studies, that report examines the links between VET in very remote areas and employability. The authors note that, although retention and completion rates were low, participants in VET training reported a range of benefits of the training, including increased self-confidence and improved communication; maintaining connections to language, Country and culture; and opportunities to undertake further study (Guenther et al. forthcoming).

Our analysis gives cause for optimism in relation to employment outcomes for Aboriginal and Torres Strait Islander people living in nonremote areas, given the increased participation in higher-level VET programs, and the positive association between acquiring a post-school qualification (particularly a higher-level qualification such as Certificate III and above) and employment outcomes for this population. The findings of the NCVER report constitute a valuable complementary study, using qualitative data, of the enablers and barriers to VET retention and completion in very remote areas, along with alternative measures of success (Guenther et al. forthcoming).

Although our analysis has focused on labour supply, it is also important to consider factors affecting labour demand during the period covered by the ACLD (August 2006 to August 2011). The employment-to-population ratio among the working-age population in Australia as a whole declined through 2009 following the global financial crisis, and in August 2011 remained lower than it had been in August 2006. Some evidence suggests that, unlike previous recessions, the adverse effects of the global financial crisis were more likely to be felt by skilled workers (Wooden 2012).

We focused on the transition from not being employed in 2006 to being employed in 2011, and this provided some illuminating insights. Of course, there is no simple and direct pathway from education to employment. New industry requirements for qualifications, or individual aspirations for promotion or a change of career may motivate those already in employment to undertake a vocational education program. In such cases, there may be other benefits of training, such as increased job security, higher pay, improved working conditions and greater job satisfaction. Although these are important benefits, they are beyond the scope of this report. The ACLD, which comprises linked information from censuses conducted five years apart, has limitations for examining multiple shorter-term and potentially overlapping transitions, such as those between vocational education and employment. The ACLD does not contain detailed information about the timing, number and duration of

education and employment events, such as when an individual attained their educational qualification, how many episodes of employment an individual had and how long these (and any breaks between them) lasted.

Another issue to consider in relation to the ACLD analysis is that it is based on the linked sample of those identified as Indigenous in the 2006 Census. This is an advantage because it controls for the potentially confounding effects of changing Indigenous identification over time (Biddle 2015, Biddle & Crawford 2015); previous analysis has shown that measured improvements in socioeconomic outcomes of the Indigenous population between 2006 and 2011 based on cross-sectional census data may have been overstated as a result of identification change. However, it means that the baseline data are now a decade old. The administrative and survey data analysed as part of this paper show that the substantial increase in the percentage of working-age Indigenous Australians enrolling in, and attaining, higher-level vocational qualifications has occurred more recently and in younger cohorts, where Indigenous identification change occurs most frequently (Biddle 2015).

Using more contemporary results drawing on the repeated cross-sections of the Student Outcomes Survey, we showed that the percentage who gained employment among the increasingly large cohort of the Indigenous population with Certificate III and higher qualifications has been increasing since 2013. A limitation of this analysis is that using the public dataset that is readily available via VOCSTATS (a product that allows users to construct tables via an interactive web interface, using databases containing data from various NCVER collections), it was not possible to undertake a multivariate analysis controlling for all the variables used in the ACLD analysis.

Educational trends among the Australian population more broadly also form an important part of the context for this analysis. Between 2006 and 2011, the percentage of both the Indigenous and non-Indigenous working-age populations who had a post-school qualification increased by about 5 percentage points. Among the Indigenous population, most of this increase occurred at the certificate level; in contrast, among the non-Indigenous population, most of the increase occurred at diploma level or above (Crawford & Biddle 2015).

The Behrendt Review (Behrendt et al. 2012) described how Indigenous students are often steered into vocational education instead of higher education because of low teacher expectations. The authors also argued that only qualifications at Certificate IV level or above facilitate entry to university; because most Indigenous enrolments are at a lower level than this, the VET sector acts as a diversion from higher education for Indigenous students. This is an important concern; however, it is also the case that Certificate III is a prerequisite for many Certificate IV programs. The dramatic increases in the attainment of Certificate III qualifications in recent years may provide a pathway to higher-level qualifications for many among the Indigenous population.

Our analysis has reaffirmed previous research showing that the relationship between education and employment is stronger among the Indigenous population than among the non-Indigenous population, and that the biggest increase in employment comes from attaining any post-school qualification (Taylor et al. 2012). The link between education and employment is influenced by a complex set of potentially interacting factors. Human capital – individual knowledge and skills – is important, but it is also important to understand labour supply and demand in regional labour markets, and employment-related relocation. Previous research has highlighted how Indigenous employment has changed by region, hours worked, industry and occupation (Biddle et al. 2008, Taylor et al. 2012, Gray et al. 2014). In the context of changes in the Australian labour market from 1993 to 2013 described by Wilkins and Wooden (2014), our analysis of Indigenous trends in VET participation and attainment indicates some potential opportunities for Indigenous employment growth. For example, one-third of Indigenous women completing a Certificate III in each of the five years from 2010 to 2014 gained a qualification in the field of human welfare studies and services, which includes the growth areas of children's services and aged care. Another opportunity is the Australian Government's Indigenous Procurement Policy, launched in 2015, which aims to 'drive demand for Indigenous goods and services, stimulate Indigenous economic development and grow the Indigenous business sector' by setting a target for the number of contracts to be awarded to Indigenous business, as well as through other conditions, such as minimum Indigenous participation requirements for certain contracts (DPMC 2016b). Vocational Training and Employment Centres, funded by the Australian Government's Indigenous Advancement Strategy, aim to provide vocational training that is directly related to available jobs and prioritise the most disadvantaged jobseekers (DPMC 2016c). Given that the large increase in participation in higher-level VET and attainment of vocational qualifications among Indigenous people is quite recent, little is known about the effect of government policy in this area.

The release of data from the 2016 Census will provide a timely opportunity to revisit these types of analyses to provide insights into the relationship between the increasing attainment of higher-level vocational qualifications and employment among Aboriginal and Torres Strait Islander people.

Appendix

TABLE A1. Numbers of Indigenous people aged 15–64 years with different levels of education, 2002 to 2014–15

Characteristic	2002	2006[a]	2008	2011[a]	2014–15
Indigenous males					
With tertiary educational qualifications	33 300	26 700	43 700	40 200	88 500
Bachelor degree or higher	3 300	3 600	5 700	5 200	8 000
Diploma or advanced diploma	2 200	2 900	4 200	4 300	8 500
Certificate III or IV	15 500	16 900	21 800	25 900	50 000
Certificate I or II	9 100	1 900	8 800	3 200	19 500
Certificate (level not determined)	3 200	1 300	3 200	1 600	2 500
No tertiary educational qualifications	94 400	81 400	100 900	96 300	107 300
Total	127 700	108 000	144 600	136 500	196 000
Indigenous females					
With tertiary educational qualifications	35 600	28 900	43 700	46 600	102 400
Bachelor degree or higher	5 600	6 700	5 700	10 100	12 300
Diploma or advanced diploma	4 900	5 600	4 200	8 500	13 000
Certificate III or IV	8 500	10 700	21 800	19 200	47 200
Certificate I or II	13 500	3 700	8 800	5 600	27 100
Certificate (level not determined)	3 100	2 400	3 200	3 200	2 800
No tertiary educational qualifications	102 800	90 900	100 900	104 000	111 400
Total	138 400	119 700	144 600	150 600	213 800
Indigenous people					
With tertiary educational qualifications	68 900	55 500	93 200	86 900	190 600
Bachelor degree or higher	8 900	10 200	14 100	15 300	20 200
Diploma or advanced diploma	7 100	8 500	12 400	12 900	21 700
Certificate III or IV	23 900	27 500	41 600	45 100	96 900
Certificate I or II	22 600	5 600	19 400	8 800	46 300
Certificate (level not determined)	6 400	3 700	5 600	4 800	5 500
No tertiary educational qualifications	197 100	172 200	208 600	200 300	218 600
Total	266 100	227 800	301 800	287 100	409 500

a Excludes cases where the level of educational qualification was unable to be determined.
Note: Numbers are rounded to the nearest hundred.
Source: Australian Bureau of Statistics – tables generated from the 2006 and 2011 censuses using Tablebuilder; and the 2002, 2008 and 2014–15 National Aboriginal and Torres Strait Islander Social Survey using expanded confidentialised unit record files and Tablebuilder

TABLE A2. Numbers of Australians aged 15–64 years, by Census 2011 categories of level and field of post-school qualification

Characteristic	Indigenous		Non-Indigenous		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Highest level of educational attainment						
Postgraduate degree level	1 900	1	574 200	4	576 000	4
Graduate diploma and graduate certificate level	1 700	1	270 300	2	272 100	2
Bachelor degree level	11 700	4	2 134 400	16	2 146 100	16
Advanced diploma and diploma level	12 900	4	1 194 700	9	1 207 500	9
Certificate level	58 600	18	2 657 700	20	2 716 400	20
Level of education inadequately described	3 000	1	181 800	1	184 800	1
Level of education not stated	40 400	12	524 400	4	564 800	4
No post-school qualification	200 300	61	5 788 500	43	5 988 700	44
Total	330 500	100	13 325 900	100	13 656 400	100
Field of study						
Natural and physical sciences	800	0	242 800	2	243 600	2
Information technology	1 300	0	270 700	2	272 100	2
Engineering and related technologies	12 900	4	1 226 100	9	1 239 000	9
Architecture and building	7 200	2	457 000	3	464 200	3
Agriculture, environmental and related studies	4 100	1	172 900	1	177 000	1
Health	9 200	3	742 600	6	751 700	6
Education	7 500	2	589 700	4	597 300	4
Management and commerce	17 400	5	1 573 700	12	1 591 000	12
Society and culture	15 800	5	895 900	7	911 700	7
Creative arts	3 100	1	297 200	2	300 300	2
Food, hospitality and personal services	7 200	2	439 000	3	446 200	3
Mixed field programs	400	0	10 500	0	10 900	0
Field of study inadequately described	1 800	1	102 300	1	104 100	1
Field of study not stated	41 600	13	517 100	4	558 700	4
No post-school qualification	200 300	61	5 788 500	43	5 988 700	44
Total	330 500	100	13 325 900	100	13 656 400	100

Source: Australian Bureau of Statistics – tables generated from the 2011 Census using Tablebuilder

Notes

1. Judging by the marginal effects alone (small sample sizes mean that statistical significance can be difficult to achieve).

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