

The impact of disadvantage on VET completion and employment gaps

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About the research

The impact of disadvantage on VET completion and employment gaps

Duncan McVicar and Domenico Tabasso, Melbourne Institute of Applied Economic and Social Research

Educational attainment tends to be lower and labour market outcomes poorer among disadvantaged individuals. Here ‘disadvantage’ refers to those who have any form of disability, Indigenous Australians, those who live in low socioeconomic status (SES) areas and those with limited English language skills. The vocational education and training (VET) sector provides an entry point into post-compulsory education for disadvantaged individuals, and in doing so gives them the opportunity to develop skills and knowledge of immediate usability in the labour market.

But do disadvantaged students gain the same benefit from participating in vocational education and training as their non-disadvantaged peers? More specifically, how do their qualification completion rates and post-VET labour market experiences compare? Previous research, including recent work undertaken by the National Centre for Vocational Education Research (NCVER; Griffin 2014), suggests that individuals from some disadvantaged backgrounds tend to have poorer outcomes in both respects.

Taking advantage of the National VET Provider Collection and the Student Outcomes Survey, this work builds on previous research by investigating the impact of belonging to one or more of these disadvantaged groups on VET completion and on subsequent employment outcomes. The authors find that sizeable gaps in both completion and employment rates (post-VET completion) exist between the disadvantaged individuals and their non-disadvantaged peers.

Key messages

- Learners from disadvantaged backgrounds who enrol in VET are less likely to complete by comparison with their non-disadvantaged peers. The completion gap is as much as ten percentage points for Indigenous students and those experiencing multiple disadvantage, and as low as two percentage points for those with limited English language skills.
- Most of these completion gaps can be explained by differences in individual characteristics beyond the disadvantage (for example, age, gender) and course characteristics (for example, field of education, course duration).
- For some disadvantaged learners, completion gaps do not necessarily directly accord with employment gaps; for example, individuals with limited English skills have the greatest difficulties in finding a job, with the gap for non-disadvantaged peers estimated to be around 36 percentage points.
- Employment status before starting the VET course, not actually completing the course, is a key factor in determining employment outcomes post-VET. Therefore, policies or measures aimed at closing the completion gap may not, in themselves, be effective in closing employment gaps.

Dr Craig Fowler
Managing Director, NCVER

Contents



Tables and figures	6
Executive summary	8
Introduction	10
Literature review	12
Completion gaps for disadvantaged students	12
Employment gaps for individuals from disadvantaged groups	13
VET completion and labour market outcomes	14
Completion gaps	16
The National VET Provider Collection	16
Completion gaps for disadvantaged students	20
Decomposition analysis	21
Decomposition analysis of completion gaps	22
Employment gaps	27
The Student Outcomes Survey	27
Employment gaps for disadvantaged groups	29
Decomposition analysis of employment gaps	30
Gaps in escaping joblessness	34
Conclusion	38
References	40
Appendices	
A: Additional descriptive statistics	42
B: Course completion: expanded specification	47
C: Module completion	48
D: Employment gaps: course completers only	50
E: Employment gaps: module completers only	51
F: Exiting unemployment gaps: course completers only	52
G: Exiting unemployment gaps: module completers only	53
NVETR Program funding	54

Tables and figures

Tables

1	National VET Provider Collection data: descriptive statistics, 2008 entrants, at time of enrolment	17
2	Probability of course completion, main decomposition results	26
3	Probability of course completion, decomposition results: contributions of additional disadvantages	26
4	Student Outcomes Survey data: descriptive statistics, 2008 VET entrants, at time of interview	28
5	Probability of employment, all individuals, main decomposition results	33
6	Probability of employment, all individuals, decomposition results: contributions of additional disadvantages	33
7	Transition from unemployment to employment, main decomposition results: graduates and module completers combined	37
8	Transition from unemployment to employment, decomposition results: contributions of additional disadvantages, graduates and module completers combined	37
A1	Average values of individual and course observable characteristics, by disadvantage category: National VET Provider Collection data	43
A2	Average values of individual and course observable characteristics, by disadvantage category: Student Outcomes Survey data	45
B1	Probability of course completion, main decomposition results, including interaction effects	47
B2	Probability of course completion, decomposition results, including interaction effects: contributions of additional disadvantages	47
C1	Module completion, main decomposition results	49
C2	Module completion, decomposition results: contributions of additional disadvantages	49
D1	Probability of employment, main decomposition results: VET graduates only	50
D2	Probability of employment, decomposition results, including interaction effects: contributions of additional disadvantages: VET graduates only	50
E1	Probability of employment, main decomposition results: module completers only	51

E2	Probability of employment, decomposition results, including interaction effects: contributions of additional disadvantages: module completers only	51
F1	Transition from unemployment to employment, main decomposition results: VET graduates only	52
F2	Transition from unemployment to employment, decomposition results, including interaction effects: contributions of additional disadvantages: VET graduates only	52
G1	Transition from unemployment to employment, main decomposition results: module completers only	53
G2	Transition from unemployment to employment, decomposition results, including interaction effects: contributions of additional disadvantages: module completers only	53

Figures

1	Duration of completed VET courses, 2008 entrants, months	19
2	Gap in the percentage of completed VET courses between disadvantaged and non-disadvantaged students	20
3	Oaxaca–Blinder decomposition of the gap in the probability of course completion	24
4	Gap in the percentage of employed individuals between disadvantaged and non-disadvantaged VET graduates and module completers	30
5	Oaxaca–Blinder decomposition of the gap in probability of employment after VET course	31
6	Gap in the percentage between non-disadvantaged and disadvantaged VET graduates and module completers moving from unemployment or out of the labour force to employment after VET	34
7	Oaxaca–Blinder decomposition of the gap in the probability of a transition from unemployment to employment after VET course	35
A1	Percentage of VET course completed, by type of disability	42
C1	Gap in the percentage of completed VET modules between disadvantaged and non-disadvantaged students	48
C2	Oaxaca–Blinder decomposition of the gap in the rate of module completion	48

Indigenous students and individuals who have multiple disadvantages experience the largest gaps in completion.



Executive summary

Vocational education and training (VET) provides individuals with skills and knowledge of immediate usability in the labour market. This function of VET may be more important for particular groups of students such as Indigenous students or those with a disability; that is, students whose education and labour market opportunities might otherwise be more limited.

But do such disadvantaged students benefit from participating in vocational education and training to the same degree as their non-disadvantaged peers? More specifically, how do their qualification completion rates and post-VET labour market experiences compare? The existing evidence suggests that students from some disadvantaged backgrounds tend to have poorer outcomes in both respects.

In this report we examine the issue of VET completion gaps and the subsequent gaps in labour market outcomes for students from four (not mutually exclusive) disadvantaged groups, namely:

- students who report having any form of disability
- Indigenous students
- students who live in low socioeconomic status (SES) areas¹
- students with limited English language skills.

This report specifically addresses the following four research questions. The main findings for each question are given under each question.

- Is there a VET completion gap for students from these disadvantaged groups?

On average, we estimate a lower completion rate, of six percentage points, among those from a disadvantaged group compared with that of those who are not from a disadvantaged group (completion gap). Indigenous students and individuals who have multiple disadvantages are those who experience the largest gaps in completion, with differences in completion rates close to ten percentage points. For individuals with low English language proficiency we find only a very small course completion gap, of fewer than two percentage points. Completion gaps for the other two groups – students with a disability and students living in low SES areas – fall in between these two extremes.

- How much of this gap can be explained by differences in the students' other characteristics² available in the data between the particular disadvantaged group and other students?

Of the average six-percentage-point completion gap, around four percentage points (or 63%) can be explained by differences in other characteristics available in the data (National VET Provider Collection), leaving around two percentage points 'unexplained' by the data. In

¹ Low SES is defined as living in an area that is in the lowest quintile (20%) on the ABS Index of Relative Social Disadvantage in the 2011 Census (ABS 2013).

² These include a range of socio-demographic and course characteristics measured at the time of enrolment and which can be used to control for differences between individual students; for example, sex, age, reason for undertaking a VET course, qualification level, field of education, labour force status before undertaking the course. The full range of individual and course characteristics used to control for differences between students is detailed below.

other words, were students from these disadvantaged groups to have the same observable characteristics and to enrol in the same courses as their non-disadvantaged peers, they would still experience a two-percentage-point completion gap, on average.

- Are there any post-study employment gaps for individuals from these disadvantaged groups by comparison with non-disadvantaged individuals?

Students from the disadvantaged groups also had a lower chance of post-study employment by comparison with their more advantaged peers (employment gap). Graduates with low levels of proficiency in English have the greatest difficulty in terms of employment opportunities: their chances of finding a job after VET are 45 percentage points lower than native English speaker graduates. In contrast, the gap is relatively small (around ten percentage points) for Indigenous graduates and for VET students who live in low SES areas, independent of their VET completion state.

- How much of these employment gaps are explained by the measured gaps in completion?

On average across the four groups, the completion gaps play only a very small role in explaining the gaps in employment (with the partial exception of Indigenous students). Most important in explaining the employment gaps are the other student characteristics available in the data (Student Outcomes Survey), which, on average, explain around 65% of the employment gaps between students from the four disadvantaged groups and their non-disadvantaged peers. Among the student characteristics, differences in employment rates prior to the VET study explain around a third of the employment gap. The remaining gap (35%) is due to factors not included in the model or to ‘unexplained’ characteristics, which may be related to the specific disadvantages themselves. For Indigenous students, the differences in course and individual characteristics available in the data explain more than 95% of the overall employment gap.

We also decompose the post-study employment gap associated with being disadvantaged for individuals who were unemployed before entering study. On average, the differences in student and course characteristics available in the data are estimated to explain only 26% of the employment gap. Once again, Indigenous students are the exception to this pattern, where the differences in observable characteristics are estimated to explain all of the gap (and more).

Policy implications

Because the differences in student and course characteristics available in the data explain much of the completion and post-study employment gaps, policy interventions that target these differences may be effective in closing post-study employment gaps. In particular, measures targeted at supporting the course choices of people from disadvantaged backgrounds, such as career counselling and the provision of labour market information, may help to close the gap in post-study employment.

Importantly, the small contribution of completion gaps in explaining employment gaps means that measures aimed at improving course retention will not in themselves help to close employment gaps. The partial exception to this is Indigenous students – closing the completion gap for this group could plausibly narrow, although nowhere near eliminate, the employment gap.

Boosting participation rates will only be effective if disadvantaged students are no less likely to complete a qualification than more advantaged students.

Introduction

Educational attainment tends to be generally low and labour market outcomes relatively poor for individuals living in low SES areas, those with disabilities, Indigenous people, and people with limited English language skills (Van Ewijk & Slegers 2010; Wilkins 2003). In fact, lower educational attainment among individuals from these groups is one reason why their labour market outcomes tend to be relatively poor (Rumberger & Lamb 2003; Polidano, Hanel & Buddelmeyer 2013). Closing the gap in the level of educational attainment between these disadvantaged individuals and others may therefore help to reduce disparities in labour market outcomes (Kell 2010).

Part of the gap in educational attainment is explained by the lower participation rates in post-compulsory education and training among these groups, particularly at higher qualification levels (Le & Miller 2005). Policy interventions that increase the participation rates of these groups, including at higher qualification levels, could therefore contribute to closing the gap in educational attainment. But while boosting participation rates is likely to be necessary for closing the educational qualifications gap, it will only be sufficient if education and training participants from these disadvantaged groups are no less likely than their more advantaged counterparts to complete the qualification for which they have enrolled. This, unfortunately, seems unlikely to be the case. For example, we know that students with disabilities are less likely to complete a VET³ qualification, if they do enrol (Karmel & Nguyen 2008; Polidano & Mavromaras 2011). We also know that students with disabilities, Indigenous students and students from non-English speaking backgrounds are less likely to pass VET modules (alternatively called subjects) than other students (John 2004).

This project builds on these earlier contributions to provide an analysis of the effects of belonging to one or more of these disadvantaged groups on the completion of VET modules and VET courses. To do this, we first provide a descriptive analysis of the magnitude of the gaps in both module and course completion rates experienced by students from these groups. Second, we examine the extent to which any such gaps can be explained by other observable differences between students from these groups and their peers, drawing out the particular differences that contribute most to observed completion gaps. Third, we explore the extent to which such completion gaps contribute to any subsequent employment gaps among those previously enrolled in vocational education and training.

We focus on four groups of students whom we identify as disadvantaged: students who report having any form of disability; Indigenous students; students who live in low SES areas⁴; and students with limited English language skills. Some students belong to more than one of these groups. Three of these four groups correspond to those identified by the National VET Equity Advisory Council (NVEAC; 2013). The fourth – students with limited English language skills – is similar but not identical to another NVEAC equity group (culturally and linguistically diverse students).

³ This study focuses on VET in part because enrolments in tertiary education and training among students from disadvantaged backgrounds are much more likely to be in the VET sector rather than in the higher education sector.

⁴ Low SES is defined as living in an area that is in the lowest quintile (20%) on the ABS Index of Relative Social Disadvantage in the 2011 Census (ABS 2013).

Specifically, we answer the following four research questions:

- Is there a VET completion gap for students from these disadvantaged groups?
- How much of this gap can be explained by differences in the students' other characteristics available in the data between the particular disadvantaged group and other students?
- Are there any post-study employment gaps for individuals from these disadvantaged groups by comparison with non-disadvantaged individuals?
- How much of these employment gaps are explained by the measured gaps in completion?

For the first two questions we exploit rich administrative data from the National VET Provider Collection (VETPC) for the population of working-age (15–65 years) VET students enrolling in a VET course in 2008 and tracked until the end of 2011. We examine two alternative measures of completion. For the last two questions we use rich survey data from the NCVET Student Outcomes Survey (SOS), which collects data on labour market outcomes for large samples of course completers and course non-completers who completed at least one module. The data are collected a year after the students leave their course.

The Australian VET system is characterised more generally by low course completion rates.



Literature review

Completion gaps for disadvantaged students

Previous research has tended to focus on a single disadvantage when analysing the existence and magnitude of a VET completion gap. Our report builds on this previous research, but adopts a more general approach, covering individuals experiencing different forms of disadvantage.

For example, Karmel and Nguyen (2008) use data from the NCVER National VET Provider Collection to assess how different types of disability impact on VET completion. Their empirical analysis is based on a decomposition method similar to the one we use here. The results indicate that disabilities can have very different effects on the likelihood of completion. The authors split the students into ten different categories on the basis of the disability and find that for only four of these categories can the lower completion rate be attributed directly to the disability. In all other cases the poor completion rates are mostly explained by other (non-disability-related) observable characteristics. As a consequence, policy aiming to improve the completion rates of students with disabilities should take these differences into account, and should not treat students with disabilities as a uniform group.

Polidano and Mavromaras (2011) use the Household, Income and Labour Dynamics in Australia (HILDA) Survey data to assess whether the type and severity of the disability influences the participation in and completion of VET courses. They draw three main conclusions. First, having a disability does not affect participation in vocational education. Second, completion rates are linked to the severity but, in contrast to Karmel and Nguyen (2008), not type of disability. This may in part reflect the fact that data constraints mean that Polidano and Mavromaras can only identify four broad categories of disability. Finally, the availability of tangible support can improve the completion rates of students with disabilities, especially those with mental health conditions.

The Australian VET system is characterised more generally by low course completion rates; the average completion rate for VET courses commenced in 2012 is around 36%. Conversely, VET students tend to complete around 80% of the VET modules they attend (NCVER 2014). John (2004) studied whether a gap exists in module completion rates for students from various disadvantaged groups, including those with disabilities, Indigenous students, and students from non-English speaking backgrounds. He finds evidence of module completion gaps for each of these three groups. He also finds other characteristics, including gender, prior education and location, to be associated with module completion rates. Although our methodology differs somewhat from the one used by John, his results are similar to those we present and provide us with a first test on the validity of our findings.

The studies briefly outlined so far show that a completion gap exists for various groups of disadvantaged VET students. Several studies have focused on the design of strategies to address this issue. Volkoff, Clarke and Walstab (2008) examined the strategies adopted by 58 TAFE (technical and further education) institutions to attract a high level of engagement in education for disadvantaged students. They found that larger institutions located in capital cities are more capable of providing disadvantaged students with better facilities and services to facilitate their inclusion in VET programs. The provision of VET programs in

line with the needs of local communities and the demands of the market is of particular relevance in enhancing the effectiveness of the inclusiveness strategies.

Research by Helme and Lamb (2011) focused on the 2008 Council of Australian Governments (COAG) target of halving, by 2012, the gap in Year 12 (or equivalent) completion rate between Indigenous and non-Indigenous students. Helme and Lamb proposed a review of the methods adopted by the government in the attempt to reach this goal. Their conclusions confirm several of the findings that Volkoff, Clarke and Walstab (2008) identified with respect to the broader group of disadvantaged individuals. Specifically, Helme and Lamb (2011) highlighted the importance of moving away from 'one size fits all' strategies. Instead, they strongly recommended the adoption of education methodologies tailored to the needs of the individuals and their communities.

Past research reveals that immigrants from non-English speaking backgrounds face a lower probability of gaining employment, compared with those from English speaking backgrounds.

Employment gaps for individuals from disadvantaged groups

Turning now to employment gaps, Hunter (2004) produced a rich analysis of the position of Indigenous Australians in the labour market, partly following the work of Daly (1995). Overall, the picture that emerges from Hunter's investigation is not particularly encouraging. According to Hunter (2004, p.117):

Indigenous people continue to be less educated, and more likely to be unemployed, and less likely to be either participating in the labour force or working than other Australians. Indigenous workers continue to be disproportionately wage and salary earners, as opposed to being self-employed, and tended to be concentrated in the public sector, low skilled occupations and particular industries. The formal statistical analysis confirms that the lower educational attainment is the major factor underlying Indigenous labour force status.

Hunter (2004) also highlights the importance of discrimination as another element, which may seriously hinder the labour market performance of Indigenous Australians.

Kalb et al. (2012) decompose the difference in labour market participation between Indigenous and non-Indigenous Australians, relying on the same methodology used in this report. By controlling for observable characteristics, they are able to explain more than 50% of the employment gap between Indigenous and non-Indigenous men, and almost 80% of the gap for women. These results confirm that controlling for the simultaneous effect of multiple observable characteristics is crucial in understanding what might determine the size of the employment gap.

Several papers have investigated whether migrants and individuals whose native language is not English are disadvantaged in terms of wage or the probability of employment by comparison with those who are from an English-speaking background. Antecol, Kuhn and Trejo (2006) found little evidence of a wage gap for those employed, but did find evidence of an employment gap between migrants to Australia and Australian-born workers. This finding was reiterated more recently by Cobb-Clark, Hanel and McVicar (2012). Wilkins (2007) found that labour market outcomes differ profoundly for English speaking background and non-English speaking background (NESB) immigrants. By comparison with native Australians, NESB immigrants face a lower probability of employment, with lower participation rates and higher unemployment.

Students living in low SES areas have a much lower probability of gaining a university-level qualification.

The dynamic effects of disabilities on employment outcomes have also been investigated by Oguzoglu (2010) and by Polidano and Vu (2012). Both studies used HILDA Survey data. Polidano and Vu (2012) aimed to identify the causal impact of a work limitation on a large number of labour market outcomes up to four years after the disability onset. Their analysis showed that disability onset negatively affects labour market outcomes such as full-time employment rates, particularly for individuals with low education levels.

The last group of disadvantaged individuals we concentrate on are those living in low SES areas. This is a composite group and its members cannot be uniquely categorised along the other dimensions of disadvantage we use in our report. The Australian Bureau of Statistics (ABS) has produced a number of publications that show how individuals living in low SES areas are vulnerable to social exclusion. For example, the ABS (2009) shows that, for students living in disadvantaged areas, Year 12 completion rates are considerably lower than those of other students. Furthermore, the statistics indicate no sign of a reduction of this gap over time. The ABS also signals that students living in low SES areas have a much lower probability of gaining a university-level qualification. As a consequence, these individuals also experience higher rates of unemployment and a lower propensity to be engaged in employment or study activities by the age of 24 years.

VET completion and labour market outcomes

With respect to the labour market outcomes of VET students and their relationships with the probability of completing a VET course⁵, we look at three Australian studies.

Using data from the NCVER Apprentice and Trainee Destination Survey, Karmel and Mlotkowski (2010) assessed whether low VET completion rates can be explained by low training wages by comparison with the expected wage in alternative jobs. They found that the expected wages in alternative jobs are greater than wages during training, while only in limited cases – depending on the type of training and the gender of the student – do the expected wages on completion significantly exceed the expected wages in alternative employment.

Hérault, Zakirova and Buddelmeyer (2011) investigated the relationship between wages and VET completion from a different perspective. Using data from the 1995 and 1998 cohorts of the Longitudinal Surveys of Australian Youth (LSAY), they estimated the wage returns associated with course completion and contrasted them with the wage premiums associated with completion of a university degree. They found that:

After controlling for a range of individual characteristics and for potential selection biases, only the completion premiums attached to university qualifications remain statistically significant across the years for both males and females. The completion premiums attached to VET courses tend to be positive but they are imprecisely estimated (p.38).

Diploma-level VET courses are the partial exception to this pattern (Hérault, Zakirova & Buddelmeyer 2011).

The potential benefits of completing a VET course were also analysed by Karmel and Fieger (2012), who used two datasets, the Student Outcomes Survey and the Student Intentions

⁵ Freedman (2008) provides a study on the relation between vocational training and post-study outcomes for disadvantaged students across different countries.

Survey, to analyse a broad set of post-study outcomes. They showed that, in general, completion matters, but the pay-off is not equal for all students and depends on the motivation for undertaking the study. If the reason for the study is to be employed after training or to facilitate further study, then completion nearly always pays. If the reason is to obtain a better job (that is, higher wages or occupational status), then completion pays for a much smaller proportion of students, but still at around 60% for a clear majority of students (Karmel & Fieger 2012).



Completion gaps

We use two datasets to analyse VET completion gaps and subsequent employment gaps for those previously enrolled in VET. For completion gaps we use unit record data from multiple years of the National VET Provider Collection. For employment gaps we use data from multiple years of the Student Outcomes Survey. In this section we discuss the National VET Provider Collection data and our findings regarding the VET completion gaps.

The National VET Provider Collection

The National VET Provider Collection is an administrative dataset at the individual student level collected annually. It includes detailed information on enrolment type, field of education, level of course, modules undertaken, hours of study, and provider and student characteristics for all students enrolled in publicly-funded VET courses across Australia, including those enrolled with private providers. As well as information on publicly-funded courses, the National VET Provider Collection also includes information on students undertaking domestic and overseas fee-for-service courses delivered by public providers – TAFE and ACE (adult and community education) providers.⁶ We impose two restrictions to these data. First, we concentrate on those aged 15–64 years at the time of enrolment (working age). Second, we focus on courses at Australian Qualifications Framework (AQF) certificate level I and above.

For the completion gap analysis we use the National VET Provider Collection data from 2008-11. For this time period there were 880 914 working-age individuals who started a VET course at AQF level I or above in 2008. More than 86% of these students started only one course in 2008, while almost 11% started two courses. In total, the dataset includes information on 1 030 327 course enrolments. Table 1 describes some basic statistics of the sample.

⁶ A limitation of the National VET Provider Collection when this study was undertaken was that private providers were not obligated to provide information on fee-for-service courses and hence there was limited information on such enrolments in the collection. From 2015, the National VET Provider Collection was broadened to include all fee-for-service training data.

Table 1 National VET Provider Collection data: descriptive statistics, 2008 entrants, at time of enrolment

	Average/ sample proportion	Std. dev.	Min.	Max.
Indigenous	0.029	0.167	0	1
Disability	0.043	0.203	0	1
Lowest SEIFA quintile	0.143	0.350	0	1
Limited English language skills	0.025	0.155	0	1
Multiple disadvantages	0.038	0.192	0	1
Course completion (binary)	0.263	0.440	0	1
Proportion of course completed	0.591	0.471	0	1
Module completion rate	0.792	0.354	0	1
Number of courses started	1.187	0.524	1	12
Females	0.493	0.500	0	1
Age at enrolment	29.77	12.78	15	65
Still at school	0.141	0.349	0	1
Employed	0.557	0.497	0	1

Note: SEIFA = Socio-economic Indexes for Areas (ABS).

Source: National VET Provider Collection data, 2008–11.

We identify 14% of VET students as living in a low SES area, 4% as having a disability, 3% as Indigenous, 3% as having limited English language skills, and an additional 4% as belonging to more than one of these groups (mostly living in a low SES area coupled with one other form of disadvantage).

Similar to what has been reported elsewhere (NCVER 2014), VET course completion rates among our population are generally low, at around 26% for 2008 VET entrants (table 1). Of the modules actually enrolled in, students completed around 79%. This is very much in line with the high module completion rates reported elsewhere (NCVER 2014; Bednarz 2012).

Table A1 in appendix A gives a detailed breakdown of differences in the full set of observable course and individual characteristics across each of the disadvantaged groups and their non-disadvantaged counterparts for each of the four study groups.

Measuring completion rates

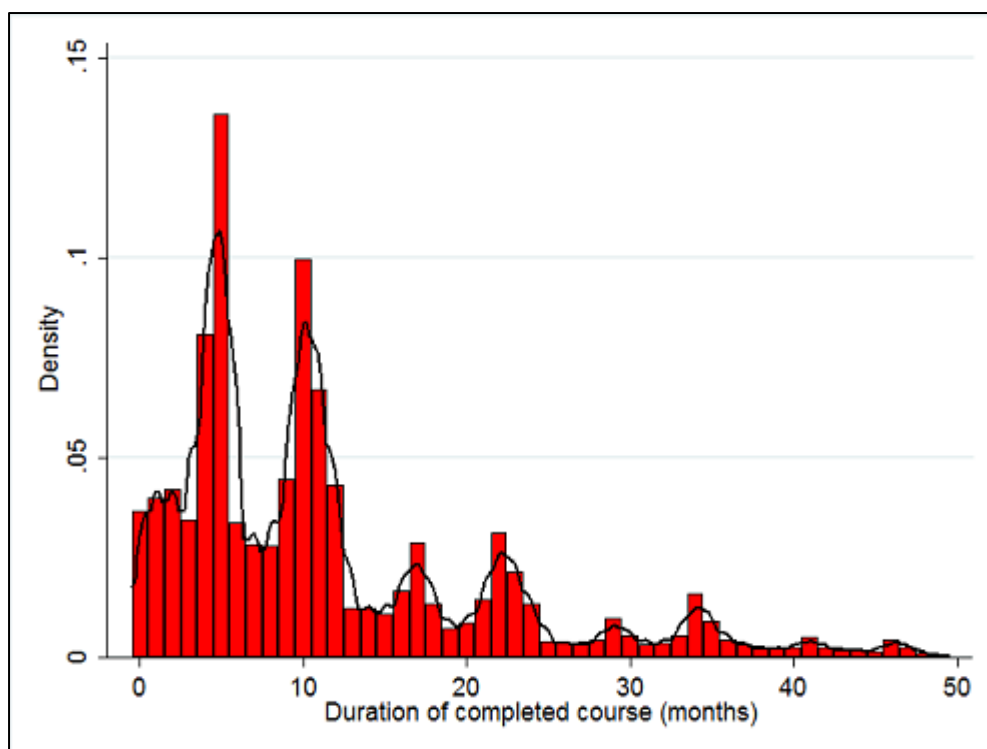
Measuring and interpreting course completion rates in VET is not straightforward. While many courses are typically completed within a year, others (particularly those at higher levels or those taken part-time) can take longer. Students who have not completed after a particular period of time may have dropped out of the course, however they may also still be enrolled but yet to complete.

One way to address this issue is to use completion information for previous cohorts of students to estimate the likely completion rates for current cohorts of students (see Bednarz 2012). This has the advantage of giving an up-to-date estimate of completion for current cohorts, but may introduce systematic errors if completion rates are not stable over time. An alternative is to link enrolment data across years to give a measure of the completion rates within a certain period. This introduces reporting delays (because a number of years must pass before completion rates can be derived) and is likely to systematically underestimate eventual completion rates, because, whatever the cut-off date (within reason), some students will still be enrolled but yet to complete.

In this project we begin by following the second method. Using National VET Provider Collection data for the years 2008–11, we focus only on those students who start a VET

course in 2008 and minimise the risk of observing a high number of non-completed courses due to right-censoring (those still enrolled who have yet to finish the course). The data allow us to follow these students for a minimum of three years (if they begin a course in December 2008) and a maximum of four years (if they begin a course in January 2008). From these data we derive a binary measure of course completion set equal to 1 if the course is completed by 31 December 2011, and 0 otherwise. In using this measure, our assumption is that this ‘window’ is sufficiently long to enable us to capture almost all course completions – the shape of the distribution of completed course durations shown in figure 1 supports this assumption – and that right-censoring does not disproportionately affect the four disadvantaged groups we identify. Using this measure, we estimate that 26% of the 2008 entrants complete their course by the end of 2011 (table 1). Despite the low completion rate, we estimate that non-completers finish more than half of their course. These low completion rates are consistent with previous estimates from NCVET (2014) and Bednarz (2012).

Figure 1 Duration of completed VET courses, 2008 entrants, months



Source: Authors' calculations from the VET Provider Collection, linked 2008–11.

The binary measure, although simple to interpret (whether the student gains the qualification or not), treats all those students who do not gain the qualification (or have not yet gained the qualification) as being alike in terms of non-completion. This ignores information on how far through the course the student gets before either dropping out or being right-censored.

Our second completion measure is a pseudo-continuous measure of module completion (alternatively called subject completion), defined as the proportion of enrolled modules that have been completed by 31 December 2011. This measure is designed and used by NCVET (see Mark & Karmel 2010) to address the main difficulty with *interpreting* course completion rates; that is, that students may enrol in VET courses only to attain a specific set of skills and not to attain a qualification.⁷ Overall, we estimate that up until the end of 2011, 2008 entrants complete 79% of the modules they commence (table 1). This is in line with previous estimates from NCVET (2014) and Bednarz (2012).

For brevity, in the analysis that follows we concentrate on the binary measure of course completion. The results for the alternative course completion measure are very similar and are presented in appendix B for completeness.⁸

⁷ Almost all modules are completed within 18 months, regardless of level or mode of study.

⁸ We also experimented with a third alternative (pseudo-continuous) measure of completion to distinguish between students who complete different proportions of the course. Specifically, we first estimate the average number of completed modules for those individuals who did complete the course at the provider-course level (i.e. separately for each VET course at each VET provider recorded in the National VET Provider Collection dataset). We then calculate our alternative course completion rate as the number of modules a student has completed for a particular course (by 31 December 2011) divided by the number of modules required (on average at that provider) to complete the course. This did not lead to any new insights over the existing two measures discussed in the report.

Students with multiple medical conditions and those with mental disabilities have the lowest percentages of completion.

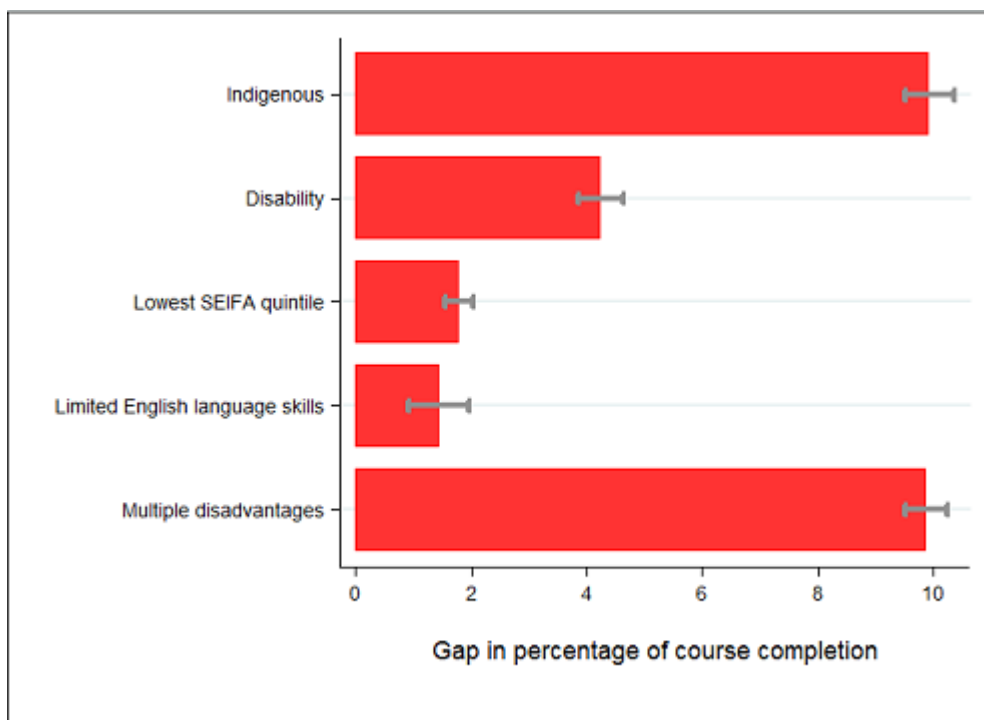
Completion gaps for disadvantaged students

Here we describe completion gaps using the binary course completion measure. The results for the (continuous) module completion are presented in appendix C.

Binary measure of course completion

Figure 2 shows the VET completion gaps for students from each of the four disadvantaged groups and also for students in more than one of the four groups. The magnitude varies across different types of disadvantage. Individuals with limited English language skills or living in a low SES area have small course completion gaps of between one and two percentage points (relative to those who either speak English at home or speak English well and to those who do not live in a low SES area). In contrast, for Indigenous students (relative to non-Indigenous) and those individuals who belong to more than one disadvantaged group (relative to those in no group or only one group), the gaps are much higher, at around ten percentage points. Students with disabilities face a completion gap of four percentage points relative to those without a disability, but this figure varies considerably, depending on the type of disability. As shown in figure A1 in appendix A, students with multiple medical conditions and those with mental disabilities have the lowest percentages of completion (16.5% and 17.5%, respectively), while students with a sensory disability have a course completion rate above 24%. These findings are in line with those reported by Karmel and Nguyen (2008) in relation to the module completion rates of VET students with disabilities.

Figure 2 Gap in the percentage of completed VET courses between disadvantaged and non-disadvantaged students



Source: Authors' calculations from National VET Provider Collection data, 2008–11.

Decomposition analysis

Decomposition method

Prior to discussing the decomposition results, it is necessary to briefly explain the regression-related decomposition method, which breaks any completion gap into differences in observable and unobservable factors, and estimates the contribution of each observable factor to any observed completion gap. For this purpose, we use both the standard ‘Oaxaca–Blinder’ decomposition approach and a variation of the standard approach designed for models where the outcome variable being analysed is binary (for example, in our binary completion measure).

Once we have measured the gaps in completion rates between students from disadvantaged groups and their non-disadvantaged counterparts, the next step is to explain them. An Oaxaca–Blinder decomposition analysis does this by examining how much of any gap in outcomes between two groups can be explained by differences in the observable characteristics between the two groups. For example, we know that course completion rates tend to be lower for men than for women, lower for low-level courses, and lower in the Northern Territory compared with other states and territories (John 2004; National VET Advisory Council 2013). If students in any of our disadvantaged groups are disproportionately male, enrolled on lower-level courses, or living in the Northern Territory, then these differences may explain part of the observed completion gap.

The standard Oaxaca–Blinder decomposition can be illustrated as follows.⁹ Imagine we are interested in studying the following relation:

$$Y_i = X_i \beta + u_i \quad (1)$$

where Y is the outcome we want to investigate (in our case, course completion for individual i), X is a matrix of characteristics believed to be related to the outcome, β represents a vector of the coefficients that characterise the relation under investigation and u is an error term capturing unobserved influences. Assume now that we are interested in studying this relation for two different populations, A (non-disadvantaged students) and B (disadvantaged students). We then have:

$$Y_i^A = X_i^A \beta^A + u_i^A \quad (1.1)$$

$$Y_i^B = X_i^B \beta^B + u_i^B \quad (1.2)$$

The difference in the average outcomes (here: completion rates) between non-disadvantaged students (A) and disadvantaged students (B) can be expressed as:

$$\bar{Y}^A - \bar{Y}^B = (\bar{X}^A - \bar{X}^B) \hat{\beta}^A + \bar{X}^B (\hat{\beta}^A - \hat{\beta}^B) \quad (2)$$

The $\hat{\beta}$'s are the estimated coefficients that we obtain by estimating equation (1.1) and (1.2) for the two populations separately. The first term on the right of equation (2) is the ‘explained’ component of the observed gap (or ‘attributable to the endowments’, as defined by Blinder). The second term is the component of the gap that cannot be explained by differences in the endowments, and is often labelled as ‘unexplained’ (or ‘attributable

⁹ See Blinder (1973) and Oaxaca (1973).

to the coefficients’). The explained component of the gap can itself be broken down in the contributions made by each of the X s.

Our specifications with respect to VET course completion using the binary measure and employment probability differ from standard applications of the Oaxaca–Blinder decomposition, as the dependent variables under investigation (that is, our Y) are binary variables that take value 1 in case the individual completes the VET course or has a job and 0 otherwise. In these cases we employ a modified version of equation (2) in order to deal with estimation in a non-linear context (see Gomulka & Stern 1989; Fairlie 2005; Bauer, Hahn & Sinning 2008), although the motivation for the method and the interpretation of the decomposition results are the same.¹⁰

Student and provider characteristics to include

The National VET Provider Collection contains information on type of enrolment, field of education, level of course, modules undertaken, hours of study, and provider and student characteristics. From this information we derive a large number of variables (all measured at time of enrolment) that are used to control for observable differences between individual students in the regression-based decomposition analysis. Specifically, we include the following variables (in addition to the disadvantaged group identifiers listed above) as controls: sex (a dummy which takes the value of 1 for males); age; attending secondary school; number of courses began in 2008; state of residence (a series of state dummies, with NSW as the reference category); reason for attending VET course (a series of dummies for stated reasons: ‘to voluntarily upskill’, ‘to compulsorily upskill’, ‘to reskill’, for ‘general skill’ reasons, or for ‘other’ reasons, with ‘to find work’ as the reference category); course level (dummies for diploma, certificate IV, certificate III, certificate II, certificate I, with above diploma as the reference category); required course hours (dummies for 1–20, 21–50, 51–100, 101–200, 201–400, 401–800, with 800+ hours as the reference category); labour force status (unemployed, not in the labour force, with employed as the reference category); field of education (dummies at the 1-digit ASCED¹¹ level, with mixed field programmes as the reference category); closest occupation (dummies at the 1-digit ANZSCO¹² level, with ‘generic’ as the reference category). The ‘closest occupation’ is defined as the type of occupation that may be expected for those undertaking a particular program of study. It is based on ANZSCO. We also include variables for provider type (dummies for TAFE, ACE, with private provider as the reference category); variables for level of schooling attained (dummies for Year 12, Year 11, with Year 10 or less as the reference category); and whether the student has a prior post-school qualification, and if so, its broad level (dummies for prior qualifications at diploma or above, certificate III/IV, certificate I/II, with no prior qualification as the reference category).

Decomposition analysis of completion gaps

This section presents the results of the decomposition analysis of completion gaps for our binary measure of completion.¹³ The two key parts of this analysis are the identification of the variables that most significantly contribute to the gap for each category of disadvantage

¹⁰ Polidano, Hanel and Buddelmeyer (2013) use this kind of approach to explaining SES school completion gaps.

¹¹ ASCED = Australian Standard Classification of Education.

¹² ANZSCO = Australian and New Zealand Classification of Occupations.

¹³ The results for the module completion measure are presented in appendix C.

and quantifying the role of multiple disadvantages in determining the size of the gaps for each group.

Binary measure of course completion

In figure 3 the black bars indicate the overall size of the (observed) gap in completion rates between VET students in each group and their non-disadvantaged counterparts. Note that these overall completion gaps differ slightly from those reported in figure 2 because we have not separated out students belonging to more than one group into a separate ‘multiple disadvantages’ category. (This has the effect of increasing the magnitude of the gaps across all four groups, given that completion rates for those with multiple disadvantages are particularly low.) The red bars show how much of these overall gaps can be explained by differences in the observable characteristics between the members of the particular disadvantaged group and those outside the group.

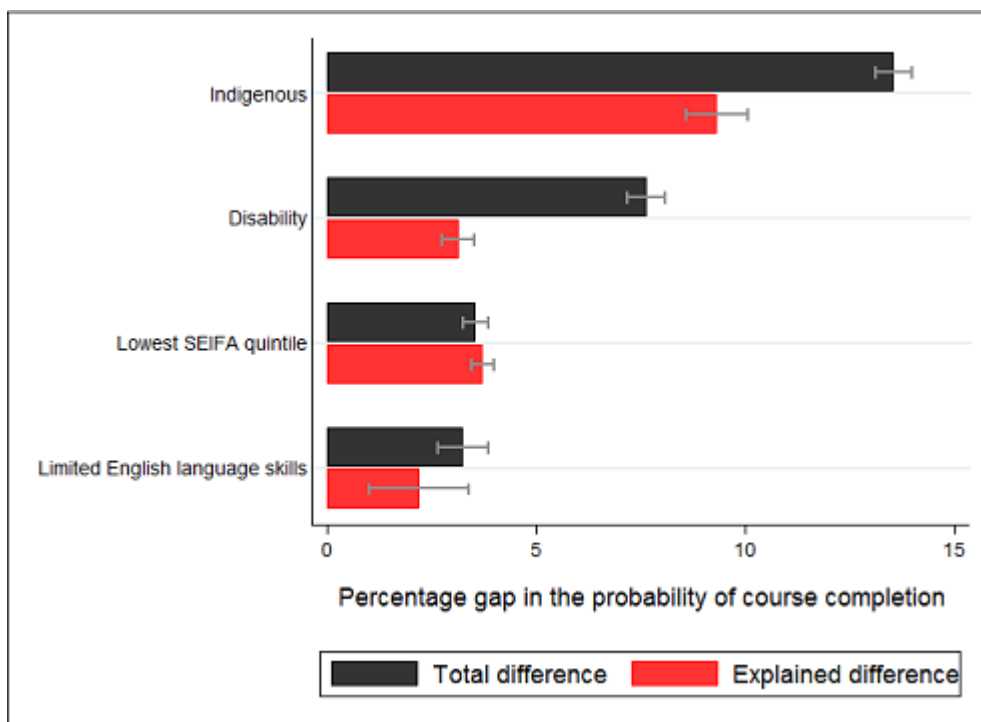
Figure 3 shows that controlling for differences in observable characteristics does not annul the gap for three of the four groups of disadvantaged students. There are at least two potential explanations for this. First, we cannot rule out the possibility that the set of observable variables included in the National VET Provider Collection dataset, although extensive, is not large enough to fully control for all the relevant differences in the socio-demographic characteristics and course choices between disadvantaged and non-disadvantaged students. The second potential explanation, which is certainly more relevant in terms of policy implications, is that the disadvantage per se constitutes a relevant obstacle to the completion of VET courses. In other words, even if students in a particular disadvantaged group shared exactly the same characteristics (other than the particular disadvantage itself) and are enrolled in exactly the same courses as those outside the group, there would still be a gap in completion rates. In this case, policy interventions aimed directly at the disadvantage, for example, interventions to boost English language skills, or additional support tailored to an individual student’s disability, can contribute to closing completion gaps. The exception is the category of VET students living in low SES¹⁴ areas, for whom differences in observable characteristics and course choices explain the whole completion gap. Averaged across all four groups, the overall gap related to disadvantage is estimated to be 5.7 percentage points, 3.6 percentage points of which (or 63%) is explained by differences in observable characteristics. The percentage of explained difference for the individual groups ranges from 41% for students with a disability, to 104% for students living in low SES area (table 2).

Policy interventions aimed directly at the disadvantage can help improve the completion rates of disadvantaged students, except for those living in low SES areas.

¹⁴ Low SES is defined as living in an area that is in the lowest quintile (20%) on the ABS Index of Relative Social Disadvantage in the 2011 Census (ABS 2013).

Students in the four groups tend to choose lower-level courses, which also have lower completion rates.

Figure 3 Oaxaca–Blinder decomposition of the gap in the probability of course completion



Source: Authors' calculations using National VET Provider Collection data, 2008–11.

Table 2 gives more detailed results of the decomposition exercise. For each category of disadvantage, we identify the contribution of the ten most relevant variables (in terms of the absolute value of their contribution) to the ‘explained’ part of the gap. By contribution, we mean the extent to which the variable adds to (makes bigger) or subtracts from (makes smaller) the penalty associated with the disadvantage. In table 2, a positive contribution for a variable means that difference in the variable levels associated with being in the disadvantaged group add to the gap, whereas the opposite is true for negative values.

The results vary across the different groups, but some common patterns emerge, stemming both from the differences in the characteristics of the students themselves and the differences in course choices. Some of the differences in course choice associated with disadvantage increase the completion gap, while some decrease it. In the case of differences that increase the gap, students in the four groups tend to choose shorter courses and more generic courses compared to non-disadvantaged students, and these courses have lower completion rates.¹⁵ On the other hand, students in the four groups tend to choose lower-level courses, which have higher completion rates.

Finally, consider the role played by the differences in student characteristics (table 2, table A1). This tends to vary across the groups, but the factors that show up as important in explaining completion gaps include: state (for example, the concentration of Indigenous students in the Northern Territory contributes to the Indigenous completion gap, given the

¹⁵ As the course duration and the level of qualification play an important role in our decomposition results, we conduct an additional investigation by augmenting the set of explanatory variables with interaction terms between each level of VET course and the course duration in hours. The results are summarised in appendix B, table B1. Two main findings emerge from the table. First, the two sets of variables and their interaction terms remain among the largest contributors to the explained share of the difference. The second indication that emerges is that the percentage of explained difference does not change after the introduction of the interaction effects.

lower rates of completion in the Northern Territory); labour market status at time of enrolment (for example, the lower employment rate among students with a disability contributes to the completion gap for those with a disability because those in employment at the time of enrolment have higher completion rates than those not in employment); high school completion (for example, students with Year 12 are more likely to complete, but students with a disability are less likely to have attained Year 12 schooling); age at enrolment (for example, older students are less likely to complete and students with limited English language skills tend to be older); and gender (females have higher completion rates than males and students with limited English language skills are more likely to be female, which actually reduces the size of the completion gap).

Table 3 shows that, for some disadvantaged groups, the differences in the probability of belonging to an additional disadvantaged group contribute to the overall size of the completion gap. For example, students living in low SES areas are more likely to be Indigenous students than those living elsewhere, and because Indigenous students have lower completion rates, this in turn contributes to the completion gap of low SES areas. Table 3 summarises the role played in explaining completion gaps by membership of more than one disadvantaged group. The results indicate that higher disability rates and high rates of living in low SES areas both contribute to the overall completion gap for Indigenous students. Similarly, the higher proportions of Indigenous students among students with a disability and students living in low SES areas contribute to the completion gaps for these two groups. In contrast, the lower rates of disability and the lower proportion of Indigenous students among those with limited English language skills mean the completion gap for this group is smaller than it would otherwise be.

Students living in low SES areas are more likely to be Indigenous and because they have lower completion rates, this in turn contributes to the completion gap of low SES areas.

Table 2 Probability of course completion, main decomposition results

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.1373		0.0756		0.0357		0.0307	
Total explained difference	0.0931		0.0313		0.0371		0.0219	
Percentage of explained difference	67.81		41.38		103.98		71.25	
Top 10 explaining variables*	Name of the variable	Percentage contribution to explained difference**	Name of the variable	Percentage contribution to explained difference**	Name of the variable	Percentage contribution to explained difference**	Name of the variable	Percentage contribution to explained difference**
1	Certificate I	-26.48	Certificate I	-47.63	Course hours: more than 800	38.25	Course: Mixed programmes	332.74
2	Course hours: more than 800	23.79	Occupation: Generic	37.22	Course hours: 401–800	31.97	Occupation: Generic	172.20
3	Course hours: 401–800	23.04	Employed	32.18	Course hours: 1–20	24.40	Certificate I	-130.94
4	Northern Territory	18.41	Course hours: more than 800	21.10	New South Wales	16.94	Age at enrolment	84.30
5	Employed	10.74	Course hours: 401–800	13.63	Course hours: 21–50	16.01	Occupation: Technicians	-69.06
6	Course hours: 1–20	10.12	Certificate II	-12.05	Certificate II	-14.62	Course hours: more than 800	66.82
7	Course hours: 21–50	9.83	Not in the labour force	11.17	Indigenous	12.27	Occupation: Clerical work	-56.50
8	Occupation: Generic	8.14	High school: Year 12	10.50	Diploma	-10.77	South Australia	-54.71
9	Course hours: 51–100	6.74	Diploma	-8.36	Certificate I	-10.14	Respondent is male	-50.22
10	High school: Year 12	6.57	Reason: Compulsory upskill	8.33	Course hours: 51–100	7.30	Indigenous	-49.33

Notes: *Based on the absolute value of the parameter. ** The sum of these contributions is above 100%, as some variables may negatively contribute to the explained difference.

Source: Authors' calculations using National VET Provider Collection data, 2008–11.

Table 3 Probability of course completion, decomposition results: contributions of additional disadvantages

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	43	0.81			36	1.85	35	-13.45
Lives in lowest SEIFA quintile	16	4.27	64	-0.20			55	-3.53
Limited English language skills	41	-0.89	29	-3.29	53	-0.49		
Indigenous			15	6.34	7	12.27	10	-49.33

Note: * Out of 70 variables.

Source: Authors' calculations using National VET Provider Collection data, 2008–11.



Employment gaps

The Student Outcomes Survey

We use the Student Outcomes Survey¹⁶ data for the period 2009–12 to investigate both the existence of an employment gap for disadvantaged VET students and the role of completion in explaining employment gaps. In particular, we focus on those former VET students who had started their VET course in 2008. In this way, we guarantee that we follow in the Student Outcomes Survey a sub-sample of the same population of VET students whose completion rates we analysed with the National VET Provider Collection data. The total number of individuals included in our analysis is 75 451.

When using the Student Outcomes Survey data, care must be taken with the representativeness of the sample. Our results based on the National VET Provider Collection data indicate that only a quarter of VET students complete the course they enrolled in independent of their disadvantaged status (table 1). At first sight, the Student Outcomes Survey data describe a different picture. This is due to the sampling framework of the survey, which surveys graduates and those who successfully complete part of a course and then leave the VET system (module completers). Once the two populations are defined, a total sample of 300 000 students is selected. The higher response rate among graduate students and the fact that around 30% of the module completers define themselves as graduate students¹⁷ lead to an over-representation of course completers in the Student Outcomes Survey data in relation to what is observed in the National VET Provider Collection data. In order to control for these sample characteristics and produce statistics that can be interpreted as referring to the relevant population from the National VET Provider Collection data, we will, throughout the report, present statistics based on the Student Outcomes Survey generated by making use of the provided weights for rebuilding the original populations. Other than the use of these weights, the two datasets are analysed entirely separately.

Critically for our analysis, the Student Outcomes Survey data contain information that allows us to identify disadvantaged students in the same way as in the National VET Provider Collection data. The only partial exception is the way by which we define individuals with limited English language skills across the two surveys. As in National VET Provider Collection, non-native English speaking respondents to the Student Outcomes Survey are asked to specify their level of proficiency in English.¹⁸ Also, as in the National VET Provider Collection data, some individuals may report more than one form of disadvantage.

¹⁶ The Student Outcomes Survey is an annual survey of Australian students who successfully complete some vocational training in the previous year. The survey has been conducted by NCVET since 1997. Detailed information about the survey can be found on the webpage: <<http://www.ncver.edu.au/sos/faq.html>>.

¹⁷ Student Outcomes Survey support document, Student outcomes 2009 technical notes, available at <<http://voced.edu.au/content/ngv%3A9271>>.

¹⁸ In this report we focus only on individuals who started their VET courses in 2008. Only 0.8% of these former VET students are interviewed in 2012. Information about English language proficiency is not available for 2012 respondents but the total number of individuals for which this type of information is missing is 84, from a total sample of more than 75 000 respondents. Therefore we do not believe that this difference between the National VET Provider Collection and Student Outcomes Survey data can have any significant effect on our results.

Preliminary description of the Student Outcomes Survey variables

Table 4 summarises the preliminary descriptive statistics relating to the most relevant characteristics of the individuals included in the Student Outcomes Survey sample.¹⁹

Slightly less than a quarter of all of the Student Outcomes Survey individuals belong to one or more of our categories of disadvantage. Specifically, 11% of the respondents live in a low SES area, 7% have a disability, 2% are of Indigenous background (similar to the 2011 ABS Census counts indicating an Australian Indigenous population of around 2.5%) and 1.2% indicated they have limited English language proficiency. Finally, an additional 3% of the sampled individuals are classified as having more than one disadvantage.

VET graduates constitute 27% of the Student Outcomes Survey population of reference, which is in line with the findings based on the National VET Provider Collection. The average age of the Student Outcomes Survey population is 31 years, and 75% of them are employed in the year after leaving the VET course, independently of their graduation status (table 4). The survey data include information on the earnings of respondents, but this information is only provided with values grouped in several income categories. If we assume the mid-point of each category as the average earning value of the individuals in that category, we see great variability in average earnings: individual annual earnings vary from as low as \$2000 up to more than \$100 000, with average annual pre-tax earnings of around \$36 500.

Table 4 Student Outcomes Survey data: descriptive statistics, 2008 VET entrants, at time of interview

	Average	Std dev.	Min.	Max.
Indigenous	0.020	0.140	0	1
Disability	0.069	0.254	0	1
Lowest SEIFA quintile	0.111	0.314	0	1
Limited English language skills	0.012	0.109	0	1
Multiple disadvantages	0.033	0.177	0	1
Graduate	0.266	0.442	0	1
Females	0.466	0.499	0	1
Age	30.62	12.90	15	66
Employed	0.751	0.432	0	1
Average annual earnings (\$)	36 471	22 418	2 080	104 000

Source: Student Outcomes Survey data, 2009–12, weighted statistics.

As for the National VET Provider Collection dataset, the Student Outcomes Survey dataset includes numerous additional individual and course-related variables, which we use in our multivariate analysis: the gender and age of the respondents; the state/territory in which they live and the degree of remoteness of their living area; their VET qualification; the field of education and the organisational characteristics of the VET course they attended; their previous education attainment; the employment status and the sector of employment before and after the training; the number of hours of work; and the weekly earnings before and after the training.

¹⁹ As weighted statistics are presented, the figures presented in table 4 are similar to those presented in table 1.

Table A2 in appendix A gives a detailed breakdown of the differences in the full set of observable course and individual characteristics across each of the disadvantaged groups and their non-disadvantaged counterparts in each case.

Employment gaps for disadvantaged groups

On average, post-study employment rates appear high – 77% for VET graduates and 73% for module completers. However, the average figures mask substantial differences in employment rates between those who are and who are not members of a disadvantaged group. On average, we estimate that members of a disadvantaged group are 17 percentage points less likely to be in post-study employment than VET graduates who are not members.

Figure 4 illustrates the gap in the employment rates in the year after leaving VET between our disadvantaged groups and their non-disadvantaged counterparts, separately by their course completion status. The graph highlights two elements that constitute the starting point of our descriptive analysis and will be further explored in our multivariate investigation:

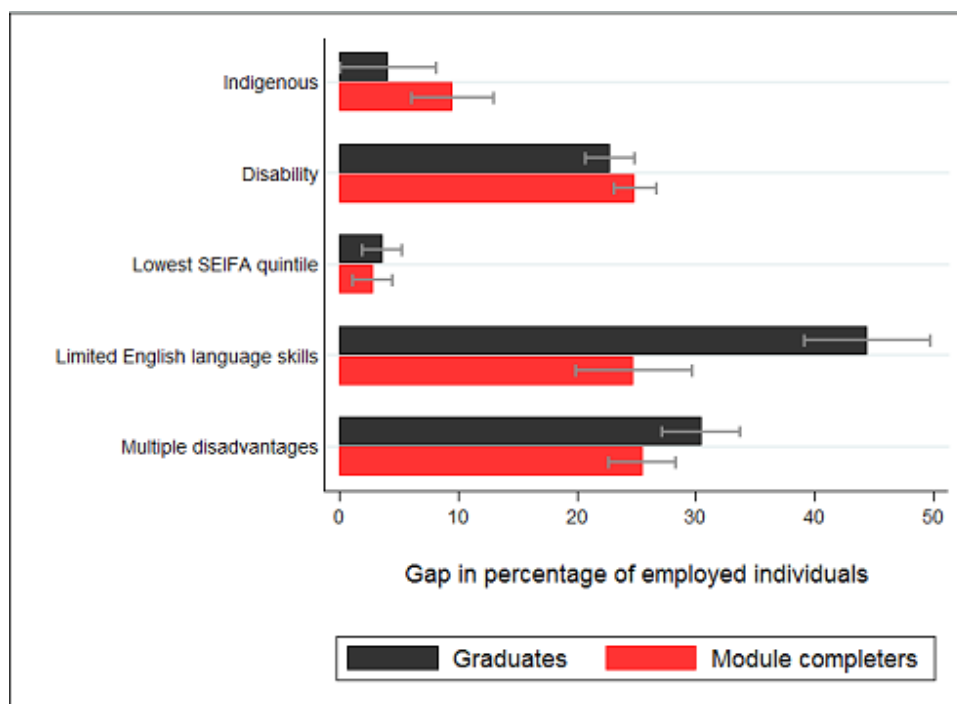
- In the year after leaving the VET course, there is evidence of an employment gap for all four groups of disadvantaged students, independently of their course completion status.
- While, on average, the gap is wider among module completers than for VET graduates, the opposite result holds for some specific groups of disadvantaged students.

As seen in figure 4, the gaps in the employment rates display a high degree of variability across the different disadvantaged groups. Indigenous VET graduates and both graduates and module completers who live in low SES areas display relatively small percentage gaps in the probability of employment with respect to non-disadvantaged individuals (fewer than five percentage points). Indigenous module completers, on the other hand, face a much higher employment gap (more than five percentage points).

Individuals with limited English language skills show the largest employment gaps overall, and in contrast to Indigenous VET leavers, the gap is larger for graduates than for module completers. As suggested earlier, it is possible that some of these students already hold a foreign qualification and therefore only needed to attend a few VET modules to obtain the qualification level necessary for successful entry to the Australian labour market.

Employment gaps exist for students from all disadvantaged groups one year after leaving a VET course, independent of their completion status.

Figure 4 Gap in the percentage of employed individuals between disadvantaged and non-disadvantaged VET graduates and module completers



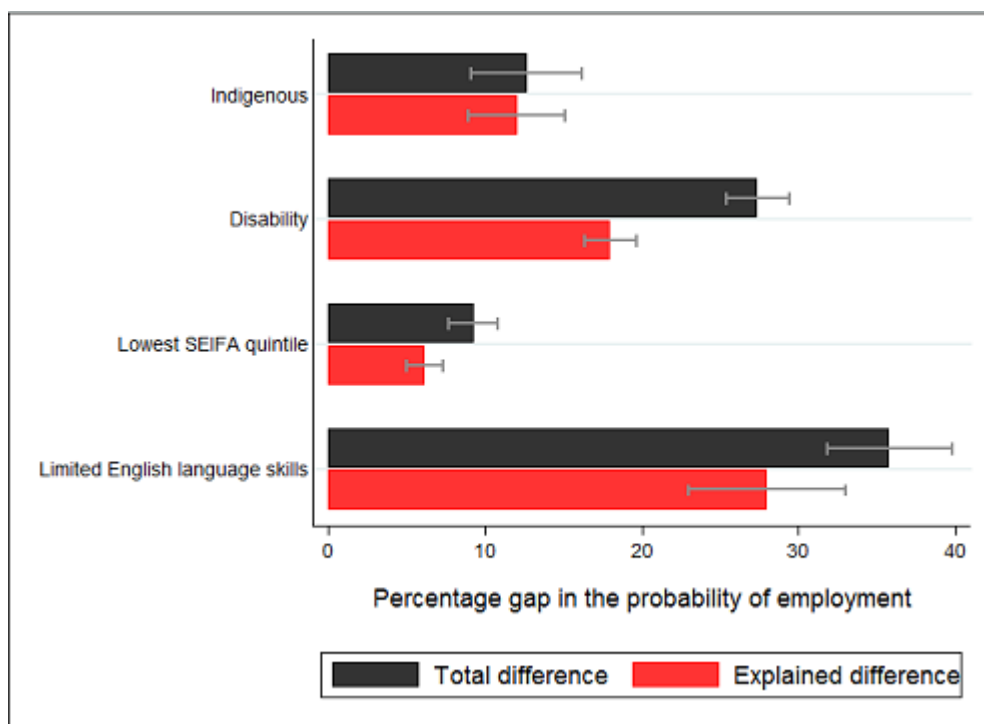
Source: Authors' calculations using weighted Student Outcomes Survey data, 2009–12.

Decomposition analysis of employment gaps

Figure 5 shows the total difference in the probability of employment between those in our disadvantaged groups and their non-disadvantaged counterparts (black bars) and the percentage of difference that is explained by the observable characteristics (red bars). Table 5 gives a more detailed description of the decomposition results. These results are for VET graduates and module completers *combined*. Appendices D and E display the findings separately for subsets of VET graduates and module completers, respectively.

On average across the four groups, the gap in employment rates is close to 20 percentage points, of which around 13 percentage points can be explained by differences in observables between the disadvantaged groups and their counterparts. In other words, if, on average, former VET students in our four disadvantaged groups had the same characteristics as the non-disadvantaged individuals, they would still have a seven-percentage-point lower probability of employment. The remaining unexplained gap is smallest for those in the Indigenous group, where the differences in the observable characteristics between the Indigenous and non-Indigenous groups account for 95% of the total estimated gap, and is largest for those with a disability or those living in a low SES area, where the observable characteristics only explain around 65% of the total gap (table 5).

Figure 5 Oaxaca–Blinder decomposition of the gap in probability of employment after VET course



The key variable in explaining the gaps for each of the four groups is employment status before the beginning of the VET course.

Source: Authors' calculations using weighted Student Outcomes Survey data, 2009–12.

Table 5 reports a more detailed picture of the effects of the observable characteristics, including the ten most explanatory variables, on the total estimated gaps for each category of disadvantage. As was the case for the completion decompositions, a combination of course characteristics and individual characteristics contributes to the explained part of the employment gap for each group. But in this case, course characteristics – field of education, closest occupation category, and level – play a smaller role than individual characteristics. In particular, the key variable in explaining the gaps for each of the four groups is employment status before the beginning of the VET course. For those with a disability or living in low SES areas (middle two columns in table 5), holding a job before starting the VET course is responsible for about half of the explained difference (47.06% and 48.64%, respectively). This means that if these students were employed before starting their VET course, the observed gap in finding employment after exiting the VET course (of 0.2741 and 0.0923, respectively) would decrease by about half of the explained gap (of 0.1799 and 0.0612, respectively), or about nine (0.5 x 0.18) and three (0.5 x 0.06) percentage points in the case of students with a disability or living in a low SES area, respectively.

One of the explanatory factors included in the decomposition analysis summarised in table 5 is a dummy that takes the value 1 for VET graduates and 0 otherwise (that is, for module completers). With the exception of the Indigenous group, this variable is outside the top ten important variables. For the low SES and limited English language skills groups this is perhaps little surprise, given that course completion gaps are small in magnitude. It is perhaps more of a surprise for the group of VET leavers with a disability, where the completion gap is larger. The exception to this is the Indigenous group, for whom the course completion gap is largest and for whom this completion gap does play an economically significant role in explaining the employment gap they face in the year after VET.

Table 6 summarises the role of multiple disadvantages in explaining the employment gaps faced by each disadvantaged group. Generally, multiple disadvantages play a small role, although higher proportions of disability among the Indigenous and low SES groups do contribute to the employment gaps for these groups.

We also replicated the decomposition exercise separately for VET graduates (tables D1 and D2 in appendix D) and module completers (tables E1 and E2 in appendix E). The figures presented in tables D1 and E1 are very similar across the two specifications and are consistent with those shown in table 5. This confirms, once again, that the lower probability of finding a job that disadvantaged VET leavers face with respect to non-disadvantaged individuals cannot be substantially attributed to the different labour market effects of VET completion, with the partial exception of the Indigenous group.

Table 5 Probability of employment, all individuals, main decomposition results

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.1265		0.2741		0.0923		0.3584	
Total explained difference	0.1204		0.1799		0.0612		0.28	
Percentage of explained difference	95.16		65.63		66.26		78.15	
Top 10 explaining variables	Name of the variable	Percentage contribution to explained difference*	Name of the variable	Percentage contribution to explained difference*	Name of the variable	Percentage contribution to explained difference*	Name of the variable	Percentage contribution to explained difference*
1	Employed before VET	26.16	Employed before VET	47.06	Employed before VET	48.64	Employed before VET	29.53
2	Occupation: Managers	19.09	Not in labour force before VET	16.68	New South Wales	13.49	Course: Management	22.96
3	Module completers	7.83	Unemployed before VET	7.67	Unemployed before VET	12.47	Occupation: Clerical work	-13.48
4	Course: Management	7.55	Age	3.70	Not in labour force before VET	10.85	Not in labour force before VET	12.15
5	Victoria	7.34	Reason: Voluntary upskill	3.58	Victoria	-8.34	Reason: Compulsory upskill	11.33
6	Unemployed before VET	6.70	Course: Mixed programmes	3.43	Occupation: Unknown	6.83	Age	10.72
7	Occupation: Unknown	5.66	Reason: Compulsory upskill	3.43	Tasmania	-6.29	Occupation: Technicians	8.78
8	Has a disability	5.05	Currently enrolled in VET	2.80	Has a disability	5.23	Course: Mixed programmes	-8.23
9	Occupation: Comm. Worker	4.83	Reason: General skill	2.45	Poor English knowledge	3.27	Occupation: Comm. worker	7.04
10	Certificate IV	3.97	Course: Engineering	2.05	Reason: Compulsory upskill	3.24	Previous qualification: Year 11	-6.69

Notes: * Based on the absolute value of the parameter. ** The sum of these contributions is above 100%, as some variables may negatively contribute to the explained difference.

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Table 6 Probability of employment, all individuals, decomposition results: contributions of additional disadvantages

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	8	5.05			8	5.23	58	-0.25
Lives in lowest SEIFA quintile	14	2.98	57	-0.12			26	2.06
Limited English language skills	57	-0.16	54	-0.17	9	3.27		
Indigenous			63	-0.05	16	2.16	45	-0.93

Note: * Out of 70 variables.

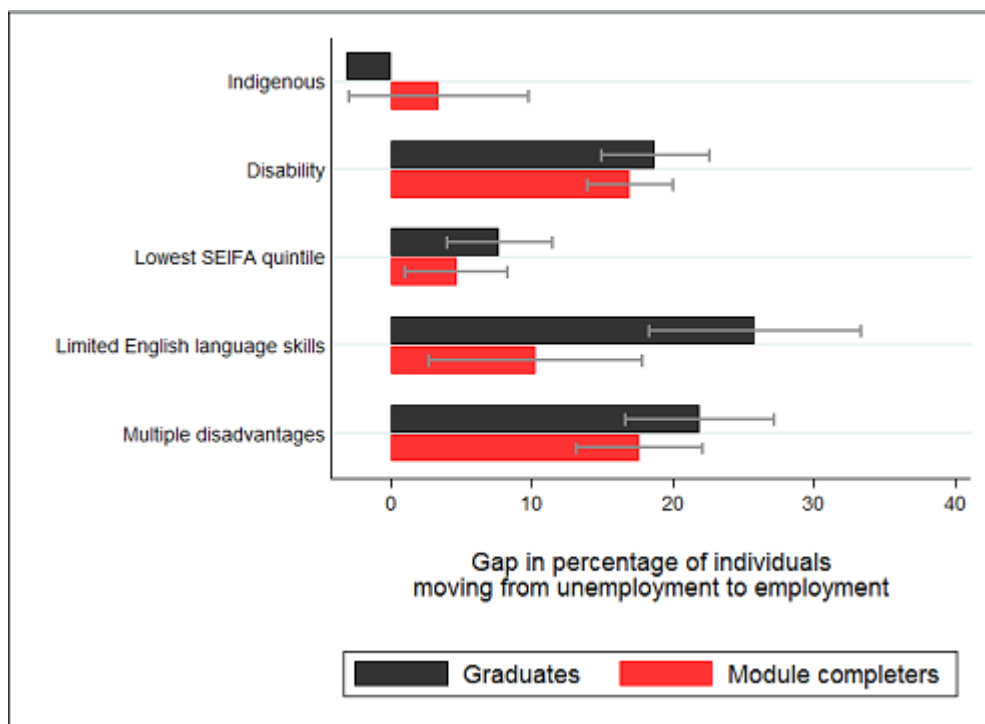
Source: Authors' calculations using Student Outcomes Survey data, 2009–12.



Gaps in escaping joblessness

VET courses are often seen as crucial educational elements for a successful transition into employment. Figure 6 analyses the gap in the probability of transitioning from unemployment (or not in the labour force) to employment between disadvantaged and non-disadvantaged VET graduates and module completers, controlling for their completion status. The graph indicates that, of all the individuals who were unemployed before starting the VET course, students in three of the four disadvantaged groups struggle more than non-disadvantaged students in finding a job within one year after exiting VET.

Figure 6 Gap in the percentage between non-disadvantaged and disadvantaged VET graduates and module completers moving from unemployment or out of the labour force to employment after VET



Note: Confidence interval for Indigenous graduates too wide to be shown.

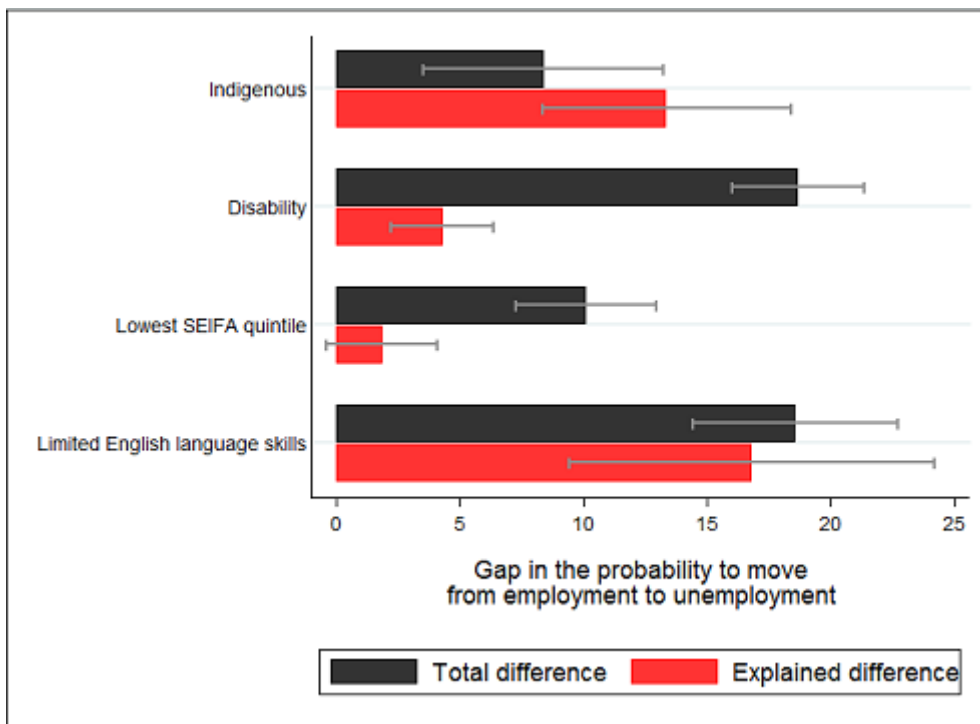
Source: Authors' calculations using weighted Student Outcomes Survey data, 2009–12.

Among the disadvantaged students, Indigenous individuals are an exception here and appear to benefit no less than non-Indigenous students in terms of moving into employment via VET. For Indigenous graduates, the gap is actually negative (-3 percentage points), although statistically insignificant (table F1).

In the last part of our empirical analysis, we concentrate on the probability that disadvantaged and non-disadvantaged VET students move from unemployment into employment after exiting the VET course. The results of this last decomposition analysis are summarised in figure 7 and table 7 for graduates and module completers combined, in tables F1 and F2 in appendix F for the sub-sample of VET graduates, and in tables G1 and G2 in appendix G for the sub-sample of module completers.

Differences in course completion rates between disadvantaged and non-disadvantaged students do not account for the gaps in the transition to employment.

Figure 7 Oaxaca–Blinder decomposition of the gap in the probability of a transition from unemployment to employment after VET course



Source: Authors' calculations using weighted Student Outcomes Survey data, 2009–12

The first result we see is that, in general, the observed characteristics only explain a limited amount of the total difference between non-disadvantaged and disadvantaged former VET students for two of the four groups: those with a disability and those who live in a low SES area. On average across the four groups, the observable characteristics only explain 26% of the total 19-percentage-point gap. The remaining unexplained gap might be driven by differences in unobserved characteristics or by factors related directly to the particular disadvantage, for example, cyclical labour market factors impacting more detrimentally on those with a disability relative to those without a disability. There are big differences in the share of the gap that can be explained by differences in the observables across the four groups, however, ranging from below 20% (and statistically insignificant) for those in low SES areas, to more than 100% for Indigenous ex-students (table 7). The implication is that if Indigenous individuals had the same observable characteristics as the non-Indigenous in the sample, they would actually have a higher probability of transitioning from unemployment to employment at the end of their vocational course than their non-Indigenous counterparts.

As was the case in table 5, the results presented in table 7 suggest that the differences in course completion rates between our disadvantaged groups and their counterparts do not play a major role in driving the gaps in the transition to employment, again with the partial exception of Indigenous ex-students. Table 8 similarly summarises the role of multiple

disadvantages in explaining the gaps in transition to employment; multiple disadvantages play the biggest role for those in the low SES group.

Tables F1 and F2, and G1 and G2, summarise the results we obtained by performing the decomposition separately for VET graduates and module completers, respectively. As for the results with respect to the probability of being employed, in this case also the two tables report very similar figures. Therefore, we can conclude that individual observable characteristics do not affect the gap in the transition to employment between non-disadvantaged and disadvantaged individuals differently for VET graduates and module completers.

Table 7 Transition from unemployment to employment, main decomposition results: graduates and module completers combined

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.084		0.187		0.101		0.1859	
Total explained difference	0.1338		0.0429		0.0185		0.1683	
Percentage of explained difference	159.35		22.95		18.30		90.51	
Top 10 explaining variables	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference
1	Victoria	31.17	Age	37.74	New South Wales	62.65	Age	43.91
2	Occupation: Managers	16.03	Reason: General skills	9.22	Western Australia	29.63	Course: Management	32.36
3	Course: Management	14.29	Reason: Other	8.38	Occupation: Unknown	24.00	Occupation: Professionals	18.35
4	Course hours: 401–800	-8.61	Course: Mixed programmes	7.50	Victoria	-22.31	Occupation: Clerical work	-17.20
5	Module completers	6.90	Certificate III	7.29	Course: Society	-14.51	Occupation: Unknown	16.77
6	Occupation: Technicians	-6.42	Males	-7.14	ACT	-11.05	Occupation: Technicians	14.79
7	Certificate III	5.99	Course: Architecture	5.53	Poor English	9.90	Course: Mixed programmes	-14.41
8	Course: Agriculture	4.79	Course hours: 1–20	5.10	Tasmania	-9.19	Course: Architecture	-12.02
9	Occupation: Unknown	4.66	Reason: Find work	5.08	Course: Management	-8.84	Course hours: 1–20	-11.74
10	Course: Education	4.58	No previous qualification	-4.61	Reason: Compulsory upskill	8.39	Occupation: Labourers	10.03

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Table 8 Transition from unemployment to employment, decomposition results: contributions of additional disadvantages, graduates and module completers combined

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	11	4.43			12	8.02	49	-0.68
Lives in lowest SEIFA quintile	61	-0.05	37	-0.81			22	3.70
Limited English language skills	n/a**	-	48	-0.45	7	9.90		
Indigenous			54	-0.21	16	6.68	n/a**	-

Note: * Out of 70 variables. **Coefficient missing due to insufficient number of observations for robust estimation.

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Almost all gaps faced by those living in low SES areas and those with limited English language skills can be explained by the differences in other observable characteristics.

Conclusion

Our results indicate the existence of course completion gaps for disadvantaged students from the four groups we identify. These are largest for Indigenous students and those in more than one disadvantaged group, and smallest for those with limited English language skills or living in low SES areas. There are also gaps in module completion rates for all but the low SES area group.

The results of the decomposition exercise for course completion show that differences in observable individual and course characteristics between students with at least one disadvantage and students with no disadvantage can explain more than half of the estimated difference in the probability of course completion. In other words, if disadvantaged students were identical to non-disadvantaged students in all observable respects, including in their course choice patterns, they would only face a 3.6 percentage point gap in their likelihood of course completion, rather than a 5.7 percentage point gap.

This aggregate picture obscures some important differences by particular disadvantaged group. Specifically, almost all of the gaps faced by those living in low SES areas and those with limited English language skills can be explained by the differences in other observable characteristics. In contrast, even after accounting for the differences in observable characteristics, both Indigenous students and students with disabilities still face a 4.4-percentage-point completion gap (table 2).

The second part of our analysis focused on the existence of employment gaps for disadvantaged VET students in our four groups. These gaps are large for all four groups, ranging from nine percentage points for those living in low SES areas to 36 percentage points for those with limited English language skills (table 5). There are similar gaps in the probability of moving from non-employment prior to the VET course into employment following the VET course (table 7).

The decomposition exercises for the probability of being employed after VET and for the probability of moving into employment from unemployment again suggest that differences in observable characteristics and course choices play a role in explaining the gaps. With respect to the former, the observable characteristics included in our analysis explain around 65% of the total employment gap for those with a disability or who live in a low SES area, rising to 95% for the Indigenous group. With the exception of the Indigenous group, this implies that disadvantaged VET students would still face a lower probability of employment even if, on average, they had the same observable characteristics and chose the same courses as the non-disadvantaged. In fact, the employment status before starting the VET course is the key explanatory variable across all four groups here (table 5). Course completion gaps are relatively unimportant in driving employment gaps, although they do explain part of the employment gap for the Indigenous group. Again with the exception of the Indigenous group, the observable characteristics tend to explain a smaller share of the gaps in transitions to employment across the disadvantaged groups, particularly for those with a disability or who live in a low SES area (table 7).

We conclude by highlighting some policy implications suggested by our analysis. First, although we show that both completion and employment gaps exist for students in our four

disadvantaged groups, our analysis indicates that substantial shares of these gaps can be explained by the differences in other individual and course characteristics between these groups and their non-disadvantaged counterparts. Although many of these factors are unlikely to be amenable to intervention by policy-makers, some may be. In particular, it may be possible to influence patterns of course choice, for example, the level or field of education of a course, in such a way as to reduce the completion and employment gaps faced by students from these disadvantaged groups.

Providing disadvantaged students with better information on completion rates and likely subsequent employment rates at the course-provider level, and perhaps more guidance on how to interpret such information, may help to support more informed choices and, ultimately, improved outcomes. Note, however, that measures to close completion gaps would not in themselves be sufficient to close employment gaps, given the relatively small contribution of completion gaps to the employment gaps for these groups. The partial exception to this is the group of Indigenous students – closing the completion gap for this group could plausibly narrow, although not eliminate, the employment gap.

Finally, completion and employment gaps remain in most cases, even when we account for all of the observable differences between the students in the disadvantaged groups and their non-disadvantaged counterparts. This suggests that the disadvantage itself can constitute a serious obstacle to completing a VET course or to entering employment post-VET. For example, individuals who have a disability may have difficulty in accomplishing some physically demanding tasks, while some jobs will be effectively closed to those with limited English language skills. It follows that there is a need for additional support the VET sector and in the labour market to help overcome these disadvantages, as far as practicable.

Disadvantage itself can constitute a serious obstacle to completing a VET course or to entering employment post-VET.



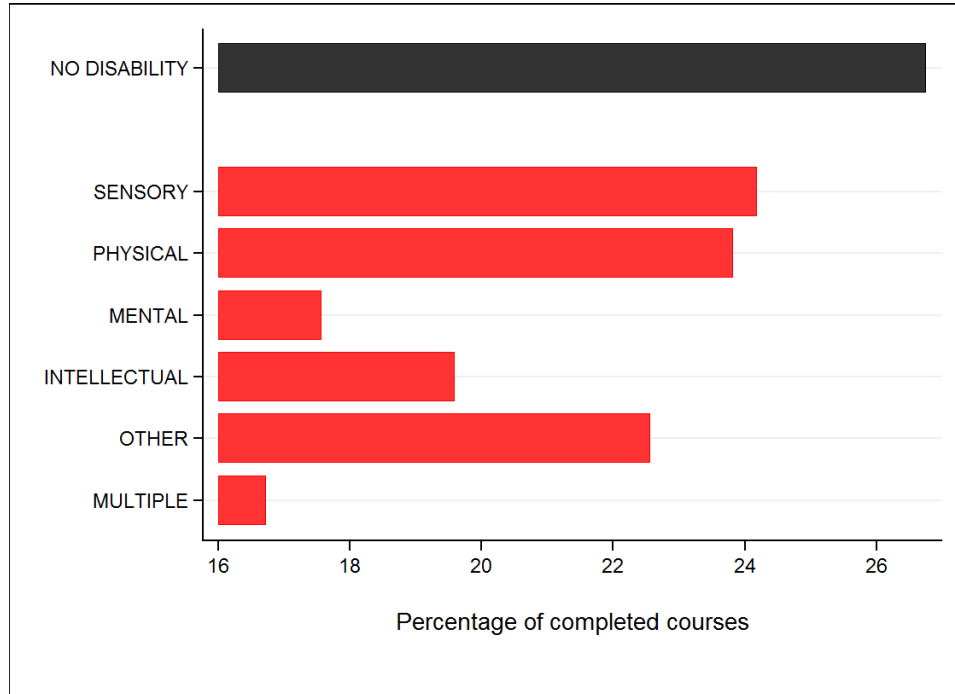
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Appendix A: Additional descriptive statistics

Figure A1 Percentage of VET course completed, by type of disability



Source: Authors' calculations using National VET Provider Collection data, 2008–11.

Table A1 Average values of individual and course observable characteristics, by disadvantage category: National VET Provider Collection data

Variable	Indigenous	Non-Indigenous	Has a disability	No disability	Lowest SEIFA quartile	Other quartile	Limited English	Non-limited English
Indigenous	1.000	0.000	0.086	0.054	0.100	0.046	0.028	0.058
Has a disability	0.112	0.071	1.000	0.000	0.088	0.073	0.050	0.077
Lowest SEIFA quartile	0.363	0.197	0.238	0.203	1.000	0.000	0.238	0.208
Limited English language skills	0.021	0.044	0.029	0.045	0.050	0.043	1.000	0.000
Males	0.535	0.500	0.515	0.502	0.502	0.505	0.350	0.507
Enrolment age	28.353	29.739	32.934	29.872	30.788	29.459	36.713	29.355
<i>State</i>								
New South Wales	0.290	0.291	0.287	0.269	0.245	0.309	0.265	0.271
Victoria	0.089	0.296	0.311	0.303	0.315	0.292	0.331	0.274
Queensland	0.201	0.189	0.153	0.175	0.111	0.144	0.155	0.225
Western Australia	0.184	0.092	0.089	0.104	0.040	0.147	0.078	0.091
Southern Australia	0.066	0.075	0.089	0.081	0.155	0.059	0.126	0.073
Tasmania	0.023	0.035	0.039	0.036	0.123	0.013	0.016	0.035
Northern Territory	0.143	0.010	0.016	0.019	0.010	0.019	0.026	0.017
Australian Capital Territory	0.005	0.013	0.015	0.013	0.001	0.017	0.003	0.013
<i>Reason for enrolment in VET</i>								
Find work	0.204	0.116	0.180	0.122	0.123	0.115	0.153	0.122
Voluntary upskill	0.129	0.137	0.108	0.143	0.124	0.125	0.085	0.144
Reskill	0.030	0.048	0.053	0.050	0.035	0.050	0.022	0.048
Compulsory upskill	0.074	0.088	0.045	0.094	0.088	0.081	0.020	0.093
General skill	0.218	0.109	0.148	0.111	0.103	0.111	0.171	0.117
Other	0.057	0.024	0.040	0.026	0.033	0.023	0.056	0.026
Not specified	0.288	0.477	0.425	0.453	0.495	0.495	0.494	0.449
<i>Course qualification</i>								
Advanced diploma	0.003	0.024	0.016	0.025	0.013	0.025	0.015	0.023
Diploma	0.031	0.099	0.071	0.102	0.062	0.100	0.046	0.095
Certificate level IV	0.075	0.153	0.124	0.157	0.118	0.157	0.062	0.150
Certificate level III	0.273	0.368	0.271	0.380	0.336	0.358	0.219	0.372
Certificate level II	0.349	0.259	0.298	0.242	0.327	0.253	0.295	0.267
Certificate level I	0.270	0.096	0.221	0.094	0.144	0.107	0.364	0.093
<i>Course duration in hours</i>								
1–20	0.113	0.077	0.081	0.076	0.106	0.074	0.03	0.086
21–50	0.142	0.101	0.102	0.101	0.121	0.095	0.064	0.108
51–100	0.150	0.100	0.118	0.100	0.114	0.098	0.112	0.104
101–200	0.198	0.148	0.171	0.148	0.168	0.150	0.184	0.150
201–400	0.217	0.230	0.232	0.231	0.228	0.236	0.282	0.226
401–800	0.137	0.233	0.209	0.233	0.188	0.235	0.244	0.221
800 and more	0.042	0.112	0.087	0.112	0.075	0.113	0.085	0.106
<i>Labour force status</i>								
Employed	0.480	0.680	0.393	0.693	0.628	0.675	0.271	0.692
Unemployed	0.275	0.185	0.317	0.181	0.221	0.186	0.280	0.186
Out of the labour force	0.245	0.135	0.290	0.127	0.151	0.139	0.449	0.122
Currently in education	0.158	0.131	0.104	0.096	0.135	0.140	0.029	0.140
Number of courses attended	1.534	1.362	1.495	1.355	1.391	1.356	1.595	1.370

Variable	Indig-enous	Non-Indig-enous	Has a disability	No disability	Lowest SEIFA quartile	Other quartile	Limited English	Non-limited English
<i>Closest occupation</i>								
Generic	0.152	0.078	0.190	0.078	0.100	0.083	0.335	0.067
Managers	0.019	0.074	0.040	0.075	0.062	0.073	0.223	0.061
Professionals	0.094	0.096	0.082	0.101	0.079	0.105	0.218	0.088
Technicians and trade workers	0.099	0.205	0.151	0.212	0.152	0.203	0.051	0.206
Community workers	0.214	0.209	0.186	0.201	0.223	0.201	0.065	0.222
Clerical and administrative workers	0.163	0.158	0.186	0.157	0.153	0.162	0.057	0.163
Sales workers	0.022	0.047	0.032	0.044	0.044	0.045	0.005	0.047
Machinery operators	0.041	0.035	0.019	0.037	0.048	0.033	0.008	0.037
Labourers	0.196	0.097	0.114	0.095	0.138	0.094	0.038	0.108
<i>Field</i>								
Natural and physical sciences	0.001	0.005	0.004	0.005	0.003	0.005	0.002	0.004
Information technology	0.009	0.027	0.038	0.026	0.019	0.028	0.008	0.026
Engineering	0.140	0.169	0.119	0.175	0.174	0.164	0.043	0.176
Architecture and building	0.052	0.059	0.033	0.059	0.044	0.062	0.009	0.061
Agriculture and environment	0.098	0.042	0.054	0.046	0.069	0.039	0.008	0.047
Health	0.036	0.037	0.035	0.039	0.037	0.038	0.010	0.038
Education	0.032	0.025	0.018	0.027	0.021	0.029	0.004	0.026
Management	0.192	0.265	0.242	0.264	0.237	0.265	0.097	0.267
Society and culture	0.110	0.124	0.120	0.125	0.111	0.126	0.172	0.118
Creative arts	0.069	0.030	0.047	0.030	0.023	0.035	0.007	0.033
Food and hospitality	0.095	0.121	0.088	0.110	0.127	0.107	0.051	0.127
Mixed	0.166	0.097	0.202	0.095	0.134	0.102	0.588	0.075
<i>Provider</i>								
ACE	0.157	0.136	0.139	0.141	0.149	0.135	0.091	0.143
TAFE	0.721	0.754	0.799	0.778	0.747	0.751	0.849	0.751
School and universities	0.032	0.053	0.017	0.025	0.044	0.055	0.027	0.048
Other	0.090	0.058	0.045	0.055	0.060	0.059	0.033	0.058
<i>High school achievement</i>								
Year 10 or below	0.681	0.386	0.529	0.370	0.483	0.380	0.374	0.407
Year 11	0.145	0.143	0.142	0.144	0.164	0.138	0.062	0.147
Year 12	0.174	0.471	0.329	0.486	0.353	0.482	0.563	0.446
<i>Highest post-secondary qualification</i>								
No post-secondary qualification	0.798	0.671	0.654	0.669	0.694	0.672	0.696	0.671
Certificate level I/II	0.059	0.027	0.062	0.027	0.040	0.027	0.027	0.030
Certificate level III/IV	0.100	0.158	0.173	0.159	0.161	0.154	0.059	0.163
Diploma	0.044	0.143	0.111	0.144	0.104	0.148	0.218	0.136

Source: National VET Provider Collection data, 2008–11.

Table A2 Average values of individual and course observable characteristics, by disadvantage category: Student Outcomes Survey data

	Indigenous	Non-Indigenous	Has a disability	No disability	Lowest SEIFA quartile	Other quartile	Limited English	Non-limited English
Indigenous	1.000	0.000	0.054	0.029	0.064	0.024	0.012	0.032
Has a disability	0.163	0.093	1.000	0.000	0.123	0.091	0.154	0.094
Lowest SEIFA quartile	0.301	0.136	0.182	0.137	1.000	0.000	0.238	0.139
Limited English language skills	0.008	0.020	0.032	0.018	0.036	0.019	1.000	0.000
Module completer	0.667	0.646	0.668	0.644	0.614	0.646	0.670	0.649
Males	0.447	0.458	0.469	0.456	0.441	0.464	0.342	0.458
Age	31.073	32.386	37.401	31.845	32.994	31.972	40.424	32.224
<i>State</i>								
New South Wales	0.227	0.208	0.229	0.207	0.310	0.218	0.317	0.206
Victoria	0.092	0.206	0.200	0.202	0.194	0.229	0.229	0.203
Queensland	0.236	0.220	0.203	0.222	0.111	0.150	0.168	0.221
Western Australia	0.179	0.177	0.150	0.181	0.076	0.211	0.178	0.178
Southern Australia	0.074	0.104	0.129	0.101	0.194	0.101	0.061	0.105
Tasmania	0.051	0.031	0.037	0.032	0.085	0.027	0.011	0.033
Northern Territory	0.116	0.024	0.022	0.028	0.027	0.027	0.026	0.027
Australian Capital Territory	0.024	0.028	0.031	0.028	0.003	0.036	0.012	0.028
<i>Reason for enrollment in VET</i>								
Find work	0.225	0.181	0.215	0.178	0.204	0.181	0.325	0.179
Voluntary upskill	0.247	0.311	0.219	0.319	0.301	0.314	0.198	0.311
Reskill	0.072	0.102	0.114	0.100	0.091	0.103	0.036	0.102
Compulsory upskill	0.164	0.187	0.114	0.193	0.161	0.180	0.050	0.187
General skill	0.162	0.132	0.193	0.126	0.135	0.129	0.251	0.131
Other	0.049	0.030	0.050	0.029	0.032	0.029	0.023	0.032
Not specified	0.081	0.057	0.094	0.054	0.076	0.064	0.117	0.057
<i>Course qualification</i>								
Advanced diploma	0.009	0.030	0.021	0.030	0.026	0.033	0.014	0.030
Diploma	0.064	0.116	0.093	0.116	0.097	0.122	0.045	0.116
Certificate level IV	0.114	0.175	0.163	0.174	0.152	0.179	0.071	0.176
Certificate level III	0.402	0.414	0.325	0.423	0.397	0.408	0.263	0.414
Certificate level II	0.277	0.208	0.269	0.204	0.247	0.199	0.297	0.210
Certificate level I	0.134	0.058	0.129	0.053	0.081	0.059	0.310	0.055
<i>Course duration in hours</i>								
1–20	0.145	0.095	0.114	0.095	0.107	0.088	0.049	0.098
21–50	0.340	0.303	0.324	0.302	0.302	0.299	0.300	0.305
51–100	0.192	0.238	0.223	0.238	0.207	0.246	0.322	0.235
101–200	0.078	0.082	0.082	0.081	0.082	0.082	0.044	0.082
201–400	0.130	0.136	0.133	0.136	0.148	0.136	0.163	0.135
401–800	0.086	0.110	0.097	0.111	0.117	0.113	0.101	0.110
800 and more	0.030	0.035	0.026	0.036	0.037	0.036	0.021	0.035
<i>Labour force status before taking the course</i>								
Employed	0.624	0.745	0.515	0.765	0.670	0.750	0.362	0.747
Unemployed	0.190	0.109	0.194	0.103	0.157	0.106	0.261	0.110
Out of the labour force	0.187	0.146	0.292	0.132	0.173	0.144	0.377	0.144
Currently in education	0.252	0.226	0.260	0.223	0.249	0.231	0.308	0.226

	Indig-enous	Non-Indig-enous	Has a disability	No disability	Lowest SEIFA quartile	Other quartile	Limited English	Non-limited English
<i>Closest occupation</i>								
Generic/other	0.090	0.062	0.132	0.056	0.099	0.065	0.356	0.057
Managers	0.027	0.068	0.044	0.069	0.063	0.068	0.115	0.066
Professionals	0.096	0.115	0.115	0.114	0.100	0.122	0.246	0.112
Technicians and trade workers	0.176	0.245	0.179	0.249	0.196	0.254	0.067	0.243
Community workers	0.271	0.212	0.209	0.214	0.214	0.202	0.083	0.217
Clerical and administrative workers	0.136	0.146	0.169	0.143	0.155	0.144	0.059	0.148
Sales workers	0.031	0.040	0.032	0.041	0.044	0.041	0.010	0.041
Machinery operators	0.045	0.034	0.034	0.035	0.043	0.032	0.014	0.035
Labourers	0.045	0.034	0.034	0.035	0.043	0.032	0.014	0.035
<i>Field</i>								
Natural and physical sciences	0.002	0.006	0.005	0.006	0.006	0.006	0.005	0.006
Information technology	0.015	0.025	0.036	0.024	0.025	0.027	0.011	0.025
Engineering	0.174	0.191	0.136	0.196	0.187	0.190	0.064	0.190
Architecture and building	0.053	0.066	0.038	0.069	0.048	0.070	0.014	0.066
Agriculture and environment	0.064	0.045	0.049	0.045	0.041	0.044	0.009	0.046
Health	0.044	0.044	0.041	0.044	0.037	0.046	0.011	0.045
Education	0.047	0.045	0.040	0.046	0.034	0.048	0.004	0.046
Management	0.187	0.240	0.230	0.239	0.259	0.239	0.099	0.243
Society and culture	0.159	0.135	0.153	0.134	0.152	0.134	0.208	0.135
Creative arts	0.044	0.038	0.058	0.037	0.025	0.042	0.010	0.039
Food and hospitality	0.113	0.101	0.083	0.104	0.091	0.090	0.056	0.103
Mixed	0.099	0.063	0.129	0.057	0.096	0.065	0.509	0.055
<i>Provider</i>								
ACE	0.006	0.007	0.008	0.007	0.009	0.008	0.000	0.006
TAFE	0.831	0.862	0.874	0.860	0.857	0.858	0.951	0.860
School and universities	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.002
Other	0.162	0.129	0.117	0.131	0.133	0.133	0.048	0.131
<i>Previous qualification</i>								
Diploma	0.104	0.208	0.169	0.209	0.174	0.211	0.284	0.203
Certification level III/IV	0.165	0.201	0.207	0.199	0.201	0.194	0.088	0.203
Certification level I/II	0.186	0.125	0.157	0.123	0.145	0.118	0.189	0.125
Year 12	0.089	0.154	0.091	0.158	0.128	0.151	0.124	0.152
Year 11	0.077	0.062	0.052	0.063	0.059	0.061	0.018	0.063
Year 10 or below	0.244	0.143	0.171	0.143	0.146	0.135	0.126	0.147
No qualification	0.135	0.108	0.152	0.104	0.145	0.130	0.172	0.108

Source: Student Outcomes Survey data, 2009–12.



Appendix B: Course completion: expanded specification

Table B1 Probability of course completion, main decomposition results, including interaction effects (= table 2 with interaction effects)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.1348		0.0755		0.0352		0.0318	
Total explained difference	0.0933		0.0311		0.0363		0.0168	
Percentage of explained difference	69.20		41.13		103.11		52.90	
Top 10 explaining variables	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference
1	Northern Territory	17.60	Certificate I	-111.20	Certificate II	-170.25	Cert. I x 201-400 hrs	14 055
2	Course hours: more than 800	16.58	Cert. III x 401-800 hrs	-58.81	Course hours: 401-800	79.28	Cert. I x 401-800 hrs	11 194
3	Course hours: 21-50	12.26	Cert. I x 101-200 hrs	48.47	Course hours: 1-20	75.02	Course hours: 201-400	-10 563
4	Certificate III	-11.50	Course hours: 401-800	47.80	Cert. II x 21-50 hrs	69.60	Course: Mixed programme	9 086
5	Certificate II	-11.37	Certificate III	44.80	Certificate IV	65.71	Cert. I x 101-200 hrs	-8 430
6	Course hours: 401-800	11.08	Certificate II	-40.52	Cert. III x 800 hrs	54.06	Cert. II x 201-400 hrs	7 783
7	Cert. III x 401-800 hrs	10.51	Cert. I x 21-50 hrs	38.44	Diploma	-51.96	Certificate III	7 359
8	Certificate IV	-10.28	Occupation: Generic	34.72	Cert. II x 201-400 hrs	49.40	Cert. III x 401-800	-6 628
9	Employed	10.04	Employed	32.76	Cert. IV x 401-800 hrs	-44.95	Cert. IV x 51-100	-6 193
10	Diploma	9.76	Cert. II x 401-800 hrs	31.00	Diploma x 800 hrs	42.60	Cert. II x 401-800	5 948

Source: Authors' calculations using National VET Provider Collection data, 2008-11.

Table B2 Probability of course completion, decomposition results, including interaction effects: contributions of additional disadvantages (= Table 3 with interaction effects)

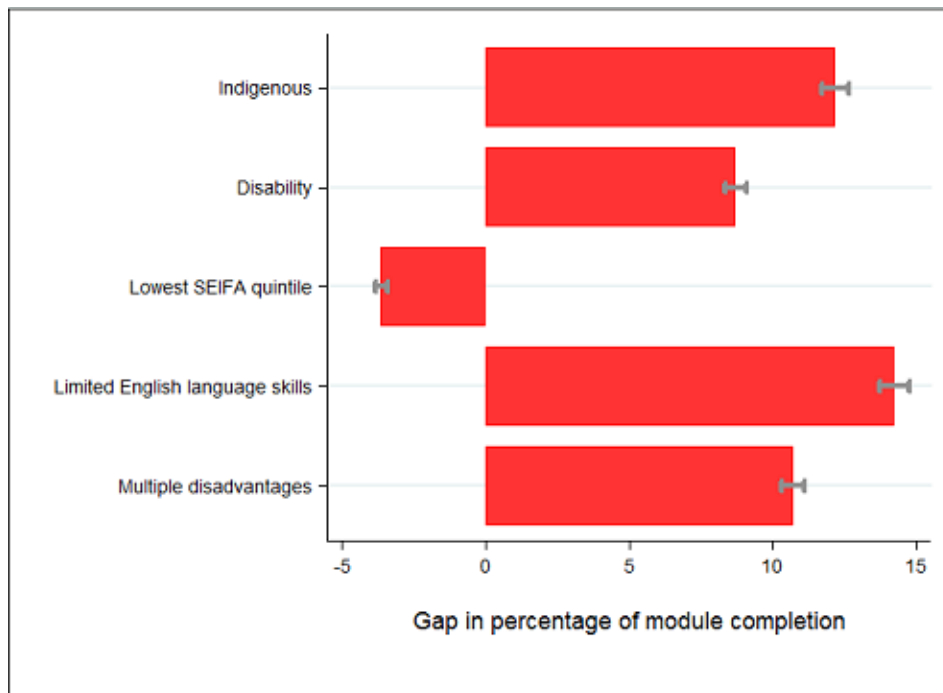
	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	62	0.75			60	1.78	59	-412.46
Lives in lowest SEIFA quintile	23	3.93	101	-0.35			99	95.78
Limited English language skills	66	-0.72	63	-3.47	81	-0.53		
Indigenous			43	6.47	25	12.51	32	-1391.08

Note: *Out of 112 variables.

Source: Authors' calculations using National VET Provider Collection data, 2008-11.

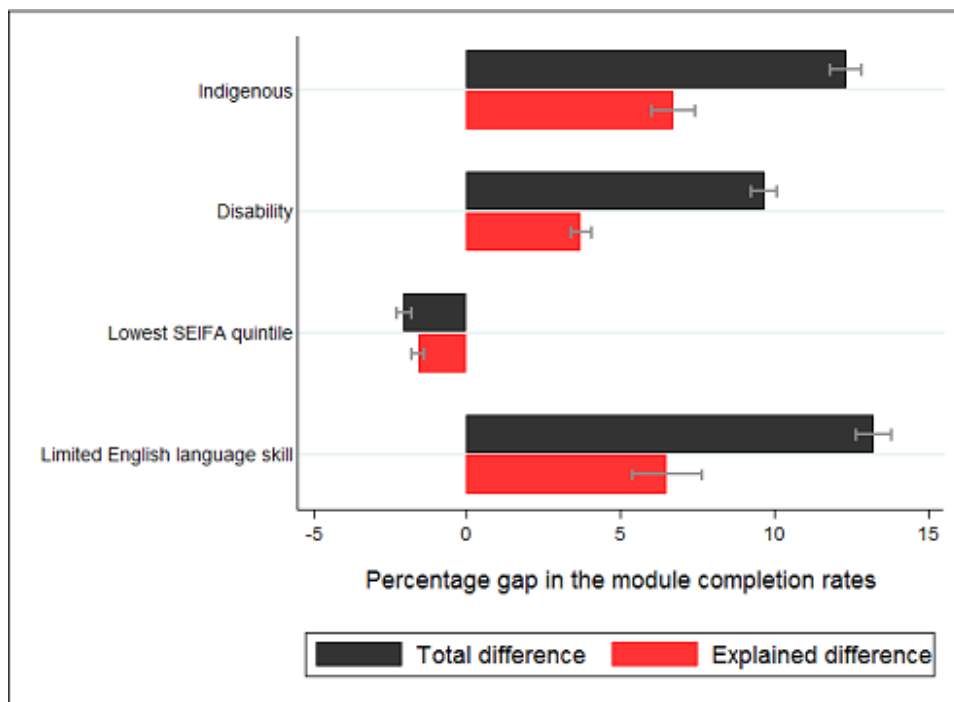
Appendix C: Module completion

Figure C1 Gap in the percentage of completed VET modules between disadvantaged and non-disadvantaged students



Source: Authors' calculations using National VET Provider Collection data, 2008–11.

Figure C2 Oaxaca–Blinder decomposition of the gap in the rate of module completion



Source: Authors' calculations using National VET Provider Collection data, 2008–11.

Table C1 Module completion, main decomposition results

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.1236		0.0974		-0.0203		0.1347	
Total explained difference	0.0672		0.0372		-0.0158		0.0652	
<i>Percentage of explained difference</i>	54.35		38.20		77.72		48.40	
Top 10 explaining variables*	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference**	Name of the variable	Percentage contribution to explained difference**
1	Certificate I	-24.04	Employed	42.28	South Australia	68.15	Course: Mixed programmes	62.62
2	Northern Territory	19.44	Certificate I	-28.18	Certificate II	29.36	Occupation: Generic	49.84
3	Employed	17.95	Course: Mixed programmes	22.17	Indigenous	-28.85	South Australia	-34.70
4	Course hours: more than 800	17.51	Age	-15.20	Course hours: more than 800	-28.73	Occupation: Managers	17.51
5	High school: Year 12	16.32	Occupation: Generic	12.85	Age	24.84	Certificate I	-16.25
6	Course: Mixed programmes	14.20	Unemployed	12.66	Course: Mixed programmes	-21.97	Occupation: Professionals	14.43
7	Occupation: Technicians	-13.86	Total number of courses	-11.65	Certificate I	17.71	Provider: ACE	-13.66
8	High school: Year 10 or below	12.94	High school: Year 12	11.52	Diploma	17.52	Occupation: Comm. worker	13.03
9	Course hours: 401–800	11.31	Certificate II	-10.62	High school: Year 12	-16.62	Occupation: Clerical work	-10.77
10	Western Australia	10.93	Not in labour force	8.16	Western Australia	16.56	Course: Management	9.53

Source: Authors' calculations using National VET Provider Collection data, 2008–11.

Table C2 Module completion, decomposition results: contributions of additional disadvantages

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	32	3.04			31	-5.68	36	-1.85
Lives in lowest SEIFA quintile	44	-1.60	46	-1.25			53	-0.87
Limited English language skills	54	0.53	20	-4.88	49	-1.79		
Indigenous			15	6.10	3	-28.85	49	-1.22

Note: * Out of 70 variables.

Source: Authors' calculations using National VET Provider Collection data, 2008–11.



Appendix D: Employment gaps: course completers only

Table D1 Probability of employment, main decomposition results: VET graduates only (= table 5 for subset of graduates)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.1071		0.2643		0.1088		0.4412	
Total explained difference	0.1008		0.1818		0.078		0.3744	
Percentage of explained difference	94.13		68.76		71.69		84.88	
Top 10 explaining variables	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference
1	Employed before VET	29.01	Employed before VET	43.67	Employed before VET	39.31	Employed before VET	31.93
2	Occupation: Managers	13.44	Not in labour force before VET	13.69	Western Australia	15.39	Occupation: Unknown	18.44
3	Not in labour force before VET	13.02	Course: Mixed programmes	9.23	Unemployed before VET	9.97	Occupation: Technicians	14.63
4	Occupation: Labourers	12.65	Unemployed before VET	8.36	Not in labour force before VET	9.18	Not in labour force before VET	11.15
5	Occupation: Professionals	12.45	Age	6.85	Tasmania	-5.84	Course: Management	8.11
6	Course: Management	8.89	Reason: Voluntary upskill	5.27	New South Wales	5.23	Diploma	5.82
7	Previous qualification: Yr 10	-8.71	Currently enrolled in VET	4.85	Occupation: Unknown	4.63	Unemployed before VET	5.34
8	Victoria	8.39	Certificate I	4.41	Reason: Compulsory upskill	4.36	Occupation: Clerical work	-4.71
9	Course: Mixed programmes	7.79	Occupation: Unknown	-3.69	Has a disability	4.28	Course: Society & culture	-4.32
10	Occupation: Comm. worker	-7.41	Certificate II	3.66	Occupation: Professionals	3.91	Reason: Find work	3.51

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Table D2 Probability of employment, decomposition results, including interaction effects: contributions of additional disadvantages: VET graduates only (= table 6 for subset of graduates)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	24	2.43			9	4.28	62	0.07
Lives in lowest SEIFA quintile	27	2.03	22	1.20			33	-0.76
Limited English language skills	n/a**	-	65	-0.05	21	1.42		
Indigenous			31	-0.77	30	0.99	n/a**	-

Note: *Out of 112 variables. ** Coefficient missing due to insufficient number of observations.

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.



Appendix E: Employment gaps: module completers only

Table E1 Probability of employment, main decomposition results: module completers only (= table 5 for subset of module completers)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.1358		0.2771		0.0848		0.3154	
Total explained difference	0.119		0.1843		0.056		0.224	
Percentage of explained difference	87.68		66.50		66.04		71.00	
Top 10 explaining variables	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference
1	Occupation: Managers	43.32	Employed before VET	47.20	Employed before VET	50.15	Course: Management	47.66
2	Employed before VET	17.81	Not in labour force before VET	17.77	New South Wales	15.47	Occupation: Clerical work	-32.82
3	Occupation: Unknown	8.55	Unemployed before VET	7.04	Unemployed before VET	13.14	Employed before VET	29.81
4	Occupation: Comm. worker	7.23	Reason: Compulsory upskill	3.97	Victoria	-11.03	Course: Mixed programmes	-27.93
5	Unemployed before VET	6.32	Occupation: Unknown	3.64	Not in labour force before VET	10.71	Occupation: Comm. worker	18.73
6	Course: Management	5.57	New South Wales	3.38	Occupation: Unknown	7.13	Occupation: Technicians	18.49
7	Has a disability	5.34	Reason: Voluntary upskill	3.11	Tasmania	-6.87	Age	16.44
8	New South Wales	5.29	Course hours: 51–100	-3.11	South Australia	-5.50	Reason: Compulsory upskill	15.21
9	Occupation: Technicians	-4.72	Age	2.27	Has a disability	5.34	Not in labour force before VET	14.25
10	Occupation: Clerical work	-4.50	Course: Engineering	2.26	Poor English knowledge	4.64	Certificate I	-13.88

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Table E2 Probability of employment, decomposition results, including interaction effects: contributions of additional disadvantages: module completers only (= table 6 for subset of module completers)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	7	5.34			9	5.34	39	-1.21
Lives in lowest SEIFA quintile	26	1.11	26	-0.64			20	4.06
Limited English language skills	46	0.23	36	-0.48	10	4.64		
Indigenous			34	0.50	15	2.57	38	-1.29

Note: *Out of 112 variables.

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.



Appendix F: Exiting unemployment gaps: course completers only

Table F1 Transition from unemployment to employment, main decomposition results: VET graduates only (= table 7 for subset of graduates)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.0433		0.1737		0.1012		0.2072	
Total explained difference	0.0703		0.0405		0.071		0.1401	
<i>Percentage of explained difference</i>	162.19		23.31		70.18		67.65	
Top 10 explaining variables	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference
1	Victoria	234.66	Age	48.90	Western Australia	70.07	Occupation: Unknown	63.38
2	Course: Engineering	-95.03	Course: Mixed programme	25.08	Course: Architecture	15.86	Course: Society	-28.58
3	Occupation: Managers	-89.06	Previous qual: Year 12	-24.23	Course: Society	-8.82	Age	27.70
4	Course: Society	-73.55	Occupation: Managers	20.99	New South Wales	7.99	Course hours: 201–400	18.05
5	Occupation: Unknown	-64.89	Certificate I	20.63	South Australia	7.92	Course: Mixed programme	11.03
6	Occupation: Technicians	-64.75	Reason: General skills	16.46	Occupation: Technicians	7.87	Provider: TAFE	-9.57
7	Certificate I	62.28	Reason: Find work	15.91	ACT	-7.68	Course hours: 50–100	8.55
8	Occupation: Community work	-60.66	Course: Society	12.55	Occupation: Unknown	7.26	Course: Management	7.59
9	Reason: Other	-59.33	Provider: ACE	-11.12	Course: Education	-6.91	Has a disability	7.59
10	Course: Hospitality	53.13	Course hours: 101–200	-10.93	Tasmania	-5.48	Reason: General skills	5.92

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Table F2 Transition from unemployment to employment, decomposition results, including interaction effects: contributions of additional disadvantages: VET graduates only (= table 8 for subset of graduates)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	16	34.62			21	2.35	9	7.59
Lives in lowest SEIFA quintile	24	-27.49	60	0.31			27	-2.19
Limited English language skills	n/a**	-	23	-5.44	34	1.32		
Indigenous			28	-4.25	45	-0.52	n/a**	-

Note: *Out of 112 variables. ** Coefficient missing due to insufficient number of observations.

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Appendix G: Exiting unemployment gaps: module completers only

Table G1 Transition from unemployment to employment, main decomposition results: module completers only (= table 7 for subset of course completers)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
Total difference	0.0994		0.1885		0.0874		0.163	
Total explained difference	0.1196		0.048		0.0219		0.2565	
Percentage of explained difference	120.32		25.46		25.04		157.31	
Top 10 explaining variables	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference	Name of the variable	Percentage contribution to explained difference
1	Occupation: Managers	55.99	Age	24.29	New South Wales	54.73	Course: Management	232.73
2	Occupation: Unknown	24.28	Course hours: 1–20	12.98	Victoria	-36.79	Occupation: Clerical work	-166.63
3	Victoria	16.03	Course hours: 50–100	-12.95	Poor English	12.66	Occupation: Technicians	102.90
4	Diploma	-15.40	Occupation: Unknown	10.86	South Australia	-12.10	Occupation: Labourers	67.91
5	Occupation: Technicians	-13.40	New South Wales	10.85	Course: Mixed programme	10.80	Occupation: Unknown	-46.18
6	Certificate II	-12.24	Reason: Other	8.48	Occupation: Unknown	10.09	Certificate I	-44.71
7	Occupation: Community work	-7.56	Reason: General skills	6.20	Reason: Compulsory upskill	8.72	Occupation: Community work	41.74
8	Occupation: Clerical work	-7.07	Course hours: 21–50	4.79	Occupation: Machinery op.	-8.54	Diploma	-41.45
9	Occupation: Labourers	7.00	Occupation: Community work	4.67	Has a disability	8.42	Course: Engineering	-35.70
10	Course: Management	6.85	Male	-4.64	Indigenous origin	7.95	Age	31.29

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

Table G2 Transition from unemployment to employment, decomposition results, including interaction effects: contributions of additional disadvantages: module completers only (= table 8 for subset of course completers)

	Indigenous		Has a disability		Lives in lowest SES area		Limited English language skills	
	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference	Rank of the categories of disadvantage*	Percentage contribution to explained difference
Has a disability	20	3.39			9	8.42	59	0.07
Lives in lowest SEIFA quintile	23	-2.79	30	-1.51			21	6.07
Limited English language skills	n/a**	-	58	0.10	3	12.66		
Indigenous			24	1.78	10	7.95	n/a**	-

Note: *Out of 112 variables. ** Coefficient missing due to insufficient number of observations.

Source: Authors' calculations using Student Outcomes Survey data, 2009–12.

NVETR Program funding

The National Vocational Education and Training Research (NVETR) Program is coordinated and managed by NCVER on behalf of the Australian Government and state and territory governments. Funding is provided through the Department of Education and Training.

The NVETR Program is based on national research priorities and aims to improve policy and practice in the VET sector. The research effort itself is collaborative and requires strong relationships with the research community in Australia's universities and beyond. NCVER may also involve various stakeholders, including state and territory governments, industry and practitioners, to inform the commissioned research, and use a variety of mechanisms such as project roundtables and forums.

Research grants are awarded to organisations through a competitive process, in which NCVER does not participate. To ensure the quality and relevance of the research, projects are selected using an independent and transparent process and research reports are peer-reviewed.

From 2012 some of the NVETR Program funding was made available for research and policy advice to National Senior Officials of the then Standing Council for Tertiary Education, Skills and Employment (SCOTESE) Principal Committees. They were responsible for determining suitable and relevant research projects aligned to the immediate priority needs in support of the national VET reform agenda.

For further information about the program go to the NCVER Portal <<http://www.ncver.edu.au>>.



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