



From VET to sustainable employment for Aboriginal and Torres Strait Islander peoples — support document

NCVER

This document was produced by NCVER based on the research for the report *From VET to sustainable employment for Aboriginal and Torres Strait Islander peoples*, and is an added resource for further information. The report is available on NCVER's Portal: <<https://www.ncver.edu.au>>.

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Acknowledgement of Country

NCVER acknowledges the Traditional Custodians of Country throughout Australia and their continued spiritual connection to land. We pay respect to Elders past, present and emerging.

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Level 5, 60 Light Square, Adelaide, SA 5000
PO Box 8288 Station Arcade, Adelaide SA 5000, Australia

Phone +61 8 8230 8400 Email ncver@ncver.edu.au

Web <<https://www.ncver.edu.au>>

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Introduction

This support document accompanies the research summary *From VET to sustainable employment for Aboriginal and Torres Strait Islander peoples*, which examines the contribution of vocational education and training (VET) participation to sustainable employment for this cohort of the Australian population.

The purpose of this document is to provide a technical discussion of the data extraction and transformation approaches used in the research, as well as an explanation of the research methodologies.

The main source of data for this research is the Australian Bureau of Statistics (ABS) Multi-Agency Data Integration Project (MADIP). This report details the scope of the data used in the analysis, including the criteria for inclusion and exclusion of individuals and training programs. It also describes the construction and treatment of the control groups used in the regression models and comparative analysis.

A mix of methodologies was used in this research, including k-nearest neighbors (KNN) matching, difference-in-differences (DID) logistic regressions, multiple logistic regression and comparative analyses. These methods were implemented to estimate the impact of VET participation, as well as the influence of an individual's personal and training characteristics, on sustainable employment.

By describing the data sources, extraction and transformation processes, research methodologies and analytical techniques used in the study, this document serves as a tool for readers seeking a deeper understanding of the research findings.

Data extraction and transformation

Scope

The ABS Multi-Agency Data Integration Project (MADIP) was the main source of data for this analysis. MADIP is a secure data asset, combining information on health, education, government payments, income and taxation, employment and population demographics in Australia over time.¹

For this analysis, we used the following linked datasets in MADIP: National Centre for Vocational Education Research (NCVER) Total VET activity (TVA) data (2015–19); ABS 2016 Census data; and the Department of Social Services (DSS) DOMINO Benefit data (2006–21). For consistency, all demographic information for individuals was sourced from the 2016 Census data.

Data from the different agencies were linked in MADIP using the Person Linkage Spine.² The Person Linkage Spine is central to MADIP data-linking methods, allowing the records of the same person from different datasets to be linked. The spine enables more efficient and higher-quality linkage, at the same time ensuring privacy and security.

The ABS has established a spine-quality estimator to assess the dependability of a spine in identifying the same individual across multiple datasets, providing a spine quality rating for each spine. A spine with a quality identifier of '1' signifies the highest reliability level, meaning we can confidently state that all records with this spine refer to the same person. In this analysis, version V5 of the spine was used and only the records with the top two highest spine quality levels were included.

Our specific area interest for this analysis was the association between participation in vocational education and training and a sustainable employment outcome. We therefore excluded individuals aged 14 years or under from the analysis as they are too young to join the workforce.

Our analysis focused on nationally recognised VET programs, with the following types of training in scope:

- training package qualifications
- accredited qualifications
- training package skill sets
- accredited courses.

In this study, we use the 2016 VET commencing cohort as the group of interest, to allow for sufficient time to have passed for investigating their program completion and post-training outcomes within the linked data. We have excluded all 2016 VET in Schools students, as well as those students who were enrolled in 40 or more subjects in 2016 due to data-quality concerns.

Regression models and comparative analyses were used in this research. The regression models are used to measure the effect of VET participation and personal and training characteristics on sustainable employment. For the models, we construct treatment and control groups (described below) and compare the changes in outcome over time between these groups. By examining the difference in outcomes

¹ Details of MADIP can be found at: <<https://www.abs.gov.au/about/data-services/data-integration/integrated-data/multi-agency-data-integration-project-madip>>.

² Details about the person linkage spine can be found at: <<https://www.abs.gov.au/about/data-services/data-integration/person-linkage-spine>>.

between the two groups before and after training, we can isolate the effect of VET. This is important, as each person in the data might have a different employment status and different personal abilities in the pre-training period. Additionally, other factors might change over time but do so equally for both groups, for example, economic trends and job market demands.

In the regression, the treatment group refers to those people who receive the intervention, which is VET participation in this research; the control group does not receive the intervention.

The following treatment groups were constructed:

- *Aboriginal and Torres Strait Islander completers*: Aboriginal and Torres Strait Islander students who commenced at least one VET program in 2016 and completed at least one of those programs between 2016 and 2019
- *Aboriginal and Torres Strait Islander non-completers*: Aboriginal and Torres Strait Islander students who commenced at least one VET program in 2016 but did not complete any of those programs between 2016 and 2019.

The following control groups were constructed:

- *Aboriginal and Torres Strait Islander peoples non-2016 commencing* (for regression models): Aboriginal and Torres Strait Islander peoples who had not commenced a VET program in 2016
- *Non-Indigenous 2016 commencing* (for regression models): non-Aboriginal and Torres Strait Islander peoples who had commenced a VET program in 2016 and had completed or not completed any of those programs
- *Aboriginal and Torres Strait Islander peoples without any VET* (for comparative analysis):³ Aboriginal and Torres Strait Islander peoples whose previous highest education level in 2016 was not certificates I–IV, diploma or above and had not commenced a VET program in 2016
- *Non-Indigenous* (for comparative analysis): Non-Aboriginal and Torres Strait Islander peoples who had commenced a VET program in 2016.

Terms and data definition

Sustainable employment outcome

There is no commonly accepted definition of a sustainable employment outcome. We therefore used data relating to the receipt of unemployment benefits as the main measurement for someone who was not employed pre- or post-training. The unemployment benefits included:

- Farm Household Allowance
- Farm Household Support
- Job Search Allowance
- Jobseeker Payment

³ In the data, Years 11 and 12 are higher than certificate II, and Year 10 may be considered higher than certificate I or certificate II. In some cases, therefore, individuals might have Year 10, 11 or 12 as their highest education level and have also completed a VET program.

- Newstart Mature Age Allowance
- Newstart Allowance
- Newstart
- Parenting Allowance
- Parenting Payment Partnered
- Parenting payment Single
- Special Benefit
- Youth Allowance (Other).

Our working definition for a sustainable employment outcome was: 183 days (6 months) or more continuous employment within the pre-/post-training period. The continuous employment period means a person has not received unemployment benefits for that time.

To estimate the effect of VET programs on sustainable employment outcomes, we compared the outcome of the pre-training period with the post-training period. Identifying the pre-training period is straightforward. Defining the post-training period presents a challenge because non-completers and the control group do not have a defined training period (that is, it is not clear when they stopped their training). Thus, we must define the training period and post-training period for these particular groups.

These periods were defined as follows:

Pre-training period: the pre-training period was defined as the 2015 calendar year.

Training period: our focus was on the 2016 VET commencing cohort. Note that around 25% of students had more than one VET program enrolment in 2016.

- For *completers*, we chose the year of the most recent completion record as the final training year. For example, if a student commenced two programs in 2016 and one was completed in 2017 and the other completed in 2019, then 2019 was set as the final training year for this student.
- For *non-completers*, it is not clear when they ceased the training. We note that around 91% of the 2016 VET commencing cohort completed the program within two years, in 2017. Thus, we make the assumption that a typical VET program takes two years to complete. For non-completers, it's difficult to identify when they abandon the program. Hence, for non-completers, we make the assumption that their training spanned two years, from 2016 to 2017, and set 2017 as their final year of training.

Individuals in the control group did not have VET program enrolments that commenced in 2016. We therefore use the KNN matching process (details below) to match each individual in the control group with a counterpart from the treatment group. The matched year of a person in the control group was the same as the final completion year of their counterpart.

For example, person A in figure 1 commenced in a VET program in 2016 and completed in 2018; person B commenced in a VET program in 2016 and did not complete it. According to the definition given above, the final training year for A and B are 2018 and 2017 respectively. If persons 1 and 2 are persons A and B's counterparts from the control group respectively, then the matched year for 1 and 2 are 2018 and 2017.

We defined the training period as the time interval between 1 January 2016 and 31 December of the final completion/matched year.

Post-training period: we took into consideration that VET learners may need time to find a job after completing their training. Thus, the post-training period was longer than the pre-training period and was defined as the 18 months following the completion/matched year.

Figure 1 Example of the pre-training, training and post-training periods for a VET program completer, non-completer and their matched counterparts in the control group

	2015	2016	2017	2018	2019	2020
Person A: Completer	Pre-training (1 year)	Training period (2016–18)			Post-training (1.5 years)	
Person 1: Matched counterpart of A	Pre-training (1 year)	Training period (2016–18)			Post-training (1.5 years)	
Person B: Non-completer	Pre-training (1 year)	Training period (2016–17)		Post-training (1.5 years)		
Person 2: Matched counterpart of B	Pre-training (1 year)	Training period (2016–17)		Post-training (1.5 years)		

Note that person 1 and person 2 did not actually have VET as they are in the control group, as explained in the text.

Key and control variables

In the analysis, we extracted (or further derived) 19 variables from the data sources.

VET participation and personal and training characteristics were the key factors of interest. VET participation was separated into two components: 2016 VET commencing completers and non-completers, which were consistent with our treatment group settings. Personal and training characteristics were obtained from TVA and Census 2016 data.

In addition to the above key variables, we added a set of control variables, used for data matching and regression modelling. The control variables helped to reduce potential bias from missing variables, which could have led to unreliable results.

The variable list and definitions⁴ included the following.

Personal characteristics

Age group

This variable was derived from the Census 2016 age variable. The 2016 Census form asks respondents to provide the date of birth for each person on the form, or age in years if the date of birth is unknown. Age is then calculated from date of birth when provided, otherwise the stated age is used. If neither age nor

⁴ All the definitions are from ABS Census data dictionary and NCVET Total VET students and courses: terms and definitions. The details are available from: <<https://www.abs.gov.au/ausstats/abs@.nsf/mf/2901.0>>; <<https://www.ncver.edu.au/research-and-statistics/publications/all-publications/total-vet-students-and-courses-2021>>.

date of birth is provided, age is imputed using other information on the form and using an age distribution of the population.

In this analysis, we defined the following age groups: 15–19 years; 20–24 years; 25–44 years; 45–64 years; and 65 years and over.

Apprentice or trainee

This variable was extracted from TVA data. It indicates whether a student is undertaking some off-the-job training under an apprenticeship/traineeship training contract during the collection year.

Gender

This variable was extracted from Census 2016 data. It gives the gender of each person recorded in the Census as being either male or female.

Indigenous status

This variable was extracted from Census 2016 data. The Indigenous status of a person is determined by their response to the ABS Standard Indigenous Question, which asks whether each person is of Aboriginal and/or Torres Strait Islander origin.

In our analysis, we combine them into three categories: Aboriginal and Torres Strait Islander peoples, non-Indigenous and unknown.

Remoteness region

This variable was derived from Census 2016 data. The Remoteness Structure of the Australian Statistical Geography Standard (ASGS) is used to disseminate a broad range of ABS social and demographic statistics. It divides each state and territory into several regions, based on their relative access to services.

In this study, we integrated the data into five categories: major cities, inner regional, outer regional, remote and very remote.

Index of Relative Socio-economic Disadvantage (IRSD)

This variable was extracted from combined geography data. This index is a general socio-economic index that summarises information about the economic and social resources of people and households within an area. This index focuses on disadvantage. A high score (or decile) reflects a relative lack of disadvantage rather than relative advantage.

State of residence

This variable is derived from Census 2016 data. States/territories are the largest spatial unit in the ASGS and are part of the main structure within ABS structures.

Training characteristics

Field of education

This variable was extracted from TVA data. It describes the broad area of study related to a qualification or subject in which a student is enrolled.

Funding source

This variable was extracted from TVA data. It refers to the source of funding for a program enrolment. Where a program enrolment has subject enrolments in more than one funding category, the funding source is assigned according to the following hierarchical order: government funding, international fee-for-service funding, domestic fee-for-service funding.

In our research, we consolidated funding source into two main types: government funding and fee-for-service funding.

Level of education

This variable was extracted from TVA data. The level of education identifies the level of a program in which a student is enrolled. It identifies the degree of complexity of the program of study.

Occupation (ANZSCO) 1-digit

This variable was extracted from TVA data. It refers to the intended occupational outcome of a program. Occupations are classified using the Australian and New Zealand Standard Classification of Occupations (ANZSCO)

Provider type

This variable was extracted from TVA data. It refers to the type of institution or organisation providing the training.

Type of training

This variable was extracted from TVA data. It distinguishes a qualification, course or skill set by its level of recognition in the VET sector.

In this research, only nationally recognised programs were included in scope. These are training package qualifications, accredited qualifications, training package skill sets and accredited courses that are listed on the National Training Register (<training.gov.au>).

Control variables

Australian citizenship status

This variable was extracted from Census 2016 data. It records whether people indicate that they hold Australian citizenship.

Country of birth

This variable was extracted from Census 2016 data. It indicates the country in which a person was born and is coded using the Standard Australian Classification of Countries (SACC), 2016 (ABS cat.no.1269.0).

In our analysis, we consolidated them into two main types: Australia and other.

Household relationship

This variable was extracted from Census 2016 data. It is used to record the relationship of each person in a family to the family reference person or, where a person is not part of a family, that person's relationship to the household reference person.

Language spoken at home

This variable was extracted from Census 2016 data. It records the main language other than English spoken at home.

In this analysis, we combined them into two main categories: English and other.

Previous highest education level

This variable was derived from Census 2016 and TVA data.

In TVA data, it is defined as the highest level of education, including any post-compulsory education successfully completed by a student before commencing training.

The 2016 Census provides a definition derived from information on the highest year of school completed and the level of the highest non-school qualification, regardless of the particular field of study or the type of institution in which the study was undertaken. The derivation process determines which of the 'non-school' and 'school' attainments will be regarded as the highest.

For all students who commenced at least one VET program in 2016, we referred to the TVA dataset. In other cases, the 2016 Census served as the data source.

Years 11 and 12 may be considered higher levels than certificate II, and Year 10 may be considered higher than certificate I or certificate II. Therefore, it should be noted that, in some cases, individuals might have Year 10, 11 or 12 as their highest education level when they have also completed a VET program.

Self-assessed proficiency in spoken English

This variable was extracted from Census 2016 data. It classifies their self-assessed proficiency in spoken English.

Methodology

In this analysis, we implemented a mix of methodologies to provide a comprehensive analysis. The selected methods included a comparative analysis of the descriptive data and a combination of logistic regression models.

Firstly, we constructed a set of *K*-nearest neighbors (KNN) matching difference-in-differences (DID) logistic regressions. This was used to estimate the impact of VET participation on sustainable employment for Aboriginal and Torres Strait Islander peoples. This method is a robust choice, one that reduces selection bias and isolates the influence of VET participation from other external factors.

To further interrogate the effect, we used multiple logistic regression to determine the influence of an individual's personal and training characteristics on sustainable employment. By incorporating these different types of regression models, we were able to independently explore the contribution of VET participation and various personal and training characteristics on the likelihood of achieving sustainable employment.

To further support our findings, we conducted a comparative analysis. This method primarily contrasted the proportions of different demographic and training characteristics between the treatment and control groups.

Estimation of the impact of VET participation on the sustainable employment outcome

K-nearest neighbors matching

In this study, individuals in the treatment and control groups were non-random samples of the population. This is because students commencing VET in 2016 self-selected themselves into this group, likely due to their own characteristics. Those who participated in VET may already have a strong drive or certain abilities that increase their chances of securing employment, even without VET. For example, an individual may have chosen to commence training in 2016. This individual's decision may have been driven by their being a fast learner and potentially already holding relevant skills, which could naturally lead to a similar job, even without participating in VET. That is, the individual's inherent capabilities could facilitate job acquisition through a different pathway. If we only compare VET students with non-VET individuals, we might overestimate the benefits of VET. This is because the differences may be due to their initial traits, not solely to the VET program's effect.

To address the issue of self-selection and reduce potential selection bias, we implemented matching methods in this study. Matching is a widely used technique in observational studies for creating comparable groups by pairing individuals with similar observed characteristics from the treatment and control groups. This approach ensures a fair comparison of outcomes and strengthens the credibility of the study's findings.

We selected several matching variables with the potential to influence a person's decision to participate in VET and subsequent outcomes. The variables selected included:

- age group
- country of birth
- Australian citizenship status

- gender
- language spoken at home
- remoteness region
- relationship in household
- self-assessed proficiency in spoken English
- statistical area.

The K-nearest neighbors (KNN) method, a non-parametric supervised machine learning technique, was used for matching. KNN identifies the k most similar individuals based on the selected matching variables, with the aim of finding the most similar, non-repeated person in the control group for everyone in the treatment group.

For example, consider having person 1, person 2, person 3, ..., in the treatment group; person A, person B, person C, ..., in the control group. If the result shown in table 1 is generated from the KNN model (first two columns), the matching result will be the pairs in the third column.

Table 1 Example of results generated from K-nearest neighbours model

Individual in treatment group	Top most similar individuals in control group (descending order)	Matching pair
1	A, C, E, ...	1 - A
2	A, D, F, ...	2 - D
3	A, D, F, ...	3 - F
4	F, G, T, ...	4 - G
...

KNN matching results

A comparison of the pre-matching and post-matching distributions of each factor revealed that the treatment and control groups had more comparable observed characteristics after matching.

In figure 2, the control group (green bars) tended to have a higher proportion of people in older age groups when compared with the treatment group (blue bars).

In contrast, figure 3 shows that our matched samples for both groups had more similar age distributions after the matching process.

Figure 2 Pre-matching comparison for age of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

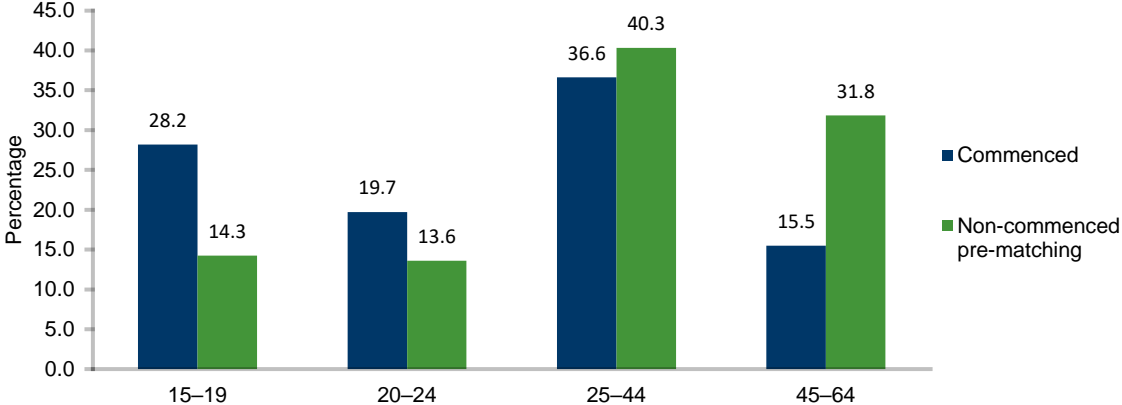
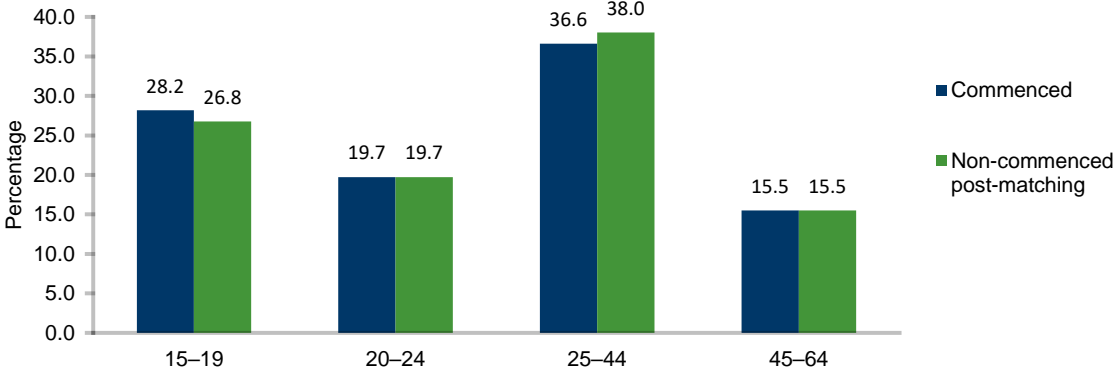


Figure 3 Post-matching comparison for age of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016



The pre-matching and post-matching results for other factors can be found in appendix A. The results provide strong evidence that the application of the KNN matching method successfully created matching pairs with comparable observed characteristics, which reduced selection bias and allowed for a more reliable comparison between the treatment and control groups.

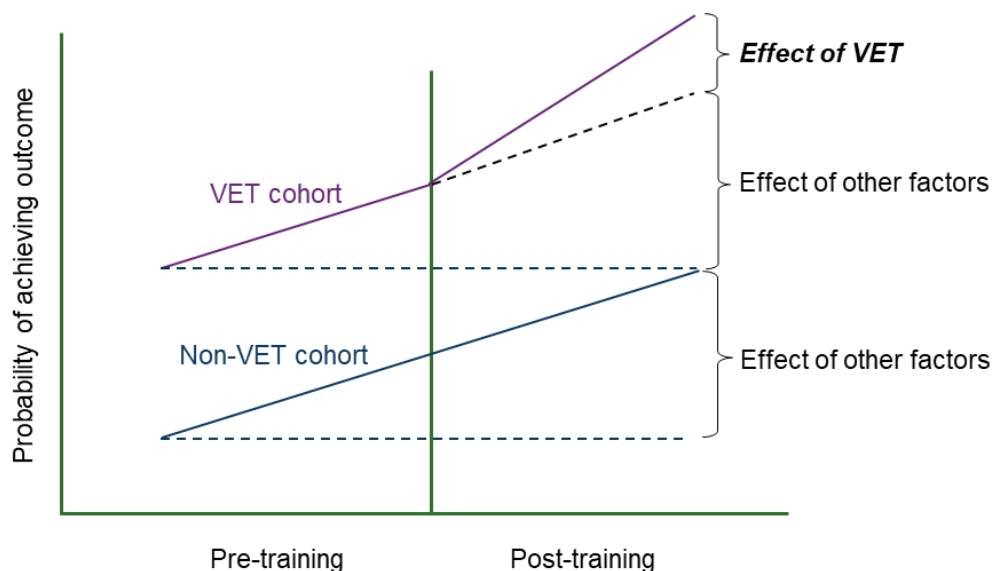
Difference-in-differences model

The difference-in-differences (DID) model was used to assess the impact of VET participation on the probability of achieving a sustainable employment outcome. By observing the difference in the probability between the treatment and control groups, before and after the period of VET activity, the model was able to separate out the influence that VET had on the outcome when compared with other external factors, such as time, economic trends, job market demands etc.

Figure 4 illustrates the rationale behind the DID method used in this analysis. The effect of VET participation was estimated by comparing the outcome before and after VET participation. After the matching process, we assumed that people in both the treatment and control groups had similar backgrounds. Therefore, the key factor causing the difference in the probability of achieving a

sustainable employment outcome was VET participation, which is represented as the ‘Effect of VET’ in figure 4.

Figure 4 Graphical representation of the VET and non-VET cohorts across the pre- and post-training periods, showing the effect of VET and other factors



Note: This figure is for indicative purposes only and does not represent the actual relationship between the two groups.

The equation for the basic DID logistic regression in our research is as follow:

$$\begin{aligned} \text{logit}(p) &= \beta_0 + \beta_1 * VET_{Comp} + \beta_2 * VET_{non-Comp} + \beta_3 * TIME + \beta_4 * VET_{Comp} * TIME + \beta_5 * VET_{non-Comp} * TIME \\ &+ \gamma * Controls + \varepsilon \end{aligned}$$

In this equation:

- logit(p) represents the log odds of a person who has achieved a sustainable employment outcome.
- VET_{Comp} is whether a person commenced at least one VET program in 2016 and completed at least one of the programs.
- $VET_{non-Comp}$ indicates that a person commenced at least one VET program in 2016 and did not complete any of those programs.
- TIME takes a value of 1 for post-training and 0 for pre-training.
- $VET_{Comp} * TIME$ and $VET_{non-Comp} * TIME$ are the interaction terms that are 1 for the group at post-training period and 0 for at pre-training period.
- Controls represent the control variables.
- ε is the error term.

The model examined the strength of the correlation between VET participation and a sustainable employment outcome using odds ratio analysis.

Odds ratio (OR) is a measure of association between a factor and an outcome, often used in a logistic regression analysis. The OR represents the factor by which the odds of the outcome occurring change for

each unit increase in each factor, while holding all other factors constant. OR is calculated from the exponentials of the coefficients in the DID regression.

The analysis provided valuable insights into how VET participation affected the probability of achieving sustainable employment. We selected a baseline category – individuals who did not commence any VET programs in 2016, with the odds ratio set to 1. An odds ratio greater than 1 for a specific treatment indicates that this factor increases the likelihood of achieving sustainable employment, by comparison with those in the baseline group. Conversely, an odds ratio lower than 1 for a particular treatment suggests that it decreases the likelihood of achieving the outcome.

We also considered the p-value of each category to determine its statistical significance. If the p-value of a category is higher than 0.05, it means that it was not statistically significant at the 5% level, indicating that there was insufficient evidence to claim that the likelihood of achieving the outcome for this category is different from the baseline category. By taking into account p-values, we gain a more comprehensive understanding of how each category of different personal and training characteristics contributes to the likelihood of achieving sustainable employment.

Difference-in-differences model results

In our analysis, we constructed two separate DID regressions to estimate the following effects:

- the difference of the effect of VET participation (commenced at least one VET program in 2016) for Aboriginal and Torres Strait Islander completers and non-completers compared with non-Indigenous VET participants (commenced VET in 2016) – scenario 1
- the difference of the effect of VET participation (commenced at least one VET program in 2016) for Aboriginal and Torres Strait Islander completers and non-completers compared with Aboriginal and Torres Strait Islander non-VET participants (did not commence any VET programs in 2016) – scenario 2.

How to interpret the results

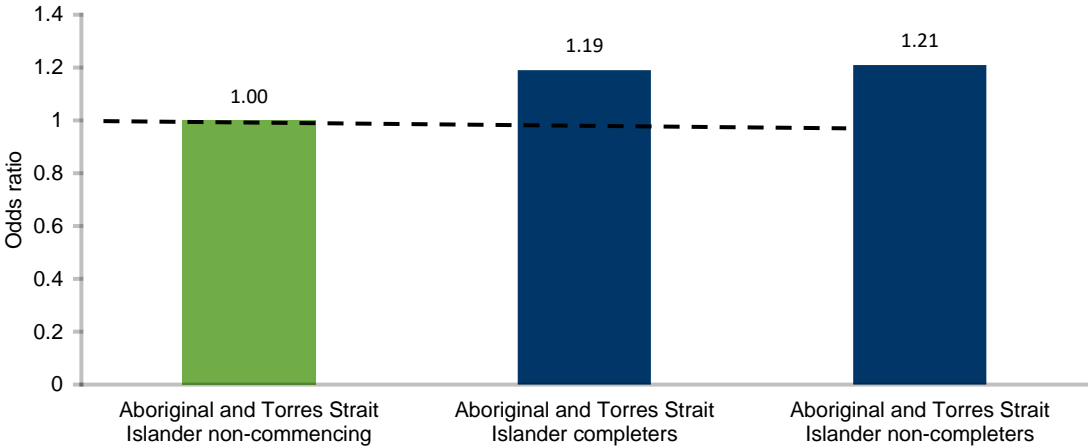
Taking the second scenario as an example (the result for the first scenario can be found in appendix B), the Aboriginal and Torres Strait Islander 2016 non-commencing group, which was the control group, was chosen as the baseline. The coefficients for completers and non-completers were 0.171 and 0.191 respectively (refer to the full results in the appendix). The p-values for both were below 0.05. By calculating the exponentials of these two coefficients, we obtained the odds ratios displayed in figure 5.

Figure 5 shows if an Aboriginal and Torres Strait Islander student commenced at least one VET program in 2016 and completed this program, the likelihood of their achieving sustainable employment would increase by 19% when compared with someone with the same background who did not commence a VET program in 2016.

Similarly, if an Aboriginal and Torres Strait Islander student commenced at least one VET program in 2016 but did not complete this program, the likelihood of their achieving sustainable employment would increase by 21% compared with someone with the same background who did not commence a VET program in 2016.

The results suggests that, on average, the likelihood of achieving sustainable employment for an Aboriginal and Torres Strait Islander student who commenced a VET program in 2016 increased by approximately 20%, regardless of their background characteristics such as age or gender.

Figure 5 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who had commenced at least one VET program in 2016, by completion status, compared with those who did not commence a VET program in 2016



Note: The green bar in the figure indicates the odds ratio of the baseline, with a value of 1; that is, no increase or decrease in the likelihood of achieving a sustainable employment outcome. The control group was chosen as the baseline for comparison.

Estimation of the impact of Aboriginal and Torres Strait Islander personal and training characteristics on sustainable employment

Multiple logistic regression

In our analysis, we applied multiple logistic regression to estimate the strength of the correlation between various personal and training characteristics and the probability of achieving sustainable employment. This model is a statistical method for analysing the relationship between a binary outcome variable and multiple factors, accounting for their individual effects while holding all other factors constant. This method allows us to identify how each of the factors influences the likelihood of achieving sustainable employment.

Only those individuals who participate in VET have the training characteristics information. Thus, we only apply this model to Aboriginal and Torres Strait Islander peoples who commenced at least one VET program in 2016, regardless of whether they completed or not.

The equation for the multiple logistic regression used in our analysis was as follows:

$$\text{logit}(p) = \beta_0 + \beta_i * \text{Personal_char}_i + \beta_j * \text{Training_char}_j + \gamma * \text{Controls} + \varepsilon$$

In this equation, $\text{logit}(p)$ represents the log odds of a person who has achieved a sustainable employment outcome. Personal_char_i is the i -th personal characteristic, while Training_char_j indicates the j -th training characteristic. Controls represent the control variables, and ε is the error term.

Similar to the DID model analysis, we implemented an odds ratio analysis to quantify the strength of the correlation between the personal and training characteristics and the probability of achieving a sustainable employment outcome. For each factor, we selected a baseline category with an odds ratio set to 1. If a category within a factor had an odds ratio greater than 1, it indicated that a student in this category had an increased likelihood of achieving sustainable employment compared with those in the baseline category group. Conversely, if a category had an odds ratio lower than 1, it suggests that the likelihood of achieving the outcome is decreased for that particular category.

We again paid attention to the p-value of each factor in our multiple logistic regression. If the p-value of a variable exceeded 0.05, it implied that the category of the characteristic was not statistically significant at the 5% level. This suggests we lacked the evidence to claim that the likelihood of achieving sustainable employment for a student in this category is different from the baseline.

Multiple logistic regression results

In our analysis, we set up the regression to estimate the following effects for all Aboriginal and Torres Strait Islander 2016 VET commencing students:

- How do different categories of each personal characteristic associate with the likelihood of achieving sustainable employment?
- How do different categories of each training characteristic affect the likelihood of achieving sustainable employment?

Personal characteristics used in this analysis included:

- apprentice or trainee
- Index of Relative Socio-economic Disadvantage (IRSD)
- age group
- gender
- state of residence
- student remoteness region.

The training characteristics contain:

- provider type
- level of education
- field of education
- occupation (ANZSCO) 1-digit
- funding source
- type of training.

All the factors used in the regression analysis were associated with sustainable employment for Aboriginal and Torres Strait Islander peoples. Table 2 presents the factors affecting the likelihood of achieving sustainable employment, in order of influence (that is to say, the degree of disadvantage endured by students exercises the most influence, with state of residence the least).

The level of influence is calculated by estimating the variance of the absolute differences between the odds ratio for each category within a factor and the baseline (an odds ratio of 1). For instance, consider a factor with three categories: A, B and C, where C is the base line, with an odds ratio of 1, and the odds ratios for A and B are 2.1 and 0.8, respectively. The absolute differences are therefore 1.1 (by calculating $|2.1 - 1|$), 0.2 (calculating $|0.8 - 1|$) and 0 (calculating $|1 - 1|$). Based on these three numbers, the variance is calculated to be 0.229. The higher the variance, the higher level of influence this factor will have.

Table 2 Personal and training characteristics affecting the likelihood of Aboriginal and Torres Strait Islander peoples achieving sustainable employment, in order of influence

1. Index of Relative Socio-economic Disadvantage (IRSD)	7. Field of education
2. Apprentice or trainee	8. Occupation (ANZSCO) 1-digit
3. Provider type	9. Gender
4. Level of Education	10. Remoteness region
5. Age group	11. Type of training
6. Funding source	12. State of residence

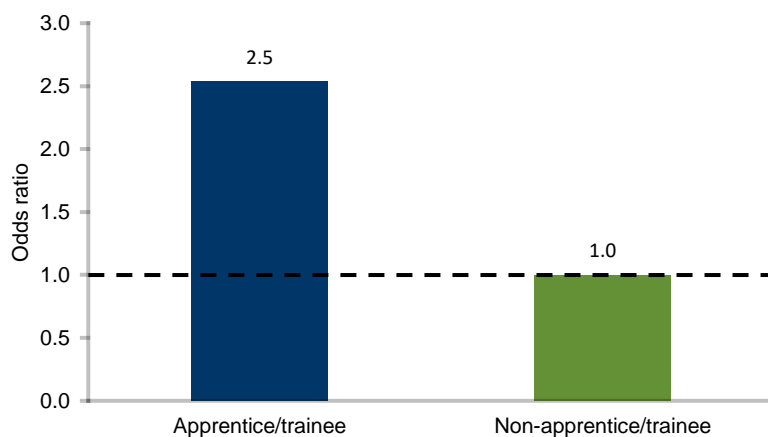
How to read outputs

Here we present one characteristic – apprentice/trainee status – by way of example. For this factor, we set the most common category (not an apprentice/trainee) as the baseline (most people in the sample were not an apprentice/trainee in 2016).

The coefficient for being an apprentice/trainee in 2016 was 0.931 (refer to the full results in appendix C). The p-value was below 0.05. By calculating the exponentials of this coefficient, we obtained the odds ratio displayed in figure 6. (The odds ratio for baseline category is always 1.)

Figure 6 shows that on average, if an Aboriginal and Torres Strait Islander 2016 VET commencing student was an apprentice/trainee in 2016, the likelihood of their achieving sustainable employment would increase by 150% compared with someone with the same background who commenced in the same VET programs but was not an apprentice/trainee in 2016.

Figure 6 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by apprenticeship/traineeship status



Note: The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category was selected by choosing the most common category in this factor. This factor only reflects the students' apprentice or trainee status in 2016. Note that employment is an inherent element of undertaking an apprenticeship or traineeship and, hence, apprentices or trainees in 2016 were employed in that year.

The second example is based on the training characteristic – provider type. In this example we selected private training providers as the baseline as it was the most common category in this factor, with most students in the sample undertaking their programs through private training providers.

Table 3 shows the coefficients and p-values for all categories. (Refer to the full results in appendix C.) By calculating the exponentials of these coefficients, we obtained the odds ratio displayed in figure 7. The p-value of ‘Community education providers’ is 0.33, which is larger than 0.05, meaning it is not statistically significant at the 5% level. This indicates that there was not enough evidence to claim that the likelihood of achieving the outcome for this category was different from the baseline category. Therefore, we adjust the odds ratio to 1 for ‘Community education providers’, which is the same as the baseline category ‘Private training providers’.

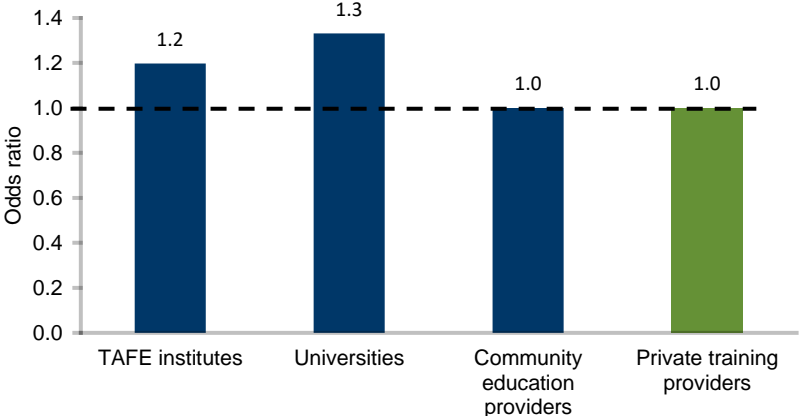
Table 3 Logistic regression coefficients and p-values for provider type

Category	Coefficient	P-value
TAFE institutes	0.181	0.00
Universities	0.287	0.00
Community education providers	-0.040	0.33*
Private training providers	Baseline	Baseline

*Not statistically significant at the 5% level.

Figure 7 shows that on average, if an Aboriginal and Torres Strait Islander student commenced a VET program with a university or TAFE institute in 2016, the likelihood of their achieving sustainable employment increased by 30% and 20% respectively, compared with someone with the same background who commenced in the same VET programs but was with a community education or private training provider.

Figure 7 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by provider type



Notes: 1. The green bar in the figure indicates the baseline category, with an odds ratio of 1. Enterprise providers have been excluded from this chart because students who commenced a VET program in 2016 with an enterprise provider were employed by this provider.
 2. Community education providers had an odds ratio of 1 as it was not statistically significant at 5% level, which means there was not enough evidence to show the likelihood of achieving the outcome is different from the baseline.

Personal and training characteristics – comparative analysis

The study carried out an in-depth demographic analysis of three distinct groups: Aboriginal and Torres Strait Islander 2016 VET commencing students (completers and non-completers); Aboriginal and Torres Strait Islander peoples without any VET before 2016; and non-Indigenous 2016 VET commencing students.

For the analysis of training characteristics, the comparison is constructed between Aboriginal and Torres Strait Islander 2016 VET commencing students (completers and non-completers) and non-Indigenous 2016 VET commencing students (completers and non-completers).

The study included a comparative analysis of the proportions of personal and training characteristics across these different groups. This aspect aimed to identify patterns and trends that may contribute to a deeper understanding of the overall profile for each group, thereby further supporting the findings from the regression models.

Full results of this analysis can be found in appendix D.

Appendix A – Pre- and post-KNN matching comparison results

This appendix presents the pre- and post-KNN matching comparison results for Aboriginal and Torres Strait Islander peoples who either commenced or did not commence a VET program in 2016.

Figure A1a Pre-matching comparison for Australian citizenship status of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

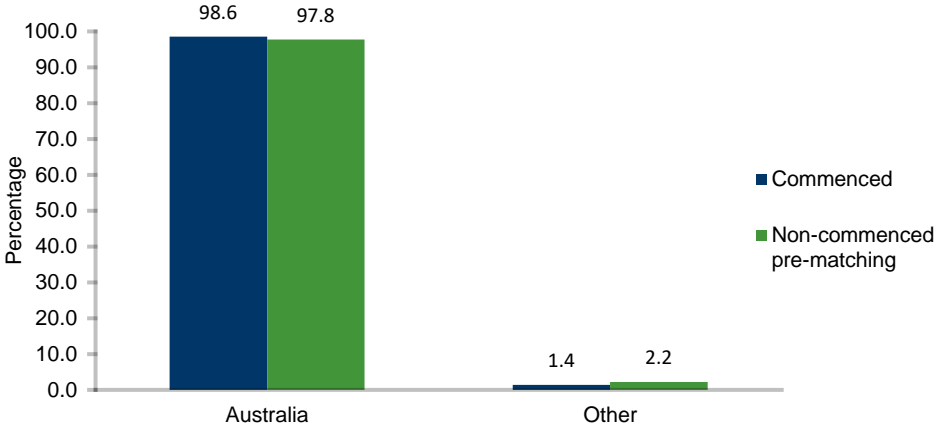


Figure A1b Post-matching comparison for Australian citizenship status of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

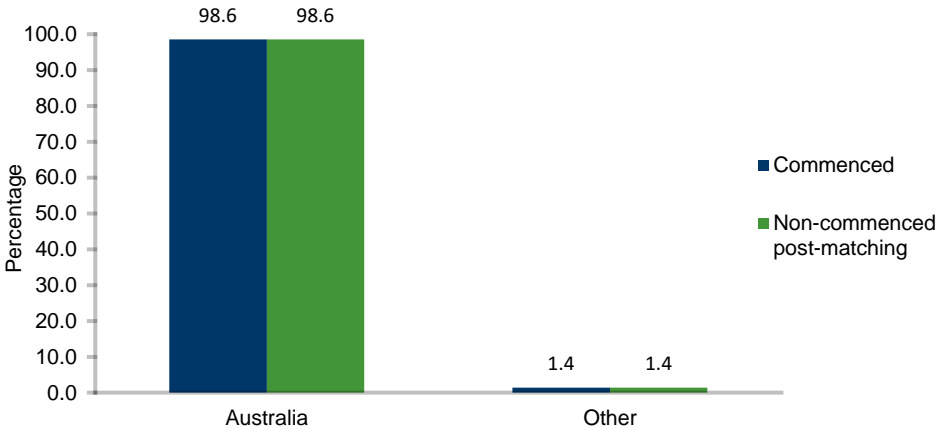


Figure A2a Pre-matching comparison for country of birth of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

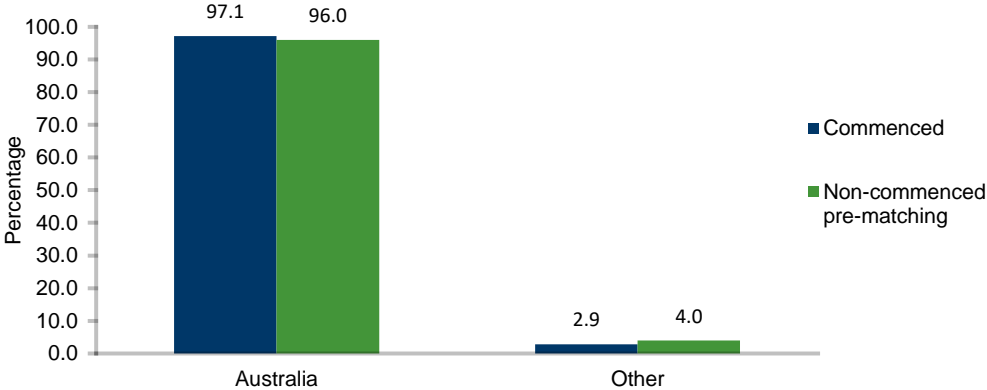


Figure A2b Post-matching comparison for country of birth of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

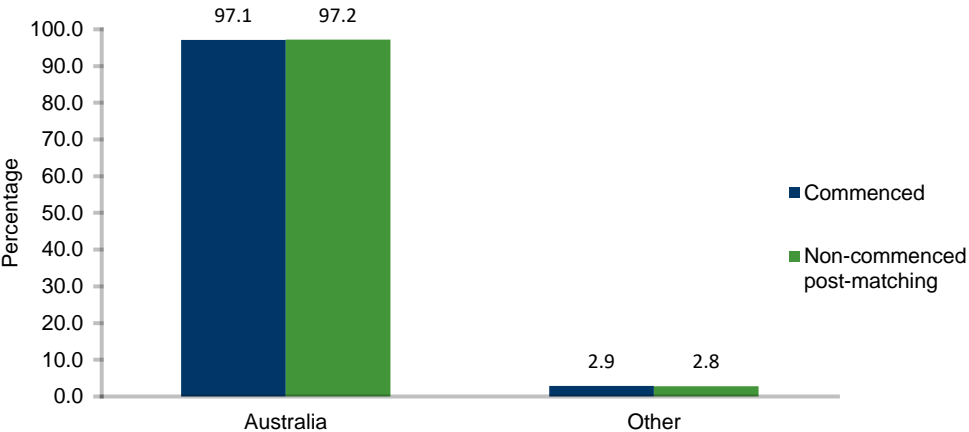


Figure A3a Pre-matching comparison for gender of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

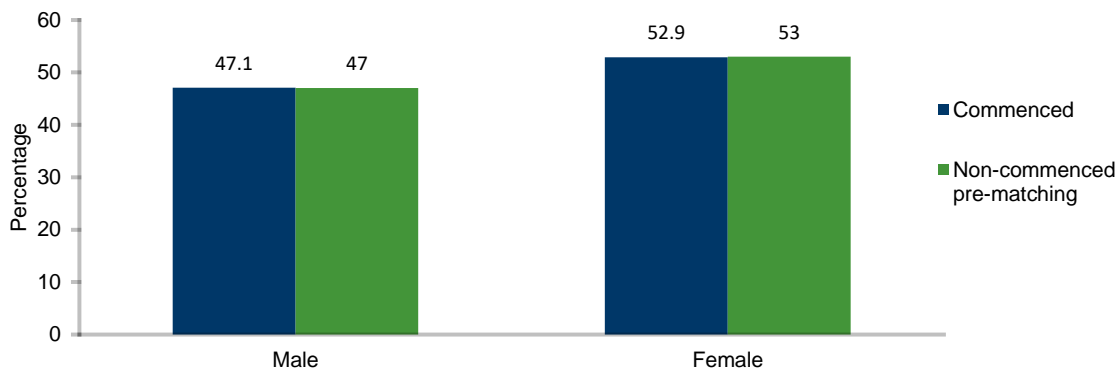


Figure A3b Post-matching comparison for gender of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

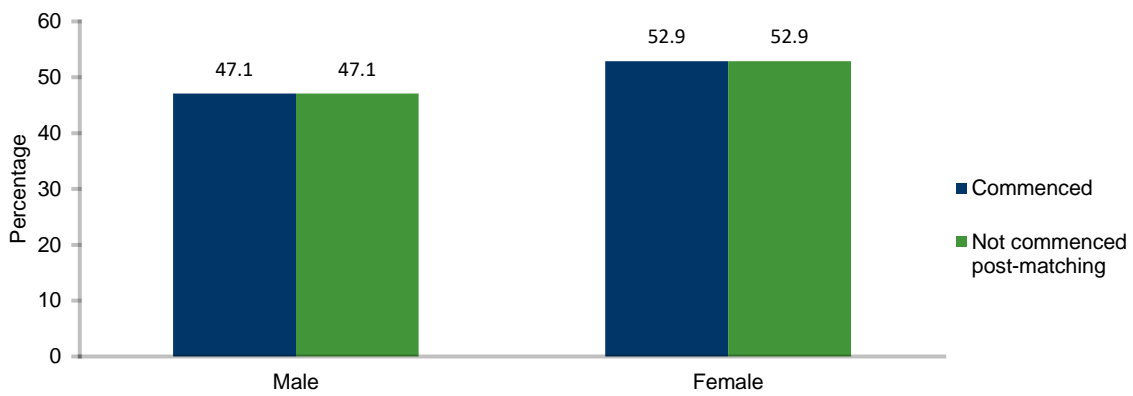


Figure A4a Pre-matching comparison for household relationship of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

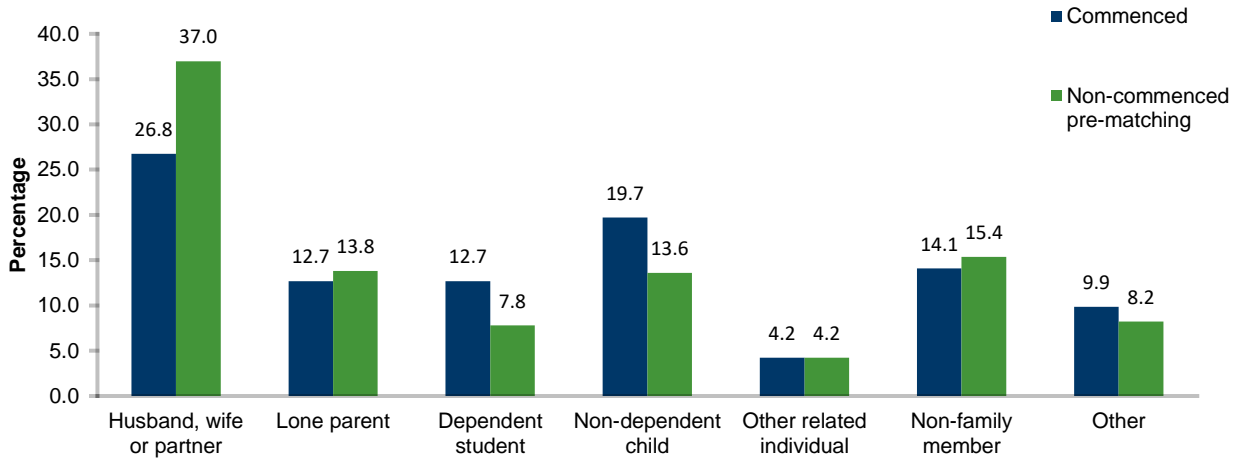


Figure A4b Post-matching comparison for household relationship of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

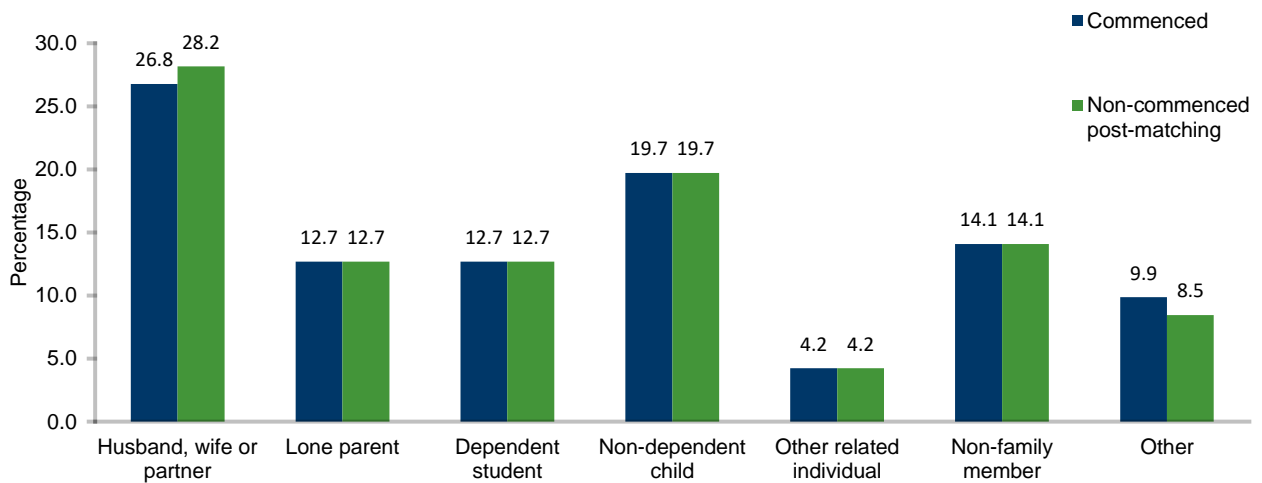


Figure A5a Pre-matching comparison for language spoken at home of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

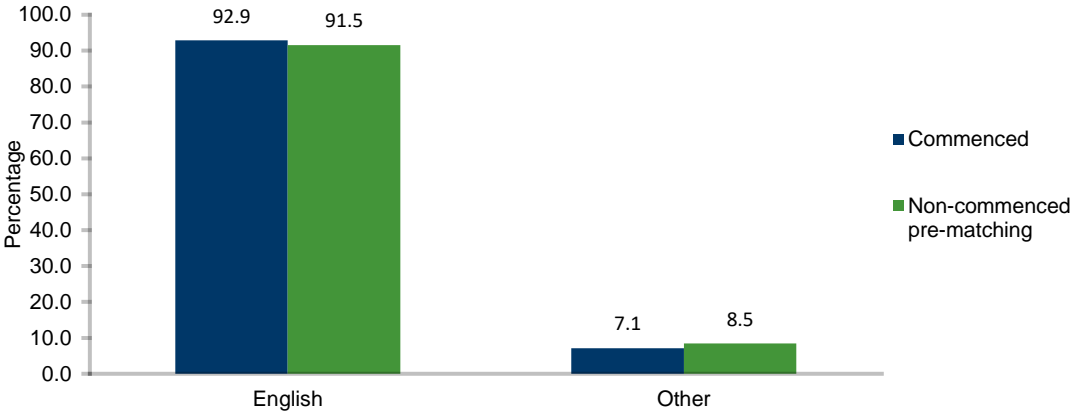


Figure A5b Post-matching comparison for language spoken at home of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

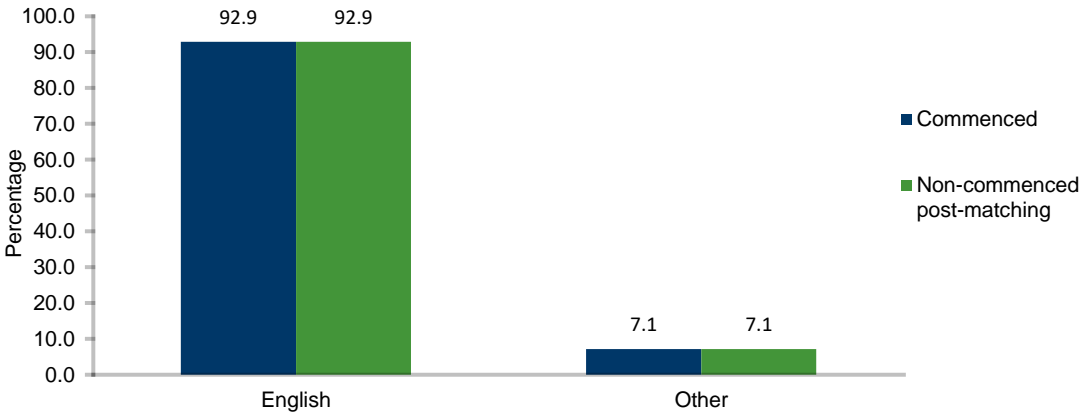


Figure A6a Pre-matching comparison for previous highest education level of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

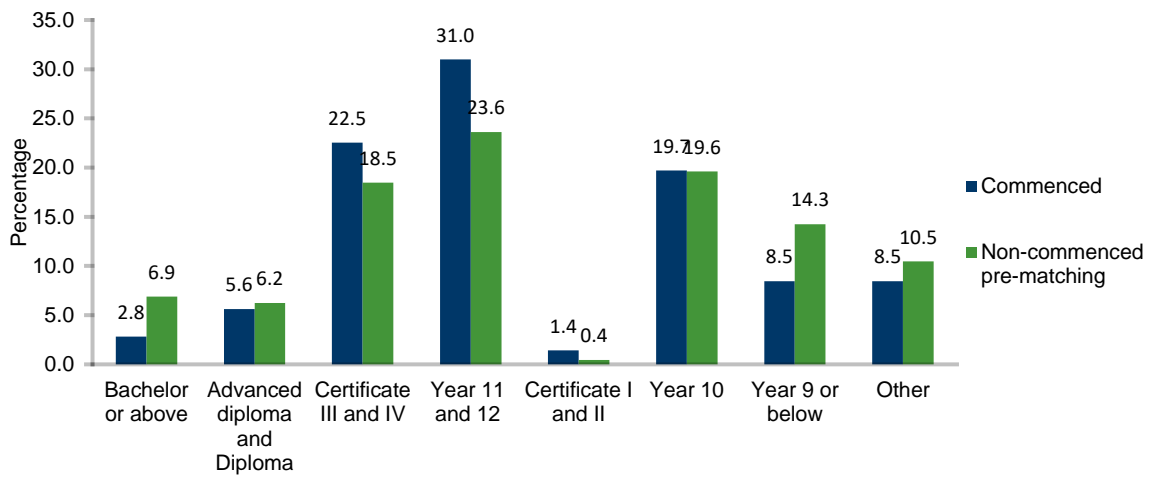


Figure A6b Post-matching comparison for previous highest education level of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

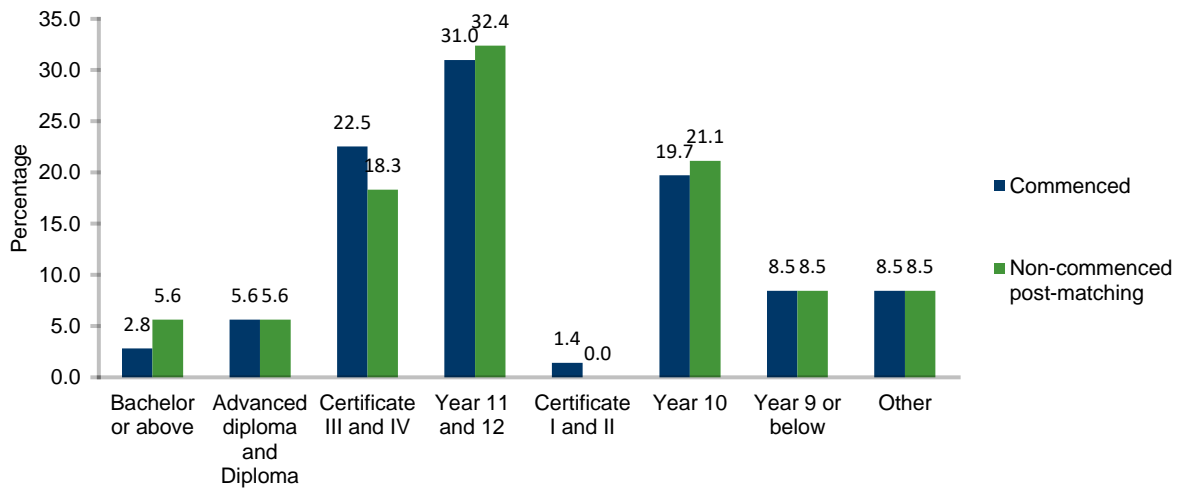


Figure A7a Pre-matching comparison for remoteness region of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

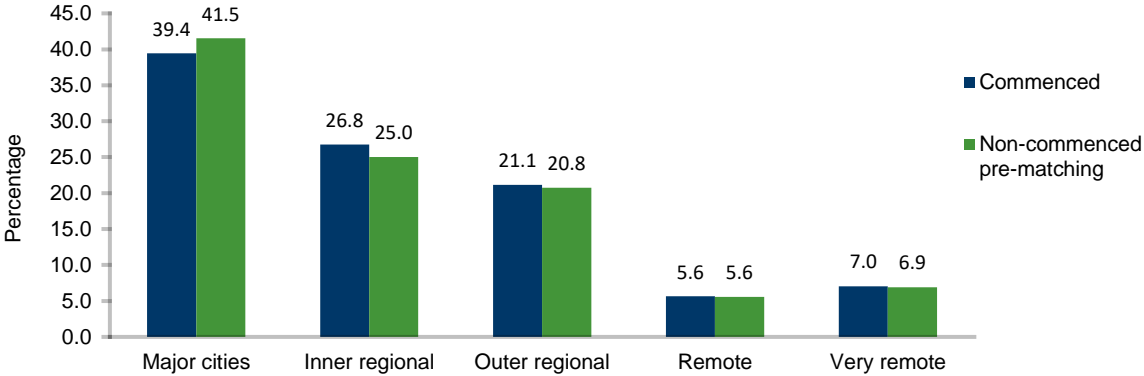


Figure A7b Post-matching comparison for remoteness region of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

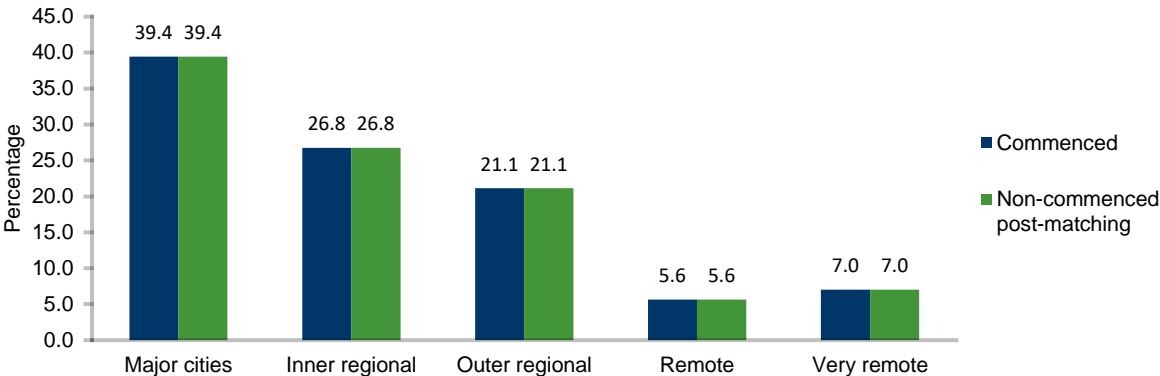


Figure A8a Pre-matching comparison for the Index of Relative Socio-economic Disadvantage (IRSD) of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

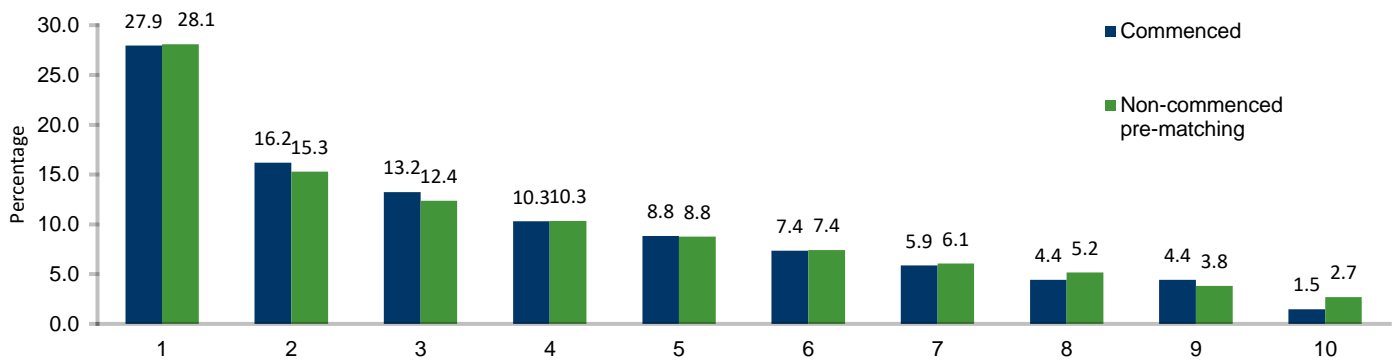


Figure A8b Post-matching comparison for the Index of Relative Socio-economic Disadvantage (IRSD) of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

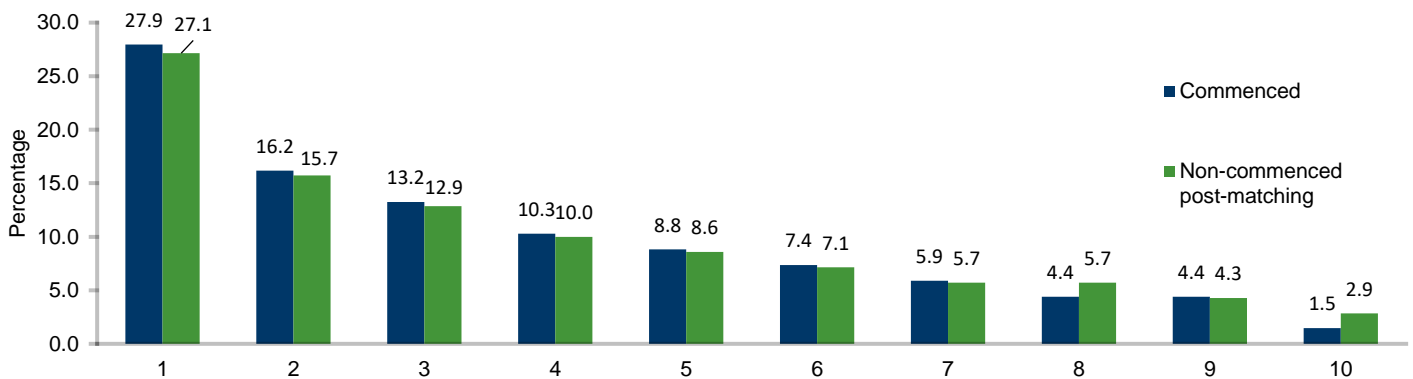


Figure A9a Pre-matching comparison for state of residence of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

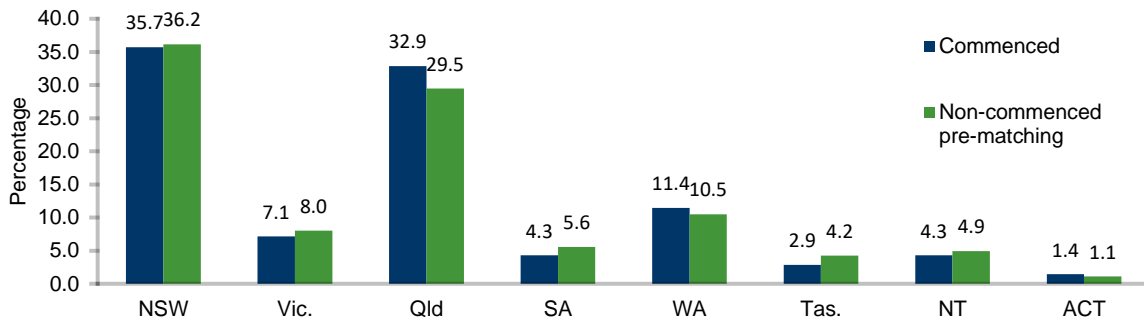


Figure A9b Post-matching comparison for state of residence of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

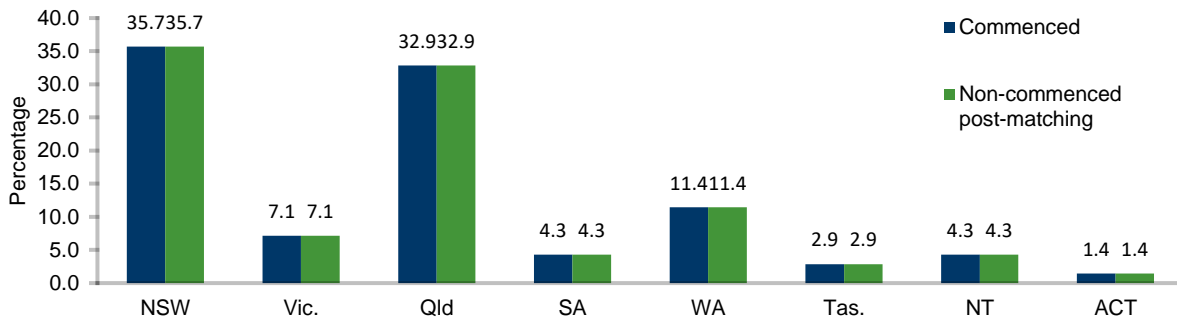


Figure A10a Pre-matching comparison for age of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016

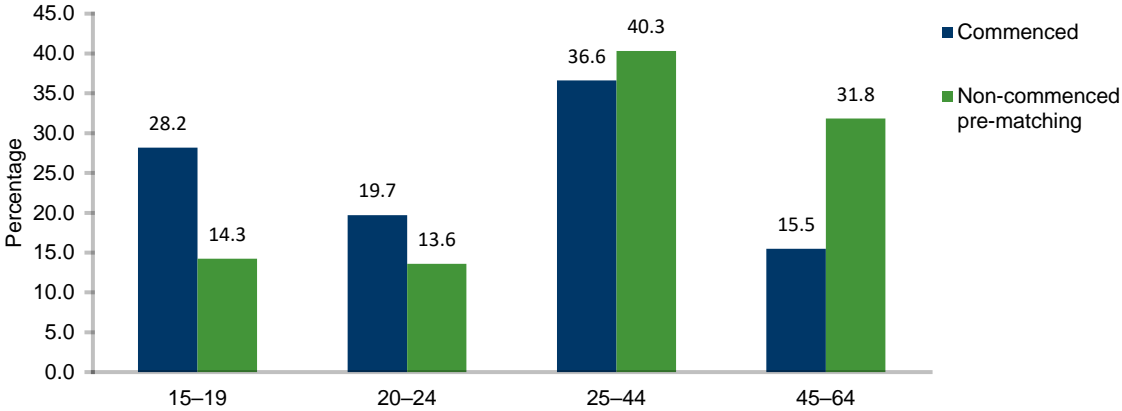
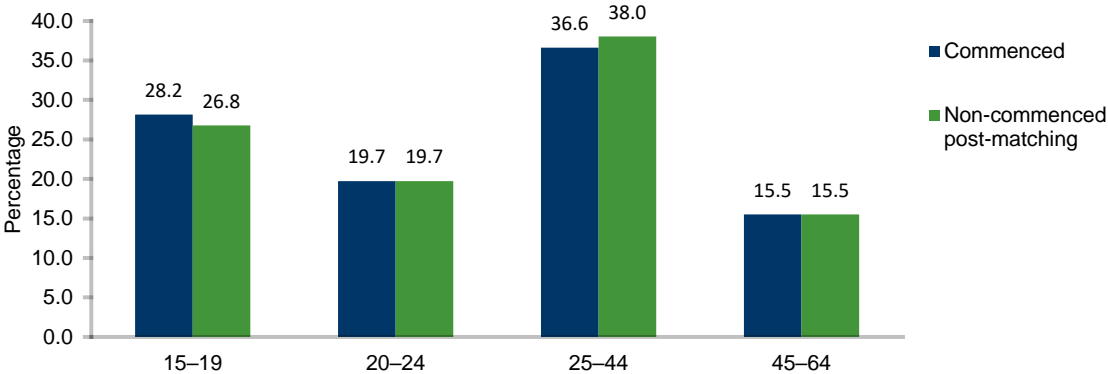
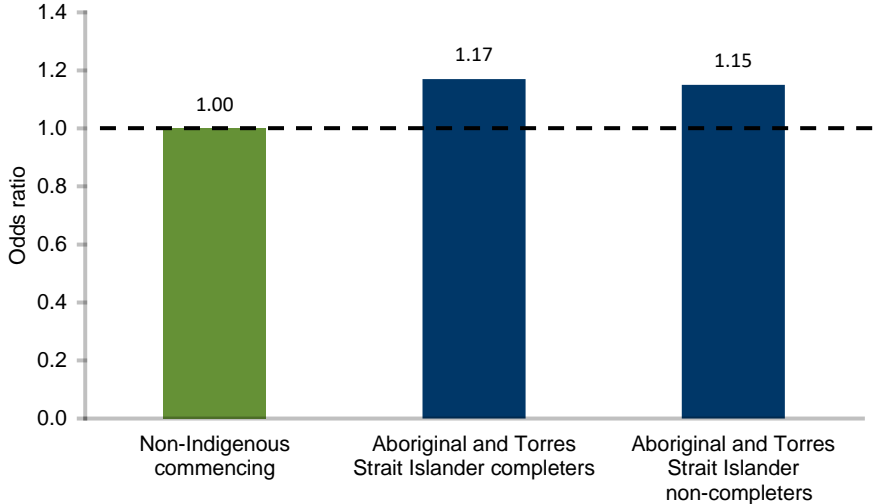


Figure A10b Post-matching comparison for age of Aboriginal and Torres Strait Islander peoples who commenced or did not commence a VET program in 2016



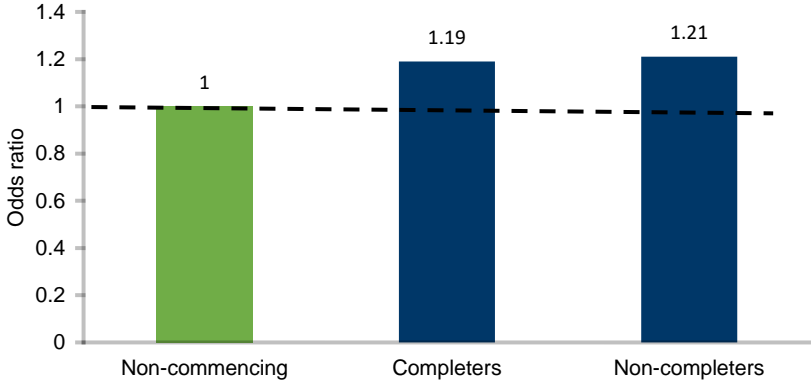
Appendix B – Difference-in-differences model results

Figure B1 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by completion status, compared with non-Indigenous students who commenced a VET program in 2016



Note: The green bar in the figure indicates the baseline category, with the odds ratio set at 1 (meaning no increase or decrease in the likelihood of achieving sustainable employment).

Figure B2 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced at least one VET program in 2016, by completion status, compared with those who did not commence a VET program in 2016



Note: The green bar in the figure indicates the baseline category, with the odds ratio set at 1 (meaning no increase or decrease in the likelihood of achieving sustainable employment).

Table B1 Estimation of the impact of VET participation on sustainable employment, Aboriginal and Torres Strait Islander peoples 2016 commencing group, compared with non-Indigenous 2016 commencing group (full regression result)

	Coefficient	Standard errors
Previous highest education level		
Bachelor degree or above	1.6544*	(0.031)
Advanced diploma or diploma	1.0558*	(0.027)
Certificate III or IV	0.7184*	(0.018)
Year 11 or 12	0.5487*	(0.016)
Certificate I or II	-0.3744*	(0.05)
Year 10	base	base
Year 9 or below	0.0271	(0.022)
Other	0.3793*	(0.022)
Gender		
Male	0.54*	(0.012)
Female	base	base
Remoteness region		
Major cities	0.1879*	(0.014)
Inner regional	base	base
Outer regional	0.0566*	(0.017)
Remote	0.1501*	(0.03)
Very remote	0.0128	(0.029)
Other	-0.01	(0.091)
Index of Relative Socio-economic Disadvantage (IRSD)		
IRSD 1	base	base
IRSD 2	0.4179*	(0.017)
IRSD 3	0.6072*	(0.018)
IRSD 4	0.7244*	(0.02)
IRSD 5	0.8771*	(0.022)
IRSD 6	1.05*	(0.024)
IRSD 7	1.1945*	(0.027)
IRSD 8	1.3066*	(0.03)
IRSD 9	1.44*	(0.035)
IRSD 10	1.8086*	(0.049)
State of residence		
NSW	base	base
Vic.	0.0361	(0.019)
Qld	-0.0837*	(0.014)
SA	-0.1654*	(0.025)
WA	-0.0285	(0.02)
Tas.	0.2488*	(0.034)
NT	-0.2264*	(0.034)
ACT	0.0048	(0.061)
Other	2.5403*	(0.311)
Household relationship		
Non-family member	base	base
Husband, wife or partner	0.645*	(0.017)

Lone parent	-1.1739*	(0.02)
Dependent student	1.6691*	(0.029)
Non-dependent child	0.261*	(0.018)
Other related individual	0.1587*	(0.028)
Other	0.2864*	(0.023)
Age group		
15–19	base	base
20–24	-0.5601*	(0.018)
25–44	-0.3226*	(0.018)
45–64	0.3675*	(0.021)
VET completer	-0.2354*	(0.029)
VET non-completer	-0.4176*	(0.028)
Time	0.6649*	(0.028)
VET completer * Time	-0.0469	(0.047)
VET non-completer * Time	-0.0423	(0.045)
VET completer* Aboriginal and Torres Strait Islanders	0.1473*	(0.038)
VET non-completer * Aboriginal and Torres Strait Islanders	0.0935*	(0.035)
Time* Aboriginal and Torres Strait Islanders	-0.3707*	(0.034)
VET completer* Aboriginal and Torres Strait Islanders *Time	0.1563*	(0.06)
VET non-completer* Aboriginal and Torres Strait Islanders *Time	0.1356*	(0.055)

Note: * indicates significance at 5%.

Table B2 Estimation of the impact of VET participation on sustainable employment, Aboriginal and Torres Strait Islander peoples 2016 commencing group, compared with Aboriginal and Torres Strait Islander peoples non-2016 commencing group (full regression result)

	Coefficient	Standard errors
Previous highest education level		
Bachelor degree or above	1.7022*	(0.051)
Advanced diploma or diploma	1.1053*	(0.037)
Certificate III or IV	0.7688*	(0.024)
Year 11 or 12	0.5199*	(0.022)
Certificate I or II	-0.3058*	(0.058)
Year 10	0.1473*	(0.023)
Year 9 or below	base	base
Other	0.2618*	(0.028)
Gender		
Male	0.4406*	(0.014)
Female	base	base
Remoteness region		
Major cities	0.1368*	(0.017)
Inner regional	base	base
Outer regional	-0.0097	(0.019)
Remote	0.1219*	(0.032)
Very remote	0.052	(0.03)
Other	-0.011	(0.101)
Index of Relative Socio-economic Disadvantage (IRSD)		
IRSD 1	base	base
IRSD 2	0.3497*	(0.02)
IRSD 3	0.5437*	(0.022)
IRSD 4	0.6943*	(0.025)
IRSD 5	0.7804*	(0.027)
IRSD 6	0.9457*	(0.031)
IRSD 7	1.0593*	(0.034)
IRSD 8	1.23*	(0.04)
IRSD 9	1.3928*	(0.049)
IRSD 10	1.6324*	(0.07)
State of residence		
NSW	base	base
Vic.	-0.0496	(0.028)
Qld	-0.1979	(0.017)
SA	-0.2773	(0.032)
WA	-0.2291	(0.025)
Tas.	0.3079	(0.041)
NT	-0.3157	(0.036)
ACT	-0.0201	(0.077)
Other	-0.0604	(0.591)
Household relationship		
Non-family member	base	base
Husband, wife or partner	0.4977*	(0.021)

Lone parent	-1.0887*	(0.024)
Dependent student	1.5695*	(0.034)
Non-dependent child	0.2185*	(0.021)
Other related individual	-0.0061	(0.033)
Other	0.1891*	(0.026)
Age group		
15–19	base	base
20–24	-0.6951*	(0.02)
25–44	-0.4313*	(0.02)
45–64	0.3842*	(0.025)
VET completer	-0.1808*	(0.024)
VET non-completer	-0.4235*	(0.021)
Time	0.271*	(0.019)
VET completer * Time	0.1709*	(0.035)
VET non-completer * Time	0.191*	(0.031)

Note: * indicates significance at 5%.

Appendix C – Multiple logistic regression results

Table C1 Estimation of the impact of Aboriginal and Torres Strait Islander peoples' personal and training characteristics on sustainable employment (full regression result)

	Coefficient	Standard errors
Previous highest education level		
Bachelor degree or above	1.2477*	(0.078)
Advanced diploma or diploma	0.9612*	(0.053)
Certificate III or IV	0.567*	(0.037)
Year 11 or 12	0.3404*	(0.035)
Certificate I or II	-0.223*	(0.068)
Year 10	0.0568	(0.036)
Year 9 or below	base	base
Other	0.158*	(0.043)
Gender		
Male	0.2573*	(0.023)
Female	base	base
Remoteness region		
Major cities	0.0645*	(0.025)
Inner regional	base	base
Outer regional	0.012	(0.028)
Remote	0.2556*	(0.047)
Very remote	0.2257*	(0.045)
Index of Relative Socio-economic Disadvantage (IRSD)		
IRSD 1	base	base
IRSD 2	0.2371*	(0.028)
IRSD 3	0.4475*	(0.031)
IRSD 4	0.5164*	(0.035)
IRSD 5	0.6263*	(0.038)
IRSD 6	0.8208*	(0.043)
IRSD 7	0.9086*	(0.048)
IRSD 8	1.0201*	(0.055)
IRSD 9	1.197*	(0.068)
IRSD 10	1.4468*	(0.098)
State of residence		
NSW	base	base
Vic.	-0.0956*	(0.04)
Qld	-0.1591*	(0.026)
SA	-0.1895*	(0.045)
WA	-0.1351*	(0.036)
Tas.	0.2376*	(0.058)
NT	-0.3673*	(0.056)
ACT	-0.0291	(0.105)

Household relationship		
Non-family member	base	base
Husband, wife or partner	0.501*	(0.03)
Lone parent	-1.134*	(0.034)
Dependent student	1.2728*	(0.048)
Non-dependent child	0.1025*	(0.032)
Other related individual	-0.0472	(0.047)
Other	0.1197*	(0.038)
Age group		
15–19	base	base
20–24	-0.9624*	(0.031)
25–44	-0.7439*	(0.032)
45–64	-0.1569*	(0.039)
Apprentice/trainee status		
Apprenticeship	0.9314*	(0.038)
Non-apprenticeship	base	base
Funding source		
Fee-for-service	0.3702*	(0.024)
Government-funded	base	base
Type of training		
Training package qualifications	base	base
Accredited qualifications	0.2264*	(0.052)
Training package skill sets	0.0023	(5.66E+14)
Accredited courses	0.3287	(1.70E+06)
Provider type		
Private training providers	base	base
TAFE institutes	0.1809*	(0.023)
Universities	0.2867*	(0.07)
Community education providers	-0.0404	(0.042)
Enterprise providers	0.8455*	(0.081)
Occupation (ANZCO)		
Managers	-0.1824*	(0.057)
Professionals	0.0676	(0.055)
Technicians and trades workers	0.1535*	(0.05)
Community and personal service workers	base	base
Clerical and administrative workers	-0.3393*	(0.045)
Sales workers	-0.7238*	(0.061)
Machinery operators and drivers	-0.4756*	(0.052)
Labourers	-0.488*	(0.055)
Unknown	0.0268*	-
Level of education		
Diploma/advanced diploma/associate degree	0.1836*	(0.034)
Certificate IV	0.7115*	(0.035)
Certificate III	base	base
Certificate II	0.0384	(0.03)
Other	0.331	(2.28E+06)

Field of education		
Natural and physical sciences	-0.2138	(0.168)
Information technology	-0.5582*	(0.082)
Engineering and related technologies	0.4768*	(0.05)
Architecture and building	0.2*	(0.064)
Agriculture, environmental and related studies	0.1194*	(0.055)
Health	-0.0069	(0.057)
Education	-0.0319	(0.064)
Management and commerce	base	base
Society and culture	-0.2619*	(0.044)
Creative arts	-0.2899*	(0.078)
Food, hospitality and personal services	-0.3382*	(0.046)
Mixed field programmes	-0.5026*	(0.034)
Unknown	0.0023	(5.91E+14)
Time	0.4809*	(0.019)

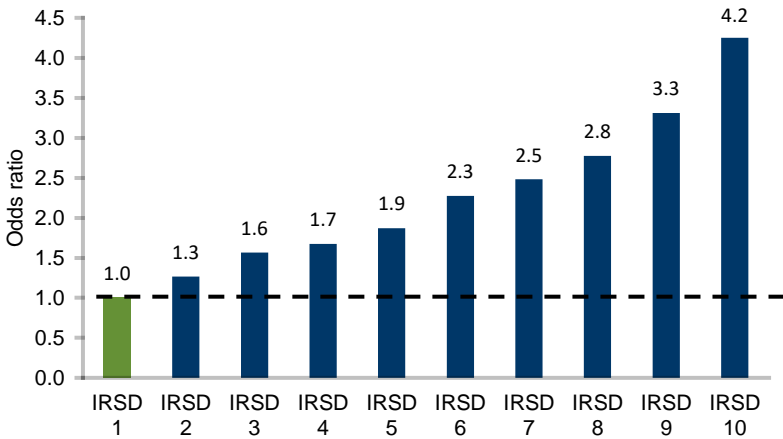
Table C2 Estimation of the impact of Aboriginal and Torres Strait Islander peoples' personal and training characteristics on sustainable employment (full odds ratio result)

Gender	Odds ratio
Male	1.3
Female	1.0
Remoteness region	
Major cities	1.1
Inner regional	1.0
Outer regional*	1.0
Remote	1.3
Very remote	1.3
Index of Relative Socio-economic Disadvantage (IRSD)	
IRSD 1	1.0
IRSD 2	1.3
IRSD 3	1.6
IRSD 4	1.7
IRSD 5	1.9
IRSD 6	2.3
IRSD 7	2.5
IRSD 8	2.8
IRSD 9	3.3
IRSD 10	4.2
State of residence	
NSW	1.0
Vic.	0.9
Qld	0.9
SA	0.8
WA	0.9
Tas.	1.3
NT	0.7
ACT*	1.0
Age group	
15–19	1.0
20–24	0.4
25–44	0.5
45–64	0.9
Apprentice or trainee status	
Apprentice/trainee	2.5
Non-apprentice/trainee	1.0
Funding source	
Government-funded	1.0
Fee-for-service	1.4
Type of training	
Training package qualifications	1.0
Accredited qualifications	1.3
Training package skill sets*	1.0
Accredited courses*	1.0

Provider type	
TAFE institutes	1.2
Universities	1.3
Community education providers*	1.0
Enterprise providers	2.3
Private training providers	1.0
Occupation (ANZSCO) 1-digit	
Managers	0.8
Professionals*	1.0
Technicians and trades workers	1.2
Community and personal service workers	1.0
Clerical and administrative workers	0.7
Sales workers	0.5
Machinery operators and drivers	0.6
Labourers	0.6
Unknown*	1.0
Level of education	
Advanced diploma/associate degree/diploma	1.2
Certificate IV	2.0
Certificate III	1.0
Certificate II*	1.0
Other*	1.0
Field of education	
Natural and physical sciences*	1.0
Information technology	0.6
Engineering and related technologies	1.6
Architecture and building	1.2
Agriculture, environmental and related studies	1.1
Health*	1.0
Education*	1.0
Management and commerce	1.0
Society and culture	0.8
Creative arts	0.7
Food, hospitality, and personal services	0.7
Mixed field programmes	0.6
Unknown*	1.0

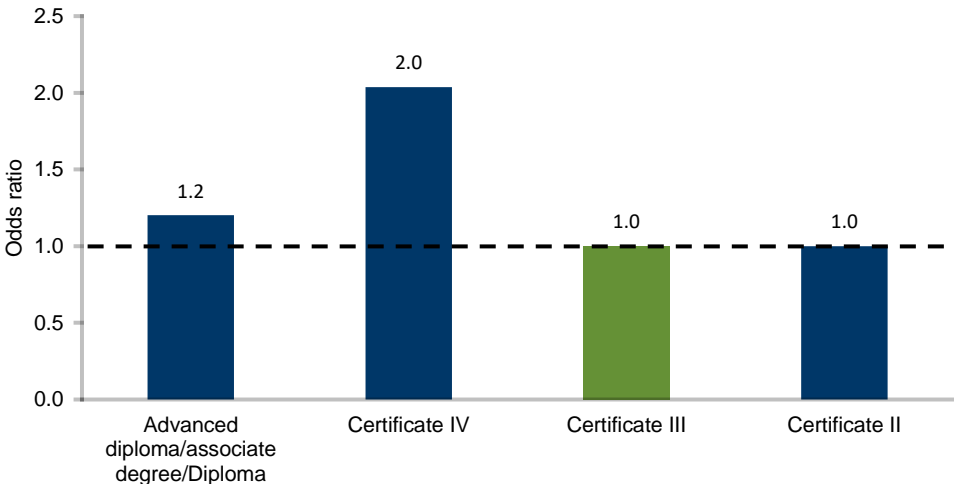
Note: * If the p-value for a category is larger than 0.05, we reset the odds ratio to 1 for this category.

Figure C1 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by Index of Relative Socio-economic Disadvantage (IRSD)



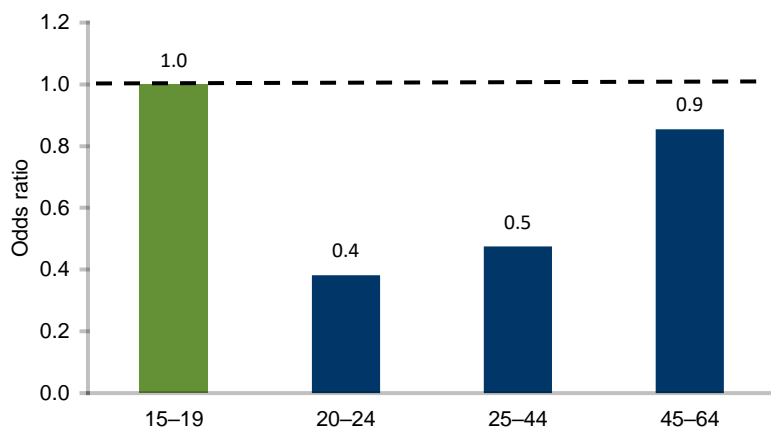
Note: The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category is selected by choosing the first category in this ordered factor.

Figure C2 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by level of education



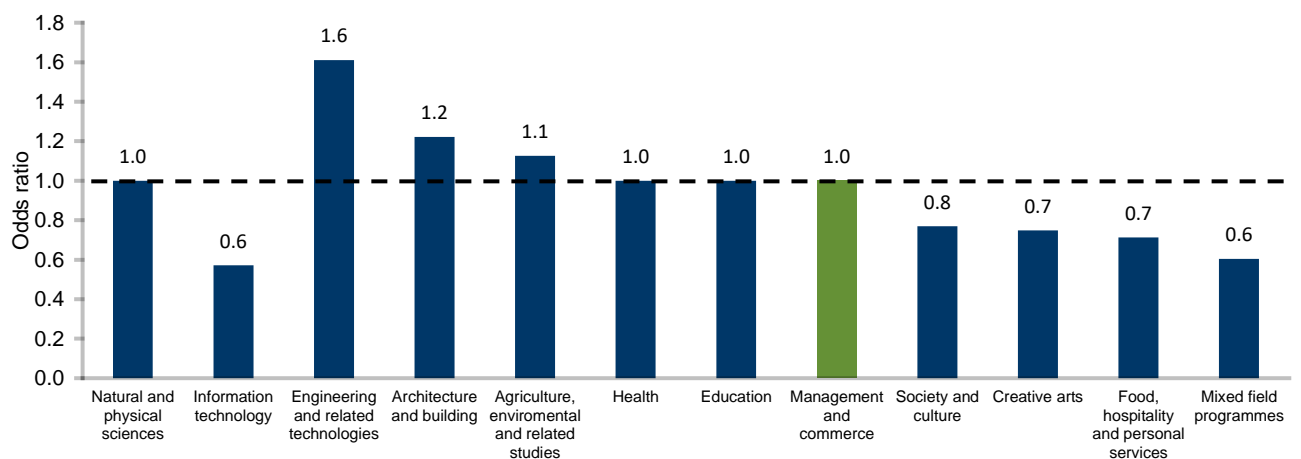
Notes: 1. The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category was selected by choosing the most common category in this factor.
 2. Certificate II had an odds ratio of 1 as it was not statistically significant at the 5% level (meaning there was no evidence suggesting the likelihood of achieving the outcome is different from the baseline).

Figure C3 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by age group



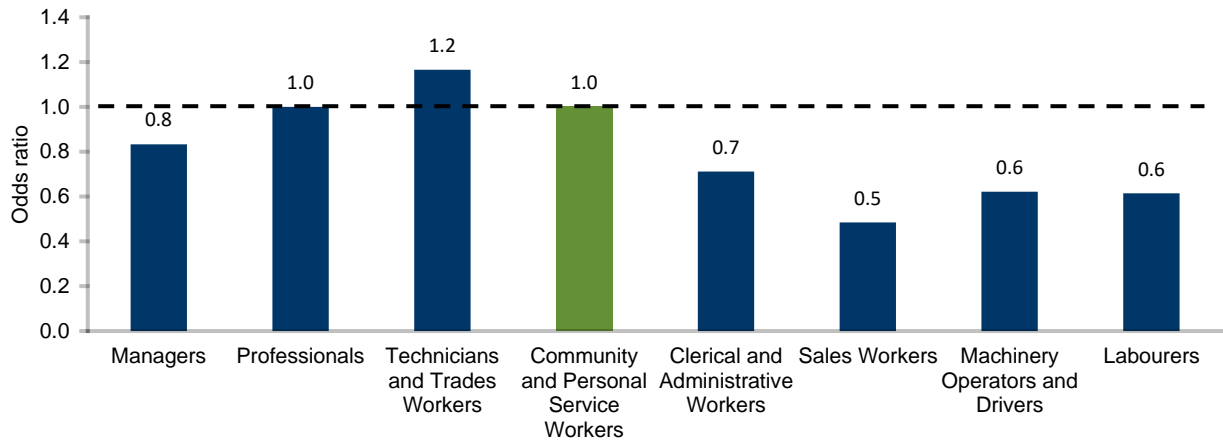
Note: The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category was selected by choosing the first category in this ordered factor.

Figure C4 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by field of education



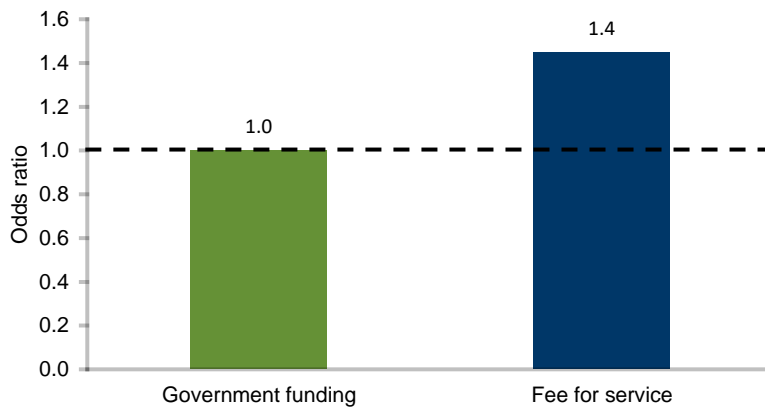
- Note: 1. The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category was selected by choosing the most common category in this factor.
2. Programs with an unknown field of education have been excluded from this chart.
3. Natural and physical sciences, Health and Education had an odds ratio of 1 as they were not statistically significant at the 5% level (meaning there was no evidence suggesting the likelihood of achieving the outcome is different from the baseline).

Figure C5 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by occupation (ANZCO)



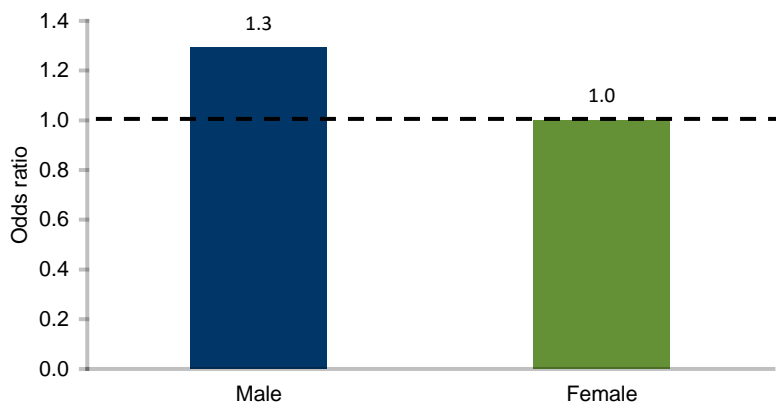
- Note: 1. The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category was selected by choosing the most common category in this factor.
2. Programs with an unknown ANZSCO have been excluded from this chart.
3. Professionals had an odds ratio of 1 as it was not statistically significant at the 5% level (meaning there was no evidence suggesting the likelihood of achieving the outcome is different from the baseline).

Figure C6 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by funding source



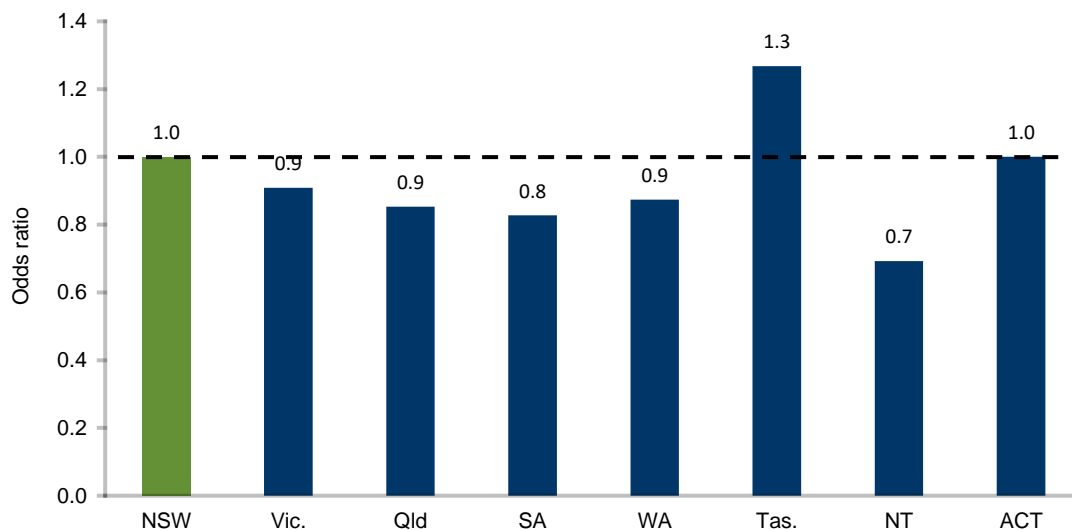
Note: The green bar in the figure indicates the baseline category, with an odds ratio of 1. Government funding was selected as the baseline category in order to better assess the impact of funding on sustainable employment.

Figure C7 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by gender



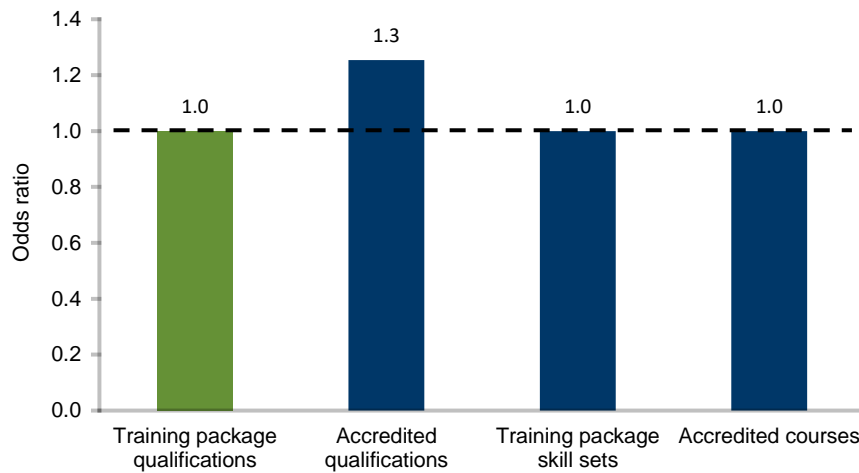
Note: The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category is selected by choosing the most common category in this factor.

Figure C8 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by state/territory of residence



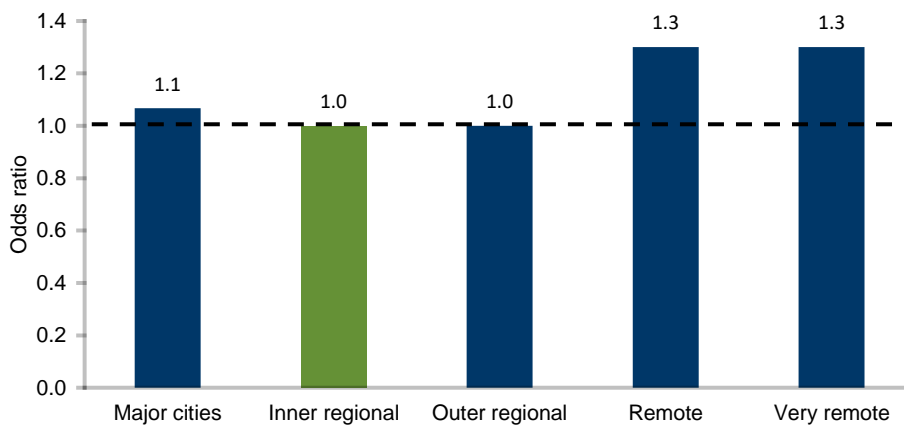
Note: 1. The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category is selected by choosing the most common category in this factor.
 2. ACT had an odds ratio of 1 as it was not statistically significant at the 5% level (meaning there was no evidence suggesting the likelihood of achieving the outcome is different from the baseline).

Figure C9 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by types of training



- Note: 1. The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category was selected by choosing the most common category in this factor.
2. Training package skill sets and accredited courses had an odds ratio of 1 as they were not statistically significant at the 5% level (meaning there was no evidence suggesting the likelihood of achieving the outcome is different from the baseline).

Figure C10 Sustainable employment odds ratios for Aboriginal and Torres Strait Islander peoples who commenced a VET program in 2016, by geographic remoteness



- Note: 1. The green bar in the figure indicates the baseline category, with an odds ratio of 1. The baseline category was selected by choosing the second most common category in this factor as it provided a better comparison of results.
2. Outer regional had an odds ratio of 1 as it was not statistically significant at the 5% level (meaning there was no evidence suggesting the likelihood of achieving the outcome is different from the baseline).

Appendix D – Comparative analysis results

Table D1 Personal characteristics for Aboriginal and Torres Strait Islander students with VET (2016 commencing), Aboriginal and Torres Strait Islander peoples without VET and non-Indigenous students with VET (2016 commencing)

	Aboriginal and Torres Strait Islander students 2016 commencing (Completers and non-completers)	Aboriginal and Torres Strait Islander students without any VET	Non-Indigenous 2016 commencing
Gender (%)			
Female	52.1	53.2	47.8
Male	47.9	46.8	52.2
Age group (%)			
15–19	28.2	17.9	20.1
20–24	19.7	12.9	16
25–44	36.6	31.7	42
45– 64	15.5	27.3	20.7
65 and over	0.0	10.3	1.2
Previous highest education level (%)			
Bachelor or above	2.8	N/A	13.3
Advanced diploma and diploma	5.6	N/A	9.1
Certificate III and IV	22.5	N/A	22.6
Year 11 and 12	31.0	31.8	31.1
Certificate I and II	1.4	N/A	0.8
Year 10	19.7	27.6	11.7
Year 9 or below	8.5	24.1	4.6
Remoteness region (%)			
Major cities	39.4	38.1	68.4
Inner regional	26.8	25.1	19.7
Outer regional	21.1	22.1	9.7
Remote	5.6	6.2	1.4
Very remote	7	8.3	0.6
Index of Relative Socio-economic Disadvantage (IRSD) (%)			
IRSD 1	27.9	32.9	10.4
IRSD 2	16.2	16.3	10.9
IRSD 3	13.2	12.5	11.1
IRSD 4	10.3	9.8	10.9
IRSD 5	8.8	8	10.8
IRSD 6	7.4	6.5	10.6
IRSD 7	5.9	5	10.2
IRSD 8	4.4	4.2	9.9
IRSD 9	4.4	3	8.6
IRSD 10	1.5	1.8	6.7

State of residence (%)			
NSW	35.7	35.9	26.9
Vic.	7.1	7.4	25
Qld	32.9	29.4	24.5
SA	4.3	5.6	6.4
WA	11.4	11.2	12.2
Tas.	2.9	4.1	2.3
NT	4.3	5.6	0.9
ACT	1.4	0.9	1.5
Apprentice or trainee (%)			
Yes	9.3	N/A	8.6
No	90.7	N/A	91.4
Unemployment benefit received (%) *			
Yes	56.3	44.4	30.2
No	43.7	55.6	69.8

Notes: * For unemployment benefit received factor, 'yes' was defined as 'received any type of unemployment benefit for 90 days or more between 2006 to 2021'.

Table D2 Training characteristics for Aboriginal and Torres Strait Islander peoples with VET (2016 commencing) and non-Indigenous students with VET (2016 commencing)

	Aboriginal and Torres Strait Islander peoples 2016 commencing (Completers and non-completers)	Non-Indigenous 2016 commencing (completers and non-completers)
Funding source (%)		
Government-funded	66.3	53.7
Fee-for-service	33.7	46.3
Type of training (%)		
Training package qualifications	84.4	82.2
Accredited qualifications	8.3	9.3
Training package skill sets	2.9	3.1
Accredited courses	4.4	5.4
Provider type (%)		
TAFE institutes	44.1	36.5
Universities	2	2.4
Schools	1	0.6
Community education providers	5.9	4.6
Enterprise providers	2	2.2
Private training providers	45.1	53.7
Level of education (%)		
Diploma/advanced diploma/associate degree	13.1	18.4
Certificate IV	9.2	15.7
Certificate III	36.4	35
Certificate II	23.8	16.8
Other	7.3	8.5
Field of education (%)		
Natural and physical sciences	0.5	0.6
Information technology	1.5	2.2
Engineering and related technologies	15.1	14.2
Architecture and building	5.9	6.2
Agriculture, environmental and related studies	5.4	2.7
Health	4.9	6.9
Education	3.4	6
Management and commerce	20	20.9
Society and culture	18.5	17.6
Creative arts	2	2.8
Food, hospitality and personal services	9.3	7.6
Mixed field programmes	10.7	9.2
Unknown	2.9	3.1
Occupation (ANZSCO) 1- digit (%)		
Managers	5.3	5.2
Professionals	5.3	8.3
Technicians and trades workers	9.2	15.8
Community and personal service workers	29.1	27.7
Clerical and administrative workers	13.1	12

Sales workers	3.4	3.8
Machinery operators and drivers	8.7	6.1
Labourers	12.6	7.4
Unknown	13.1	13.7