

VET as a re-engagement pathway for early school leavers

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About the research

VET as a re-engagement pathway for early school leavers

Patrick Lim, NCVET

School non-completion and non-completers' subsequent pathways into employment or back into education are enduring issues for policy-makers in Australia. Understanding the factors that predict a higher probability of leaving school before completing Year 12, as well as those that increase the chance of re-engaging with education, can inform action on how best to support young people in their decision-making.

An analysis of the Longitudinal Surveys of Australian Youth (LSAY) confirms that vocational education and training (VET) is an important pathway to educational re-engagement for young people who leave school before completing Year 12. This analysis also highlights the importance of providing career information not only to young people before and after they leave school, but also to their parents or guardians. For school leavers, having parents with aspirations for them is influential in determining whether early school leavers re-engage with education, demonstrating the value of ensuring that parents also have access to high-quality career information.

Key messages

- About 75% of the LSAY respondents who left school before completing Year 12 re-engaged with some form of education by the age of 25. About 63% re-engaged with education via VET.
- Of the LSAY respondents who re-engaged with some form of education after leaving school early, just over half (51%) entered into apprenticeships and traineeships (combining employment and training). Other VET courses (certificates and diplomas), not delivered as part of an apprenticeship or traineeship, made up 34% of all educational re-engagement.
- The career or educational plans of young people were important in predicting early school leaving. Other factors, such as mathematics and reading achievement, also had an influence, but these played a smaller role.
- Parents' plans for their child in the year after leaving school were important in predicting re-engagement with any form of education, especially through VET. Those early school leavers whose parents wanted them to go on to VET were more likely to do so than those whose parents had other plans for their child.
- The factors most important in predicting re-engagement with any form of education (not just VET) by the age of 25 were socioeconomic status (SES) and school sector.
 - Those with lower socioeconomic status were less likely to re-engage with education than those with higher socioeconomic status, although this impact could be overcome to some extent if their parents had post-school VET plans for their child.
 - Those with higher socioeconomic status who attended Catholic or independent schools were more likely to re-engage with education than those who attended government schools (although the latter is still relatively high).
- The majority of LSAY respondents who re-engaged with education after leaving school early do so within six months. This, combined with personal and parental post-school plans, suggests that these young people are making conscious decisions about their learning and career pathways.

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Executive summary

Leaving school without completing Year 12

Australian policy-makers have an ongoing interest in school non-completion and non-completers' subsequent pathways into employment or re-engagement with education. The education attainment targets set by the Council of Australian Governments (COAG) in 2009 were for 90% of 20 to 24-year-olds to have completed Year 12 or equivalent or a certificate III. The proportion of people in this age group without a Year 12 qualification has steadily declined since that time but since 2019 has remained at around 18%. Understanding the motivations, pathways and outcomes of the young people who do not complete Year 12, especially those who do not transition into work is therefore a topic of interest.

This research explores the pathways of early school leavers – that is, those who leave school without completing Year 12 – by means of an analysis of data from the Longitudinal Surveys of Australian Youth (LSAY). In particular, the research examines the characteristics of those who re-engage with education, especially via vocational education and training (VET).

VET as a re-engagement pathway

The research confirms that VET is an important pathway for educational re-engagement for early school leavers. About 63% of LSAY respondents who left school without completing Year 12 had re-engaged with education via some form of VET by the age of 25. Apprenticeships and traineeships made up around 51% of all educational re-engagement, followed by other VET courses (certificates and diplomas, 34%).

Parents' plans for their child the year after the child had left school were shown to influence educational re-engagement through VET, with those whose parents wanted them to go on to VET more likely to follow that pathway. For the early school leavers whose parents' plans for them did not include VET, those who had undertaken some VET subjects at school at the age of 15 were more likely to re-engage with education through VET than those who had not.

In terms of re-engagement with any education (not just VET), the analysis shows that the most important factors are:

- *Socio-economic status (SES)*: those from lower SES were less likely to re-engage with education than those from higher SES. However, the impact of SES can be overcome if the young person's parents have post-school VET aspirations for their children.
- *School sector*: those from higher SES who attended Catholic or independent schools were more likely to re-engage with education than those from government schools. Those who attended government schools *and* whose parents had post-school VET plans for them were more likely to re-engage with education than those whose parents had other plans.

The groups of early school leavers who were least likely to re-engage with education were those from lower SES; those whose parents did not have any post-school VET aspirations for their children; and those who had lower achievement in the Organisation for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA) mathematics scales at the age of 15.

The role of career or educational plans and parental influence

The analysis highlights the important role that the career or educational plans of both the young person and their parents have in predicting early school leaving and educational re-engagement. While some other factors, such as SES, or PISA mathematics and reading achievement at the age of 15, also had an influence, these often played a smaller role than factors related to career planning.

For most of the LSAY respondents, their own career and educational plans had a strong and clear influence on their decision to leave school without completing Year 12. Those who, at the age of 15, report intending to leave school early are in fact more likely to do so. These individuals were also more likely to have plans to undertake VET, either in the year after leaving school, or in the longer term.

The plans that parents had for their child for the year after leaving school were important in predicting any educational re-engagement, especially through VET. Early school leavers whose parents had post-school VET plans for their child were more likely to undertake VET.

The time taken to re-engage with education through VET

The current government policy, which directs young people to remain at school until the age of 17 unless they are moving into employment or another form of education, is likely to influence the time taken by an individual to re-engage with education or transition into employment. Indeed, the analysis of the LSAY data shows that a large majority of young people who re-engage with education after leaving school early do so within six months.

Re-engagement with education via VET within six months is driven by the young person's plans for the year after leaving school. Those young people who plan to do VET in the year after leaving school are the most likely to engage with VET within six months.

School sector was also important in determining the likelihood of engaging with VET within six months, with those from Catholic schools more likely to do so.

Why is this important?

Previous research has shown poorer outcomes for young people who do not complete Year 12. For example, non-completion of Year 12 has been shown to be correlated with their having longer periods not participating in education, employment or training (Stanwick, Forrest & Skujins 2017). Having an understanding of the motivations and characteristics of those who leave school before completing Year 12, especially those who do not transition reasonably quickly into a recognised career path, such as an apprenticeship, can help to direct efforts towards these more vulnerable individuals.

This research demonstrates the importance of school students (and their parents) holding career aspirations, which can be developed through career-planning activities. Career advice and pastoral care for young people must start well before senior secondary school and it is also important that these services are available to young people who are no longer engaged in the school system.

VET is an important educational pathway for early school leavers. There is an ongoing need for the VET system to provide early school leavers with not only the required occupational skills for employment, but also a broad-based education that would otherwise be provided by completing a senior secondary certificate (Education Council 2020). This approach will enable young people to gain the skills and educational background needed to navigate the ever-changing and complex workforce and to develop the flexibility and agility required for the modern economy.



This project

School completion – the current context

Given the potential for a future economic downturn and the disruption to the education and employment of young people caused by the coronavirus pandemic, it has never been more important for young people to complete senior secondary school and obtain a relevant senior secondary certificate of education. Evaluations of previous economic downturns indicate that young people are particularly vulnerable and may bear the brunt of a poor labour market during a long recovery (for example, see Karmel & Mlotkowski 2008; Anlezark 2011).

In 2009 COAG set school completion targets (or their equivalent), following on from the Melbourne Declaration (MCEETYA 2008). The educational attainment targets stipulated that, by 2020, 90% of 20-to 24-year-olds will have Year 12 or equivalent or certificate III attainment. These targets were reinforced by the more recent Alice Springs (Mparntwe) Education Declaration (Education Council 2019).¹ The current jurisdictional policies, which support these targets, mean that young people need to remain at school until the age of 17, unless they move into employment or another form of education.

These ‘learn or earn’ policies have largely eliminated the issue of early school leaving and disengagement and have had an impact on Year 12 completion, with the proportion of 20-to 24-year-olds without Year 12 steadily decreasing between 2004 and 2019 (figure 1). However, as of 2019 around 18% of this group still did not have their high school qualification.

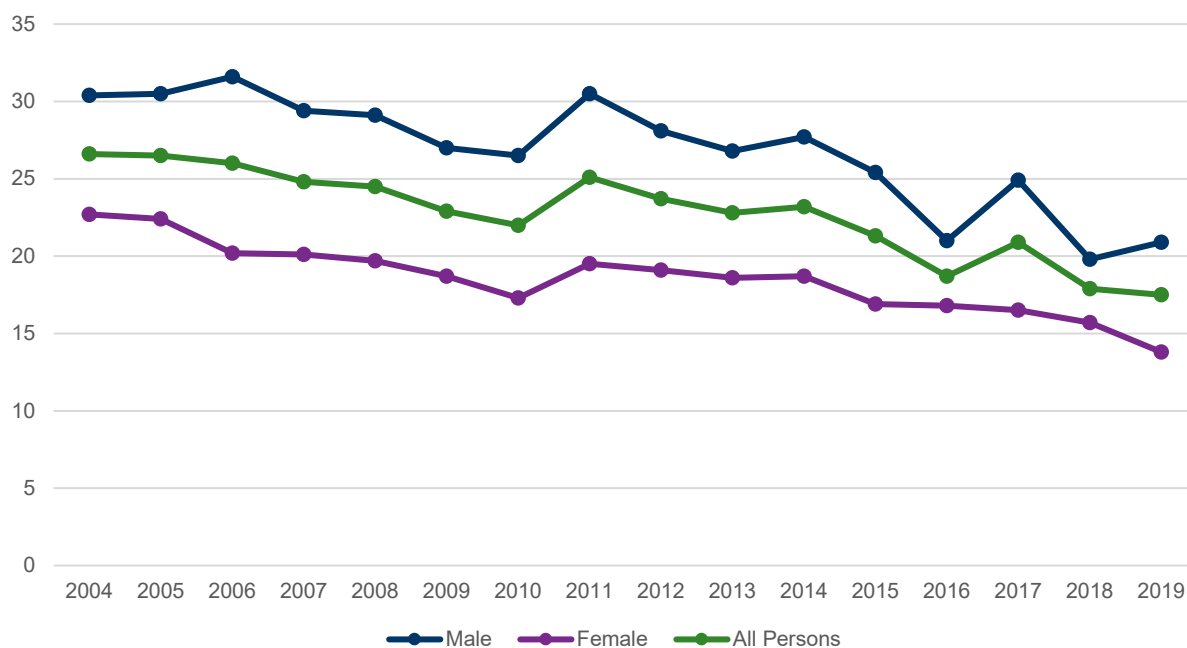
The VET sector has an important role to play in these policies, in that it provides the opportunity for early school leavers to continue learning and obtaining qualifications outside the school sector. Apprenticeships and traineeships, in particular, offer an option for early school leavers to obtain a qualification while being employed, as well as a recognised pathway into employment.

Key points

- The proportion of 20-to 24-year-olds without Year 12 decreased steadily between 2004 and 2019
- The VET sector plays an important role in enabling early school leavers to continue learning and obtaining qualifications
- Apprenticeships and traineeships provide an opportunity for early school leavers to obtain a qualification while employed

¹ The broad goals of the Alice Springs Declaration are that the Australian education system promotes excellence and equity, and for all Australians to become confident and creative individuals, successful lifelong learners and active and informed members of the community. A key aim of the Alice Springs Declaration is the support of young Australians at risk of educational disadvantage.

Figure 1 20 to 24-year-olds without Year 12 by gender, 2004–19 (%)



Source: ABS (2019, table 29).

Project aims

The aim of this research is to gain an understanding of the pathways taken by young people who leave school without completing Year 12 (referred to as ‘early school leavers’ in this report) and to determine whether those who commence VET studies after leaving school have different characteristics from those who do not. Also explored are the time taken for early school leavers to move into VET after leaving school early and the types of VET undertaken.

The project examined:

- Whether the characteristics of early school leavers who re-engage with education through VET differ from those who leave education altogether.
- For those who re-engage with education via VET, what types of programs do they undertake, and what is the length of time taken to re-engage with education after leaving school?
- Where and how do early school leavers access information on further education, training or employment opportunities? In this context, what is the role of family and peer influence in prompting them to follow certain post-school pathways?

The difficulty in examining transitions in young people – data limitations

Due to the limitations of the available data sources, investigating the pathways of early school leavers is difficult. There are no readily available administrative datasets and the current datasets have limitations, including:

- School data are not included in the Multi-Agency Data Integration Project (MADIP).
- Total VET activity (TVA) data only relate to individuals who have enrolled in VET and do not capture those who leave school and do not engage with VET.
- There is currently no unique student identifier that spans school and post-school education.

Administrative datasets are also restricted in the type of information they contain, such as individuals' motivations and plans for the future.

Data from surveys are more likely to prove useful in examining the pathways of early school leavers. The various surveys that contain relevant information include:

- Longitudinal Surveys of Australian Youth (LSAY)
- ABS Survey of Education and Training
- ABS Survey of Education and Work
- Household, Income and Labour Dynamics in Australia (HILDA) Survey
- Australian Longitudinal Census Dataset.

This research uses LSAY data. LSAY is a nationally representative survey that tracks 15-year-old students, who are in school at the time of their first interview (aged 15), as they move from school to other destinations, until they are 25 years of age. The survey collects information on their education activities (school, transitions from school, post-school education and training), employment (job history, job search and mobility), living arrangements and health, as well as socioeconomic and demographic information.

Nationally representative samples of over 10 000 young people start out in each LSAY cohort, with participants recruited from Australian schools that take part in the OECD's Programme for International Student Assessment, which measures the ability of 15-year-olds to use their reading, mathematics and science knowledge to meet real-life challenges.

Because LSAY tracks young people longitudinally, changes to the young person's circumstances can be observed over a 10-year period, which allows for sophisticated analyses of their pathways. The benefits of using LSAY data in this study are that they provide us with information on students' motivations and plans for the future, as well as their characteristics and transitions from school to post-school education and employment.

LSAY data are not without limitations, however. The biggest drawback, especially for this research, is that individuals who disengage from school are more likely to disengage from the survey as well.

For this research project, two cohorts of LSAY were combined into a single dataset to ensure a reasonable sample size of early school leavers: the 2006 (Y06) cohort, who were 15 years old in 2006 and had their last annual survey in 2016, and the 2009 (Y09) cohort, who were 15 in 2009 and completed their last survey in 2019. The total number of respondents across the two cohorts is 28 421.

Table 1 shows the number of respondents who were reported as being early school leavers; those who were not early school leavers; and those who left the survey before their school leaving status could be recorded. There are 3530 (12%) LSAY respondents across both the Y06 and Y09 cohorts who are recorded as being early school leavers.

Table 1 Respondents in the Y06 and Y09 LSAY cohorts, by early school leaving status

	Early school leavers	Not early school leavers	Attrition	Total
LSAY cohort	n (%)	n (%)	n (%)	n (%)
Y06	2 130 (15)	5 899 (41.6)	6 141 (43.3)	14 170 (100)
Y09	1 400 (9.8)	5 744 (40.3)	7 107 (49.9)	14 251 (100)
Overall	3 530 (12.4)	11 643 (41)	13 248 (46.6)	28 421 (100)

As can be seen, a high proportion of respondents left the survey before their school leaving status could be recorded (43% and 50% for the Y06 and Y09 cohorts respectively). The bulk of the analysis in this paper is therefore based on the 15 173 individuals whose school leaving status is known, including the 3530 respondents who are identified as early school leavers. This means that 23% of the Y06 and Y09 respondents, for whom school leaving status was known, left school prior to completing their senior secondary certificate.

Further detail on the data and the methodologies used in this research is described in appendix A.



Characteristics of early school leavers

While the focus of this report is on the educational re-engagement – especially via VET – of those who leave school before completing Year 12, it is relevant to first consider the characteristics of the early school leavers themselves. This enables us to identify the characteristics that are most influential in determining whether a young person will leave school without completing Year 12.

Table 2 shows the significance of the variables that contribute to early school leaving (see appendices A and B for details of the logistic mixed model used and the regression results). The significant variables (that is, those that contribute to early school leaving) are indicated with ticks.

Table 2 P-values for explanatory variables for early school leaving, LSAY Y06 and Y09

Explanatory variable	P-Value	Significant
School sector	<.0001	✓
Gender	0.0647	✓
Indigenous status	0.4954	
School geographic location	0.2026	
Language spoken at home	<.0001	✓
Immigration status	0.5070	
Father's occupation	0.2724	
Mother's education	0.0006	✓
Intention to complete Year 12	<.0001	✓
Plans immediately after school (self)	<.0001	✓
Plans immediately after school (parents)	0.0008	✓
Eventual post-school plans	0.0060	✓
Worked while at school (PISA year)	0.0264	✓
Occupational aspiration at age 30	0.1670	
Any VET subjects in PISA year	<.0001	✓
School engagement	<.0001	✓
Time spent on science homework	0.2193	
Time spent on mathematics homework	0.0249	✓
Time spent on other subject homework	0.9303	
Hours spent working in part-time job during the week	<.0001	✓
Hours spent working in part-time job during the weekend	0.0017	✓
Combined hours doing other activities	0.9760	
PISA maths achievement	0.0270	✓
PISA science achievement	0.2311	
PISA reading achievement	0.0052	✓
Socioeconomic status (ESCS)	0.0040	✓

While table 2 shows those characteristics that contribute to early school leaving, a more interesting question relates to which of these predictors has the biggest impact on the likelihood of leaving school early. To understand this, we use the significant variables to determine the predicted probability of early school leaving for each individual. The findings of this analysis are presented graphically in a regression tree showing the variables that most contribute to early school leaving (see appendix A for further detail). The first three nodes of the regression tree are shown in Figure 2. This does not mean that the

other significant variables are not meaningful, rather, their relative impact on early school leaving is weaker.

The overall predicted probability of early school leaving is 0.216, as indicated in the top box of the regression tree (figure 2). The most important factor in determining early school leaving is an individual's intention to complete Year 12 (as reported at the age of 15). Those who had no intention of completing Year 12 have a predicted probability of early school leaving of 0.677, around 4.5 times higher than those whose intention was to complete Year 12 (0.151).

For those individuals with no intention of completing Year 12, PISA reading achievement was influential, with lower scores more likely to lead to early school leaving. Individuals' plans for the year after leaving school and their eventual post-school plans were also important, young people with post-school VET plans being more likely to leave school early.

For those who did not intend to leave school early, the probability of their leaving school early is low (0.151), but this probability increased if they had VET or other training (not university) aspirations (0.272).

The individuals with the highest probability (0.773) of early school leaving are those who reported no intention to complete Year 12, had a lower PISA reading achievement score, and had eventual post-school plans for vocational education (VET/apprenticeship or traineeships). Conversely, those with the lowest probability (0.079) of leaving school early are those who had no intention to leave school early, had plans to attend university immediately after school, and had a higher PISA mathematics achievement score.



Re-engagement in education

VET as a re-engagement pathway

Here we investigate the factors that influence an early school leaver to re-engage with education through VET.

Table 3 presents LSAY respondent counts by their first educational re-engagement after leaving school. The data show that around 63% of early school leavers re-engaged with education via VET (at diploma or lower level), with 11% via higher education (at degree or higher level). Around 26% of the respondents who left school early had not re-engaged with any further education by the age of 25.

Table 3 First educational re-engagement of respondents in the Y06 and Y09 LSAY cohorts, by early school leaving status

Variable	First re-engagement	Early school leaver	Not early school leavers	Total
		n (%)	n (%)	n (%)
Group variable	Re-engaged via HE (degree or higher)	391 (11.1)	7 151 (61.4)	7 542 (49.7)
	Re-engaged via VET (diploma or lower)	2 221 (62.9)	3 098 (26.6)	5 319 (35.1)
	Re-engaged at level lower than VET	19 (0.5)	4 (0)	23 (0.2)
	No further study or data	899 (25.5)	1 390 (11.9)	2 289 (15.1)
Binary	Re-engaged via VET	2 221 (62.9)	3 098 (26.6)	5 319 (35.1)
	Did not re-engage via VET ¹	1 309 (37.1)	8 545 (73.4)	9 854 (64.9)
Total		3 530 (100)	11 643 (100)	15 173 (100)

Notes: Excludes those who left the survey.

¹ Did not re-engage via VET includes those who re-engaged via higher education (HE) and at a level lower than VET, and those who did not engage with any further study.

There is a clear distinction in the post-school education pathways of early school leavers when compared with non-early school leavers, with a higher proportion of early school leavers re-engaging in education via VET (63% compared with 27%) or in no further study (26% compared with 12%) (table 3). A higher proportion of those who complete Year 12 re-engage with education at a degree or higher level than early school leavers, noting that LSAY is biased towards individuals who complete school and then undertake higher-level education.

Table 4 demonstrates the significance of the variables that explain early school leavers' re-engagement with education via VET and their re-engagement with any form of education. The characteristics that significantly influence the probability of re-engaging with education via VET, indicated by the ticks, are: school sector, gender, father's occupation, individual's intention to complete Year 12, parental plans for their child for the year immediately after school, occupational aspiration at the age of 30, undertaking any VET subjects while at school at the age of 15, and socioeconomic status. The full regression results for both outcomes appear in appendix B.

Table 4 P-values for explanatory variables for educational re-engagement via VET and any educational re-engagement, LSAY Y06 and Y09

Explanatory variable	Educational re-engagement via VET		Any educational re-engagement	
	P-value	Significant	P-value	Significant
School sector	0.0130	✓	0.0126	✓
Gender	<.0001	✓	0.0992	✓
Indigenous status	0.8417		0.7150	
School geographic location	0.8773		0.5872	
Language spoken at home	0.9265		0.2742	
Immigration status	0.1931		0.1480	
Father's occupation	0.0039	✓	0.2884	
Mother's education	0.7061		0.8502	
Intention to complete Year 12	0.0002	✓	<.0001	✓
Plans immediately after school (self)	0.3172		0.3046	
Plans immediately after school (parents)	0.0012	✓	0.0055	✓
Eventual post-school plans	0.2370		0.2809	
Worked while at school (PISA year)	0.6871		0.6392	
Occupational aspiration at age 30	0.0170	✓	0.1075	
Any VET subjects in PISA year*	<.0001	✓	0.2781	
School engagement	0.5730		0.0106	✓
Time spent on science homework	0.1509		0.4052	
Time spent on mathematics homework	0.4436		0.0513	✓
Time spent on other subject homework	0.2940		0.1175	
Hours spent working in part-time job during the week	0.3136		0.3791	
Hours spent working in part-time job during the weekend	0.3887		0.0586	✓
Combined hours doing other activities	0.1022		0.4611	
PISA maths achievement	0.9826		0.0996	
PISA science achievement	0.7752		0.5364	
PISA reading achievement	0.3338		0.5749	
Socioeconomic status (ESCS)	<.0001	✓	<.0001	✓

Next, we focused on educational re-engagement via VET, comparing those who re-engaged with education via VET with those who did not. For the statistical regression analysis, the four-level group variable was coded to a binary variable, as shown in table 3. The group who did not re-engage with education via VET included those who re-engaged with education via higher education and at a level lower than VET, as well as those who did not engage in any further study. This binary split confirms the important role of VET for re-engaging early school leavers in education.

Figure 3 presents the regression tree (first three nodes) for the predicted probability of re-engagement with education via VET. The overall predicted probability of VET as a re-engagement pathway for early school leavers is 0.647, as shown in the top box of the regression tree.

The most influential factor identified was parental plans for their child for the year immediately after leaving school. Those whose parents wanted their child to undertake VET have a 1.4 times higher probability of re-engagement via VET than those who wanted their child to go to university or get a job.

The characteristics that lead to the highest probability (0.824) of re-engagement with education via VET are having parents that want them to go on to VET in the year after leaving school, not intending to complete Year 12 and being male. Females are less likely to re-engage with education through VET even when their parental post-school plans and own intention to complete Year 12 are the same as for males (although it is still relatively high at 0.739).

The characteristics that lead to the lowest probability of re-engaging with education via VET (0.272) are an individual's eventual post-school plans (including university study), not undertaking any VET subjects at the age of 15, and their parents wanting them to go to university in the year after leaving school.

Thus, for those who leave school prior to completing Year 12, the probability of using VET as a re-engagement pathway appears to be driven by a conscious decision to do so.

Any educational re-engagement

While re-engagement with education via VET is the primary focus of this research, it is also useful to look at the probability of re-engagement with any form of education. Table 4 also presents the factors that are significant in explaining any educational re-engagement. Here we can see some differences between those re-engaging via VET and those re-engaging via education generally. For the latter category, school engagement, time spent on mathematics homework and the number of hours spent working in a part-time job on the weekend become significant. Further, father's occupation, an individual's occupational aspiration for the age of 30 and whether any VET subjects were undertaken while in school at the age of 15 become less important.

The importance of these significant factors in any educational re-engagement is presented in a regression tree (figure 4). This shows early school leavers have a 76% chance of re-engaging with some form of education ($p = 0.761$, as shown in the top box of the regression tree).

The primary driver of any educational re-engagement is socioeconomic status, with those having a lower SES score being less likely to re-engage in education than those having a higher SES score (although it is worth noting that the predicated probability of educational re-engagement for this group is still relatively high, at 0.711).

The lowest probability (0.642) of any educational re-engagement is for those who display the following combination of characteristics: are from low SES; their parental plans for the year after school are going to university, doing other training or finding a job (as opposed to doing VET); and have a lower PISA mathematics achievement score. It is of note that this probability is still higher than 50%.

The highest probability (0.890) of any educational re-engagement is for those who are from higher SES, attended a Catholic or independent school, and had no intention of completing Year 12.

The results across both re-engagement via VET and any educational re-engagement highlight the importance of parental influence, with parental plans for their child in the year after leaving school featuring prominently. For those from lower-SES backgrounds, parental plans are important for any educational re-engagement, as they are for young people from higher-SES backgrounds who attend a government school. This suggests that the parents of young people at risk of leaving school early have a need for information about the available post-school options.

Figure 3 Regression tree – predicted probability of early school leavers re-engaging with education through VET by the age of 25

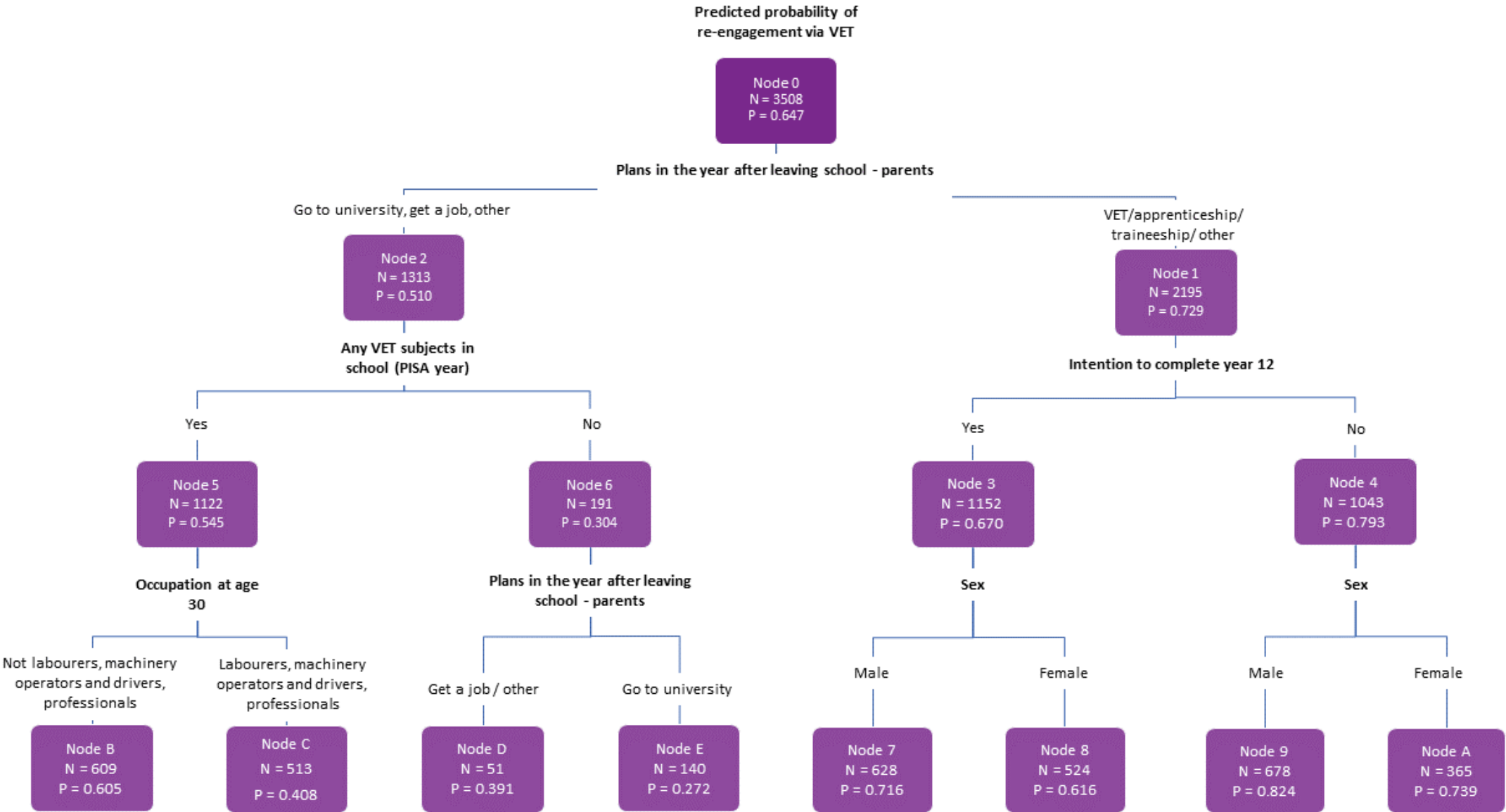
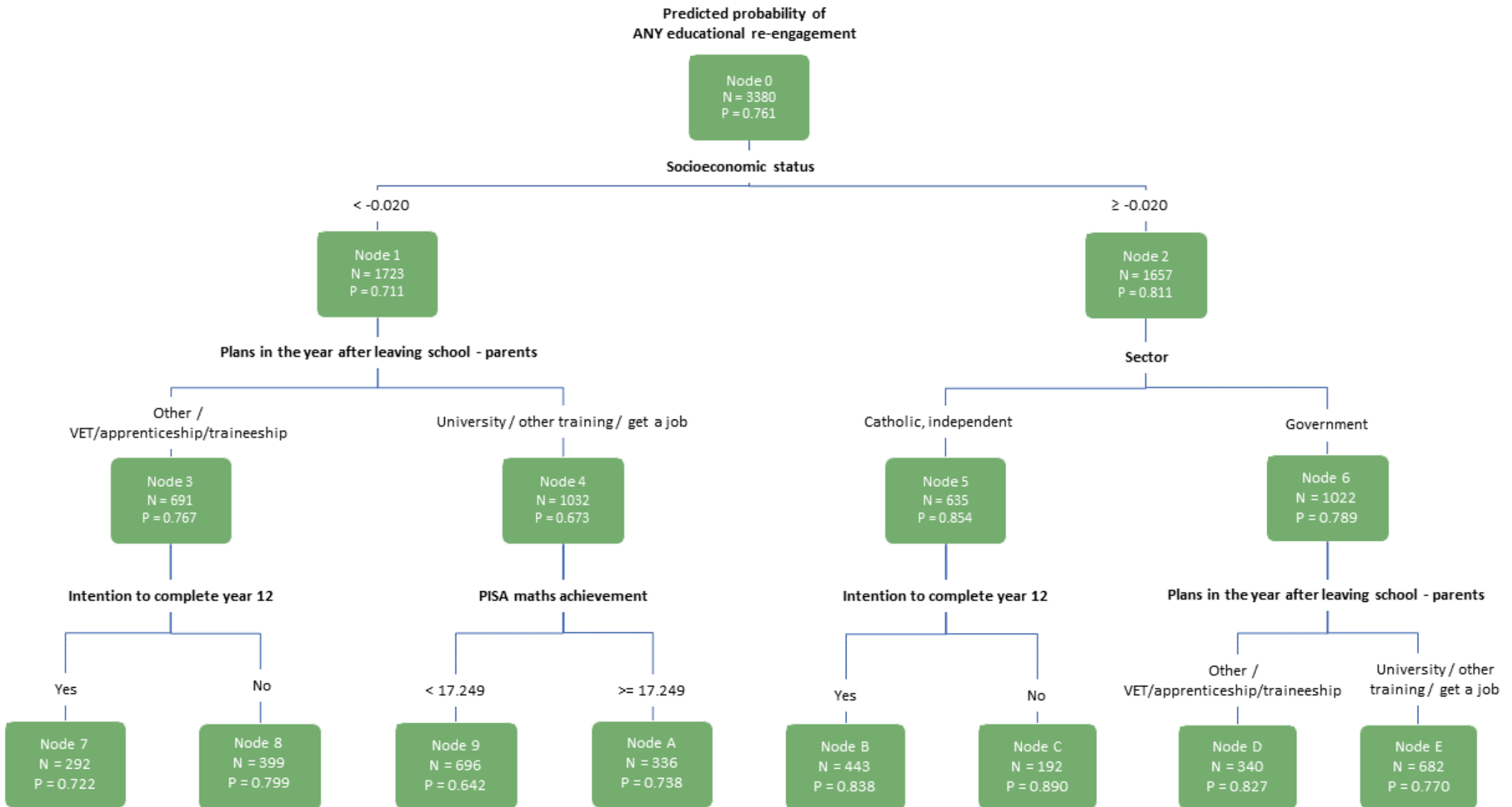


Figure 4 Regression tree – predicted probability of early school leavers re-engaging with any education by the age of 25



Level of educational re-engagement

This section includes a brief investigation of the levels of education with which early school leavers re-engage.

Table 5 presents LSAY respondent counts by the level of their first educational re-engagement after leaving school. The data indicate that half of early school leavers who re-engaged with education first did so through an apprenticeship or traineeship, 22% via a certificate III or higher VET qualification (excluding apprenticeships or traineeships), and 15% via a bachelor degree or higher qualification.

For those who completed Year 12, about 70% of those who re-engaged with education first did so via a bachelor or higher qualification, and 15% via a certificate III or higher VET qualification (excluding an apprenticeship or traineeship).

Table 5 Level of first educational re-engagement of respondents in the Y06 and Y09 LSAY cohorts, by early school leaving status

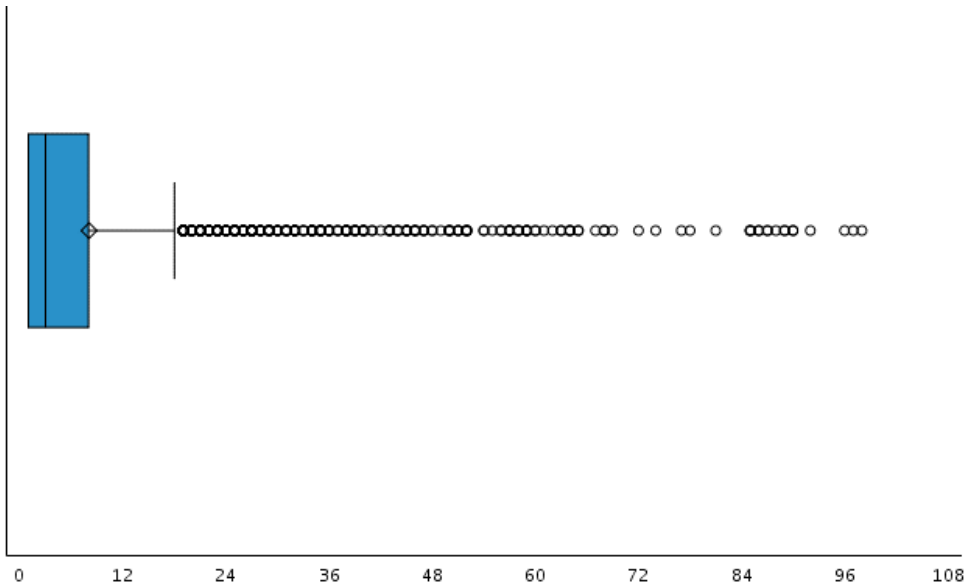
First re-engagement education level	Early school leaver	Not early school leaver	Total
	n (%)	n (%)	n (%)
Bachelor degree or higher (HE)	391 (14.9)	7 151 (69.7)	7 542 (58.5)
Apprenticeship/traineeship (VET)	1 335 (50.7)	1 312 (12.8)	2 647 (20.5)
Certificate III/IV/diploma (VET)	580 (22.0)	1 518 (14.8)	2 098 (16.3)
Certificate I/II (VET)	306 (11.6)	268 (2.6)	574 (4.5)
Short course or single modules/other	19 (0.7)	4 (0.04)	23 (0.18)
Total	2 631 (100)	10 253 (100)	12 884 (100)

Time until re-engagement with education

This section investigates the time taken for early school leavers to re-engage with education.

The distribution for time until first educational re-engagement is heavily skewed (figure 5), with the bulk of early school leavers re-engaging with education between one and six months, followed by a long tail of up to 96 months after leaving school.

Figure 5 Boxplot of time until first educational re-engagement for early school leavers in the Y06 and Y09 LSAY cohorts (months)



The characteristics significantly influencing the time taken to move from school to VET or to re-engage with any form of education are shown in table 6.

Table 6 P-values for explanatory variables for time to first educational re-engagement via VET and any educational re-engagement, LSAY Y06 and Y09

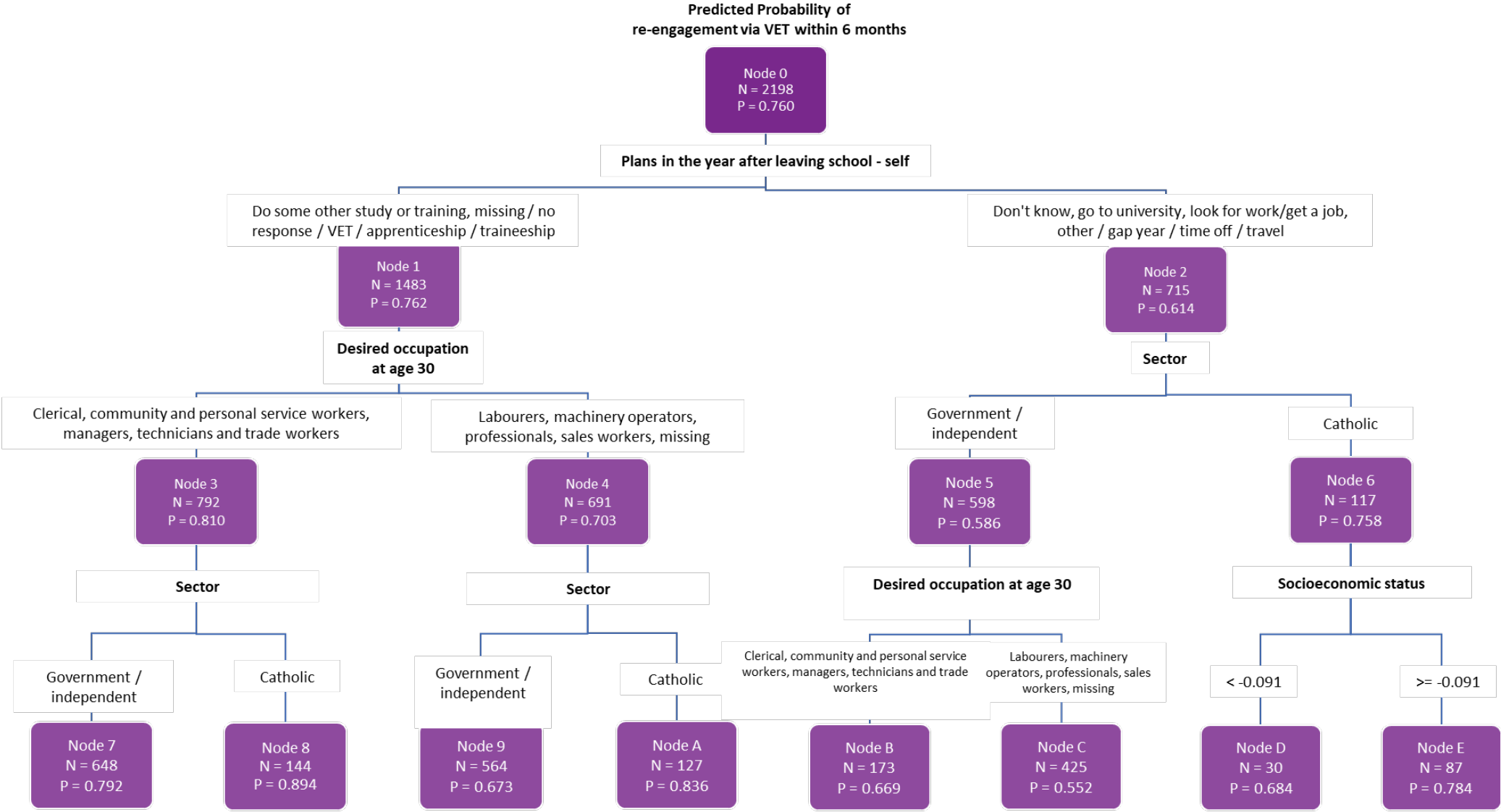
Explanatory variable	Educational re-engagement via VET		Any educational re-engagement	
	P-value	Significant	P-value	Significant
School sector	0.0009	✓	0.0132	✓
Gender	0.0609	✓	0.0828	✓
Indigenous status	0.3400		0.2268	
School geographic location	0.1611		0.1418	
Language spoken at home	0.5104		0.6357	
Immigration status	0.0347	✓	0.2193	
Father's occupation	0.8551		0.6602	
Mother's education	0.2111		0.0425	✓
Intention to complete Year 12	0.0004	✓	0.0002	✓
Plans immediately after school (self)	0.0844	✓	0.0205	✓
Plans immediately after school (parents)	0.4363		0.4345	
Eventual post-school plans	0.1770		0.2720	
Worked while at school (PISA year)	0.6466		0.3937	
Occupational aspiration at age 30	0.0623	✓	0.0209	✓
Any VET subjects in PISA year*	0.5251		0.0332	✓
School engagement	0.7089		0.3328	
Time spent on science homework	0.3226		0.2774	
Time spent on mathematics homework	0.9744		0.9792	
Time spent on other subject homework	0.5156		0.2413	
Hours spent working in part-time job during the week	0.6391		0.5500	
Hours spent working in part-time job during the weekend	0.4973		0.4978	
Combined hours doing other activities	0.1122		0.1170	
PISA maths achievement	0.3888		0.2374	
PISA science achievement	0.2008		0.4949	
PISA reading achievement	0.0722	✓	0.1389	
Socioeconomic status (ESCS)	0.0451	✓	0.1818	

A regression tree of the predicted probability of re-engaging with education via VET within six months of leaving school is presented in figure 6. This shows early school leavers have a 76% chance of re-engaging with education via VET within six months of leaving school ($p = 0.760$, as shown in the top box of figure 6).

Respondents' own plans for the year after leaving school play an important role, with those who want to undertake VET or other non-university training having a probability of 0.762 of engaging with VET within six months of leaving school. School sector also plays an important role, with those who attended Catholic schools more likely to re-engage within six months than those who attended government or independent schools.

The findings demonstrate the importance of the VET sector for young people who leave school before completing Year 12, with around three-quarters of early school leavers who re-engaged with education via VET doing so within six months of leaving school. This is likely driven by policies that ensure people who leave school before the age of 17 move into employment or some other form of education.

Figure 6 Regression tree – predicted probability of re-engaging with education via VET within six months of leaving school, early school leavers who re-engage with VET





VET for early school leavers

The first finding from this study is that VET is a popular educational pathway for this group of early school leavers (Y06 and Y09 LSAY cohorts). This is a positive finding, as previous research demonstrates that individuals who complete VET qualifications, at any level, have better employment outcomes than those who do not re-engage with education. The benefits of VET re-engagement (or higher) may persist for up to five years (Lee & Coelli 2010; Polidano & Ryan 2016). The evidence also indicates that VET qualifications can lead to better outcomes than university qualifications, particularly for men but also for those that have lower ATAR scores (Karmel & Lui 2011).

These findings are in line with those observed in Black et al. (2011), who noted that, due to Australia's overall good general performance in PISA testing and the wide range of post-school education options available to young people, early school leavers are still able to acquire relevant post-school qualifications, enabling their economic participation. From an economic perspective, increased labour force participation enhances productivity and GDP growth (Levin 2010; Deloitte Access Economics 2012).

Access to VET is important for disadvantaged students, who are more at risk of school non-completion (Deloitte Access Economics 2012). Improving educational and labour market outcomes for early school leavers is particularly important in addressing labour market inequality. In addition, individuals have enhanced social benefits such as improved wellbeing, better health outcomes, reduced criminal behaviour and greater participation in community activities (Deloitte Access Economics 2012).

VET can provide a more positive experience than the formal school system for some young people. Indeed, Murray and Mitchell (2013), in interviews with young people attending TAFE (technical and further education) institutes in Tasmania, reported that young people talked about their negative school experiences but their positive experiences at TAFE. The young people interviewed said that they preferred the adult learning environment, the individual attention, the support and feedback provided by teachers, the positive peer behaviour and interactions, and the competency-based assessments that TAFE provides.

While this report has presented a quantitative analysis of the factors that contribute to early school leavers' re-engagement in education, the recent Shergold review into senior secondary schooling acknowledged the importance of catering for the needs of all students, and noted that students who are more interested in pursuing vocational learning or structured workplace learning often feel inferior (Education Council 2020). This study has revealed that early school leavers are not necessarily interested in pursuing further education; instead, their own VET aspirations (and those held by their parents) may be better met outside the formal school system.

Comprehensive careers advice services and good pastoral care for young people (and their parents), especially for early school leavers, have a significant role to play. The importance of a post-school plan for young people, highlighted in this research, supports a key finding by Black et al. (2011) that having a post-school career plan or finding a 'career job' soon after leaving school were important drivers in the likelihood of post-school qualification acquisition.

Support for early school leavers

Some early school leavers do not access or enrol in VET as an alternative to school completion, for various reasons. Dommers et al. (2017) conducted a qualitative study that investigated the factors and initiatives designed to encourage young early school leavers to re-engage with VET. The key messages from that report were that VET needed to be demystified through the provision of accessible and relevant information. The enrolment process needs to be simple and engaging, providing information on course choices and available financial support. Additionally, multiple supports – logistic, academic and/or social – should be provided during training.

Young people are likely to benefit from support throughout their education, regardless of the environment (school or otherwise). Access to relevant careers information once they have left school and the provision of multiple post-school options would help to ensure that their requirements can be addressed within the Australian educational framework. Further, education and careers guidance needs to begin much earlier than during senior secondary schooling, and VET pathways need to be accorded a higher status. Rather than being considered as a ‘second chance’, they need to be viewed as a valued, viable educational choice. Waugh and Circelli (2020) discussed the role the VET sector can play in mitigating the effects of economic downturns on young people and assisting them to move into employment. Their key points are that career planning needs to be individualised, with ongoing support from an informed and objective person. As Waugh and Circelli (2020, p.1) argue:

The opportunity VET offers Australia’s youth can only reach those who most need it when VET is adequately resourced to execute programs in tandem with holistic social services and industry support.

The findings in this project have demonstrated that not only should young people be provided with high-quality career-planning information, so also should their parents/carers.

Equivalent education for early school leavers

Early school leavers still require the educational skills accrued by completing senior secondary education, skills that complement the occupation-specific skills that VET provides. This is consistent with the overarching goals of the Alice Springs (Mparntwe) Education Declaration:

Australian Governments must provide all young Australians with equality of opportunity that enables them to reach their potential and achieve their highest educational outcomes.

(Education Council 2019)

Whether there is in fact a vocational equivalence to the general education provided by the completion of senior secondary schooling is open to debate (Lim & Karmel 2011). Karmel (2019), in a response to the Productivity Commission Interim Report on the National Agreement for the Skills and Workforce Development Review, noted that the aims of the VET sector (through training packages) have focused on the narrow technical skills required for the workforce, meaning that the sector is losing its role in providing broader education. Greater efforts need to be made to provide opportunities for equivalent education (to senior secondary schooling) for those students who decide they want to leave school early. Karmel (2019) further argued that VET needs a broader role in this, given that skills are embodied in individuals, and higher levels of general education make individuals more adaptable and provide insurance against an unknown future. Both Karmel (2019) and recommendation 13 in the Shergold review (Education Council 2020) advocated for broader vocational education certificates (for example, a certificate III or IV in vocational education) as an alternative to completion of secondary school, with Karmel arguing:

We guarantee funding for all students attending secondary schooling and I am suggesting that this guarantee could be extended to VET for those students who have not obtained a reasonable tertiary

entrance rank. This would mean the extension of a schooling entitlement to those students who have not successfully completed secondary schooling. (Karmel 2019, p.2)

And from the Shergold review:

Governments should provide access to free education or training to 16- to 20-year-olds who have left school without obtaining a Senior Secondary Certificate of Education in order to allow them to attain a Senior Secondary Certificate of Education or equivalent, and to attain minimum standards of literacy, numeracy and digital literacy. (Recommendation 13, Education Council 2020, p.21)

Given the important pathway that VET provides for early school leavers, further consideration of how VET can meet these broader skills needs is warranted.

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Appendix A

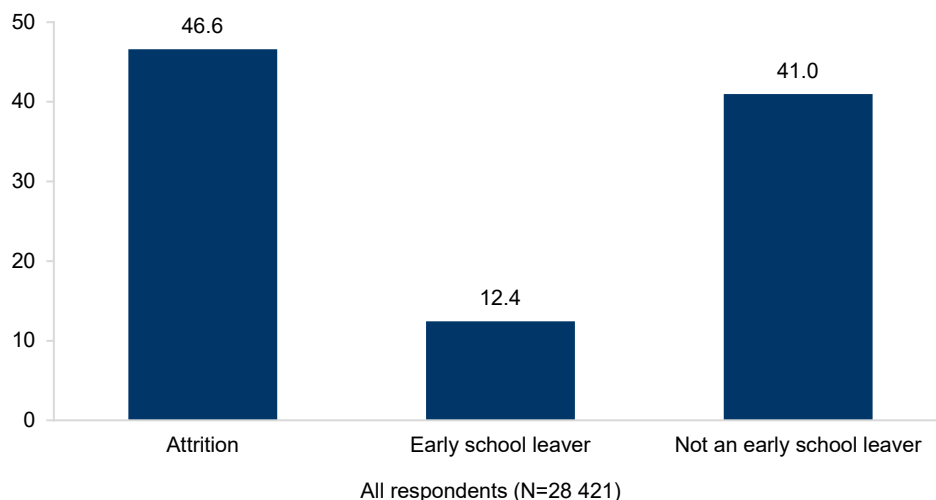
Data and methodology

Description of data

Early school leaving

Early school leavers are defined in the LSAY dataset as those who did not report completing Year 12. Year 12 completion is defined as individuals who left school and reported obtaining a senior secondary certificate (or International Baccalaureate) upon leaving school, or those who reported leaving school when they were in Year 12 and left school after October. Those who left school and reported being in Year 13 are considered as school completers. Individuals who dropped out of the survey (that is, no reported leaving school date) were excluded from the analysis. Figure A1 shows that, of the 28 421 respondents in both Y06 and Y09, 47% had left the surveys before school leaving status could be determined, 41% reported finishing senior secondary schooling and 12% were identified as early school leavers.

Figure A1 Early school leaving status of respondents in the Y06 and Y09 LSAY cohorts (%)



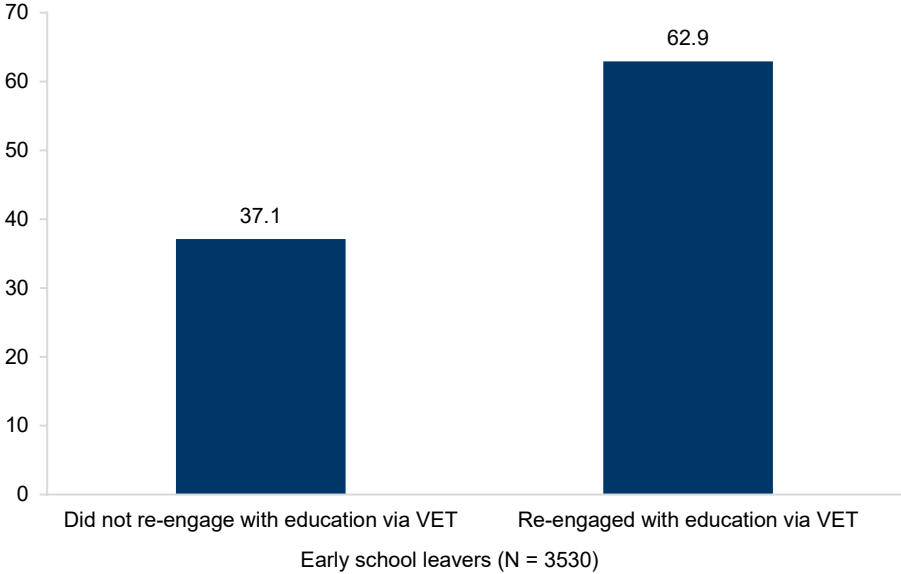
First educational re-engagement

Two educational re-engagement variables have been derived for this study. The first (and primary endpoint) is that of first educational re-engagement via VET. The second variable is the first of any educational re-engagement (not just VET). Additionally, the qualification level of first educational re-engagement is also derived. There is no formal analysis of the level of educational re-engagement variable. It is noted that the outcomes of these courses are not considered in this paper.

First VET re-engagement

First educational re-engagement via VET is defined as those individuals who reported starting a VET course at any point after leaving school as their first post-school education. Those who did not re-engage with education via VET include those who re-engaged in education via higher education or at a level lower than VET, and those who did not re-engage with any education. Of the 3530 LSAY respondents identified as early school leavers in the LSAY sample, 63% re-engaged with education via VET as their first educational re-engagement after leaving school and 37% did not re-engage with education via VET. This variable is the primary variable of analysis in this paper (figure A2).

Figure A2 Educational re-engagement via VET for early school leavers in the Y06 and Y09 LSAY cohorts (%)



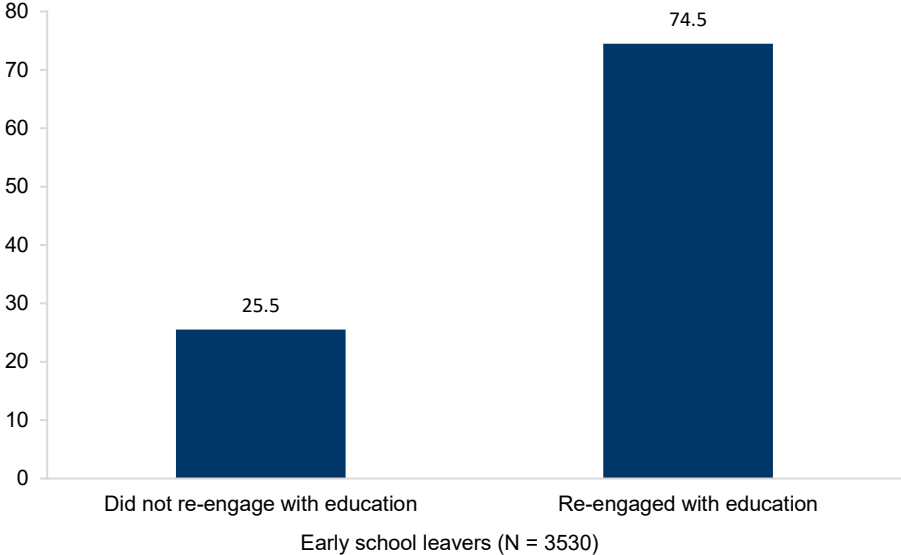
Note: Did not re-engage with education via VET includes those who re-engaged with education via higher education and at a level lower than VET, and those who did not engage with any form of education.

Any educational re-engagement

Any re-engagement is defined as those individuals who reported starting any education at any point after leaving school as their first post-school education up to the age of 25. This includes those who re-engaged in education via higher education or in short courses or in Year 12 not undertaken at school.

Overall, 75% of early school leavers in the Y06 and Y09 LSAY sample re-engaged with education after leaving school (figure A3).

Figure A3 Educational re-engagement for early school leavers in the Y06 and Y09 LSAY cohorts (%)

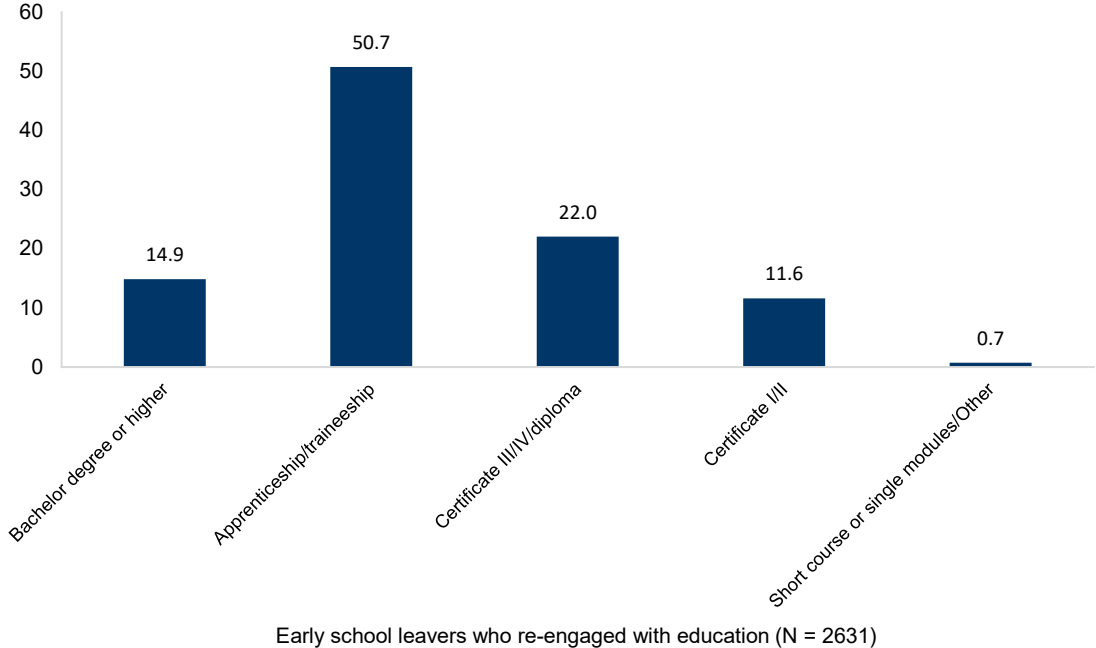


Level of educational re-engagement

A secondary response variable of interest is the educational level of the student’s first post-school re-engagement (figure A4).

For those early school leavers who re-engaged with education, 51% commenced an apprenticeship or traineeship and 34% commenced a VET qualification at certificate I or above. Across all VET programs, 85% of early school leavers who re-engage with education did so via VET. Thus, VET is an important re-engagement pathway for early school leavers.

Figure A4 Level of first re-engagement with education for early school leavers in the Y06 and Y09 LSAY cohorts (%)



Time until first re-engagement with education

While the return of early school leavers to education is important, it is also important to understand how long it takes for early school leavers to re-engage with the education system.

The timing variable used is the time (in months) of early school leavers' re-engagement with education via VET. This is derived as the number of months between the reported date (MM/YYYY) of leaving school and the reported commencement date (MM/YYYY) of their first VET course. The duration is limited by the accuracy of the data; those with a negative duration (that is, commenced VET prior to leaving school) are reported as one month.

The time until first re-engagement is converted to a dichotomous variable, with a level of 1 for those who engaged with VET within six months of leaving school and 0 for those who took longer than six months. This duration variable will be the primary duration variable for the analysis (Table A1), with unable to determine engagement time combined with longer than six months to engage with VET to make it dichotomous.

Table A1 Time until first educational re-engagement via VET for early school leavers in the Y06 and Y09 LSAY cohorts

Time until first educational re-engagement via VET	n (%)
Unable to determine time to engage with VET	85 (3.2)
Longer than six months to engage with VET	754 (28.7)
Less than six months to engage with VET	1 792 (68.1)
Total	2 631 (10.00)

Around 70% of early school leavers who re-engage with education via VET do so within six months of leaving school, with 29% engaging after six months.

Explanatory variables

The list of potential² background/explanatory variables used for investigating early school leaving and re-engagement with education via VET, along with the summary of the proposed continuous variables, are presented in Table A2. The variables selected in the analysis are those used in the PISA (wave 1) surveys that are thought to impact on both early school leaving and educational re-engagement via VET. Note that there are other possible variables, but for this study the variable must have been collected during the PISA wave, as the event of dropping out of school (and attrition) can commence from the second wave of LSAY, when respondents are 16 years of age. It is important that explanatory variables occur prior to the event of interest.

These variables measure items such as SES, engagement with school, students' plans for their future, along with parental plans for their child, and achievement in PISA testing. Parents' occupation is included as the literature indicates that there is a relationship between parental education and occupation and their children's occupational and educational choices. The usual other background variables (gender, Indigenous status, language spoken at home) are also included in the analysis.

Summary statistics of background variables are available as supplementary data tables, available to download from the NCVET portal.

² 'Potential' is used here as a number of background characteristics were considered but were subsequently removed due to either collinearity in the regression model, or because they have been used to create a new variable using factor analysis.

Table A2 Possible explanatory variables for early school leaving and re-engagement with education via VET

Background variable	School/student level
<i>Categorical variables:</i>	
School sector	School
School geographic location	School
Language spoken at home	Student
Sex	Student
Immigration status	Student
Indigenous status	Student
Mother's highest education completion	Student
Mother's occupation (ISCO)	Student
Mother's highest school level completed	Student
Father's occupation (ISCO)	Student
Father's highest school level completed	Student
Respondent's Intention to complete Year 12	Student
Respondent's desired occupation at age 30	Student
Respondent's plans in the year immediately after leaving school	Student
Respondent's parents plans in the year immediately after leaving school	Student
Currently undertaking any VET subjects while at school (PISA year)	Student
Plans to undertake any further study at any time after leaving school	Student
Do you currently have a job (PISA year)	Student
<i>Continuous variables:</i>	
Total hours of out of school activities	Student
PISA mathematic achievement	Student
PISA reading achievement	Student
PISA science achievement	Student
Socioeconomic status (ESCS)	Student
Hours spent on maths homework	Student
Hours spent on science homework	Student
Hours spent on other subjects homework	Student
Hours spent working – Mon. to Fri.	Student
Hours spent working – weekend	Student
School engagement variable	Student

Total hours of out-of-school activities

The total hours of out-of-school activities variable is derived as the sum of five variables collected in PISA. These are the hours that an individual spent undertaking activities such as watching TV, listening to music, playing sport and reading for pleasure, and participating in unpaid or voluntary work.

School engagement

The PISA questionnaires in 2006 (Q46) and 2009 (Q63) asked students a range of questions on their life at school. For example, these questions include items such as: The work we do is interesting, I feel happy, I know how to cope with the work etc., which were measured using a 4-point Likert scale (1 = Strongly Agree, 4 = Strongly disagree). Using factor analysis (separately for each cohort), these variables were converted to a single measure of 'school engagement' (analysis not shown). This single factor was then standardised to the standard normal distribution and reversed so that higher scores indicated higher school engagement.

Multi-collinearity

The nature of the background variables mean that relationships are likely to exist between the explanatory variables. There are also likely to be strong relationships between parents' working status, occupation (ISCO) and parental school and education variables.

To help reduce the impact of multi-collinearity in the analysis, the following variables from Table A2 were removed from the analysis:

- mother's occupation
- mother's highest school level completed
- father's highest school and highest education level completed.

The removal of these variables can be justified as a child's socioeconomic status is influenced by parental occupation and educational status, with typically the father's occupation and mother's education being the key influences on SES, together with the ESCS variable of household possessions (Marks et al. 2000).

LSAY weighting

The analysis of survey data, particularly from longitudinal surveys, typically includes the use of survey and attrition weights. In order to maximise the sample size, individual respondents' outcomes (early school leaving, undertaking further study etc.) are captured in the year in which the event occurred. In most analyses of LSAY, a particular wave or age (for example, by the age of 19) is selected and the analysis is undertaken up to that point. In this approach, it is 'simple' to use the given LSAY weights. In this case, the weights that have been selected are the weights for the year in which the relevant event has occurred. The implication of this is that summary tables do not provide totals that correspond to the overall LSAY weighted totals as provided in the LSAY quickstats (<<https://lsay.edu.au/data/lsay-quickstats>>). This is of no concern, as the aim of this paper is not to estimate the number of young people who leave school early or re-engage with the VET system, but rather to look at the relationships between VET re-engagement and a range of background characteristics. Additionally, the variables of interest are principally those that explain early school leaving. Attrition and non-response in LSAY and a brief (not shown) analysis indicates that there are very little differences in the summary tables and regression results obtained when using weighted or unweighted data. Thus, the regression analysis uses the weights in the year of the particular event. The summary tables and graphs produced that are not the result of regression modelling are presented using unweighted data.

Statistical methodology

The statistical techniques used in this study include:

- basic summary statistics through the use of tabulations and graphical representation of data
- generalised linear logistic regression for modelling early school leaving, VET re-engagement and educational re-engagement, and time to re-engagement (for both VET and any educational re-engagement)
- regression trees to identify the most important variables and pathways for each of the regressions.

General interpretation of results

Given the nature of the population of interest (early school leavers) and the use of LSAY, the results in this paper present the results observed for the research dataset. As time within the LSAY sample progresses, it is known that LSAY tends to be biased towards those individuals who are from the highest

achievement quartiles (in maths, science and reading), have higher socioeconomic status and ‘university pathways’. Individuals from lower SES and those who take alternative educational and employment pathways are more likely to drop out of the LSAY surveys. Thus, by the end of the survey, there is an over-representation of ‘higher’ achieving young people. In the context of the research questions in this paper, this is also the case, with more early school leavers re-engaging with education than otherwise might be seen in the general population of 15 to 25-year old people. The results should be interpreted in this context.

It is noted that the relationships observed (and the general patterns) between the responses and the explanatory variables are valid for providing more general conclusions.

Logistic mixed model

The generalised logistic mixed model regression is an extension of the ordinary logistic regression model to allow for the multi-level nature of the LSAY survey. The LSAY survey design is stratified in such a way that survey respondents (individuals) are selected from schools nested within school sectors, which are then nested within jurisdictions (state/sector/school). The regression model should accurately account for this selection strategy (as individuals in schools are likely to be more similar than individuals between schools, and schools in sectors may be more similar than between sectors etc.). Further, the cohort (Y06 & Y09) should also be included as the highest-level grouping factor in the random model.

In this dataset, the number of respondents is relatively small against the nesting structure (707 schools in three sectors across eight jurisdictions) for the 15 000 respondents (those who didn’t drop out of the survey) and reduces to around 3500 when looking at just early school leavers. The mixed model was investigated using the full nesting structure; however, the model failed to converge (even for the intercept-only model) and so the only random effect included was that of School Identifier (unique across both cohorts) with a variance components correlation structure between individuals. For a description of the multi-level model for the two-level school-effects model, readers are referred to Lim, Gemici and Karmel (2013) and appendix B.

The individual regression results for each of the outcomes appear in appendix B.

An important statistic obtained from the regression modelling is the intra-class correlation (ICC). This statistic is used to determine the impact of the random effect on the outcome of interest (that is, the impact that schools have on the outcome of interest).

It is obtained from the generalised logistic mixed mode, in which only the random school effect is included. The ICC is derived as follows:

$$ICC = \frac{\sigma_{school}^2}{\sigma_{school}^2 + \sigma_e^2},$$

where the variance component for school (σ_{school}^2) is estimated from the generalised logistic model and σ_e^2 is 3.29 (derived from $\frac{\pi^2}{3}$ as the variance of the standard logistic distribution). This gives us the percentage of variation that arises from unmeasured school factors.

Regression tree

The logistic regression predicts those variables that contribute to the outcomes of interest. A more interesting question relates to which of these predictors matter most. This question is approached using a regression tree. Based on the significant predictors, as identified from the regression and the calculated predicted probabilities for the outcomes of interest, the regression tree creates a diagram that allocates influential predictors by order of relative importance. (For technical details on CHAID, readers are

referred to Biggs, Deville and Suen 1991 or Magidson 1993.) The regression trees are presented graphically. For the sake of presentation, only three levels of the regression tree are shown. This does not mean that the other significant variables are not meaningful; it just means that their relative impact on the outcome of interest is weaker and occurs at lower levels within the diagrams.

Appendix B presents a brief overview of the logistic regressions used in this paper and the partial regression results. For brevity, regression results are shown for the significant parameters only.

The model fitted allows a random intercept for schools and fixed effects for all other school and student-level characteristics:

$$\text{logit}(y_{ij}) = \mathbf{X}\boldsymbol{\tau} + \mathbf{Z}\mathbf{u} + \epsilon$$

where y_{ij} is a binary indicator (1,0) variable indicating whether student i in school j has the characteristic of interest, \mathbf{X} is the design matrix for fixed effects (both school and individual effects), $\boldsymbol{\tau}$ is the vector of regression co-efficients obtained for the corresponding fixed effects, \mathbf{Z} is the design matrix for random school effects, \mathbf{u} represents the variation in intercepts between schools and ϵ is the between-student (within school) variation with the assumptions that $\mathbf{u} \sim N(0, \sigma_{school}^2)$ and $\epsilon \sim N(0, \sigma_{\epsilon}^2)$. In the case of logistic regressions σ_{ϵ}^2 is approximated by $\frac{\pi^2}{3} = 3.290$.

Appendix B

Regression results

Early school leaving

Table B1 Covariance parameter and intra-class correlation for school effects, early school leaving

Variance component:	Estimate	Std error	P-value
SchoolID (σ_{school}^2)	0.756	0.0619	<0.0001
Error variance for logistic (σ_{error}^2)	3.290		
ICC	0.187		

Notes: *Derived as $-2\log L$ of the models with and without the random (school) effect and obtained using the COVTEST option in PROC GLIMMIX in SAS.

Table B2 Regression results for early school leaving, significant values only

Background characteristic level	β	Std error	Pr > t	Odds-ratio	95% CL for odds ratio	
					Lower	Upper
School sector						
Catholic	-0.388	0.0941	0.000	0.679	0.564	0.816
Independent	-0.370	0.1089	0.001	0.691	0.558	0.855
Government						
Sex						
Female	-0.090	0.0579	0.121	0.914	0.816	1.024
Male						
Language spoken at home						
Language other than English	-0.556	0.1175	0.000	0.574	0.456	0.722
N/A, invalid or missing	-0.673	0.2466	0.006	0.510	0.315	0.827
English						
Mother's highest education level						
Did not finish school and no further education	0.000	0.0624	0.994	1.000	0.884	1.130
Diploma or higher	-0.021	0.0638	0.740	0.979	0.864	1.110
Missing education level	0.429	0.1163	0.000	1.536	1.223	1.929
Year 12 or VET qualification						
Intention to complete Year 12						
Missing	0.556	0.1872	0.003	1.743	1.208	2.516
No or I'm not sure	1.457	0.0663	0.000	4.291	3.769	4.887
Yes, I plan to complete Year 12						
Own plans in the year immediately after leaving school						
Do some other study or training	-0.427	0.1678	0.011	0.652	0.470	0.907
Don't know	-0.597	0.1127	0.000	0.550	0.441	0.686
Go to university	-0.515	0.1072	0.000	0.598	0.484	0.737
Look for work/get a job	-0.521	0.1215	0.000	0.594	0.468	0.754
Missing/no response	-0.324	0.1113	0.004	0.723	0.581	0.899
Other/gap year/time off/travel	-0.415	0.1135	0.000	0.660	0.529	0.825
VET/apprenticeship/traineeship						
Parental plans in the year immediately after leaving school						
Do some other study or training	0.086	0.1832	0.638	1.090	0.761	1.561
Don't know	-0.176	0.0942	0.061	0.838	0.697	1.008
Go to university	-0.366	0.0912	0.000	0.694	0.580	0.829

Background characteristic level	β	Std error	Pr > t	Odds-ratio	95% CL for odds ratio	
					Lower	Upper
Look for work/get a job	0.003	0.1200	0.981	1.003	0.793	1.269
Missing/no response	-0.104	0.1132	0.357	0.901	0.722	1.125
Other/gap year/time off/travel	-0.061	0.1227	0.619	0.941	0.740	1.197
VET/apprenticeship/traineeship						
Eventual post-school plans						
Do some other study or training	-0.064	0.2940	0.827	0.938	0.527	1.669
Don't know	-0.399	0.2870	0.164	0.671	0.382	1.177
N/A/invalid/missing	-0.059	0.1072	0.582	0.943	0.764	1.163
No	0.013	0.0845	0.874	1.014	0.859	1.196
Other	0.121	0.1732	0.484	1.129	0.804	1.585
University course	-0.353	0.0870	0.000	0.702	0.592	0.833
VET/apprenticeship /traineeship						
Any VET subjects in PISA year						
Invalid/missing/no response	0.455	0.1179	0.000	1.577	1.251	1.987
No	0.828	0.1373	0.000	2.289	1.749	2.996
Yes						
Part-time job						
Invalid/missing	-0.252	0.1476	0.088	0.777	0.582	1.038
No, I do not currently have a job	0.119	0.0829	0.149	1.127	0.958	1.326
Yes, I have a part-time or casual job						
School engagement	-0.201	0.0310	0.000	0.818	0.770	0.869
Time spent on mathematics homework	-0.042	0.0190	0.027	0.959	0.924	0.995
Hours spent working in part-time job during the week	0.038	0.0080	0.000	1.039	1.022	1.055
Hours spent working in part-time job weekend	0.029	0.0083	0.001	1.029	1.012	1.046
PISA maths achievement	-0.002	0.0006	0.001	0.998	0.997	0.999
PISA reading achievement	-0.003	0.0006	0.000	0.997	0.996	0.999
Socioeconomic status (ESCS)	-0.176	0.0410	0.000	0.838	0.774	0.909
Constant	-1.208	0.1569	0.000			
Total N	14 578					

Notes: Probability modelled is probability of early school leaving. A negative co-efficient indicates a lower probability of early school leaving (or lower probability when compared with reference group).

Regression results for re-engagement with education via VET

Table B4 Covariance parameter and intra-class correlation for school effects, re-engagement with education via VET

Variance component:	Estimate	Std error	P-value
SchoolID (σ_{school}^2)	0.478	0.073	<.0001
Error variance for logistic (σ_{error}^2)	3.290		
ICC	0.127		

Note: *Derived as -2logL of the models with and without the random (school) effect and obtained using the COVTEST option in PROC GLIMMIX in SAS.

Table B5 Regression results for re-engagement with education via VET, significant values only

Background characteristic level	β	Std error	Pr > t	Odds-ratio	95% CL for odds ratio	
					Lower	Upper
School sector						
Catholic	0.114	0.137	0.4060	1.1207	0.8564	1.4666
Independent	-0.477	0.168	0.0046	0.6205	0.4461	0.8630
Government						
Sex						
Female	-0.373	0.088	0.0000	0.6883	0.5793	0.8178
Male						
Intention to complete Year 12						
Missing	0.276	0.216	0.2013	1.3177	0.8630	2.0119
No or I'm not sure	0.491	0.095	0.0000	1.6343	1.3563	1.9693
Yes, I plan to complete Year 12						
Father's occupation						
Clerical support workers	-0.070	0.323	0.8281	0.9322	0.4948	1.7566
Craft and related trade workers	0.285	0.169	0.0923	1.3303	0.9542	1.8546
Elementary occupations	-0.229	0.186	0.2193	0.7956	0.5524	1.1459
Managers	-0.196	0.173	0.2574	0.8220	0.5856	1.1540
No occupation reported	0.006	0.223	0.9780	1.0062	0.6494	1.5589
Plant and machine operators	0.183	0.190	0.3358	1.2005	0.8274	1.7420
Professionals	-0.461	0.197	0.0195	0.6307	0.4284	0.9285
Service and sales workers	-0.044	0.219	0.8401	0.9567	0.6225	1.4704
Skilled ag., forestry and fishery workers	0.243	0.248	0.3270	1.2754	0.7841	2.0747
Technicians and associate professionals						
Plans in year after leaving school – parents						
Do some other study or training	-0.193	0.264	0.4660	0.8246	0.4910	1.3851
Don't know	-0.306	0.141	0.0305	0.7362	0.5578	0.9715
Go to university	-0.865	0.126	0.0000	0.4209	0.3290	0.5384
Look for work/get a job	-0.647	0.164	0.0001	0.5238	0.3795	0.7230
Missing/no response	-0.291	0.133	0.0290	0.7474	0.5754	0.9707
Other/gap year/time off/travel	-0.479	0.191	0.0120	0.6192	0.4260	0.9001
Go to a TAFE or VET (vocational) college	-0.193	0.264	0.4660	0.8246	0.4910	1.3851
VET/apprenticeship/traineeship						
Desired occupation at age 30						
Clerical and administrative workers	-0.216	0.471	0.6473	0.8060	0.3198	2.0314
Community and personal service workers	-0.276	0.195	0.1561	0.7585	0.5176	1.1114
Labourers	-0.445	0.231	0.0546	0.6407	0.4069	1.0088
Machinery operators and drivers	-1.267	0.397	0.0014	0.2817	0.1294	0.6136

Background characteristic level	β	Std error	Pr > t	Odds-ratio	95% CL for odds ratio	
					Lower	Upper
Managers	-0.177	0.194	0.3618	0.8377	0.5724	1.2259
Missing	-0.270	0.124	0.0300	0.7634	0.5983	0.9741
Professionals	-0.503	0.122	0.0000	0.6046	0.4758	0.7683
Sales workers	-0.101	0.157	0.5200	0.9038	0.6639	1.2302
Technicians and trades workers						
Any VET subjects in PISA year						
Invalid/missing/no response	0.067	0.204	0.7423	1.0694	0.7169	1.5950
No	-0.852	0.239	0.0004	0.4267	0.2669	0.6822
Yes						
Socioeconomic status (ESCS)	0.312	0.071	0.0000	1.3661	1.1893	1.5692
Constant	1.344	0.262	0.0000			
Total N	3,482					

Notes: Probability modelled is probability of VET re-engagement. A negative co-efficient indicates a lower probability of VET re-engagement (or lower probability when compared with reference group).

Regression results for any educational re-engagement

Table B7 Covariance parameter and intra-class correlation for school effects, any re-engagement in education

Variance component:	Estimate	Std error	P-value
SchoolID (σ_{school}^2)	0.567	0.08414	<.0001
Error variance for logistic (σ_{error}^2)	3.290		
ICC	0.147		

Note: *Derived as -2logL of the models with and without the random (school) effect and obtained using the COVTEST option in PROC GLIMMIX in SAS.

Table B8 Regression results for any re-engagement with education, significant values only

Background characteristic level	β	Std error	Pr > F	Odds-ratio	95% CL for odds ratio	
					Lower	Upper
Sector						
Catholic	0.371	0.159	0.0196	1.449	1.061	1.978
Independent	0.186	0.203	0.3585	1.205	0.809	1.793
Government						
Sex						
Female	-0.173	0.0926	0.061	0.841	0.701	1.008
Male						
Intention to complete Year 12						
Missing	0.610	0.325	0.0605	1.840	0.973	3.479
No or I'm not sure	0.488	0.102	0.0000	1.630	1.333	1.992
Yes, I plan to complete Year 12						
Plans in year after leaving school – parents						
Do some other study or training	-0.147	0.284	0.6037	0.863	0.494	1.506
Don't know	-0.341	0.149	0.0219	0.711	0.531	0.952
Go to university	-0.452	0.135	0.0008	0.636	0.489	0.829
Look for work/get a job	-0.760	0.167	0.0000	0.467	0.337	0.648
Missing/no response	-0.215	0.142	0.1304	0.807	0.611	1.066
Other/gap year/time off/travel	-0.254	0.215	0.2380	0.776	0.508	1.183
VET/apprenticeship/traineeship						
School engagement	0.139	0.051	0.0064	1.150	1.040	1.271
Time spent on mathematics homework	0.104	0.0342	0.002	1.109	1.037	1.186
PISA maths achievement	0.003	0.0006	0.000	1.003	1.001	1.004
Hours spent working in part-time job – weekend	-0.016	0.0098	0.101	0.984	0.965	1.003
Socioeconomic status (ESCS)	0.377	0.0672	0.000	1.459	1.278	1.664
Constant	1.212	0.138	0.0000			
Total N	3,355					

Regression results for time until first re-engagement with education via VET

Table B10 Covariance parameter and intra-class correlation for school effects, time until first re-engagement in education via VET

Variance component:	Estimate	Std error	P-value
SchoolID (σ_{school}^2)	0.9069	0.1321	<.0001
Error variance for logistic (σ_{error}^2)	3.290		
ICC	0.216		

Note: *Derived as -2logL of the models with and without the random (school) effect and obtained using the COVTEST option in PROC GLIMMIX in SAS.

Table B11 Regression results for time until first re-engagement with education via VET, significant values only

Background characteristic level	β	Std error	Pr > F	Odds-ratio	95% CL for odds ratio	
					Lower	Upper
Sector						
Catholic	0.731	0.192	0.0001	2.078	1.426	3.028
Independent	-0.272	0.234	0.2464	0.762	0.481	1.207
Government	.	.	.	.	.	.
Sex						
Female	-0.391	0.121	0.0013	0.676	0.533	0.857
Male	.	.	.	.	.	.
Plans in year after leaving school – self						
Do some other study or training	0.448	0.360	0.2131	1.565	0.773	3.170
Don't know	-0.456	0.218	0.0362	0.634	0.414	0.971
Go to university	-0.512	0.190	0.0072	0.599	0.413	0.871
Look for work/get a job	-0.823	0.230	0.0004	0.439	0.280	0.690
Missing/no response	-0.118	0.164	0.4733	0.889	0.645	1.226
Other/gap year/time off/travel	-0.541	0.236	0.0222	0.582	0.366	0.925
VET/apprenticeship/traineeship						
Intention to Complete Year 12						
Missing	-0.299	0.266	0.2606	0.742	0.440	1.249
No or I'm not sure	0.414	0.126	0.0010	1.514	1.182	1.939
Yes, I plan to complete Year 12	.	.	.	.	.	.
Immigration status						
Australian born	0.633	0.406	0.1187	1.884	0.850	4.173
First generation	0.406	0.447	0.3642	1.501	0.624	3.610
Foreign born	1.360	0.476	0.0043	3.894	1.532	9.898
N/A/invalid/missing						
Desired occupation at age 30						
Clerical and administrative workers	1.494	0.909	0.1005	4.456	0.749	26.519
Community and personal service workers	0.253	0.275	0.3589	1.287	0.750	2.209
Labourers	-0.561	0.296	0.0586	0.571	0.319	1.021
Machinery operators and drivers	-1.214	0.560	0.0302	0.297	0.099	0.890
Managers	0.134	0.286	0.6386	1.144	0.653	2.005
Missing	-0.220	0.161	0.1714	0.803	0.586	1.100
Professionals	-0.337	0.170	0.0479	0.714	0.511	0.997
Sales workers	-0.365	0.194	0.0597	0.694	0.475	1.015
Technicians and trades workers						
PISA reading achievement	0.001	0.001	0.2580	1.001	0.999	1.002
Socioeconomic status	0.283	0.081	0.0004	1.328	1.134	1.555
Constant	0.611	0.428	0.1538			
Total N	2,118					

Notes: Probability modelled is probability of VET re-engagement within six months of leaving school. A negative co-efficient indicates a lower probability of VET re-engagement within six months of leaving school (or lower probability when compared with reference group).



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