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Factors Influencing University Student Satisfaction, Dropout and Academic Performance

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Factors Influencing University Student Satisfaction, Dropout and Academic Performance: An Australian Higher Education Equity Perspective

Abstract

There has been increasing access to higher education enrolment for equity groups following the Bradley Review of Australian higher education. However, students from equity groups have also been found to lag behind their more privileged counterparts in completing higher education. This study looks at the determinants of student satisfaction at university, with a focus on equity group differences. The influence of student satisfaction on being at risk of dropping out of university, actual university degree dropout, and academic performance at university are also examined. Students from equity groups, particularly non-English speaking background students and students with disability, have lower levels of satisfaction across various satisfaction dimensions. Further, students from equity groups have poorer academic scores and are more likely to be at risk of university dropout, with health and financial reasons identified to be important determinants for leaving university. These findings support the need for multi-faceted initiatives to support higher education students from equity groups.

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Executive Summary

Higher education access and participation by individuals from equity groups has increased in the past decade. However, recent studies have also found that members of equity groups are lagging behind their counterparts in terms of the completion of their university degrees. This study investigates the determinants of student satisfaction in Australian higher education, with a focus on students in various equity groups. Furthermore, the study examines the determinants of three key academic outcomes:

- being at risk of dropout
- dropout from university studies
- academic performance, as measured by students' Weighted Average Marks (WAM).

This study is based on data from the national University Experience Survey, supplemented with demographic and enrolment data from the Higher Education Information Management System, and WAM data from 13 participating universities.

The results of this study suggest that equity students in Australia are generally well-supported at university and are satisfied with most aspects of their educational experience. However, students from non-English speaking backgrounds or who have a disability are found to have lower levels of student satisfaction across most dimensions.

Equity group membership is not found to be associated with an increased likelihood of considering leaving university in the short term. However, students from most of the equity groups, particularly students who identified as Aboriginal or Torres Straits Islander, who have disabilities or who were from rural or remote locations, are more likely to consider leaving university than non-equity students. Financial and health reasons are identified as strong drivers of these students' consideration of leaving university, while at the same time, the disposition of equity group students towards university study reduced their likelihood of considering leaving university relative to non-equity students.

The models of actual dropout behaviour showed that students from equity groups are not statistically different from non-equity group students in terms of the likelihood of dropping out, although being at risk of dropping out (i.e. considering leaving university) is a significant predictor of actual dropout, particularly for commencing students. Equity group students are also shown to perform less well academically, relative to their counterparts. At the same time, academic performance is also shown to be an important influence on university dropout – academically weaker students are more likely to dropout from university study.

The findings of this study indicate a strong need to provide support to students from equity groups from an early stage, as the results from the various analyses all indicated stronger equity effects for commencing students as opposed to students at a later stage of their studies. This itself is likely attributable, at least partially, to especially vulnerable students dropping out relatively early in their courses; this is all the more justification for providing early support. Finally, it should be recognised that there could be a need for support for equity students from beyond the higher education sector, particularly in the areas of financial support and health, in order to level the odds for them.

1. Introduction

The Bradley (2008) Review of Australian higher education identified the need to better support access and participation of disadvantaged individuals in higher education, with the aim of improving their socioeconomic outcomes through the provision and attainment of university study. The recommendations of the Bradley Review have had bipartisan support and have led to a number of initiatives within the higher education sector aimed at achieving the targets set out in the Review.

Research into the labour market outcomes of university students from various equity groups in Australia has found that students from low SES backgrounds and rural or remote Australia experience comparable labour market outcomes to that of their more privileged counterparts, in terms of their propensity to be matched to a good job and earnings (Coates and Edwards 2009; Li et al. 2015). These positive findings are encouraging in that employment and earnings outcomes for disadvantaged individuals form part of the aim behind equity policies in higher education. However, it was suggested that the positive labour market outcomes experienced by disadvantaged students could be indicative of a selection process during university (Li et al. 2015). In particular, statistics from the Department of Education and Training (2016a) and a study by Lim (2015) found that students from disadvantaged groups were less likely to complete their university study. Hence, the positive labour market outcomes for disadvantaged students found by Li et al. (2015) and Coates and Edwards (2009) could be a reflection of the unobserved academic characteristics of the disadvantaged students. In other words, disadvantaged students who have successfully completed university might have positive attributes which also translate to favourable outcomes in the labour market.

Over the past decade, participation in higher education by Australians from disadvantaged groups has been increasing. However, their degree completion rates still lag behind those of their fellow students from more privileged backgrounds (Department of Education and Training 2016a). It is thus of interest to explore the differences in university academic outcomes for students from disadvantaged backgrounds, as well as the determinants of those differences. In addition, it is of interest to examine whether there are differences in student experience at university for disadvantaged groups, and how student experience contributes to academic outcomes.

This study hence aims to explore the determinants of the higher education student experience, with a focus on the difference in student experience by equity groups. In addition, the academic outcomes of higher education completion and marks are examined.

2. Literature Review

The literature looking at factors influencing student experience and/or satisfaction in higher education goes back several decades. Liu and Jung (1980), among other studies, point out that the interest into studies of student satisfaction originally stemmed from a period of unrest in the 1970s. During this time, student riots and arrests took place, and student enrolments in higher education declined. Hence, studies into the determinants of student satisfaction were conducted by universities in order to address these issues and improve student enrolments. Over the years, while the interest in examining student satisfaction has been maintained, the rationale for conducting such studies now relate to quality assurance. Data on student satisfaction is available in Australia and overseas, and is used frequently to construct rankings of universities, such as the Good Universities Guide for Australian institutions (The Good Universities Guide 2016), The Times Higher Education student experience ranking for UK institutions (Times Higher Education World University Ranking 2016), among other well-established rankings for various countries.

The theoretical underpinnings of models examining student satisfaction were drawn from the literature examining job satisfaction. For instance, the theoretical perspective developed by Bean and Bradley (1986) describes the mechanism by which factors influencing student satisfaction operate in the following sequence: from an object (situation), to perception (cognition), to appraisal (value judgment), and to emotion (satisfaction) (page 394). In Bean and Bradley's model, seven exogenous factors are expected to influence satisfaction: i) institutional fit; ii) academic integration; iii) utility; iv) academic difficulty; v) social life; vi) memberships in campus organisations; and vii) class level.

Determinants of Student Satisfaction

Lenton (2015), using the National Student Survey for UK universities, found that student satisfaction differed by the field of study. Importantly, resource measures such as staff-to-student ratios were found to have substantial impact on student satisfaction, while other broader measures of resources, such as total expenditure at the university level or academic staff remuneration were not found to impact on student satisfaction. Zineldin et al. (2011) identified the quality of university infrastructure as an important determinant of student satisfaction in Turkey. Specifically, this related to factors such as physical appearance and cleanliness of classrooms, as well as the quality of equipment such as computers. In addition, Zineldin et al. (2011) found that factors relating to academic atmosphere, such as responsiveness of staff to student needs, also impacted heavily on student satisfaction.

Some of the research in this area has focused on students with backgrounds analogous to the disadvantaged students relevant for Australian higher education policy. For example, Soria, Stebleton and Huesman (2013) looked at differences in academic integration (including student satisfaction) for university students in the USA, with a focus on whether students from the working class were integrated into academia as well as their counterparts from middle or upper class families. This study found that students from the working class experienced lower satisfaction with their educational experience, and have lower sense of belonging on campus, compared to their counterparts. In addition, working class students rated the campus climate for diversity and personal characteristics lower than their peers from more privileged backgrounds. They also reported more obstacles to their academic performance, such as job and family responsibilities, and lower levels of measures of academic integration, such as time spent on academic activities and collaboration with peers or tutors. Earlier studies in this area have reported similar findings, such as a sense of disconnect to the educational environment driven by social norms rather than academic demands (Borrego 2001). Indeed, social integration into university has been identified as a key determinant of student experience and intent to persist with studies (DaDeppo 2009). However, social integration is more challenging for students from disadvantaged backgrounds, including low SES (Soria, Stebleton

and Huesman 2013), students of minority ethnicities or foreign students (Brown and Jones 2011) and students with disabilities (Reed, Kennett and Emond 2015).

Determinants of Academic Performance

There is a substantial literature that examines the determinants of tertiary academic performance, with a focus on academic outcomes such as retention (or conversely, attrition), marks and completion of study. Bean (1980) theorised attrition to be influenced by the students' background, including socioeconomic status and place of residence, as well as organisational factors, such as the quality of the institution of study, the opportunity cost of study and staff-student relationships, while Tinto (1975) argued that academic and social integration are important factors against student attrition at university. It is noted, however, that the causes of attrition need to be distinguished. Specifically, Tinto (1975) noted that academic failure needs to be distinguished from non-academic dropout, such as voluntary withdrawal, or permanent dropout, which needs to be distinguished from a temporary study suspension or transfer to other institutions of higher education.

Aside from academic and social integration, attrition has also been shown to be linked to prior academic performance (Johnson 2008), engagement with faculty and students (Hoffman et al. 2002), and conflicting work commitments, which Willcoxson et al. (2011) argue possibly reflect financial need or the lack of commitment to study, a finding reinforced by Leveson, McNeil and Joiner (2013). Willcoxson et al. (2011) also noted that attrition in the first year of study could result from different reasons as compared to attrition in later years of study. Specifically, Willcoxson et al. (2011) noted that personal factors, such as the lack of academic or social integration are more influential in first year attrition, while institutional factors, such as teaching quality and staff-student interactions are more crucial in determining attrition in later years. Another important finding from Willcoxson et al.'s (2011) study is the strong association between first year students' expectation of the institution and intention to leave. Hence, first year students were found to be sensitive to factors such as the availability and approachability of teaching staff and empathy shown. In the second and third year, academic confidence appears to be of paramount consideration in students' intention to leave their studies.

A number of determinants of tertiary academic marks have been identified in the literature, which can be broadly categorised into high school characteristics (e.g. school type, co-educational status, resources), personal characteristics (e.g. sex, family background, ethnicity), prior academic performance (e.g. university entrance scores) and university characteristics (e.g. field of study, academic support programs) (see, for instance, Cardak and Vecchi 2013; Marks 2010). One notable finding from this literature is that prior academic performance, such as the Australian Tertiary Academic Rank, is an important predictor of subsequent performance at university (Cardak and Vecchi 2013; Li and Dockery 2015).

A separate literature looks at the role of student experience and engagement in determining tertiary academic outcomes, with the finding that student experience is a prominent influence on tertiary completion (Yorke 2000; Leveson, McNeil and Joiner 2013). There were, however, obstacles to the use of student satisfaction measures as a predictor of academic performance as measured by grades or marks, due to the imprecise causal direction of the relationship, as highlighted in earlier studies such as Bean and Bradley (1986). This issue has been explored, however, in studies such as Pike's (1991) which suggests that satisfaction exerts strong influences over grades rather than the other way around. In the relatively few studies that examine the influence of student satisfaction on grades or academic performance, findings that more satisfied students perform better in their grades are common (Grayson 2004).

3. Data Description

University Experience Survey

The key data sources for this study are the 2013 and 2014 collections of the University Experience Survey (UES)¹, a national survey of commencing and later year undergraduate students studying onshore at one of Australia's 40 Table A (public) and Table B (private) universities.² The UES was originally developed by the Australian Council for Educational Research (ACER) on behalf of the then Department of Industry, Innovation, Science, Research and Tertiary Education to provide a national architecture for collecting feedback on important facets of the higher education student experience and, in doing so, obtain important data on the levels of engagement and satisfaction of current students.³ The UES focuses on aspects of the higher education student experience that are measurable, linked with learning and development outcomes, and for which institutions can reasonably be assumed to have responsibility.

Specifically, the UES measures five facets of the higher education student experience:

- engagement with learning at their institution
- satisfaction with the quality of teaching they have experienced
- satisfaction with the learning resources provided by their institution
- satisfaction with the support they received at their institution
- satisfaction with the skills development they experienced through their studies.

These are operationalised by means of summated rating scales, underpinned by 46 individual questionnaire items, including one item gauging students' satisfaction with the overall quality of their educational experience.⁴ The psychometric properties of the UES questionnaire have been extensively reviewed and validated, the results of which are presented in the respective reports of the 2013 and 2014 UES collections (Graduate Careers Australia and the Social Research Centre [GCA and SRC] 2014; GCA and SRC 2015). These studies concluded that the UES indicators are generally valid and reliable; however further development of the 'Student Support' focus area was suggested, due to relatively large amounts of missing data on some of its constituent questionnaire items.⁵ While the potential limitation with this one scale is acknowledged, there is a high level of confidence in the validity of the data as well as its fitness for purpose for this investigation.

In addition to the items asking students to rate their levels of engagement and satisfaction with different aspects of their university experience, students were also asked to indicate whether they had seriously considered leaving their university in the year the survey was administered. Those who expressed a serious consideration of leaving are then asked to indicate, from a list of 30 possible reasons, why they considered doing so. The UES also contains two additional sets of items, demographic and contextual, to facilitate data analysis and reporting.

¹ The UES was renamed the 'Student Experience Survey' (SES) for the 2015 collection onwards to account for the involvement of non-university higher education providers. The two collections on which this study is based were administered under the UES name and will be referred to as such in this report.

² Depending on the institution attended, students are classified as 'later year' either on the basis of their study mode and course duration; or a ratio of student load successfully completed/currently in progress to the total student load for the course, with the goal of identifying students in their final year of study (see GCA and SRC 2014; 2015 for further information).

³ The 2012 UES national research report (Radloff et al. 2012) presents a detailed background on the origins and development of the UES, including its conceptual basis and validity.

⁴ This item forms part of the Teaching Quality scale.

⁵ In 2014, for example, five of the 13 Student Support items had missing data percentages (including 'not applicable' responses) greater than 50 (GCA and SRC 2015, p. 66).

The UES is administered as a stratified random sample, with strata defined on the basis of institution and subject area. To achieve the required level of statistical precision (± 5 pp at a 95 per cent confidence level for national estimates), the survey was essentially a census of commencing and later year undergraduate students in all but the largest strata. In these large strata, a random sample was drawn by the consortium administering the survey.

The survey sample frame was drawn from the Commonwealth Government's Higher Education Information Management System (HEIMS). The 2013 and 2014 UES collections were administered entirely online. Sampled students received an initial email invitation, followed by multiple email reminders and one hardcopy letter. Participation in the survey was incentivised by prize draws at each participating institution. Low-responding strata were targeted throughout data collection fieldwork, which took place during Semester Two of each survey year, to ensure generalisability of the sample. After the completion of fieldwork, the response data were cleaned, checked for quality and coded, and composite student experience scores were calculated for each of the five facets identified previously. The analysis sample was found to reflect the general university population on most attributes, however, males were somewhat underrepresented in the analysis sample. Experimentation with post-stratification weighting showed that correcting this gender imbalance had no substantial impact on the student experience estimates at the cost of increased variance, so, in the interest of simplicity, only unweighted estimates were presented.

The pooled response rate across both UES collections used in this study was 29.7 per cent, yielding 217,262 course-level responses from 199,337 students.⁶ Restricting the sample to Australian domestic students—the main group of interest in this study—results in a working sample of 193,464 course-level responses.

Supplementary Data Sources

In addition to the UES data, additional data sources were required for us to undertake the investigation. This is because the UES does not capture students' socioeconomic status and postcode of their permanent home residence (necessary to define two of the equity groups); nor data on their retention status or Weighted Average Marks (WAM)⁷ (two of the three academic performance measures).

The first three of these—socioeconomic status, home postcode and retention status—are held within the Higher Education Statistics Collection, and were obtained via a data request to the Commonwealth Department of Education and Training. These data were subsequently linked to students' UES responses using their Commonwealth Higher Education Student Support Numbers (CHESSNs), which were available in both data sets.

WAMs are not held within the Higher Education Statistics Collection and had to be requested from universities directly. Data requests were sent to the Heads of Planning and Statistics in all 40 participating universities, with 13 universities ultimately agreeing to provide data (see Appendix A for a list of these institutions). Students' WAMs (calculated as at the end of the academic year in which they responded to the UES) were linked to their UES responses using their unique survey ID.

⁶ Students could respond for up to two majors, meaning that the final data file contained more responses than respondents. Response rates for the 2013 and 2014 UES collections were 29.4 per cent ($n = 100,225$) and 30.0 per cent ($n = 99,112$), respectively.

⁷ $WAM = \frac{\text{sum}(\text{unit points} \times \text{unit mark})}{\text{sum}(\text{unit points})}$

Equity Group Definitions

This study considers seven equity groups, all defined on the basis of HEIMS data (element numbers in parentheses where relevant—see Appendix B for a list of elements):

- Aboriginal and Torres Strait Islander students (ATSI): includes all students identifying as Aboriginal and/or Torres Strait Islander (E316).
- Students from non-English speaking backgrounds (NESB): includes all students who use a language other than English at their permanent home residence (E348).
- Students with disability: includes all students who have a disability, impairment or long term medical condition that may affect their studies (E386).
- Women in STEM fields of study: includes all female students (E315) enrolled in a course within the broad study fields of natural and physical sciences, information technology, or engineering and related technologies (E461).
- Low SES students: is defined based on the students' postcode of permanent home residence (E413), with the SES value derived from the ABS Socio-Economic Indexes for Areas (SEIFA) Index of Education and Occupation for postal areas (ABS 2013). Postal areas in the bottom 25 per cent of the population aged 15-64 are classified as low SES and, correspondingly, students whose postcode of permanent home residence is in a low SES area are classified as low SES students.
- Students from regional and remote Australia: includes all students whose postcode of permanent home residence (E413) is not within a major city of Australia, as defined by the ABS Australian Standard Geographical Classification – Remoteness Area Correspondences, 2006 (ABS 2011).
- Students who are first in their family to complete higher education: is defined based on the highest educational attainment of students' first and/or second parent/guardian (E573 and E574, respectively). In the UES, students are classified as first in family if neither parent/guardian completed a graduate or postgraduate degree. Because of how parental education is recorded in HEIMS, this equity group can only be defined for commencing students.

These equity groups are included in the analysis as a set of dichotomous variables, where one indicates group membership and zero otherwise (excluding missing data).

Because all relevant equity group indicators are included in all of the estimations, any cases with missing data on one or more of these variables were excluded (listwise deletion). As shown in Table 1, this would exclude 14,332 commencing and 2,658 later year cases from the initial working sample, equal to 12.0 and 3.6 per cent of the respective subsamples.⁸ This results in a total analysis sample of 105,435 commencing and 71,039 later year cases.⁹

⁸ *The indicator with the most missing data is clearly 'first in family'. As a sensitivity test, estimations were performed on an analysis sample that did not exclude cases with missing data on this variable. Substantively similar results were obtained (available on request).*

⁹ *There were no missing data on any of the standard control variables.*

Table 1*Available cases and missing data on equity group indicators*

Equity group	Commencing		Later year	
	Obs (n)	% missing	Obs (n)	% missing
ATSI	118,339	1.2	73,154	0.7
NESB	117,575	1.8	72,481	1.6
Disability	119,767	0.0	73,697	0.0
Women in STEM	119,767	0.0	73,697	0.0
Low SES	118,500	1.1	72,812	1.2
Regional/remote	118,674	0.9	73,027	0.9
First in family	109,655	8.4		
Full sample	119,767		73,697	
Cases with missing data	14,332		2,658	
Analysis sample	105,435	12.0	71,039	3.6

Experience and Outcome Indicators

This study considers six key indicators of the student experience:

- learner engagement satisfaction indicator
- teaching quality satisfaction indicator
- learning resources satisfaction indicator
- student support satisfaction indicator
- skills development satisfaction indicator
- quality of overall educational experience satisfaction indicator.

As discussed previously, the first five of these student experience indicators are based on summated rating scales comprising multiple items. The sixth indicator (overall educational experience), is a single-item indicator from the teaching quality focus area.¹⁰ In line with standard UES practice, these indicators are included in the analysis as dichotomous variables, where one indicates satisfaction with a particular facet and zero otherwise (excluding missing data). In relation to the five indicators based on summated rating scales, 'satisfied' denotes a score of 55 or greater (on a range of zero to 100) on the underlying scale score. This threshold value was originally adopted for UES reporting because it is clearly above the midpoint of the response scale and reflects the maximum percentage of students satisfied with their higher education experience (GCA and SRC 2015). In relation to overall educational experience, 'satisfied' denotes a response in the top two response categories of the four-point response format.

Three measures of academic performance are considered:

- At risk student indicator: a dichotomous variable taking the value one if a student responded 'yes' to a question in the UES asking whether they seriously considered leaving their university in the year that the survey was administered, and zero if they responded 'no'.

¹⁰ The item wording is: "Thinking about your [course], overall how would you rate the quality of your entire educational experience this year?" Poor/Fair/Good/Excellent.

- Student attrition indicator: a dichotomous variable taking the value one if a student did not re-enrol in Australian higher education the year after responding to the UES and did not successfully complete their course requirements by the end of the survey year. Those students who re-enrolled the following year (at any institution) or successfully completed their course requirements were coded zero.
- Weighted Average Mark: a continuous variable measuring the students' WAMs, calculated from the beginning of their current course through to the end of the year in which they responded to the UES. Because different universities use different grading schemes, WAMs by institution for 2013 and 2014 were standardised (i.e. converted to z-scores)¹¹ separately. Therefore, individual students' WAMs are measured in standard deviations relative to the institutional mean WAM in a given year, where the mean is equal to zero. A WAM of 0.5, for example, indicates that a student's WAM was 0.5 standard deviations above the institutional mean in the year they answered the UES; that is, they received a WAM equal to or better than ~69% of the UES respondents at their university in that year.

In addition, students who identified themselves as being 'at risk' were asked to indicate, from a list of 30 possible (and non-exclusive) reasons, why they seriously considered leaving their university. These were grouped into six broad categories for the statistical analysis (see Appendix C for a detailed concordance between these categories and the original items):

- financial
- health or stress
- academic/institutional
- social and personal
- workload
- disposition (i.e. attitude towards study).

These categories are included in the analysis as a set of dichotomous variables, where one indicates that a student selected one or more reasons within the respective categories, and zero otherwise (excluding missing data).

Due to differing levels of non-response to the survey items, and the unavailability of valid university-supplied data for a relative handful of respondents¹², the number of observations available for analysis differs across the experience and outcome indicators. Table 2 presents the number of observations in the analysis sample for each of the experience and outcome indicators. For both commencing and later year students, the largest percentages of missing data are observed in relation to student support and learning resources, mainly due to students selecting 'Not Applicable' for many of the constituent survey items.¹³ This is somewhat expected as not every student will have accessed a broad range of learning resources or student support services at their institution even though all students should be able to comment on the other facets of their university experience (and the vast majority do).

Sample Description

Descriptive statistics on the commencing and later year analysis subsamples are presented in Tables 3 and 4, respectively. Each table contains sample percentages on various relevant demographic and enrolment characteristics for each equity group and all students ('Total'). These tables contain considerable detail, and are not discussed at length here. Some key observations include the following:

¹¹ Standardised WAM=(WAM-mean(WAM))/stdev(WAM).

¹² The retention status indicator is only available for students with CHESNs, for example. This immediately excludes, among others, students who are not in Commonwealth-supported places.

¹³ Scale scores are only calculated if students complete a threshold number of the underpinning items.

- The proportions of students in each equity group except disability decline between commencement and later year enrolment, which implies that students in these groups are more prone to dropout than students generally.
- The relative sizes of the equity groups vary markedly, from around one per cent of the sample for ATSI students through to around half for the first in family group.
- There are some intersections in equity group membership. For example, ATSI and regional/remote students, and first in family students to a lesser extent, were considerably more represented than students overall and students in other equity groups, to be low SES.¹⁴ Additionally, ATSI and low SES students were much more likely to be first in family attendees; and women in STEM were more likely than overall to be from an NESB.
- Students in each equity group also tend to differ in their demographic and enrolment characteristics, both across groups and compared with students overall. ATSI students and students with disability tend to be older, for example, and NESB students were overrepresented amongst students undertaking combined degrees.

Table 2

Available cases and missing data on experience and outcome indicators

Indicator	Commencing		Later year	
	Obs (n)	% missing	Obs (n)	% missing
Learner engagement	105,072	0.3	70,767	0.4
Teaching quality	104,880	0.5	70,581	0.6
Learning resources	96,779	8.2	63,855	10.1
Student support	86,205	18.2	58,742	17.3
Skills development	104,227	1.1	70,235	1.1
Overall educational experience	105,123	0.3	70,807	0.3
Considered leaving	103,522	1.8	69,806	1.7
Retention status	105,435	0.0	71,039	0.0
Weighted Average Mark (WAM)	36,667	0.8	24,705	1.0
Reasons for considering leaving	19,324	0.2	10,382	0.1
Analysis sample	105,435		71,039	
WAM subsample ^a	36,973		24,943	
Considered leaving subsample ^b	19,357		10,396	

^a Students from the 13 institutions that provided WAM data (see Appendix A).

^b Students who responded 'yes' to the question about whether they had considered leaving their university in the year the survey was administered.

Given the fact that students can be members of multiple equity groups, and the extent of the differences in characteristics across students in different equity groups and students generally, a multivariate approach is needed to control for these potential confounding factors when investigating the determinants of students' higher education experience and their academic outcomes. This approach is described in the following section.

¹⁴ Noting, of course, that both the regional/remote and low SES indicators are based on postcode of permanent home residence.

Table 3*Sample percentages on commencing students*

		ATSI	NESB	Disability	Women in STEM	Low SES	Reg/ remote	First in family	Total
Equity groups									
ATSI	Yes		0.1	2.1	0.8	2.5	2.7	1.9	1.3
	No		99.9	97.9	99.2	97.5	97.3	98.1	98.7
NESB	Yes	1.0		9.6	21.8	16.7	3.1	14.3	15.0
	No	99.0		90.4	78.2	83.3	96.9	85.7	85.0
Disability	Yes	8.5	3.5		5.4	5.7	6.2	5.5	5.4
	No	91.5	96.5		94.6	94.3	93.8	94.5	94.6
Women in STEM	Yes	5.9	14.0	9.6		9.4	8.5	8.5	9.6
	No	94.1	86.0	90.4		90.6	91.5	91.5	90.4
Low SES	Yes	33.8	20.4	19.2	18.0		36.4	25.0	18.3
	No	66.2	79.6	80.8	82.0		63.6	75.0	81.7
Regional/ remote	Yes	46.6	4.9	26.5	20.7	46.7		28.4	23.4
	No	53.4	95.1	73.5	79.3	53.3		71.6	76.6
First in family	Yes	71.1	46.8	49.6	43.5	66.9	59.2		48.9
	No	28.9	53.2	50.4	56.5	33.1	40.8		51.1

Continued on next page

Table 3 cont.*Sample percentages on commencing students*

		ATSI	NESB	Disability	Women in STEM	Low SES	Reg/ remote	First in family	Total
Other characteristics									
Sex	Female	74.8	63.6	68.7	100.0	70.8	71.1	70.9	68.0
	Male	25.2	36.4	31.3	0.0	29.2	28.9	29.1	32.0
Age group ^a	Less than 20	55.3	75.0	55.0	77.7	65.6	63.5	61.1	67.2
	20 and above	44.7	25.0	45.0	22.3	34.4	36.5	38.9	32.8
Attendance mode	Internal	78.0	95.4	87.0	93.8	84.0	79.6	85.6	89.0
	External	14.8	2.2	8.0	3.8	11.3	13.6	9.8	7.1
	Multi-modal	7.2	2.4	5.0	2.4	4.7	6.8	4.5	4.0
Attendance type	Full time	87.6	94.5	85.1	94.3	88.7	87.1	87.6	90.3
	Part time	12.4	5.5	14.9	5.7	11.3	12.9	12.4	9.7
Combined degree	Yes	18.7	28.6	20.9	21.1	19.6	18.2	19.7	23.4
	No	81.3	71.4	79.1	78.9	80.4	81.8	80.3	76.6
Study area	Sci and math	7.9	15.4	13.3	79.1	11.8	10.9	10.9	12.4
	Comp and info	1.8	4.0	3.7	6.1	2.8	2.1	2.6	2.7
	Engineering	2.8	10.0	4.0	14.8	6.3	5.7	5.3	6.2
	Arch and build	0.7	2.5	1.1	0.0	1.4	1.3	1.8	2.0
	Ag and env	1.6	0.8	1.6	0.0	1.9	2.8	1.8	1.7
	Health serv	7.5	6.1	7.2	0.0	8.1	8.4	8.2	7.5
	Medicine	1.8	2.0	0.6	0.0	1.2	2.1	1.0	1.7
	Nursing	10.2	6.3	6.4	0.0	9.4	9.4	8.6	6.7
	Pharmacy	0.4	2.1	0.5	0.0	1.1	0.8	0.8	0.9
	Dentistry	0.4	1.1	0.2	0.0	0.5	0.4	0.4	0.4
	Vet science	0.6	0.3	0.4	0.0	0.6	0.8	0.4	0.5
	Rehabilitation	0.9	1.3	1.3	0.0	1.8	2.3	1.7	2.0
	Teacher ed.	15.6	4.4	8.7	0.0	12.4	12.3	11.8	9.2
	Bus and mgt	9.4	19.8	9.4	0.0	11.8	10.8	12.7	13.2
	Hum and soc sci	12.8	9.0	17.6	0.0	10.4	11.5	11.6	12.7
	Social work	5.5	1.3	3.6	0.0	2.9	2.7	2.9	2.2
	Psychology	4.8	3.5	6.0	0.0	4.7	4.3	5.3	4.8
	Law and p'legal	7.4	4.9	5.1	0.0	4.4	4.3	4.7	5.1
	Creative arts	5.0	3.0	5.3	0.0	3.4	4.1	4.0	4.5
Communications	2.8	2.1	4.0	0.0	2.9	2.8	3.3	3.5	
Tour, hosp, etc.	0.2	0.2	0.1	0.0	0.3	0.2	0.3	0.3	
Observations (n)		1,410	15,776	5,737	10,112	19,275	24,703	51,514	105,435

^a These age groups have been constructed to correspond roughly with school leaver and mature age at course commencement.

Table 4.*Sample percentages on later year students*

		ATSI	NESB	Disability	Women in STEM	Low SES	Reg/ remote	First in family	Total
Equity groups									
ATSI	Yes		0.1	1.9	0.8	1.9	1.8	b	1.1
	No		99.9	98.1	99.2	98.1	98.2	b	98.9
NESB	Yes	1.5		9.8	21.4	16.5	2.6	b	14.3
	No	98.5		90.2	78.6	83.5	97.4	b	85.7
Disability	Yes	9.8	3.8		5.4	5.8	6.6	b	5.6
	No	90.2	96.2		94.6	94.2	93.4	b	94.4
Women in STEM	Yes	6.5	13.5	8.6		8.6	7.5	b	9.0
	No	93.5	86.5	91.4		91.4	92.5	b	91.0
Low SES	Yes	29.4	19.4	17.4	16.0		34.7	b	16.9
	No	70.6	80.6	82.6	84.0		65.3	b	83.1
Regional/ remote	Yes	38.2	4.1	26.2	18.4	45.7		b	22.2
	No	61.8	95.9	73.8	81.6	54.3		b	77.8
First in family	Yes	b	b	b	b	b	b		b
	No	b	b	b	b	b	b		b

Continued on next page

Table 4 cont.*Sample percentages on later year students*

		ATSI	NESB	Disability	Women in STEM	Low SES	Reg/ remote	First in family	Total
Other characteristics									
Sex	Female	73.4	63.0	67.8	100.0	70.7	72.0	b	67.5
	Male	26.6	37.0	32.2	0.0	29.3	28.0	b	32.5
Age group ^a	Less than 20	42.7	68.0	49.0	78.6	60.5	59.7	b	63.3
	20 and above	57.3	32.0	51.0	21.4	39.5	40.3	b	36.7
Attendance mode	Internal	65.6	88.7	79.9	88.0	72.2	66.2	b	80.9
	External	16.1	3.5	9.0	3.3	14.8	17.0	b	8.8
	Multi-modal	18.3	7.8	11.1	8.7	13.0	16.8	b	10.2
Attendance type	Full time	90.3	92.2	86.0	92.4	87.6	87.3	b	89.8
	Part time	9.7	7.8	14.0	7.6	12.4	12.7	b	10.2
Combined degree	Yes	13.2	21.3	17.3	17.0	15.5	15.8	b	19.2
	No	86.8	78.7	82.7	83.0	84.5	84.2	b	80.8
Study area	Sci and math	7.8	16.0	11.8	82.5	11.3	10.2	b	11.9
	Comp and info	1.3	4.1	3.6	5.7	2.9	2.0	b	2.8
	Engineering	2.6	8.2	3.5	11.8	4.9	4.7	b	5.4
	Arch and build	1.7	2.7	1.5	0.0	1.7	1.6	b	2.2
	Ag and env	1.5	0.9	1.8	0.0	2.1	2.7	b	1.7
	Health serv	5.3	4.8	4.8	0.0	6.1	7.0	b	6.2
	Medicine	1.9	2.3	1.5	0.0	1.3	2.3	b	1.9
	Nursing	11.0	6.7	7.6	0.0	11.2	11.8	b	7.8
	Pharmacy	0.4	2.4	0.6	0.0	0.9	0.8	b	0.8
	Dentistry	0.5	1.4	0.5	0.0	0.5	0.6	b	0.5
	Vet science	0.1	0.2	0.3	0.0	0.4	0.4	b	0.3
	Rehabilitation	1.9	0.6	1.2	0.0	1.7	2.4	b	1.6
	Teacher ed.	17.1	4.1	8.7	0.0	12.6	12.9	b	9.2
	Bus and mgt	11.0	22.4	11.0	0.0	13.5	11.6	b	15.0
	Hum and soc sci	13.5	9.3	16.2	0.0	10.6	11.5	b	13.0
	Social work	5.2	1.5	3.8	0.0	3.7	3.4	b	2.3
	Psychology	3.2	3.2	6.7	0.0	3.6	3.3	b	4.4
Law and p'legal	6.2	4.1	4.7	0.0	3.9	3.4	b	4.3	
Creative arts	4.5	2.9	5.8	0.0	3.6	4.3	b	4.5	
Communications	3.2	2.2	4.1	0.0	3.2	2.9	b	3.6	
Tour, hosp, etc.	0.3	0.2	0.2	0.0	0.3	0.3	b	0.3	
Observations (n)		756	10,172	3,992	6,418	11,977	15,760	b	71,039

^a These age groups have been constructed to correspond roughly with school leaver and mature age at course commencement.

^b First in family is not available for later year students.

4. Methodology and Estimating Equations

For all the binary (yes/no) dependent variables, specifically those relating to the student experience, consideration of leaving university, retention status and reasons for considering leaving, a series of logistic regression models were estimated with the general form:

$$\ln \left(\frac{p_i}{1-p_i} \right) = \beta_0 + \beta E_i + \beta X_i \quad (1)$$

where E_i is a vector containing the binary-coded equity group indicators; X_i is a vector containing the binary-coded control variables, including sex, age group, attendance mode, attendance type, combined degree and study area (and for the retention model, binary-coded indicators for considered leaving university and quality of overall educational experience); and p_i is the probability of an affirmative response for observation i . Logistic models are estimated separately for commencing and later year students.

Because students study within universities, the standard assumption underpinning regression analysis that observations are independent is not valid. Observations from different universities are independent, but observations within the same university are not, which can lead to substantially downward-biased standard errors (and, therefore, to incorrect statistical tests and inferences).¹⁵ To address this, clustered standard errors are estimated, with the cluster based on the university attended.

In addition to logistic coefficients, average marginal effects (AMEs) are reported, which represent the average percentage change in the probability of an affirmative response associated with a particular explanatory variable. Since all of the explanatory variables are binary-coded, this represents the average percentage change associated with a variable relative to its omitted category. For example, an AME of -0.020 on NESB indicates a two percentage point decrease in the probability of an affirmative response for NESB students relative to non-NESB students, holding other factors constant.

For the continuous dependent variable, WAM, linear regression models of the following form were estimated separately for commencing and later year students:

$$Y_i = \beta_0 + \beta E_i + \beta X_i + \varepsilon_i \quad (2)$$

where Y_i is the standardised WAM for observation i , ε_i is the error term, and E_i and X_i are as previously defined. Standard errors are again clustered at the university level for the reasons described above.

Because the dependent variable is standardised by institution and year, estimated coefficients in the linear regression models can be interpreted as the average change in WAM associated with a particular explanatory variable relative to the institutional mean in a given year, measured in standard deviation units (z-scores). For example, an estimated coefficient of -0.412 on ATSI indicates that students in this equity group achieved a mean WAM 0.412 standard deviations below the mean WAM of UES respondents in their institution in the year they completed the survey, holding other factors constant.

¹⁵ As an alternative approach, estimating for selected dependent variables mixed effects logistic regression models with random university intercepts were trialled, and substantively similar results to the conventional logistic regression models were obtained. The simpler and more parsimonious approach was hence preferred and utilised.

5. Results

Student Satisfaction Models

Equation (1) was estimated for satisfaction outcomes from each of the five UES focus areas:

- skills development
- learner engagement
- teaching quality
- student support
- learning resources.

It was also estimated on an outcome of satisfaction with the overall quality of the educational experience. The results from these models of student satisfaction are presented in Table 5, stratified by stage of study (commencing and later year).¹⁶ For ease of interpretation of the results from these binary logistic regression models, average marginal effects (AMEs) were calculated and are presented in the table for each of the equity groups under investigation. Logistic coefficients and detailed results on the control variables are presented in Tables D1 to D6 in Appendix D.

There are a few general observations with regards to the estimated effects of equity groups that may be drawn based on the results of Table 5. First, there are more statistically significant estimates from the models estimated for students in commencing years than later years, indicating that disadvantage plays a marginally more important role in determining student satisfaction in the earlier years of university. Second, the estimates are generally consistent across the years at university. Third, there are differences in the effects of being in certain equity groups across the various UES dimensions of student satisfaction. Fourth, while there are statistically significant effects on student satisfaction measures associated with the various equity groups, these tend to be small in magnitude, at around one or two percentage points.

¹⁶ The reader is reminded that due to the way data was collected by the Department of Education and Training, identification of the first in family equity group was not possible for students in later years. Hence, models estimated for the later year students exclude this equity group indicator.

Table 5.*Estimated AMEs for student satisfaction models^a*

	LE	TQ	LR	SS	SD	OE
Commencing						
ATSI	-0.016 (0.015)	-0.008 (0.011)	0.011 (0.009)	0.040** (0.016)	0.011 (0.011)	-0.010 (0.010)
NESB	-0.020*** (0.005)	-0.036*** (0.005)	-0.027*** (0.005)	-0.022*** (0.006)	-0.002 (0.005)	-0.058*** (0.003)
Disability	-0.007 (0.008)	-0.020*** (0.006)	-0.027*** (0.006)	0.054*** (0.007)	-0.032*** (0.007)	-0.026*** (0.006)
Women in STEM	0.032*** (0.009)	0.004 (0.005)	0.012** (0.005)	0.020** (0.008)	-0.002 (0.008)	0.003 (0.005)
Low SES	0.008 (0.005)	0.004 (0.004)	0.006 (0.004)	0.020*** (0.005)	0.013*** (0.004)	0.001 (0.004)
Regional/remote	0.012 (0.008)	0.002 (0.005)	0.001 (0.007)	0.017** (0.007)	0.001 (0.006)	0.002 (0.007)
First in family	-0.010*** (0.004)	0.004 (0.003)	0.008*** (0.003)	0.015*** (0.006)	0.013*** (0.003)	0.001 (0.003)
Clusters	39	39	39	39	39	39
Obs	105,072	104,880	96,779	86,205	104,227	105,123
Pseudo R ²	0.054	0.010	0.012	0.005	0.011	0.010
Prob>chi ²	0.000	0.000	0.000	0.000	0.000	0.000

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Table 5 cont.*Estimated AMEs for student satisfaction models^a*

	LE	TQ	LR	SS	SD	OE
Later Year						
ATSI	0.011 (0.018)	-0.007 (0.015)	0.021 (0.014)	0.045** (0.019)	0.011 (0.012)	-0.005 (0.015)
NESB	-0.007 (0.007)	-0.023*** (0.007)	-0.009 (0.006)	0.010 (0.008)	-0.013* (0.007)	-0.032*** (0.008)
Disability	-0.006 (0.007)	-0.034*** (0.008)	-0.033*** (0.009)	0.044*** (0.014)	-0.041*** (0.007)	-0.043*** (0.009)
Women in STEM	0.023* (0.012)	0.010 (0.015)	0.010 (0.010)	0.020 (0.015)	-0.003 (0.011)	-0.002 (0.012)
Low SES	-0.009* (0.005)	0.004 (0.004)	0.012** (0.005)	0.019*** (0.006)	0.010** (0.004)	-0.003 (0.005)
Regional/remote	-0.006 (0.007)	-0.006 (0.005)	-0.021* (0.012)	0.015 (0.012)	-0.007 (0.005)	-0.014* (0.007)
Clusters	39	39	39	39	39	39
Obs	70,767	70,581	63,855	58,742	70,235	70,807
Pseudo R ²	0.057	0.018	0.014	0.006	0.018	0.013
Prob>chi ²	0.000	0.000	0.000	0.000	0.000	0.000
Controls						
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Age group	Yes	Yes	Yes	Yes	Yes	Yes
Attendance mode (2)	Yes	Yes	Yes	Yes	Yes	Yes
Attendance type	Yes	Yes	Yes	Yes	Yes	Yes
Combined degree	Yes	Yes	Yes	Yes	Yes	Yes
Study area (20)	Yes	Yes	Yes	Yes	Yes	Yes

^a LE = learner engagement, TQ = teaching quality, LR = learning resources, SS = student satisfaction, SD = skills development, OE = overall educational experience.

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

First in family students generally had increased likelihoods of being satisfied with their university study, compared to students who were not the first in their family to attend university. The exception to this was in the area of learner engagement, where first in family students were observed to have a minute one percentage point reduced probability of being satisfied. There was no statistically significant difference in the likelihood of being more or less satisfied with first in family students' overall educational experience. For Indigenous students, most of the estimates across the various UES dimensions were statistically insignificant, indicating that their reported student satisfaction was similar to that reported by their non-Indigenous counterparts. However, Indigenous students reported being more satisfied with the level of student support they were given, and were four (five) percentage points more likely to be satisfied with student support compared to their non-Indigenous counterparts, when they were in their commencing (later) year of university study.

NESB students were shown to be dissatisfied across all UES focus areas, as well as being dissatisfied with their overall educational experience, compared to ESB students. This generally held true regardless of their year of study. The areas where NESB students had the largest likelihood of being dissatisfied, however, was in the teaching quality focus area and overall educational experience. Students who had a disability were also found to have decreased likelihoods of being satisfied at university across stages of study, compared to students without a disability. Aside from being less likely to be satisfied with their overall educational experience, the UES focus area where the most sizeable effects associated with dissatisfaction was found for students with disability was the area of student support.

The estimates on satisfaction for female students in the non-traditional STEM fields of study were mostly statistically insignificant, indicating that their levels of satisfaction were broadly comparable to the reference group of males in the STEM fields of study. However, for female students in STEM fields, increased likelihoods of satisfaction were observed in the first year of study, for the areas of learning resources and student support.

Students from low SES background were found to have differences in satisfaction across three measures, compared to those from more privileged SES backgrounds. First, low SES students in later years had a very small increased likelihood of being satisfied with their learner engagement and the quality of learning resources. Second, they were more likely to report being satisfied with the level of student support they received by around two percentage points across the commencing and later years of study. The estimates for students who originated from rural or remote areas were mostly statistically insignificant, indicating that their satisfaction at university were generally indistinguishable from their counterparts from metropolitan areas. They were found to have small reduced likelihoods of being satisfied with learning resources and overall educational experience, however.

Models of Students at Risk of Dropout

Table 6 presents estimated AMEs from the models of students who are at risk (indicated seriously considering dropping out from university). Logistic coefficients and detailed results on the control variables are presented in Table D7 in Appendix D.

Table 6.*Estimated AMEs for models of students at risk of dropout*

	Commencing	Later year
ATSI	0.062*** (0.013)	0.050*** (0.016)
NESB	-0.026*** (0.007)	0.001 (0.004)
Disability	0.048*** (0.006)	0.073*** (0.009)
Women in STEM	0.007 (0.007)	0.011 (0.009)
Low SES	0.007* (0.004)	0.013*** (0.005)
Regional/remote	0.018*** (0.005)	0.020*** (0.004)
First in family	0.015*** (0.003)	a a
Clusters	39	39
Obs	103,522	69,806
Pseudo R ²	0.008	0.020
Prob>chi ²	0.000	0.000
Controls		
Gender	Yes	Yes
Age group	Yes	Yes
Attendance mode (2)	Yes	Yes
Attendance type	Yes	Yes
Combined degree	Yes	Yes
Study area (20)	Yes	Yes

^a *First in family is not available for later year students.**** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

The results from this model indicate that all equity groups, with the exception of NESB students, are at increased likelihoods of being at risk of leaving university, at both stages of study under investigation. In particular, Indigenous students in their commencing year were six percentage points more likely to be at risk than non-Indigenous students. For Indigenous students in their later year of study, the increased chance of being at risk was still substantial, at five percentage points above non-Indigenous students. Students with disability were found to have the largest increased likelihood of being at risk compared to students without disabilities, at five percentage points in the commencing year and seven percentage points in the later year.

Female students in non-traditional fields of study appeared to have similar outcomes compared to male students in the same fields, in terms of being at risk. Students from low SES backgrounds had statistically significant increased probabilities of being at risk compared to students from better-off SES backgrounds, however, these were very modest in magnitude. Similarly, students from rural or remote areas had small, increased likelihoods of being at risk, of around two percentage points in both university years. First in family students had a small, 1.5 percentage point increased likelihood of being at risk in their first year of study, compared to students who were not first in their family to be in university. NESB students were three percentage points less likely to be at risk in their commencing year compared to ESB students, and there were no statistically discernible effects by language status in the later year.

Models of Reasons for being at Risk of Dropout

To investigate how the reasons for considering dropout differ by equity group, equation (1) was estimated for each of the six broad reasons:

- financial
- health or stress
- academic/institutional
- social and personal
- workload
- disposition.

This was done separately for commencing and later year students in the subsample of at risk individuals. AMEs from these estimations are summarised in Table 7 for the seven equity groups. Logistic coefficients and results on the control variables are presented in Tables D8 to D13 in Appendix D.

Looking first at financial reasons, commencing students in five equity groups had a greater probability of giving this reason than those not in each respective equity group, with the strongest effect observed for Indigenous students (12 percentage points greater than non-Indigenous students). Only one equity group was associated with a reduced probability of giving this as a reason (NESB students—four percentage points), and for women in STEM the difference was statistically insignificant. Considering later year students, only low SES and regional/remote students had a greater probability of selecting financial reasons. NESB students were still less likely to give this reason than ESB students; however the effect was smaller and only borderline statistically significant ($p < 0.10$).

Table 7.*Estimated AMEs for models of reasons for considering leaving university*

	Fin	Hlth	Acad	Soc	Work	Disp
Commencing						
ATSI	0.120*** (0.026)	0.009 (0.025)	-0.018 (0.028)	0.073*** (0.022)	0.058** (0.024)	-0.065*** (0.022)
NESB	-0.077*** (0.013)	-0.054*** (0.012)	0.062*** (0.012)	-0.015 (0.012)	-0.066*** (0.011)	-0.045*** (0.015)
Disability	0.035*** (0.011)	0.220*** (0.011)	-0.003 (0.013)	0.003 (0.014)	0.010 (0.016)	-0.043*** (0.012)
Women in STEM	-0.001 (0.019)	-0.020 (0.020)	-0.002 (0.020)	-0.043** (0.020)	-0.046*** (0.016)	0.034 (0.023)
Low SES	0.041*** (0.009)	0.025*** (0.009)	-0.020* (0.010)	0.025** (0.011)	0.008 (0.010)	-0.003 (0.011)
Regional/remote	0.052*** (0.008)	0.006 (0.010)	-0.023** (0.011)	-0.007 (0.009)	0.005 (0.012)	-0.045*** (0.011)
First in family	0.054*** (0.009)	0.026*** (0.006)	-0.022*** (0.008)	0.012 (0.008)	0.058*** (0.007)	-0.022** (0.009)
Clusters	39	39	39	39	39	39
Obs	19,324	19,324	19,324	19,324	19,324	19,324
Pseudo R ²	0.043	0.036	0.009	0.010	0.021	0.091
Prob>chi ²	0.000	0.000	0.000	0.000	0.000	0.000

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Table 7 cont.*Estimated AMEs for models of reasons for considering leaving university*

	Fin	Hlth	Acad	Soc	Work	Disp
Later Year						
ATSI	-0.026 (0.041)	0.037 (0.049)	-0.093** (0.047)	0.069** (0.032)	0.017 (0.043)	-0.092** (0.039)
NESB	-0.026* (0.013)	-0.047*** (0.018)	-0.007 (0.018)	-0.001 (0.017)	-0.013 (0.014)	-0.006 (0.021)
Disability	0.017 (0.023)	0.159*** (0.019)	0.027 (0.019)	0.004 (0.018)	0.006 (0.017)	-0.044** (0.017)
Women in STEM	-0.020 (0.030)	0.016 (0.027)	0.019 (0.027)	0.004 (0.029)	-0.055** (0.026)	-0.002 (0.023)
Low SES	0.032** (0.013)	0.019 (0.014)	-0.007 (0.010)	0.018 (0.012)	0.010 (0.013)	-0.001 (0.012)
Regional/remote	0.053*** (0.014)	-0.005 (0.012)	-0.021 (0.017)	-0.010 (0.010)	0.004 (0.012)	-0.004 (0.012)
Clusters	39	39	39	39	39	39
Obs	10,382	10,382	10,382	10,382	10,382	10,382
Pseudo R ²	0.023	0.032	0.013	0.009	0.017	0.050
Prob>chi ²	0.000	0.000	0.000	0.000	0.000	0.000
Controls						
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Age group	Yes	Yes	Yes	Yes	Yes	Yes
Attendance mode (2)	Yes	Yes	Yes	Yes	Yes	Yes
Attendance type	Yes	Yes	Yes	Yes	Yes	Yes
Combined degree	Yes	Yes	Yes	Yes	Yes	Yes
Study area (20)	Yes	Yes	Yes	Yes	Yes	Yes

^a *Fin = Financial, Hlth = Health or stress, Acad = Academic/institutional, Soc = Social and personal, Work = Workload, Disp = Disposition.*

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Perhaps not surprisingly, students with disability have a vastly greater probability of giving health or stress as a reason for being at risk of dropout, especially regarding commencing students (22 percentage points above non-disability students). This effect was also large and statistically significant for later year students with disability, but smaller than for commencing students (16 percentage points). Low SES and first in family students were also at an increased probability of indicating this reason, but only in their commencing year. NESB were somewhat less likely to give this reason than ESB students in both stages of study.

Only NESB students had a greater probability of listing academic/institutional factors as a reason for considering dropout, and only in their commencing year of study. Low SES, regional/remote and first in family students had a lower probability of giving this reason compared with non-members of their respective equity groups, though the effect sizes were modest (two to three percentage points). Considering later year students, the only significant difference was observed for Indigenous students, who had a greatly reduced probability of indicating academic/institutional factors (nine percentage points). Notably, the equivalent difference for commencing Indigenous students was small and statistically insignificant.

Looking now at social and personal reasons, Indigenous students were more likely than non-Indigenous students to indicate this in their commencing year, as were low SES students (compared with higher SES students), although to a lesser extent. The opposite result was observed for women in STEM. Indigenous students also had a heightened probability of indicating this reason in their later year of study—no other differences were statistically significant at this stage of study.

Considering workload, ATSI and first in family commencing students had an increased probability of selecting this reason, whereas NESB students and women in STEM were significantly less likely to do so. (It is interesting to note that the results for ATSI, first in family and NESB students on this variable tend to mirror those on financial reasons—presumably students who are struggling financially would need to undertake paid work in addition to their studies, which would have an impact on their workload.) For later year students, the only significant difference was observed for women in STEM, who were again less likely than others to give this reason.

Finally, considering disposition—that is, students' attitudes towards study—commencing students in five equity groups had a reduced probability of giving this reason. Looking at the specific items underpinning this broad category (see Appendix C), this result suggests that students in the equity groups in question are less likely than non-group members to consider dropping out due to lack of interest, or desiring a break or change in direction. Later year Indigenous students were also much less likely to give this reason (9.2 percentage points)—more so, in fact, than commencing students (seven percentage points)—as were later year students with disability, though to a lesser extent.

Two interesting general findings emerge from this table. First, the reasons for considering leaving university tend to differ across equity groups and, in a great many cases, are not significantly different from the reasons given by non-group members. Some strong results emerge, however, which can be used to form the basis of policy interventions. Second, there are relatively few significant differences for later year students. This could suggest that disadvantaged students' reasons are addressed early in their studies and hence are not significantly different from students generally by their later year of study; however it could also suggest that students experiencing these pressures are more likely to withdraw early in their studies, in which case effective early-intervention policies are needed.

Models of Dropout

In addition to students' self-ratings on whether they had seriously considered leaving their university, there was also factual data on whether students re-enrolled in higher education the year after completing the survey (or had completed their course requirements by this stage), permitting dropout to be modelled explicitly. Two variants of this model are estimated: (1) dropout is modelled as a function of equity group membership, standard demographic and enrolment variables; and indicators for being at risk of dropout and satisfaction with the quality of the overall educational experience (both as previously defined); and (2) as previously, but omitting the 'at risk' indicator. Table 8 presents estimated AMEs from the models of dropout, with logistic coefficients and detailed results on the control variables for the two variants presented in Tables D14 and D15 in Appendix D, respectively.

Results from Model 1 are considered first. Given the many statistically significant effects observed for equity groups in the at risk models (see Table 8), it is interesting to note that there are relatively few significant effects on equity membership in the dropout models. Looking first at commencing students, NESB students are less likely than non-NESB students to withdraw from higher education, with the opposite seen for first in family students. This mirrors similar results for these groups in the equivalent at risk model—as then, the effect sizes are relatively modest. Again, mirroring the at risk model, later year regional/remote students are significantly more likely to drop out than students from metropolitan Australia. Low SES students in this model were significantly less likely to drop out; however the effect size is negligible.

As expected, being at risk of dropout is significantly associated with dropout, especially for commencing students—students who self-identified as being at risk had a probability of dropping out eight percentage points higher than those who did not. The effect was still statistically significant for later year students, albeit with a smaller effect size (two percentage points).

Table 8*Estimated AMEs for models of dropout*

	Model (1)		Model (2)	
	Commencing	Later Year	Commencing	Later Year
ATSI	-0.002 (0.007)	0.006 (0.009)	0.004 (0.007)	0.007 (0.009)
NESB	-0.015*** (0.003)	0.013 (0.008)	-0.019*** (0.003)	0.014* (0.008)
Disability	0.001 (0.003)	0.008 (0.005)	0.005* (0.003)	0.009* (0.005)
Women in STEM	-0.001 (0.004)	-0.003 (0.006)	0.000 (0.004)	-0.003 (0.006)
Low SES	0.002 (0.001)	-0.006** (0.003)	0.003** (0.001)	-0.006** (0.003)
Regional/remote	0.002 (0.003)	0.034** (0.016)	0.003 (0.003)	0.034** (0.016)
First in Family	0.010*** (0.001)	a a	0.011*** (0.002)	a a
At risk	0.076*** (0.003)	0.023*** (0.004)	b b	b b
Overall experience	-0.015*** (0.002)	-0.009** (0.004)	-0.045*** (0.003)	-0.015*** (0.004)
Clusters	39	39	39	39
Obs	103,213	69,576	105,123	70,807
Pseudo R ²	0.094	0.038	0.057	0.036
Prob>chi ²	0.000	0.000	0.000	0.000
Controls				
Gender	Yes	Yes	Yes	Yes
Age group	Yes	Yes	Yes	Yes
Attendance mode (2)	Yes	Yes	Yes	Yes
Attendance type	Yes	Yes	Yes	Yes
Combined degree	Yes	Yes	Yes	Yes
Study area (20)	Yes	Yes	Yes	Yes

^a First in family is not available for later year students. ^b Not included.

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Satisfaction with the overall educational experience is negatively associated with dropout; however, the effect sizes are modest, especially when compared with those on the 'at risk' variable. Taken together, these results suggest that, for a given level of satisfaction, students experiencing dropout pressures are still more likely to withdraw than those who are not.

Looking at Model 2, which omits the control for being at risk of dropout, it is interesting to observe that the results on the equity group variables are generally similar to Model 1. This finding could suggest that although students in most equity groups are more likely than non-group members to consider leaving university, in most cases they are not significantly (or substantively) more likely to actually withdraw, at least in the short term.¹⁷

In order to test the sensitivity of these results to students' academic performance, Model 2 was estimated again on the subsample of students from universities that provided WAM data (see Appendix A), this time including WAM as an explanatory variable. Commencing students are considered first. In results not presented here (but available from the authors on request), the estimate on the WAM variable is negative and significant—students who perform less well academically tend to be more likely to withdraw. Controlling for WAM also sees students in five equity groups significantly less likely (at the 10 per cent level or below) to leave university than their non-equity peers (ATSI; NESB; Disability; Women in STEM; Low SES), compared with only two in the WAM subsample when WAM is not included (ATSI; Women in STEM).¹⁸ There is no significant effect associated with regional/remote students in both versions of the model, and first in family students are consistently more likely to withdraw. Interestingly, these results suggest that, at a given level of academic performance, students in most equity groups are less prone to dropout than their non-equity counterparts; however these results also imply that equity students tend to perform less well academically, on average.

Moreover, the negative overall educational experience estimate for commencing students becomes statistically insignificant when WAM is included. This result implies a positive association between student satisfaction and academic performance. Being at risk of dropout is a significant and substantial predictor of dropout in both variants, with a slightly reduced coefficient estimate when controlling for WAM—this result implies that at risk students tend to perform less well academically, on average, than those not at risk.

Looking now at later year students, the only significant equity-group effect in both versions of the model estimated on the WAM subsample is for students with a disability, who were significantly more likely to withdraw than those without a disability. The estimate on the WAM variable is again negative and significant, albeit with a smaller coefficient.

Model for WAM

To investigate the factors influencing students' WAMs, equation (2) was estimated on the WAM subsample (see Appendix A), separately for commencing and later year students. In addition to the standard set of explanatory variables (equity group indicators, plus controls for demographic and enrolment characteristics), variables for at risk and satisfaction with the overall educational experience were included. Results from these estimations are summarised in Table 9, with comprehensive results presented in Table D15 in Appendix D.

¹⁷ Because the dropout indicator used in this study is based on re-enrolment the following year (or successful completion at year's end), the potential for dropout could be further down the track. This could be a potential limitation, especially for commencing students.

¹⁸ Note that these results differ to those based on the full 39-institution sample (cf. Table 8), presumably because the WAM subsample does not perfectly reflect the broader study sample in terms of institutional and student characteristics. Caution is therefore advised when interpreting results based on the WAM subsample.

Table 9*Estimated regression coefficients for WAM models*

	Commencing	Later Year
ATSI	-0.412*** (0.107)	-0.208** (0.073)
NESB	-0.162*** (0.048)	-0.286*** (0.027)
Disability	-0.189*** (0.034)	-0.108*** (0.026)
Women in STEM	0.022 (0.051)	-0.043 (-1.310)
Low SES	-0.141*** (0.027)	-0.100*** (0.017)
Regional/remote	0.054 (0.045)	0.099*** (0.020)
First in Family	-0.114*** (0.019)	a a
At risk	-0.277*** (0.022)	-0.191*** (0.020)
Overall experience	0.297*** (0.022)	0.109*** (0.020)
Clusters	13	13
Observations	35,937	24,234
R ²	0.075	0.078
Controls		
Gender	Yes	Yes
Age group	Yes	Yes
Attendance mode (2)	Yes	Yes
Attendance type	Yes	Yes
Combined degree	Yes	Yes
Study area (20)	Yes	Yes

^a *First in family is not available for later year students.**** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Looking first at commencing students, it can be seen that five equity groups were associated with significantly lower than average WAMs, with the effect size ranging from 0.1 standard deviation units (first in family) to 0.4 standard deviation units (Indigenous) below the institutional mean—this remains even after controlling for an extensive set of background characteristics, plus students' perceptions of the quality of the education they received and whether they were at risk of dropping out. Average WAMs for women in STEM and regional/remote students were not significantly different from their institutional mean, all else being equal.

Four equity groups are associated with significantly lower WAMs in the later year cohort (recalling that first in family is only defined for commencing students). Average WAMs for later year Indigenous, disability and low SES students fall closer to the institutional mean than was the case for commencing students in each of the equity groups (i.e. the estimated coefficients were closer to zero); however the opposite was observed for NESB students. Regional/remote students in their later year of study achieved an average WAM above the institutional mean.

The estimates on the at risk and overall experience variables are significantly different from zero and carry the expected signs—being at risk of dropout is associated with an average WAM below the institutional mean, and being satisfied with the quality of the overall educational experience is associated with a better than average mean WAM. These results imply that students with below-average marks are more likely to be at risk of dropout, and students with above-average marks are more likely to be satisfied with the quality of their educational experience. Both effects are larger for commencing than later year students, which is a common finding in the analyses.

6. Discussion

The results from the models of student satisfaction uncovered some modest differences in the various dimensions of student satisfaction between equity groups and their non-disadvantaged counterparts, as well as between equity groups themselves. The student satisfaction differences were generally modest in magnitude, with even more muted effects going from commencement of university study to the later years of undergraduate study. For the equity groups of students with disability and those from NESB, however, lower levels of satisfaction were observed across most satisfaction dimensions. Hence, more attention could be devoted to addressing the inequitable differences in the study experience for these two groups.

Students from most of the equity groups were found to have larger probabilities of being at risk of dropout, with the exceptions of women in STEM fields of study and NESB students. In particular, students who identified as ATSI, who have disabilities or who originated from rural or remote locations have rather sizeable increased probabilities of being at risk of dropout. These effects were also persistent across stages of study for these three groups. Furthermore, being at risk of dropping out was a significant predictor of actual dropout. Notably, however, most equity groups were not associated with a greater likelihood of leaving higher education in the short term. In spite of this, the fact that students from various equity groups are more likely than non-group members to consider leaving university suggests that there are still shortcomings in their higher education experience that need to be addressed.

The models estimating reasons for being at risk of dropout revealed some diversity in terms of the underlying reasons behind why students from each equity group considered leaving university. Financial reasons appeared to be a dominant reason in influencing students from equity groups to consider leaving university, as students from five equity groups were significantly and substantially more likely to give this reason than non-group members. In the same vein, health reasons and disposition towards study were also important areas of influence for students from equity groups, although the direction of influence for disposition towards study showed that this was a reason that reduced equity groups' consideration for leaving university. This finding is encouraging, and indicates that students from most equity groups tend to have the right sort of attitudes towards their studies, at least compared with their non-disadvantaged counterparts. At the same time, policy aimed at equity outcomes in higher education will need to take into account the influences of these other factors, notably, financial and health issues, which might require policy decision-making from outside the higher education portfolio and sector.

Lastly, the results from the models assessing WAMs showed that students from most equity groups performed poorly relative to their counterparts, particularly for commencing students, although large effects were still observed for some equity groups in later years of study. This is doubly concerning, given that strong academic performance is associated with a reduced likelihood of dropout. Furthermore, students who tended to perform worse academically were more likely to be at risk of dropping out, and tended to be less satisfied with their overall educational experience.

The findings from the various models above point to modest differences in terms of student satisfaction levels between equity and non-equity groups, and substantial differences in terms of being at risk of dropout and academic performance (WAMs) between equity and non-equity groups. From the policy perspective, it would appear that equity groups are generally well-supported at university and are satisfied with most aspects of their educational experience. Factors that occur in their personal circumstances, such as finances, health, social and workload related reasons need to be targeted in order to provide equity groups with a level playing field for completing university studies, and excelling in it.

7. Conclusion

This study has examined the determinants of student satisfaction at university for equity groups in Australia. Further, the study examines the determinants of three university academic outcomes:

- being at risk of dropout
- dropout from university studies
- academic performance, as measured by WAMs, with a focus on these outcomes for equity groups and encompassing student satisfaction as an intermediary.

There are several strengths in the study approach. First, the analysis on determinants of student satisfaction and being at risk made use of the national University Experience Survey. Hence, the findings in these two respects can be taken to be representative of the university student population in Australia. Second, data on students' retention status was obtained from the national HEIMS data collection. This approach is superior to other studies that used university data to identify dropout, since HEIMS makes the distinction between students who withdrew to continue their studies at other institutions and those who discontinued altogether. In other words, the dropout outcome in the present study is more accurate and in keeping with the aims of higher education equity policies—retaining students in higher education. Third, the linkage of UES and WAM data for 13 universities meant that the inter-relationship between student satisfaction, being at risk of dropout and academic performance could be analysed across a diverse range of Australian universities, covering different Australian states, backgrounds and university alliances. Hence, the findings should be broadly generalisable to equity students from other universities that did not participate in this study, although a degree of caution in interpreting these results is still warranted (see footnote 18).

This study has also raised some further questions which could be addressed by future research. One particularly pertinent issue relates to the students who identified as being at risk. While this study was able to identify some of the broad reasons behind why these students seriously considered leaving university, future research using qualitative methodologies will be better placed to drill deeper into the underlying reasons for being at risk, as well as develop appropriate measures to better support at risk students at university.

The findings of this study indicate a strong need to provide support to students from equity groups from an early stage, as the results from the various analyses all indicated stronger equity effects for commencing students as opposed to students at a later stage of their studies. This itself is likely attributable, at least partially, to especially vulnerable students dropping out relatively early in their courses; this is all the more justification for providing early support. Finally, it should be recognised that there could be a need for support for equity students from beyond the higher education sector, particularly in the areas of financial support and health, in order to level the odds for them.

Appendix A

Institutions in WAM subsample

University	Commencing ^a	Later Year ^a
Curtin University of Technology	3,188	2,026
Deakin University	4,891	2,658
Edith Cowan University	2,152	1,484
Flinders University of South Australia	2,432	2,211
Griffith University	4,167	2,653
James Cook University	1,899	1,225
Queensland University of Technology	4,746	2,956
Southern Cross University	576	493
The University of Adelaide	1,724	1,025
The University of Western Australia	1,433	2,181
University of New South Wales	4,984	2,396
University of South Australia	2,911	2,440
Victoria University	1,564	957
Total	36,667	24,705

^a Observations (*n*) with valid WAM.

Appendix B

HEIMS data elements

Element ^a	Name
E316	Aboriginal and Torres Strait Islander code
E348	Language spoken at home code
E386	Disability
E315	Gender code
E461	Field of education code
E413	Address of permanent home residence - postcode
E573	Highest educational attainment of parent/guardian 1
E574	Highest educational attainment of parent/guardian 2

^a See *Department of Education and Training (2016b)* for additional information on these data elements, including classification codes.

Appendix C

Reasons for considering leaving concordance

UES item	Reason (categorised)
Fee difficulties Financial difficulties Government assistance Need to do paid work	Financial
Health or stress	Health or stress
Academic support Administrative support Career prospects Expectations not met Institution reputation Quality concerns Standards too high	Academic/institutional
Commuting difficulties Family responsibilities Gap year / deferral Moving residence Paid work responsibilities Personal reasons Social reasons Travel or tourism	Social and personal
Workload difficulties Study / life balance	Workload
Boredom/lack of interest Change of direction Need a break	Disposition
Other opportunities Received other offer Academic exchange Graduating Other	Excluded ^a

^a These reasons were not categorised, either because they were difficult to classify (e.g. other opportunities; received other offer; other), or did not relate to dropout as characterised in the investigation (e.g. academic exchange; graduating).

Appendix D

Supplementary tables

Table D1

Estimation results for learner engagement models

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	-0.073 (0.065)	-0.016 (0.015)	0.051 (0.081)	0.011 (0.018)
NESB	-0.091 (0.022)***	-0.020 (0.005)***	-0.030 (0.030)	-0.007 (0.007)
Disability	-0.033 (0.037)	-0.007 (0.008)	-0.029 (0.032)	-0.006 (0.007)
Women in STEM	0.146 (0.043)***	0.032 (0.009)***	0.107 (0.057)*	0.023 (0.012)*
Low SES	0.036 (0.024)	0.008 (0.005)	-0.043 (0.024)*	-0.009 (0.005)*
Regional/remote	0.055 (0.034)	0.012 (0.008)	-0.028 (0.033)	-0.006 (0.007)
First in family	-0.047 (0.017)***	-0.010 (0.004)***	a	a
Covariates				
Male	0.026 (0.020)	0.006 (0.004)	-0.087 (0.026)***	-0.019 (0.006)***
Mature age	-0.295 (0.029)***	-0.067 (0.007)***	-0.361 (0.024)***	-0.081 (0.006)***
Mode: internal	1.479 (0.103)***	0.342 (0.021)***	1.381 (0.116)***	0.324 (0.025)***
Mode: mixed	1.174 (0.137)***	0.270 (0.030)***	1.133 (0.120)***	0.267 (0.026)***
Attend full time	0.577 (0.037)***	0.135 (0.009)***	0.494 (0.048)***	0.114 (0.011)***
Combined degree	-0.064 (0.028)**	-0.014 (0.006)**	-0.083 (0.037)**	-0.018 (0.008)**
Clusters	39		39	
Observations	105,072		70,767	
Pseudo R ²	0.054		0.057	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D2*Estimation results for teaching quality models*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	-0.055 (0.078)	-0.008 (0.011)	-0.039 (0.085)	-0.007 (0.015)
NESB	-0.245 (0.035)***	-0.036 (0.005)***	-0.131 (0.038)***	-0.023 (0.007)***
Disability	-0.140 (0.041)***	-0.020 (0.006)***	-0.191 (0.042)***	-0.034 (0.008)***
Women in STEM	0.026 (0.040)	0.004 (0.005)	0.061 (0.091)	0.010 (0.015)
Low SES	0.030 (0.028)	0.004 (0.004)	0.022 (0.025)	0.004 (0.004)
Regional/remote	0.015 (0.038)	0.002 (0.005)	-0.037 (0.027)	-0.006 (0.005)
First in family	0.027 (0.020)	0.004 (0.003)	a	a
Covariates				
Male	-0.046 (0.025)*	-0.006 (0.003)*	-0.192 (0.029)***	-0.033 (0.005)***
Mature age	0.014 (0.029)	0.002 (0.004)	-0.018 (0.029)	-0.003 (0.005)
Mode: internal	0.089 (0.070)	0.013 (0.010)	0.123 (0.095)	0.021 (0.017)
Mode: mixed	0.018 (0.069)	0.003 (0.010)	0.018 (0.094)	0.003 (0.017)
Attend full time	-0.087 (0.050)*	-0.012 (0.007)*	0.038 (0.058)	0.006 (0.010)
Combined degree	-0.109 (0.040)***	-0.015 (0.006)***	-0.230 (0.047)***	-0.040 (0.008)***
Clusters	39		39	
Observations	104,880		70,581	
Pseudo R ²	0.010		0.018	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D3*Estimation results for learning resources models*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.103 (0.087)	0.011 (0.009)	0.138 (0.094)	0.021 (0.014)
NESB	-0.238 (0.043)***	-0.027 (0.005)***	-0.054 (0.039)	-0.009 (0.006)
Disability	-0.231 (0.045)***	-0.027 (0.006)***	-0.200 (0.052)***	-0.033 (0.009)***
Women in STEM	0.119 (0.055)**	0.012 (0.005)**	0.062 (0.063)	0.010 (0.010)
Low SES	0.053 (0.036)	0.006 (0.004)	0.074 (0.032)**	0.012 (0.005)**
Regional/remote	0.011 (0.068)	0.001 (0.007)	-0.132 (0.071)*	-0.021 (0.012)*
First in family	0.078 (0.025)***	0.008 (0.003)***	a	a
Covariates				
Male	-0.064 (0.038)*	-0.007 (0.004)*	-0.138 (0.028)***	-0.022 (0.004)***
Mature age	-0.332 (0.037)***	-0.037 (0.005)***	-0.096 (0.032)***	-0.015 (0.005)***
Mode: internal	0.238 (0.075)***	0.027 (0.009)***	-0.151 (0.111)	-0.023 (0.016)
Mode: mixed	0.007 (0.154)	0.001 (0.019)	-0.130 (0.108)	-0.020 (0.016)
Attend full time	-0.112 (0.052)**	-0.012 (0.005)**	0.038 (0.042)	0.006 (0.007)
Combined degree	-0.276 (0.052)***	-0.031 (0.006)***	-0.179 (0.053)***	-0.029 (0.009)***
Clusters	39		39	
Observations	96,779		63,855	
Pseudo R ²	0.012		0.014	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D4*Estimation results for student support models*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.199 (0.086)**	0.040 (0.016)**	0.193 (0.083)**	0.045 (0.019)**
NESB	-0.106 (0.029)***	-0.022 (0.006)***	0.044 (0.035)	0.010 (0.008)
Disability	0.275 (0.040)***	0.054 (0.007)***	0.189 (0.060)***	0.044 (0.014)***
Women in STEM	0.099 (0.041)**	0.020 (0.008)**	0.084 (0.065)	0.020 (0.015)
Low SES	0.099 (0.023)***	0.020 (0.005)***	0.080 (0.026)***	0.019 (0.006)***
Regional/remote	0.085 (0.033)**	0.017 (0.007)**	0.064 (0.051)	0.015 (0.012)
First in family	0.074 (0.027)***	0.015 (0.006)***	a	a
Covariates				
Male	-0.041 (0.023)*	-0.008 (0.005)*	-0.116 (0.029)***	-0.028 (0.007)***
Mature age	0.052 (0.028)*	0.011 (0.006)*	0.156 (0.027)***	0.037 (0.006)***
Mode: internal	-0.087 (0.057)	-0.018 (0.012)	-0.116 (0.102)	-0.027 (0.024)
Mode: mixed	-0.175 (0.070)**	-0.036 (0.015)**	-0.142 (0.090)	-0.033 (0.021)
Attend full time	-0.028 (0.039)	-0.006 (0.008)	0.094 (0.039)**	0.022 (0.009)**
Combined degree	-0.063 (0.038)*	-0.013 (0.008)	-0.173 (0.044)***	-0.041 (0.011)***
Clusters	39		39	
Observations	86,205		58,742	
Pseudo R ²	0.005		0.006	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D5*Estimation results for skills development models*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.070 (0.067)	0.011 (0.011)	0.089 (0.097)	0.011 (0.012)
NESB	-0.009 (0.032)	-0.002 (0.005)	-0.095 (0.048)**	-0.013 (0.007)*
Disability	-0.185 (0.040)***	-0.032 (0.007)***	-0.288 (0.047)***	-0.041 (0.007)***
Women in STEM	-0.010 (0.045)	-0.002 (0.008)	-0.022 (0.079)	-0.003 (0.011)
Low SES	0.081 (0.023)***	0.013 (0.004)***	0.078 (0.031)**	0.010 (0.004)**
Regional/remote	0.004 (0.033)	0.001 (0.006)	-0.051 (0.039)	-0.007 (0.005)
First in family	0.076 (0.021)***	0.013 (0.003)***	a	a
Covariates				
Male	-0.153 (0.023)***	-0.026 (0.004)***	-0.365 (0.039)***	-0.050 (0.006)***
Mature age	-0.061 (0.027)**	-0.010 (0.005)**	-0.179 (0.028)***	-0.024 (0.004)***
Mode: internal	0.238 (0.060)***	0.042 (0.011)***	0.266 (0.100)***	0.038 (0.015)**
Mode: mixed	0.239 (0.067)***	0.042 (0.012)***	0.210 (0.094)**	0.030 (0.014)**
Attend full time	0.235 (0.035)***	0.041 (0.006)***	0.219 (0.048)***	0.031 (0.007)***
Combined degree	-0.160 (0.026)***	-0.027 (0.005)***	-0.270 (0.051)***	-0.038 (0.008)***
Clusters	39		39	
Observations	104,227		70,235	
Pseudo R ²	0.011		0.018	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D6*Estimation results for overall experience models*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	-0.069 (0.073)	-0.010 (0.010)	-0.027 (0.084)	-0.005 (0.015)
NESB	-0.386 (0.024)***	-0.058 (0.003)***	-0.176 (0.044)***	-0.032 (0.008)***
Disability	-0.178 (0.042)***	-0.026 (0.006)***	-0.235 (0.046)***	-0.043 (0.009)***
Women in STEM	0.021 (0.034)	0.003 (0.005)	-0.011 (0.066)	-0.002 (0.012)
Low SES	0.004 (0.030)	0.001 (0.004)	-0.019 (0.028)	-0.003 (0.005)
Regional/remote	0.014 (0.053)	0.002 (0.007)	-0.079 (0.040)**	-0.014 (0.007)*
First in family	0.005 (0.021)	0.001 (0.003)	a	a
Covariates				
Male	-0.143 (0.027)***	-0.020 (0.004)***	-0.249 (0.034)***	-0.045 (0.006)***
Mature age	-0.153 (0.025)***	-0.022 (0.004)***	-0.086 (0.027)***	-0.015 (0.005)***
Mode: internal	0.090 (0.063)	0.013 (0.009)	-0.009 (0.083)	-0.002 (0.014)
Mode: mixed	-0.049 (0.069)	-0.007 (0.010)	-0.163 (0.084)*	-0.029 (0.015)**
Attend full time	0.020 (0.042)	0.003 (0.006)	0.098 (0.042)**	0.018 (0.008)**
Combined degree	-0.131 (0.033)***	-0.019 (0.005)***	-0.123 (0.046)***	-0.022 (0.008)***
Clusters	39		39	
Observations	105,123		70,807	
Pseudo R ²	0.010		0.013	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D7*Estimation results for models of students at risk of dropout*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.371 (0.067)***	0.062 (0.013)***	0.356 (0.106)***	0.050 (0.016)***
NESB	-0.183 (0.049)***	-0.026 (0.007)***	0.006 (0.034)	0.001 (0.004)
Disability	0.292 (0.032)***	0.048 (0.006)***	0.506 (0.056)***	0.073 (0.009)***
Women in STEM	0.044 (0.047)	0.007 (0.007)	0.084 (0.066)	0.011 (0.009)
Low SES	0.047 (0.027)*	0.007 (0.004)*	0.101 (0.038)***	0.013 (0.005)***
Regional/remote	0.119 (0.035)***	0.018 (0.005)***	0.157 (0.033)***	0.020 (0.004)***
First in family	0.102 (0.021)***	0.015 (0.003)***	a	a
Covariates				
Male	-0.073 (0.020)***	-0.011 (0.003)***	0.097 (0.030)***	0.012 (0.004)***
Mature age	0.060 (0.029)**	0.009 (0.004)**	0.291 (0.028)***	0.037 (0.004)***
Mode: internal	0.082 (0.066)	0.012 (0.009)	0.057 (0.058)	0.007 (0.007)
Mode: mixed	0.137 (0.113)	0.021 (0.017)	0.169 (0.062)***	0.021 (0.008)***
Attend full time	-0.081 (0.034)**	-0.012 (0.005)**	0.021 (0.047)	0.003 (0.006)
Combined degree	-0.155 (0.050)***	-0.023 (0.007)***	-0.258 (0.048)***	-0.030 (0.005)***
Clusters	39		39	
Observations	103,522		69,806	
Pseudo R ²	0.008		0.020	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D8*Estimation results for at risk reason: financial*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.518 (0.110)***	0.120 (0.026)***	-0.112 (0.177)	-0.026 (0.041)
NESB	-0.354 (0.062)***	-0.077 (0.013)***	-0.111 (0.057)*	-0.026 (0.013)*
Disability	0.154 (0.050)***	0.035 (0.011)***	0.071 (0.095)	0.017 (0.023)
Women in STEM	-0.003 (0.087)	-0.001 (0.019)	-0.083 (0.127)	-0.020 (0.030)
Low SES	0.179 (0.040)***	0.041 (0.009)***	0.132 (0.056)**	0.032 (0.013)**
Regional/remote	0.230 (0.035)***	0.052 (0.008)***	0.222 (0.060)***	0.053 (0.014)***
First in family	0.238 (0.039)***	0.054 (0.009)***	a	a
Covariates				
Male	-0.087 (0.052)*	-0.020 (0.012)*	-0.097 (0.053)*	-0.023 (0.013)*
Mature age	0.731 (0.057)***	0.170 (0.013)***	0.555 (0.046)***	0.134 (0.011)***
Mode: internal	0.516 (0.078)***	0.109 (0.015)***	0.375 (0.105)***	0.087 (0.023)***
Mode: mixed	0.729 (0.156)***	0.158 (0.035)***	0.473 (0.125)***	0.110 (0.029)***
Attend full time	0.195 (0.068)***	0.043 (0.015)***	0.250 (0.098)**	0.059 (0.022)***
Combined degree	-0.124 (0.055)**	-0.028 (0.012)**	-0.080 (0.091)	-0.019 (0.021)
Clusters	39		39	
Observations	19,324		10,382	
Pseudo R ²	0.043		0.023	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D9*Estimation results for at risk reason: health or stress*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.044 (0.122)	0.009 (0.025)	0.165 (0.214)	0.037 (0.049)
NESB	-0.281 (0.065)***	-0.054 (0.012)***	-0.219 (0.083)***	-0.047 (0.018)***
Disability	0.968 (0.048)***	0.220 (0.011)***	0.678 (0.082)***	0.159 (0.019)***
Women in STEM	-0.103 (0.104)	-0.020 (0.020)	0.074 (0.121)	0.016 (0.027)
Low SES	0.124 (0.042)***	0.025 (0.009)***	0.086 (0.061)	0.019 (0.014)
Regional/remote	0.029 (0.049)	0.006 (0.010)	-0.020 (0.054)	-0.005 (0.012)
First in family	0.129 (0.031)***	0.026 (0.006)***	a	a
Covariates				
Male	-0.568 (0.037)***	-0.109 (0.007)***	-0.512 (0.060)***	-0.111 (0.012)***
Mature age	0.239 (0.055)***	0.049 (0.011)***	0.322 (0.049)***	0.072 (0.011)***
Mode: internal	0.212 (0.068)***	0.041 (0.013)***	0.415 (0.117)***	0.087 (0.023)***
Mode: mixed	0.254 (0.088)***	0.050 (0.018)***	0.382 (0.138)***	0.080 (0.028)***
Attend full time	-0.028 (0.068)	-0.006 (0.014)	-0.101 (0.096)	-0.023 (0.022)
Combined degree	-0.120 (0.048)**	-0.024 (0.009)**	-0.001 (0.082)	0.000 (0.018)
Clusters	39		39	
Observations	19,324		10,382	
Pseudo R ²	0.036		0.032	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D10*Estimation results for at risk reason: academic/institutional*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	-0.072 (0.112)	-0.018 (0.028)	-0.381 (0.190)**	-0.093 (0.047)**
NESB	0.251 (0.048)***	0.062 (0.012)***	-0.028 (0.075)	-0.007 (0.018)
Disability	-0.012 (0.054)	-0.003 (0.013)	0.113 (0.079)	0.027 (0.019)
Women in STEM	-0.007 (0.082)	-0.002 (0.020)	0.081 (0.116)	0.019 (0.027)
Low SES	-0.082 (0.042)*	-0.020 (0.010)*	-0.028 (0.042)	-0.007 (0.010)
Regional/remote	-0.093 (0.043)**	-0.023 (0.011)**	-0.088 (0.071)	-0.021 (0.017)
First in family	-0.091 (0.033)***	-0.022 (0.008)***	a	a
Covariates				
Male	0.143 (0.049)***	0.035 (0.012)***	0.374 (0.051)***	0.088 (0.012)***
Mature age	-0.021 (0.047)	-0.005 (0.012)	-0.232 (0.048)***	-0.055 (0.012)***
Mode: internal	-0.080 (0.084)	-0.020 (0.021)	-0.183 (0.097)*	-0.043 (0.023)*
Mode: mixed	-0.065 (0.077)	-0.016 (0.019)	-0.061 (0.091)	-0.014 (0.021)
Attend full time	0.101 (0.070)	0.025 (0.017)	0.057 (0.087)	0.014 (0.021)
Combined degree	0.096 (0.045)**	0.024 (0.011)**	0.082 (0.078)	0.019 (0.018)
Clusters	39		39	
Observations	19,324		10,382	
Pseudo R ²	0.009		0.013	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D11*Estimation results for at risk reason: social and personal*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.337 (0.107)***	0.073 (0.022)***	0.289 (0.136)**	0.069 (0.032)**
NESB	-0.065 (0.050)	-0.015 (0.012)	-0.004 (0.068)	-0.001 (0.017)
Disability	0.015 (0.060)	0.003 (0.014)	0.016 (0.075)	0.004 (0.018)
Women in STEM	-0.185 (0.085)**	-0.043 (0.020)**	0.017 (0.117)	0.004 (0.029)
Low SES	0.110 (0.047)**	0.025 (0.011)**	0.075 (0.050)	0.018 (0.012)
Regional/remote	-0.032 (0.041)	-0.007 (0.009)	-0.039 (0.039)	-0.010 (0.010)
First in family	0.052 (0.033)	0.012 (0.008)	a	a
Covariates				
Male	-0.261 (0.040)***	-0.061 (0.009)***	-0.185 (0.049)***	-0.045 (0.012)***
Mature age	-0.158 (0.043)***	-0.036 (0.010)***	0.123 (0.058)**	0.030 (0.014)**
Mode: internal	-0.080 (0.073)	-0.018 (0.016)	0.039 (0.071)	0.009 (0.018)
Mode: mixed	-0.059 (0.091)	-0.013 (0.021)	0.140 (0.084)*	0.034 (0.020)*
Attend full time	-0.306 (0.066)***	-0.068 (0.014)***	-0.227 (0.059)***	-0.055 (0.014)***
Combined degree	0.082 (0.051)	0.019 (0.011)	-0.118 (0.074)	-0.029 (0.018)
Clusters	39		39	
Observations	19,324		10,382	
Pseudo R ²	0.010		0.009	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D12*Estimation results for at risk reason: workload*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.242 (0.098)**	0.058 (0.024)**	0.070 (0.181)	0.017 (0.043)
NESB	-0.281 (0.046)***	-0.066 (0.011)***	-0.055 (0.059)	-0.013 (0.014)
Disability	0.042 (0.066)	0.010 (0.016)	0.028 (0.074)	0.006 (0.017)
Women in STEM	-0.196 (0.068)***	-0.046 (0.016)***	-0.240 (0.115)**	-0.055 (0.026)**
Low SES	0.032 (0.043)	0.008 (0.010)	0.043 (0.054)	0.010 (0.013)
Regional/remote	0.019 (0.049)	0.005 (0.012)	0.017 (0.049)	0.004 (0.012)
First in family	0.242 (0.030)***	0.058 (0.007)***	a	a
Covariates				
Male	-0.400 (0.036)***	-0.095 (0.008)***	-0.495 (0.048)***	-0.114 (0.011)***
Mature age	0.106 (0.051)**	0.025 (0.012)**	0.204 (0.040)***	0.048 (0.010)***
Mode: internal	-0.297 (0.111)***	-0.072 (0.027)***	-0.206 (0.069)***	-0.049 (0.017)***
Mode: mixed	-0.312 (0.129)**	-0.076 (0.031)**	-0.064 (0.085)	-0.015 (0.020)
Attend full time	-0.226 (0.058)***	-0.055 (0.014)***	-0.064 (0.071)	-0.015 (0.017)
Combined degree	-0.055 (0.049)	-0.013 (0.012)	-0.036 (0.084)	-0.009 (0.020)
Clusters	39		39	
Observations	19,324		10,382	
Pseudo R ²	0.021		0.017	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D13*Estimation results for at risk reason: disposition*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	-0.300 (0.106)***	-0.065 (0.022)***	-0.420 (0.189)**	-0.092 (0.039)**
NESB	-0.209 (0.068)***	-0.045 (0.015)***	-0.026 (0.093)	-0.006 (0.021)
Disability	-0.200 (0.058)***	-0.043 (0.012)***	-0.195 (0.078)**	-0.044 (0.017)**
Women in STEM	0.157 (0.106)	0.034 (0.023)	-0.010 (0.102)	-0.002 (0.023)
Low SES	-0.013 (0.049)	-0.003 (0.011)	-0.006 (0.053)	-0.001 (0.012)
Regional/remote	-0.205 (0.051)***	-0.045 (0.011)***	-0.017 (0.053)	-0.004 (0.012)
First in family	-0.101 (0.040)**	-0.022 (0.009)**	a	a
Covariates				
Male	-0.015 (0.055)	-0.003 (0.012)	-0.032 (0.051)	-0.007 (0.012)
Mature age	-1.251 (0.054)***	-0.285 (0.011)***	-0.819 (0.044)***	-0.192 (0.010)***
Mode: internal	0.395 (0.060)***	0.086 (0.013)***	0.289 (0.092)***	0.065 (0.020)***
Mode: mixed	0.144 (0.095)	0.031 (0.021)	0.301 (0.111)***	0.068 (0.025)***
Attend full time	0.320 (0.070)***	0.070 (0.015)***	-0.030 (0.103)	-0.007 (0.023)
Combined degree	-0.038 (0.057)	-0.008 (0.012)	0.151 (0.067)**	0.035 (0.015)**
Clusters	39		39	
Observations	19,324		10,382	
Pseudo R ²	0.091		0.050	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D14*Estimation results for dropout model 1*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	-0.047 (0.154)	-0.002 (0.007)	0.117 (0.173)	0.006 (0.009)
NESB	-0.378 (0.089)***	-0.015 (0.003)***	0.244 (0.134)*	0.013 (0.008)
Disability	0.020 (0.055)	0.001 (0.003)	0.148 (0.082)*	0.008 (0.005)
Women in STEM	-0.019 (0.082)	-0.001 (0.004)	-0.066 (0.122)	-0.003 (0.006)
Low SES	0.048 (0.032)	0.002 (0.001)	-0.126 (0.056)**	-0.006 (0.003)**
Regional/remote	0.038 (0.062)	0.002 (0.003)	0.591 (0.222)***	0.034 (0.016)**
First in family	0.217 (0.032)***	0.010 (0.001)***	a	a
Covariates				
Male	-0.012 (0.045)	-0.001 (0.002)	0.012 (0.079)	0.001 (0.004)
Mature age	0.296 (0.054)***	0.014 (0.002)***	0.308 (0.069)***	0.016 (0.004)***
Mode: internal	-0.222 (0.050)***	-0.011 (0.003)***	-0.035 (0.292)	-0.002 (0.015)
Mode: mixed	-0.059 (0.072)	-0.003 (0.004)	0.004 (0.212)	0.000 (0.011)
Attend full time	-0.720 (0.057)***	-0.040 (0.004)***	-0.270 (0.117)**	-0.015 (0.007)**
Combined degree	-0.579 (0.080)***	-0.023 (0.003)***	0.182 (0.178)	0.010 (0.010)
At risk	1.285 (0.044)***	0.076 (0.003)***	0.415 (0.072)***	0.023 (0.004)***
Overall experience	-0.307 (0.042)***	-0.015 (0.002)***	-0.169 (0.073)**	-0.009 (0.004)**
Clusters	39		39	
Observations	103,213		69,576	
Pseudo R ²	0.094		0.038	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students.

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D15*Estimation results for dropout model 2*

	Commencing Coeff.	AME	Later year Coeff.	AME
Equity groups				
ATSI	0.082 (0.141)	0.004 (0.007)	0.124 (0.174)	0.007 (0.009)
NESB	-0.466 (0.090)***	-0.019 (0.003)***	0.252 (0.133)*	0.014 (0.008)*
Disability	0.098 (0.052)*	0.005 (0.003)*	0.169 (0.085)**	0.009 (0.005)*
Women in STEM	-0.005 (0.082)	0.000 (0.004)	-0.059 (0.125)	-0.003 (0.006)
Low SES	0.069 (0.031)**	0.003 (0.001)**	-0.118 (0.058)**	-0.006 (0.003)**
Regional/remote	0.057 (0.059)	0.003 (0.003)	0.594 (0.222)***	0.034 (0.016)**
First in family	0.237 (0.034)***	0.011 (0.002)***	a	a
Covariates				
Male	-0.048 (0.042)	-0.002 (0.002)	0.017 (0.078)	0.001 (0.004)
Mature age	0.288 (0.055)***	0.014 (0.002)***	0.328 (0.069)***	0.017 (0.004)***
Mode: internal	-0.188 (0.051)***	-0.009 (0.003)***	-0.035 (0.290)	-0.002 (0.015)
Mode: mixed	-0.036 (0.084)	-0.002 (0.004)	0.000 (0.212)	0.000 (0.011)
Attend full time	-0.713 (0.057)***	-0.041 (0.004)***	-0.263 (0.118)**	-0.014 (0.007)**
Combined degree	-0.642 (0.081)***	-0.025 (0.003)***	0.153 (0.181)	0.008 (0.010)
At risk	b	b	b	b
Overall experience	-0.778 (0.036)***	-0.045 (0.003)***	-0.287 (0.078)***	-0.015 (0.004)***
Clusters	39		39	
Observations	105,123		70,807	
Pseudo R ²	0.057		0.036	
Controls				
Study area (20)	Yes		Yes	

^a First in family is not available for later year students. ^b Not included.

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

Table D16*Estimation results for WAM models*

	Commencing	Later year
Equity groups		
ATSI	-0.412 (0.107)***	-0.208 (0.073)**
NESB	-0.162 (0.048)***	-0.286 (0.027)***
Disability	-0.189 (0.034)***	-0.108 (0.026)***
Women in STEM	0.022 (0.051)	-0.043 (-1.310)
Low SES	-0.141 (0.027)***	-0.100 (0.017)***
Regional/remote	0.054 (0.045)	0.099 (0.020)***
First in family	-0.114 (0.019)***	a
Covariates		
Male	-0.091 (0.042)*	-0.071 (0.024)**
Mature age	0.176 (0.067)**	0.082 (0.043)*
Mode: internal	0.089 (0.067)	0.250 (0.159)
Mode: mixed	-0.094 (0.083)	0.195 (0.173)
Attend full time	-0.174 (0.086)*	0.066 (0.062)
Combined degree	0.175 (0.039)***	0.053 (0.031)
At risk	-0.277 (0.022)***	-0.191 (0.020)***
Overall experience	0.297 (0.022)***	0.109 (0.020)***
Clusters	13	13
Observations	35,937	24,234
Pseudo R ²	0.075	0.078
Controls		
Study area (20)	Yes	Yes

^a First in family is not available for later year students.

*** = significant at $p < 0.01$, ** = significant at $p < 0.05$, * = significant at $p < 0.10$

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