

# Student Satisfaction and Academic Outcomes of Disadvantaged Students in Australian Higher Education

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- Changes in the Australian higher education landscape
  - Bradley (2008) review
  - Demand-driven system
- Bradley Review
  - Support for disadvantaged individuals in higher education
  - Increased rates of access and participation to higher education by equity group members
- Aim of improving socioeconomic outcomes of disadvantaged individuals through university study
  - Research (Coates and Edwards 2009; Li *et al.* 2015) into labour market performance of university students has found evidence of positive outcomes

# Background (cont)

- Evidence to suggest that a selection process during university exists
  - Department of Education and Training statistics showed that completion rates for disadvantaged groups were lower compared to non-disadvantaged
  - Lim (2015)
  - Li and Dockery (2015)
- As such, it is of value to look into reasons contributing to non-completion of university study
  - With a focus on drivers of non-completion for disadvantaged students



# Research aims

- Study questions:
  - Does student satisfaction (or experience) differ for disadvantaged students?
  - How does student satisfaction influence academic outcomes?
    - Dropout from university study
    - Risk of dropout from university study
    - Academic scores



# Student satisfaction literature

- Literature looking at student satisfaction issues spans several decades
- More recently, the rationale for student satisfaction studies relate to quality assurance in universities
- Data on student satisfaction is available in several countries, and are used to construct rankings of university experience
  - Australia - Good Universities Guide
  - UK - The Times Higher Education student experience ranking



# Determinants of student satisfaction

- A UK study by Lenton (2015) found the following determinants of satisfaction:
  - Fields of study
  - Resource levels (such as staff-student ratios)
  - Broader measures of resourcing, such as total expenditure for the university or academic staff salaries were not influential factors
- A Turkish study by Zineldin et al. (2011) found that quality of university infrastructure was important, as was academic atmosphere
- Soria, Stebleton and Huesman (2013) found that US university students from more disadvantaged SES backgrounds reported lower satisfaction, due to lower sense of belonging and academic integration issues
- Social integration was found to be more challenging for students from disadvantaged backgrounds, including low SES (Soria, Stebleton and Huesman 2013), minority ethnicities and foreign students (Brown and Jones 2011) and students with disabilities (Reed, Kennett and Emond 2015).

# Determinants of dropout

- Influenced by students' background, including SES, place of residence, organisational factors (Bean 1980) and academic and social integration (Tinto 1975)
- Tinto (1975) highlighted the distinction between academic failure and non-academic dropout
- Linked to engagement with faculty and other students (Hoffman et al. 2002) and conflicting work commitments which could be indicative of financial need (Willcoxson et al. 2011; Leveson et al. 2013)
- Different reasons found to influence attrition at different stages of academic study
- Student experience has been found to be a prominent influence on degree completion (Yorke 2000; Leveson, McNeil and Joiner 2013)

# Satisfaction and academic marks

- A number of studies have found that student satisfaction exerts a positive influence on academic performance, such as test scores (Bean and Bradley 1986; Pike 1991 and Grayson 2004)



- University Experience Survey (UES), 2013 and 2014
  - National survey of commencing and later-year undergraduate students studying onshore in Australia
  - Covers both public and private universities
  - Administered as a stratified random sample, with strata defined on the basis of institution and subject area
  - Survey sample frame drawn from Commonwealth Government's Higher Education Information Management Systems (HEIMS)
  - Invitation to participate sent via email, followed by multiple email reminders and one hardcopy letter
  - Administered entirely online, with participation incentivised by prize draws at each university
  - Pooled response rate of ~30%
  - Restricted sample to Australian domestic students (N = 193,464)

# Data (cont)

- UES contains data on demographics and university-study items of the individual students
- Students reported whether they had seriously considered leaving university in the survey year
- Focuses on aspects of higher education student experience that are measurable
  1. **Engagement with learning** at their institution
  2. Satisfaction with the **quality of teaching** they have experienced
  3. Satisfaction with the **learning resources** provided by their institution
  4. Satisfaction with the **support** they received at their institution
  5. Satisfaction with the **skills development** they experienced through their studies.



# Supplementary data sources

- UES data linked to data from the Higher Education Statistics collection
  - Via request to the Department of Education and Training
  - SES, residential home postcode and retention status
- Linkage to university academic records
  - Requests for Weighted Average Marks data linkage to UES sent to Heads of Planning and Statistics (or equivalent) in all 40 universities who participated in the UES
  - Approval granted and data provided from 13 universities



# Equity group definitions

- **Aboriginal and Torres Strait Islander students:** identifying as Aboriginal and/or Torres Strait Islander
- **Students from Non-English speaking backgrounds:** language other than English at their permanent home residence
- **Students with disability:** disability, impairment or long term medical condition that may affect their studies
- **Women in STEM fields of study:** female students enrolled in a course within the broad study fields of natural and physical sciences, IT, or engineering
- **Low SES students:** students' postcode of permanent home residence, with the SES value derived from the ABS Socio-Economic Indexes for Areas (SEIFA) Index of Education and Occupation for postal areas (ABS 2013).
- **Students from regional and remote Australia:** postcode of permanent home residence is not within a *Major City of Australia*, (ABS Australian Standard Geographical Classification – Remoteness Area Correspondences, 2006)
- **Students who are first in their family to complete higher education:** defined based on the highest educational attainment of students' first and/or second parent/guardian. 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.



# Academic outcomes variables

- Dropout
  - 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; 0 otherwise
- At-risk of dropout
  - 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; zero if they responded ‘no’
- WAM
  - 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.
  - standardised to account for different grading schemes in each university
  - hence, individual student WAMs are expressed in standard deviations to the institutional mean WAM in a year, where mean is = 0

# Estimating equations

- Binary logistic regression models for models relating to student satisfaction; at-risk of leaving university; dropout
- Expressed as:

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

- 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  $i$ . Clustered standard errors were estimated based on the university attended.

## Estimating equations (cont)

- For the continuous dependent variable, WAM, linear regression models of the following form

$$Y_i = \beta_0 + \beta E_i + \beta X_i + \varepsilon_i,$$

- where  $Y_i$  is the standardised WAM for observation  $i$ ,  $\varepsilon_i$  is the error term, and  $E_i$  and  $X_i$  are as previously defined. Standard errors are again clustered at the university level



# Results

# AMEs for Student Satisfaction Models

Commencing Students	Learner engagement	Teaching quality	Learning resources	Student support	Skills development	Overall edu. experience
<b>ATSI</b>	-0.016 (0.015)	-0.008 (0.011)	0.011 (0.009)	0.040** (0.016)	0.011 (0.011)	-0.010 (0.010)
<b>NESB</b>	-0.020*** (0.005)	-0.036*** (0.005)	-0.027*** (0.005)	-0.022*** (0.006)	-0.002 (0.005)	-0.058*** (0.003)
<b>Disability</b>	-0.007 (0.008)	-0.020*** (0.006)	-0.027*** (0.006)	0.054*** (0.007)	-0.032*** (0.007)	-0.026*** (0.006)
<b>Women in STEM</b>	0.032*** (0.009)	0.004 (0.005)	0.012** (0.005)	0.020** (0.008)	-0.002 (0.008)	0.003 (0.005)
<b>Low SES</b>	0.008 (0.005)	0.004 (0.004)	0.006 (0.004)	0.020*** (0.005)	0.013*** (0.004)	0.001 (0.004)
<b>Regional/remote</b>	0.012 (0.008)	0.002 (0.005)	0.001 (0.007)	0.017** (0.007)	0.001 (0.006)	0.002 (0.007)
<b>First in family</b>	-0.010*** (0.004)	0.004 (0.003)	0.008*** (0.003)	0.015*** (0.006)	0.013*** (0.003)	0.001 (0.003)
<b>Clusters</b>	39	39	39	39	39	39
<b>Obs</b>	105,072	104,880	96,779	86,205	104,227	105,123
<b>R<sup>2</sup></b>	0.054	0.010	0.012	0.005	0.011	0.010
<b>Prob&gt;chi2</b>	0.000	0.000	0.000	0.000	0.000	0.000

Controlled for Gender, Age group, Attendance mode, Attendance type, Combined degree and Study area

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

# AMEs for Student Satisfaction Models

Later Year Students	Learner engagement	Teaching quality	Learning resources	Student support	Skills development	Overall edu. experience
<b>ATSI</b>	0.011 (0.018)	-0.007 (0.015)	0.021 (0.014)	0.045** (0.019)	0.011 (0.012)	-0.005 (0.015)
<b>NESB</b>	-0.007 (0.007)	-0.023*** (0.007)	-0.009 (0.006)	0.010 (0.008)	-0.013* (0.007)	-0.032*** (0.008)
<b>Disability</b>	-0.006 (0.007)	-0.034*** (0.008)	-0.033*** (0.009)	0.044*** (0.014)	-0.041*** (0.007)	-0.043*** (0.009)
<b>Women in STEM</b>	0.023* (0.012)	0.010 (0.015)	0.010 (0.010)	0.020 (0.015)	-0.003 (0.011)	-0.002 (0.012)
<b>Low SES</b>	-0.009* (0.005)	0.004 (0.004)	0.012** (0.005)	0.019*** (0.006)	0.010** (0.004)	-0.003 (0.005)
<b>Regional/remote</b>	-0.006 (0.007)	-0.006 (0.005)	-0.021* (0.012)	0.015 (0.012)	-0.007 (0.005)	-0.014* (0.007)
<b>First in family</b>	-	-	-	-	-	-
<b>Clusters</b>	39	39	39	39	39	39
<b>Obs</b>	70,767	70,581	63,855	58,742	70,235	70,807
<b>R<sup>2</sup></b>	0.057	0.018	0.014	0.006	0.018	0.013
<b>Prob&gt;chi2</b>	0.000	0.000	0.000	0.000	0.000	0.000

Controlled for Gender, Age group, Attendance mode, Attendance type, Combined degree and Study area

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

# Student satisfaction result highlights

- Positive findings for students from some equity groups
- Room for improvement in addressing student satisfaction issues for NESB students and students with disability
- Policies to address student satisfaction issues might be more effective for students in earlier stages of their study



# AMEs for Models of Students at-risk of Dropout

	Commencing Students	Later Year Students
<b>ATSI</b>	0.062*** (0.013)	0.050*** (0.016)
<b>NESB</b>	-0.026*** (0.007)	0.001 (0.004)
<b>Disability</b>	0.048*** (0.006)	0.073*** (0.009)
<b>Women in STEM</b>	0.007 (0.007)	0.011 (0.009)
<b>Low SES</b>	0.007* (0.004)	0.013*** (0.005)
<b>Regional/remote</b>	0.018*** (0.005)	0.020*** (0.004)
<b>First in family</b>	0.015*** (0.003)	-
<b>Clusters</b>	39	39
<b>Obs</b>	103,522	69,806
<b>R<sup>2</sup></b>	0.008	0.020
<b>Prob&gt;chi2</b>	0.000	0.000

Controlled for Gender, Age group, Attendance mode, Attendance type, Combined degree and Study area

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

# At-risk of dropout model highlights

- All equity groups are at higher risk of dropout, except NESB students
- In particular, ATSI and students with disability are more likely to consider leaving university
- Students from low SES backgrounds, regional/remote areas, and first in family are also more likely to consider leaving university, albeit at low magnitudes



# AMEs for Models of Reasons for Considering Leaving University

Commencing Students	Financial Health	Health or Stress	Academic/ Institutional	Social and Personal	Workload	Disposition
<b>ATSI</b>	0.120*** (0.026)	0.009 (0.025)	-0.018 (0.028)	0.073*** (0.022)	0.058** (0.024)	-0.065*** (0.022)
<b>NESB</b>	-0.077*** (0.013)	-0.054*** (0.012)	0.062*** (0.012)	-0.015 (0.012)	-0.066*** (0.011)	-0.045*** (0.015)
<b>Disability</b>	0.035*** (0.011)	0.220*** (0.011)	-0.003 (0.013)	0.003 (0.014)	0.010 (0.016)	-0.043*** (0.012)
<b>Women in STEM</b>	-0.001 (0.019)	-0.020 (0.020)	-0.002 (0.020)	-0.043** (0.020)	-0.046*** (0.016)	0.034 (0.023)
<b>Low SES</b>	0.041*** (0.009)	0.025*** (0.009)	-0.020* (0.010)	0.025** (0.011)	0.008 (0.010)	-0.003 (0.011)
<b>Regional/remote</b>	0.052*** (0.008)	0.006 (0.010)	-0.023** (0.011)	-0.007 (0.009)	0.005 (0.012)	-0.045*** (0.011)
<b>First in family</b>	0.054*** (0.009)	0.026*** (0.006)	-0.022*** (0.008)	0.012 (0.008)	0.058*** (0.007)	-0.022** (0.009)
<b>Clusters</b>	39	39	39	39	39	39
<b>Obs</b>	19,324	19,324	19,324	19,324	19,324	19,324
<b>R<sup>2</sup></b>	0.043	0.036	0.009	0.010	0.021	0.091
<b>Prob&gt;chi2</b>	0.000	0.000	0.000	0.000	0.000	0.000

Controlled for Gender, Age group, Attendance mode, Attendance type, Combined degree and Study area

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

# AMEs for Models of Reasons for Considering Leaving University

Later Year Students	Financial Health	Health or Stress	Academic/ Institutional	Social and Personal	Workload	Disposition
<b>ATSI</b>	-0.026 (0.041)	0.037 (0.049)	-0.093** (0.047)	0.069** (0.032)	0.017 (0.043)	-0.092** (0.039)
<b>NESB</b>	-0.026* (0.013)	-0.047*** (0.018)	-0.007 (0.018)	-0.001 (0.017)	-0.013 (0.014)	-0.006 (0.021)
<b>Disability</b>	0.017 (0.023)	0.159*** (0.019)	0.027 (0.019)	0.004 (0.018)	0.006 (0.017)	-0.044** (0.017)
<b>Women in STEM</b>	-0.020 (0.030)	0.016 (0.027)	0.019 (0.027)	0.004 (0.029)	-0.055** (0.026)	-0.002 (0.023)
<b>Low SES</b>	0.032** (0.013)	0.019 (0.014)	-0.007 (0.010)	0.018 (0.012)	0.010 (0.013)	-0.001 (0.012)
<b>Regional/remote</b>	0.053*** (0.014)	-0.005 (0.012)	-0.021 (0.017)	-0.010 (0.010)	0.004 (0.012)	-0.004 (0.012)
<b>First in family</b>	-	-	-	-	-	-
<b>Clusters</b>	39	39	39	39	39	39
<b>Obs</b>	10,382	10,382	10,382	10,382	10,382	10,382
<b>R<sup>2</sup></b>	0.023	0.032	0.013	0.009	0.017	0.050
<b>Prob&gt;chi2</b>	0.000	0.000	0.000	0.000	0.000	0.000

Controlled for Gender, Age group, Attendance mode, Attendance type, Combined degree and Study area

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

# Model of reasons for at-risk results highlights

- Financial and health reasons were very influential in determining equity students' consideration of leaving university, except for NESB students
- Disposition towards study was influential in decreasing equity students' consideration of leaving university



# AMEs for Models of Dropout

	Commencing Students	Later Year Students
<b>ATSI</b>	-0.002 (0.007)	0.006 (0.009)
<b>NESB</b>	-0.015*** (0.003)	0.013 (0.008)
<b>Disability</b>	0.001 (0.003)	0.008 (0.005)
<b>Women in STEM</b>	-0.001 (0.004)	-0.003 (0.006)
<b>Low SES</b>	0.002 (0.001)	-0.006** (0.003)
<b>Regional/remote</b>	0.002 (0.003)	0.034** (0.016)
<b>First in family</b>	0.010*** (0.001)	a
<b>At risk</b>	0.076*** (0.003)	0.023*** (0.004)
<b>Overall experience</b>	-0.015*** (0.002)	-0.009** (0.004)
<b>Clusters</b>	39	39
<b>Obs</b>	105,123	70,807
<b>R<sup>2</sup></b>	0.057	0.036
<b>Prob&gt;chi2</b>	0.000	0.000

Controlled for Gender, Age group, Attendance mode, Attendance type, Combined degree and Study area

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

# Model of dropout results summary

- Relatively few statistically significant effects on dropout for equity group membership
- For commencing sample, NESB students were less likely to dropout, by 1.5% while FiF students were more likely to dropout, by 1%
- For later year sample, regional/remote students were more likely to dropout, by 3.4%
- At-risk students were more likely to dropout, particularly at the early stage of their degree



# WAM Models

	Commencing Students	Later Year Students
<b>ATSI</b>	-0.412*** (0.107)	-0.208** (0.073)
<b>NESB</b>	-0.162*** (0.048)	-0.286*** (0.027)
<b>Disability</b>	-0.189*** (0.034)	-0.108*** (0.026)
<b>Women in STEM</b>	0.022 (0.051)	-0.043 (-1.310)
<b>Low SES</b>	-0.141*** (0.027)	-0.100*** (0.017)
<b>Regional/remote</b>	0.054 (0.045)	0.099*** (0.020)
<b>First in family</b>	-0.114*** (0.019)	-
<b>At risk</b>	-0.277*** (0.022)	-0.191*** (0.020)
<b>Overall experience</b>	0.297*** (0.022)	0.109*** (0.020)
<b>Clusters</b>	13	13
<b>Obs</b>	35,937	24,234
<b>R<sup>2</sup></b>	0.075	0.078
<b>Prob&gt;chi2</b>	-0.412*** (0.107)	-0.208** (0.073)

Controlled for Gender, Age group, Attendance mode, Attendance type, Combined degree and Study area

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

# Model of WAM result highlights

- In commencing sample, all equity groups except Women in STEM and regional/remote performed poorer academically, with effect size ranging from 0.1 to 0.4 standard deviation units, below their institutional mean
- In later sample, ATSI, NESB, students with Disability, and low SES students were still performing relatively poorer, although the effect sizes were reduced compared to commencing sample
  - Regional/remote students performed marginally better compared to students in metropolitan areas
- Being at-risk of dropout is associated with an average WAM below the institutional mean
- Being satisfied with overall quality of educational experience is associated with a better than average mean WAM

# Discussion

- Modest effects on student satisfaction for equity group students, with even more muted effects going from commencement to later year of study
  - Lower levels of satisfaction across most dimensions for NESB and students with disability
- Apart from Women in STEM and NESB students, most other equity group students had larger probabilities of being at-risk of dropout
  - In particular, ATSI, students with disability and regional/remote have sizable increased probabilities of being at-risk of dropout, and were persistent across stages of study

## Discussion (cont)

- Financial and health reasons were important determinants of being at-risk of dropout, while encouragingly, disposition towards study was a positive influence against equity group students being at-risk of dropout
- Students from most equity groups performed poorly relative to their counterparts, especially for commencing students.

# Conclusion

- Most equity group students are as satisfied as their privileged counterparts with their university education, although future research and practice could focus on NESB and students with disability who were less satisfied
- Most equity group students were also at-risk of dropout, with financial and health identified as broad reasons behind the risk of dropout
- Strong need to provide support to equity students from an early stage of study
- Support for equity group students will need to combine efforts from beyond higher education, particularly in terms of financial and health support

# Acknowledgements



- The authors acknowledge funding support from the National Centre for Student Equity in Higher Education
- Data provision and support from the Department of Education and Training, and the data offices of the 13 universities who participated in this study are gratefully acknowledged.

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