



Equity off course: Mapping equity access across courses and institutions

Beni Cakitaki, Michael Luckman and Andrew Harvey

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Beni Cakitaki, Griffith University, formerly La Trobe University

Michael Luckman, La Trobe University

Andrew Harvey, Griffith University, formerly La Trobe University

National Centre for Student Equity in Higher Education
Tel: +61 8 9266 1743
Email: ncsehe@curtin.edu.au
ncsehe.edu.au
Building 602 (Technology Park)
Curtin University
Kent St, Bentley WA 6102
GPO Box U1987, Perth WA 6845

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Abbreviations

ABS	Australian Bureau of Statistics
ASCED	Australian Standard Classification of Education
ASGS	Australian Statistical Geography Standard
ATAR	Australian Tertiary Admission Rank
ATN	Australian Technology Network of Universities
BAME	Black, Asian and Minority Ethnicity
CHEEDR	Centre for Higher Education Equity and Diversity Research (La Trobe University)
DESE	Australian Government Department of Education, Skills and Employment
EAS	Equity Access Scheme
GAMSAT	Graduate Medical School Admissions Test
Go8	Group of Eight
GOS	Graduate Outlook Survey
HEIMS	Higher Education Information Management System
HEPPP	Higher Education Participation and Partnerships Program
HILDA	Household, Income and Labour Dynamics in Australia
IRLSAF	Indigenous, Regional and Low SES Attainment Fund
IRU	Innovative Research Universities
IT	Information Technology
LSAY	Longitudinal Surveys of Australian Youth
MET	Medical Education and Training
NESB	Non-English Speaking Background
NGU	New Generation Universities
POLAR	Participation of Local Areas
QILT	Quality Indicators for Learning and Teaching
RHMT	Rural Health Multidisciplinary Training Program
RUN	Regional Universities Network
SEIFA	Socio-Economic Indexes for Areas

SEAS	Special Entry Access Scheme
SES	Socioeconomic Status
STEM	Science, Technology, Engineering and Mathematics
TAC	Tertiary Admissions Centre
TAFE	Technical and Further Education
UA	Universities Australia
UAC	University Admissions Centre
UK	United Kingdom
US	United States
VTAC	Victorian Tertiary Admissions Centre
WGEA	Workplace Gender Equality Agency
WINTA	Women in Non-Traditional Areas of Study

Executive summary

This report examines student equity stratification by field of education and institution. A large focus of the report is on student equity across *selective institutions and disciplines*, which we take to mean those that require a high achievement threshold for entry. Unequal representation within selective institutions and disciplines carries consequences for individuals, universities, professions, and the broader society. For individuals, access to selective institutions and disciplines is typically correlated with higher incomes, and perceptions of a better fit between qualifications and employment. For universities, raising student diversity within selective courses is important for both equity and learning quality. At the broader professional and societal levels, research suggests diverse graduate cohorts are critical for maximising economic efficiency and social cohesion (Wakeling, 2010).

The report examines two key research questions:

1. To what extent are equity group students underrepresented within selective study areas and institutions?
2. What are the course choices of high ATAR students from equity groups, and how might these choices inform our understanding of equity within selective disciplines and institutions?

Our analysis uses national student enrolment data released to universities by the Department of Education, Skills and Employment (DESE) under an agreement negotiated by Universities Australia. The study analyses patterns of course and institutional stratification for six equity groups, including Indigenous students, students from non-English speaking backgrounds (NESB), students from low socioeconomic status (SES) backgrounds, students from regional and remote areas, students with disability, and female students.

The sample is restricted to include only domestic students admitted on the basis of their secondary school results and commencing a bachelor course.

In our analysis of equity group representation across courses and institutions, our findings confirm ongoing challenges within the most selective institutions, with substantial access gaps between equity and non-equity groups. Relative to their overall representation in our sample, low SES, regional and remote, and Indigenous students were underrepresented at the selective Group of Eight (Go8) universities.

There is some variability between courses though, with some selective courses admitting larger shares of equity students than others. Students from low SES backgrounds were underrepresented in medicine courses. However, reflecting Government and institutional policies to improve the diversity of the medical workforce, medicine had good representation from regional and remote students, Indigenous students, and NESB students. Dentistry had above average representation for low SES and NESB students, and female students, yet Indigenous students, students with disability, and students from regional and remote areas were underrepresented. While high status allied health courses in rehabilitation and pharmacy had poor representation of Indigenous students, both had access rates for regional and remote students, and female students that were above the overall averages. Law, a traditionally high-status course, had relatively good representation for low SES students, regional and remote students, Indigenous students, and female students, while NESB students and students with disability were underrepresented.

Our study confirmed the long-acknowledged underrepresentation of women in male-dominated study areas. Despite accounting for 59 per cent of students in our sample, female students constituted just 15.6 per cent of students in computer and information systems courses, 16.8 per cent in engineering courses, and less than half of the share of students in architecture and built environment courses, and business and management courses.

Low SES students and NESB students were underrepresented in creative arts and communications courses. While those courses are less selective, they are often pathways to careers in arts, media, and cultural professions, and so this has implications for the lack of diversity in those industries.

We also investigated the enrolment patterns of students who we term as **high achieving** or **high ATAR** (Australian Tertiary Admission Rank) students – those with ATARs higher than 90. Students with ATARs above 90 meet the achievement threshold for entry to most courses in Australian higher education, so compared to students with lower ATARs, enrolment patterns among this cohort are more likely to reflect course choices without an ATAR constraint. The study is therefore primarily focussed on school leavers, and those whose basis of admission is ATAR. Further research would be required to explore mature age access and patterns to selective courses, including the various contextual admissions offers made across the sector that take non-academic experiences and achievements into account. Such research is critical given the prevalence and increasing number of both mature age students and contextual admissions schemes. Nevertheless, ATAR remains the primary admissions model for the most selective courses in Australia. Understanding the choices of high ATAR students is itself important to improving student equity and diversity within those courses. When we restrict the sample to high ATAR students, we found that the enrolment choices students made across courses and institutions differed in interesting ways between equity and non-equity groups.

High ATAR students from all groups, equity and non-equity, were more likely to commence at Group of Eight (Go8) universities than other universities, yet we found interesting differences in the relative shares between equity and non-equity cohorts. Just over half of high achieving low SES students commenced at a Go8 university compared to more than two thirds of high achieving medium and high SES students. High achieving regional and remote students were much less likely to commence at Go8 universities than metropolitan students. Similarly, Indigenous students with high ATARs were much less likely to enrol at Go8 universities than non-Indigenous students.

Some high achieving equity groups were more likely to enrol at a Go8 university than their non-equity counterparts. Three quarters of high achieving students from non-English speaking backgrounds commenced at a Go8 university. High ATAR students with a disability were also slightly more likely to commence at a Go8 university than students without a disability.

Across courses, low SES high achievers were more likely to select health services and teacher education courses than their counterparts. Regional high achievers were also more likely to select health services and teacher education than their counterparts, as well as nursing. Indigenous high achievers were more likely than others to enrol in humanities courses, science and mathematics, law, and engineering. Equally notably, female high achievers and those with a declared disability are much more likely to choose humanities courses than their counterparts. In these patterns lie lessons for institutions, professions, and governments.

Recommendations

Government

1. That the Department of Education, Skills and Employment (DESE) report equity participation and achievement data for the official “Fair Chance for All” equity categories, both by field of education and by the 21 QILT study areas.
2. That, where the Department of Health has set equity targets for Indigenous and regional and remote participation in medical training and allied health courses, they also include targets for low SES students.
3. That DESE reform the existing Access and Participation Plans by adopting the UK system of making institutions set equity targets and evaluate progress towards those targets. Such an approach could be connected to the Performance Based Funding for the Commonwealth Grant Scheme or the awarding of the Indigenous, Regional and Low-SES Attainment Fund.
4. That the DESE commissions a review into the representation of women in male dominated study areas, with the object of setting participation targets in the terms of reference.

Institutions

5. That individual institutions monitor and track equity participation rates by course and discipline as part of their standard evaluation and monitoring processes.
6. That institutions set themselves targets to increase equity participation in their most selective courses.
7. Given lower achievement is likely to be a major factor in the underrepresentation of students, that institutions employ an achievement focus as part of their school outreach work.
8. That approaches to outreach account for career stereotypes and expectation differences by class, race, gender and other categories. Effort is required to ensure that all students are receiving the information, advice, and guidance required to make an informed choice when applying for a course.

Equity researchers

9. That equity researchers conduct further research on the course choices and motivations of high achieving equity students.

Introduction

This report maps course and institutional stratification across Australian public universities. While equity group participation has improved in aggregate, students from marginalised cohorts remain underrepresented in the fields of education which deliver the greatest private financial returns (Cherastidtham & Norton, 2014). Gender workforce inequalities, for instance, are aggravated by the fact that female students are greatly underrepresented in more lucrative STEM (Science, Technology, Engineering and Mathematics) courses (Li et al., 2016; Norton & Cakitaki, 2016). Regional and remote students and students from low socioeconomic status (SES) backgrounds are more likely to study vocational courses in education and health fields but are underrepresented in traditional selective professions (Bennett et al., 2015). Students from non-English speaking backgrounds (NESB) are much less likely to be enrolled in the social sciences and creative arts. Students with a disability are less likely to enrol in engineering or commerce courses, and similarly for Indigenous students (Bennett et al., 2015).

The report is centred around two key research questions:

1. To what extent are equity group students underrepresented within selective study areas and institutions?
2. What are the course choices of high ATAR students from equity groups, and how might these choices inform our understanding of equity within selective disciplines and institutions?

We begin by providing a background section on equity and selectivity, including reference to the international literature. From the literature, we identified course and institutional stratification as a product of the expansion of higher education attainment. As more of the population gains access to higher education, other forms of distinction and status become important, such as course status and institutional selectivity. In the Australian context, we see that the endowment of status tends to be mediated through the ATAR (Australian Tertiary Admission Rank). Equity group students likely to face barriers to educational opportunity in earlier years of schooling have lower achievement levels, and so are less likely to meet the achievement thresholds required to gain entry to the most selective courses and institutions. Yet the literature shows that high achieving equity students have unique strengths, experiences, expectations and aspirations that tend to shape different course choices to those of non-equity students. These same traits make equity students an asset for selective institutions and high-status courses.

The analysis section of this report covers six equity groups, including: Indigenous students, students from non-English speaking backgrounds (NESB), students from low SES backgrounds, students from regional and remote areas, students with disability, and female students. We utilise national enrolment data for Australian public universities and restrict the sample to include only domestic students commencing a bachelor course who were admitted on the basis of their secondary school results.

Our quantitative analysis first maps equity access rates across institutions and courses, using the aggregated “study areas” framework developed by the Quality Indicators for Learning and Teaching (QILT) survey reports. We analyse shares of high ATAR students – those students with an ATAR higher than 90 – to determine the most selective institutions and courses. The second part of our analysis further restricts the sample to only include high ATAR students. From this, we examine the course choices of high ATAR students, looking specifically at differences in course choice by equity group membership.

Finally, we discuss the implications of our findings for government, institutions, and the sector generally, with reference to policy recommendations. We close by outlining some limitations of our study and offer avenues of inquiry for future research.

Background

For at least the past 30 years, there has been a policy focus on equitable access to higher education in Australia. The 1990 report, “A Fair Chance for All”, established disadvantage in higher education as a public policy problem and identified six equity groups on the basis of their under-representation (Martin, 2016). This priority was further elevated by the Bradley Review in 2008 and the subsequent response from the Australian Government, which included equity performance targets, the introduction of the Demand Driven System of Student Funding, and the Higher Education Participation and Partnerships Program (HEPPP) (Australian Government, 2009; Birrell & Edwards, 2009; Bradley et al., 2008). Together, these reforms contributed to an increase in the participation rates of many equity cohorts (Kemp & Norton, 2014; Koshy, 2020; Productivity Commission, 2019). Government statistics show that there has been tremendous growth in the number of Indigenous students and students with disability, while the number of students from low SES areas and women in non-traditional areas have also increased faster than the sector generally (Koshy, 2020, p. 6). However, significant underrepresentation amongst the six identified equity groups and other disadvantaged cohorts remain an issue (Harvey et al., 2016).

The increased focus on equity in higher education could be seen as a result of fundamental changes to Australia’s higher education system. Trow (1972; 2007), in his seminal work on higher education systems, reasoned that expansion of higher education systems is a feature of modernisation, and further, that the expansion of higher education systems would necessarily change their purpose, functions, pedagogy, and attitudes to access. The expansion of Australia’s higher education system has seen it rapidly progress towards a “universal” system according to Trow’s typology of “elite”, “mass” and “universal” participation, defined by more than 50 per cent of the population progressing to higher education (Probert, 2016; Trow, 2007). This expansion has been both accompanied and motivated by an increased focus on equity and access.

Despite its expansion, higher education remains stratified. Bourdieu, for instance, argued that higher education systems fundamentally reflect the values of the broader society and serve to reinforce stratification (Bourdieu & Passeron, 1977). A number of other scholars have argued that inequality is not necessarily reduced or eliminated as higher education systems expand; it is instead redefined (Bexley, 2016; Gale et al., 2010; Marginson, 2016; Teese, 2007). As Teese (2007, p. 40) notes, the shift to high participation education systems has only served to “shift upwards the basis on which inequalities are expressed rather than narrowing them”. Therefore, it is possible that the current focus on the “participate or not” dichotomy (Bexley, 2016) could obfuscate other vital dimensions of underrepresentation in higher education.

Drawing on the earlier work of Fred Hirsch (1995), Marginson contends that higher education is a positional good whose value (social and economic) is defined by its relative scarcity (Marginson, 2016). This perspective draws on the economic theory that a university education acts as a filter (Arrow, 1973) or signal (Spence, 1973): a credential that allows employers to efficiently sort and rank job applicants where there is otherwise imperfect information about their capabilities. As Spence (1973) observed, “increases in [the quantity of education] improve the quality of the sorting not one bit.” As the relative advantage of simply having a degree is diminished in a universal higher education system, prestige and status is instead conferred from degrees in certain disciplines, course types or institutions. In effect, this creates a feedback loop where individuals are constantly searching for comparative advantage within the higher education system (Bexley, 2016).

Stratification is not confined to higher education but instead reflects the broader inequality in the education system, for instance, the divide between private and public schools or between well-resourced public schools in middle class areas and schools in marginalised areas (Gonski, 2011). In the higher education system, a veneer of meritocracy is maintained

by the selection of students based on ATAR, but this overlooks the fact that student achievement is in turn shaped by the lifelong experiences of social inequality. Previous research confirms, for example, that ATAR itself is correlated with SES, and relatedly, that public school students “outperform” their ATAR at university, relative to private school students who enter with the same ATAR (Cardak & Ryan, 2006; Harvey & Burnheim, 2013; UAC, 2021) Therefore, so-called “selective” university courses are overwhelmingly occupied by those from private schools or the top socioeconomic quintile (Teese, 2007).

The nature of stratification within higher education systems was initially presented by Bourdieu as a bifurcation between selective and recruiting institutions. In a massified higher education sector, enrolments in selective institutions would remain constrained and rationed, while recruiting institutions would expand their enrolments but see a marginal decline in their value (Bourdieu, 1988; Marginson, 2016). Marginson (2016), among others (Charles & Bradley, 2002; Lee, 2014; Teese, 2007; Triventi, 2013) emphasized that stratification exists in two separate dimensions: vertical and horizontal stratification. Vertical stratification is based on the relative status of institutions while horizontal stratification is based on the discipline of study.

We would argue that there is, in fact, a third dimension of stratification in higher education based on course level, although this is not a focus of this present study. A number of scholars have examined credential inflation and its close connection to the reproduction of social inequality (Brown, 2001; Kariya, 2011). In Australia, postgraduate enrolments now represent around one quarter of university enrolments (Department of Education and Training, 2019), a dramatic increase from the time when *A Fair Chance for All* was written. This change represents one of the weaknesses of the extant student equity model in Australia, which was exclusively focussed on undergraduate access, since inequity does not simply ‘wash out’ through the pipeline (Bell & May, 2016; Wakeling & Kyriacou, 2010). The rise in postgraduate enrolments is partly driven by many professional qualifications being shifted from bachelor level to postgraduate level: Teaching and Health qualifications are not uncommonly taught at Masters level, all professionally orientated courses are taught at Masters level at the University of Melbourne as part of the Melbourne Model, and Juris Doctor courses are becoming increasingly popular pathways to becoming a lawyer. A number of studies have highlighted that equity representation at postgraduate and higher degree research level are worse than they are at undergraduate level (Bell, 2016; Harvey & Andrewartha, 2013), and while improvement in undergraduate participation rates may be having a “trickle up” effect, the proportional gap in participation between disadvantaged and advantaged students remains stark (Grant-Smith, Irmer, & Mayes, 2020). While not specifically covered in our research, course level is a further important element of stratification.

Evidence of stratification in Australia

Empirical investigation of stratification in Australian higher education is surprisingly limited. Teese, (2007) using admissions centre data, was able to measure the nature of both vertical and horizontal stratification by ranking higher education courses into deciles based on average ATARs, and examined the breakdown of each decile by SES. For courses ranked in the higher academic achievement decile (overwhelmingly represented by medicine, law, and some health sciences at selective institutions), more than 40 per cent of students were from the highest SES quintile (and therefore 200 per cent over-represented), while only around 10 per cent of the cohort came from the lowest quintile (Teese, 2007, pp. 55-57).

Institutional stratification

While formal analysis of vertical stratification is comparatively rare, it is common to cluster institutions in statistical analysis according to their peak institutional groupings, although, these groupings are not necessarily as homogenous as is commonly assumed (Coates et al., 2013). These clusters include the research-intensive Group of Eight (Go8) universities; a vocationally focussed selection of universities called the Australian Technology Network (ATN); a group of multidisciplinary universities created in the 60s and 70s known as the Innovative Research Universities (IRU); a group of universities clustered primarily due to their location in regional/remote areas called the Regional Universities Network (RUN); and a number of unaligned institutions (Gale & Parker, 2013, p. 10).

Government data shows that during the years of the Demand Driven System of Student Funding, the sector grew rapidly. According to government statistics, the number of undergraduate domestic students enrolments increased by 70 per cent between 2008 (the year the Bradley Review was released) and 2019 (DESE, 2020b). Yet, analysis carried out by the National Centre for Student Equity in Higher Education (NCSEHE) found that the number of domestic undergraduate enrolments at Go8 institutions actually declined between 2014 and 2019 (Koshy, 2020). The participation rate for students from low socio-economic areas at Go8 institutions grew slightly from 8.9 per cent in 2014, to 9.7 per cent in 2019, but still remained substantially lower than the 27.1 per cent at RUN universities, 21.8 per cent for IRU, 17 per cent for ATN universities and 16 per cent for unaligned institutions (Koshy, 2020, p. 7). Similar trends are apparent amongst the Indigenous and regional equity categories. Underrepresentation of equity cohorts remains a significant issue in selective institutions.

Bexley (2016), in a paper on vertical stratification, argues that this differentiation between institution has at least partially been a policy objective of successive governments, who have argued that differentiation would lead to improved student choice and a better match to their skills and interests. However, the actual “landscape” of such a system has itself been largely unplanned, instead the institutional hierarchy that exists in Australia arises from a series of historical circumstances that led to Australia’s current higher education system.

Indeed, it is important to note that while our research of vertical stratification focuses on the hierarchy of public universities, there is a broader hierarchy within the higher education sector, with nearly 165 providers of higher education, including TAFEs and private providers (Bexley, 2016), and further, a hierarchy based on the higher education/vocational education divide (Teese, 2007). Non-university providers of higher education form a small but rapidly growing proportion of student enrolments, yet these providers still remain largely outside the student equity framework, including access to HEPPP funds (Brett et al., 2019).

Horizontal stratification

There is even less publicly available evidence of horizontal stratification by discipline than there is on institutional groupings, as the Australian Government does not publish differences in participation rates by field of education. There have been some studies of equity participation by individual fields, such as a recent study of equity in STEM fields by McMillan et al. (2021), which found that the proportion of disadvantaged students in STEM fields was roughly equivalent to the overall average, although they noted that disadvantaged students were less likely to have completed their qualification by age 25.

James et al. (2004), in their report on the analysis of equity groups in higher education, examined participation rates by broad field of education. They found that architecture, law, and creative arts disciplines had the lowest low SES representation, while agriculture, and education had the highest. When the broad fields of education were disaggregated, low SES participation rates were particularly low in high status disciplines such as medicine, dentistry,

law and economics (James et al., 2004, p. 15). Similar patterns were apparent for regional students too.

Bennett et al. (2015), in their work on higher education equity interventions, included a breakdown of equity participation rates by discipline. The analysis found that not much had changed from the James et al. (2004) analysis. For instance, the participation ratio for low SES students was found to be dramatically lower in creative arts, architecture and building, and slightly lower in society and culture, management and commerce, and natural and physical sciences fields. Contrastingly, the participation ratio was nearly twice as high in the Education field compared to the sector wide figure and was slightly higher in the Health, IT, Agriculture and Engineering fields. Similar relationships were found amongst the other equity groups as well.

Yet, while the breakdown of equity participation rates by broad field of education demonstrates unevenness in participation across the disciplines, it is not specific enough to draw conclusions about the narrow and detailed fields of education that are most closely associated with high status or higher graduate outcomes. For instance, while the low SES participation rate for health is higher than the overall participation rate, it is largely a result of dramatically higher numbers of low SES students in Nursing and may not carry over to disciplines associated with higher status professions like medicine or high-status allied health fields like physiotherapy (James et al., 2004). We need clearer information regarding equity participation at the narrow or detailed field of education level in order to understand the extent of under-representation.

Relationship between stratification and student outcomes

Developing an improved understanding of stratification is vital if we are to ensure disadvantaged cohorts are able to benefit equally from obtaining a university qualification, with the most stark benefit being the substantial graduate wage premium (Cassells et al., 2012; Daly et al., 2015; Norton, 2012). Stratification in the higher education sector matters partly because the benefits derived from higher education study are not distributed evenly across the sector. There are, of course, non-financial reasons to consider stratification. For instance, unequal representation also affects the quality and diversity of professions. The paucity of Indigenous medical doctors affects how well the profession can understand and respond to the health needs of Indigenous people (Anderson, 2016). Regionally trained medical professionals are far more likely to remain in the regions to fill a dire skills gap (McGrail et al., 2018). Additionally, classroom diversity has been shown to result in higher learning quality for all students (Milem, 2003; Milem et al., 2005).

Several studies have examined institutional effects on graduate outcomes. Some studies found that there is no evidence of a graduate wage premium by institution, within the public university system (Koshy et al., 2016; Mihut, 2021). Other scholars have, however, found evidence of an institutional graduate premium. Carroll et al. (2019), using salary data from the Graduate Outcomes Survey (GOS) in Australia, found that the “unconditional” graduate premium for Go8 graduates was 4.3 per cent higher than for ATN universities, 5.5 per cent higher than for New Generation Universities (NGU) and 5.4 per cent higher for graduates from all other universities. Once covariates (such as field of study, ATAR, gender etc.) were controlled for using regression methods, they found that the scale of the premium for Go8 graduates was slightly reduced to be 2.3 per cent higher than ATN graduates, 3.4 per cent higher than NGU graduates and 4.7 over “other” universities. The authors suggest that this premium is comparatively small, but given the median full time salary of undergraduates in 2020 was nearly \$65,000 (Social Research Centre, 2020c), it typically represents an annual premium of several thousand dollars.

Cherastidtham and Norton (2014) investigated the graduate wage premium using data from the Household, Income and Labour Dynamics in Australia (HILDA) longitudinal survey and were therefore able to examine the longer-term impact of graduating from a Go8 institution.

They found that while graduates from the Go8 institutions do not have statistically higher starting salaries on average, lifetime earnings were found to be about 10 per cent higher for Go8 graduates compared to non-Go8 graduates. In some instances, these graduate premiums could total more than \$200,000 over a forty-year career (Cherastidtham & Norton, 2014, p. 14). The advantages graduates have from attending a selective institution are not only limited to higher salaries. Studies have also shown that graduates from Go8 institutions are more likely to report a better fit between qualifications and their employment (Li & Miller, 2013) and are more likely to consider working in higher status professions (Lee, 2014).

While there is evidence that vertical stratification is likely to affect graduate outcomes, the impact of course stratification is even stronger. Several studies have found that the association between discipline and graduate salaries is the strongest determinant of graduate salaries of all variables examined (Carroll et al., 2019; Daly et al., 2015; Norton, 2012). Immediate outcomes as measured by the GOS, suggest that initial salaries across the disciplines vary significantly, with dentists earning the highest median salary of \$84,000 a year compared to the average salary of 65,000 dollars per year. Pharmacy graduates reported the lowest median income of 49,600 dollars per annum (Social Research Centre, 2020c). Some disciplines, such as humanities, and visual and performing arts, report average weekly incomes that are actually lower than the average for those who only completed year 12 (Daly et al., 2015).

Nevertheless, while the starting salary of many graduates may be similar, substantial differences emerge in later years. The Grattan Institute's Graduate Winners report shows that dentistry, medicine and law in particular are subject to graduate premiums twice as large as some other disciplines like education and nursing that appear to have a large number of disadvantaged students, and more than four times larger than humanities and performing arts (Norton, 2012, p. 55). Over a career, students who graduated from medicine or dentistry courses enjoy a graduate premium of nearly a million dollars over nursing and teaching graduates.

Given the institution and field of education effects on graduate outcomes, there is a possibility that these variables act as confounders that can obscure equity effects in graduate outcomes. While Li and Carroll (2019) specifically studied the graduate outcomes of equity students and found there was no or only small differences in salaries amongst equity students, their model included field of study and institution grouping as covariates. If there is an uneven distribution of equity cohorts amongst both covariates, it is possible that the effects of equity group membership could be washed away by the effect of field of education and institutional grouping. An improved understanding of stratification within higher education would help us to better understand the outcomes of equity students.

Causes of stratification

The causes of stratification in higher education are likely to be broadly similar to the barriers identified to accessing higher education all together: achievement, scarcity, and student expectations, motivations and aspirations (Anderson & Vervoorn, 1983; Gale et al., 2010; Harvey et al., 2016). Of these barriers, the most influential is the disparity in achievement and educational outcomes of people from marginalised backgrounds (Bastedo & Jaquette, 2011; Bexley, 2016; Harvey, et al., 2016; Teese, 2007). The effects of inequality accumulate through a child's education and are evidenced in the strong association between SES and achievement as measured by the ATAR, the likelihood of completing secondary school or undertaking a less academic track within secondary school (Cardak & Ryan, 2006; Teese, 2007).

Another aspect of stratification is likely to be relative scarcity of high-status degrees. As we have demonstrated, the expansion of the sector has primarily been amongst "recruiting" institutions, while the number of places in Go8 institutions actually decreased during the Demand Driven System of Student Funding. Further, a number of high-status courses,

particularly in the health sciences, have the number of places carefully managed by accrediting bodies and are therefore more constrained than other courses. This scarcity means places for these courses must be rationed and historically the ATAR was developed as a cost effective and fair way to base ration places according to merit (Norton, 2018). However, the fact that ATAR and SES are highly correlated (Cardak & Ryan, 2009), means marginalised cohorts are necessarily under-represented.

Finally, student expectations and aspirations are also likely to be relevant. There has been a focus, especially amongst education economists, on the issue of information asymmetry contributing to underrepresentation in higher education. While achievement is the predominant barrier and deserves the most effort, improvements to address information asymmetry could lead to some “quick wins”. A number of studies in the Australian context have found evidence of information asymmetry amongst disadvantaged cohorts. Harvey et al. (2016) found that knowledge of an increasingly complex and decentralised admissions system is poorer amongst students from under-represented backgrounds, who were often not aware of schemes designed to improve their chances of being offered a place at university, and many had no knowledge of bursaries and other programs designed to support their access and success at high school. Furthermore, students from marginalised backgrounds are less likely to receive career support and guidance, despite the strong link between early career guidance and enrolling in higher education (Tomaszewski et al., 2017).

Cardak et al. (2015a), found evidence to suggest that students from low SES backgrounds were less likely to engage in certain strategic behaviours associated with a high likelihood of being admitted to university, such as applicants changing their course preferences after their ATAR was revealed. In a separate project, they found that students from low SES backgrounds were much more likely to receive no offer and were 60 per cent more likely to reject an offer they have received. They argued that this effect is mediated through covariates like ATAR, with the authors arguing students with lower achievement may be struggling to match their aspirations with feasible programs (Cardak et al., 2015b).

In the United States (US), Hoxby and Turner (2015) undertook an evaluation of interventions designed to encourage larger numbers of high achieving low income students to enrol in selective institutions, and found evidence that many low income students were confused about the cost of degrees, the financial support available to them, and a poor understanding of the differences in outcomes amongst different colleges. Hoxby and Avery (2013), looked at the destinations of students in the top 10 per cent of SAT or ACT results — common standardised tests used in higher education admissions in the US. They found that the vast majority of high achieving students from low-income backgrounds do not apply to selective universities, despite financial aid and other incentives, while students from advantaged backgrounds seem to be overrepresented in selective colleges given their achievement. Dividing high achieving low income students into those who act according to their high achievement (and therefore maximise their college match) and those who act according to their low income status (and therefore undermatch their achievement), Hoxby and Avery (2013) found that high achievement-typical students are often concentrated geographically in selective public high schools and are therefore more likely to have access to mentors and influencers who attended selective colleges, whereas those who act low-income typical, are much more likely to be geographically diffuse and not able to access similar influences.

The focus on information asymmetry as a cause of underrepresentation has led to a number of studies investigating the concept of mismatch, which occurs when a student enrolls in a course that is a poor fit for their level of achievement. One such project was conducted in the US by Dillon and Smith (2017). Their project examined mismatch using data from the National Longitudinal Survey of Youth. They found higher levels of mismatch amongst marginalised students, and that mismatched students either do not apply to a well-matched school, or apply and are admitted, but do not enrol. There was, however, some tentative evidence that affirmative action policies could be leading to overmatching (students reporting

a lower level of achievement compared to the ranking of the course) for those with the most extreme level of socio-economic disadvantage. They also found that other factors, such as proximity to high quality colleges can also impact mismatch.

One may consider that a centralised admissions process might mitigate the risk of undermatching, but a similar study in the United Kingdom (UK), which also has a centralised admission body also found evidence of undermatching. Campbell et al. (2019) sought to measure student “match” using data on achievement in senior secondary school to calculate an achievement percentile. This in turn was compared to a “quality” measure of their course, calculated as a percentile of average admission score of students admitted to that course or the average earning of previous graduates five years after graduation. They found that approximately 21 per cent of students are undermatched and another 21 per cent are overmatched based on the binary 20 percentage point threshold. Low SES students reported higher levels of mismatch compared to high SES students with a similar level of achievement. Further, the mismatch gap between low and high SES students was larger for those with high achievement.

Yet, there are many critiques of the concept of mismatch (Bastedo & Flaster, 2014; Bastedo & Jaquette, 2011). Most importantly, Bastedo and Jaquette (2011) argue that as many others have highlighted, stratification is primarily driven by lower student achievement. While there have been significant gains over the past 40 years in the achievement of low-income students, it is still the primary barrier. Thus, even if marginalised students were perfectly matched to course options according to their ability, they would still be underrepresented in higher education and selective fields and institutions. Further, the theory of undermatch ignores other important considerations for selecting a course, such as inherent interest in a subject or proximity to home (Hoxby & Avery, 2013; Krause et al., 2005; Norton, 2012).

Addressing stratification

Currently, programs designed to improve the representation of marginalised students are relatively common. Programs such as VTAC’s Special Entry Access Scheme (SEAS) and UAC’s Equity Access Scheme (EAS) are commonplace across the sector. These schemes are designed to adjust student rankings in light of the educational disadvantage they have experienced but such programs do not appear to have dramatically changed the nature of institutional or course stratification (Walton & Carrillo, 2017).

In addition to equity access schemes embedded in the admission centres application processes, universities are also making efforts to improve historically poor equity representation in their most selective courses. For instance, The School of Dentistry at La Trobe University has a strong regional focus as part of its core mission to address the issue of too few dentists in the regions. The course is the most selective at the university, with a minimum entry ATAR of 99.05. To increase the proportion of regional students in the course, the university applies considerable adjustments to ATARs of those residing in the regions (La Trobe University, 2021). Similarly, Deakin University has a target to increase Indigenous representation within a number of high-status health qualifications. The Deakin University medicine degree specifically has a target for 5 per cent of its students to be Indigenous, which is well above the sector average and even the Indigenous population generally. To help achieve this goal, Indigenous students are not required to sit the Graduate Medical School Admissions Test (GAMSAT), with achievement in undergraduate courses considered instead (Deakin University, 2021). The fact that both programs are in the health discipline is not a coincidence, with a growing body of literature on the advantages of a diverse medical workforce (Bailey et al., 2020; Stanford, 2020).

At a sector level, the UK presents an interesting case study for addressing stratification within higher education. UK institutions are strongly encouraged to develop Access and Participation Plans, which include ambitious equity targets, institutional progress and details of strategies/interventions being used to meet the targets (Office for Students, 2018). While

there have been substantial changes in the plans over the past decade, they can be traced back to 2006, when fee deregulation reforms allowed institutions to increase their fees as long as they had an access agreement (Department for the Economy, 2021). The plans are currently linked to regulatory action and the ability to set fees according to a set of tariffs (Office for Students, 2021c). The Plans also play an important role in the regulation of universities. In a recent report, the Office for Students said that 164 of 171 plans they assessed had “mitigations” (minor regulatory interventions that might require an institution to reset targets or introduce new interventions) applied (Office for Students, 2020). Previously, institutions including, but not limited to, Cambridge and Oxford have had special conditions applied to their registrations and a number of institutions have faced substantial financial penalties up to 250,000 pounds (Office for Students, 2021b).

The latest Access and Participation Plans are focused on achieving a series of specific targets related to their area measure of disadvantage, the POLAR (Participation of Local Area) measure, including targets to eliminate the gap between the highest and lowest POLAR quintiles in access, progression and attainment, in addition to targets to address the gap in attainment of Black and White students and for disabled and non-disabled students. Most importantly in terms of our study, there is a target for the most selective institutions specifically to eliminate the gap in access rates between POLAR quintile 1 and 5 students at the top third of universities according to their tariff ranking (Office for Students, 2021a). According to the UK Office for Students, progress is being made to close the gap in access between quintiles 1 and 5 at a sector-wide level but progress has been slower amongst higher fee (tariff) universities. There has been a slight decline in the gap from 19.8 per cent in 2017-18 academic year to 19.2 per cent in 2019-20, but the gap is larger than the 18.5 per cent reported in 2010-11.

An evaluation conducted by the Nous Group found that despite an increased commitment to improving access for disadvantaged cohorts, and the reports contributing to a “whole of institution” approach, however, several institutions also noted issues with implausible targets (Nous Group, 2020). The Russell Group in particular, have criticised the target of achieving equivalent participation between the highest and lowest quintiles at the top universities. The group released a report which argued that in order to meet the ambitious access targets, it would need to hold its share of quintile 5 students more or less at current levels and increase the number of quintile 1 students at 10 per cent year on year until 2040 to meet the targets. Additionally, it claimed that there are simply not enough quintile 1 students to recruit with A levels and would have to admit students who “do not get placed anywhere in the higher education system”. Instead, they argue that greater emphasis needs to be placed on addressing educational inequality and associated achievement outcomes earlier in the educational system (Russell Group, 2020).

The approach in the UK contrasts starkly with the situation in Australia. In response to the Bradley Report, the Rudd Government introduced a target for 40 per cent of 25-34 year olds to have attained a degree and for 20 per cent of students enrolled at university to come from the lowest socio-economic quartile by 2025 (Australian Government, 2009). At present, while there are a range of policies designed to support students from disadvantaged backgrounds, such as the new Indigenous, Regional and Low-SES Attainment Fund (IRLSAF) which incorporates the HEPPP, the access target for 20 per cent of students to be from a low SES background has long been abandoned (Hurst & Tovey, 2013), with progress stalled at around 18.6% (based on the more generous postcode measure) (DESE, 2020a).

Even when in place, the Bradley low SES access target applied to the entire sector. There were no institution-specific targets, and no significant consequences for low access performance beyond minor annual adjustments to HEPPP, which partly explains why equity growth was concentrated in the “recruiter” universities. While the target to specifically improve equity participation in higher-tariff institutions is causing the Russell Group some

consternation, it is at least forcing selective universities to thoroughly engage with the issues of educational disadvantage. Further, while all Australian universities are required to have an Access and Participation Plan as part of the HEPPP scheme, they are not linked to government mandated targets, nor are they using a regulatory tool as they are in the UK.

Analysis

Research aims

This report addresses the following research questions:

1. To what extent are equity group students underrepresented within selective study areas and institutions?
2. What are the course choices of high ATAR students from equity groups, and how might these choices inform our understanding of equity within selective disciplines and institutions?

Data and method

To examine the current state of stratification within Australian higher education, we utilised a custom dataset released to universities by DESE under an agreement negotiated by Universities Australia. Throughout the report we refer to this file as the “UA data file”.

The UA data file is based on enrolment data captured through the Higher Education Information Management System (HEIMS) and includes records for all Universities Australia member institutions. This customised dataset was developed to allow universities access to more detailed data than is current available through DESE’s statistical publications and was designed to facilitate research and improvement activities. Access and use of the UA data file is governed by a code of practice developed by Universities Australia.

The data file contains a wide range of variables including institution, field of education, course level, mode of study, postcode, regional status, Indigenous status, and the ATAR band of students, which were particularly useful for our analysis. To ensure the dataset complies with policy and legal requirements, the data file has an unusual structure. Instead of releasing detailed student/course level data, the file has been aggregated and any cell with fewer than five ($n < 5$) enrolments were suppressed from the file.

We used student enrolment data from 2014 to 2019. Because our analysis sought to outline student enrolment across equity as well as course lines, we pooled the years to increase the sample counts available. This was especially important for smaller groups, such as Indigenous students. We further restricted the sample to only include domestic commencing cohorts enrolled in bachelor level courses.

We included the six *A Fair Chance for All* equity groups:

- Indigenous students include students who identify as Aboriginal and/or Torres Strait Islander at the time of enrolment.
- NESB students are defined as speaking a language other than English at home and had arrived in Australia less than 10 years before they commenced their course.
- Low SES students are defined according to whether the postcode of their permanent home of residence is within the bottom quartile of the working age population captured in the Australian Bureau of Statistics (ABS) Socio-Economic Indexes for Areas (SEIFA) Index of Education and Occupation.
- Students from regional and remote areas were defined according to whether the postcode of their permanent home residence was designated as regional or remote by the ABS Australian Statistical Geography Standard (ASGS) classification of regions. Regional and remote students are typically understood as two distinct equity groups (Koshy, 2020), but for the purposes of this report we combined the relatively small number of remote students with the much larger regional student cohort.

- Disability students include students who identified as having disability, impairment, or long-term medical condition.
- Female students are used in favour of the WINTA group definition, because this is a study of equity in field of education, and we look at female enrolment across all study areas, not just the so called “non-traditional” areas.

We organised courses according to the study areas used in the Quality Indicators for Learning and Teaching (QILT) framework (Social Research Centre, 2020b). QILT organises courses according to 21 and 41 study areas that group courses among others with similar vocational content and direction. The final analysis only utilises 20 of the 21 QILT study areas. The study area of Tourism, Hospitality, Personal Services, Sport and Recreation was excluded due to small numbers.

University groupings in higher education

A common method of clustering universities in Australian higher education research is to use the interest groups the universities themselves coalesce into. The main university group is Universities Australia, which represents all 37 public universities in Australia, as well as the two private Table B universities. There are four distinct university-represented interest groups outside of Universities Australia.

The Go8, the so-called “sandstone” universities, are eight universities that include some of the oldest institutions and which typically rank highest in research focussed international rankings and attract the largest research and student-based revenues.

The ATN group is comprised of a selection of universities that were originally polytechnics that gained university status as part of reforms in the late 1980s.

The IRU represent eight multidisciplinary universities across Australia predominantly established in the 1960s and 1970s to expand education.

The RUN group is made up of seven universities clustered primarily due to their location in regional/remote areas.

Universities not affiliated into one of the previously mentioned groupings were labelled as “Other universities” through our analysis. The full list of universities by their grouping are presented in Table 2 of the Appendix.

Definitions

We defined **high ATAR or high achieving** students, as those who achieved an ATAR above 90. The threshold of 90 was chosen as the ATAR is only reported as a categorical interval variable rather than a number in the UA data. We also note that access to all institutions and most undergraduate courses are possible with an ATAR of 90, so this can be seen as an example of student choice without an achievement constraint.

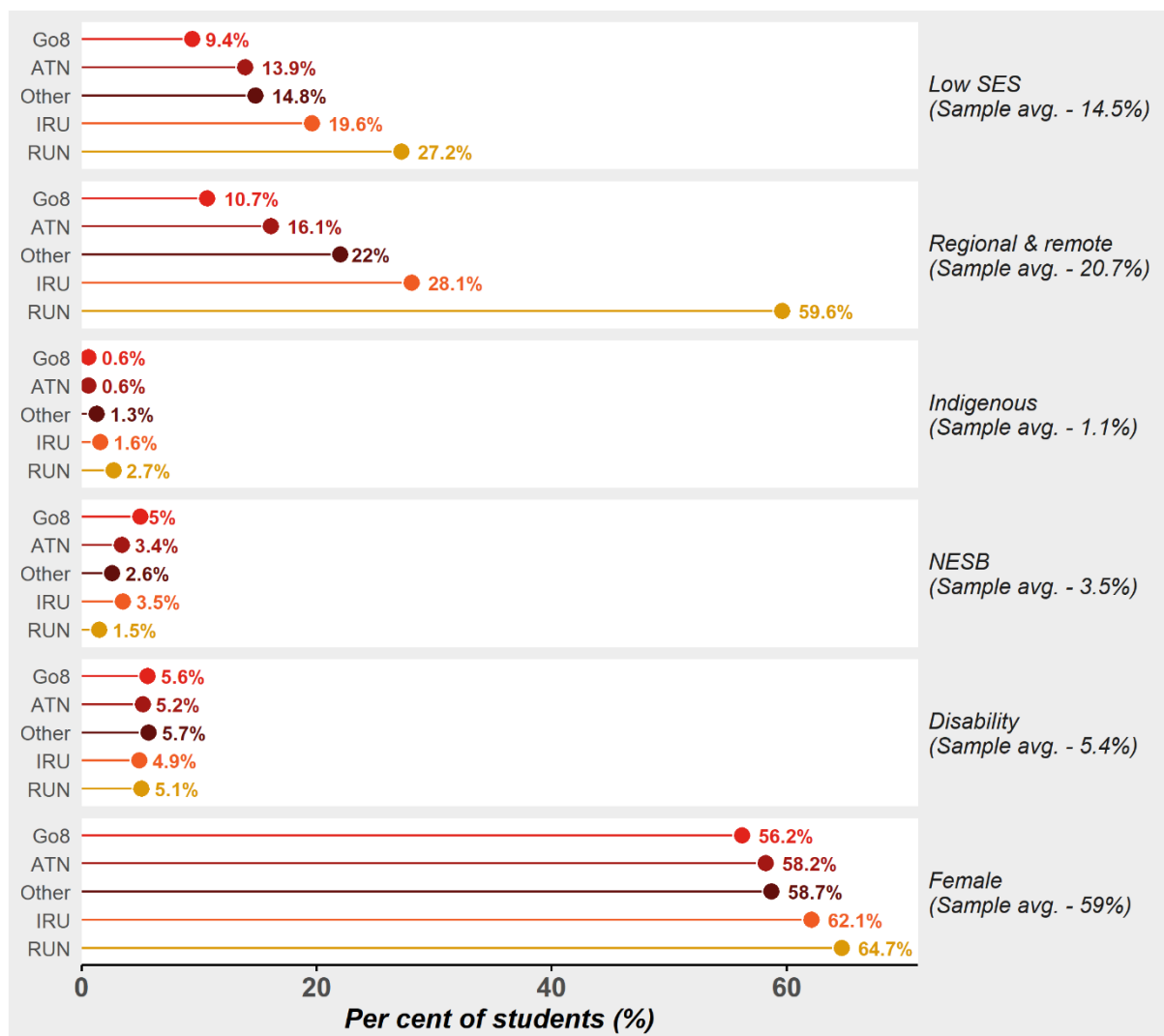
We defined **high status courses** as those study areas with a share of high ATAR students above the average in our sample.

Mapping equity by university grouping

Low SES, regional and remote, and Indigenous students were underrepresented among Group of Eight (Go8) institutions compared to their overall representation. Female students were less represented in Go8 universities than in others, though still formed the majority of students. Conversely, Go8 institutions have higher representation of students from non-English speaking backgrounds. Representation of students who declared a disability was relatively even across the different university groups.

In contrast, the RUN universities have the highest representation of low SES, regional and remote, Indigenous, and female students. The IRU universities also have above sector average representation of low SES, regional and remote, Indigenous, and female students.

Figure 1. Equity access rates by university grouping



Mapping equity by study areas

Equity access differs by study area. Table 1 outlines equity access rates for each of the 21 QILT study areas. Taking the overall access rate as the reference value, the data show that some study areas have major underrepresentation of equity groups, while others show overrepresentation. A similar table of the 41 QILT study areas is available in Table 3 of the Appendix.

Table 1. Equity access rates for 21 QILT study areas

21 QILT study areas	Low SES (%)	Regional & remote (%)	Indigenous (%)	NESB (%)	Disability (%)	Female (%)
Agriculture & Environmental Studies	15.8	41.8	1.3	1.7	6.5	55.6
Architecture & Built Environment	11.8	14.6	0.8	4.8	3.9	41.4
Business & Management	12.3	15.4	0.7	4.1	3.7	44.4
Communications	11.5	18.1	1.0	1.2	5.8	64.6
Computer & Information Systems	16.7	17.2	0.8	5.3	5.9	15.6
Creative Arts	12.4	19.4	1.4	2.3	7.2	64.6
Dentistry	19.9	14.1	0.5	11.9	3.7	73.4
Engineering	14.5	23.0	0.9	5.8	4.3	16.8
Health Services & Support	15.9	23.5	1.1	2.8	4.5	63.5
Humanities, Culture & Social Sciences	12.6	19.4	1.3	2.4	7.6	67.7
Law & Paralegal Studies	17.6	23.5	1.6	2.3	4.9	65.1
Medicine	7.6	24.3	1.1	3.7	4.4	57.3
Nursing	20.0	34.5	1.6	4.1	5.0	89.9
Pharmacy	20.1	22.3	0.6	11.2	4.5	63.7
Psychology	16.8	22.3	1.5	2.5	7.6	74.8
Rehabilitation	11.4	23.7	0.6	2.1	3.3	73.2
Science & Mathematics	13.6	17.2	0.8	5.5	5.8	53.5
Social Work	21.4	24.2	2.6	2.3	7.6	87.8
Teacher Education	19.3	29.4	1.8	1.4	4.5	73.4
Veterinary Science	16.1	20.9	1.4	2.3	6.9	82.6
Overall	14.5	20.7	1.1	3.5	5.4	59.0

Medicine, a course with constrained places even during the period of demand driven funding, had just 7.6 per cent of students from low SES backgrounds, although has good representation from regional & remote students (24.3 per cent), Indigenous students (1.1 per cent), and NESB students (5.4 per cent). On the other hand, dentistry, another high-status health course, has above average low SES representation (19.9 per cent), NESB students (11.9 per cent), and female students (73.4). Yet just 14.1 per cent of commencing dentistry

students in the sample were from regional and remote areas, and Indigenous students (0.5 per cent), and students with disability (3.7 per cent) were also underrepresented.

Interestingly, law and paralegal studies, which includes traditionally high-status law courses, has relatively high equity representation for low SES students (17.6 per cent), regional and remote students (23.5 per cent), Indigenous students (1.6 per cent), and female students (65.1 per cent). However, there is still underrepresentation among NESB students (2.3 per cent) and students with disability (4.9 per cent).

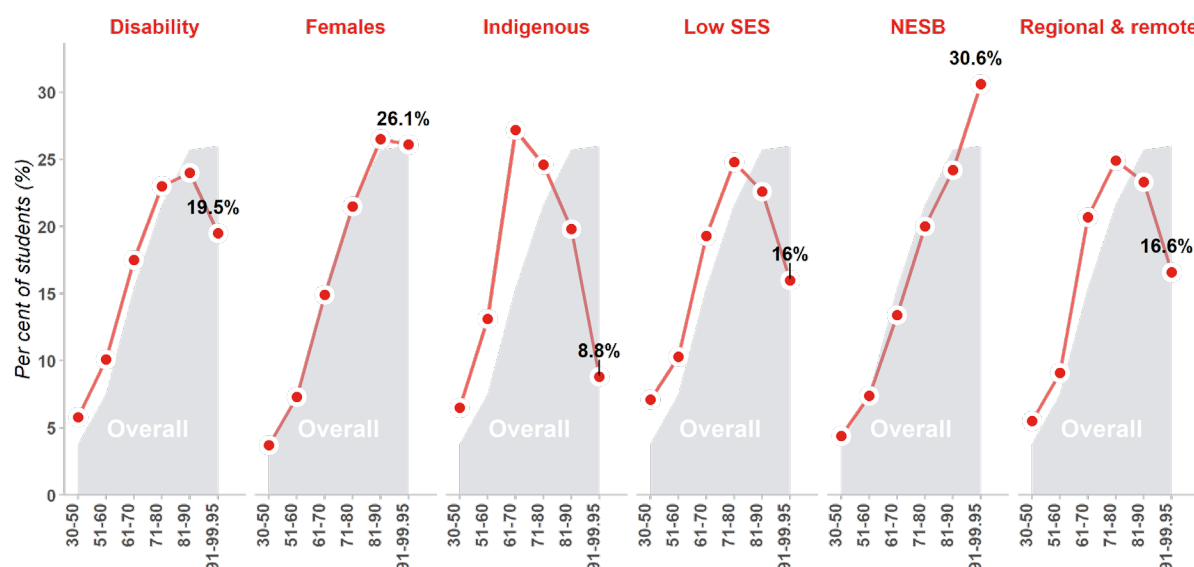
The DESE defines the following as non-traditional study areas for women: natural and physical sciences, information technology; engineering and related technologies; architecture and building; agriculture, environmental and related studies; management and commerce; and economics and econometrics. Gaps are confirmed in our data, where just 15.6 per cent of students in computer and information systems as a study major were female, and only 16.8 per cent in engineering. Architecture and built environment courses only had 41.4 per cent of female students, and business and management courses only had 44.4 per cent. Female representation in agriculture and environmental studies was higher (55.6 per cent), as well as science and mathematics (53.5 per cent), but both were still below the overall rate of female representation. In economics, as reported in Table 3 of the appendix, female students accounted for only 35.4 per cent of enrolments.

Conversely, female students comprised most of the students in nursing (89.9 per cent), social work (87.8 per cent), and veterinary studies (82.6 per cent). Women also had higher rates of representation than average in communications, creative arts, dentistry, health services and support, humanities and social sciences, law and paralegal studies, pharmacy, psychology, rehabilitation, and teacher education.

High ATAR students and university groupings

As Figure 2 shows, Indigenous, low SES, and regional and remote students were much less likely to have ATARs over 90. Students with disability were also slightly more underrepresented among high ATAR students. Conversely women, who make up nearly 60 per cent of the sample, had similar shares of high ATAR students to the overall average, and students from NESB were much more likely to be high ATAR students.

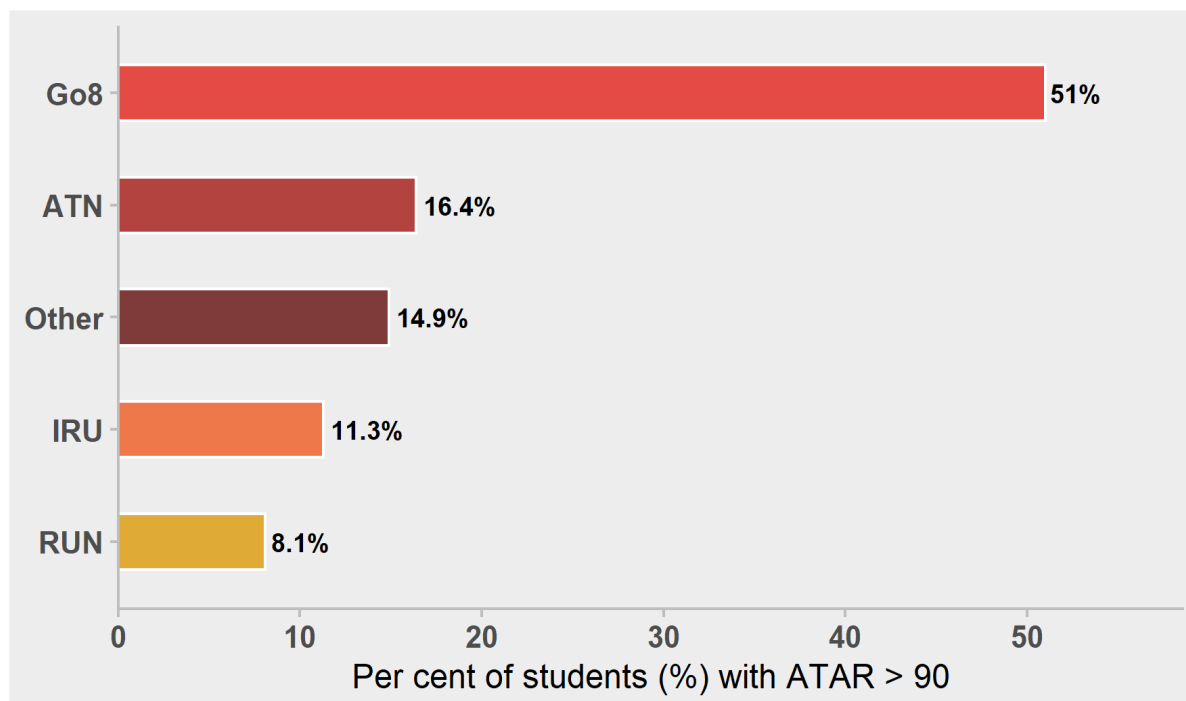
Figure 2. ATAR shares by student equity groups (share of high ATAR students labelled in black)



The perceived prestige of Go8 universities is reflected in our data. Overall, 26 per cent of students with a valid ATAR had an ATAR higher than 90. Looking at all commencing

students between 2014 and 2019 (Figure 3), 51 per cent of students at Go8 institutions had an ATAR higher than 90. The next highest by university groupings was less than a third of that proportion – 16.4 per cent of students at the ATN universities had ATARs above 90. Only 8.1 per cent of students at RUN universities had ATARs higher than 90.

Figure 3. Access rates for high ATAR students by university grouping



This pattern tends to hold even after accounting for study area. Figure 4 plots the share of high ATAR students in each study area for each university group compared to the shares for the other university groupings. As Figure 4 shows, in nearly every study area Go8 universities have higher shares of students with ATARs over 90 than other groups. Similarly, ATN universities tend to have the second highest rate of students with ATARs above 90 across each study area. RUN universities have the lowest rate of students with ATARs above 90 in almost every study area. This pattern is particularly interesting in areas such as law, in which sectoral enrolments have expanded enormously since the introduction of the demand drive system. While most Go8 Law students still enter their course with an ATAR above 90, the recent expansion of other institutions offering the course has enabled broader overall access to the profession.

Figure 4. Share of high ATAR students by study area and university grouping compared to other groupings

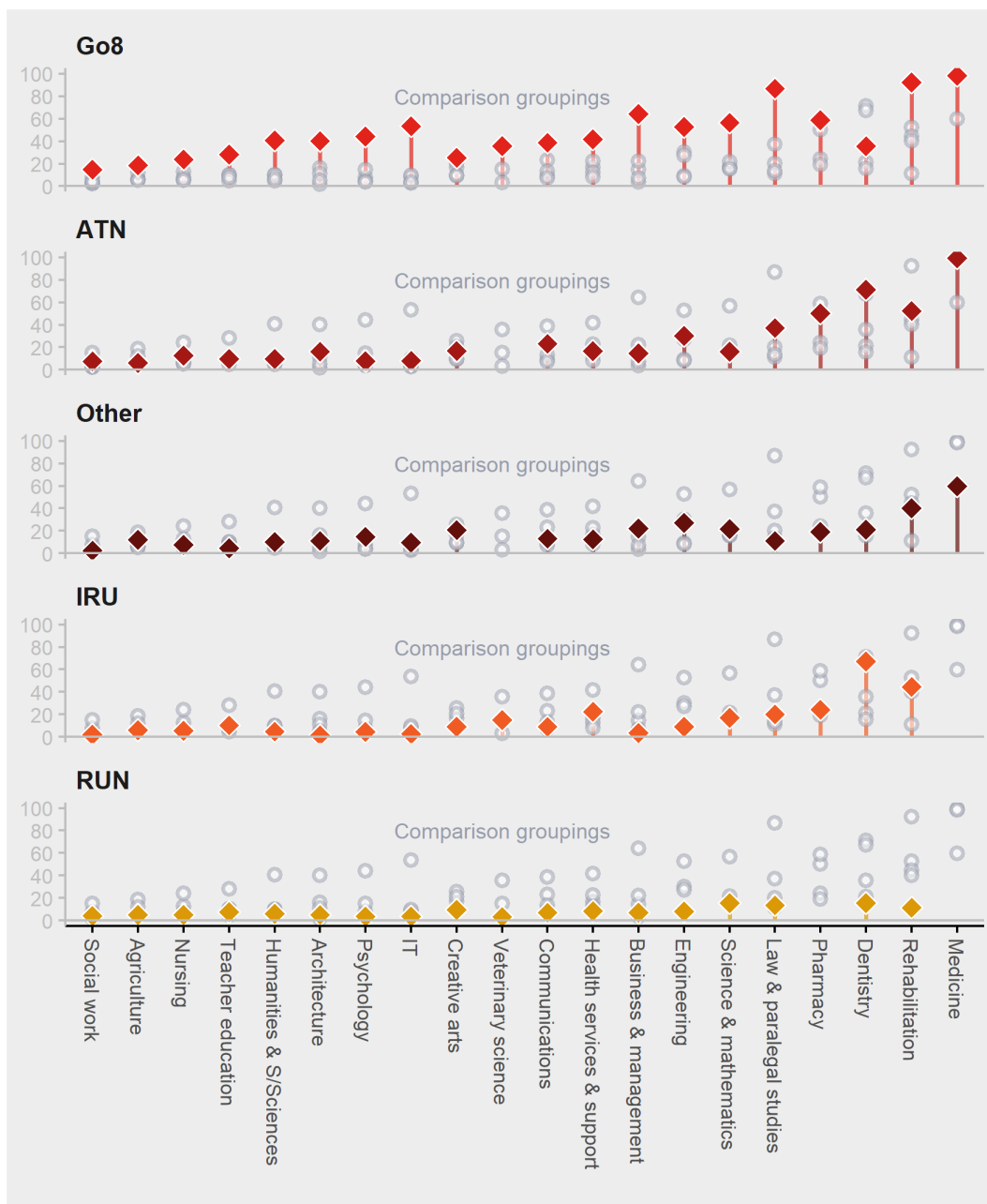


Figure 5 compares the university grouping commencement shares of high ATAR students from equity groups against their non-equity corollary group. The top order of the groupings is similar to Figures 3 and 4, with high ATAR students from all groups much more likely to commence at Go8 universities. However, there are interesting differences in the shares between equity and non-equity cohorts.

Over half (52.3 per cent) of low SES students with a high ATAR commenced at a Go8 university compared to more than two thirds (64.5 per cent) of high ATAR Medium and High SES students.

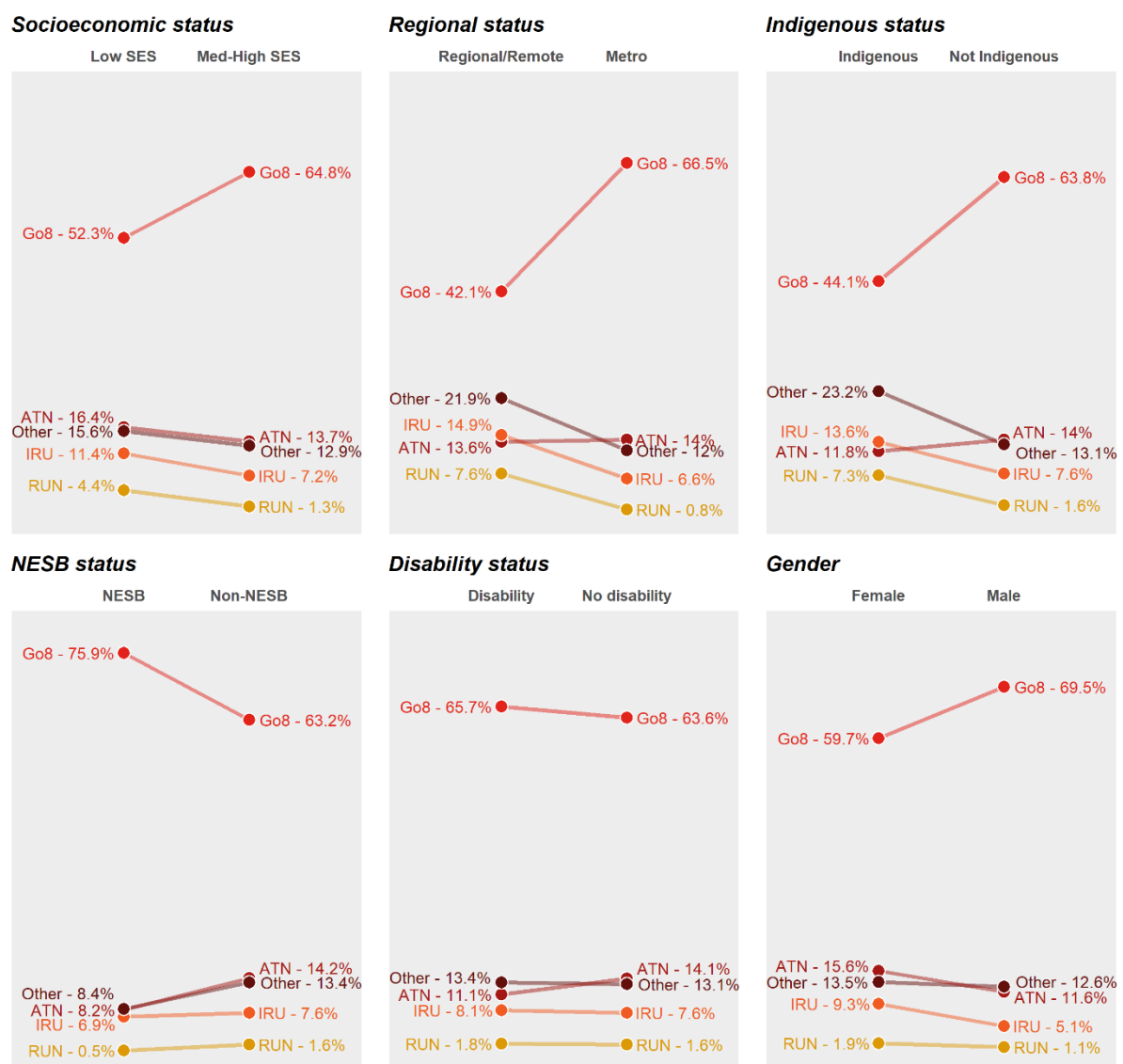
Regional and remote students with high ATARs were less likely to commence at Go8 universities. While 66.5 per cent of high ATAR metropolitan students commenced at Go8 universities, just 42.1 per cent of high ATAR regional and remote students did so.

The difference was similar among Indigenous high ATAR students, with 44.1 per cent enrolling at Go8 universities compared to 63.8 per cent in the non-Indigenous cohort.

Interestingly, high ATAR female students were less likely than high ATAR male students to commence study at Go8 universities. This gap is likely explained in part by discipline mix, with Go8 universities offering many of the most male-dominated course offerings.

Some high achieving equity groups were more likely to enrol at a Go8 university than their non-equity counterparts. Three quarters (75.9 per cent) of high ATAR students from NESB commenced at a Go8 university, compared to 63.2 per cent of non-NESB students. High ATAR students with disability were marginally more likely to commence at Go8 universities and less likely to enrol at ATN universities, but otherwise shares were similar between those with and without disability.

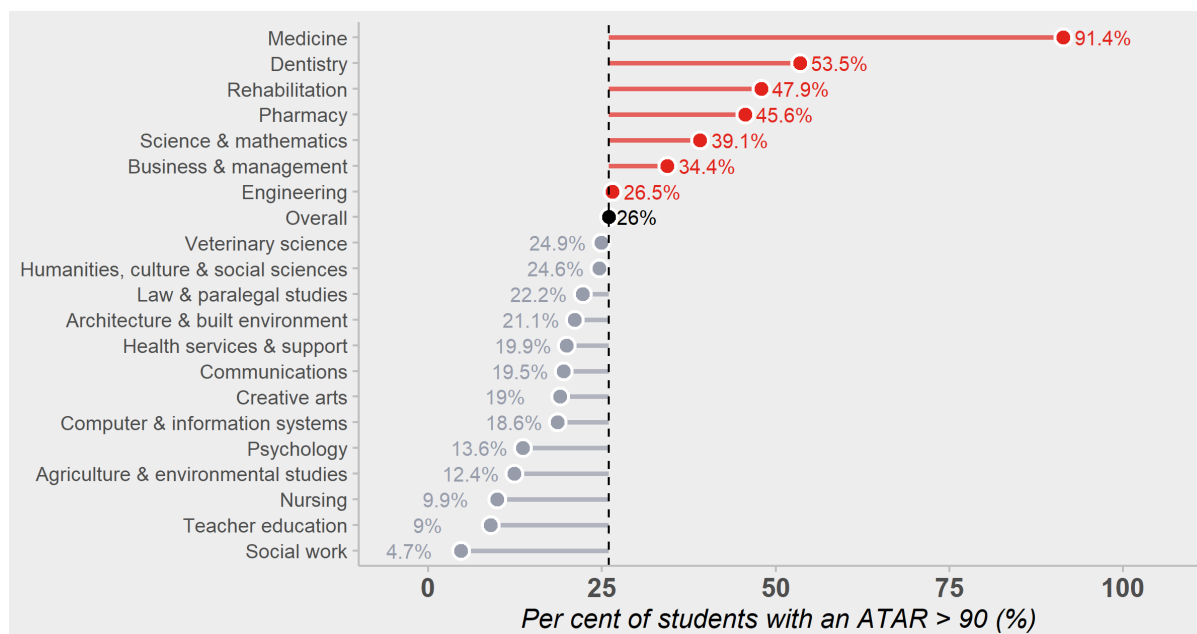
Figure 5. Enrolment shares across university groups for high ATAR students by equity status



High ATAR students and study areas

Across the entire sample, 26 per cent of commencing students received an ATAR above 90. Figure 6 reports the high ATAR share of commencing students across study areas (the access share). The dashed line is the overall average. We consider study areas with high ATAR students above the overall average as ‘high status’ courses. As Figure 6 shows, the vast majority of commencing students in medicine (91.4 per cent) had an ATAR above 90, followed by a group of different allied health fields, dentistry, rehabilitation, and pharmacy. Science and mathematics, business and management, and engineering, also had above average levels of high ATAR students. Although as Figure 4 earlier shows, generalist fields such as science and mathematics, business and management, and humanities and social sciences had large variations between institutions.

Figure 6. Access shares for high ATAR students by study area



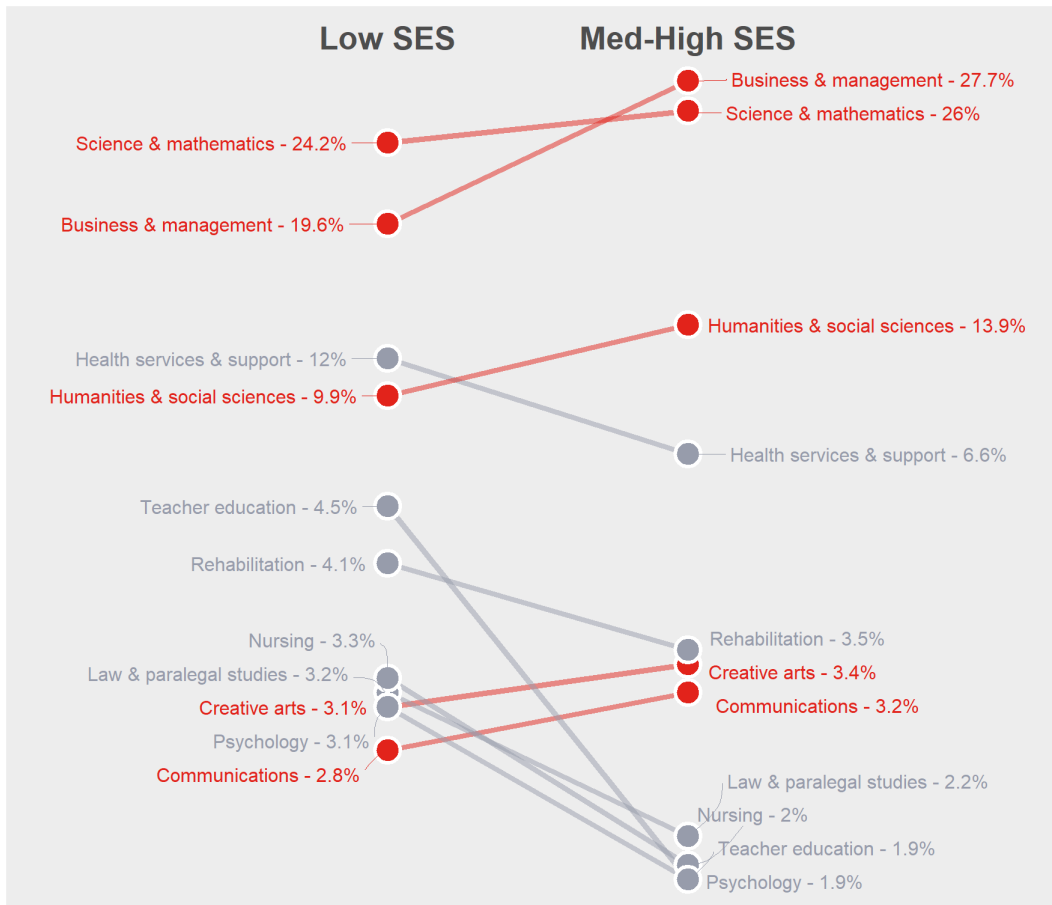
The next series of charts (Figures 7 to 12) compare the enrolment shares of high ATAR equity cohorts against non-equity students by study area. While achievement is an important prerequisite for university study, the analysis shows that even among high achieving students, as measured through the ATAR, there are marked differences in the courses chosen between equity groups.

For the analysis in Figures 7 through to 12, we have only included the top ten study areas by enrolment share for each of the equity and non-equity groups. The points and lines are colour coded according to whether the equity group had a lower relative enrolment share (red), or a higher relative enrolment share (grey). It should also be noted, the shares are calculated by each equity group and non-equity group separately, so for example, in the case of figure 7, if we were to include all study areas (not just top ten), all the low SES share would sum to 100 per cent, as would the sum of the medium-high SES students.

Across all high ATAR students regardless of equity status, generalist courses in science and mathematics, business and management, and humanities and social sciences were the most popular (Figures 7-12). This is mainly an effect of high ATAR students being more likely to enrol at Go8 universities. Yet outside of these generalist study areas there are interesting disparities that highlight equity groups are making different course choices at the margin.

As Figure 7 shows, science and mathematics courses were the most popular among low SES students with high ATARs (24.2 per cent), and this was similar for medium and high SES students (26%). Approximately a fifth (19.6 per cent) of the high ATAR low SES students chose to study business and management courses, although medium and high SES students were much more likely (27.7 per cent). While one in ten (9.9 per cent) high ATAR low SES students enrolled in humanities and social science courses, medium and high SES students were slightly more likely to enrol in these courses (13.9 per cent). Conversely, low SES students were more likely to choose courses in health services and support (12 per cent vs 6 per cent), and teacher education (4.5 per cent vs 1.9 per cent), as well as rehabilitation, nursing, law and paralegal studies, and psychology.

Figure 7. Enrolment shares across study areas for high ATAR students by socioeconomic status



Science and mathematics courses were also the most popular among high ATAR regional and remote students (Figure 8, 25.7 per cent), and this was similar for metropolitan students (26.9%). Regional and remote students with a high ATAR were just as likely to study business and management (14.7 per cent) or humanities and social sciences (14.2 per cent). Metropolitan students were much more likely to enrol in business and management courses (26.9 per cent). High ATAR regional and remote students were more likely to choose courses in health areas, including health services and support (9.3 per cent vs 6.9 per cent), and nursing (4.7 per cent vs 2.1 per cent). Teacher education courses were also more popular among high ATAR regional and remote students (4.4 per cent vs 1.7 per cent).

Figure 8. Enrolment shares across study areas for high ATAR students by regionality status

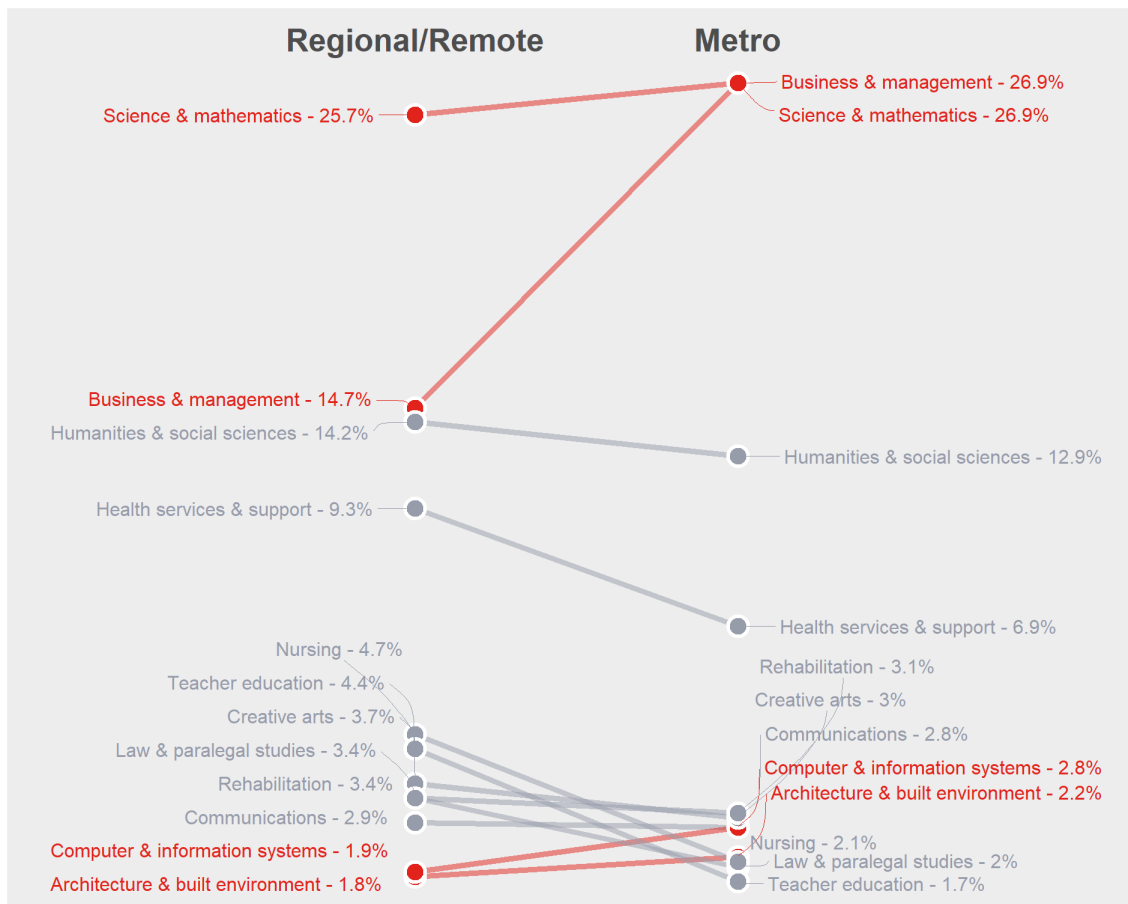
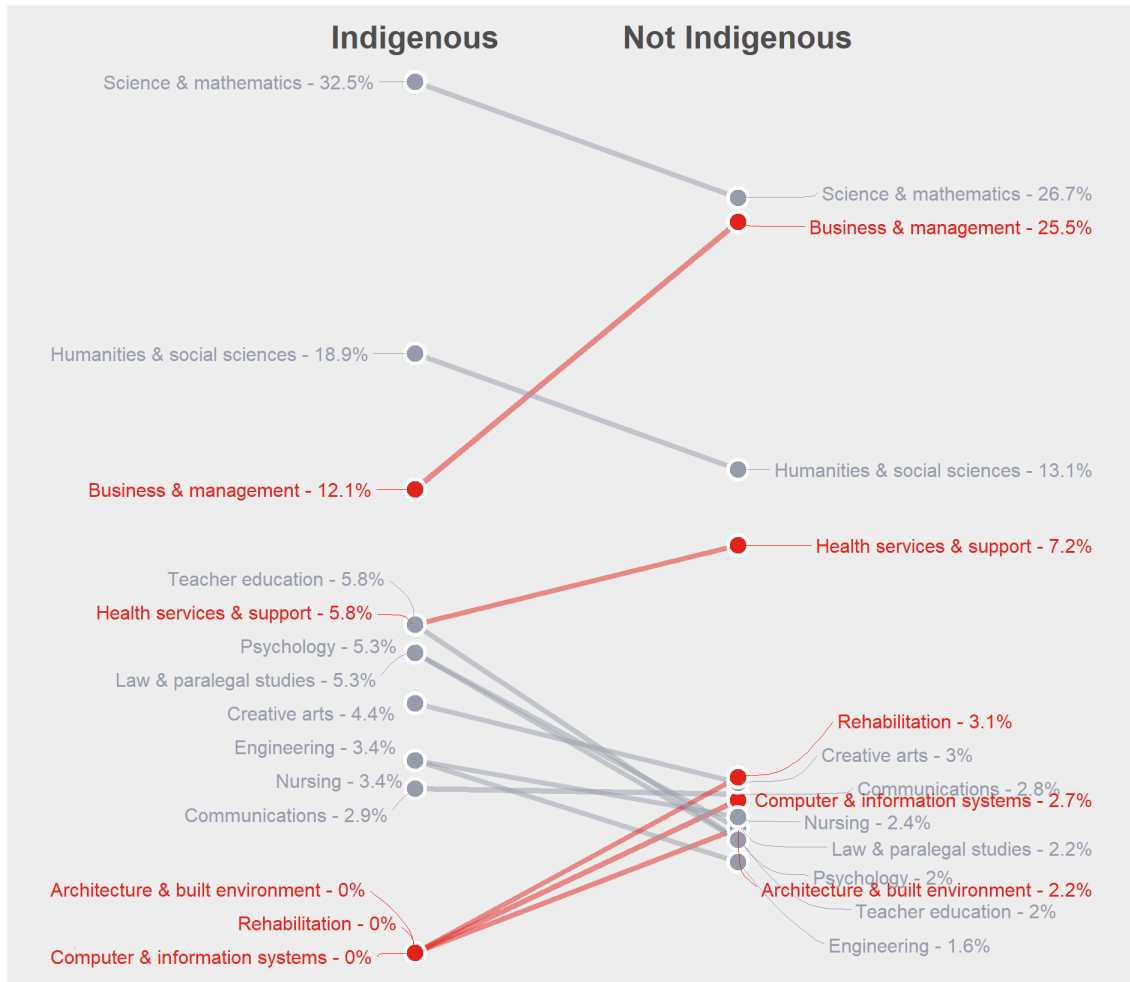


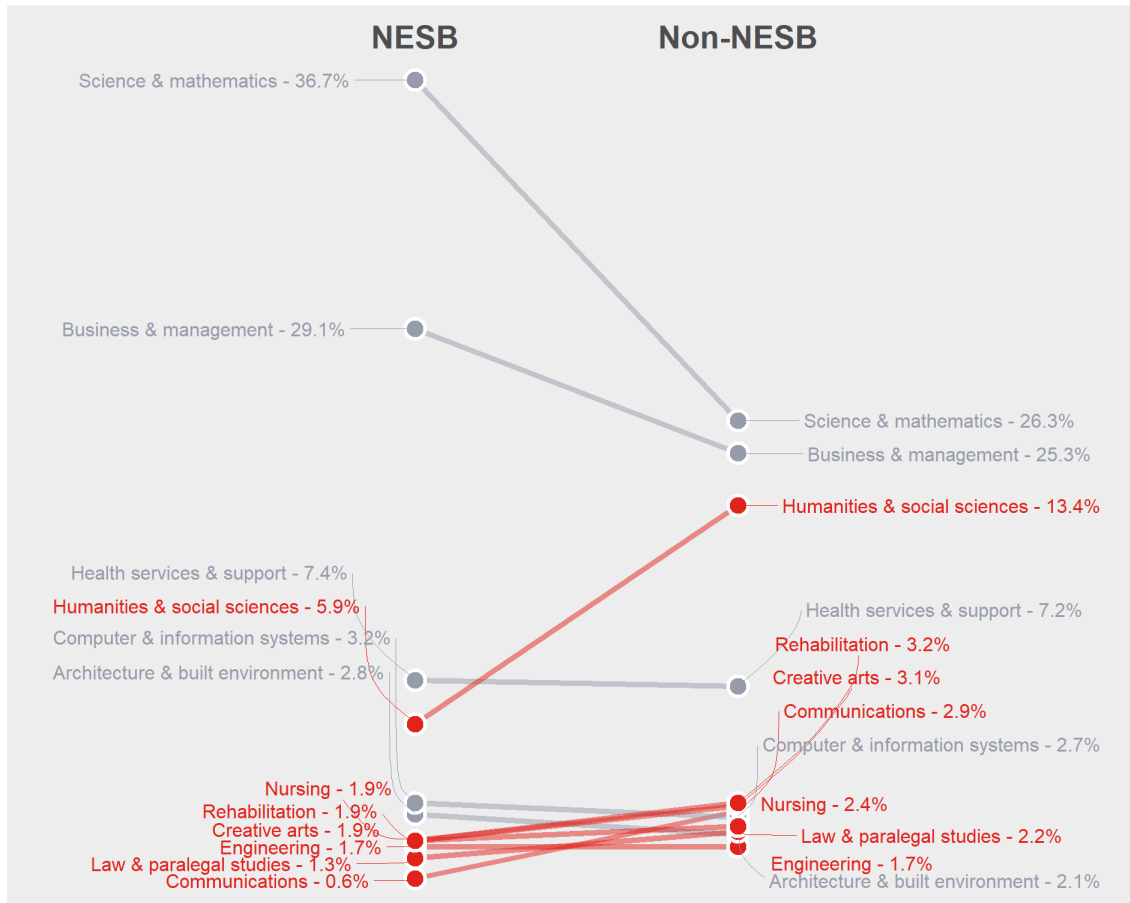
Figure 9 shows that a third of high ATAR Indigenous students enrolled in science and mathematics courses compared to just over a quarter of non-Indigenous students (26.7 per cent). High ATAR Indigenous students were more likely to enrol in humanities and social sciences courses (18.9 per cent vs 13.1 per cent), but less likely to enrol in business and management courses (12.1 per cent compared to 25.5 per cent). The share of high ATAR Indigenous students enrolling in teacher education, psychology, law and paralegal studies, creative arts, engineering, and nursing was higher relative to non-Indigenous students, although it is important to note that the number of high ATAR Indigenous students is relatively small and so these shares should be read with caution.

Figure 9. Enrolment shares across study areas for high ATAR students by Indigenous status



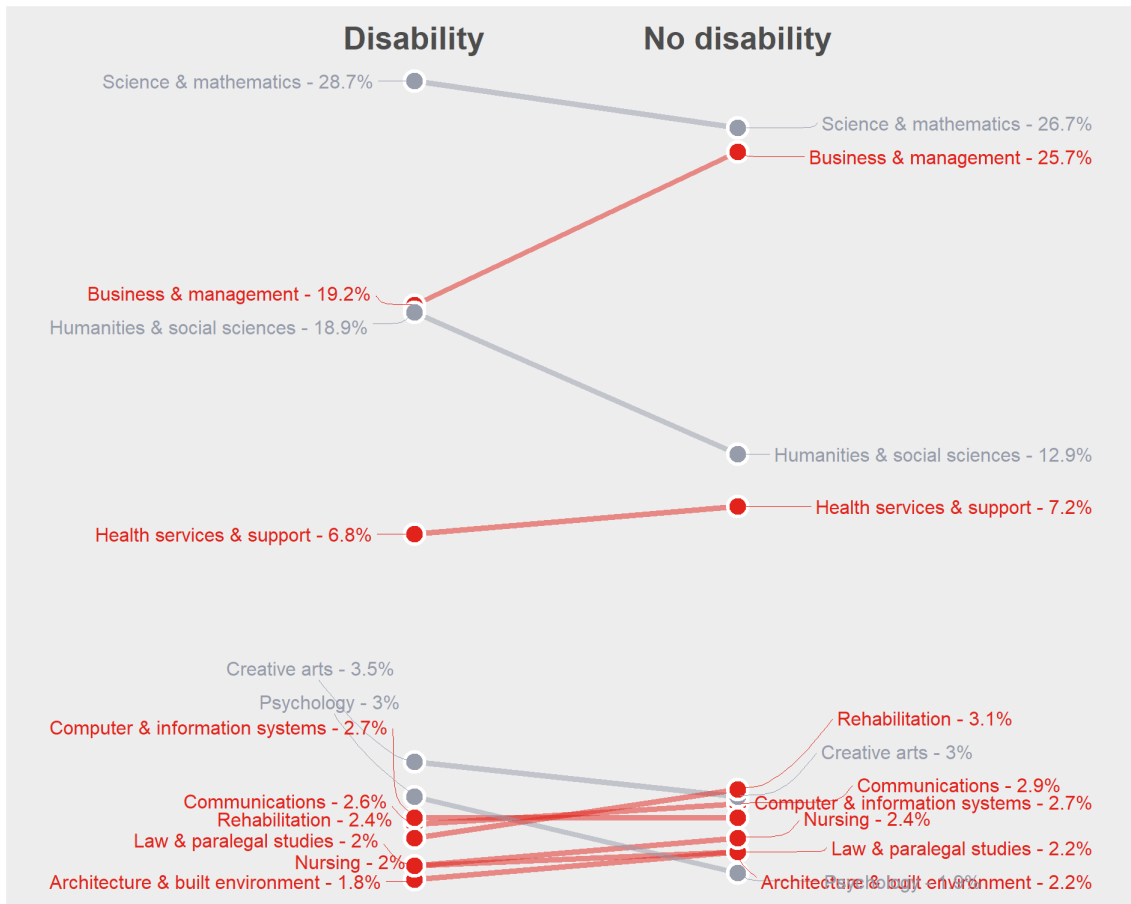
About two-thirds of high ATAR NESB students were enrolled in courses in either science and mathematics or business and management (Figure 10). These students were much less likely to enrol in humanities and social sciences courses compared to those from English speaking backgrounds (5.9 per cent vs 13.4 per cent). High ATAR NESB students were also less likely to enrol in nursing, rehabilitation, creative arts, law and paralegal studies, and communications courses.

Figure 10. Enrolment shares across study areas for high ATAR students by language background status



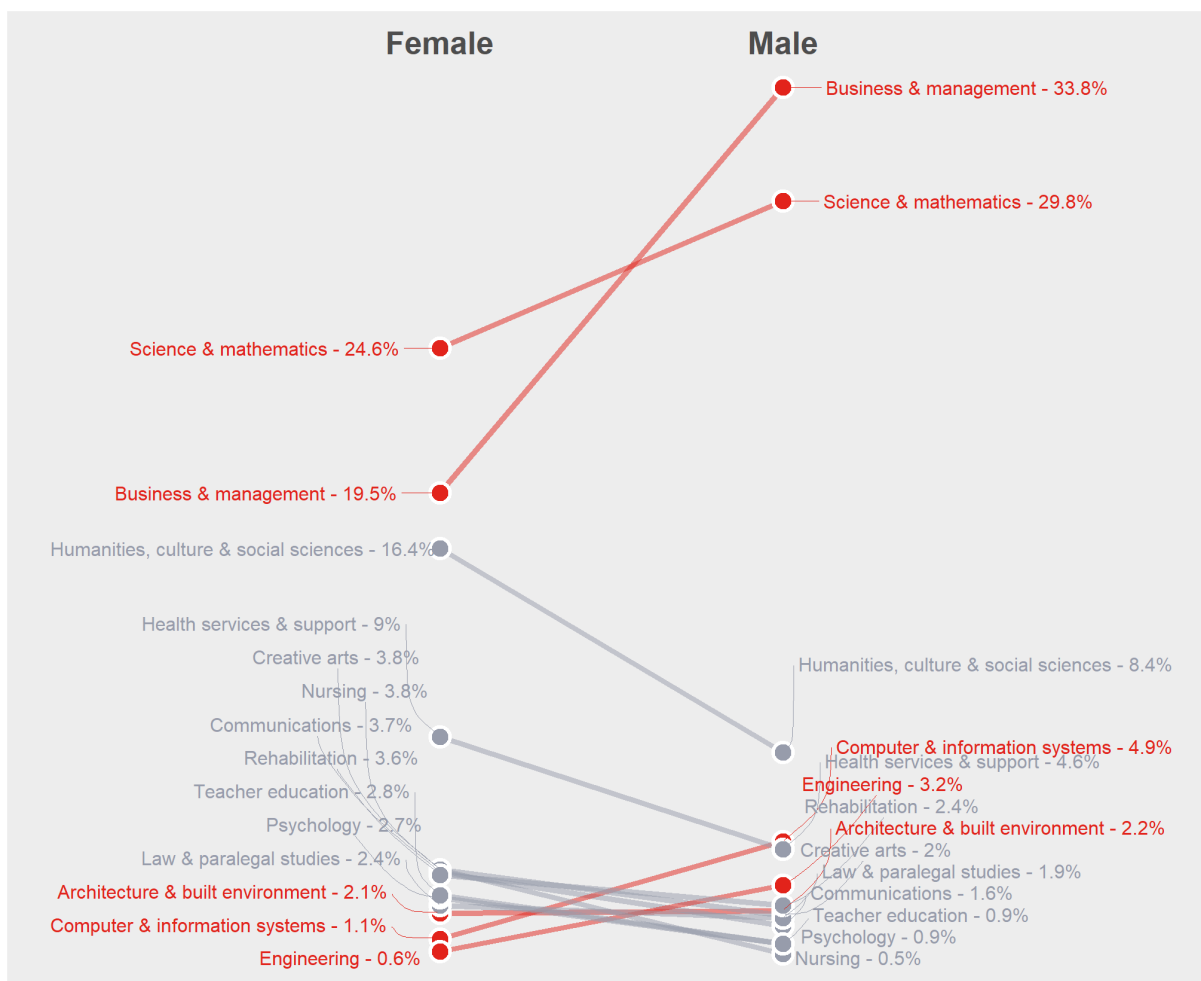
High ATAR students with disability were less likely than those without disability to enrol in business and management courses (19.2 per cent vs 25.7 per cent), although were more likely to enrol in humanities and social sciences (18.9 per cent vs 12.9 per cent).

Figure 11. Enrolment shares across study areas for high ATAR students by disability status



Nearly two thirds of male students with high ATARs were enrolled in business and management or science and mathematics courses compared to fewer than half of women with high ATARs (Figure 12). Instead, high ATAR female students were more likely to enrol in courses in humanities and social sciences (16.4 per cent vs 8.4 per cent), health services and support (9 per cent to 4.6 per cent), creative arts (3.8 per cent vs 2 per cent), nursing (3.8 per cent vs 0.5 per cent), communications (3.7 per cent vs 1.6 per cent), rehabilitation (3.6 per cent vs 2.4 per cent), teacher education (2.8 per cent vs 0.9 per cent), psychology (2.7 per cent vs 0.9 per cent), and law and paralegal studies (2.4 per cent vs 1.9 per cent). Women with high ATARs were much less likely than high ATAR male students to enrol in computer and information systems courses (1.1 per cent vs 4.9 per cent), or engineering courses (0.6 per cent vs 3.2 per cent).

Figure 12. Enrolment shares across study areas for high ATAR students by gender



Discussion

The supply and demand for higher education courses across different institutions and fields of education has often been considered with respect to national economic and strategic imperatives. For instance, recent Australian government policy reshaped student contribution amounts so as to, "...incentivise students to make more job-relevant choices, that lead to more job-ready graduates, by reducing the student contribution in areas of expected employment growth and demand." (Tehan & Cash, 2020).

While policy makers have been concerned with producing more graduates from a diverse range of fields to service an increasingly complex economy, much less attention has been given to the diversity of backgrounds of the graduates across these fields. In this study, we broadened the focus to include equity representation by university grouping and field of education. In the proceeding sections, we go on to discuss further some key themes in our analysis and offer recommendations.

The challenge for high-status institutions and student equity

Our analysis found large equity disparities between university groupings. Commencing students attending the selective Go8 universities were much less likely to come from low SES, regional or remote, or Indigenous backgrounds. This is in line with findings from other studies that have analysed equity representation by Australian university groups (Commission, 2019; Southgate, 2017).

The issue of wide disparities in the representation of traditionally disadvantaged groups among more selective institutions has received substantial attention abroad. In France, the selective so called *grande écoles* institutions have very few female students or students from disadvantaged backgrounds (Bonneau et al., 2021). Partly in response to pressure from anti-elitism protesters, President Macron announced the abolition of France's most selective *grande école*, École Nationale d'Administration which is responsible for producing a disproportionate share of France's political and business leaders (Morgan, 2019).

In the United States, children of parents in the top one per cent of the income distribution are 77 times more likely to attend a selective Ivy League college than those with parents in the bottom income quintile (Chetty et al., 2017). Questionable practices such as "legacy admissions", and preferences for relatives of donors, have contributed to large racial disparities in Ivy League enrolments. At Harvard University, for example, 43 per cent of white admissions were through preferences Harvard gives to what have been termed "ALDC applicants" – those who are athletes, legacies (descendants of previous graduates), dean's interest list (predominantly relatives of big donors), and children of faculty and staff – compared to less than 16 per cent for non-white admissions (Arcidiacono et al., 2019, p. 16). This is even more extraordinary when one considers that the overall admission rate at Harvard in 2020 was less than 5 per cent, yet for ALDC applicants it was between 33 per cent to 86 per cent, depending on the particular criteria the applicant fell under (Arcidiacono et al., 2019, p. 14).

Similarly, the selective Russell Group universities in the United Kingdom (UK) have come under criticism for their lack of representation of students from Black, Asian, and minority ethnic (BAME) groups (Milburn, 2012). As mentioned earlier, the Office for Students has set targets for the most high-status institutions specifically to eliminate the gap in access rates between POLAR quintile 1 and 5 students at the top third of universities when ranked using the tariff score methodology (Office for Students, 2021b). As Major and Banerjee (2019, p. 1), "Much of the heavy lifting on widening participation in higher education to date has been undertaken by newer and less selective higher education institutions. The access challenge therefore remains greater at more selective institutions."

In Australia, RUN universities are responsible for a larger share of widening participation across the system (Figure 1), yet improving equity representation across Go8 institutions may unlock improvements across the sector. Using data from the Longitudinal Survey of Australian Youth (LSAY), the Productivity Commission (2019, p. 60) conducted a composition analysis to attempt to explain why some equity groups were underrepresented in the higher education system and found that low SES and regional or remote students were, "...under-represented in the university system almost entirely because they are under-represented at Go8 universities". In contrast to selective institutions in other parts of the world, Go8 universities have higher rates of students from non-English speaking backgrounds than the sector average. However, Indigenous students are still less likely to attend Go8 universities than the sector average.

The common refrain is that Go8 universities are more competitive and have higher ATAR offer thresholds, and therefore, all else equal, equity groups on average are less likely to achieve ATARs high enough to receive an offer to these institutions. Interestingly though, our analysis of high ATAR students showed that, low SES, regional and remote, Indigenous, and female students with ATARs higher than 90 were still less likely to attend a Go8 university than their respective reference groups (Figure 3).

Improving equity and diversity at an institution need not come at the cost of excellence; indeed, excellence is arguably heightened by the presence of student (and staff) diversity. Supporting class, gender, ethnic, and geographical diversity is important to the quality of learning for all students. "Inclusive excellence" refers to how student (and staff) diversity can be harnessed to increase teaching and learning quality, as well as the student experience. Researchers have found that the likelihood that students will engage with students who are from different backgrounds increases as the compositional diversity of the campus increases (Chang, 1999), and that universities are more influential when they offer students "a social and intellectual atmosphere that is distinctively different from that with which they are familiar" (Milem et al., 2005, p. 8). Similarly, minority influence theory shows how minority opinions can serve to increase cognitive complexity among majority opinion members (Gruenfeld et al., 1998).

As we highlighted earlier, the UK has adopted ambitious access and participation goals, which includes a target specifically for selective institutions. These targets must be addressed within institutional Access and Participation Plans, which are a precondition for the ability to raise student fees. According to the Office for Students, the Access and Participation Plans have led to improved engagement with the broader widening participation agenda amongst selective institutions and has resulted in new measures designed to improve access. These include greater use of contextual admissions, bridging and foundation programs and better collaboration between institutions (Office for Students, 2020). The Go8 universities currently record participation rates of around 10 per cent for both the low SES and regional student groups, and just 0.6 per cent for Indigenous students. These rates are a matter of concern and require greater policy attention. Unless doors are opened to the most selective institutions, students from equity groups will remain at a positional disadvantage and selective institutions will recruit from a limited pool, while not enjoying the diversity of student cohorts that raises learning quality and increases the quality of graduates and, in turn, the professions.

Go8 universities are admittedly constrained by geographic factors that make it more of a challenge to attract equity cohorts than other institutions. The Go8 universities are predominantly based in major cities, but nearly half of Indigenous undergraduates, and a third of low SES students, are from regional and remote areas (DESE, 2020b). As an example, the Australian National University (ANU) in Canberra has the worst low SES access rate across public universities (DESE, 2020a), but this is largely explained by the fact that just 0.2 per cent of the Australian Capital Territory population qualifies as low SES (Koshy, 2020, p. 8). On the other hand, RUN universities, and other universities with a

significant regional presence, are much better situated to recruit these equity groups. It is widely recognised that the largest equity access payoffs are contingent on raising achievement at earlier levels of education among disadvantaged cohorts (Harvey et al., 2016). Our research found that just 8.8 per cent of Indigenous students, and about 16 per cent of low SES and regional and remote students had an ATAR above 90.

Such context helps to explain lower access levels but cannot be used as an excuse for inaction. The Russell Group universities in the UK, with similar selectivity as the Go8, have markedly increased their participation of equity groups following a concerted campaign by the Office for Students and its predecessor. Indeed, even within the Go8, there are already marked variations across institutions, courses, and equity groups, with evidence of some success where specific resources have been allocated. The recent decision by the ANU (2021) to provide subsidised accommodation for all future students who require it is one example of a major initiative to improve student equity.

Challenges and opportunities for equity across fields of education

Our analysis highlights disparities by field of education between equity and non-equity students. Policy makers have long recognised that some equity groups have been traditionally underrepresented in some study areas. As has been previously mentioned, concern over the lack of representation of women in non-traditional study areas led to the formation of the WINTA group as a formal equity group during the Dawkins reforms (DEET, 1990, p. 27). Indigenous representation has also received some attention. For instance, in the Dawkins era, Australian Government equity policy guidelines, *A Fair Chance for All* (DEET, 1990, p. 20), stated the objective was the increase in the participation of Indigenous people in higher education with an emphasis on, "...certain disciplines, including law, business and administration, medicine and health studies." Yet improving equity in these recognized areas of disparity has been mixed. While there have been some success stories for Indigenous participation, there are still plenty of areas of disparity. Conversely improvement has been paltry for WINTA. Further, our research identifies some unrecognized disparities among the remaining equity groups.

Encouragingly, we found evidence to suggest that some high-status fields have eschewed a false economy of a perceived trade-off between equity and excellence. While most equity groups have lower ATARs on average, some courses still manage to recruit equity applicants at levels above or at parity with their overall representation.

Medicine is considered the most high-status course in Australian higher education and had the largest share of high ATAR students (figure 6), yet students from regional or remote areas are represented in medical degrees at rates higher than their overall representation, and Indigenous students were at parity to their overall representation (table 1). Indeed, our findings likely downplay the equity gains in medical training. According to Medical Education and Training (MET) data from the Department of Health (2020, pp. 15-18), 2.9 per cent of medical students commencing in 2019 were Indigenous, and 28 per cent were from a rural background – both higher than their overall access rates across the sector (DESE, 2020a). Because our analysis only includes bachelor courses, we only capture a select few medical courses, but many universities only offer medical training as a postgraduate course.

Equity gains in medical training courses are no accident. Concerted policy efforts since the 1990s to improve the inequalities in access to healthcare, particularly for Indigenous communities, and in regional and remote places, have resulted in robust medical training infrastructure in regional areas to have medical students train and remain to serve these areas (Greenhill et al., 2015; Lyle & Greenhill, 2018). The centrepiece of this policy effort, the Rural Health Multidisciplinary Training (RHMT) program, designates targets of

Indigenous and regional or remote students that the universities in the RHMT program are expected to meet (Department of Health, 2019).

Still, we found that low SES students in our study were underrepresented in medicine degrees, with 7.6 per cent in medicine compared to 14.5 per cent overall, and female students were also slightly underrepresented relative to their representation in the sector as a whole. Griffin and Hu (2015) in a study of an outer metropolitan medical school found that the additional hurdles, particularly standardized testing, required as part of the medical training application put female low SES background applicants at a particular disadvantage. Although interestingly, this handicap was counteracted by the particular medical school's policy of a targeted allowance of students from local low SES areas which prioritised these students. Importantly in the case of the Griffin and Hu (2015, p. 110) study, low SES students admitted to the medical training program performed just as well as students from high SES areas. Medical schools, conscious of improving the supply of health professionals for underserved communities, have used quotas and reserved places, as well as enabling programs and alternative pathways to improve participation in equity groups (Southgate, 2017, pp. 48-49).

With some notable exceptions, high-status courses in allied health areas, in particular dentistry, rehabilitation, and pharmacy, have also managed to promote access among equity groups. Low SES students, NESB students, and female students were overrepresented in dentistry, although interestingly regional or remote students were underrepresented. Still, it is likely that the salience of a regional target through the RHMT program is stimulating improvements in the admission of regional or remote students. For example, La Trobe University reported that between 2020 and 2021 they were able to increase the share of regional students admitted to the bachelor of dental science (honours) by 27 per cent, as a result of a change in the Victorian Tertiary Admissions Centre (VTAC) admissions process that prioritised applicants from regional and remote areas (Sciberras, 2021). In pharmacy, low SES students and regional and remote students were overrepresented relative to their sector averages. Regional and remote students were also overrepresented in rehabilitation courses, although low SES students were slightly underrepresented. Unfortunately, the data shows Indigenous students were underrepresented in each of these allied health fields, despite the fact that many courses would be subject to the RHMT targets. A recent evaluation of the RHMT program argued that most universities were putting more effort into enrolling Indigenous students into medicine than other health degrees such as dentistry (KBC Australia, 2020, p. 146). The success of equity targets at the course level suggests they can play a key role in any strategy for widening participation.

While improving representation in the most selective study areas is important, diversity in courses that lead to careers in the arts, media and cultural professions are equally important. From a positive standpoint, our analysis shows that students from non-English speaking backgrounds had higher ATARs on average and were well represented in higher status courses. Yet, alongside low SES students, NESB students were less likely to enrol in courses in the creative arts, and communications (Table 1). Creative sectors have recently come under scrutiny for their lack of diversity, particularly at the executive and leadership level (Diversity Arts Australia, BYP Group, & Western Sydney University, 2019). Yet more attention and research are required to understand why underrepresentation of these students persist in creative arts and communications courses.

Of the groups we examined, the most dramatic disparities by study area were between male and female students. Female students made up 59 per cent of students in our sample yet accounted for only 15.6 per cent of students in computer and information systems courses, and 16.8 per cent in engineering courses (Table 1). Less than half of the share of students in architecture and built environment courses, and business and management courses were female, although there are nuances in the data when we dig further into the more detailed 41 QILT study areas (Table 3). Over half of students in Architecture courses were female (51.5

per cent), compared to only 14.8 per cent of students in building and construction courses. Looking at business and management courses, female students had particularly poor representation in banking and finance (24.7 per cent), and economics courses (35.4 per cent), although made up 57.5 per cent of students in sales and marketing courses (Table 3).

Despite WINTA being a recognized equity category in Australian higher education for several decades now, there has been little change in the share of female students enrolling in male dominated disciplines (Ellis, 2017; WGEA, 2019). In fact, between 2007 and 2017, the share of female students has declined in broad fields of education such as management and commerce, and information technology (WGEA, 2019, Table 1). This stalling, and in some courses reversal, of representation is at least partially due to a relative lack of attention from institutions and policy makers (Bell, 2016). A survey of equity programs and initiatives at Australian universities noted a “lack of emphasis” on improving WINTA participation in government policy, was reflected in the dearth of programs targeting WINTA participation (Bennett et al., 2015, p. 90). Improving the reporting of equity access and participation for female students by QILT study areas or narrow fields will at the very least provide publicly available information to galvanise widening participation efforts to where they are needed. As Bell (2016, p. 114) argues, “...reporting and review processes tend to focus on Broad Field of Education, therefore disguising significant and enduring disciplinary differences.” Further, the Australian Government could reinstate direct participation targets for study areas where women remain below parity.

Students and course choice

Our findings suggest that the course decisions of high-achieving students are informed by multiple factors and influences. There are some commonalities in the course choices of high ATAR students. Across all equity and non-equity groups, the study areas with the highest enrolments were science and mathematics, business and management, and humanities and social sciences. As with most students, there is a general trend for high-achieving students to “spend their ATAR”, selecting courses with ATAR cut-offs close to their own rank. However, many other factors are also at play.

Compared to high ATAR students from medium and high SES backgrounds, students from low SES backgrounds had lower enrolment shares in science and mathematics, business and management, humanities and social sciences, and creative arts. In contrast, low SES high ATAR students were more likely than their medium and high SES counterparts to enrol in health services and support, and teacher education.

High ATAR metropolitan students were much more likely to enrol in business and management courses whereas high ATAR regional and remote students were more likely to choose courses in health areas, including health services and support, nursing and teacher education.

Indigenous students with high ATARs were more likely to enrol in science and mathematics, and humanities and social science courses compared with non-Indigenous students, though less likely to enrol in courses in business and management. The share of high ATAR Indigenous students enrolling in teacher education, psychology, law and paralegal studies, creative arts, engineering, and nursing was also higher relative to non-Indigenous students.

Nearly two thirds of high ATAR NESB students were enrolled in courses in either science and mathematics or business and management. Yet high ATAR NESB students were much less likely to enrol in humanities and social sciences courses compared to those from English speaking backgrounds. High ATAR NESB students were also less likely to enrol in nursing, rehabilitation, creative arts, law and paralegal studies, and communications courses.

Almost two thirds of high-achieving male students were enrolled in business and management, or science and mathematics courses, compared to fewer than half of high achieving women. Rather, female students with high ATARs were more likely to enrol in courses in humanities and social sciences, health services and support, creative arts, nursing, communications, rehabilitation, teacher education, psychology, and law and paralegal studies. Consistent with other research, higher achieving female students were much less likely than their male counterparts to enrol in computer and information systems, or engineering courses.

Variable enrolment patterns suggest that many high achieving students do not simply spend their ATAR and/or follow institutional rankings, but rather align their university and course selection to a range of other factors including their own location, interests and passions. Such diversity and elasticity suggest that there is scope for highly selective courses, to increase their participation of high achieving equity group students. This opportunity exists notwithstanding the broader need for diversification of admissions and enrolments. We have, for example, raised the importance of contextual admissions and the limitations of ATAR elsewhere (Harvey et al., 2016). Relatedly, we have also addressed elsewhere the mature age question – school leavers, for example, form a majority of enrolments at Go8 universities but a minority at RUN institutions (Harvey et al., 2016). There are many ways in which selective institutions and courses could expand access, but this report is focussed on high ATAR achievers as a group that is rarely disaggregated by equity group and has received less policy attention than issues such as contextual admissions.

More broadly, variabilities in enrolment suggest that high achieving equity group students may be less likely to “spend their ATAR” and more likely to pursue interests such as humanities, health services, and education, that are less financially rewarding than courses chosen by most high achievers. Around half of high achieving equity group students also eschew a Go8 university, despite their universal eligibility (access to a Go8 university in all states is possible with an ATAR of 90). Understanding how, and why, high achieving equity group students select their courses may provide valuable insight into understanding and reforming popular narratives and stereotypes. One prominent critique of ATAR, for example, is that it tends to narrow student choice (Shergold et al., 2020), with prestige and reputation the dominant signifiers in a system where secondary schooling is reduced to a single number. Disaggregating the high ATAR achievers reveals clearly different motivations by equity group status, and further understanding of these differences may be helpful to diversifying student choice and influences.

Limitations and future research directions

Our analysis only captures commencing bachelor level students who were admitted to university on the basis of their secondary school results. As we noted earlier, this omits the dimension of course level but it also omits a significant proportion of university commencers who are admitted through pathways other than via ATAR. Yet the reality is that the majority of students admitted to higher education now enter through other pathways (Luckman & Harvey, 2019; Pilcher & Torii, 2018). Further research could look at the relationship between the basis for admission and stratification more broadly.

While we have been able to highlight patterns of stratification across the sector, we have not adequately been able to examine the precise causes of such stratification and it is clear further research is required in this area. Further research using additional data, such as data on student choices (preferences) and selection decisions (offers), could help to identify the mechanisms that contribute to stratification. Additionally, longitudinal data which tracks students from an earlier age, such as data from the LSAY, may help to identify patterns earlier in the lives of young people.

Relatedly, despite evidence from the US and UK suggesting undermatching contributes to stratification, we are no closer to understanding its potential impact in Australia. Although

tertiary admissions centres (TACs) in Australia are collecting data that could be used to conduct such an analysis, we were unable to access it for this project. Further research, in collaboration with TACs, is required to confirm that the university application process is working effectively and not contributing to stratification.

How graduates from equity groups fare in the labour market is also an important question for improving the social mobility of the educationally disadvantaged. For example, while we found that NESB students had good representation in high status institutions and study areas, research shows that these graduates then struggle more than other graduates to gain a foothold in the labour market (Social Research Centre, 2020a). Further research is required to examine the differential equity graduates and to explore outcomes like being employed in elite firms (Rivera, 2012).

We would also make the point that research on equity student outcomes generally would benefit from a better understanding of the confounding impact of institution and course. For example, including interaction effects between field of education and equity group membership in the modelling of graduate outcomes or even performance measures like retention could reveal important new insights.

Conclusion

This study provides novel research of equity access by higher education course and institution for school leaver cohorts. It does this first by combining large Australian national enrolment data from 2016 through to 2019 with the QILT study areas course classification typology, which enabled us to analyse equity access across course categories that better informed the potential vocational outcomes associated with each course. The study also examined course choice among high ATAR students by equity status. By isolating ‘high ATAR’ students in our analysis, we were able to examine course choice for applicants where prior achievement, as measured by the ATAR, was less likely to be a constraining factor in the choice.

The report set out to examine two broad questions. First, we set out to examine the extent to which equity group students are underrepresented within selective study areas and institutions. We found that, consistent with previous Australian studies, there are often large disparities in access across study areas by equity group membership. Each group had certain study areas in which they were overrepresented. Encouragingly, many high-status health courses where equity access targets already exist had strong access across some equity groups. Although, there were also many areas that had relatively low access rates across equity groups.

Our results show that, while it was common for all high achieving students to enrol at selective Go8 universities, there were differences in the strength of that inclination between equity and non-equity students. Compared to non-equity students, low SES, regional and remote, Indigenous students were less likely to choose a Go8 university. There were also clear differences in the study areas chosen by equity students at the margin. Together, these findings imply that many high achieving students, but particularly from equity groups, do not simply “spend” their ATAR. Instead, university and course selection is driven by a complex amalgam of factors depending on a student’s location, interests and passions.

The research supports previous calls (See for example Bell, 2016) for the Australian Government to improve on its equity performance reporting by including participation across more detailed course disciplines. We recommend using the 21 QILT study areas for reporting purposes. Our research also points towards the broader use of targets as a way to improve equity access. The success of equity targets for improving access for regional and remote and Indigenous students in high-status courses such as medicine suggest that a broader application of equity targets across institutions and courses is an effective way to improve access.

Appendix

Table 2. List of public Australian universities arranged by interest group

University groups	
Group of Eight	Australian National University Monash University The University of Adelaide The University of New South Wales The University of Melbourne The University of Sydney The University of Queensland The University of Western Australia
Australian Technology Network of Universities	Curtin University of Technology Deakin University RMIT University University of South Australia University of Technology Sydney
Innovative Research Universities	Charles Darwin University Flinders University Griffith University James Cook University La Trobe University Murdoch University Western Sydney University
Regional Universities Network	Central Queensland University Southern Cross University Federation University Australia The University of New England University of Southern Queensland University of the Sunshine Coast
Not Aligned/Other	Australian Catholic University Charles Sturt University Edith Cowan University Macquarie University Queensland University of Technology Swinburne University of Technology The University of Newcastle University of Canberra* University of Tasmania University of Wollongong Victoria University

Notes: * The University of Canberra joined the IRU group in September 2021, however we included it among the non-aligned institutions in our analysis.

Table 3. Equity access rates for 41 QILT areas

QILT 41 study areas	Low SES (%)	Regional & remote (%)	Indigenous (%)	NESB (%)	Disability (%)	Female (%)
Agriculture & environmental studies						
Agriculture & forestry	17.0	50.6	1.3	1.3	7.1	58.1
Environmental studies	14.6	33.0	1.2	2.1	5.9	53.0
Architecture & built environment						
Architecture & urban environment	10.5	16.6	0.9	5.5	4.5	51.5
Building & construction	15.4	9.4	0.6	2.9	2.4	14.8
Business & management						
Accounting	19.4	25.2	0.7	6.4	4.5	41.1
Banking & finance	12.0	8.4	0.2	6.6	3.4	24.7
Business management	13.4	17.4	0.9	4.1	3.4	47.7
Economics	6.6	8.5	0.2	3.8	3.8	35.4
Management & commerce – other	10.1	13.0	0.4	3.8	4.0	41.6
Sales & marketing	10.7	11.6	0.7	1.3	4.1	57.5
Communications						
Communication, media & journalism	11.5	18.1	1.0	1.2	5.8	64.6
Computer & information systems						
Computer & information systems	16.7	17.2	0.8	5.3	5.9	15.6
Creative arts						
Art & design	13.2	18.2	1.4	2.4	7.2	68.5
Music & performing arts	10.0	23.5	1.2	2.1	7.3	52.0
Dentistry						
Dentistry	19.9	14.2	-	11.9	3.7	73.4
Engineering						
Aerospace	16.3	17.5	1.1	8.9	1.8	21.8
Civil	12.8	33.0	-	4.0	4.3	13.1
Electrical & electronic	12.9	20.3	0.8	6.2	7.3	11.4
Mechanical	11.5	36.9	-	3.1	8.5	11.2
Other	14.9	24.0	0.9	4.7	4.3	16.7
Process & resources	9.9	14.8	-	5.6	-	26.8
Health services & support						
Health services & support	15.9	23.9	1.1	2.8	4.3	61.5
Public health	15.9	21.0	1.1	2.7	5.9	75.5
Humanities, culture & social sciences						
Humanities inc. history & geography	12.9	19.4	1.4	2.4	7.5	67.9
Language & literature	13.7	22.3	1.2	3.5	11.9	67.9
Political science	7.6	17.8	0.6	2.4	7.7	64.8
Law & paralegal studies						
Justice studies & policing	23.1	19.2	1.8	2.6	4.9	66.3
Law	14.5	26.0	1.5	2.1	4.9	64.5
Medicine						
Medicine	7.6	24.3	1.1	3.7	4.4	57.3
Nursing						
Nursing	20.0	34.5	1.6	4.1	5.0	89.9

QILT 41 study areas	Low SES (%)	Regional & remote (%)	Indigenous (%)	NESB (%)	Disability (%)	Female (%)
Pharmacy Pharmacy	20.1	22.3	0.6	11.2	4.5	63.7
Psychology Psychology	16.8	22.3	1.5	2.5	7.6	74.8
Rehabilitation Occupational therapy Physiotherapy	11.7 11.2	28.8 19.0	0.6 0.6	1.4 2.7	3.7 2.8	87.0 60.3
Science & mathematics Biological sciences Mathematics Medical science & technology Natural & physical sciences	16.0 11.9 15.3 12.2	20.5 15.4 16.5 17.0	0.9 0.5 1.0 0.8	4.6 5.4 7.0 4.8	6.3 4.2 5.2 6.1	61.9 25.6 60.3 49.6
Social work Social work	21.4	24.2	2.6	2.3	7.6	87.8
Teacher education Early childhood Other Primary & secondary	22.3 20.1 18.2	31.4 28.6 28.9	1.6 1.3 1.9	2.0 1.1 1.2	5.0 5.3 4.1	82.2 72.1 70.7
Veterinary science Veterinary science	16.1	20.9	1.4	2.3	6.9	82.6
Overall	14.5	20.7	1.1	3.5	5.4	59.0

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