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Australian Mobility Report Cards: Which Universities Admit the Most Disadvantaged Students?

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Abstract

Tertiary education has a vital role to play in fostering social mobility. To assess the extent to which Australian universities enrol disadvantaged students, I use two measures of disadvantage: neighbourhood characteristics and individual characteristics, and compare higher education institutions. Neighbourhood metrics appear to be a poor proxy for individual disadvantage. Yet even so, some institutions stand out as more effective pathways for disadvantaged students. I conclude with some recommendations for improving data quality, education policy and evaluation in order to make Australian universities more effective engines of social mobility.

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1. Introduction

Few investments have so large an economic payoff as attending university. The typical bachelor degree holder earns almost 50 per cent more than someone who completed year 12 (Leigh 2008). At the median, this amounts to a lifetime after-tax earnings premium of around $600,000 for women, and $800,000 for men, although there is some overlap between the earnings distributions of graduates and non-graduates (Norton, Cherastidtham and Mackey 2019, p. 14). Evidence from the United States suggests that there are large returns even at the margin: among students who only just scraped in, the wage gains from attending university are considerably larger than the costs of tuition and foregone income (Oreopoulos and Petronijevic 2013; Zimmerman 2014;. Differences in education have been found to be a significant driver of intergenerational disadvantage in Australia (Bubonya and Cobb-Clark 2021).

However, there has been a growing concern that the benefits of university may not be evenly spread across the population. For example, Chetty et al. (2017) find that US children whose parents are in the top 1 per cent of the income distribution are 77 times more likely to attend an Ivy League college than those whose parents are in the bottom income quintile. Unlike their US counterparts, Australian domestic undergraduates pay via income-contingent loans. Nonetheless, average university tuition fees are not that different in Australia and the United States.[1] Higher education equity is a live issue in

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Australian policy debates. For example, the Bradley Review recommended that the Australian Government set a national target that, by 2020, 20 per cent of higher education enrolments at undergraduate level are people from low socioeconomic backgrounds (Bradley et al. 2008). As I discuss below, it appears that this target has not been met.

In this article, I compare Australian institutions' enrolment of disadvantaged students in their undergraduate programs. I use two measures of disadvantage: neighbourhood characteristics and individual characteristics. There are significant differences between these metrics, suggesting that neighbourhood measures are only a crude proxy for true disadvantage. Yet notwithstanding these measurement issues, it is possible to discern significant differences between institutions. These results suggest that in addition to introducing reforms that target families, high schools and the tertiary education system as a whole, individual universities may be able to learn from one another in order to play a greater role as engines of social mobility.

2. Comparing Student Socioeconomic Status Across Universities

To compare the socioeconomic mix of undergraduates, the ideal dataset would contain rich background information on the family circumstances of all university attendees, as well as the name of the higher education institution. Unfortunately, such data are not publicly available. Instead, I rely primarily on a classification of domestic undergraduate enrolments by the socioeconomic status of their permanent home address. Specifically, this is carried out at the level of a Statistical Area Level 1 (SA1). SA1s are areas with a population of 200–800, with an average of approximately 400 people. Where possible, the Australian Bureau of Statistics designs SA1s to match whole suburbs or rural localities. In major cities, there are typically multiple SA1s for each suburb.

The measure of disadvantage is the ABS Socioeconomic Indexes for Areas (SEIFA) Index of Education and Occupation, based on the population distribution in the 2016 Census. This index is designed to reflect the educational and occupational level of communities, and is comprised of 10 variables relating to educational attainment, unemployment and the occupations of those who are employed.[2] The means for each institution are calculated from data on the number of students in each SEIFA decile, as enrolled in 2018. These data are not typically published at an institutional level, and were provided in response to a parliamentary question on notice.

Naturally, this approach has some limitations, since the socioeconomic status of individual students may differ from that of the neighbourhood in which they last lived before attending university. In addition, the extent to which neighbourhood variables are a good proxy for individual status may differ across institutions. For example, if a university is located in a city with pronounced clusters of prosperity and poverty, then the neighbourhood approach may be a better proxy for individual characteristics than if a university is located in an city where wealth and hardship are evenly dispersed. As students move from their teens into their twenties, they are increasingly likely to report their permanent home address as being their university residential address rather than their childhood home (Cherastidtham and Norton 2018). If students' propensity to switch addresses is correlated with disadvantage, it could skew the results. This would most likely cause regression to the mean, as disadvantaged students switch from an address that is more disadvantaged than their university accommodation, and advantaged students switch from an address that is more advantaged than their university residential address.

Neighbourhood-level data formed the basis of the Bradley Review's analysis of university attendance by low socioeconomic status students. That report found that from 1989 to 2007, 14–15 per cent of students came from the bottom quartile of neighbourhoods (Bradley et al. 2008, p. 28). Subsequent data published by the Department of Education, Skills and Employment indicates that the

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share of low socioeconomic status students rose by 1–2 percentage points during the period when student numbers were uncapped, and has remained flat since the demand-driven system was effectively ended (Department of Education, Skills and Employment 2019, Table 11.2).[3]

According to the most recent departmental statistics, low socioeconomic status students comprise fewer than 20 per cent of all domestic undergraduates. Indeed, just 15 of Australia's 41 universities—CQUniversity, Western Sydney University, Federation University Australia, University of Southern Queensland, James Cook University, University of South Australia, Victoria University, University of Tasmania, Charles Sturt University, the University of New England, Southern Cross University, the University of Newcastle, University of the Sunshine Coast, Torrens University Australia and Murdoch University—drew 20 per cent or more of their students from low socioeconomic neighbourhoods (Department of Education, Skills and Employment 2019, Table 11.6).

To check the accuracy of the neighbourhood approach, I employ a second empirical strategy, using unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. In its 2012 and 2016 waves, the HILDA survey asked respondents who had graduated from a university for the name of the institution they attended (this question was not asked in any other waves). I restrict the sample to those who completed a bachelor's degree. As a measure of socioeconomic status, I use the household net worth of the individual in years when they were aged 17 or younger. HILDA contains detailed information on the assets and debts of households. Since it is a longitudinal survey, it is possible to determine the relative position of university attendees during their childhood. For this purpose, I use all available wealth modules prior to 2016, being those in the 2002, 2006, 2010 and 2014 waves.

For each of these four waves, I calculate each individual's position on the household net worth distribution. This is done separately for each 5-year age band and survey year (for example, persons aged 5–9 in 2002). The net worth percentile is then averaged within each individual, to derive a measure of the average economic position of each person during their childhood. Because this approach necessitates observing individuals during their transition from childhood into university, only a total of 445 HILDA respondents can be assigned to Australian universities. Spread across all tertiary institutions, this provides only a check of the neighbourhood data, which are based on the full universe of students whose permanent home address is known.

Figure 1 shows the distribution of the two socioeconomic measures, averaged across all institutions. I estimate that the average undergraduate student is drawn from the 59th percentile of the neighbourhood socioeconomic distribution, and the 63rd percentile of the individual distribution. The individual measure suggests that there are fewer low socioeconomic status students than does the neighbourhood measure. For example, while 12 per cent of students are from the bottom quintile on the neighbourhood measure, only 7 per cent are from the bottom quintile on the individual measure.

Moving to institutional differences, Table 1 shows the average percentile of students' socioeconomic status according to the two measures. At an institutional level, the correlation between the neighbourhood measure and the individual measure is modest, at just 0.16. To some extent, this is likely to be a function of the imprecision of the individual measure. To address this issue, I estimate the standard error of the individual measure for each university, and then ask whether the neighbourhood measure falls outside the 95 per cent confidence interval of the mean for the individual metric. For 8 of the 41 institutions in Table 1, the neighbourhood measure is significantly further away from the individual measure than mere sampling error would predict.

These differences are in both directions. For the Australian National University, the University of Melbourne and the University of

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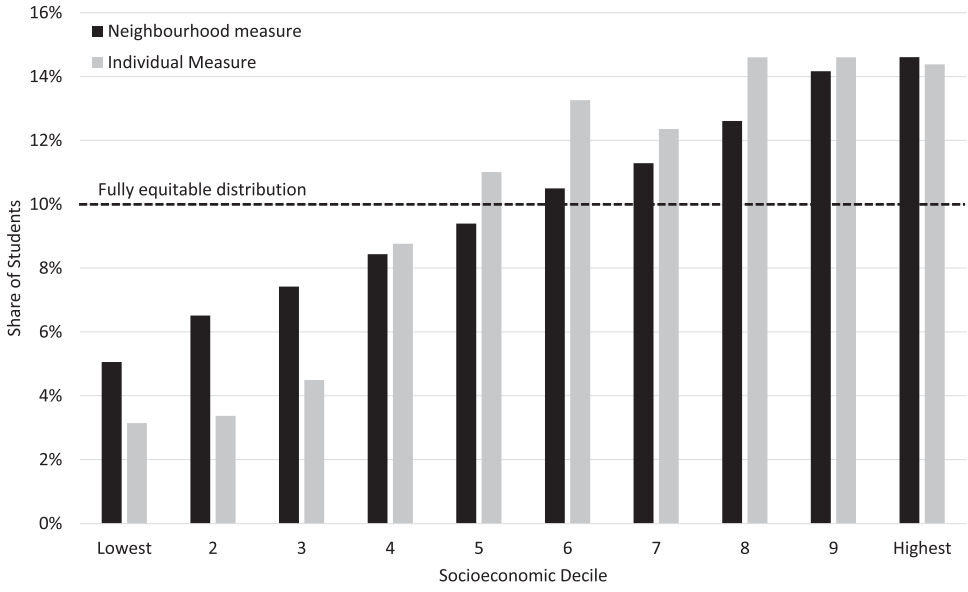
Figure 1 Socioeconomic Distribution of Undergraduate Students



Queensland, the typical student is significantly more disadvantaged on the individual measure than the neighbourhood measure. The largest gap is for the Australian National University, where students are at the 80th percentile of the neighbourhood distribution, but the 61st percentile of the individual distribution.

Conversely, for James Cook University, the University of Technology Sydney, University of the Sunshine Coast, the University of Wollongong and Victoria University, the typical student is significantly more advantaged on the individual measure than the neighbourhood measure. The largest gap is for the University of the Sunshine Coast, where students are at the 46th percentile of the neighbourhood distribution, but the 82nd percentile of the individual distribution.

Which institutions enrol the most disadvantaged students? In the first column of Table 2, I set out the institutions at which students are of lower-than-average socioeconomic status on both neighbourhood and individual measures. In the second column of Table 2, I set out those institutions at which students are of higher socioeconomic status than average on both neighbourhood and individual measures. Among those with the most low socioeconomic status students are Charles Darwin University, Federation University, Murdoch University, University of South Australia and Western Sydney University. Institutions with the fewest low socioeconomic status students include Bond University, the University of New South Wales, the University of Notre Dame Australia and the University of Technology Sydney.

One way to gain greater precision on the individual-level measure is to aggregate estimates into the two major groupings in Australian higher education: the Group of Eight and the remainder of the sector. The Group of Eight comprises eight of the country's oldest and most research-intensive institutions: the Australian National University, University of Adelaide, University of Melbourne, Monash University, University of New South Wales, University of Queensland, University of Sydney and University of Western Australia. The Group of Eight is Australia's closest equivalent to the Ivy League in the United States or the Russell Group in the United Kingdom. However, the analogy should not be taken too far, since the wage returns associated

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Table 1 Socioeconomic Status of Students by Institution

University	*Average percentile of student SES (neighbourhood measure)*	*Average percentile of student SES (individual measure)*	*Standard error of individual measure*
Australian Catholic University	62	68	6.6
Australian National University	80	61	9.5*
Bond University	65	76	12.3
Central Queensland University	40	68	25.3
Charles Darwin University	52	40	38.0
Charles Sturt University	51	61	7.8
Curtin University	57	68	6.1
Deakin University	61	63	5.7
Edith Cowan University	53	66	10.2
Federation University Australia	42	52	8.7
Flinders University	53	60	5.4
Griffith University	55	53	4.3
James Cook University	47	65	3.4*
La Trobe University	53	55	5.8
Macquarie University	70	62	9.7
Monash University	68	65	5.6
Murdoch University	52	51	16.1
Queensland University of Technology	66	73	4.0
RMIT University	63	62	8.7
Southern Cross University	47		
Swinburne University of Technology	59	62	8.1
Torrens University Australia	58		
University of Adelaide	60	57	5.2
University of Canberra	73	62	5.3
University of Divinity	64		
University of Melbourne	73	60	5.7*
University of New England	53		
University of New South Wales	69	80	6.1
University of Newcastle	50	59	5.8
University of Notre Dame Australia	69	74	9.7
University of Queensland	68	56	4.8*
University of South Australia	51	51	8.1
University of Southern Queensland	45	60	14.0
University of Sydney	72	65	6.5
University of Tasmania	53	59	8.6
	66	79	5.4*

(Continues)

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Table 1 (Continued)

University	*Average percentile of student SES (neighbourhood measure)*	*Average percentile of student SES (individual measure)*	*Standard error of individual measure*
University of Technology Sydney			
University of the Sunshine Coast	46	82	11.6*
University of Western Australia	68	61	6.5
University of Wollongong	55	72	4.3*
Victoria University	49	74	9.6*
Western Sydney University	45	58	7.0
All institutions	**59**	**63**	**1.2***

Note: Asterisk denotes that the neighbourhood mean lies outside the 95 per cent confidence interval of the individual mean.

with attending a more selective Australian university are minimal (Koshy, Seymour and Dockery 2016). This stands in contrast to the significant university selectivity premium observed in the United States (Hoxby 2009), Britain (Walker and Zhu 2017) and Canada (Milla 2017).

Table 3 shows a more detailed breakdown of the socioeconomic status of students across institutions. On the neighbourhood metrics, Group of Eight universities have a smaller share of low socioeconomic status students than universities outside that grouping. Measured by neighbourhood characteristics, the average Group of Eight student is at the 68th percentile, while students at other universities are at the 57th percentile. On the neighbourhood measure, Group of Eight universities have more students from the top tenth of the distribution than from the bottom half—unlike non-Group of Eight universities, which have a more even spread of students.

However, the individual-level measures paint a different picture. On these metrics, there is no difference in the average family wealth of students in the two groupings. Indeed, what is most striking about the comparison is that Group of Eight universities

Table 2 Institutions with the Most and Fewest Disadvantaged Students

More disadvantaged students than average on both neighbourhood and individual metrics	*Fewer disadvantaged students than average on both neighbourhood and individual metrics*
Federation University Australia	University of New South Wales
Charles Darwin University	University of Notre Dame Australia
University of South Australia	University of Technology Sydney
Western Sydney University	Bond University
Murdoch University	Deakin University
University of Southern Queensland	Australian Catholic University
University of Newcastle	Monash University
La Trobe University	Queensland University of Technology
Griffith University	University of Sydney
University of Tasmania	
Charles Sturt University	
Flinders University	

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Table 3 Student Socioeconomic Status by Percentile and University Groupings

	Group of Eight	*Non-Group of Eight*	*All institutions*
Neighbourhood measures			
Average percentile of student SES	68	57	59
Share of students from bottom 20%	7.1%	12.6%	11.6%
Share of students from bottom 50%	24.3%	39.8%	36.8%
Share of students from top 10%	26.3%	11.9%	14.6%
Individual measures			
Average percentile of student SES	63	63	63
Share of students from bottom 20%	7.2%	6.2%	6.5%
Share of students from bottom 50%	34.5%	28.8%	30.6%
Share of students from top 10%	15.1%	14.1%	14.4%
Share of students from top 1%	4.3%	1.3%	2.2%

tend to have more students from both the top and bottom of the distribution. They have 7 per cent of students from the bottom 20 per cent of the wealth distribution (as against 6 per cent in other universities), and 4 per cent from the top 1 per cent of the wealth distribution (as compared with 1 per cent in other universities). This suggests that while non-Group of Eight universities enrol more students from disadvantaged neighbourhoods, Group of Eight universities are more likely to enrol students with low levels of family wealth. To the extent that these differences are a function of different policy choices, they suggest the potential for the two sets of institutions to learn from one another as to how best to attract—and retain—disadvantaged students.

3. Institutional Constraints

Australian higher education institutions face at least three constraints on their ability to attract more students from low socioeconomic backgrounds.

First, because most undergraduate students live at home while attending university, the mix of applicants will be shaped by the degree of economic disadvantage in the suburbs surrounding the institution. Although students who live away from home receive a higher level of youth allowance ($256 per week, compared with $177 for those who live at home), the amount does not cover accommodation and living expenses in many cities. This means that institutions located in more affluent parts of Australia (for example, Crawley, Western Australia) will tend to have fewer disadvantaged applicants than in poorer areas (for example Townsville, Queensland).

Direct evidence can be gleaned by looking at the association between the socioeconomic status of the area in which a university is located and the socioeconomic status of its student body. To estimate this, I use the same measure of disadvantage as for students' neighbourhoods, the ABS SEIFA Index of Education and Occupation. For each university, I calculate that index for the postcode in which the largest campus is located. I then estimate the association between that index and the average percentile of student socioeconomic status. For the neighbourhood measure, the two measures are strongly associated, with the location of the university explaining 60 per cent of the variation in the socioeconomic mix of its students. There is no relationship between the individual measure of student socioeconomic status and the socioeconomic status of the university campus.

In general, economists tend to prefer individual-level metrics over regional-level proxies. While neighbourhood disadvantage may have some impact, it is likely to be significantly smaller than the direct impact of household disadvantage. A person's life outcomes are much more dependent on the resources in their household than on the

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average resources in their neighbourhood (for an empirical case study, see Clarke and Leigh 2011).

A second constraint on universities' ability to attract disadvantaged students is the number of such students who are university-ready. As Manny (2020) notes, poorer students are less likely to finish year 12, less likely to be eligible for a university admission score, and less likely to have an admission score sufficient to enter university. Manny's analysis, based on 2017 data from NSW, finds that students from the bottom 25 per cent of the socioeconomic distribution (based on neighbourhood characteristics) are twice as likely to be Australian tertiary admission rank (ATAR)-ineligible as those in the top 25 per cent.[4] Similarly, students from the bottom 25 per cent of the socioeconomic distribution (based on neighbourhood characteristics) are only one-quarter as likely to have an ATAR of 70 or higher as those in the top 25 per cent.[5] The ATAR is a strong predictor of students' likelihood of completing university.

These differences reflect deep structural differences in the university-readiness of students across the population. An analysis of 18 OECD nations finds that in all 18 countries, young people whose parents did not attend university are underrepresented among undergraduates (OECD 2018a, p. 241). Even in those nations offering free tertiary education, first-in-family students are underrepresented. This is consistent with Australian evidence that parents in low socioeconomic households tend not to expect their children to attend university (Koshy, Dockery and Seymour 2019). It suggests that fully equalising attendance across socioeconomic groups is likely to be difficult, if not impossible. But the perfect should not become the enemy of the good. Evaluations of programs aimed at raising the attainment rates for low socioeconomic status students suggest that there are presently many high potential students from disadvantaged backgrounds who would benefit from a university education, yet are currently missing out (see e.g. Oreopoulos and Ford 2019; Dynarski et al. 2021).

A third constraint is that Australian higher education institutions do not have a long tradition of admitting students based on their socioeconomic status. While the share of students admitted on factors other than pure test scores has risen over recent decades, institutions rarely have information on applicants' parental income or wealth. Moreover, Australian universities lack the sophisticated university admissions offices of their US counterparts. Moving to such a system requires substantial resourcing, as well as appropriate checks against the kinds of unethical behaviour that underpinned Operation Varsity Blues, a criminal conspiracy that facilitated admissions into elite universities for more than 700 students.

Nonetheless, there is room for improvement. Students from low socioeconomic status neighbourhoods are more likely to get government scholarships (12.3 per cent, compared to an average of 7.0 per cent among all domestic undergraduates), but *less* likely to get university-funded scholarships (6.2 per cent, compared to an average of 7.0 per cent among all domestic undergraduates).[6] Australian universities might consider better targeting their scholarships towards talented students from disadvantaged backgrounds, rather than providing scholarships that are allocated purely on the grounds of academic merit.

4. Policies to Increase Social Mobility

Despite these constraints, the role of education in social mobility is undeniable. Studying the ways that social position is passed down from one generation to another in Australia, Mendolia and Siminski (2017) estimate that 21–37 per cent of the impact of family background on earnings is due to education. Decomposing the earnings gap between Indigenous and non-Indigenous Australians, Birch and Marshall (2018) find that around half the gap is due to differences in formal education. To increase intergenerational mobility, it would be desirable if more students from low-socioeconomic status families had an opportunity to gain a tertiary education. To the extent that such measures identify talented

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young people who would otherwise have been unable to fulfil their potential (so-called lost Albert Einsteins and lost Marie Curies), they may be both efficient and equitable.

As a starting point, governments should improve the quality of socioeconomic data on their student population. Clear differences between individual-level and neighbourhood-level measures demonstrate the problems of using an imperfect proxy. Empirical critiques of neighbourhood measures to assess equity in Australian higher education go back decades (see e.g. McMillan and Western 2000).

Consistent with this article's conclusion that neighbourhood-level metrics are only a rough proxy for individual outcomes, Cherastidtham and Norton (2018) find disparities between neighbourhood-level data and parental education. For example, one-fifth of students in the bottom neighbourhood decile have a parent with a bachelor degree: suggesting that while their neighbourhood may be disadvantaged, their own parent is relatively highly educated. Similarly, in neighbourhoods that rank in the top decile of socioeconomic advantage, one in five children have a parent without any post-school qualification: suggesting that while their neighbourhood is highly advantaged, they have a parent with an education level that is well below average.[7] Once individual-level metrics are available, neighbourhood measures should be abandoned.

One readily available alternative to neighbourhood-level characteristics for socio-economic reporting is parental education, which is already collected by the Australian Government for nine out of ten university students. Parental income could also be attributed to students by matching student identifiers to parental tax file numbers. It should not be beyond the wit of policymakers to maintain strict data security while tangibly improving the quality of equity measures.

Once universities are being judged on a reliable benchmark, governments should begin publishing regular data to show which institutions are enrolling the highest share of disadvantaged students. It may also be worth adjusting these figures based on the relevant pool of students from which the institution draws its applicants (see Hoxby and Turner 2019 for a discussion of this issue in the US context). In comparing across universities, it is important to focus not only on the socio-economic mix of those who are admitted, but also on the share of disadvantaged students who successfully graduate. Attrition is a significant issue in Australian higher education: three in every ten students who enrol in a bachelor degree do not complete within 8 years. Attrition rates are not much higher among students from low socioeconomic backgrounds, but are substantially higher for students with lower university entrance scores (Norton, Cherastidtham and Mackey 2018).

Equalising school quality is also vital. As Table 4 shows, Australian schools that serve advantaged students have teachers who are more experienced, more appropriately trained, better prepared and less likely to be absent than teachers in schools serving disadvantaged students. This is hardly a recipe for building opportunity. If policy does not empower disadvantaged primary schools and high schools to attract and retain the best personnel, it is difficult to see how we can expect students in those schools to be university-ready.

Finally, Australian universities should do more to implement evidence-based policies for attracting low-income students. Literature reviews by Deming and Dynarski (2010) and Page and Scott-Clayton (2016) suggest that needs-based scholarships raise attendance, with each additional US$1,000 of financial aid raising university attendance by around 4 percentage points. Other promising initiatives include providing high schoolers with early access to university courses, online provision of preparatory courses in the months preceding university, and reminder text messaging to students in the months before starting university. Among the programs that appear cost-effective at reducing attrition are group study programs for first-year students, additional counselling support and peer mentoring.

Institutions should not only ensure that their initiatives are informed by the published literature, but also rigorously evaluate their interventions. For example, the University of

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Table 4 Differences in Australian High School Quality by Socioeconomic Status

	Bottom quarter	*Second quarter*	*Third quarter*	*Top quarter*
Average years of experience of the teacher workforce (years)	15.1	16.9	16.9	18.4
Proportion of teachers who are trained in all subjects they teach (%)	78.3	80.7	85.0	84.5
Principal reported that the school's capacity to provide instruction is hindered by teachers not being well prepared for classes (%)	20.7	17.3	9.3	5.8
Principal reported that the school's capacity to provide instruction is hindered by teacher absenteeism (%)	21.1	26.9	13.4	5.6

Notes: Figures are sourced from OECD 2018b, Annex B, Tables 3.9, 3.18, 3.24, 3.29. Figures for teaching experience and teacher training are for non-science teachers (in both cases, the pattern is similar for science teachers). Principal reports are weighted by the number of students in each school. The socioeconomic profile is measured by the school-average PISA index of economic, social and cultural status.

Wollongong tested the impact of peer-assisted study sessions for first-year students through a randomised trial (Paloyo, Rogan and Siminski 2016).[8] This approach could usefully be extended to a range of initiatives, from campus visits to mentoring—which presently lack strong evidence on their cost-effectiveness. Policy experimentation, rigorous evaluation and the sharing of information across institutions can all help to improve Australian social mobility.

Endnotes

1. Although the top fees in the United States are much higher than in Australia, average tuition levels do not differ much. Most US 4-year university students are in-state students at public colleges. After accounting for financial aid and tax breaks, such students paid annual average net tuition and fees of US$3,230 (around A $4,000) in 2020–21 (Ma, Pender and Libassi 2020). At private non-profit universities—attended by only half as many students—average net tuition was US$15,990 (around A$21,000). By contrast, the annual Australian student contribution amounts under the higher education contribution scheme-higher education loan program (HECS-HELP) scheme in 2021 ranged from $3,950 for courses in Band 1 (including agriculture, psychology and education) to $14,500 for courses in Band 4 (including law, economics and accounting).

2. Specifically, the index is comprised of the following 10 variables: the share of people aged 15 years and over who have no educational attainment; the share of people aged 15 years and over whose highest level of education is Year 11 or lower; the share of people aged 15 years and over whose highest level of educational attainment is a certificate III or IV qualification; the share of people aged 15 years and over whose highest level of education attainment is a diploma qualification; the share of people aged 15 years and over at university or other tertiary institution; the share of people (in the labour force) unemployed; the share of employed people who work in a Skill Level 1 occupation; the share of employed people who work in a Skill Level 2 occupation; the share of employed people who work in a Skill Level 4 occupation; and the share of employed people who work in a Skill Level 5 occupation.

3. Precise rates vary because the neighbourhood measures change over time. Using postcode data from the 2006 census, the low socioeconomic share rose from 16.0 per cent in 2006 to 16.8 per cent in 2011. Using postcode data from the 2011 census, the low socioeconomic share rose from 16.8 per cent in 2011 to 17.9 per cent in 2016. Using postcode data from the 2016 census, the low socioeconomic share stayed essentially unchanged at 18.5 per cent in 2016 and 18.6 per cent in 2019. Using Statistical Area 1 data from the 2011 census, the low socioeconomic share rose from 15.1 per cent in 2011 to 16.0 percent in 2016. And using Statistical Area 1 data from the 2016 census, the low socioeconomic share stayed constant at 17.0 per cent in 2016 and 16.8 per cent in 2019 (all figures estimated from Department of Education, Skills and Employment 2019, Table 11.2).

4. Among students in New South Wales in 2017, 32.4 per cent of those in the bottom quartile (by neighbourhood education and occupation) were ATAR-ineligible. For the top quartile of socioeconomic status, 14.5 per cent were ATAR-ineligible (Manny 2020).

5. Among students in New South Wales in 2017, 5.2 per cent of those in the bottom quartile (by neighbourhood education and occupation) received an ATAR of 70 or higher. For the top quartile of socioeconomic status, 22.9 per cent received an ATAR of 70 or above (Manny 2020).

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6. This analysis is reported in the 2012 Universities Australia Student Finances Survey (Bexley et al. 2013, p. 23). Unfortunately, the analysis was not available in the Universities Australia report on the most recent survey, which was conducted in 2017.

7. Cherastidtham and Norton (2018) report that both analyses are based on the education levels of the first parent listed on the child's survey.

8. Unfortunately, the encouragement design approach of Paloyo, Rogan and Siminski (2016) managed to induce only a small increase in take-up rates for the treatment group. Students who signed up for a study group went in the draw to win a $1,000 Coles-Myer gift card. If all those in the treatment group had subscribed, the expected value of the incentive would have averaged $18. This could have been insufficient to induce students to devote multiple hours to attending these study groups.

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