

Back to the future

Re-exploring SES among university students

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Introduction

Increasing the participation of people from low socioeconomic status (SES) backgrounds in higher education is a key tenet of the Australian Government. Australia is aiming to raise the proportion of undergraduate students who are from a low SES background to 20 percent by 2020. The emphasis on improving access has been well received and is a crucial part of the overall ambition of the Government to increase attainment levels in higher education across Australia.

Given the rise in student numbers in recent years, exploring change in SES is important. Whether this growth has encouraged a higher proportion of students from low SES backgrounds to enrol in university is an important factor in the interplay between SES targets, attainment targets and the overall equity aims of Government.

However, measuring SES is a difficult task, especially when it comes to the undergraduate university student population. In general, measurement of the SES of university students has relied on derived measures based on the concurrent residential location of the student. This has been and continues to be the most efficient way of estimating SES distributions among students; however, it is perhaps not the most accurate indicator. While recent changes to these calculations have started to include recipients of Centrelink benefits in an attempt to increase the accuracy of the measure, the current residential address remains the dominant basis for deriving SES of students.

This *Joining the Dots* (JTD) Research Briefing explores the use of a measure of SES that is based on university students' *prior* residential address rather than their address once attending university. It is hypothesised that prior address offers a more accurate indication of the SES *background* of higher education students, given that many of this cohort move house to attend university, and that the SES of their residential

area once enrolled at university may not reflect their original SES background. This exploratory study aims to investigate the extent to which a measure based on previous address changes the SES distribution of the student body. Furthermore, it tracks whether SES of this population changed between 2006 and 2011 based on this new measure, a period in which there was substantial growth in university enrolments (Edwards & Van der Brugge, 2012).

By extracting data from the 2006 and 2011 Census, which include information on residential location five years prior to the Census, and matching this information to the Australian Bureau of Statistics (ABS) Socioeconomic Indexes for Areas (SEIFA), this briefing reveals a different picture from the one that is based on current methodologies, with the proportion of low SES students being shown to be higher than previously estimated.

Key findings from this research are:

- Census data show that persons enrolled in university are more transient than the general population, justifying exploring SES based on prior residential background.
- Based on students' address five years earlier, this study estimates that 18.5 per cent of undergraduate university students in 2011 were from low SES backgrounds. The same figure emerged from 2006 Census data.
- By comparison, for the same cohort of students the SES calculation by current address in 2006 suggests 13.2 per cent are from a low SES background. The measure based on students' prior address indicates a notably higher proportion of low SES students enrolled in Australian higher education.
- Estimates from the 2006 Census and 2011 Census show that despite a large growth in enrolments at university during this time, the proportion of students from low SES backgrounds did not change. Instead, growth was seen in enrolments from students from middle SES backgrounds.
- The different results of SES measures based on prior versus current address could be explained partly by the notable rate of student movement from regional areas to capital cities. When considering the prior address of undergraduates in 2011, regional areas experienced a net loss of 16 per cent.
- While this is an exploratory study, the outcomes derived suggest potential value in the further examination of SES from the perspective of prior residential location, given the bias uncovered in current measures of SES.





Measuring SES in Australian higher education

In the Australian Government's response to the 2008 Review of Australian Higher Education (Bradley, Noonan, Nugent, & Scales), substantial focus was put on increasing Australian higher education attainment rates, with a particular emphasis on improving participation from underprivileged groups. Based on the recommendation of the Review panel, the Government set a target 'that by 2020, 20 per cent of higher education enrolments at undergraduate level will be of people from low SES background' (Australian Government, 2009b, p. 13). In this target, low SES is taken to mean the lowest SES quartile of the Australian population. The government announced funding designed to facilitate growth in enrolments of people from low SES backgrounds, and indicated further work would be undertaken to develop better measures of low SES, which at the time were based on the SES of students' current residential postcode.

By way of a brief background, the following section outlines the basic methods used to measure SES background of students in higher education. As there is no definitive way to measure socioeconomic status, a variety of methods have been used in a range of studies, with each method justifiable in its own right. The focus here is on how the Australian Government has measured SES among this group for the purpose of examining equity targets and allocating support funding. The briefing then looks at an alternative measure that is based on the use of national-level, large-scale, publicly available data.

In the past decade or so, the most common way of calculating the SES distribution of students in higher education has involved matching the postcode of each student's home residence to the SEIFA Index of Education and Occupation (IEO). A category of 'high', 'middle' or 'low' SES was allocated to each postcode based on its IEO 'score'. The allocation of high, middle or low was distributed so that 25 per cent of the Australian population was categorised as high SES, 50 per cent as middle SES and 25 per cent as low SES. For a completely equitable distribution of university students, the percentage of students in each SES group would need to be 25–50–25. However, within the university student cohort the low SES group has been consistently under-represented.

In December 2009, the Australian Government released a discussion paper examining new methods

for measuring SES in Australian higher education (Australian Government, 2009a). The postcode-to-SEIFA method was considered a blunt tool, given that SEIFA codes are only awarded at a relatively high geographical level of classification, and that it does not take into account individual circumstances.

The paper noted that there were potential problems with the allocation of SES by home residence for university students because 'university students are mobile and often move away from home to go to university', so using data based on current home address, meant they were 'not receiving information about the origin of these students' (Australian Government, 2009a, p. 2).

The discussion paper suggested a number of improvements to the measurement of SES, with a focus on the practical realities of data collection, including validity, reliability and transparency.

Following the Australian Government's discussion paper recommendations, SES is currently calculated based on an interim measure. This measure allocates SES categories at a lower geographical level, the Census District, in an attempt to eliminate some of the perceived aggregation bias that resulted from a larger postcode area allocation. It also introduced an individual-level variable based on whether a student was a recipient of a Centrelink benefit. SES is derived from these two measures, with a two-thirds weighting on the address IEO measure and a one-third weighting on the Centrelink measure.¹ The interim measure does not, however, take into account the previous address of students before starting university.

Based on this interim measure of SES as well as on the previous measure, statistics reported by the Australian Government show that students from low SES backgrounds are significantly under-represented at university. **Figure 1** shows the national rates of participation in higher education from students identified as from a low SES background on the 'current postcode' measure. It shows participation rates consistently hovering around 16.5 per cent

¹ See <http://www.innovation.gov.au/HigherEducation/HigherEducationStatistics/StatisticsPublications/Pages/LowSESInterimIndicator.aspx> for further detail.

between 2001 and 2011. As noted by others (Bradley, et al., 2008; CSHE, 2008; Gale, Tranter, Bills, Hattam, & Comber, 2010), there has not been any notable change in the representation of low SES students over the past decade or so at the national level. In fact, while the last five years a small variation in the proportion of low SES students enrolled (growth also noted in a Victorian study by Newnham, Anderson, & James, 2012), the level in 2011 (16.8 per cent) is the same as that recorded in 2001.

Alongside the time series data based on the ‘current postcode’ calculation of SES, Figure 1 indicates results based on the interim measure outlined above. The interim measure results in a lower estimate of the proportion of low SES students in higher education.

Importantly, **Figure 1** also highlights the gap between both these estimates of low SES, the Government target of 20 per cent, and the level of participation that would represent an equal representation of SES across the population.



Figure 1

Proportion of domestic undergraduate students who are from low SES backgrounds in Australian universities, 2001 to 2011 – Postcode measure (grey) and interim measure (green) (%)

Source: DIISRTE (2011), Higher Education Statistics Collection, Student Full Year & DIISRTE (2011), Low SES Interim Indicator statistics.

A different look at SES

As noted earlier, all work to date undertaken at the national level for government reporting has been based on the current home residential location of students. This methodology eschews the warning from the Government discussion paper that since the student population is a transient group, making assumptions about the background of these students based on their current address may not be the best way to accurately identify their socioeconomic status.

Data from the 2011 Census show that university students were more likely to have moved in the previous five years (with 46 per cent moving)

compared to the overall Australian population (38 per cent). It is likely that many students who moved home between 2006 and 2011 did so in order to attend university. Capturing the impact of this movement on recorded SES is important for accurately measuring SES and better understanding students in Australian universities.

The Government discussion paper itself notes that ‘to rectify some of the problems associated with the mobility of students ... students could be asked to report their home address five years ago’ (Australian Government, 2009a, pp. 7-8).

Method

The analysis in this briefing puts this suggestion into practice by using data from the 2006 Census and 2011 Census of Australian Population and Households. The Census enables the identification of university students and includes a variable that identifies the home location of students five years prior to the Census date. By matching the SES of the prior address of university students, arguably a more accurate reflection of the SES background of the student can be gained. This approach remains limited since it uses aggregated data on the SES of an area instead of picking up data on individual students. Despite this, it is considered to be a worthwhile exercise in offering indicative figures on the potential impact of this alternative approach to SES measurement.

For the purpose of this analysis, a proxy indicator has been derived based on responses to the Census relating to prior educational qualifications in order to as best identify the undergraduate cohort of students. In addition, students who were overseas in the ‘address five years ago’ variable have been removed from the analysis, give the best possible focus on domestic students. As a result of these choices, the population of focus is persons recorded as both being enrolled in university, whose highest current level of education is below bachelor level, and who were residing in Australia five years prior to the Census date. In other words, the target population is domestic, undergraduate university students.

The analysis approximates these students’ address prior to attending university by analysing the Census indicator ‘Place or Usual Residence Five Years Ago’,

or PUR5P. This indicator is then linked to the ABS’s SEIFA scores for socio-economic status. SES is allocated to each area based on quartiles of the full population. For the quartile distribution, 25 per cent of the population falls into each of the four groups: high SES (top 25 per cent), middle-high SES (between 50 and 74 per cent), middle-low SES (between 25 and 49 per cent) and low SES (bottom 25 per cent).

For students in 2011, residential address in 2006 is used as the reference point for determining SES based on the SEIFA 2006 IEO. For students in 2006, residential address in 2001 is the reference for SEIFA 2001 IEO.

The ABS changed its subdivision of Australian geographical locations between the 2006 and 2011 census periods. However the 2011 data are double coded in both the new and the old system, enabling a link to SEIFA tables from 2001 and 2006, respectively, using the ‘Statistical Local Area’ or SLA level of detail for all sets.

Even with this available concordance of areas, a one-to-one match between all areas of the SEIFA data and the census data was not always possible, and in some cases some manual data point matching was necessary to account for slight variations in the coding of regions. For the 2006 census data, 25 per cent of all students who responded to the PUR5P questions received an SLA code manually matched to SEIFA data. For the 2011 census data, this proportion amounts to 7 per cent. Of the entire student population who responded to the PUR5P questions, 15 per cent

had been overseas five years prior to the 2011 Census date, this proportion was 13 per cent in 2006. In 2011, 2 per cent of students did not list a prior address, and no SEIFA code could be matched to 3 per cent of student data. In 2006, these proportions were 2 and 14 per cent respectively.

Another caveat to the specificity of the data analysed in this brief is that the SEIFA data used here are aggregated to the SLA level, rather than the slightly smaller Postcode level (as used most commonly in the current address analyses) or the finer-grain Collection District level (as used more recently with current address analyses). This larger aggregation is used because the ABS does not report the PUR5P variable at any smaller level than SLA, so it is the best possible use of the data currently available.

In order to test the potential aggregate bias introduced by using SLA as opposed to Postcode level data, analysis of student SES by current address was undertaken using the 2006 Census and 2006 SEIFA data to see how different the distribution of SES quartiles was across the university student population. As **Table 1** shows, there are some slight differences in the distribution of the university population when using SLA and Postcode reference points for attributing SES. As these differences are not large, for the purpose of this exercise, it was considered that analysis by SLA and consistent use of this level of

aggregation across the two Census periods examined was worthwhile.

In addition to the above comparisons, we have also examined the difference in outcomes derived from the current address as listed in the census, and outcomes based on student enrolment data as published by the Government (as shown in Figure 1). These estimates use similar methodology, but are derived from different data sets. For 2006, the Census estimate is 13.9 per cent low SES while the Government figure is 16 per cent. This is a relatively big difference, largely due to the fact that it is based on data from slightly different populations – with the Census data having to use proxy indicators to identify undergraduate and domestic students rather than the more precise identifying variables found in the Higher Education Statistics Collection used by the Government.

With these shortcomings and data characteristics, the use of Census data for analysis by place of residence five years previously is not perfect. However, this analysis is designed to provide new insight into these issues and the Census is the only current collection that enables analysis by prior address at this scale. The findings discussed below highlight the potential importance of analysis using prior address data. With further work collecting and matching data in this area, more reliable and useful information on SES background could be constructed.

Table 1

Comparison of SLA quartile distribution of university students by SLA and Postcode methods, 2006 Census (%)

SES quartile	SLA calculation	Postcode calculation
Low	13.2	13.9
Mid-low	18.9	17.9
Mid-high	27.0	27.0
High	40.9	41.2
Total	100.0	100.0
N	454,302	448,606

Source: ABS Census of Population and Housing 2006 & ABS Socioeconomic Indexes for Areas 2006.



SES by prior address

An analysis of the SES distribution of domestic undergraduate university students by their address five years prior to the Census shows that 18.5 per cent of all students in 2011 lived in an area in the lowest SES quartile in 2006 (**Figure 2**).

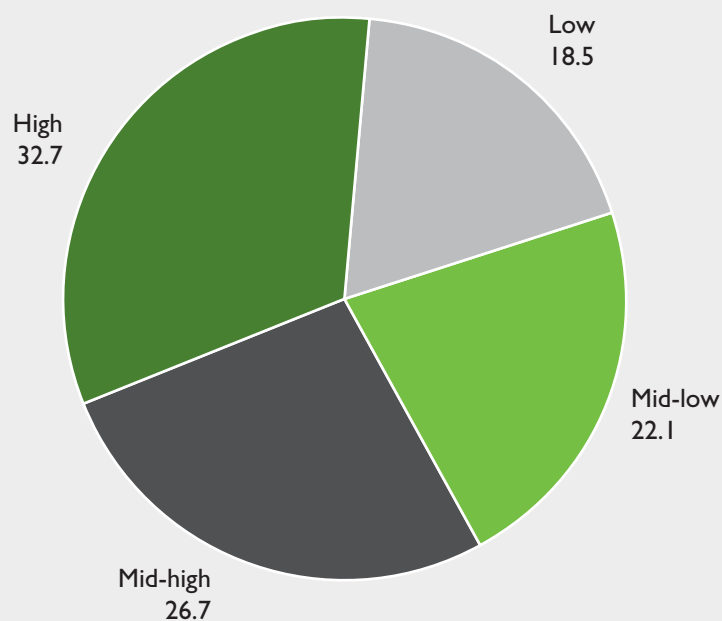
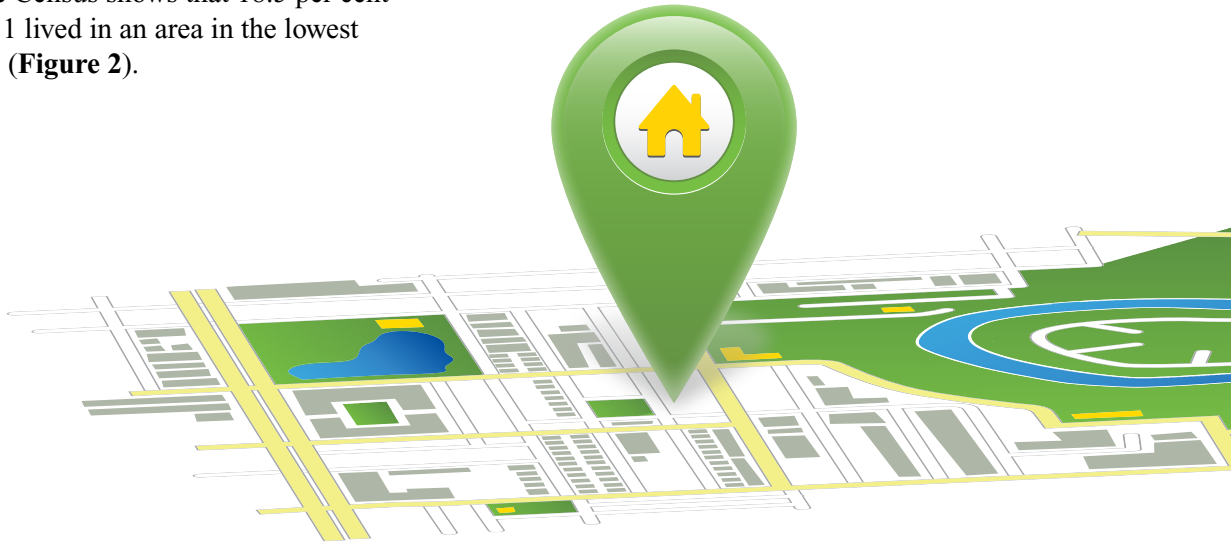


Figure 2

SES quartile distribution based on address five years prior, university students in 2011

Source: ABS Census of Population and Housing 2011 & ABS Socioeconomic Indexes for Areas 2006.

Prior Address versus Current Address SES

For the 2006 Census, a comparison of the prior address SES estimate can be undertaken alongside a current address estimate.² This enables us to assess the impact of the prior address calculation on estimates of SES of the student population. This comparison shows a notable difference in the outcomes derived from these two measures. Based on the current address of students in 2006, the Census data shows that 13.2 per cent of students were living in a low SES area – a substantially lower figure than the 18.5 per cent estimate based on the prior address calculation for the same cohort of students.

Figure 3 shows the difference in distribution of SES for each quartile using the prior address and the current address calculations. This comparison clearly shows that the current address estimate is skewed towards the high and mid-high quartiles.

This briefing does not suggest any one of these methods is necessarily a better measure of SES, but rather to highlight that analysis of the same students using the same dataset but based on a different variable can make a substantial difference to the conclusions to be drawn on the composition of the student population in Australian universities.

² SEIFA data for 2011 is not yet released by the ABS, so comparisons with the 'current' address method using the Census data are not yet possible.

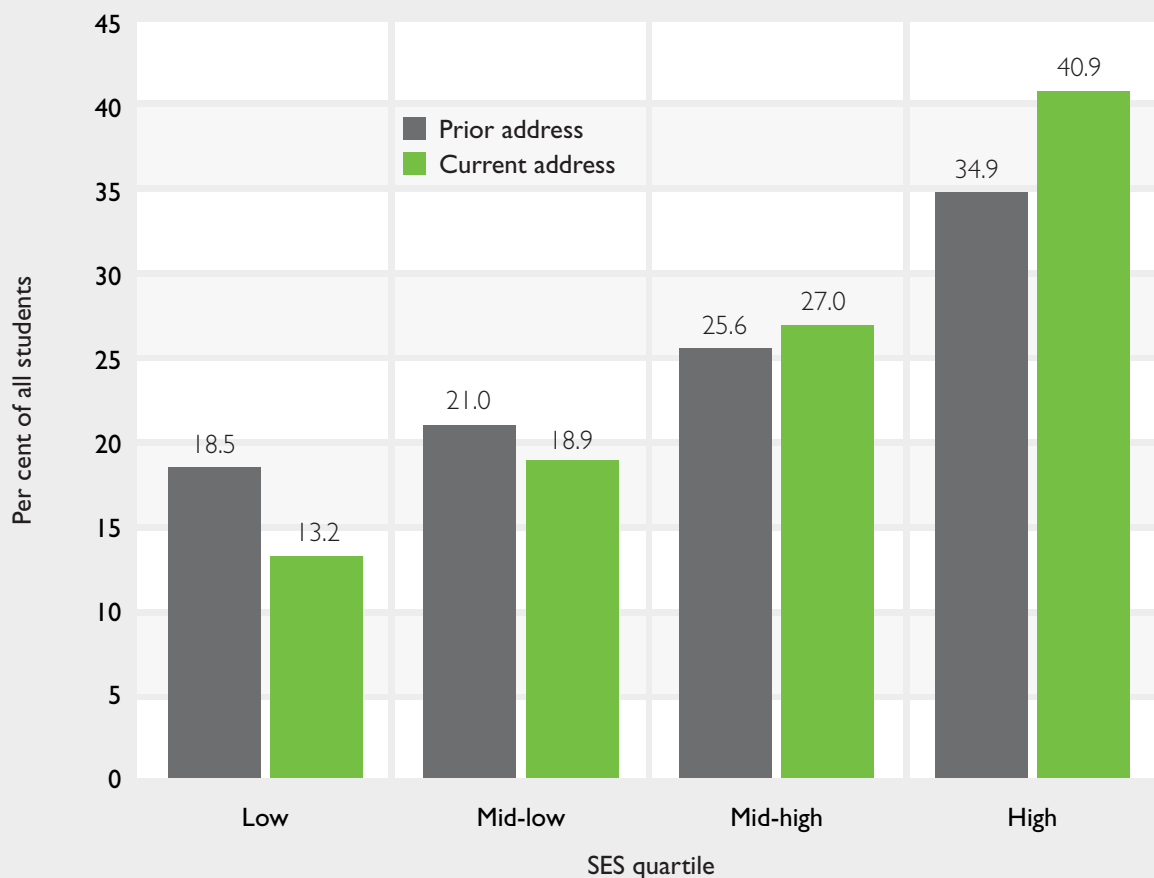


Figure 3

Comparison of Prior and Current address SES distribution for university students, 2006

Source: ABS Census of Population and Housing 2006, ABS Socioeconomic Indexes for Areas 2001 & 2006.

Explaining the difference: student mobility

A key explanation for the difference in the proportion of students from the lowest SES quartile between current and prior address calculation methods is that many students move home as they progress into university. While this is not the place for an in-depth analysis of movements of students as they enter university, this analysis provides some higher-level indications of where these students move from. Of particular importance in this regard is the movement of new students from regional areas to metropolitan areas. In general, regional locations are more likely to

be in lower SES quartiles than metropolitan areas – particularly those around many of the larger university campuses in Australia.

Overall the analysis of movement of the 2011 university student population in Australia between 2006 and 2011 shows a net loss of 33,469 students from regional locations, a decline of 16 per cent. Of the full university cohort, 37 per cent of students resided in regional Australia in 2006, whereas once enrolled in university in 2011, in total only 31 per cent of the student population were in regional areas.



Growing enrolments and impact on SES

There was considerable growth in higher education enrolment numbers between 2006 and 2011 – a 25.1 per cent increase (Edwards & Van der Brugge, 2012). The extent of this growth is unprecedented in recent decades, and it comes at a time when the focus of the Australian Government is on increasing overall university attainment levels. The policies of expansion are closely aligned with policies of widening participation from under-represented groups. It is therefore important to examine whether the growth in the sector overall came with a growth in the participation levels of people from low SES backgrounds.

The Government figures as shown in Figure 1 show a rise in the proportion of low SES students based on the current address calculations from 16.0 per cent in 2006 to 16.8 per cent in 2011. However, based on the analysis of prior address using Census data, there is

no change recorded between 2006 and 2011 in terms of the distribution of low SES students, with the figure steady for both years at 18.5 per cent.

As **Figure 4** shows, based on the Census prior address analysis, while there was a decline in the share of persons from high SES backgrounds over this period, there were offsetting gains in the enrolment of people from the two middle SES quartiles, rather than from those in the low SES group.

As **Figure 5** illustrates, growth in the overall number of students from low SES backgrounds (24.7 per cent) was at about the same rate as overall growth in the sector (25.1 per cent). Students from high SES backgrounds recorded a notably slower proportionate growth (17.3 per cent) than those in the other three quartiles, while students identified in this analysis as middle SES appear to have been the biggest beneficiaries of the recent expansion of the sector.

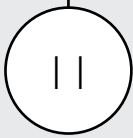


Figure 4

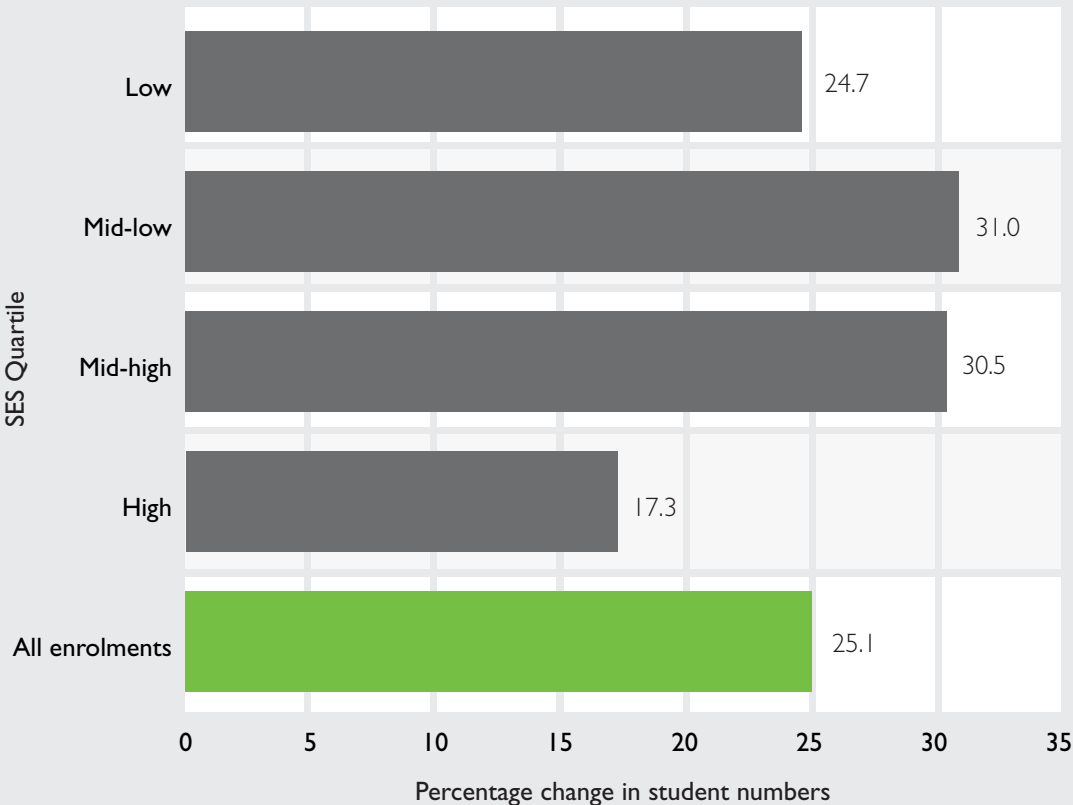
SES quartile distribution based on address five years prior, university students in 2006 and 2011



Source: ABS Census of Population and Housing 2011 & 2006, ABS Socioeconomic Indexes for Areas 2001 & 2006.

Figure 5

Change in student numbers 2006–2011, by SES quartiles based on address five years prior (%)



Source: ABS Census of Population and Housing 2011 & 2006, ABS Socioeconomic Indexes for Areas 2001 & 2006.

Conclusion

This exercise, using data from two censuses and linking SEIFA variables with university students' prior address was designed to explore the differences in outcomes that this measure provides when compared to the commonly used current address method. The hypothesis here was that measuring by prior address might offer a different indication of SES distribution of the student population than measures of current address do. The findings from this preliminary exercise suggest that this alternative measure does result in a notable difference in the distribution of the university student population by SES.

Of particular interest is that the alternative measure tested in this briefing shows a higher rate of low SES students in the university population than the current address method suggests. In fact, the estimate of 18.5 per cent of undergraduate domestic university students originating from low SES areas found in the analysis of data for this briefing places universities much closer to the government target of having 20 per cent than is the traditional measure of SES, or the newly adopted interim measure currently being used.

While this analysis is potentially of interest to universities and governments, care should be taken in drawing solid conclusions with too much confidence. This analysis is intended only as a preliminary exercise and it is important to note that while prior address could be a better indicator than current address, the data collection for this indicator is cruder and possibly introduces new errors to the evaluation of SES.

Further investigation and more accurate data collection focussing on prior address, could be possible through direct collection of this data from students through information collected at the point of enrolment, and was suggested in the government discussion paper examining measures of low SES.

In addition, more information about the cohort of students who move home to attend university is needed. The intention of future Research Briefings in the JTD series is to further explore the mobility of university students with a focus on changes in SES and other key characteristics.

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