

Does changing school matter?

This Learning Curve explores student mobility in NSW government schools and the impact mobility has on student outcomes.

The Centre for Education Statistics and Evaluation (CESE) has conducted the first system-wide study of student mobility in NSW government schools, using linked enrolment data from 2008 to 2014.

Students move schools for a variety of reasons, ranging from negative reasons such as housing distress or domestic violence, to positive or strategic reasons including school preference or job promotion. However, changing schools can be disruptive to students' learning and may have a negative effect on students' educational outcomes.

Consistent with other research in this area, this study focused on school moves made for reasons other than those expected by the system structure.

Specifically, the aim of the research was to:

- construct measures of student and school mobility that are specific to the NSW context,
- understand the size of the mobile student population, their demographic characteristics, any persistent movement patterns and the geographical distribution of school mobility,
- examine the impact of mobility on student and school performance, and how this impact is moderated by other known background factors.



KEY FINDINGS

- Around 1 in 20 students are highly mobile, enrolling at four or more schools during their primary or secondary years of schooling.
- Disadvantaged groups, such as Aboriginal students and students of low socio-economic status (SES), are more likely than their peers to be mobile.
- At least 1 in 8 schools experience high levels of student mobility, with rates more than twice the median level across all schools.
- Mobility has a detrimental impact on educational outcomes (attainment, progress, and school completion) over and above other risk factors and level of prior achievement.
- In particular, data analysis indicates that:
 - The more times students move schools, the greater the negative impact on outcomes.
 - Moves made during the year have a greater negative impact than moves made between years.
 - Mobility has an impact on both reading and numeracy, although the impact in the upper primary years appears to be greater for numeracy than for reading, irrespective of the level of mobility students experienced during that period of time.



What does the research literature say?

Studies in many countries including the United States, United Kingdom and Australia have identified student mobility as a contributing factor to student educational disadvantage, particularly in the areas of school engagement and attendance, academic achievement, and retention (e.g. Dobson, Henthorne & Lynas 2000; Navin, Hill & Doyle 2012; Reynolds, Chen & Herbers 2009).

Across studies, the effect size associated with mobility varies depending on the research methodology, the target cohort characteristics and the definitions of mobility used. In a meta-analysis of research conducted in the United States over nearly two decades, Reynolds, Chen and Herbers (2009) concluded that, after adjusting for other risk factors and prior achievement, the effect size associated with each additional move was approximately -0.07 to -0.08 of a standard deviation (SD) in reading and mathematics achievement, respectively. The impact on school dropout rates was even greater, with an average adjusted effect size of -0.10 SD for each additional move.

It is noted, though, that it is difficult to prove a causal relationship between mobility and outcomes, or to establish the mechanism by which mobility impacts outcomes, as information is rarely available on the various personal and family circumstances (e.g. poverty, family dissolution, housing pressure) that are confounded with mobility and educational outcomes.

How has mobility been measured?

This study used linked enrolment data from 2008 to 2014 from the Enrolment Registration Number (ERN) system to identify student movements. Student mobility has been measured as the number of school moves a student makes in a given period for reasons other than those expected by the structure of the schooling system (i.e. non-structural moves). The following structural moves have therefore been excluded:

- School changes as a result of students finishing Year 6 in a primary school and starting Year 7 in a secondary school.
- School changes as a result of students finishing Year 2 at an infants school (a K-2 school) and moving to a primary school to continue primary education.
- School changes as a result of students being selected into a Year 5 opportunity class in another school.
- School changes as a result of students moving from a junior secondary school (catering to students up to Year 9 or Year 10) to other schools for their senior secondary education.

Also excluded are temporary, short-term or concurrent placements in other schools where the originating school retains ownership of the student's enrolment. All other movements involving a transfer of enrolment ownership are considered in-scope, including the majority of movements into or out of a School for Specific Purposes (SSP) or a support class at another school.

What is the level of student mobility in NSW government schools?

In any given year, there are around 60,000 school moves system-wide that are not required by the schooling system structure. These moves involve approximately 54,000 students (7 per cent of all students) making one or more moves in the year.

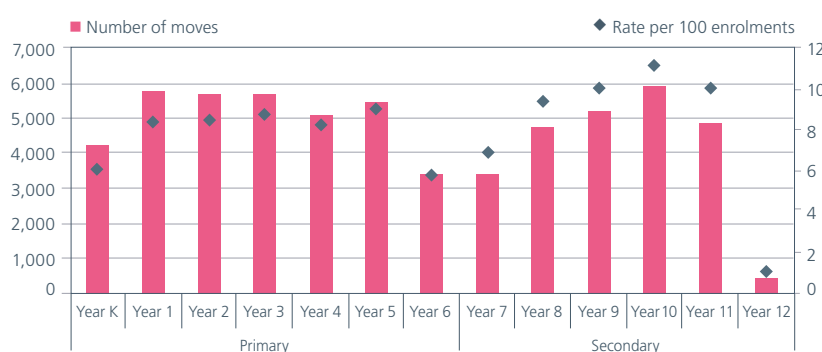
A similar number of students in most scholastic years change schools each year. As Figure 1 indicates, the exceptions are the first and last years of primary and secondary schooling (i.e. Years K, 6, 7 and 12) where considerably fewer students change schools. Year 12 students in particular are very unlikely to change schools.

When students were tracked over their seven years of primary schooling, or six years of secondary schooling, around one quarter of all students had made one or more school moves.

However, 1 in 20 students were considered highly mobile as they moved schools three or more times over the course of their primary or secondary years of schooling.

Not all students were equally likely to be highly mobile. For example, among highly mobile primary students, nearly 30 per cent were from Aboriginal backgrounds. In comparison, among those students who stayed in the same school for their entire primary education, only 5 per cent were from Aboriginal backgrounds. Additional odds ratio analysis indicates that the odds of Aboriginal or low SES students being in the highly mobile group are 4-5 times higher than the equivalent odds for their respective comparison groups.

Figure 1: Number and rate of school moves in 2014¹ by student scholastic year



¹ The number of moves includes moves made during 2014 as well as those made between the 2013 and 2014 school years.

A school-level mobility rate has also been developed to indicate the level of enrolment churn that schools experience. This has been calculated as the number of non-structural moves into and out of a school occurring over a given period divided by the average enrolment base for the school over the same period. To smooth out potential year-to-year volatility in this rate, especially for small schools, the school mobility rate has been calculated based on data over a three-year period, and then annualised.

A limitation of the mobility measures developed to date is that they only include movements between NSW government schools. As movements to, from, or between non-government schools and interstate schools are not included, the measures under-represent total student and school mobility².

When do students move schools?

All school moves have been classified into three groups depending on when they occur: between years (including moves made at the end of one year or the beginning of the next), between terms, or within term.

Figure 2 shows that more than half of all moves (55 per cent) occur during a school year, with around one-third occurring during the middle of a term.

Students from low socio-economic backgrounds and Aboriginal students make disproportionately higher numbers of moves during the middle of a term. For example, see Figure 3 for the moves made by Aboriginal students as a proportion of all moves within each category.

Figure 2: Timing of moves made over the period 2012-2014

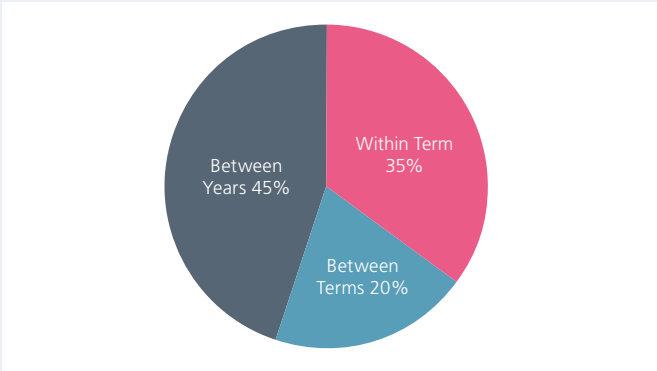
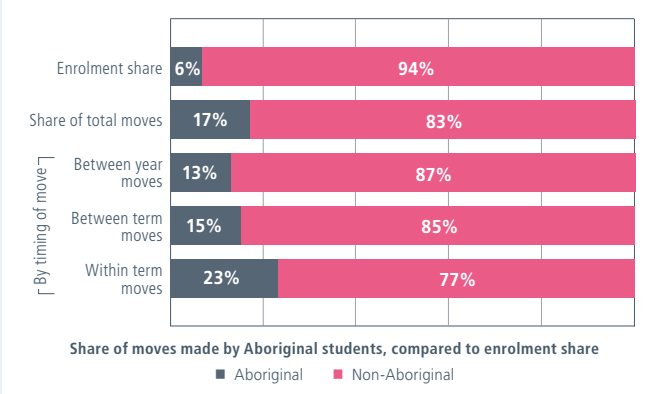


Figure 3: Aboriginal students' share of moves, 2008-2014



2 See the full report available at <http://cese.nsw.gov.au/publications/reports-and-presentations> for further discussion of the data sources and associated limitations.

What is the level of mobility at the school level?

Each year, on average, schools experience around 16 non-structural student movements for every 100 students enrolled (movements include both new students enrolling and existing students exiting the school). However, for around 13 per cent of schools, annual school mobility rates are double or higher than this median rate.

Mobility is not evenly distributed across the state. As shown in Figure 4, schools in the western and northern areas of the state have higher median mobility rates. For schools experiencing high rates of enrolment churn, mobility could be a significant barrier to schools' ability to provide coherent learning and support, and to implement a school reform agenda.

What is the impact of mobility on student educational outcomes?

The impact of mobility on student outcomes was assessed across two main areas: student participation and achievement in National Assessment Program – Literacy and Numeracy (NAPLAN)³ tests for reading and numeracy; and the likelihood of students completing Year 12.

The impact of mobility on NAPLAN participation and achievement was examined for three cohorts of students across different stages of schooling:

- A “lower primary” cohort of all students who started Kindergarten in 2011 and who were enrolled Year 3 in 2014 as at the NAPLAN test time.
- An “upper primary” cohort of all students who were enrolled at the NAPLAN test time in Year 3 in 2010 and who were enrolled in Year 7⁴ in 2014 as at the NAPLAN test time.
- A “junior secondary” cohort of all students who were enrolled at the NAPLAN test time in Year 7 in 2012 and who were enrolled in Year 9 in 2014 as at the NAPLAN test time.

To examine the impact of mobility on Year 12 completion, the cohort of Year 10 students enrolled in a government school in 2011 was selected as the target cohort and tracked through to 2014 to determine how many had completed Year 12 in any NSW school⁵.

For all cohorts, the level of student mobility over the specified period was classified as stable (stayed in the same school), or moved once, moved twice, or moved three or more times. Descriptive analyses first examined the overall association between student mobility and outcomes. Statistical analyses then assessed any unique effect of mobility on outcomes after

Figure 4: Median annual school mobility rates by ABS Statistical Area level 4



3 NAPLAN is an annual assessment conducted in May each year for students in Years 3, 5, 7 and 9. It tests skills in literacy and numeracy that are developed over time through the school curriculum. For further information on NAPLAN, refer to the website: <http://www.nap.edu.au/naplan/naplan.html>.

4 Year 7 results are a better proxy than Year 5 results for students' achievement at the end of their primary years given that all NAPLAN tests are administered in early May, about 12 weeks into the new school year. However, a limitation of using Year 7 results is that a sizable number of government students leave the government system at the end of Year 6 to enrol in non-government high schools. See the full report available at <http://cese.nsw.gov.au/publications/reports-and-presentations> for further discussion of the research methods, data sources and associated limitations.

5 For this cohort, the number of school moves incurred over the previous four years from when these students were in Year 7 in 2008 through to Year 10 in 2011 was used as the measure of mobility. For details around the choice of the target cohort and the mobility measure selected for the analysis, please refer to the full technical report available at <http://cese.nsw.gov.au/publications/reports-and-presentations>.

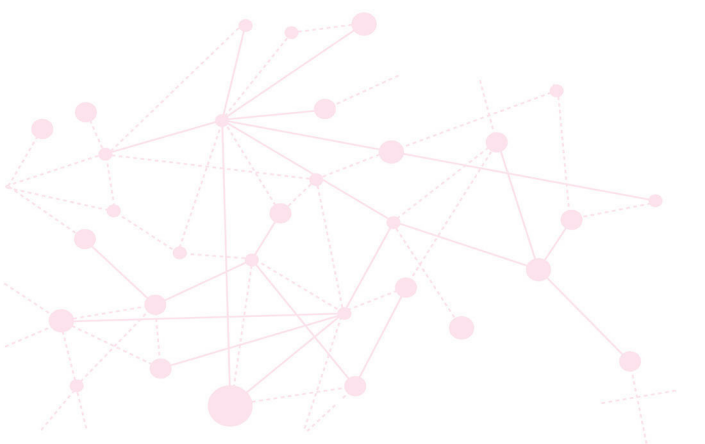
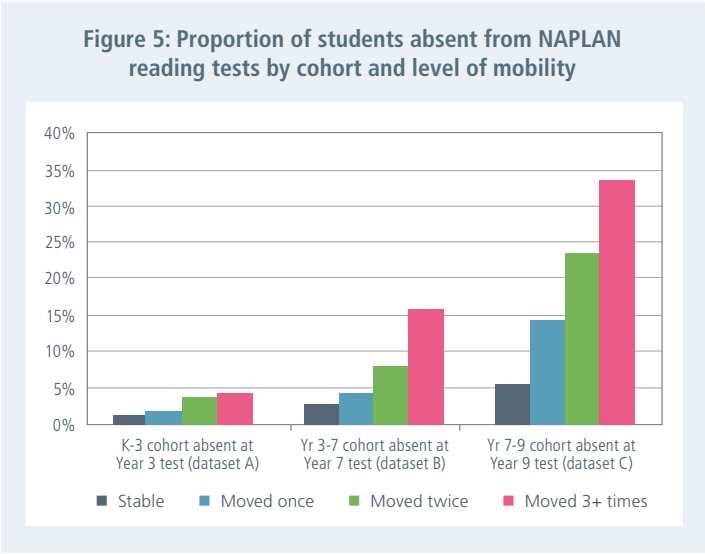
taking into account the effects of various student background factors that are also related to outcomes, such as Aboriginal status, gender and student socio-economic background.

Additional analyses included students' level of prior achievement (i.e. achievement at the beginning of the period) in order to examine the impact of mobility on student progress over the relevant period. For these analyses, prior achievement was either the students' prior NAPLAN test scores or, in the case of the lower primary cohort, the Kindergarten Best Start assessments of aspects of literacy and numeracy made by teachers at the beginning of the year.

Finding no. 1: Mobile students are more likely to be absent from school on national assessment days.

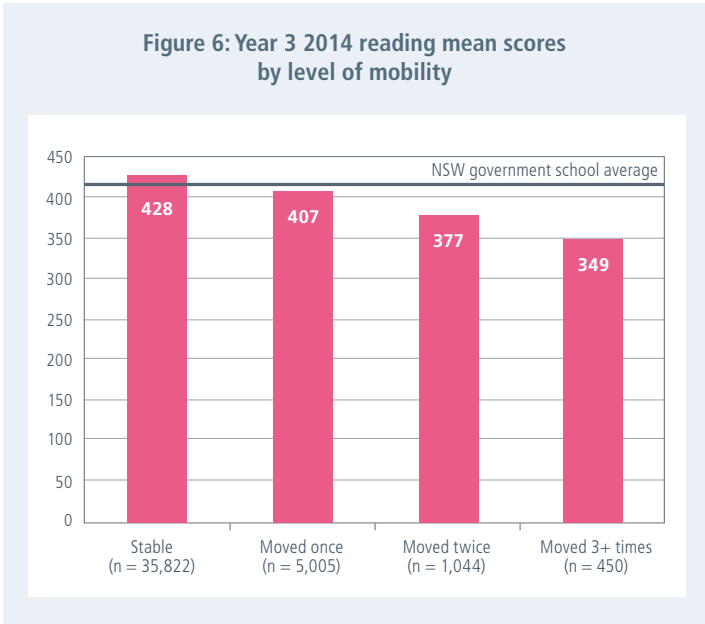
Figure 5 shows that absence from NAPLAN tests increases as students progress from the early primary to the secondary years, and as the extent of mobility increases. The gap between stable students and students moving three or more times is quite small for the lower primary cohort (around 2 percentage points) but widens to 13 percentage points for the upper primary cohort, and to 28 percentage points for the junior secondary cohort.

After statistically controlling for student background factors and prior achievement, students who moved schools during the upper primary years or junior secondary years were still considerably more likely to be absent from NAPLAN tests. In fact, the adjusted odds of being absent from tests were around 1.5 to 2 times higher for students who moved once, and around 3 to 4 times higher for those who moved three times or more, when compared to stable students with similar backgrounds and levels of prior achievement.



Finding no. 2: Mobile students achieve lower NAPLAN reading and numeracy results

Figure 6 shows that students with higher levels of mobility had lower average Year 3 reading scores. For students who moved three or more times between Kindergarten and Year 3, average reading scores at Year 3 were almost 80 points (almost one standard deviation) below that for stable students. Results were similar for other cohorts and for numeracy achievement.



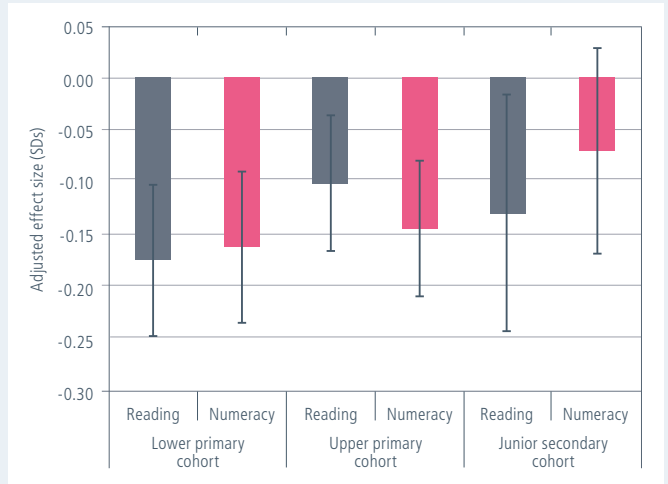
Much of the difference in outcomes across mobility groups reflects differences in student background factors and level of prior ability. However, even when the effects of these factors were held constant, the effect of mobility was still statistically significant for students in the lower primary years: students who changed school once underperformed stable students by 0.04 standard deviations on both reading and numeracy tests by Year 3, with the effect size increasing to 0.17 (for reading) and 0.16 (for numeracy) standard deviations for students who moved three or more times.

For the older cohorts, the effect of mobility on reading and numeracy progress, over and above background factors and prior achievement, was not as strong as for the lower primary years. For the upper primary years, mobility at all levels had a significant effect on numeracy, but reading was only significantly impacted if students were highly mobile. For the junior secondary years, while effects were negative for all levels of mobility, several were not statistically significant. These results suggest that mobility has a differential impact on reading as compared to numeracy for students at different learning stages.

Figure 7 provides a comparison of the effects (with confidence intervals) of moving three or more times on reading and numeracy progress for all cohorts, relative to similar students who did not move schools. As indicated, across all stages of schooling studied, highly mobile students achieved significantly lower reading and numeracy results, with the exception of numeracy for the junior secondary cohort where the negative effect was not statistically significant, partly attributable to the small number of students in the highly mobile group for this cohort.



Figure 7: Adjusted effect size (SDs) of moving 3 or more times on reading and numeracy progress



In addition to the impact of the level of mobility on learning progress, additional analyses indicated that the timing of mobility is also important. Results showed that moves made during the school year have a greater detrimental effect on reading and numeracy progress than moves made between years. The impact of moving school during the year was -0.05 SD for each move made across all levels of schooling. In contrast, the impact of between year moves decreases across the levels of schooling, from a significant negative effect in the lower primary years (-0.04 SD and -0.03 SD for reading and numeracy respectively) to a nil effect in the junior secondary years.

These effects are conservative as the analysis could not include all highly mobile students. For the junior secondary cohort, around one-third of highly mobile students were absent from school on national test days. If they had participated in the tests, the analysis suggests that they would have been more likely to be among the lowest in terms of both level of achievement and learning progress.

Figure 8: Percentage of students leaving school prior to completing Year 12 by mobility group

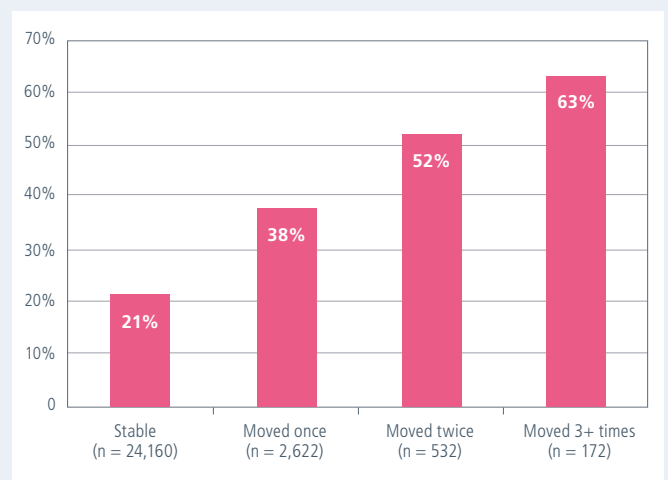
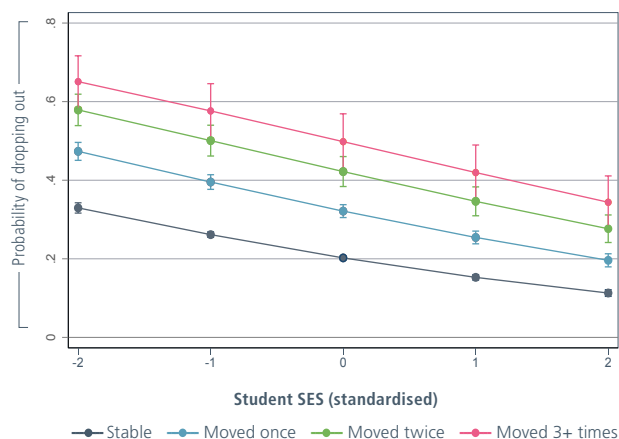


Figure 9: Adjusted probability of dropping out of school prior to completing Year 12



Finding no. 3: Mobile students are more likely to leave school prior to completing Year 12

Figure 8 shows that for the Year 10 cohort of 2011, students who had remained in the same school from Year 7 through to Year 10 were much less likely to leave school before completing Year 12 than students who had moved schools. For students who moved schools three or more times in this period, nearly two-thirds did not remain in a NSW school until Year 12.

After controlling for student background factors and students' prior achievement (at Year 7), mobility was still strongly predictive of leaving school early. Figure 9 shows the adjusted probability of dropping out of school for students in each mobility group across different socio-economic levels. While low SES students had a greater probability of dropping out than high SES students, there was a substantial increase in the predicted probability of dropping out for students with higher levels of mobility, across all socio-economic levels. For example, a very low SES student experiencing three or more moves during their first four years of secondary schooling had a 65 per cent probability of not completing secondary schooling – around twice that for a very low SES student who did not change school.

Conclusion

Student mobility is a significant issue for NSW government schools, with at least 1 in 20 students experiencing three or more non-structural school moves during their primary or secondary schooling career, and around 13 per cent of schools experiencing high rates of enrolment churn.

However, these estimates of mobility are conservative, as there is still insufficient system data to measure student mobility over the full 13 years of schooling, or to factor in student movements between government and non-government schools, or those that involve interstate schools.

Despite the limitations, the analysis replicated findings in the literature that mobility has a detrimental impact on student outcomes, over and above other disadvantaging background factors and prior achievement. Compared to stable students with similar backgrounds and levels of prior achievement, mobile students achieve lower reading and numeracy results and are more likely to leave school prior to completing Year 12. The analysis indicated that the more times a student moves schools, the greater the impact, and that moves made during the year are more detrimental than moves made between school years.

Overall, the findings from this study indicate that student and school mobility is an additional indicator of educational disadvantage that the NSW government school system should monitor and for which specific policy responses may need to be developed. However, before policies and strategies can be developed, we need a better understanding of the causes of mobility, and the mechanisms by which mobility impacts on student achievement. In this regard, qualitative case studies of highly mobile students and schools would be useful to shed light on these other important aspects of student mobility.



Further information

The full report titled Mobility of students in NSW government schools is available on the CESE website at: <https://www.cese.nsw.gov.au/publications-filter/report-mobility-of-students-in-nsw-government-schools>.

References

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