

NAPLAN participation

Who is missing the tests
and why it matters

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Acknowledgements

The Australian Education Research Organisation (AERO) acknowledges the traditional custodians of the lands, waterways, skies, islands and sea country across Australia. We pay our deepest respects to First Nations cultures and Elders past and present. We endeavour to continually value and learn from First Nations knowledges and educational practices.

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This insights paper draws on the latest National Assessment Program Literacy and Numeracy (NAPLAN) data¹ to discuss student participation and engagement with the tests – factors which impact the quality and usefulness of the results. The paper highlights important considerations for interpretation of student results and future implementation of NAPLAN.

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Key points

- NAPLAN is a valuable tool for supporting educational policy and decision-making. However, lower than desired participation can lead to policy and education decisions being made on non-representative data.
- The participation of primary students in NAPLAN has been relatively stable since the introduction of the tests; however, secondary students' participation has been in persistent decline. Increasing rates of students withdrawing from NAPLAN is contributing to the long-term decline.
- Participation rates among students from priority equity groups² are much lower, and declining faster, than average. This poses a significant challenge for measuring and monitoring the equity gaps³ in Australian education systems.
- Low-performing students are more likely to not participate in NAPLAN tests. This results in a lack of longitudinal data to measure their progress against educational standards, undermining efforts to lift the outcomes of these students.
- In 2022, there was a sharp decline in NAPLAN participation, with approximately 20,000 extra students not sitting the tests. This largely reflects school attendance that year which was much lower than for 2021 due to disruptions related to COVID-19, influenza outbreaks and local events such as floods. It will be crucial to examine NAPLAN participation in 2023 and beyond to see whether these declines continue.

1 AERO researchers analysed data released in ACARA's National Reports as well as the de-identified student-level NAPLAN participation and results datasets (2008 to 2022) provided by ACARA.

2 Priority equity groups include First Nations students, students living in regional, rural and remote backgrounds, students with disability and students from educationally disadvantaged backgrounds (Council of Australian Governments (COAG) 2021 [National School Reform Agreement](#), accessed 21 February 2023. Note: not all priority equity groups can be analysed through NAPLAN data.

3 Equity gaps are the differences in educational outcomes between students from priority equity groups and those who are not.

What is NAPLAN?

NAPLAN is a national literacy and numeracy assessment that students in Years 3, 5, 7 and 9 sit each year. It is managed by Australian Curriculum, Assessment and Reporting Authority (ACARA) in collaboration with states and territories. Its purpose is to measure student literacy and numeracy outcomes over time to inform governments, education authorities, schools and parents. NAPLAN involves assessments in four learning areas: reading, numeracy, conventions of language, and writing.

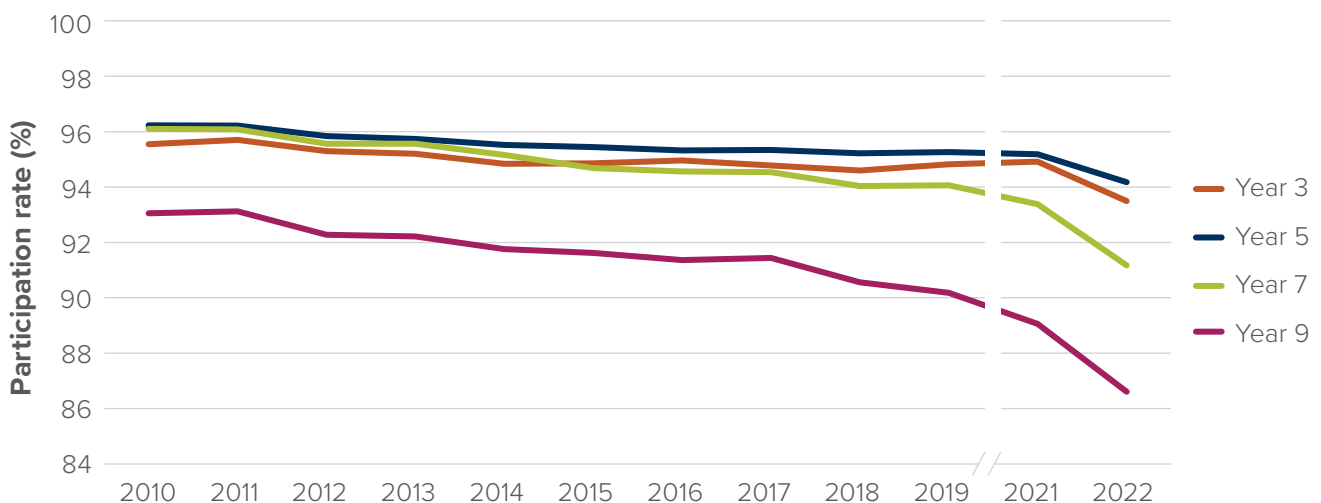
1. Persistent decline in secondary student participation

Although the NAPLAN tests are intended to be taken by every Australian student in Years 3, 5, 7 and 9, not all students sit the tests. Students may be exempt from taking the tests,⁴ withdrawn by their parents, or absent on the day.

For official reporting and for the purpose of this paper, *rates of assessed* include students who were present at tests, whereas *rates of participation* include both students who were present and those who were exempt. *Non-participating students* refers to those who were absent or withdrawn from the tests.

Our analyses⁵ show that the rate of primary students participating in NAPLAN was relatively stable between 2014 and 2021, fluctuating between 94% and 96%. For secondary students, however, there has been a persistent decline in participation rates since the introduction of NAPLAN. Figure 1 depicts the trends of declining participation in NAPLAN by Year level.⁶

Figure 1: Declining proportion of Australian students participating in NAPLAN over time.



4 Students may be exempt from participating if they have a disability that severely limits their capacity to participate in the tests, or they have recently arrived in Australia and have limited English language skills.

5 Trend analysis excludes less reliable data from the first two years of the test, 2008 and 2009.

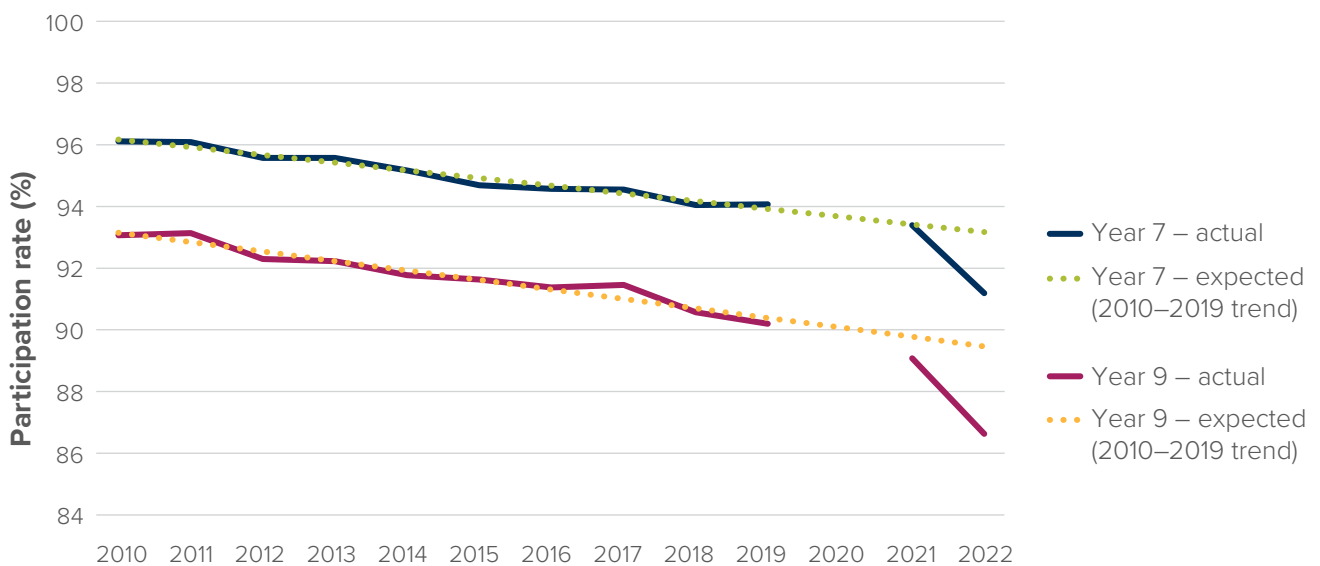
6 Unless otherwise specified, this paper uses the average participation rate across all NAPLAN tests for its analyses.

2. Sharp decline in overall student participation in 2022

In 2022, there was a considerable decline in primary student participation (around 1.2 percentage points) and an even greater decline in secondary student participation (around 2.3 percentage points) compared to 2021. This corresponds to 20,154 fewer students overall being counted as participating.

Figure 2 shows the sharp decline in secondary student participation, with dotted lines showing what participation rates might have looked like had historical trends observed up until 2019 continued. 2022 participation was negatively impacted with between 2 and 3 percentage points of the observed decline associated with emergent factors (see discussion in the next section).

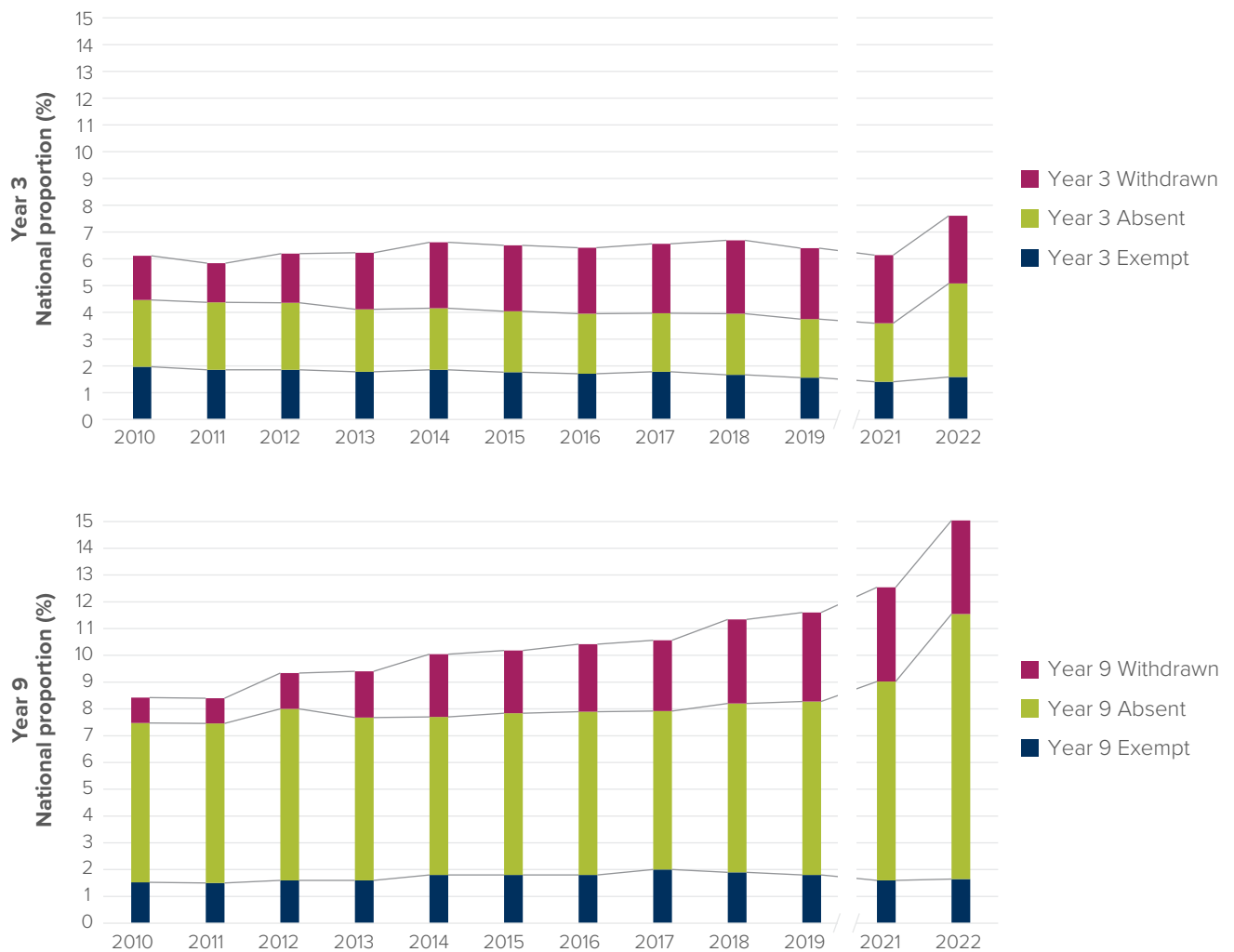
Figure 2: Declining trend in proportion of secondary students participating in NAPLAN over time



3. Increasing withdrawal rates contribute to long-term decline

Figure 3 shows the percentages of students in Year 3 and Year 9 who were withdrawn, absent or exempt from NAPLAN between 2010 and 2022. It shows that in 2022 the main factor explaining increased non-participation was greater numbers of absent students, while the long-term decline is a result of increasing numbers of students being withdrawn from NAPLAN. Both factors are present to a greater extent for Year 9 students than they are for Year 3. Exemption rates were generally stable over time, varying from 1 to 2 percentage points.

Figure 3: Reasons for not completing NAPLAN tests in Year 3 and Year 9 2010–2022



Impact of COVID-19 on NAPLAN participation

NAPLAN was cancelled in 2020 but 2021 participation rates largely reflected historical trends, despite lockdowns and isolation requirements.⁷ However, 2022 saw a sharp decline in NAPLAN participation, with approximately 20,000 additional students not sitting the tests, primarily due to being absent from the test. This reflects national school attendance in Semester 1 that year (86.5%) which was much lower than for 2021 (90.9%).⁸ Weaker school attendance was attributed to disruptions related to COVID-19 (that is, an increase in cases and stringent isolation requirements), as well as flooding across Australia and influenza outbreaks.⁹

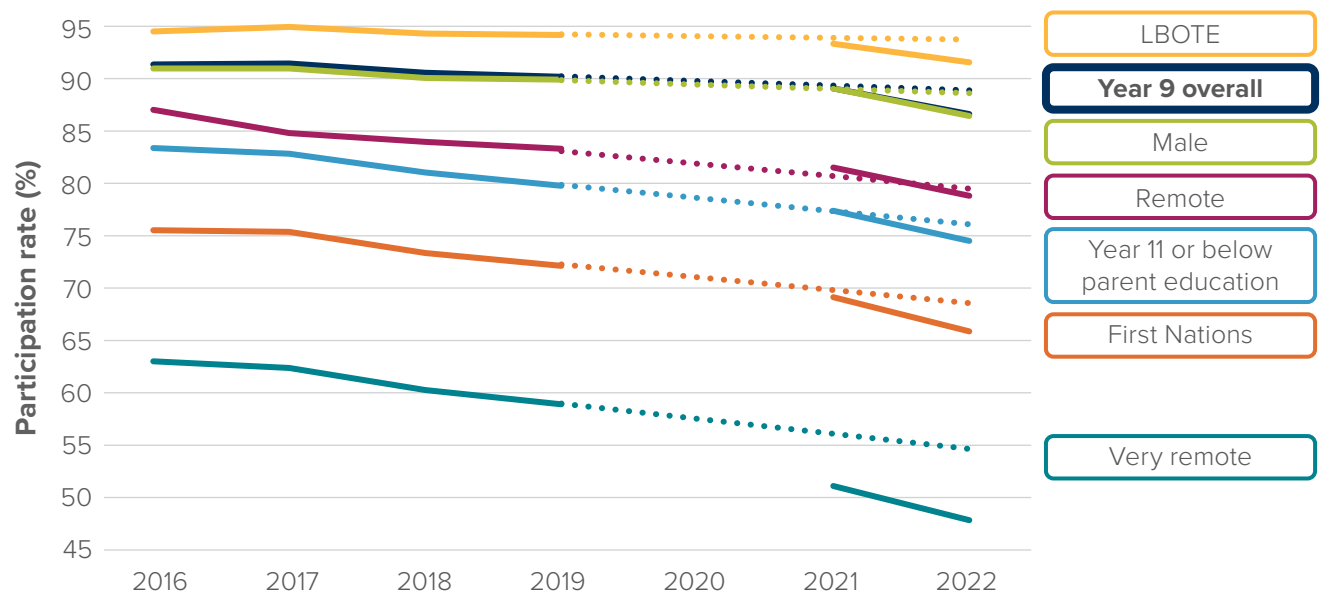
7 COVID-19 can have complex impacts on school attendance (and NAPLAN participation). For example, it can result in increased sickness days (negative impact on attendance) and also decreased student leave days due to travel restrictions (positive impact on attendance). See NSW Department Education (2022) [2021 Semester 1 Student Attendance Factsheet](#) NSW Department of Education, accessed 10 February 2023.
 8 Australian Curriculum and Reporting Authority (ACARA) (2022) [Student Attendance](#). ACARA, accessed 10 February 2023.
 9 ACARA (2022) *ibid*.

4. Participation rates differ across student groups

For some groups of students, particularly those from groups at risk of lower educational success, participation has historically been below the national average. However, 2022 saw those poor participation rates decline even further, as shown in Figure 4. This section focuses on differences among groups of Year 9 students.

Figure 4 shows the Year 9 rates of participation over time for all students and selected subgroups. It shows that over the past 7 years, participation of First Nations¹⁰ students has dropped by 10 percentage points (from 76% to 66%), while participation of very remote students has fallen by 15 percentage points (from 63% to 48%), the most significant decline of any group. Fewer than one in 2 students based in a very remote location and fewer than 2 in 3 First Nations students participated in the 2022 NAPLAN tests.

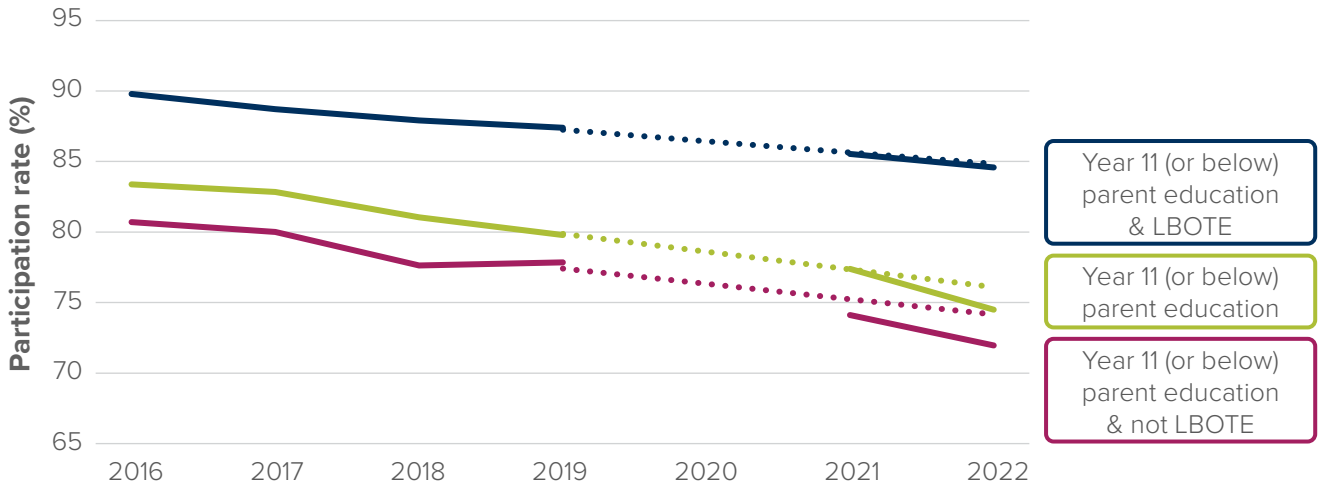
Figure 4: Participation in Year 9 NAPLAN over time across different groups of students



Conversely, students from language backgrounds other than English (LBOTE) had higher rates of participation than the Year 9 average, with a slower rate of decline. To further understand this pattern, we investigated the group with Year 11 or below parent education, the results of which are shown in Figure 5. When students were also members of the LBOTE cohort, their 2022 rate of participation was up to 12.6 percentage points higher than students with parent education of Year 11 or below who were not from LBOTE families. Between 2016 and 2022, the difference between these groups was 10.3 percentage points on average. Unlike much of the rest of the 2022 cohort, LBOTE students with parents who had low education levels (Year 11 or below) did *not* show any additional drop in participation beyond what was expected from the trend.

¹⁰ First Nations is used throughout this paper to refer to students who identify as being Aboriginal and/or Torres Strait Islander as this is the term preferred by First Nations peoples (see Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) 2022 [Australia's First Peoples](#), accessed 24 February 2023).

Figure 5: Participation in Year 9 NAPLAN over time for students whose parents had a Year 11 education or below, by LBOTE

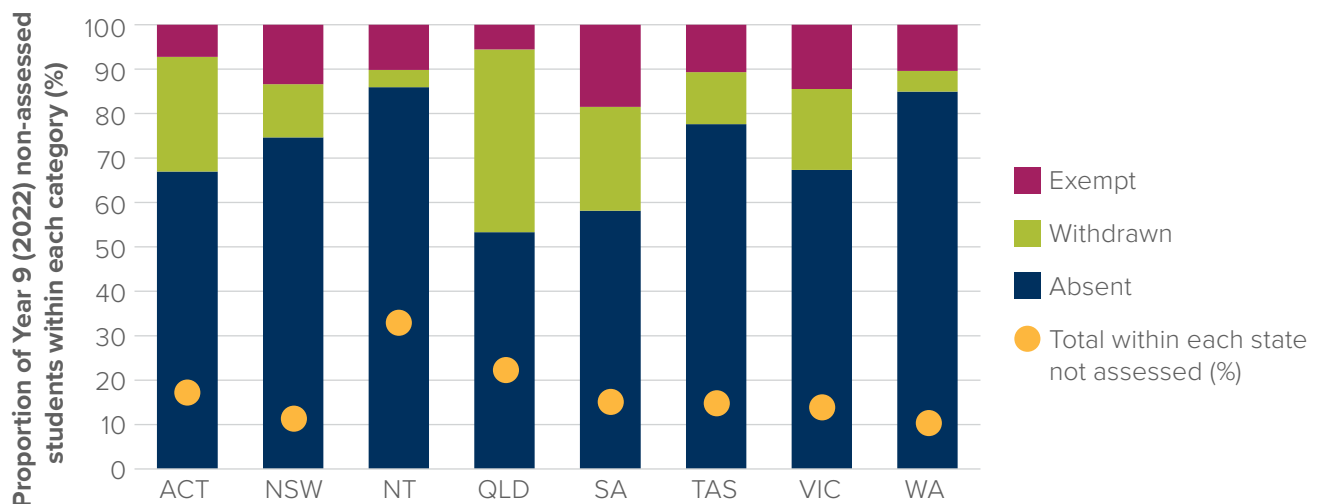


5. Patterns of non-participation across states and territories

The reasons for students not participating in NAPLAN vary across states and territories. This section focuses on differences among groups of Year 9 students.

Figure 6 shows the different proportions of Year 9 students exempt, withdrawn, and absent from NAPLAN of total non-assessed students in 2022 for each state and territory. Rates of students who were absent explained roughly the same proportion of non-assessment in the Northern Territory as it did in Western Australia, proportions which are much greater than those for the other states and territories. The total rate of students not sitting the tests was much lower in Western Australia than the Northern Territory. In the case of Western Australia, this may be associated with Year 9 NAPLAN results offering prequalification for the Western Australian Certificate of Education. The share of non-assessment due to withdrawal was highest in Queensland. These findings indicate that local factors explain differences in non-assessment across states and territories.

Figure 6: Reasons for non-assessment across states and territories for Year 9 NAPLAN 2022

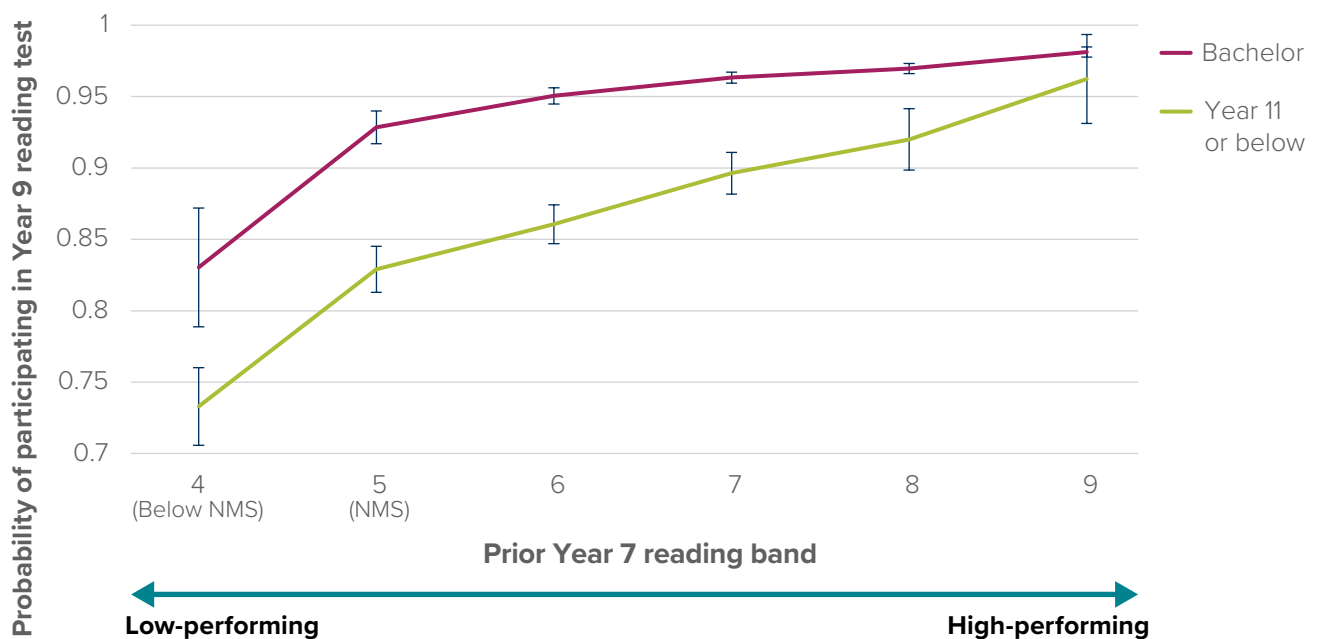


6. Low-performing students are less likely to participate

Students who perform lower in NAPLAN are less likely to participate in the tests as they progress through schooling. Our analysis of Year 9 participation in the reading test¹¹ found that students who had performed lower in the previous NAPLAN (Year 7 reading) were less likely to participate the next time around. In fact, previous NAPLAN performance predicts participation status over and above other predictive factors. Our additional analysis found that student performance in previous NAPLAN, the school’s Index of Community Socio-Educational Advantage (ICSEA) and the state or territory in which the student was enrolled were the top 3 predictors of Year 9 reading test participation.¹²

Figure 7 shows that the lower the students’ Year 7 result, the lower the probability of them participating in Year 9 NAPLAN. It also shows lower participation rates for students whose parents had low levels of education. Those students with both low parental education levels and low performance in previous NAPLAN tests had particularly low participation rates.

Figure 7: Predicted probability of participation in Year 9 reading test (2018 and 2019) by parental education levels (Year 11 or below, and Bachelor) and student prior performance in Year 7 reading



11 We used multilevel logistic regression to analyse Year 9 reading data (2018 and 2019), with Year 9 participation status as the dependent variable. Students were linked to their performance in Year 7 reading with only matched students included in the model. Due to the large sample size, a representative reduced sample (about 20% of the full sample) was drawn for this analysis (N= 100,000). A range of student, school and state level factors (e.g. LBOTE, ICSEA, the state the student was enrolled in, First Nations status, prior performance, school sector, parent education levels, gender) were included in the model.

12 We analysed Year 5 reading (2018 and 2019) data using the same multilevel logistic regression modelling as for Year 9 reading and found the same patterns. Identification of the top predictors is made by ranking the proportion of variance explained by each additional variable, using McKelvey and Zavoina’s R-square (McKelvey R and Zavoina, W (1975) A statistical model for the analysis of ordinal level depended variables *Journal of mathematical sociology*, 4(1): 103-120.

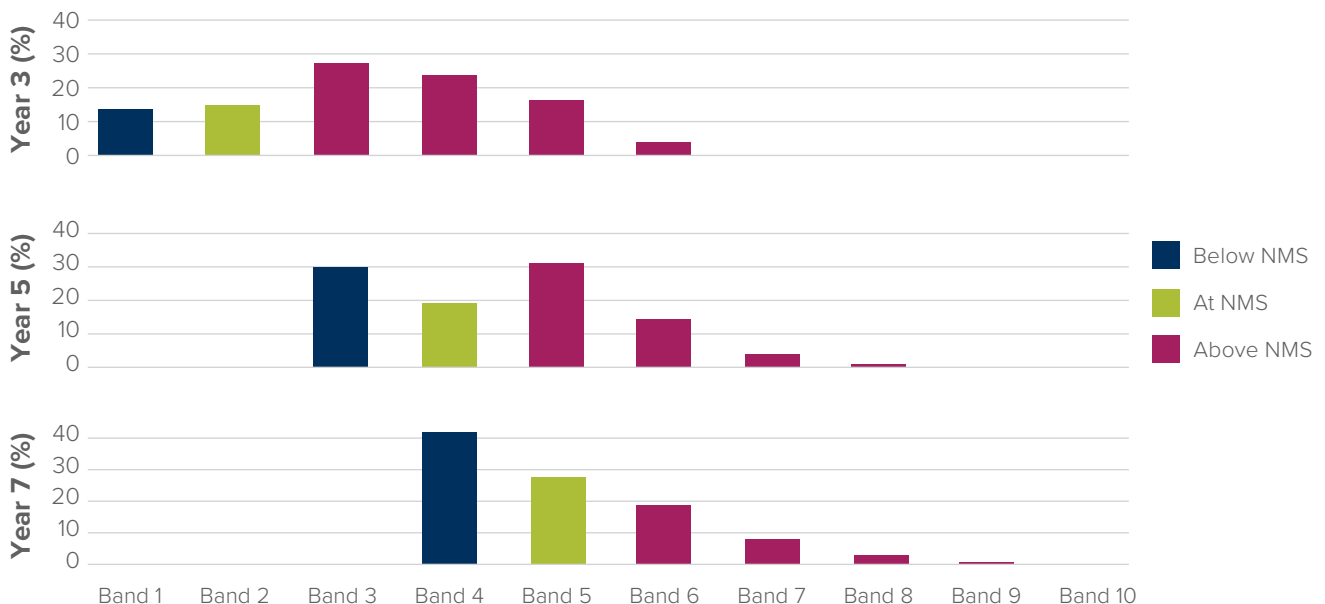
7. Student engagement with NAPLAN influences the quality of the data

Test engagement refers to how motivated students are to show what they know and can do during tests. A highly engaged student makes a genuine attempt to complete the test to the best of their ability while a poorly engaged student does not interact with the test at their potential, and their responses may not reflect their true ability. Poor test engagement can reduce the accuracy and usefulness of the results. This section explores one example of poor test engagement.

To illustrate how engagement can affect test scores, we analysed¹³ patterns of performance for Year 9 students who received a zero score¹⁴ on their NAPLAN writing test. A score of zero is given if a student writes nothing or marks the page with ineligible characters or symbols indicating disengagement with the test or difficulty accessing language to complete the writing task. In 2021, almost 3000 Year 9 students (N = 2,957 or 0.9%) received zero for their writing test.

Figure 8 shows a significant number of students who received a zero in the Year 9 writing test had performed at or above the national minimum standards in previous NAPLAN tests. Almost 9 in 10 scored at or above the national minimum standard in Year 3, more than 2 in 3 in Year 5 and more than half in Year 7 (note 86.3%, 70%, 58% respectively).¹⁵ This indicates that disengagement plays a significant role in low academic achievement and the test scores are failing to capture the true capabilities of this group.

Figure 8: Previous writing band distributions of all Year 9 students receiving a zero score for writing, 2008–2021



¹³ Analysis of the records of 27, 543 Year 9 students who received a zero score for writing between 2008 and 2021.

¹⁴ 'Zero score' here refers to the raw score students receive from a test. This raw score has a corresponding score on the NAPLAN scale. For the writing assessment, the corresponding score on the NAPLAN scale for the zero raw score is the lowest possible score on the scale for the assessment.

¹⁵ Of the 27,543 Year 9 students who received a zero score between 2008 and 2021, 19,048 students were matched to Year 7, 16,395 to Year 5, and 12,682 to Year 3.

What do these insights mean?

NAPLAN is a national census assessment which aims to provide valuable information to a range of stakeholders. It supports schools and school systems to monitor and evaluate the effectiveness of educational approaches and identify specific schools which might need more support. Assessment results also allow teachers and parents/carers to see how their children and young people are progressing in literacy and numeracy both individually against educational standards, and in relation to peers in their school and across the country. NAPLAN results, supplemented by other assessments, can also assist teachers and schools in providing targeted support to students who are behind and/or disengaged. Failure to support low-performing students to catch up has lifelong implications in relation to school completion, job opportunities, wealth and health.

However, the achievement of these goals and realising the value of the assessment program is dependent on the quality of the data. When data are not comprehensive or reflective of the underlying skills measured, then the capacity of NAPLAN to reliably inform national, state/territory and school level policy decisions is compromised. Similarly, the usefulness of NAPLAN results in providing information about student learning to teachers is dependent on students attending the tests and engaging with them. High participation by engaged students is the best way to fulfill the potential of the National Assessment Program.

This paper has shown that participation in NAPLAN has steadily declined over time, particularly amongst secondary students. Contributing to this trend is the increasing number of students withdrawing from the test. In 2022, approximately 11,000 Year 9 students were formally withdrawn from the test, with Queensland in particular experiencing high rates of withdrawal (close to 1 in 10 Year 9 students). Students from remote and very remote locations, students with lower levels of parental education, and First Nations students have rates of participation much lower than the average. Low-performing students are also less likely to participate in the tests as they progress through schooling, and this is not a unique problem for Australia.¹⁶ Continuing disengagement from NAPLAN by these students increases the challenge of measuring and closing the equity gaps.

Decreasing levels of student participation in NAPLAN can lead to policy and evaluation decisions being made based on non-representative data. In reporting national results, the managing authority, ACARA, attempts to account for absent and withdrawn students through statistically estimating a range of possible scores (known as plausible values) for all students including those who were absent or withdrawn. However, when more students, particularly more students from equity groups, miss the tests, the model could become less effective over time for generating unbiased population and sub-population means.¹⁷ Similarly, the differences in test performance between students from equity backgrounds and the broader student population could be increasingly underestimated.

¹⁶ Anders J, Has S, Jerrim J, Shure N and Zieger L (2021) Is Canada really an education superpower? The impact of non-participation on results from PISA 2015. *Educational Assessment, Evaluation and Accountability*, 3, 229–249.

¹⁷ It's also worth noting that the current imputation model fills the data gaps based on performance of students of similar backgrounds in similar schools. As illustrated in Figure 7, non-participating students tend to be the lower performing ones in their respective demographic groups. Therefore, the current imputation process is unlikely to fully account for the bias in the missing data, leading to potentially inflated population mean estimates. Adding student previous NAPLAN performance in the imputation model as a conditioning variable should improve the accuracy of the imputation process.

Additionally, school means reported on *MySchool* do not include students who were withdrawn or absent from the test. Varying rates of school participation mean school results may not be comparable between schools and over time, raising doubts about the validity of inferences made in relation to educational performance using reported school results.

Increasing non-participation results in data not being a valid source of information to support students, particularly those who need the most support in literacy and numeracy. Although teachers have a variety of sources of information with which to plan, program and inform teaching decisions, NAPLAN is one of the few datasets that teachers can use to compare their students' progress to students in similar schools, other schools in the same state/territory or nationally. In 2023, NAPLAN is being held earlier in the year to make the data available to teachers in a timely way and to help teachers identify students' needs, to provide targeted support.¹⁸ Increasing declines in participation, particularly from low-performing students, may reduce the benefit of moving the test time earlier in the year.

The value of NAPLAN data is maximised when students participate and engage fully in the tests. Our analysis of zero scores from Year 9 writing tests showed that some academically capable students do not fully engage with the tests. Methods to improve student engagement with NAPLAN tests could be explored to increase participation and confidence in interpreting and using results.

Our analysis showed that the participation of LBOTE students is higher than average, with a slower rate of decline. LBOTE students are a heterogeneous group who are from a diverse range of cultural and linguistic backgrounds. Investigating the reasons behind their positive participation in NAPLAN could help support other students to build and maintain high rates of participation in the future.

What we still need to know

Further investigation is required to develop a deeper understanding of the underlying causes of the decline in participation, including why students may not be motivated to attend or engage in NAPLAN. Factors may include personal reasons or test design issues, such as tasks that are not culturally appropriate for certain students or are irrelevant or confusing and so fail to accurately assess a student's skills. The NAPLAN online platform could provide additional data on students' engagement in the test (for example, how long it takes them to progress and respond to questions) to facilitate this type of analysis. Further research is needed to understand the association between participation and key indicators of disadvantage, as well as other factors driving non-participation, such as school influence and school attendance. More investigation is also needed to understand how features of the test design may impact student engagement. This will enable the development of effective strategies to encourage students to participate in the tests, leading to improved data accuracy and usefulness.

¹⁸ Recent communiqués from the Education Ministers Meeting ([16 March 2022](#) and [10 February 2023](#)) highlight the potential of NAPLAN as a tool to track student progress and identify where targeted support is required, particularly as NAPLAN has moved earlier in the year.



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