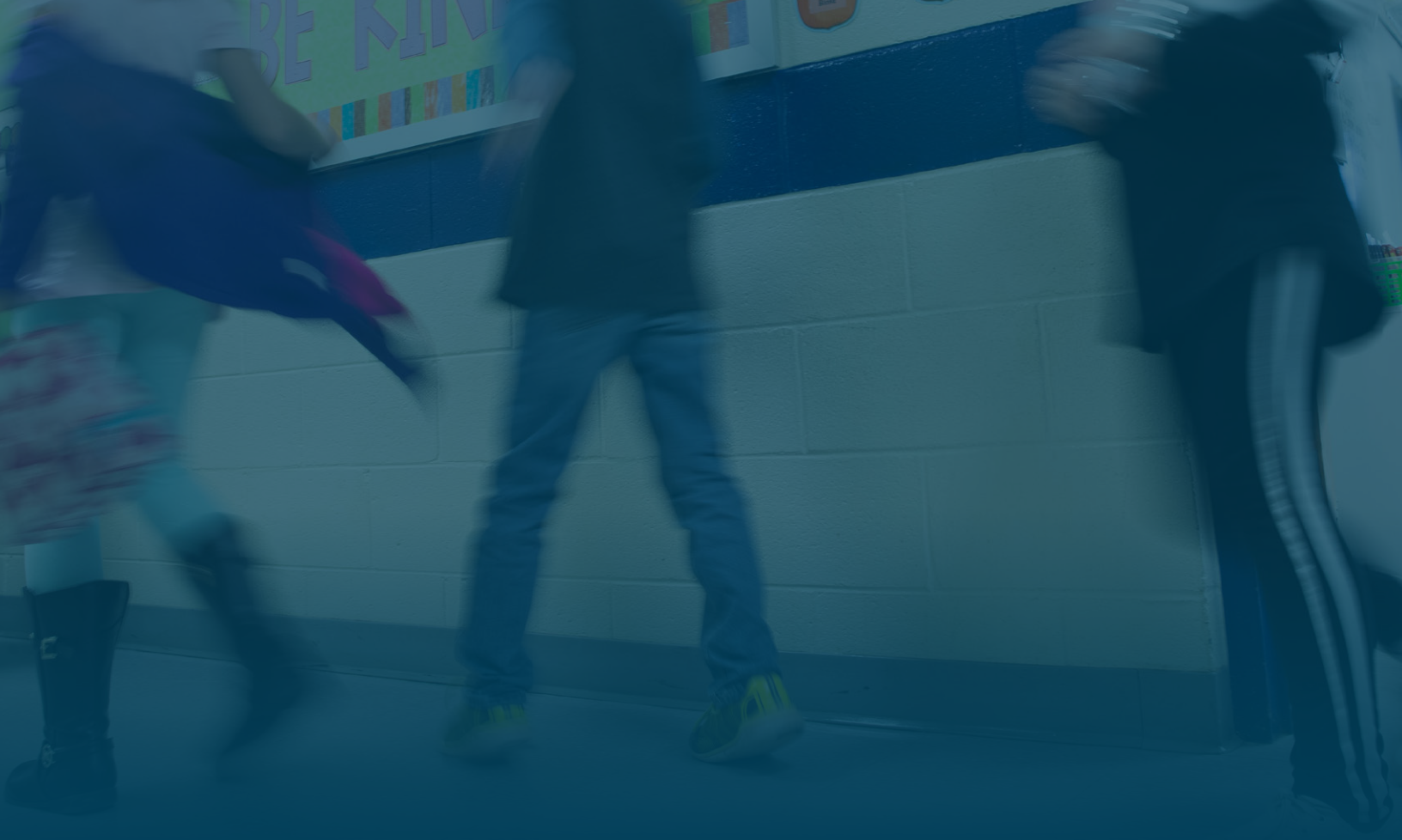

BRIEF

Behind at the starting line: What kindergarten test scores tell us about reaching proficiency in third grade

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KEY FINDINGS

- Students' reading and math skills at kindergarten entry are strongly predictive of whether they reach proficiency by third grade.
- For students who enter kindergarten scoring in the bottom 20%, the probability of reaching proficiency by third grade is low, just over 1 in 10.
- For struggling students, the door to proficiency closes quickly. Just 1 in 50 students scoring in the bottom 20% in the spring of first grade reached proficiency by the end of third grade.

Third-grade proficiency in reading and math is one of the most important milestones in a student's educational journey. This is because by third grade, students are generally expected to transition from learning foundational skills to using those skills to engage with increasingly complex academic content. Additionally, third-grade test scores are highly predictive of later outcomes, including high school test scores and graduation, implying that being on track in third grade is a strong indicator of later educational success. As a result, third-grade proficiency is often used by states and school systems as a key indicator of whether students are on track for future academic success.

Efforts to ensure students reach third-grade proficiency often confront a fundamental challenge: while states routinely monitor proficiency in third grade and beyond, fewer have systems in place to systematically identify students who may be off track in both math and reading in the earliest grades. This matters because students do not enter formal schooling with the same reading and math skills. Large differences in achievement are already evident at kindergarten entry. This means that by the time proficiency is measured on statewide assessments, many students have already spent years on trajectories that place them at risk of missing that benchmark.

In recent years, policymakers and educators have increasingly embraced early intervention, particularly in reading. Universal screening initiatives have expanded across many states, driven by research showing that identifying students' needs early creates more opportunities to provide support before academic gaps widen. Similar efforts focused on early math are beginning to emerge.

As states consider whether to expand early screening and intervention systems, it is important to understand whether achievement in the earliest grades provides meaningful signal about later proficiency outcomes. Put differently, can students who are at risk of missing third-grade proficiency be identified years before that benchmark is measured?

In this first brief in a series examining pathways to third-grade proficiency, we examine whether achievement in the earliest grades provides a meaningful signal about later proficiency outcomes. We use longitudinal data from more than 400,000 students who entered kindergarten in the 2021–22 school year to explore the relationship between MAP® Growth™ math and reading test scores from the fall of kindergarten and students' likelihood of reaching proficiency by the spring of third grade.

Specifically, we ask two questions: How strongly do achievement levels at kindergarten entry predict later proficiency? And how likely is it for students who struggle in the early grades to catch up and reach proficiency by third grade?

Kindergarten entry math and reading skills are highly predictive of third-grade scores

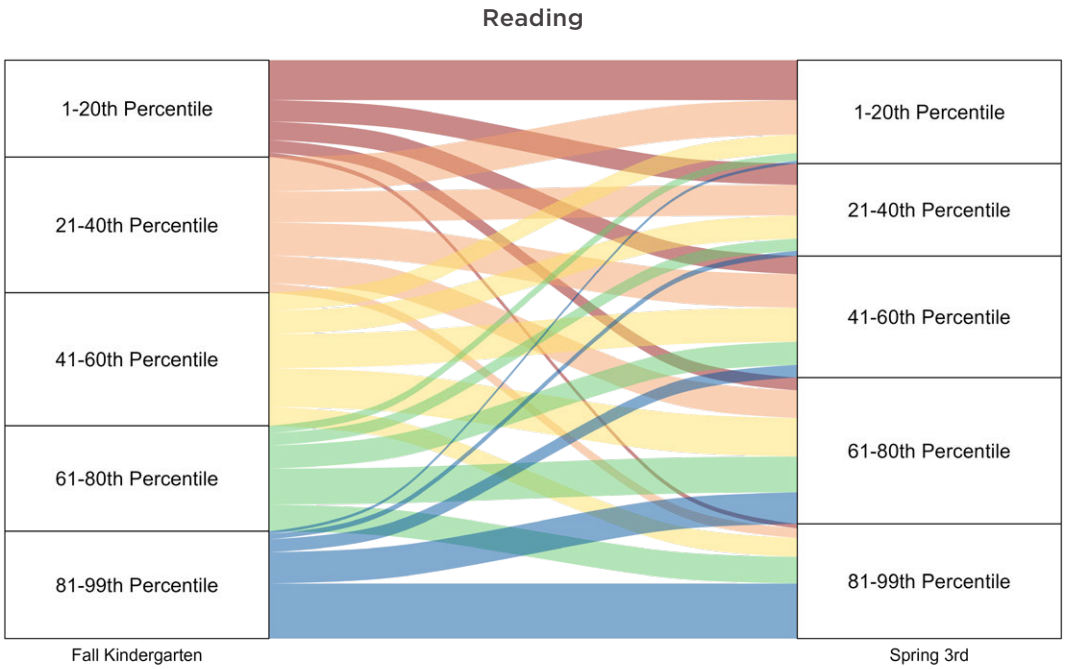
If achievement at kindergarten entry provided little information about later outcomes, we would expect students' positions in the achievement distribution to be largely reshuffled by third grade. In that scenario, students who entered kindergarten at the top, middle, and bottom of the distribution would be equally likely to end up anywhere by third grade.

Instead, we see a very different pattern. Figure 1 shows the relationship between students' fall kindergarten achievement percentile (binned into five quintiles) and their third-grade spring percentile[1], where the width of each line shows the percentage of students who remained within a quintile or shifted to a different quintile over time.

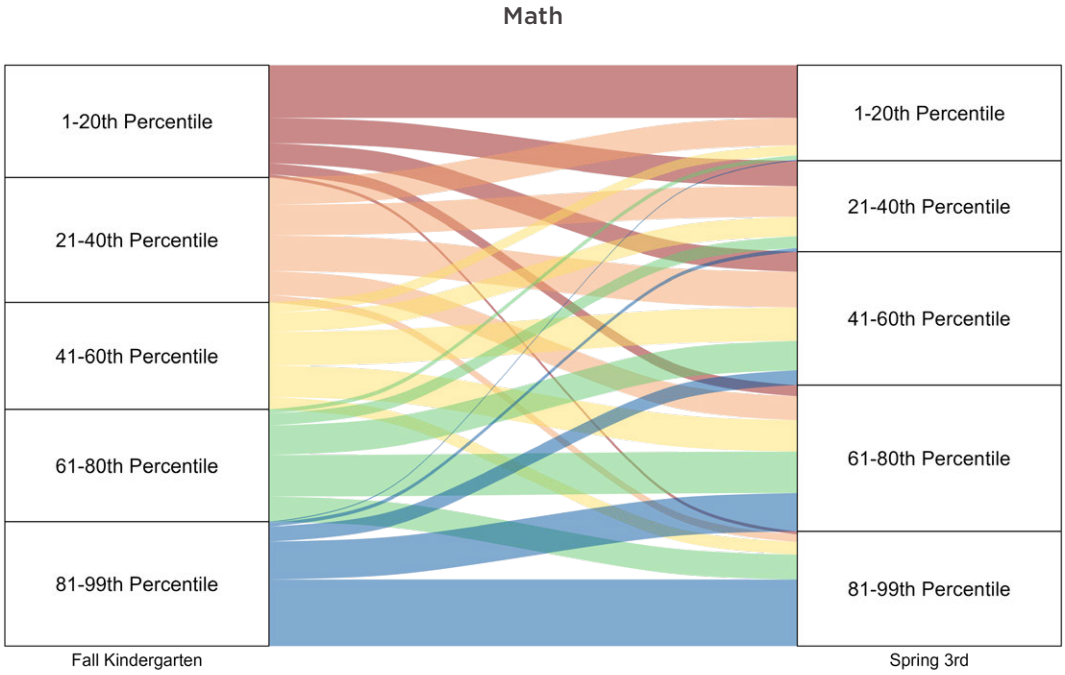
While movement occurred throughout the distribution, students who entered school at the top and bottom of the achievement distribution were especially likely to remain there. Nearly half of students who entered kindergarten in the bottom quintile remained in the bottom quintile by third grade, while more than half of students who entered in the top quintile remained in the top quintile. Most other students remained in the same quintile or moved only one quintile up or down.

These patterns demonstrate that achievement at kindergarten entry provides a meaningful signal about later academic outcomes. However, the results should not be interpreted as evidence that students' futures are predetermined, as many students did move between quintiles over time, particularly in the middle of the distribution. Rather than indicating that early achievement is destiny, Figure 1 shows that movement is possible, but where students start school is highly predictive of later outcomes. Low test scores, even early in elementary school, are meaningful and should not be ignored.

Figure 1. Students who entered school at the top or bottom of the distribution primarily stayed there by the spring of third grade



1 Students' achievement percentile within each term was calculated using the 2025 MAP Growth norms.



Notes. The width of each bar shows the percentage of students moving from each quintile in fall of kindergarten to the spring of third grade. For example, the thick red bar going from 1–20th in fall K to 1–20th in spring third indicates about half of students who started in the bottom quintile were still there at the end of third. The width of the white quintile box indicates the percentage of students in each quintile within a timepoint. Table 3 and Table 4 in the technical appendix contain the percentages underlying this figure.

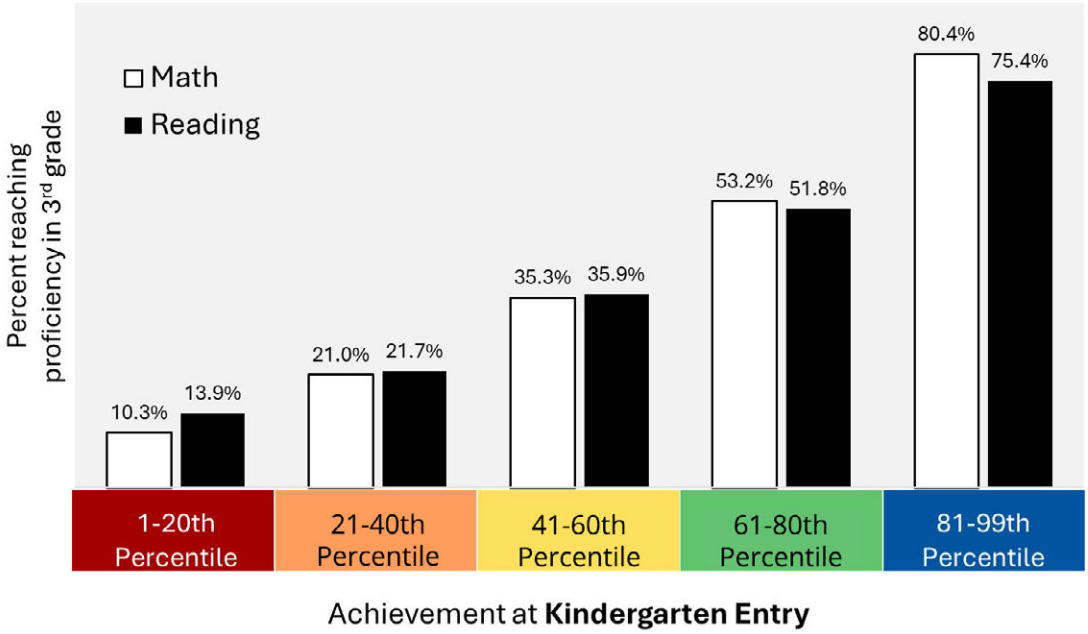
For students who enter kindergarten at the bottom of the distribution, reaching proficiency by third grade is a long shot

While Figure 1 shows that achievement at kindergarten entry is strongly related to later achievement, it does not indicate whether students ultimately reach an important educational milestone: third-grade proficiency. We examine this next by comparing how students' likelihood of reaching proficiency varies based on where they start in kindergarten.

Because proficiency standards vary across states, we define proficiency using the median MAP Growth proficiency cut score across the 41 states where MAP Growth has been linked to state summative assessments. For third grade, this benchmark corresponds approximately to the 64th percentile in math and the 65th percentile in reading. Importantly, this means that proficiency represents a higher standard than average achievement—just over 1 in 3 third-graders is proficient based on this metric. Students currently near the middle of the achievement distribution are not on track to reach proficiency without above-average growth over time.

Figure 2 shows the percentage of students who reached proficiency in third grade by their achievement quintile in the fall of kindergarten. The results reveal a strong relationship between students' starting achievement and their likelihood of later proficiency. Students who entered kindergarten in the top quintile were highly likely to reach proficiency by third grade, while students who entered in the bottom quintile faced long odds. Only 10.3% of students who started kindergarten in the bottom quintile reached proficiency in third-grade math. In reading, the figure was only slightly higher at 13.9%.

Figure 2. The odds of reaching third-grade proficiency are quite low for students who enter school at the bottom of the distribution



Notes. The bars show the percentage of students reaching proficiency (e.g., scoring at or above the 64th percentile in math and the 65th percentile in reading in spring of third grade) based on their quintile in the fall of kindergarten.

Notably, the risk of not reaching proficiency is not concentrated only among students who entered school with the lowest achievement levels. In fact, the majority of kindergarteners who started in the bottom three quintiles did not reach grade-level proficiency in third grade. Even for students who started school with above-average achievement in the fourth quintile (61–80th percentile), just over half reached proficiency.

For struggling students, the door to proficiency closes quickly

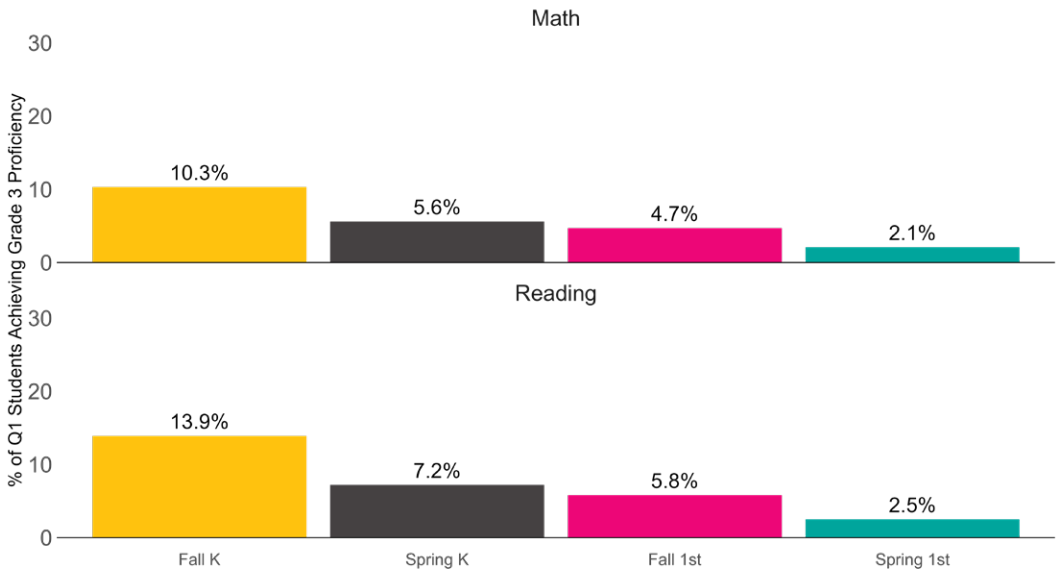
The previous analyses show that even as early as the fall of kindergarten, students' achievement levels provide a powerful signal about their likelihood of reaching third-grade proficiency. This raises an important question for educators and policymakers: does it matter when struggling students are identified?

To examine this question, we focus on students who scored in the bottom quintile of achievement and compare their likelihood of reaching proficiency with each term that passes. Figure 3 shows the percentage of students who reached proficiency in third grade among students who were in the bottom quintile in each term from fall of kindergarten to spring of first grade.

The results indicate that the likelihood of reaching proficiency declined substantially for the students in the lowest-achieving group in subsequent terms. As reported above, among students who were in the bottom quintile at the start of the 2021–22 school year, just 10.3% were proficient in math and 13.9% in reading by the end of third grade in spring 2025. A year later, in the fall of first grade, those rates fell to 4.7% in math and 5.8% in reading for students scoring in the bottom quintile. By the end of first grade, the rates fell to 2.1% in math and 2.5% in reading.

These findings underscore the importance of acting early. Students who are identified as struggling in kindergarten have a larger window of opportunity for intervention and improvement than students who are among the lowest-achieving students in first grade. These results suggest that waiting to identify and support struggling students can substantially reduce the likelihood that they ultimately reach third-grade proficiency.

Figure 3. Among students in the bottom quintile, the odds of reaching proficiency decrease with each term that goes by



Notes. This figure shows the percentage of students reaching proficiency (e.g., scoring at or above the 64th percentile in math and the 65th percentile in reading in spring of third grade) based on their quintile in the fall and spring of kindergarten and first grade. Each bar is estimated using the students in the bottom quintile in that specific term.

Conclusions

Students do not enter kindergarten on equal footing, and the differences that are evident when children first begin school provide meaningful information about their later academic outcomes. Across both reading and math, students' achievement at kindergarten entry was strongly related to their likelihood of reaching third-grade proficiency. Students who entered school with the lowest achievement levels faced particularly long odds of reaching proficiency, while students who entered school with stronger skills were substantially more likely to meet that benchmark.

Importantly, these findings should not be interpreted as evidence that students' futures are predetermined by their kindergarten achievement. Many students moved within the achievement distribution over time, and some students who started far behind ultimately reached proficiency. Rather, the results highlight the importance of early universal screening to identify students who may be at risk of missing third-grade proficiency years before that benchmark is measured, creating opportunities to provide support while students still have the greatest opportunity to change their trajectories.

The findings hint at an intriguing difference between reading and mathematics: students who started behind were generally more likely to reach proficiency in reading than in math. One possible explanation is that many states have spent the last decade investing in universal reading screening, early literacy interventions, and read-by-grade-three initiatives. While similar efforts focused on early numeracy are gaining momentum,

they remain far less widespread. These findings suggest that states may benefit from expanding early identification and intervention systems in both reading *and* math.

This brief focused on whether students who are at risk of missing third-grade proficiency can be identified years before that benchmark is measured. In the next brief in this series, we turn to a related question: what growth trajectories characterize students who ultimately reach proficiency despite starting behind? Understanding not only who is at risk, but also what it takes to get back on track, is essential for designing policies and supports that help more students reach important academic milestones.

ABOUT THE AUTHORS

Dr. Megan Kuhfeld is director of growth modeling and data analytics at NWEA. Her research seeks to understand students' trajectories of academic and social-emotional learning (SEL) and the school and neighborhood influences that promote optimal growth. Dr. Kuhfeld completed a doctorate in quantitative methods in education and a master's degree in statistics from the University of California, Los Angeles (UCLA).

Dr. Karyn Lewis is the vice president of research and policy partnerships at NWEA. She leads a team dedicated to generating actionable, policy-relevant research that directly addresses critical challenges in K–12 education. Her team's work is strategically focused on bridging the gap between rigorous research and practical educational improvements, ensuring that insights translate into meaningful strategies for educators, policymakers, and school leaders. Prior to joining NWEA, Dr. Lewis was a senior researcher at Education Northwest/REL Northwest and a data fellow with the Strategic Data Project at the Harvard Center for Education Policy Research. Dr. Lewis earned her PhD from the University of Oregon in social psychology.

Emily Morton's research focuses on estimating the effects of K–12 education policies and programs related to instructional time and learning environments on student outcomes. She conducts much of her work in partnership with schools and districts, with the intention of producing actionable findings that will directly inform policy and practice and serve to reduce inequality. Before rejoining NWEA in 2025, Dr. Morton was a researcher at the Center for Analysis of Longitudinal Data in Education Research at the American Institutes for Research. She holds a PhD in education and a master of public policy from Stanford University.

About NWEA

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