Madison Education Partnership

RESEARCH BRIEF

Elementary Math Achievement in the 2024-2025 Academic Year

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Executive Summary

The Madison Education Partnership worked with the Madison Metropolitan School District (MMSD) to extend existing work investigating mathematics achievement in middle school to the elementary school level, to better understand student's experiences and outcomes in math earlier in their academic careers. We used administrative data from summative and interim math assessments to explore patterns of achievement overall, across elementary school grades, and student demographic groups. We find that, based on the Forward Exam, less than half of students in grades 3 through 5 were meeting or exceeding grade level standards, and the proportion of students performing in the lowest Forward Exam performance category increased steadily from grade 3 to grade 5. While the data from interim assessments show that the average student's math skills do grow throughout the school year, the amount of growth is sufficient to maintain but not advance their relative standing compared to grade level norms. Across both the summative and interim assessment data, we see a clear story of increasing variability in achievement as students progress through the elementary grades. In addition, we find persistent inequities by student demographic group, consistent with the longer-term trends we noted in middle school report and national trends in math achievement (e.g., the National Assessment of Educational Progress math scores in Grade 4). Overall, we believe these results point to the opportunity for future collaboration to better understand, intervene, and study approaches and investments related to mathematics.

Introduction

The Madison Education Partnership (MEP) is working with the Madison Metropolitan School District (MMSD) Teaching & Learning department to support improvement in math achievement outcomes. This report describes the current state of mathematics achievement in the elementary grades and serves as a foundation for monitoring current and future improvements in mathematics learning in the district. Previously, we produced (1) a report on trends in school math achievement at MMSD middle schools and (2) created and are now piloting a math tutoring program in Sherman Middle School that aims to improve achievement for those one or more grade levels behind in math. However, math achievement in middle school is built upon a number of interrelated skills that are taught in elementary grades. We wanted to enhance our knowledge of the math skills and grades in which some students tend to demonstrate math difficulties earlier than middle school. This information could inform earlier prevention and intervention efforts when math difficulties are more amenable to less intensive remediation.

To do that, the MEP team extended our prior work on trends in middle school math achievement to elementary grades. We focused exclusively on the 2024-2025 school year due to recent changes to the Forward Exam and the district's adoption of a new interim math assessment in elementary grades.

This report seeks to answer the following research questions.

1. How did elementary school students in MMSD perform on the newest iteration of the Forward Exam administered in spring of 2025?
2. How did MMSD elementary school students perform on an interim assessment of math achievement given in the fall?
3. Did student performance on the interim math assessment in the fall differ based on student family income levels?
4. Did student performance on the interim assessment in the fall differ based on racial/ethnic group membership?
5. Did student performance on an interim assessment in the fall differ based on special education status or English learner status?
6. How much did student's test scores improve over the course of the academic year?
7. How did test score improvement vary by grade, family income, race, ethnicity, IEP, and ELL status?

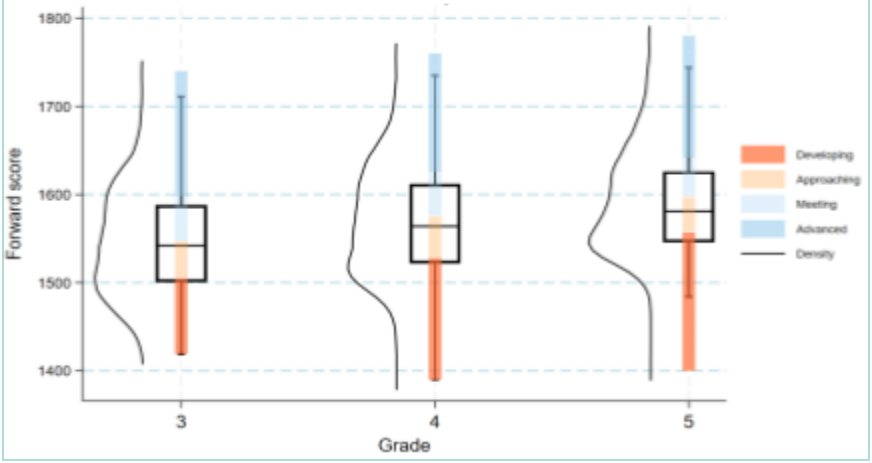
To answer question 1, we explored the Forward Exam scores and the proportion of students within each Forward Exam classification level for students in grades 3 through 5. For questions 2-5, we explored the distribution of students' scaled scores from the fall iteration of the interim assessment, Fastbridge aMath, along with the proportion of students within each aMath performance category. Finally, we also investigated the distribution of student growth performance between fall and spring assessment periods to answer questions 6 and 7.

1. How do MMSD elementary schools perform on summative assessments of math achievement?

First administered in Spring of 2016, the Forward Exams assess Wisconsin students' performance on the Wisconsin Academic Standards on English and Language Arts, Mathematics, Science, and Social Studies. In 2023-2024, Wisconsin administered a new version of the Forward Exam that is anchored to recent updates of these standards.

We analyzed student performance on the 2024-2025 Forward Exam. Figure 1 displays the distributions of Forward scores from grade 3 to grade 5 in 2025 using violin plots and box plots. The boxes in the figure display scores at the 25th percentile, 50th percentile (or median), and 75th percentile; the caps at the end of each vertical line

Figure 1: 2025 FORWARD Scores by Grade, N=5,331



above and below the boxes show the maximum and minimum scores, excluding outliers. The median score (the middle line of each box) represents the point at which half of the students score below and half score above; the 75th percentile score is the score above which only 25% of students fall and below which 75% of students fall. The box reflects scores for the middle 50% of students. To the side of each box we show a smoothed histogram (or 'violin plot') to convey the underlying shape of the distribution of achievement in each grade.

Students are classified as follows based on their performance on the Forward exam in mathematics:

- Developing (dark orange): limited understanding and not yet meeting the Wisconsin Academic Standards.
- Approaching (light orange): partial understanding and approaching the Wisconsin Academic Standards.
- Meeting (light blue): solid understanding and meets the Wisconsin Academic Standards.
- Advanced (darker blue): deep understanding and mastery of the Wisconsin Academic Standards.

Turning to the results for grade 3 as an example, about a quarter of all students earned scores below 1501 (the bottom of the box) and about a quarter of students earned scores above 1588 (the top of the box). The typical score of a 3rd grader (middle of the box) is 1542 – a score that places them around the threshold between low risk (light blue) and some risk (light peach). The distribution of scores, plotted to the left of the box plots, suggests one mode around 1508.

From grade 3 to grade 5, the distribution of math achievements shifts slightly downward from *Meeting* and *Advanced* levels (45.5% in grade 3 → 40.9% in grade 5) toward the *Developing* level (29% in grade 3 → 34.4% in grade 5) (Figure 1). The proportion of students performing at the *Advanced* level dropped from 20.8% in grade 3 to 18.9% in grade 4, with a modest recovery to 19.3% in grade 5. Meanwhile, the share of students with test scores at the level of *Meeting* expectations remains flat between grades 3 and 4 (24.7% to 24.8%) but declines to 21.6% in grade 5. The share of students with results in the *Approaching* category starts with 25.5% in grade 3 with a small increase in grade 4 (27.0%) followed by a decrease in grade 5 (24.7%). More notably, the percentage of students performing in the *Developing* category rises steadily from 29.0% in grade 3 to 34.4% in grade 5. The distribution of scores, plotted to the left of the box plots, illustrates a slow shift upward across grades, consistent with the mean increase from 1,546 in grade 3 to 1,591 in grade 5. These results suggest a modest but steady decline in math test performance across elementary grades, potentially signaling cumulative learning gaps that could weaken students' academic foundation for middle school.

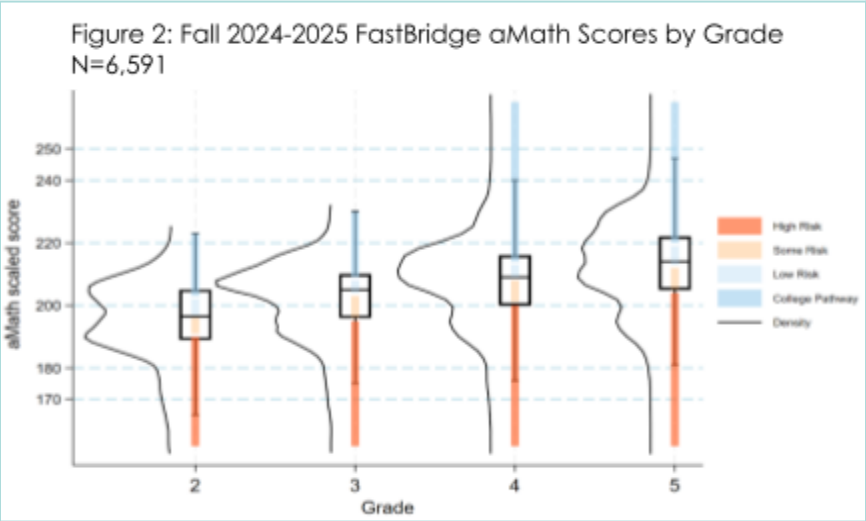
2. How do MMSD elementary school students perform on the interim assessment of math achievement?

Students in grades 2-5 completed the FastBridge adaptive math (or "aMath") test in fall, winter, and spring during the 2024–2025 academic year. Grade-level standards provided by aMath use nationally normed benchmarks to classify students into four levels of academic performance based on their test scores. These benchmarks indicate the student's risk of performing below a future (usually end of year)

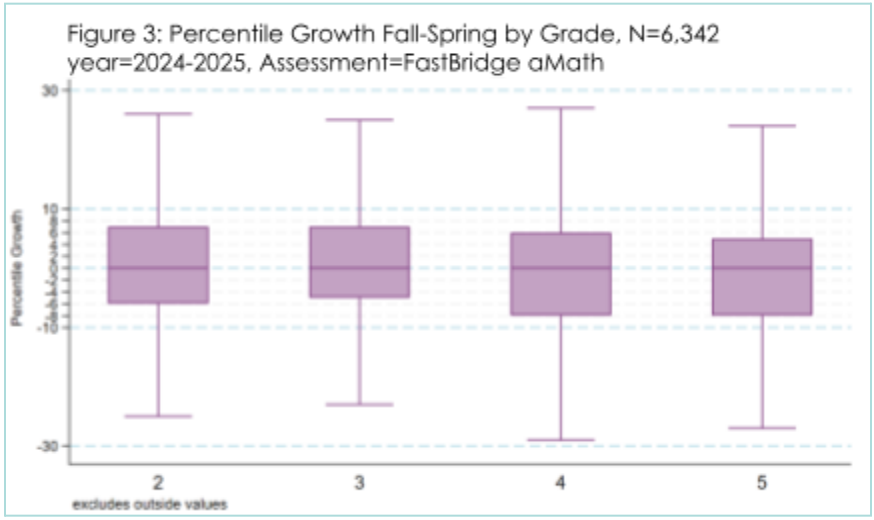
performance target. In the figure, these risk levels, as labeled and defined by FastBridge, are shown in the middle of each box plot in color:

1. High Risk (dark orange): below the 15th percentile on aMath for their grade
2. Some Risk (light orange): between the 15th and 39th percentile
3. Low Risk (light blue): between the 40th and 70th percentile
4. College Pathway (darker blue): above the 70th percentile

Elementary school students in MMSD are under-represented at the upper end of the math achievement distribution: while 60% of students nationally are classified as Low Risk or College Pathway, only 53.5% of MMSD students met this benchmark in fall 2024 (Figure 2). This proportion was the lowest in grade 2, where 50% of students began 2024 on track, and the highest in grade 3 (58%), indicating variation in academic readiness at the start of the year.



About 26% of students began the year in the High Risk category (compared to 15% of students in the nation). This proportion is the highest in grade 2, when 31% of students are below the 15th percentile of national norms. The Some Risk category is notable in upper grades: it accounts for 21% of students overall, with the highest share in grade 5 (24.4%).



In grades 4 and 5, students' starting positions for the academic year are more varied. Variability in mathematics achievement within each grade (measured by the standard deviation) shows a trend of slight increase from 11.5 in grade 2 to 12.9 in grade 5 (except grade 3 where it is equal 10.4). Moreover, consistent with the growing variability in test scores, we find more students falling behind in 4th and 5th grade, appearing to form two different

distributions with different average scores.

Figure 3 summarizes student percentile growth in aMath scores from fall to spring during the 2024-2025 academic year by grade. Percentile growth reflects changes in students' scores compared to national norms, where a value of 0 indicates maintenance of one's percentile rank, positive values indicate upward movement, and negative values indicate a decline in relative standing. Based on the Fastbridge national norms, to stay at the same percentile across fall and spring benchmarks, students

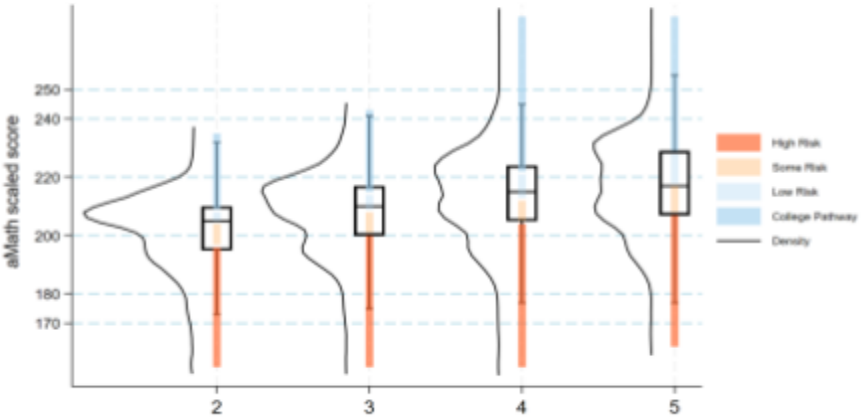
would generally need to improve by 3 to 10 points on the aMath in grade 2, by 2 to 9 points in grades 3 and 5, and improve by 2 to 11 points in grades 4.

Across all grades, the typical score of students was at the same percentile in spring as in the fall so **on average students maintained their relative position compared to national norms**. However, there is substantial individual variation.

By the end of the 2024-2025 academic year, 53.3% of MMSD students meet or exceed grade-level expectations in math, but results vary across grades (Figure 4). **1 in 4 students across grades 2-5 end their academic year in the High Risk category with the biggest representation in grade 2 (27.3%) and grade 5 (26%)**. The positive shift from High and Some Risk categories towards Low Risk and College Pathways during the academic year are in grade 2 and 4, while the negative shift occurs in grade 3 and grade 5. Grade 3 remains the leader in the number of students with test scores in College Pathway or Low Risk categories - 54.8%. On the other hand, in grade 5 there is the lowest share of students with test scores that place them in College Pathway or Low Risk category - 49.7%.

Beyond changes in the shares of students in different categories of achievement, the distribution of scores, plotted to the left of the box plots, appears to be increasingly bimodal, suggesting the presence of two distinct subpopulations in the district. This is consistent with other evidence of rising inequality in higher grades, with one group of students gaining ground and another falling further behind each year.

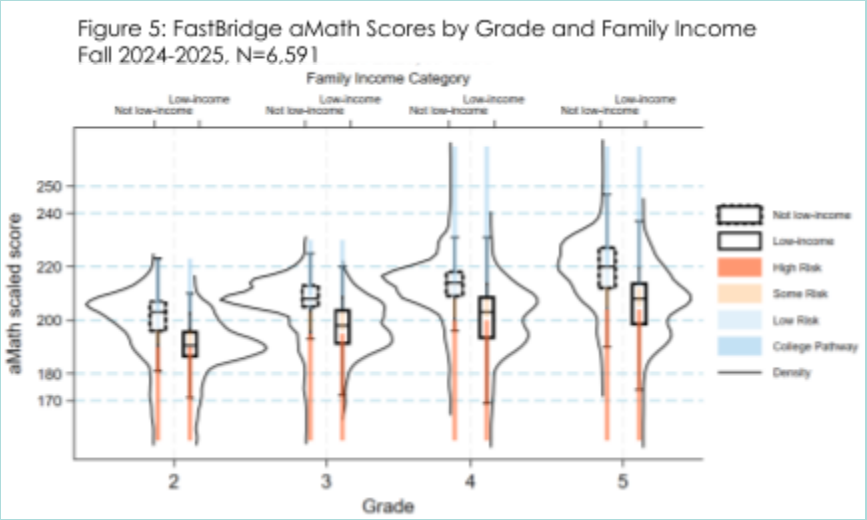
Figure 4: Spring 2024-2025 FastBridge aMath scores by Grade, N=6,625



3. How does MMSD elementary school math achievement look by student family income?

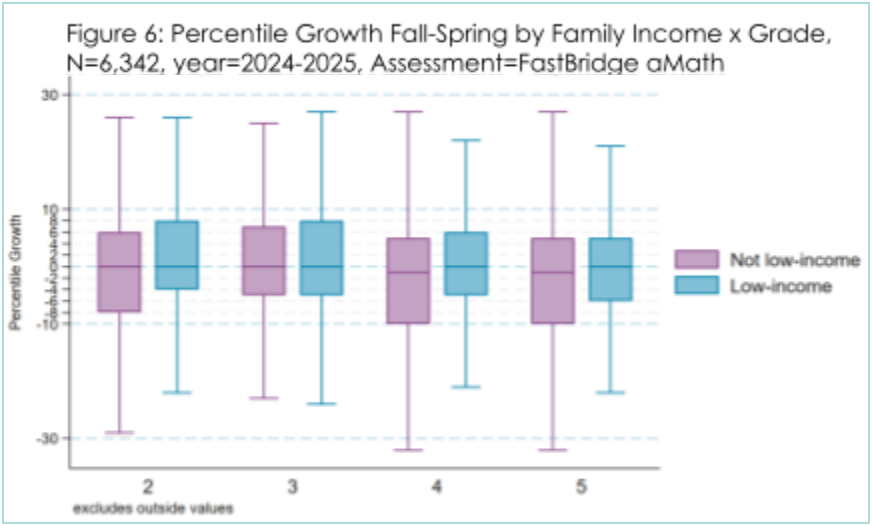
Figure 5 summarizes the fall aMath test scores in 2024 by student's family income: not low-income (shown on the left of each pair of figures, with a dashed outline) and low-income (shown on the right, with a solid outline).

Inequities in mathematics achievement across levels of family income are pronounced and persist across grades. For example, among 2nd grade students, students from low-income families have a median score of 191, compared to students from not low-income families with a median score of 203. In grade 5, the median scores are 208 and 220 respectively. These gaps are also reflected in the distribution of students across risk categories.



Students from low-income families are overrepresented in the High Risk and Some Risk categories and underrepresented in the College Pathway group. For example, in grade 5, only 11.4% of students from low-income families are in the College Pathway category compared to 53.5% of their peers from not low-income families. On the other hand, 38% of students from low-income families in grade 5 have scores that place them in the High Risk category versus just 8.6% of students from not low-income families.

Figure 6 summarizes student percentile growth in aMath scores by family income and grade from fall to spring during the 2024-2025 academic year. Typical scores of students from both low-income and not low-income families were at the same percentile in spring as in the fall in grade 2 and 3, so on average students in grade 2 and 3 maintained their relative position compared to national norms. In grades 4 and 5, students from not low-income families experienced a decline, on average, of 1 percentile in their relative standing, whereas students from low-income families, on average, maintained their position.

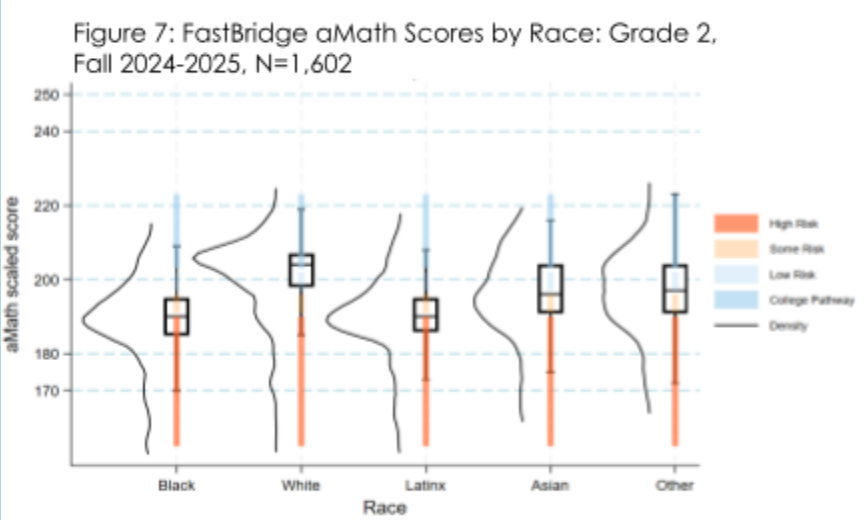


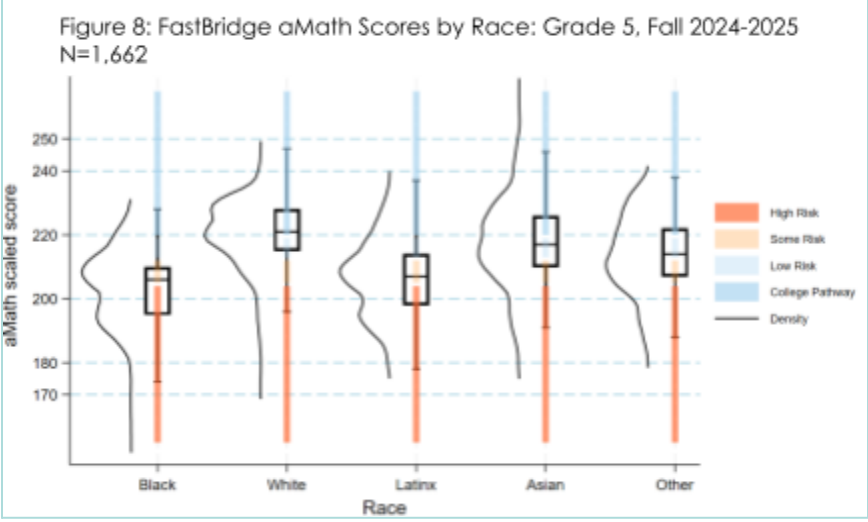
Top-performing students from low-income and not low-income families show similar percentile growth in grade 2 and 3 with small differences emerging in higher grades. The upper quartile of annual percentile growth reaches similar levels for both groups in grade 2 and 3, indicating that about a quarter of students at the top in each group achieved comparable gains, whereas in

grade 4 and 5 students from low-income families at the top 25% of the distribution experienced slightly less percentile growth than their peers from not low-income families. However, the bottom quartile shows more noticeable differences across grades (except grade 3) with **students from not low-income families experiencing slightly larger declines** compared to low-income peers at the bottom of the distribution. Overall, the variation between the top and bottom quartiles is substantial for both groups but is larger for students from not low-income families, reflecting wide variability in individual learning trajectories.

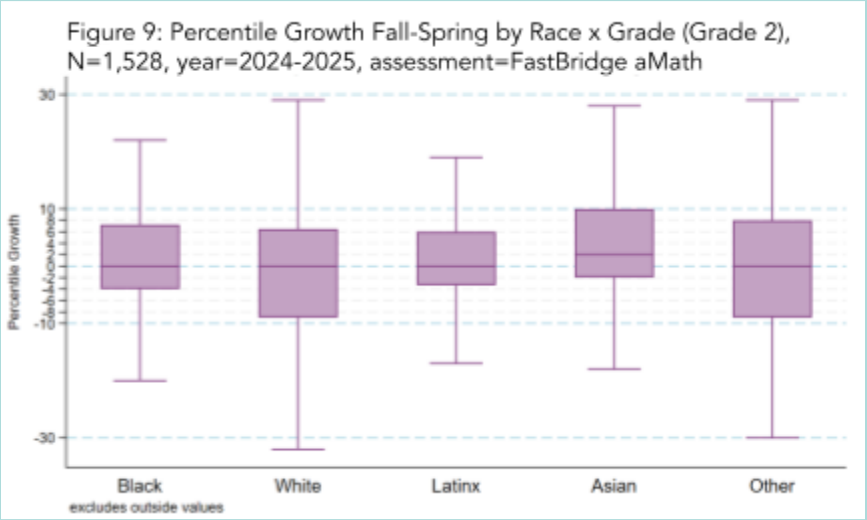
4. What is the magnitude of racial and ethnic differences in MMSD elementary school math achievement?

Figures 7 and 8 display the fall distributions of math achievement for grade 2 and grade 5 respectively with results shown separately by race. **There are noticeable inequities in achievement across racial subgroups. Students who identify as White have the highest scores on average.** In grade 2, the median fall score of White students is 204, compared to 190 for students who identify as Black and Latinx, 196 for Asian, and 197 for students who identify as another race/ethnicity. In grade 5, the median White student earned a score of 221, compared to 206 for students who identify as Black, 207 for students who identify as Latinx, 217 for Asian, and 214 for students who identify a race/ethnicity other than White, Black, Latinx or Asian. **White students also have the lowest level of inequality** (or within-group variation) as measured by the standard deviation. In the fall of grade 2, the standard deviation of White students' aMath scores was 9.5, compared 10.6 for students who identify as Black, 10.5 for students who identify as Latinx, 10.9 for Asian students, and 9.6 for students who identify as a member of another racial or ethnic group. In grade 5, the standard deviation of White students' aMath scores increased slightly to 9.8, compared to 11.0 for students who identify as Black, 11.1 for students who

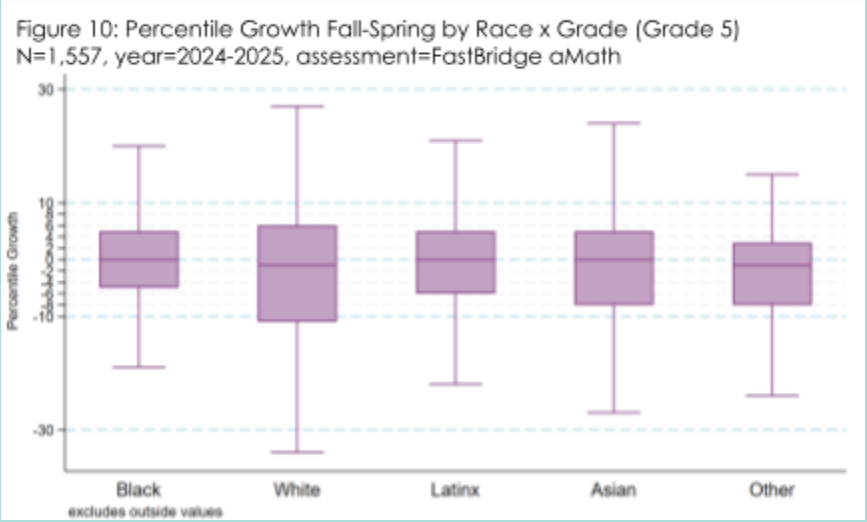




identify as Latinx, 13.4 for Asian students, and 11.7 for students who identify as another race/ethnicity. These trends are similar across all grades and exam periods (fall, winter, spring) (figures for grade 3 and 4 are available in appendix).



The differences in test scores across groups translate to huge differences in the distributions of students' scores across risk categories. In grade 2, only 7.6% of Black students and 10.6% of Latinx students are in the College Pathway category, compared to 58.2% of White students, 27.4% of Asian students, and 31.0% of students of other race/ethnicity. On the other hand, 55.1% and 51.6% of second graders who identify as Black and Latinx respectively have scores that place them in the High Risk category versus just 11.7% of students who identify as White, 22.6% of students who identify as Asian, and 24.1% who identify race other than White, Black, Latinx or Asian. **4 in 5 second graders who identify as Black or Latinx have fall scores that place them in either High Risk or Some Risk categories, compared to only one in five students who identify as White.** In grade 5, the pattern is similar: relatively few Black (6.0%) or Latinx (12.1%) students earn scores that place them in the College Pathway category compared to 57.8% of White, 42.5% of Asian, and 32.0% of "other" students. The share of students with scores in High Risk category in grade 5 is slightly lower across all racial and ethnic groups mostly due to higher shares of scores in the Some Risk category (except for students who identify as Asian whose scores more often placed them in College Pathway category).

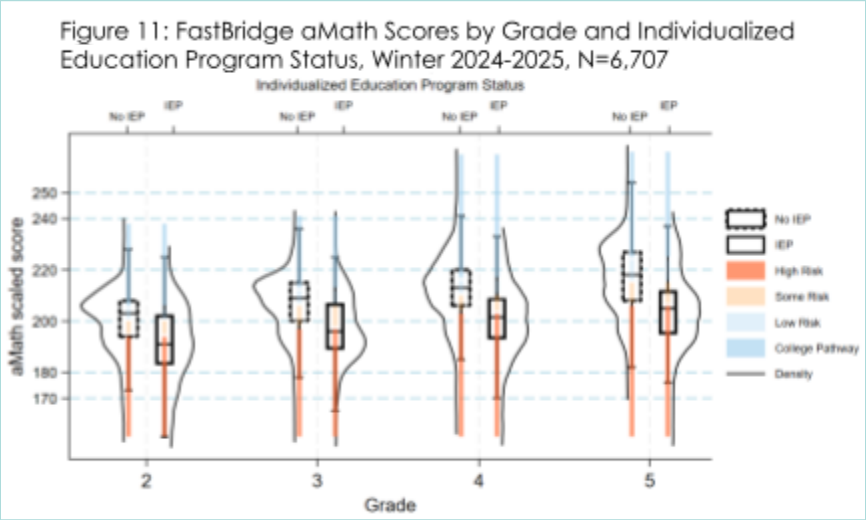


Figures 9 and 10 summarize student percentile growth in aMath scores from fall to spring during the 2024-2025 academic year by race and ethnicity in grades 2 and 5 (grades 3 and 4 are available in the appendix). **Across all grades, median annual percentile growth is at or near zero for all racial and ethnic groups,** indicating that the typical annual growth maintained students' relative standing compared to national norms over

the school year. Students who identify as Asian in grade 2 are the only group with a positive median percentile growth (+2), while small negative median shifts appear for students who identify as White or Other in grades 4 and 5 (-1 to -2). Variability in annual percentile growth is highest for students who identify as White or Other-race and consistently lower for Black and Latinx students across grades.

5. How does school math achievement look by Individualized Education Program Status?

Figure 11 presents the fall aMath test scores in 2024 by individualized education program (IEP) status: not IEP (shown on the left of each pair of figures with a dashed outline) and IEP (shown on the right with a solid outline).



Inequities in mathematics achievement across IEP status are considerable and span all grades and testing seasons. For example, among 2nd grade students, students with an IEP have a median score of 188 at the beginning of the academic year, compared to peers without an IEP who achieve a median score of 198, while in grade 5 the median scores are 204 and 216 respectively. These scale differences translate into substantial differences in the distribution of students across risk categories. For example, in grade 5, only 19% of students with an IEP earn fall scores that place them in the College Pathway or Low Risk category compared to 59.2% of their peers without an IEP. On the other hand, 51.9% of students with an IEP in grade 5 started the academic year with scores in the High Risk category versus 17.3% of students without an IEP.

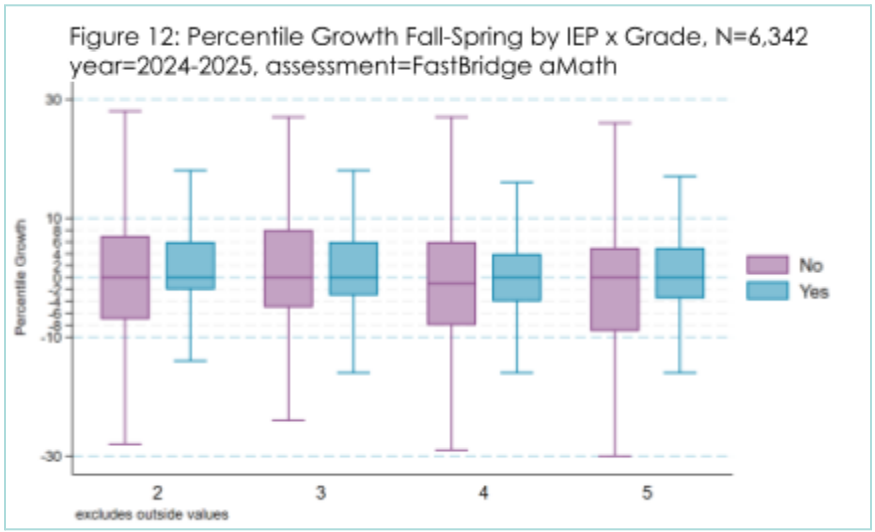
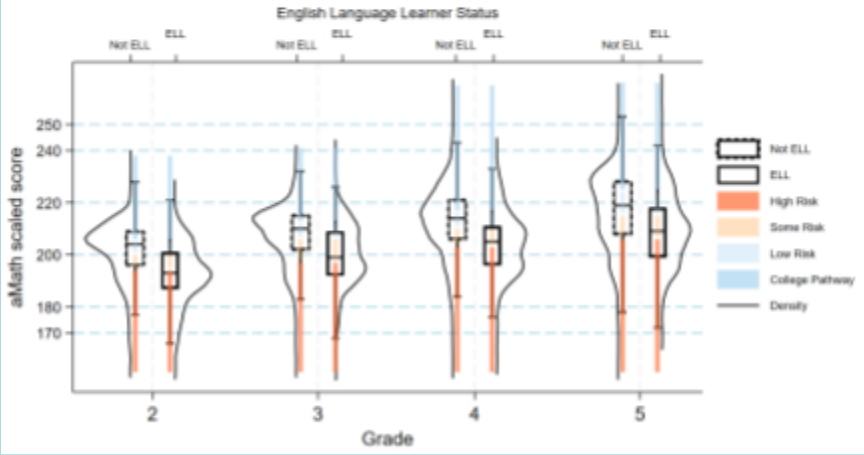


Figure 12 displays the annual percentile growth in math achievement from fall to spring during the 2024-2025 academic year by grade and IEP status. Across all grades, the median percentile growth is 0 for both students with an IEP and those

without an IEP (with only one exception in grade 4 where the median growth for students without IEP is -1 percentile). On average, students in each group maintained their relative standing according to national norms. However, more differences emerge in the range of growth. Variability is consistently higher for students without an IEP with standard deviations ranging from 12.9 (grade 5) to 16.6 (grade 2) compared to 10.5 (grade 4) to 15.04 (grade 2) for students with an IEP.

6. How does MMSD elementary school math achievement vary by English Language Learner status?

Figure 13: FastBridge aMath Scores by Grade and English Language learner Status, Winter 2024-2025, N=6,707



Across grades 2 through 5, ELL students consistently score lower on the FastBridge aMath assessment relative to their non-ELL peers (Figure 13). The median fall scores for ELL students are consistently lower than those of non-ELL students in every grade (by about 9 points). Moreover, a larger share of ELL students cluster in the High Risk and Some Risk categories. For example, in grade 2, 52.9% of students with ELL status have scores that place them in the High Risk and 26.1% in the Some Risk category relative to 23.8% and 16.8% of their peers without ELL status, respectively. By grade 5, 38% students with ELL status have scores in the High Risk category and 29.2% in Some Risk versus 17.4% and 22.5% of their peers without ELL status respectively. In contrast, non-ELL students are more likely to be represented in the Low Risk and College Pathway performance ranges: in grade 2, 59.4% of non-ELL students have scores in these categories relative to 27.2% of students with ELL status, and by grade 5 the trend continues, with 60.1% of non-ELL students versus 32.9% of their peers with ELL status. While the distribution of fall results of both groups shows some trend of shifting towards categories of higher performance as grade level increases, the gap between ELL and non-ELL students remains almost the same.

Figure 14: Percentile Growth Fall-Spring by ELL x Grade
N=6,342, year=2024-2025, assessment=FastBridge aMath

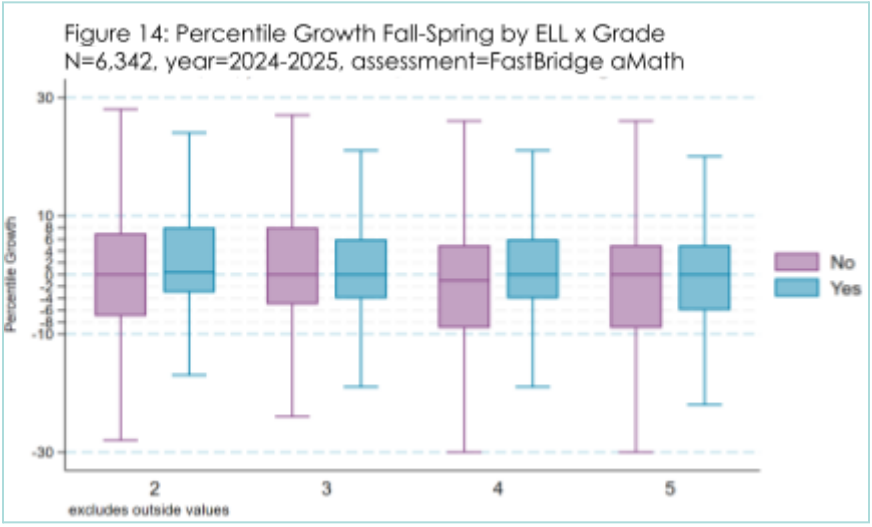


Figure 14 summarizes student percentile growth in aMath scores from fall to winter during the 2024-2025 academic year by ELL and grade. Across all grades, the average percentile growth is close to zero, indicating that on average students maintained their relative position compared to national norms in both groups (except grade 4 where students who identify as not ELL experienced a slight decline of 1 percentile). However, there is substantial individual variation, higher for not ELL students. 2nd grade students experience the widest range of percentile changes, with standard deviation 16.2 for not ELL and 17.0 for students who are ELL.

CONCLUSION

Similar to our previous report on patterns and trends in MMSD's middle school math achievement, we find appreciable challenges at the elementary level in these analyses. At the conclusion of the MEP report investigating middle school math achievement, we asked, 'To what extent do shortcomings in mathematics achievement predate middle school?' In this report, we provide an answer: those shortcomings in math have their roots in the elementary grades, if not earlier.

Our results also provide some insight to within-year changes in students' math achievement. The average student's math skills clearly grew throughout the year and their improvement was enough to maintain their relative standing in comparison to grade level norms. Moving the needle in math achievement for the lowest performing students will require more growth than what is necessary to maintain one's percentile ranking across the year. Setting higher expectations for growth, perhaps using aMath's student growth percentiles, will be necessary if students in the higher risk categories in fall are to make progress toward proficiency in grade-level content.

Black, Latinx, students from low-income families, English learners, and students receiving special education were all overwhelmingly more likely to score in the some or high risk categories on the interim assessment measure. Differences in achievement across racial and socioeconomic lines may be explained by differential participation in core instruction, lowered expectations for student performance, or ineffective interventions for students needing additional support. Differences in achievement across racial and ethnic groups is not evidence of differences in math aptitude.

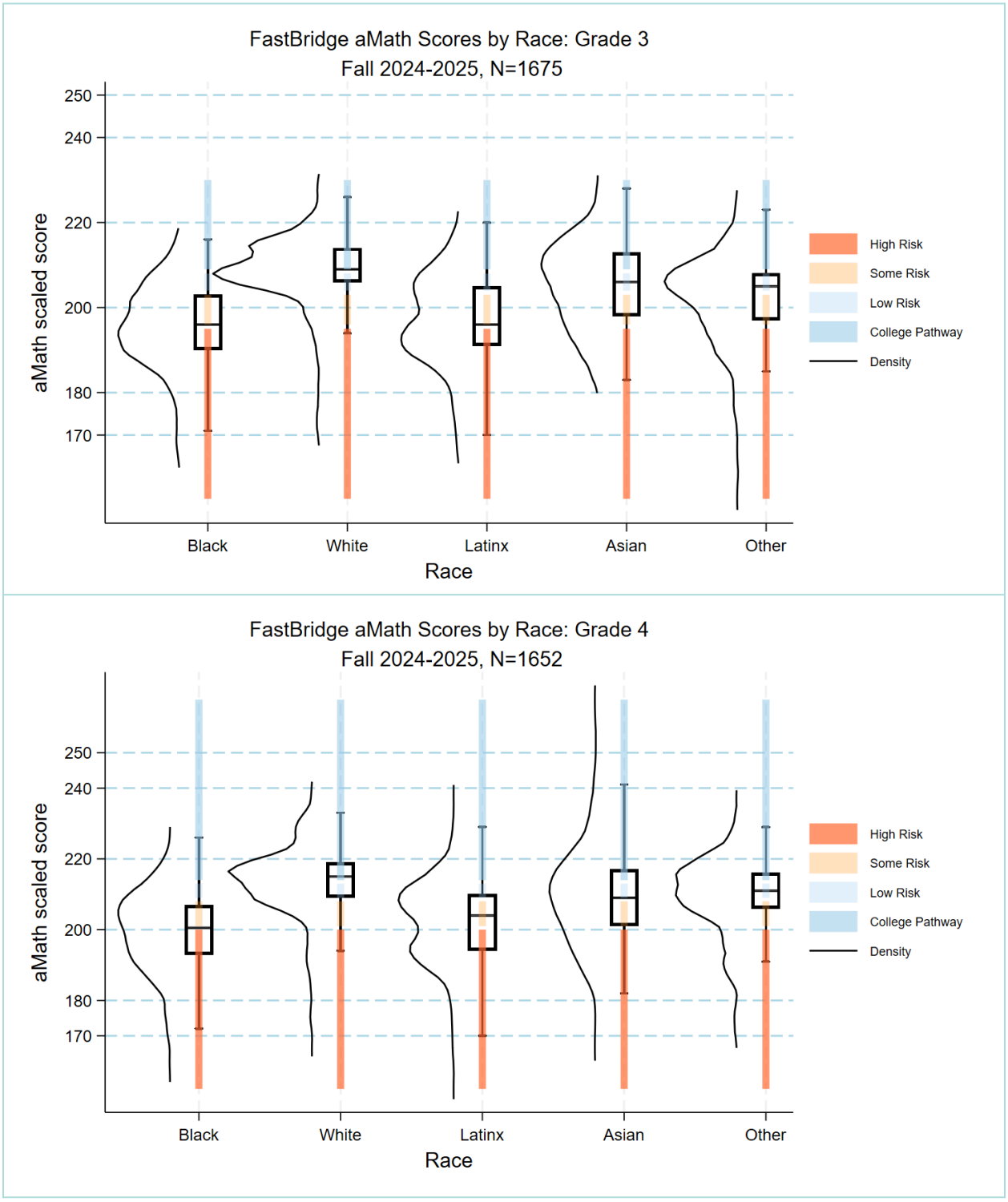
Like our previous middle school report, this report on elementary math achievement is descriptive. *Why* do we see low levels of achievement in mathematics, stark inequities between student groups, and inadequate within-year growth? What instructional, curricular, financial, or programmatic factors contribute to such results? What barriers limit

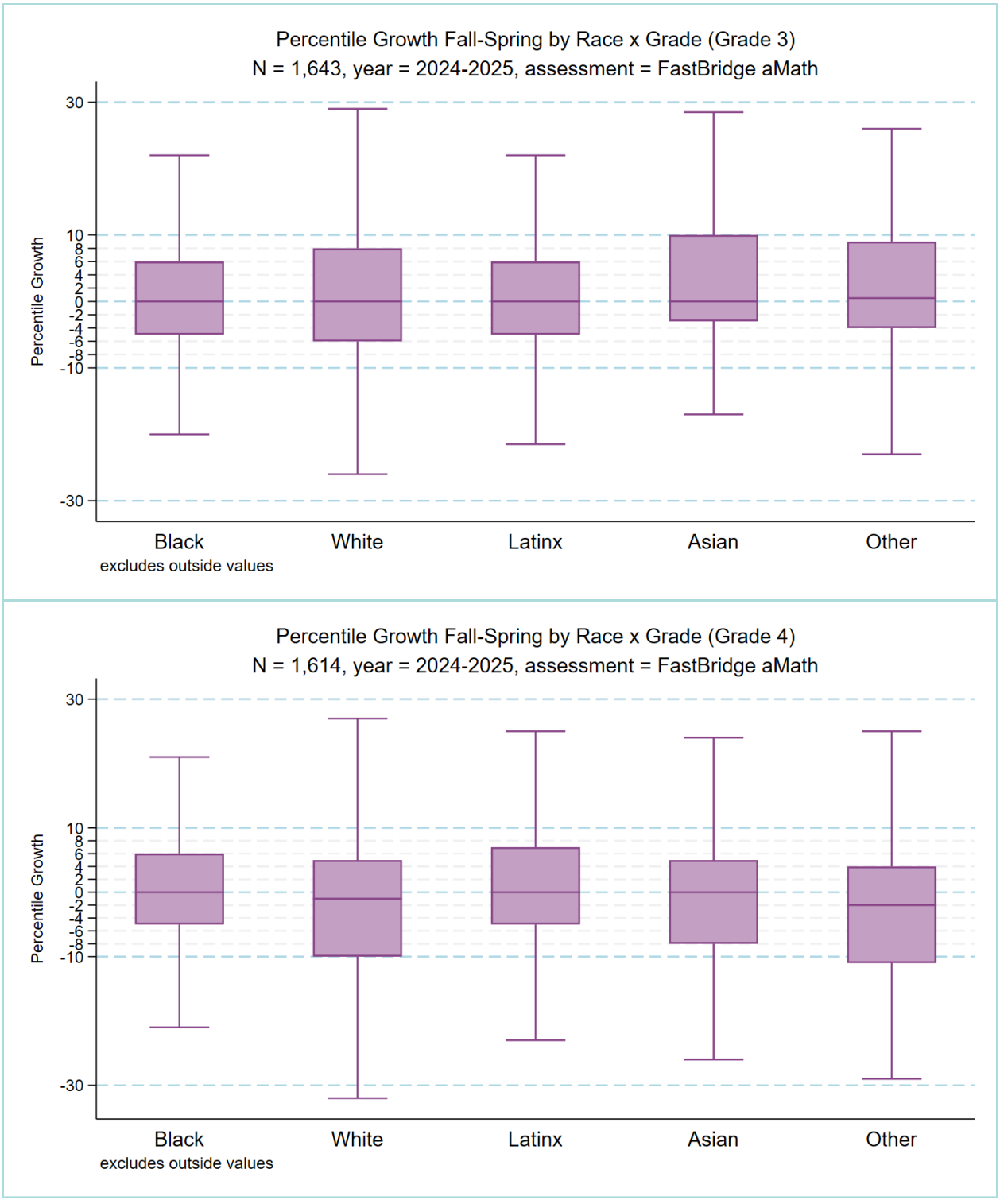
participation in core instruction, and to what extent are students most in need of additional support provided with appropriate, effective intervention? Most importantly, what, if anything, can we do to better understand the mathematics performance of students in MMSD, and what will we do to improve it?

At the time of writing, MMSD is engaged in a review of its K-8 math curriculum, with the intent of adopting new instructional materials in middle school starting in the 2026-27 school year and elementary school in the 2027-28 school year. Given the scope of the challenges that students in the district face, *a systemic approach to mathematics instruction* is necessary. In the words of one administrator with whom we spoke, "We are not going to intervene our way out of a core problem."

MEP is ready to work with MMSD to address inequities in mathematics achievement. We are collaborating with MMSD elementary math leaders to address one factor contributing to students' challenges in upper elementary math -- lack of fluency with math facts -- and have devised an approach to enhancing math fact fluency using existing curricular materials in MMSD. We are piloting this intervention in three classrooms at two schools in the fall of 2025, and have proposed other ideas for studying the use of computer or app-based math fluency programs many schools currently use. We are excited to unpack the data presented in this report with our MMSD partners to identify other avenues for future research, policy, and practice to explore together.

APPENDIX


FastBridge aMath Scores by Race: Grade 3
Fall 2024-2025, N=1675
aMath scaled score
250
240
220
200
180
170
Black
White
Latinx
Asian
Other
Race
High Risk
Some Risk
Low Risk
College Pathway
Density
FastBridge aMath Scores by Race: Grade 4
Fall 2024-2025, N=1652
aMath scaled score
250
240
220
200
180
170
Black
White
Latinx
Asian
Other
Race
High Risk
Some Risk
Low Risk
College Pathway
Density


Percentile Growth Fall-Spring by Race x Grade (Grade 3)
N = 1,643, year = 2024-2025, assessment = FastBridge aMath
Percentile Growth
30
10
8
6
4
2
0
-2
-4
-6
-8
-10
-30
Black
White
Latinx
Asian
Other
excludes outside values
Percentile Growth Fall-Spring by Race x Grade (Grade 4)
N = 1,614, year = 2024-2025, assessment = FastBridge aMath
Percentile Growth
30
10
8
6
4
2
0
-2
-4
-6
-8
-10
-30
Black
White
Latinx
Asian
Other
excludes outside values