Outcome Analysis of a Literacy Professional Development Support Program Implemented School Year 2021–2022

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Background

During the 2021–2022 school year, professional development (PD) was provided to teachers and school leaders at selected schools in Montgomery County Public Schools (MCPS). The professional development was designed to close the opportunity gap by helping schools receiving the support deliver effective literacy and mathematics instruction through learning, teaching methodology, and culturally relevant curricula (MCPS, 2022). MCPS began its partnership during the 2020–2021 school year as a pilot program supporting East Silver Spring Elementary School to improve student achievement in reading across Grades 2, 3, and 4. During the 2021–2022 school year, support was expanded to support teaching literacy in Grades K–5 in eight other elementary schools. Running record data was used by the partner to monitor student growth. A running record assesses a student's reading level specific to the Reading Recovery approach to remedial reading instruction. This report examines the following research questions:

Question 1: How different is reading performance, as measured by attaining spring 2022 Measures of Academic Progress in Reading Fluency (MAP-RF) grade-level expectations, between K-2 students in schools receiving support and students in a comparison group not receiving the same support?

Question 2: How different is reading performance, as measured by spring 2022 Measures of Academic Progress in Reading (MAP-R) scores, between Grade 3-5 students in schools receiving support and students in a comparison group not receiving the same support?

Methodology

Research Design

A quasi-experimental design was used to examine the academic impact of supports provided to teachers in select schools on students as measured by NWEA Measures of Academic Progress (MAP) assessments compared with students in schools with similar demographics without supports.

Measures

Measures of Academic Progress in Reading (MAP-R). MAP-R is a computer-adaptive reading assessment developed by NWEA. The Rasch UnIT (RIT) scores obtained from MAP assessments are reported on a vertically equated scale. Spring 2022 MAP-R RIT scores, ranging from 100 to 300, were compared between students in supported groups and a comparison group of students in Grades 3–5. The prior fall MAP-R RIT scores were used as a covariate in the analysis.

Measures of Academic Progress in Reading Fluency (MAP-RF). MAP-RF is a computer-adaptive reading assessment developed by NWEA. It measures foundational reading skills, with an emphasis on oral fluency. Attainment of the grade-level expectation on the spring 2022 MAP-RF was compared between students in the supported group and a comparison group of students in Grades K–2. Students prior attainment on fall MAP-RF were used as a predictor variable in the analysis.

Analysis

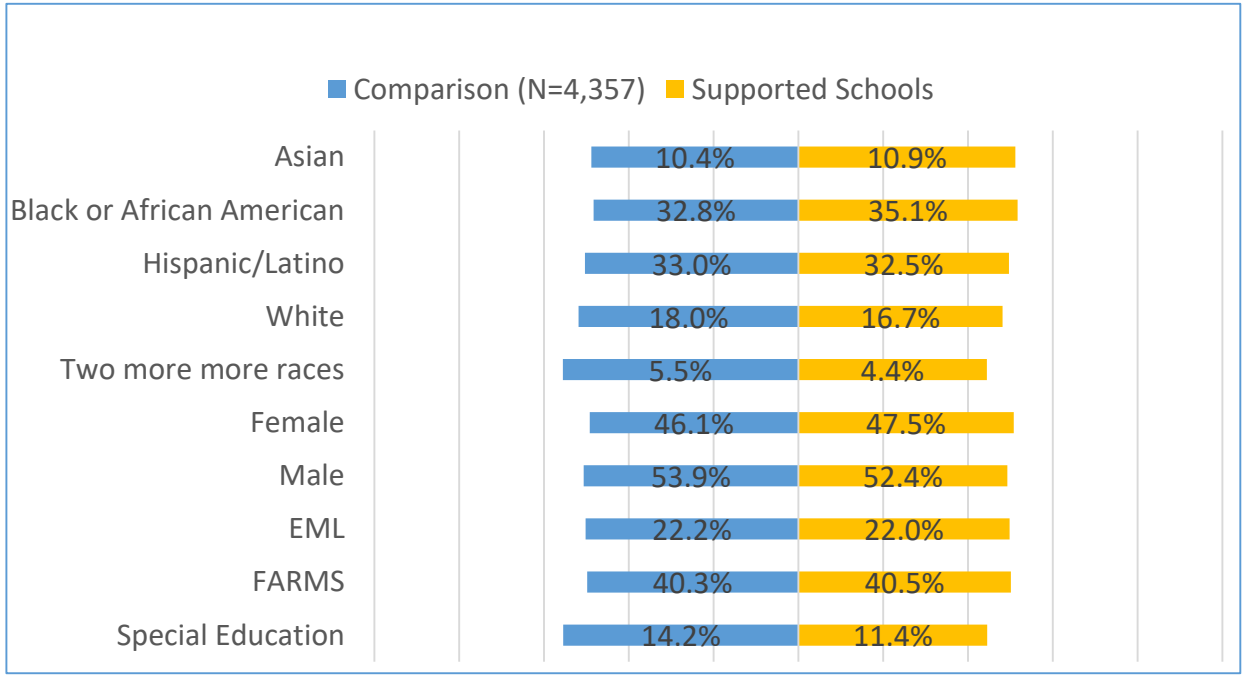
Question 1. Analysis of Covariance (ANCOVA) was used to compare Spring MAP-R RIT scores among students in schools receiving support and comparison students in Grades 3– 5, while controlling for prior achievement (Fall MAP-R), EML status, FARMS status, Special Education status, and race/ethnicity.

Question 2. Binary Logistic Regression analysis was used to test for any effects of support on the likelihood of meeting the spring MAP-RF grade level expectation while controlling for prior fall MAP-RF (met or not met), EML status, FARMS status, Special Education status, and race/ethnicity.

Study Sample

Participating Schools and Grades Receiving Support	
School	Grades
East Silver Spring (second year for Grades 2–4)	K-5
Burtonsville	2-5
Cannon Road	1-5
Glenallan	2-5
Rachel Carson	2-5
Judith A. Resnik	2-5
Rosemont	2-5
Sligo Creek	2-3

Note. Watkins Mill Elementary with Learning Center was not included in the analysis



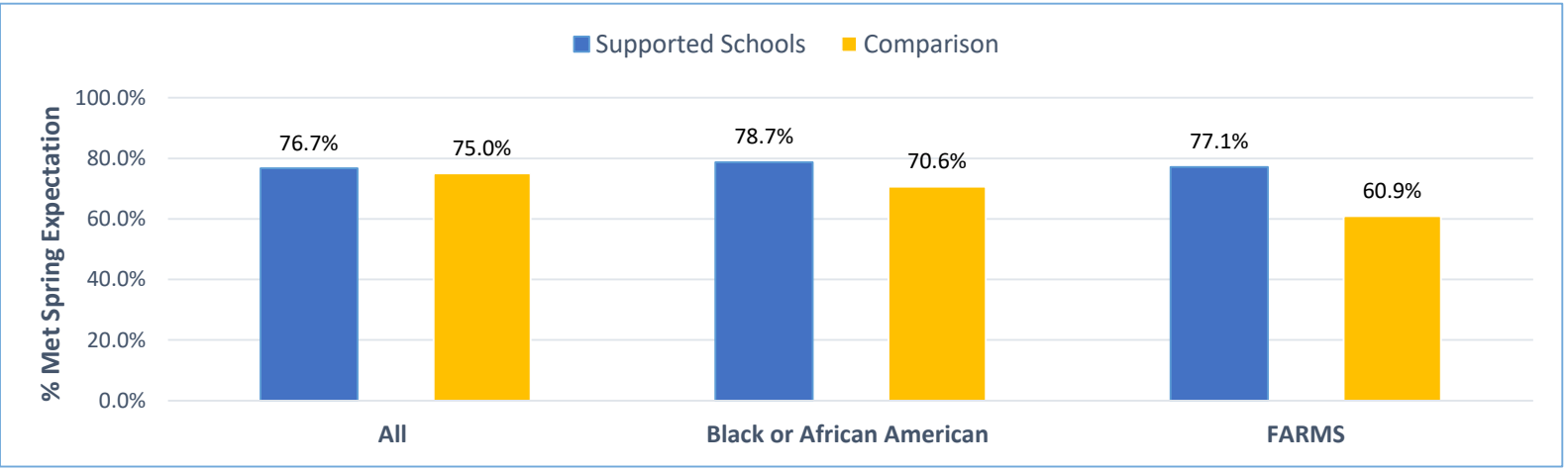
Eight schools receiving support were included in the analysis; Watkins Mill Elementary, which includes a Learning Center, was not included. The grade levels that participated, varied by school. The majority of schools received support for Grades 2–5.

Eight elementary schools with similar demographics were selected for the comparison group sample. Students from the same grades as the supported schools sample made up the comparison groups for each grade level analysis.

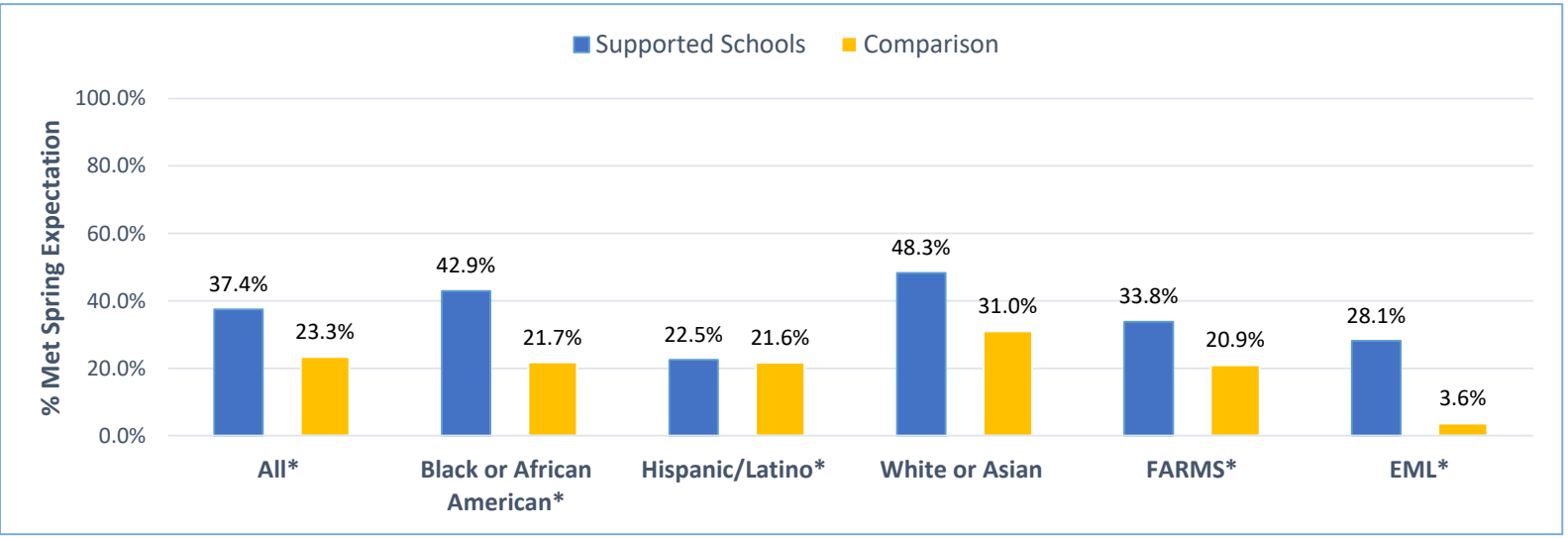
The demographics of students in supported schools were very similar to students in the comparison group schools. For example, both groups had 22% students receiving Emerging Multilingual Learners (EML) services; both had approximately one third Hispanic/Latino students and one third Black or African American students; and 40% of students from both groups received Free and Reduced Priced Meals (FARMS) services.

Findings

Kindergarten MAP-RF



Grade 1 MAP-RF



*p<.05, Odds Ratio (OR): All=2.86, Black/AA=4.82, Hispanic/Latino = 6.43, FARMS=5.95, EML=30.1

Findings

The percentage of Kindergarten and Grade 1 students who met or exceeded grade-level expectations on the spring MAP-RF assessment was examined between students in schools with support and a comparison group.

Receiving support was not found to predict whether students met or exceeded the 2022 spring MAP-RF grade-level expectations among Kindergarten students.

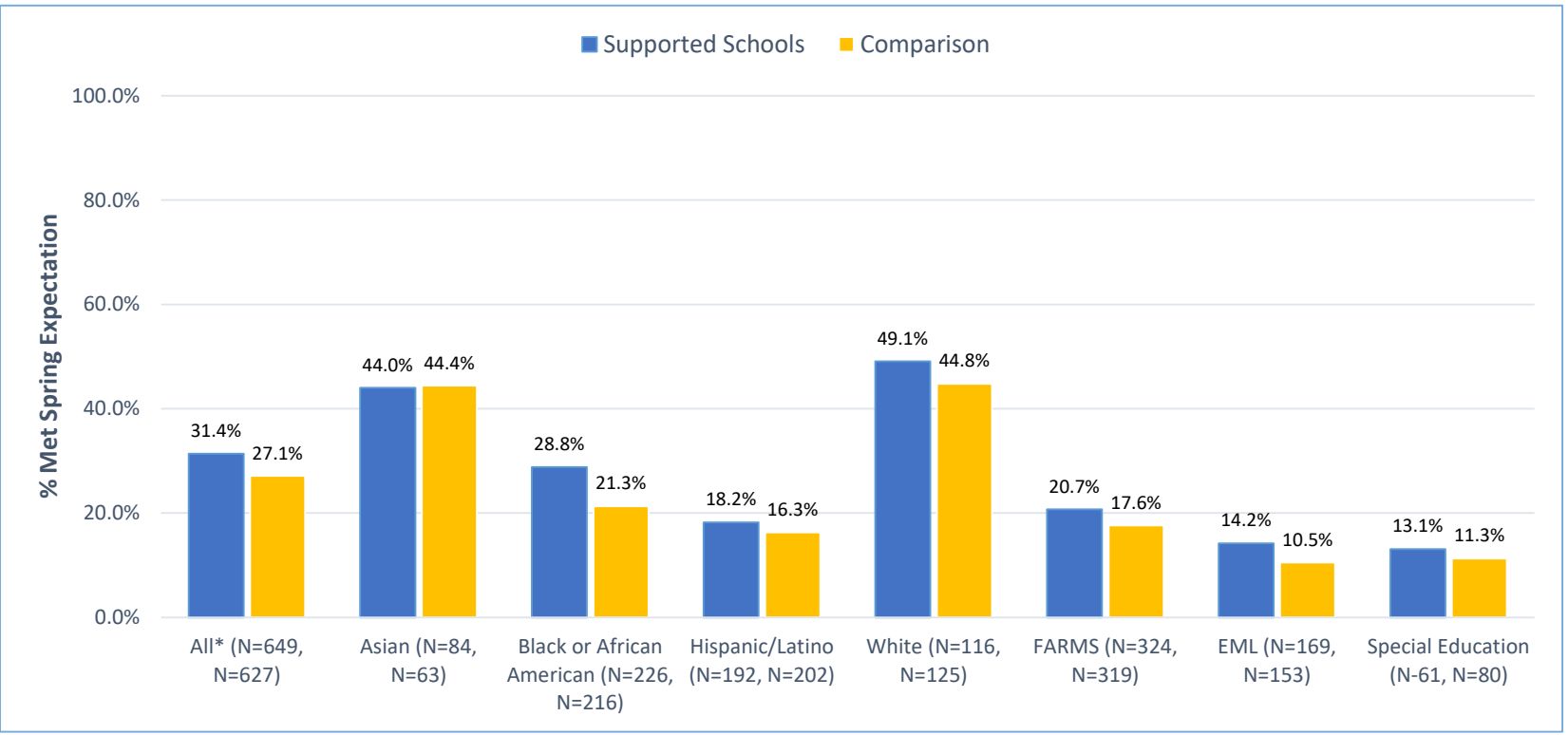
However, Grade 1 students in schools with support had greater odds of meeting or exceeding the spring MAP-RF grade level expectations. The odds of students in supported schools meeting the spring MAP-RF grade-level expectation were 2.86 times those of the comparison group.

Similarly, the odds of meeting spring MAP-RF expectations among Grade 1 Black or African American students, Hispanic/Latino students, and students receiving FARMS or EML services, were greater than their counterparts.

Notes:

- Groups with cells too small to analyze (n<20) are not included
- Kindergarten: Support based on 86 students, including 47 Black or African American and 35 students receiving FARMS services. Comparison group based on 44 students, including 17 Black or African American and 23 receiving FARMS services.
- Grade 1: Support based on 131 students, including 56 Black or African American, 40 Hispanic/Latino, 29 White or Asian, 65 FARMS, and 32 EML. Comparison group based on 129 students, including 46 Black or African American, 51 Hispanic/Latino, 29 White or Asian, 67 receiving FARMS services, and 28 EML.

Grade 2 MAP-RF



*p<.05, Odds Ratio (OR) for All = 1.39

Findings

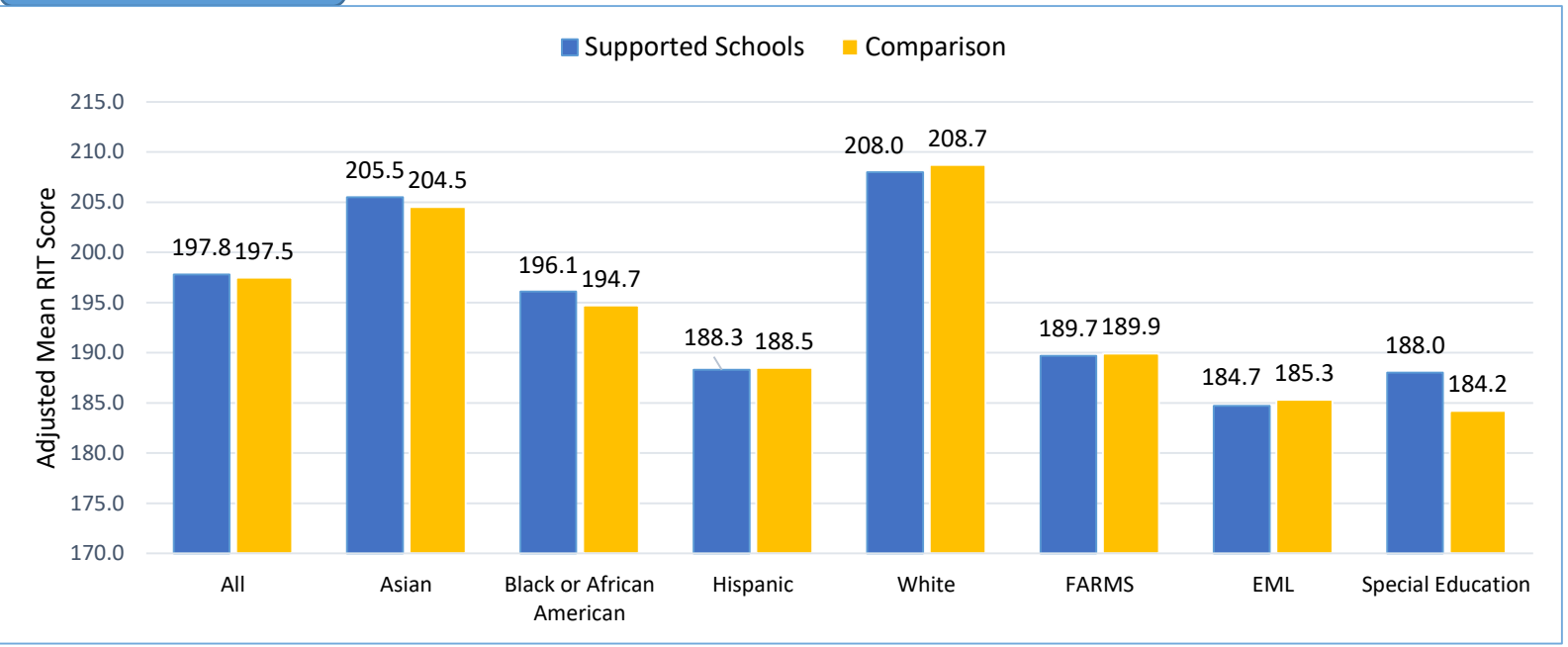
Overall, Grade 2 students in schools with support had greater odds of meeting or exceeding the spring MAP-RF grade level expectations. That is, the odds of supported participants meeting the 2022 Spring MAP-RF expectations among Grade 2 students were 39% higher than the odds for comparison students.

However, support was not found to be a predictor of meeting spring expectations among race/ethnicity students receiving FARMS, EML, and special education services.

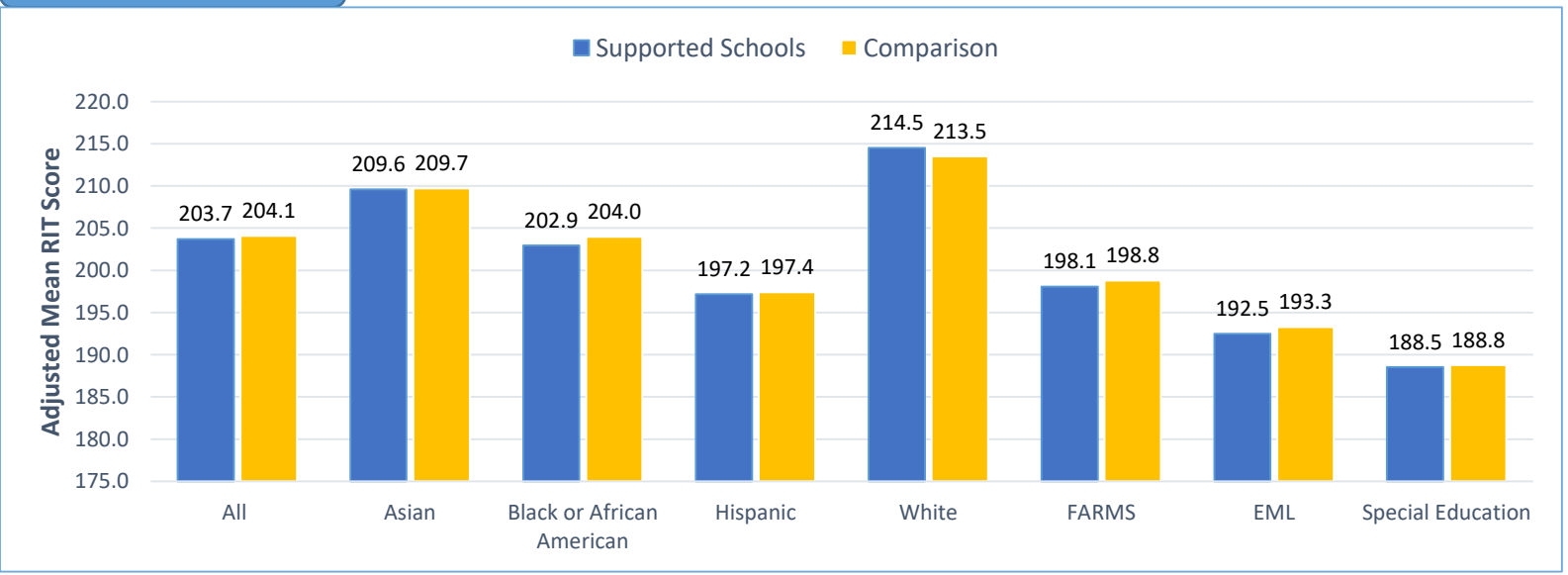
Notes:

- Grade 2: Supprot based on 649 students, including 84 Asian, 226 Black or African American, 192 Hispanic/Latino, 116 White or Asian, 324 FARMS, 169 EML, and 61 special education. Comparison group based on 627 students including 63 Asian, 216 Black or African American, 202 Hispanic/Latino, 125 White or Asian, 319 FARMS, 153 EML, and 80 special education.

Grade 3 MAP-R



Grade 4 MAP-R



Findings:

Spring MAP-R RIT scores were examined between students in schools with support and a comparison group for Grades 3–5.

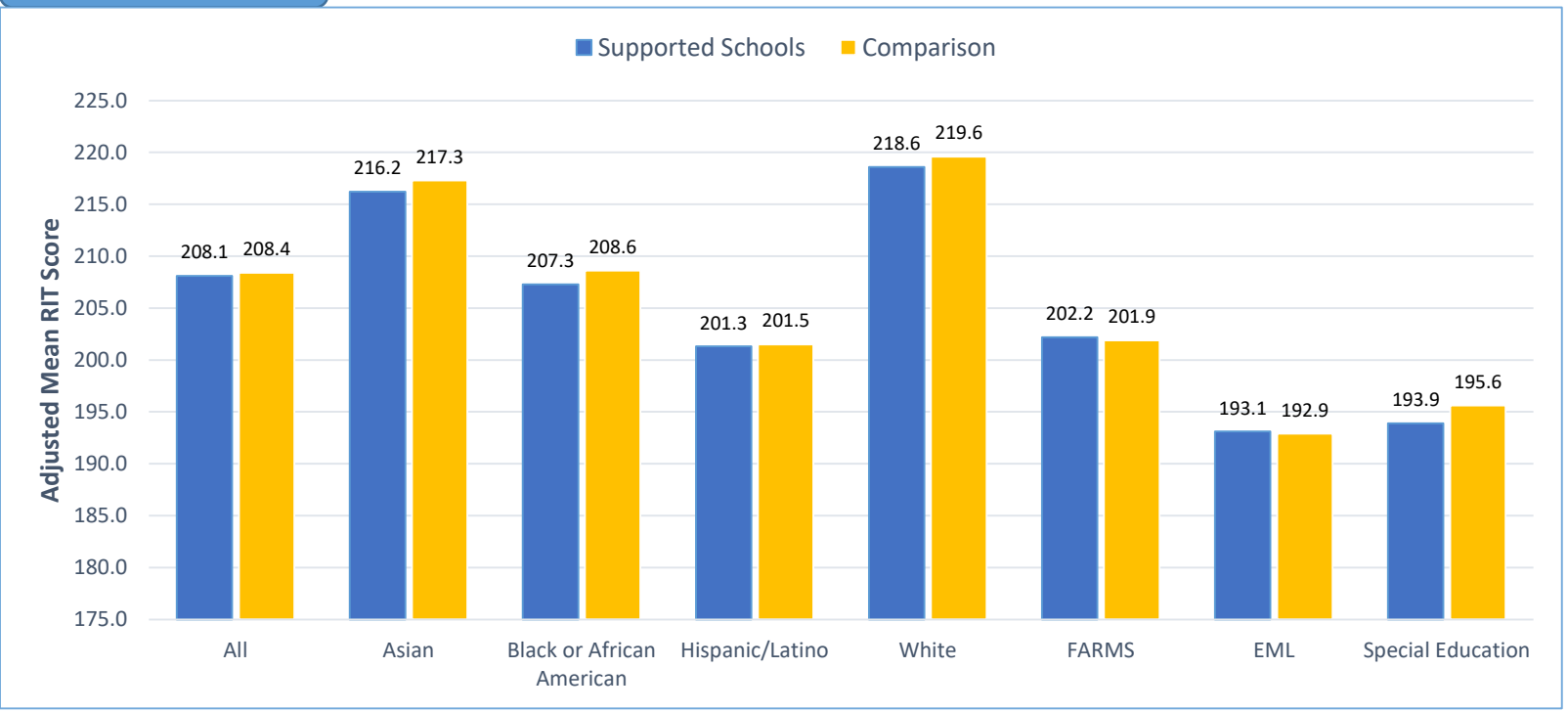
There were no significant differences found among Grade 3 and Grade 4 students in supported schools and their counterparts. Furthermore, there were no differences between the two groups among racial/ethnic groups, students receiving FARMS services, EML, and special education services.

Notes:

- Grade 3: Support based on 717 students, including 68 Asian, 234 Black or African American, 205 Hispanic/Latino, 166 White, 316 FARMS, 159 EML, and 60 special education. Comparison group based on 562 students including 58 Asian, 182 Black or African American, 177 Hispanic/Latino, 119 White, 274 FARMS, 136 EML, and 85 special education.
- Grade 4: Support based on 566 students, including 53 Asian, 182 Black or African American, 193 Hispanic/Latino, 105 White, 289 FARMS, 132 EML, and 71 special education. Comparison group based on 513 students including 55 Asian, 175 Black or African American, 188 Hispanic/Latino, 62 White, 281 FARMS, 138 EML, and 68 special education.

Adjusted Means: Adjusted means from the ANCOVA analysis are shown in the charts. Adjusted Means represent the Mean RIT scores after controlling for prior achievement, race/ethnicity, and services received.

Grade 5 MAP-R



Findings:

Similar to Grades 3 and 4, there was no significant difference between the students in the supported schools and the comparison group on spring MAP-R. Furthermore, there were no significant differences between the two groups across student race/ethnicity, students receiving FARMS services, EML, and special education services.

Notes:

- Grade 5: Support based on 569 students, including 61 Asian, 205 Black or African American, 183 Hispanic/Latino, 95 White, 292 FARMS, 126 EML, and 59 special education. Comparison group based on 474 students including 45 Asian, 176 Black or African American, 166 Hispanic/Latino, 55 White, 255 FARMS, 104 EML, and 59 special education.

Adjusted Means: Adjusted means from the ANCOVA analysis are shown in the charts. Adjusted Means represent the Mean RIT scores after controlling for prior achievement, race/ethnicity, and services received.

Overall Summary

➢ Grades K–2

- Grade 1 and Grade 2 students receiving support had better odds with expectations than comparison students, accounting for student differences in baseline reading performance, demographics, and service receipt. No statistically significant findings were apparent in Kindergarten.

- As with the overall Grade 1 finding, students receiving support had better odds of meeting expectations in reading among Black or African American students, Hispanic/Latino students, EMLs, and students receiving FARMS services.

➢ Grades 3–5

- Analysis of MAP-R RIT scores found no statistical differences between students in schools with support and a comparison group for Grades 3–5.

Grade	Effect
Kindergarten	No statistically significant effect
Grade 1	Positive effect (Odds Ratio = 2.86)
Grade 2	Positive effect (Odds Ratio = 1.39)
Grade 3	No statistically significant effect
Grade 4	No statistically significant effect
Grade 5	No statistically significant effect

A Few Caveats
Kindergarten and Grade 1 findings are based on only one and two schools receiving support, respectively. The student reading performance variables in the Grades K–2 analysis were based on whether or not a student met/exceeded expectations in reading in the fall and spring. These dichotomous variables are less sensitive than continuous variables that provide more detail on student performance (such as the RIT scores used in the Grades 3–5 analysis).

Key Findings

Positive findings among Grade 1 and 2 students in schools with support

- For Grade 1 students in schools receiving support, the odds of meeting grade-level expectations on the spring MAP-RF, were almost three times as high (Odds Ratio = 2.86) compared with the comparison group, accounting for prior reading performance (Fall MAP-RF), race/ethnicity, students receiving FARMS services, EML, and special education services.

- Similarly, Grade 1 students receiving FARMS services, or EML services, identifying as Black or African American, and Hispanic/Latino, had greater odds of meeting the spring MAP-RF grade-level expectations compared with the comparison group.

- Grade 2 students receiving support also had greater odds of meeting grade-level expectations (Odds Ratio = 1.39) than the comparison group students on the spring MAP-RF.

No differences found among Kindergarten and Grades 3-5 students in schools with support

- Receiving support was not found to predict whether students met or exceeded the 2022 spring MAP-RF grade-level expectations among Kindergarten students.

- There were no significant differences between the 2022 Spring MAP-R RIT scores of Grade 3–5 students in schools receiving support and their grade-level counterparts, including by students' race/ethnicity, receipt of FARMS services, EML, and special education services.

Recommendations

The following recommendations are based on findings from this outcome evaluation and are in alignment with MCPS's strategic plan focus area "Academic Excellence", particularly to "Improve student achievement in literacy."

- **Continue support in Grades K–2 contingent upon subsequent analysis**
  - There is preliminary evidence that support positively impacts students' reading achievement in Grades 1 and 2. This evidence supports the continuation in the early Grades K–2 until subsequent analyses confirm apparent effects.

- **Consider discontinuing support in Grades 3–5 contingent upon subsequent analysis**
  - There is no evidence from this analysis that support has affected student reading performance in Grades 3–5 at the end of the first year of implementation (second year for Grades 3–4 in one school). Absent future evidence of positive effects of support on student academic performance in Grades 3–5, consider discontinuing support at these grade levels.

- **Continue an evaluation of support through teacher feedback and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment data**
  - Consider gathering feedback from impacted teachers about their perceptions and experiences of receiving support from and how that support has impacted their classroom instruction. This feedback could help inform decisions about the future use of support and any needed improvement to implementation.
  - From 2022–2023 onward, student reading performance will be measured using the DIBELS assessment, enabling more fine-grained analyses of student reading performance in Grades K–2. In turn, this will allow a more precise estimate of any effect of support on student reading performance in Grades K–2.

- **Based on these findings, consideration must be given to pursue other early literacy programs to improve and accelerate literacy growth and progress.**

Reference: Fiscal Year 2023 Budget Question and Answer. Retrieved from https://www.montgomeryschoolsmd.org/departments/budget/archiveDetail.aspx?id=511&year=2023&order=11&keywords Rockville, MD. Montgomery County Public Schools. MCPS (2022).

Recommended Next Steps

This study's findings are based on one year of implementation in all but one of the elementary schools. Given mixed findings with positive results in Grades 1 and 2 and non-significant results in Kindergarten and Grades 3–5, questions remain about the effectiveness of a literacy professional development support program. The following questions must be addressed to further inform decisions about the potential continuation of this initiative.

- To what extent does the support provided increase reading performance among Grades K–2 and 3–5 students?
  - The desired outcome would be that reading growth among students in schools receiving support are substantially higher (statistically significant with $p < .05$ and an effect size of $d > 0.15$) than that of students in a comparison group not receiving the same support.

- What are teachers' experiences and perceptions support of this literacy professional development support program and the extent to which it has impacted their instructional practices?
  - Examining implementation and teachers' experiences could offer possible explanations for the lack of academic improvement or for strengthening the implementation program regardless of educational outcomes.

Reference: Fiscal Year 2023 Budget Question and Answer. Retrieved from https://www.montgomeryschoolsmd.org/departments/budget/archiveDetail.aspx?id=511&year=2023&order=11&keywords Rockville, MD. Montgomery County Public Schools. MCPS (2022).