



# Examining the Impact of Montgomery County Public Schools 2021 Summer School Program

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**Prepared By**

Nyambura Maina, Ph.D.

Helen Wang, Ph.D.

**Office of Shared Accountability**

Applied Research and Evaluation



850 Hungerford Drive  
Rockville, Maryland 20850  
301-740-3000

**Monifa B. McKnight, Ed.D.**  
Interim Superintendent of Schools

**Mr. James N. D'Andrea**  
Chief of Staff

**Dr. Kecia L. Addison**  
Director, Office of Shared Accountability

## Table of Contents

Executive Summary .....	iv
Background .....	1
Literature Review .....	1
Methodology .....	3
Research Questions .....	3
Evaluation Design .....	3
Study Samples .....	3
Variables and Measures .....	4
Data Analysis Procedures .....	4
Findings .....	5
Question 1. What is the demographic composition of MCPS students who participated in the 2021 summer programs? .....	5
Question 2. What impact did the summer school program have on students' academic outcomes? .....	6
Question 3. To what extent did the 2021 summer school programs mitigate students' academic learning disruption? .....	9
Question 4. What impact did the summer school program have on students' social-emotional learning (SEL)? .....	13
Limitations .....	15
Conclusion .....	15
Discussion .....	16
References .....	17
Appendices .....	20

## List of Figures

<b>Figure 1.</b> Proportions of Students who Participated in 2021 Summer Programs by Level .....	5
<b>Figure 2.</b> 2021 Summer Program Participation Rates by Level and Grade within Level.....	5
<b>Figure 3.</b> Percentage of Participants in 2021 Summer Programs by Special Services .....	5
<b>Figure 4.</b> Participation Rates in 2021 Summer Programs by Students .....	6
<b>Figure 5.</b> Recommended and Participated by Level and Grade within Level .....	6
<b>Figure 6.</b> Pretest and Posttest Literacy Assessment Scores from Grade 1–5 Students.....	7
<b>Figure 7.</b> Mean Percentage-Point Change in Literacy Scores from Pre and Posttest (Elementary).....	7
<b>Figure 8.</b> Mean Point Change in Middle School Literacy Scores from Pre and Posttest .....	7
<b>Figure 9.</b> Mean Percentage-Point Change in Elementary Literacy Scores from Pre and Posttest by LEP and Students Receiving Special Services .....	8
<b>Figure 10.</b> Mean Point Change in Middle Literacy Scores from Pre and Posttest by LEP and Students Receiving Special Services .....	8
<b>Figure 11.</b> Pre and Posttest Mathematics Scores by Grade.....	8
<b>Figure 12.</b> Mean Percentage-Point Change from Pre and Posttest (Mathematics).....	9
<b>Figure 13.</b> Mean Pre/Post Percent-Point Change in Mathematics Scores by Student Groups .....	9
<b>Figure 14.</b> Spring and Fall 2021 Mean MAP-M RIT Scores, by Grade Level.....	10
<b>Figure 15.</b> Grade 3 Spring and Fall 2021 MAP-M Mean RIT Score for Students Identified as LEP and Students Receiving Special Services, by Summer Program participation Status.....	10
<b>Figure 16.</b> Grade 6 Spring and Fall 2021 MAP-M Mean RIT Scores for Students Identified as LEP and Students Receiving Special Services .....	11
<b>Figure 17.</b> Grade 9 Spring and Fall 2021 MAP-M Mean RIT Scores for Limited English Proficient and Students Receiving Special Services .....	11
<b>Figure 18.</b> Percentage of Grade 3 Students Who Attained Spring MAP-RF Grade Expectation and 50 <sup>th</sup> Percentile Rank for Fall MAP-R Assessment.....	12
<b>Figure 19.</b> Grade 6 and 9 Mean Spring and Fall 2021 MAP-R Mean RIT Score by Summer Program Attendance Status .....	12
<b>Figure 20.</b> Proportion of Grade 3 Who Attained Spring Grade 2 MAP-RF Expectations and 50 <sup>th</sup> Percentile on Fall MAP-R Assessment: Participants vs. Nonparticipants by Focus Group..	12
<b>Figure 21.</b> Grade 6 Spring and Fall Mean MAP-R R RIT Scores for LEP and Students Receiving Special Services .....	13

<b>Figure 22.</b> Grade 9 Fall Mean MAP-R RIT Scores for Students Identified as LEP and Students Receiving Special Services.....	13
<b>Figure 23.</b> Survey Results Examining Student’s Perception towards the Summer School Programs Learning Environment.....	14
<b>Figure 24.</b> Percent of Students Who Felt They Improved Their Relationship and Collaboration Skills .....	14
<b>Figure 25.</b> Percent of Students Who Cited they Learned or Strengthened the Following Skills. 14	
<b>Figure 26.</b> Percent of Students Who Cited they Learned or Strengthened their Problem Solving and Critical Thinking Skills.....	15

## Executive Summary

### Background

During the summer of 2021, Montgomery County Public Schools (MCPS) offered a variety of voluntary summer school programs to elementary, middle, and high school students using both online and in-person models. The summer programs were designed to maximize learning recovery and mitigate learning loss during summer break in light of the COVID-19 pandemic's disruption starting in March 2020. This report examines the impact of the 2021 summer programs on students' mathematics and literacy skills using pretests and posttests for the summer program, fall and spring 2021 Measures of Academic Progress in Reading/Reading Fluency (MAP-R/RF) and Mathematics (MAP-M). Online surveys were used to gather information on the impact of the summer program on social-emotional learning (SEL) for middle and high school students.

### Research Questions

1. What is the demographic composition of students who participated in the 2021 summer programs?
2. What impact did the summer school programs have on students' academic outcomes?
3. To what extent did the 2021 summer school programs mitigate students' academic learning disruption?
4. What impact did the summer school program have on students' social-emotional learning (SEL)?

### Key Findings

#### *Participation in 2021 summer programs varied by grade and student groups*

- Nearly 30 percent (N=44,552) of students enrolled in the 2021–2022 school year attended the 2021 summer programs. These students were distributed across the elementary (51%), middle school (20%), and high school (29%) levels.
- Summer program participation rates varied by school level and student groups, ranging from 45% among elementary primary Black or African American students receiving Free and Reduced Meals Services (FARMS) to 20% among middle school Asian/White and All other students not receiving FARMS services.

#### *The student surveys showed that students reported many socioemotional benefits*

- Two-thirds reported they learned strategies to build positive relationships and collaboration.

- Thirty eight percent of the 8,020 students recommended for the summer program attended. The participation rate for recommended students varied from 12.2% for Grade 8 to 53.6% for Grade 11 students.
- Overall, students attended 92% of their summer program. Middle and high school students attended 98% and 99% of time scheduled for their programs.

#### *The summer school program had a positive impact on students' academic outcomes*

- Students in Grades 2–8 who attended the 2021 summer programs had significantly higher mathematics scores on the posttests across grade levels and student groups, compared to their average pretest scores.
- Grade 2–5 participants attained statistically higher literacy scores on the posttests than on the pretests across grade levels and student groups.
- Middle school students experienced gains in posttest literacy scores relative to pretests, and these gains were statistically significant for Grade 6 and 8 students ( $P < 0.05$ ).

#### *Overall, the fall MAP scores for participants and nonparticipants were similar but varied by grade levels, racial/ethnic groups, and special services*

- Although the result of this analysis showed no evidence that participants outperformed nonparticipants on the fall MAP assessments, it demonstrated that the summer school program contributed to maintaining the spring level of performance. Specifically, both participants and nonparticipants either remained steady or experienced minor and comparable changes (upward or downward) from spring to fall.
- While taking into consideration the spring performance and demographical variables, the between-group difference in the fall performance was statistically significant for some grades and student groups. However, the between-group differences were negligible, showing that the performance of the summer program participants and nonparticipants was comparable in the spring and fall.
- The majority of the survey respondents reported that they learned or strengthened their problem-solving and time management skills.
- Over four-fifths reported that their summer school program provided a positive learning environment.

## Examining Impact of MCPS 2021 Summer Program

### Background

During the summer of 2021, Montgomery County Public Schools (MCPS) offered a variety of voluntary summer school programs to elementary, middle, and high students using both a virtual and in-person model. The goal of the summer programs was to maximize learning recovery and mitigate learning loss in light of the COVID-19 pandemic's disruption starting in March 2020 (MCPS, 2021a). This report examines the impact of the 2021 summer programs on students' mathematics and literacy skills using data from pretest, posttest, and social-emotional learning (SEL) measures. In addition, fall 2021 Measures of Academic Progress in Reading and Mathematics (MAP-R and MAP-M) were also used to determine whether the summer school program helped facilitate students learning over the summer.

#### *Purpose*

The purpose of this study was to examine the extent to which the 2021 summer school programs supported the learning recovery efforts in literacy and mathematics for MCPS students. Specifically, this study examined the impact of the 2021 summer school programs on students' academic outcomes and SEL.

This study examined the differences in participants' performance in mathematics and literacy by the end of the summer; report of social-emotional learning, and the summer programs' influence on participants' performance on the fall MAP, comparing the performance of students in Grades 3, 6, and 9 with a matched sample of peers who did not participate in the summer school program.

#### *Description of the 2021 Summer School Programs*

The summer school programs aimed to enable all students to engage in summer academic and special/elective courses (MCPS, 2021a). MCPS offered these summer programs at no cost and made transportation services available to students from all schools and clusters. The MCPS 2021 voluntary summer programs were delivered either in person or virtually. The programs focused on helping students recover and facilitate their learning following the 2020–2021 school year in mathematics, literacy, SEL, and foundational skills to help prepare them for future success (e.g., teamwork, collaboration, critical thinking skills).

The programs delivered virtually were offered centrally, with student enrollment across many schools. Local programs offered in-person instruction at the home school. Furthermore, each school had the flexibility to adapt the academic and special/elective courses to meet the needs of students. The summer programs ran for 19 days (July 6–30, 2021) for approximately 4.5 hours per day, except for 31 Title I schools (MCPS, 2021a; MCPS, 2021b), which ran for 24 days (July 6–August 6, 2021; see Appendix A1). At the start of the summer program, students took a diagnostic assessment or pretest. At the end of the program, students took a posttest to reassess their mathematics and literacy skills.

Funding for summer school programs was provided through the federal American Rescue Plan Elementary and Secondary School Emergency Relief (ARP ESSER) Fund (Office of Elementary and Secondary Education, 2021).

#### *Significance of the study*

This evaluation supports MCPS's strategic priority of mitigating learning disruption and accelerating learning recovery across schools stipulated in the MCPS *Strategic Plan* (MCPS, 2021b) and the Maryland State Department of Education's (MSDE) requirements that each local school system a) establish and implement a summer school program for public school students to address the effects of the COVID-19 pandemic on education; and b) evaluate the program's effectiveness at the conclusion (MSDE, 2021, p. 3). These findings are expected to inform instructional decisions for improving academic achievement. Furthermore, the results from this study will help with future summer program planning.

## Literature Review

### *Disruption of Learning and Assessment*

The COVID-19 pandemic created the most extensive disruption of education systems in human history, affecting more than 1.6 billion learners in more than 200 countries (Pokhrel & Chhetri, 2021). Beginning in March 2020, school systems across the country faced extraordinary challenges in educating students at a distance. The abrupt transition from traditional face-to-face learning to virtual settings was an entirely new experience for both students and educators.

However, unlike the economic and healthcare sectors, which regularly updated the public on the pandemic's impact, school systems do not typically share student performance data with the public at highly-frequent intervals. As a result, limited access to and updates on student performance and state summative assessment data resulted in considerable apprehension among parents, educators, and policymakers. Furthermore, during the 2020–2021 school year, there was no requirement to collect any data that might be a proxy for achievement after all 50 states were permitted to skip the statewide standardized tests required by federal law (Gewertz, 2020; US Department of Education, 2020).

### ***Impact of COVID-19 on Learning***

At the start of the 2020–2021 school year, researchers projected that returning students would start fall 2020 with 1) approximately 63%–68% of the learning gains in reading, 2) 37%–50% of the learning gains in mathematics relative to a typical school year, and 3) only a third of students would potentially make significant gains in reading (Kuhfeld, Soland, Tarasawa, Johnson, Ruzek, & Lewis, 2020). However, these researchers also cautioned that the projections were inherently speculative, and could very well have over or underestimated the impact COVID-19 had on students learning.

More recent reports concur that many students made little or no progress while learning from home (Mcmurdock, 2021; MSDE, 2021; Office of Civil Rights, 2021; Pokhrel & Chhetri, 2021; Dorn, Hancock, Sarakatsannis, & Viruleg, 2020; Curriculum Research Associates, 2021a; 2021b; Garcia & Weiss, 2020; Heim, Strauss, & Meckler, 2021; Sawchuk & Sparks, 2020). Findings from these studies suggested:

- The pandemic negatively affected academic growth; students were learning less in virtual settings and disproportionately across content areas and student groups (Dickler, 2021; Curriculum Research Associates, 2021; Heim, Strauss, & Meckler, 2021).
- Technological barriers made it harder for many students to stay engaged in virtual classrooms (Garcia & Weiss, 2020; Curriculum Research Associates, 2021; Heim, Strauss, & Meckler, 2021; Dickler, 2021).
- By the end of the 2020–2021 school year, fewer students were on grade level in reading in all grades, particularly in the early elementary grades (Dorn, Hancock, Sarakatsannis, & Viruleg, 2020; Curriculum Research

Associates, 2021a; 2021b; Heim, Strauss, & Meckler, 2021).

- Fewer students were on grade level in mathematics in all grades, particularly in elementary and early middle school grades (Mcmurdock, 2021; Curriculum Research Associates, 2021; Heim, Strauss, & Meckler, 2021).
- Students impacted by poverty ended the year with six months of unfinished learning in mathematics (Curriculum Research Associates, 2021b; Garcia & Weiss, 2020; Heim, Strauss, & Meckler, 2021).
- About one fifth of rising high school seniors were not on track to graduate (Office of Civil Rights, 2021; Curriculum Research Associates, 2021a).
- On average, students were five months behind in mathematics and four months behind in reading compared to where they should be based on historical data (Sawchuk & Sparks, 2020; Curriculum Research Associates, 2021b).
- More students were at risk of finishing school without the skills, behaviors, and mindsets to succeed in college, the community, or the workforce (Dorn, Hancock, Sarakatsannis, & Viruleg, 2020).

The 2020–2021 data from MCPS representing the first full year view of academic performance during the pandemic showed a drop in the percent of students attaining Evidence of Learning framework expectations during fall 2020 and 2021 relative to pre-pandemic years (MCPS, 2021c). These indicators of unfinished learning were evident throughout every grade level and across the content areas of literacy and mathematics. The need for learning recovery was particularly pronounced in mathematics and among students receiving Free and Reduced Meals Services (FARMS), special education services, and students identified as limited English proficient (LEP).

### ***Why summer 2021 mattered?***

Ending the school year with unfinished learning presented a unique challenge in 2021. This challenge was not just an MCPS challenge, but a challenge nationally. For example, educators across the country expressed concern about the unprecedented levels of unfinished learning they could face among all students in fall 2021 (Goodswell, 2021). As a



result, summer programs were viewed as an immediate opportunity to address unfinished learning and prepare students for a more typical year in the fall.

Funded in large part by the recently passed \$1.9 trillion ARP Act, summer instructional programs were expected to go beyond addressing learning loss and remedial work to provide social interactions and emotional support for students in every age group (North, 2021; Heim, Strauss, & Meckler, 2021; MCPS 2021a; MSDE, 2021). As a result, this study examined the extent to which the MCPS summer programs alleviated learning disruption and contributed to students' recovery in mathematics, literacy, and socioemotional learning skills.

## Methodology

### Research Questions

The following four research questions were used to guide this evaluation.

1. What is the demographic composition of students who participated in the 2021 summer programs?
2. What impact did the summer school programs have on students' academic outcomes?
3. To what extent did the 2021 summer school programs mitigate students' academic learning disruption?
4. What impact did the summer school program have on students' social-emotional learning (SEL)?

### Evaluation Design

This evaluation study used a pretest posttest design and matched comparison group design, whereby the performance in mathematics and literacy was measured for the same students before and after summer 2021 and comparisons made between participants and nonparticipants when possible.

To assess the immediate impact of the 2021 summer school programs on students' academic outcomes, the change from pretest to posttest in mathematics and literacy assessment scores were examined for summer school participants across subjects, grades, and student groups, through one group pretest posttest design (Appendix A, Table A1). The pretest

posttest design provides for better control of the subject characteristics—since scores for the same students are analyzed at both times.

Furthermore, due to the fact that the summer programs were voluntary, a matched comparison group design was used to assess the extent to which summer programs mitigated learning disruption. A matched comparison group design consists of 1) summer program participants (a treatment group) and 2) summer program nonparticipants (a comparison group) whose baseline characteristics were similar with the participants at the beginning of an intervention in terms of demographic variables (i.e., race/ethnicity and special services) and spring MAP performance in literacy and mathematics. The average fall MAP scores were then compared between participants and nonparticipants across subjects, grades, and student groups, controlling for students' demographics and spring MAP performance. To address question 4, online surveys were distributed to 22,000 middle and high school students who attended the summer program.

### Study Samples

The analytical samples for this study varied across research questions. Descriptions for each sample are presented below.

#### *2021 summer program participants (treatment group).*

The sample school participants used for question 1 consisted of current MCPS students who attended at least one day of the 2021 summer school program. The analytical sample for question 2 comprised summer program elementary participants with both pretest and posttest scores in mathematics (N=7,861) and literacy (N=8,911) and middle school participants with both pretest and posttest scores in mathematics (N=3,347) and literacy (N=3,148). The analytical sample for question 3 included participants in the transition grades—Grade 3, 6 and, 9, who attended 75% of the program time and had both spring and fall 2021 MAP scores in mathematics (N=8,366) and/literacy (N=8,366). The analytical sample for question 4 is comprised of 1,466 middle and high school summer program participants who responded to the online survey.

*2021 summer program Nonparticipants (the comparison group).* The comparison group comprised a sample of nonparticipants who were similar to the participants in terms of race/ethnicity, receipt of special services (i.e., FARMS, identified as LEP, and special education), and the spring MAP scores by subject (mathematics vs. literacy) and grade

(i.e., Grades 3, 6, and 9). The matched nonparticipants had both spring and fall 2021 MAP scores in mathematics (N=8,366) and literacy (N=8,366), respectively (Appendix A, Table IC).

### ***Variables and Measures***

*Student demographic characteristics.* Student information (i.e., race/ethnicity, FARMS, LEP, and special education) was acquired from 2021–2022 enrollment records.

*Underrepresented racial/ethnic group.* Students identified as Black or African American or Hispanic/Latino or traditionally underrepresented racial/ethnic backgrounds were combined into one group.

*Summer program participation.* Office of Technology and Innovation (OTI) records were used to identify students who attended 2021 summer programs. A dichotomous variable was created to flag students who participated at least one day.

*Summer program attendance rate.* Data on students' absences from the summer program were used to calculate the attendance rate as follows: Attendance rate = (Total possible days - Days absent)/Total possible days. Title I programs lasted 24 days in total, whereas other programs lasted 19 days in total.

*Students recommended for summer programs.* This measurement referred to students who were identified as needing summer school due to evidence of unfinished learning in either mathematics, literacy, or both subjects based on a variety of indicators.

*Academic outcomes.* To examine the impact of 2021 summer programs, the following outcome measures were used:

1. *Summer program pretests and posttests.* Grade-level assessments were administered to elementary and middle school students at the start and end of the summer program.
2. *MAP-Reading Fluency (MAP-RF).* MAP-RF is a computer-adaptive reading assessment developed by Northwest Education Association (NWEA) for students in Grades Prekindergarten–5 who are learning to read. It measures foundational reading skills, with an emphasis on oral fluency (NWEA, 2021). Attainment of the Grade 2 expectation on the spring MAP-RF was used as a

variable to signify prior achievement in literacy for Grade 3 students.

3. *MAP-M and MAP-R.* These tests are computer-adaptive mathematics and reading assessments. The Rasch Unit (RIT) scores obtained from MAP assessments are reported on a vertically equated scale. RIT scores, ranging from 100 to 300, were used to measure whether the summer programs mitigated the learning disruption for the program participants, compared with nonparticipants. However, there was an exception for Grade 3 literacy. Given that Grade 3 students took MAP-RF rather than MAP-R in the spring when they were in Grade 2, attainment of the 50<sup>th</sup> national percentile that is corresponding to the median fall MAP-R RIT score was used as an outcome measure for Grade 3 literacy in light of the students' performance in the spring MAP-RF (attainment of grade expectation).
4. *SEL outcomes.* A survey designed for middle and high school students was used to gather information on 1) skills students learned and/or strengthened through the summer school program, 2) perceived benefits of the summer school program, and 3) perceived benefits on social-emotional learning from the summer school program.

### **Data Analysis Procedures**

The following analyses were conducted separately for each content area (mathematics and literacy), grade level, and student group within each school level: Kindergarten to Grade 2 (elementary primary), Grades 3–5 (elementary intermediate), middle, and high school, to answer the evaluation questions as applicable.

To answer evaluation question 1 and 4, descriptive statistics were used to summarize information on the number and characteristics of summer program participants, program participation rates, and survey responses.

To answer evaluation question 2, changes from pretests and posttests were examined for participants by grade, subject, and student group.

To answer evaluation question 3, spring and fall MAP performances were examined for both participants and nonparticipants by grade, subject, and student group.

The analysis was conducted to compare summer school program participants with matched nonparticipants in Grades 3, 6, and 9 over their spring and fall performance in MAP-M, MAP-R, and/or MAP-RF. The between-group difference in fall MAP performance was tested for its statistical significance while controlling for students' spring MAP performance and demographic variables (i.e., race/ethnicity and recipient of special services).

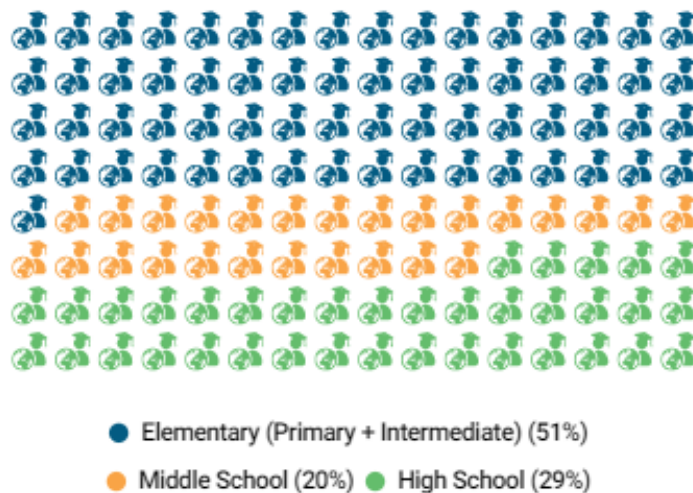
## Findings

The findings from this study are presented by evaluation question. Within each question, results are presented first for the overall population of students included in the analysis, then by student group if applicable.

### Question 1. What is the demographic composition of MCPS students who participated in the 2021 summer programs?

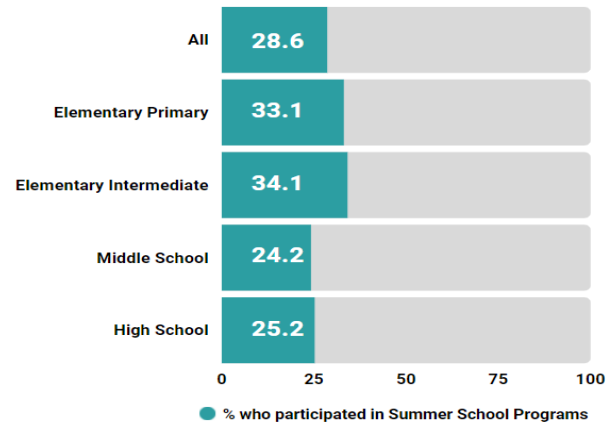
A total of 44,552 students, representing 28.6% of students enrolled in the 2021–2022 school year, attended 2021 summer programs for one or more days (Figure 1). Among these participants, the highest proportion was in elementary grades (51%, combining the primary (Grades K to 2) and intermediate (Grades 3–5) levels). Twenty-nine percent of the participants were high school students, and the remaining 20% were middle school students (Figure 1).

**Figure 1**  
*Proportions of Students who Participated in 2021 Summer Programs by Level*



When comparing participation rates across all grade levels, student participation rates ranged from as low as 24.2% for middle school students to as high as 34.1% for elementary intermediate (Grade 3 to 5) students (Figure 2).

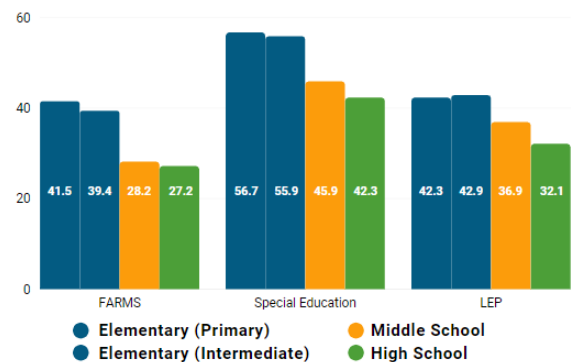
**Figure 2**  
*2021 Summer Program Participation Rates by Level and Grade within Level*



### Participation in 2021 summer programs by student group and services received

Over one-third of elementary participants received FARMS services (Figure 3). The majority of the elementary participants and over 40% of middle and high school participants were identified as receiving special education services. In addition, over one third of elementary and about one third of middle and high school students were identified as LEP students during the 2021–2022 school year.

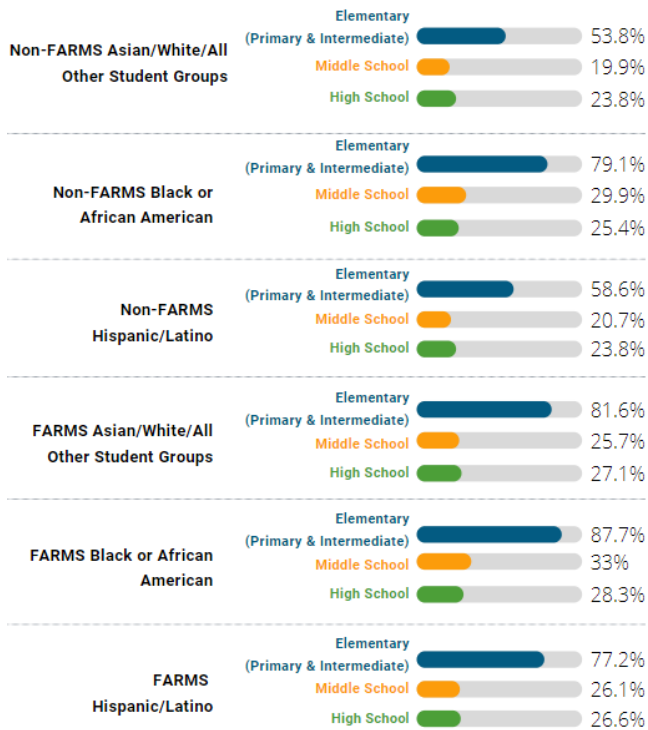
**Figure 3**  
*Percentage of Participants in 2021 Summer Programs by Special Services*



The participation rate by student groups varied across school levels, ranging from 88% among elementary Black or African American students receiving FARMS services to 19.9% among middle school Asian/White and All Other students not receiving FARMS services (Figure 4).

**Figure 4**

*Participation Rates in 2021 Summer Programs by Students*

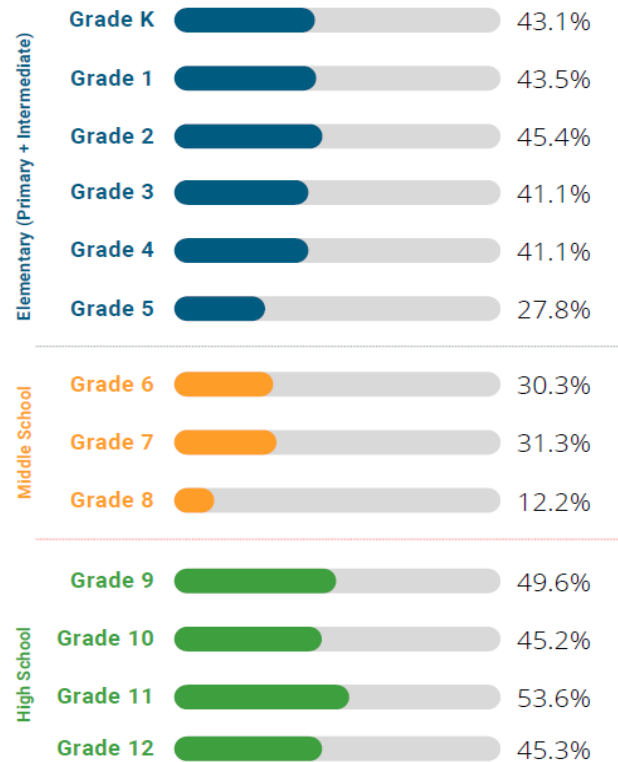


### **Recommended students who participated in summer programs**

Given that the summer programs were offered for four or five weeks during the summer, depending on the program, participants and nonparticipants may have taken part in other programs in addition to the MCPS summer programs. Thirty-eight percent (N=3,020) of the 8,020 students recommended for summer programs attended. Overall, the lowest participation rates were among middle school students recommended for summer programs. Except for Grade 8 (12%) and Grade 5 (28%), at every grade level, more than 30% of the recommended students participated in the summer program (Figure 5). It is worthy to note that the majority of recommended Grade 11 students (53.6%) enrolled in the summer programs.

**Figure 5**

*Recommended and Participated by Level and Grade within Level*



### **Summer program attendance rate**

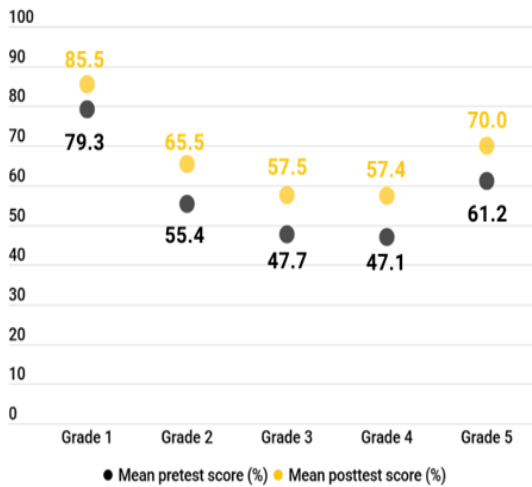
The overall average summer program attendance was 92%, indicating very high attendance at every grade and school level (Figure 5). The average attendance rates for the elementary primary and intermediate students were 86% and 87%, respectively. Middle and high school students had average attendance rates of 98% and 99%, respectively.

### **Question 2. What impact did the summer school program have on students' academic outcomes?**

Data from the pretest and posttest scores showed that Grades 1 to 5 summer program participants experienced statistically significant gains in literacy assessment scores by the end of their summer program ( $P < 0.05$ ). The pretest/posttest improvement ranged from 6.2 percentage points for Grade 1 to 10.3 percentage points for Grade 4 students (Figures 6 and 7).

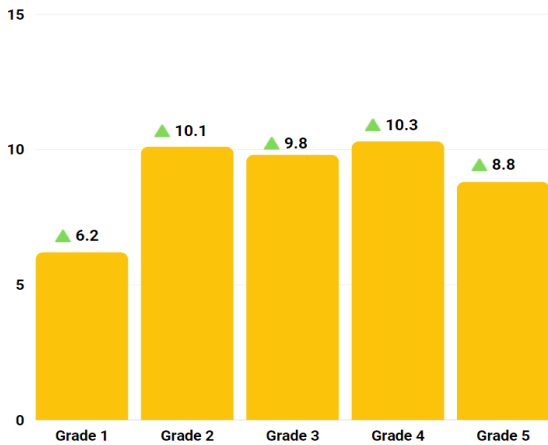
**Figure 6**

*Pre-Posttest Literacy Assessment Scores from Grades 1–5*



**Figure 7**

*Mean Percentage-Point Change in Literacy Scores from Pre to Posttest (Elementary)*

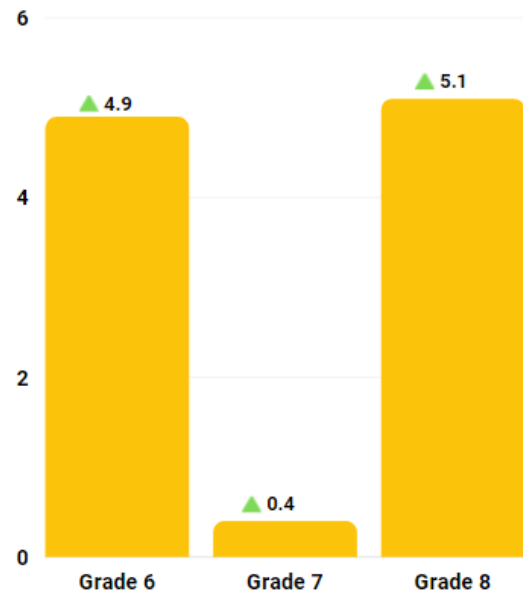


### ***Middle school level***

Middle school students used *ExactPath*, an external assessment, scored on a scale of 500-1500, to assess the posttest summer program change in literacy skills (edmentum, 2021). Overall, middle school students made pre-posttest gains ranging from 0.4 to 5.1 points, in literacy assessments by the end of the summer program.

**Figure 8**

*Mean Point Change in Middle School Literacy Scores from Pretest to Posttest*



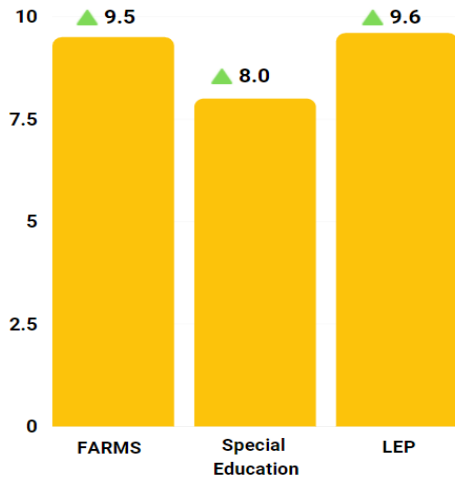
The pre to posttest gains in literacy performance fluctuated from 0.4 for Grade 7 to 5.1 for Grade 8 students (Figure 8). The growth in posttest literacy performance for middle school students was statistically significant for students in grades 6 and 8 ( $P < 0.05$ ).

### ***Change in elementary and middle school students' literacy pretest to posttest scores by student groups***

The posttest literacy scores for elementary students identified as LEP and students receiving FARMS or special education services increased relative to their performance on the pretest (Figure 9). However, by the end of their summer program, there were decreases in the posttest scores at the middle school level relative to pretest scores for students identified as LEP and among students receiving FARMS or special education services (Figure 10).

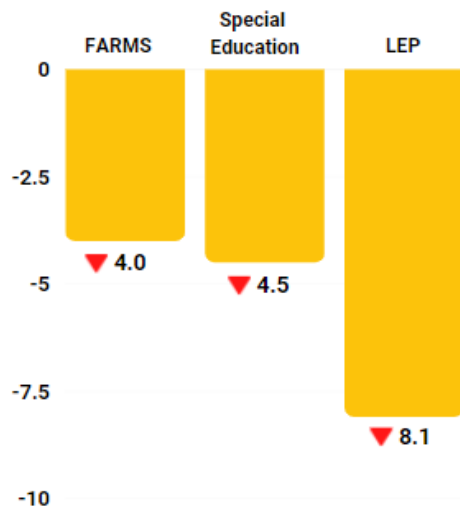
**Figure 9**

*Mean Percentage-Point Change in Elementary Literacy Scores from Pre to Posttest by LEP and Students Receiving Special Services*



**Figure 10**

*Mean Point Change in Middle School Literacy Scores from Pre to Posttest by LEP and Students Receiving Special Services*



By the end of the summer program, the literacy performance on the posttest for middle school students was mixed depending on the student group—reflecting either increased, comparable, or decreased performance relative to the pretest. The highest gains were observed for Asian/White and All

Other Student Groups students not receiving FARMs services. For the remaining student groups, the posttest scores were comparable to their pretest scores, indicating no change.

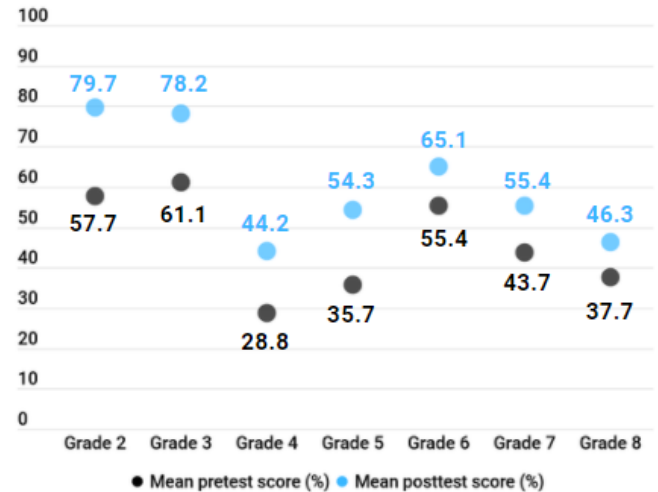
Scores for middle school students in the African American/Black and FARMs Latino/Hispanic student groups decreased slightly relative to their pretest scores. This finding suggests that the summer program was insufficient to significantly change the literacy skills measured by the ExactPath pre and post-assessments for middle school students in these student groups.

*Did elementary and middle school students' mathematics performance change at the end of the summer school program? If yes, by how much?*

Yes. Students made statistically significant gains from pre to posttest in mathematics performance at every grade level assessed ( $p < 0.05$ ).

**Figure 11**

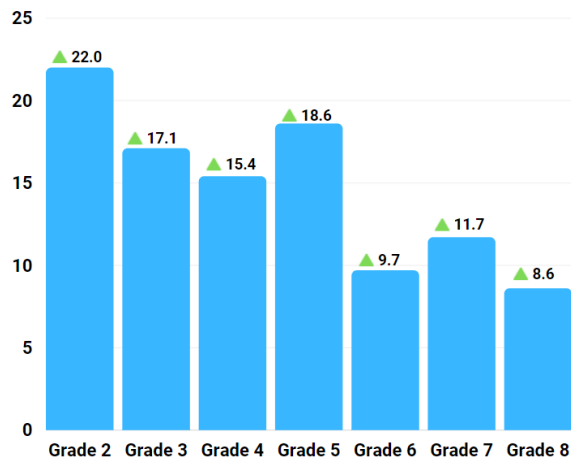
*Pre/Posttest Mathematics Scores by Grade*



Students' improvements based on percentage point change from pre to posttest mathematics assessments varied across grade levels, from 8.6 for Grade 8 students to 22.0 for Grade 2 students (Figure 12).

**Figure 12**

*Mean Percentage-Point Change from Pre to Posttest (Mathematics)*



***Changes in mathematics pre-posttest scores by student group.***

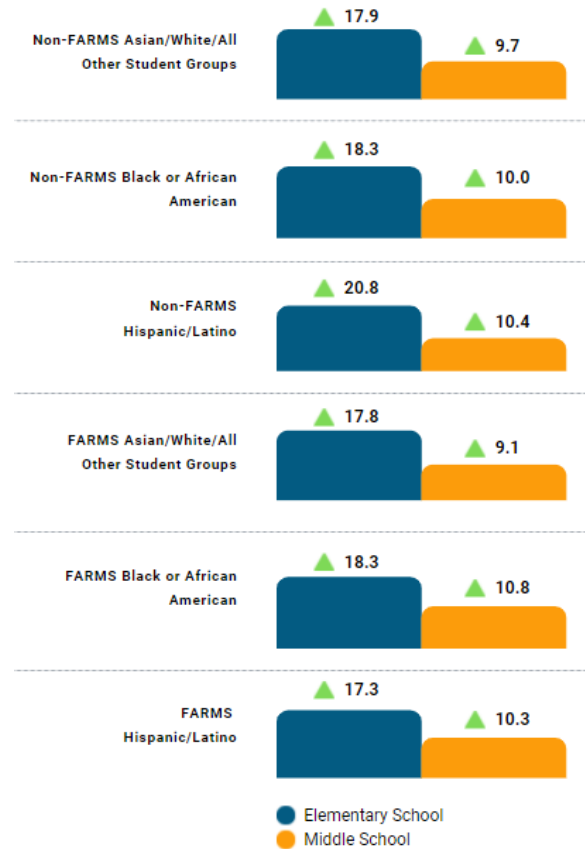
The mathematics performance varied by student groups and services. The gains pretest to posttest for students receiving services were comparable across service groups, ranging from 16.0 to 17.7 percentage points.

These improvements in mathematics performance were greater among elementary school students receiving special services, ranging from 17.3 to 20.8 percentage points, than gains made by their counterparts in the middle school. For middle school, the gains ranged from 9.1 to 10.8 percentage points.

The highest pretest to posttest gains (20.8) were observed at the student group level for the Hispanic/Latino students not receiving FARMS services. The lowest gains were among middle school Asian/White and All other Groups students receiving FARMS services.

**Figure 13**

*Mean Pre-Post Percent Point Change in Mathematics Scores by Student Groups*



**Question 3. To what extent did the 2021 summer school programs mitigate students' academic learning disruption?**

To investigate the extent to which the summer programs mitigated learning disruption, the analyses compared fall MAP RIT scores in mathematics and literacy for Grades 3, 6, and 9 summer program participants with a matched sample of nonparticipants.

The expectation was that, by attending summer school, students would maintain and/or boost their spring performance, thus alleviating learning loss during the summer break.

*Did the summer school program participants' fall 2021 academic outcomes in mathematics differ from students who did not participate? If yes, by how much?*

No. The results are presented for all students as well as for students of the underrepresented racial/ethnic groups



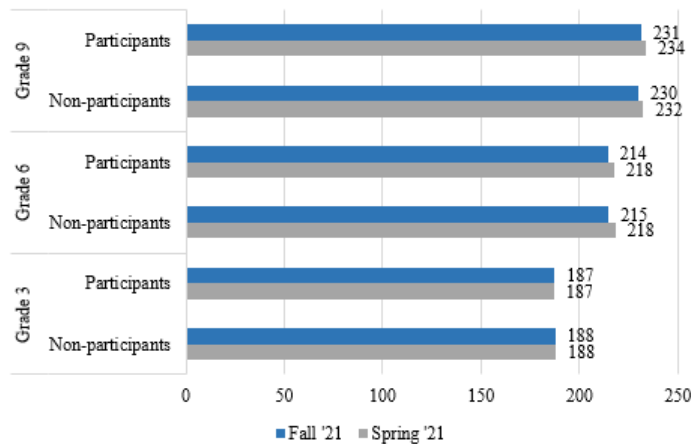
(Black/African American and Hispanic or Latino) and students receiving special services within each of the grade levels.

### Performance on fall MAP-M assessments

As the data in Figure 14 indicate, there was no statistically significant difference observed in the adjusted fall MAP-M RIT scores between summer program participants who attended 75% of the time and nonparticipants (Figure 14). The performance between participants and nonparticipants in Grade 3, 6, and 9 was similar.

1. *Grade 3:* Participants and nonparticipants maintained the mean MAP-M RIT scores of 187 and 188, respectively, from spring to fall (Figure 14).
2. *Grade 6:* Participants and nonparticipants attained a mean RIT score of 218 on the spring MAP-M, and these RIT scores decreased by three or four points in the fall (Figure 14).
3. *Grade 9:* A three-point spring-to-fall decrease in mean MAP-M RIT scores was observed for participants (234–231) and a two-point decrease was observed for nonparticipants (232–230) (Figure 14).

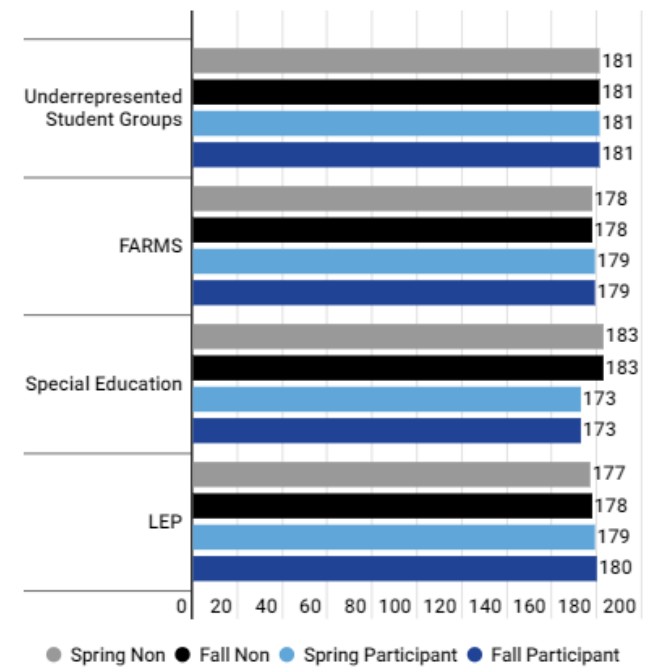
**Figure 14**  
*Spring and Fall 2021 Mean MAP-M RIT Scores, by Grade Level*



### Fall 2021 Academic Outcomes in mathematics for Participants and Nonparticipants by Students Groups.

*Grade 3.* Comparisons of the adjusted mean mathematics fall RIT scores between Grade 3 participant and nonparticipant groups showed no statistically significant differences for students identified as LEP and students receiving FARMS or special education services. (Figure 15).

**Figure 15**  
*Grade 3 Spring and Fall 2021 MAP-M Mean RIT Score for Students Identified as LEP and Students Receiving Special Services, by Summer Program participation Status*



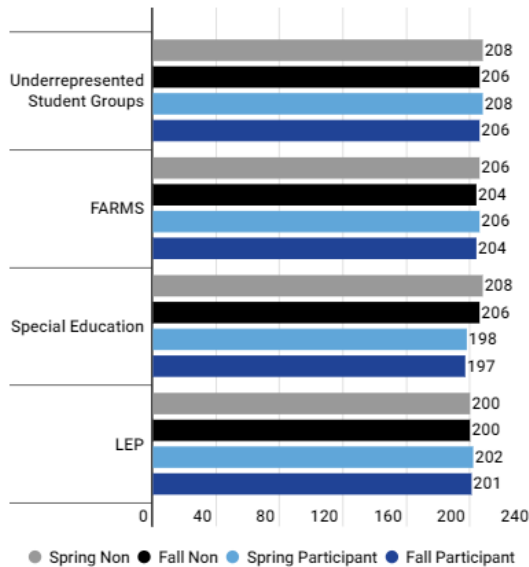
*Grade 6.* Across the Grade 6 students receiving special services, participants and nonparticipants maintained same or similar (one- or two-point decrease) scores from spring to fall (Figure 16).

For students in the traditionally underrepresented student groups, summer program participants as well as their nonparticipant peers had an average score of 208 in the spring and dropped by two points in the fall.



**Figure 16**

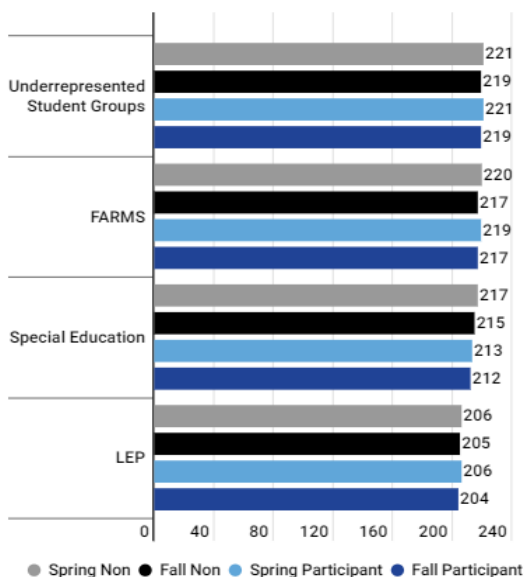
*Grade 6 Spring and Fall 2021 MAP-M Mean RIT Scores for Students Identified as LEP and Students Receiving Special Services*



*Grade 9.* Among students in the traditionally underrepresented racial/ethnic groups, participants and nonparticipants had a mean MAP-M score of 221 in the spring and ended with a two-point lower score of 219 in the fall. A similar downward trend was observed for participants and nonparticipants across all service groups (Figure 17).

**Figure 17**

*Grade 9 Spring and Fall 2021 MAP-M Mean RIT Scores for Limited English Proficient and Students Receiving Special Services*



*Is it a concern that summer program participants did not outperform their nonparticipant peers on fall MAP mathematics performance and literacy assessments?*

No. In fact, the results suggest the summer school program had a positive impact in reducing loss of learning and academic skills over the summer break. Recent research examining the “summer slide” phenomenon suggested that on average, **students lose two to three months of learning over the summer** (Kuhfield & Tarasawa, 2020). While the results did not show that summer program participants outperformed their nonparticipant peers, the results still indicate the summer school program had a positive influence on maintaining the spring level of mathematics performance over the summer.

#### ***Performance on fall 2021 MAP-R assessment***

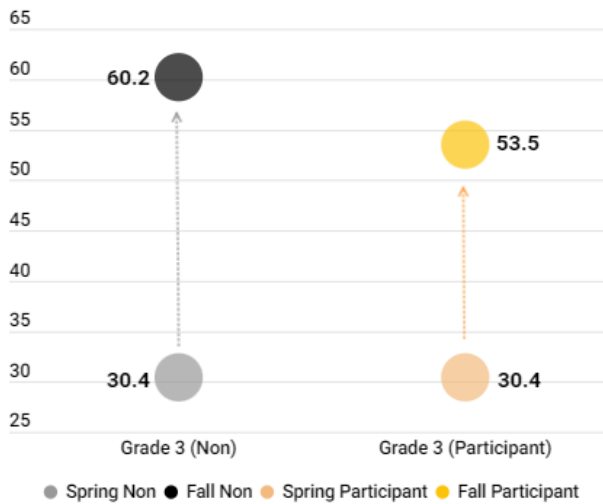
*Did summer school program participants' fall 2021 academic outcomes in Literacy differ from students who did not participate? If yes, by how much?*

Yes. There was a significant difference in the level of performance of grade 3 summer school programs participants in literacy when compared with students who did not participate.

*Grade 3:* In the spring, by the end of Grade 2, similar proportions (30.4%) of participants and nonparticipants in the analytical sample met or exceeded the Grade 2 expectations on the MAP-RF assessment. By fall, the majority of summer program participants (53.5%) as well as nonparticipants (60.2%) attained the 50<sup>th</sup> national percentile or higher on the fall MAP-R assessments. This difference in rates of attaining the 50<sup>th</sup> percentile score on fall MAP-R was significant in favor of the nonparticipants ( $p < 0.05$ ) (Figure 18).

**Figure 18**

Percentage of Grade 3 Students who Attained Spring MAP-RF Grade Expectation and 50<sup>th</sup> Percentile Rank for Fall MAP-R Assessment

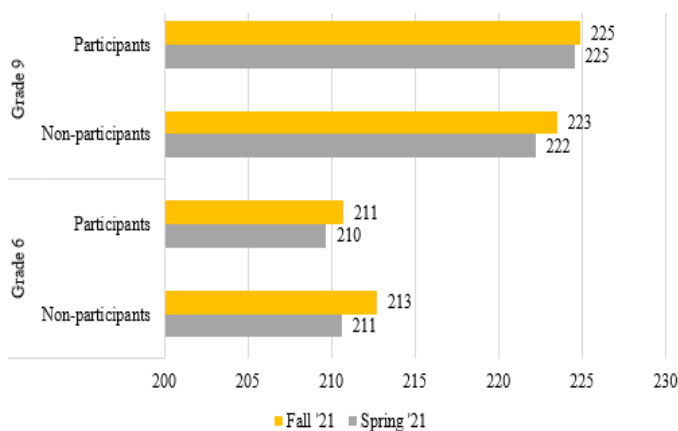


**Grade 6:** Participants and nonparticipants started with similar mean MAP-R RIT scores in the spring (210 vs. 211). In the fall, the two groups increased their performance by one or two points (211 vs. 213) (Figure 19).

**Grade 9:** The fall and spring mean MAP-RIT scores for Grade 9 participants (225–225) and nonparticipants (222–223) were similar, indicating that students were performing at the same level in fall as spring.

**Figure 19**

Grade 6 and 9 Mean Spring and Fall 2021 MAP-R Mean RIT Score by Summer Program Attendance Status



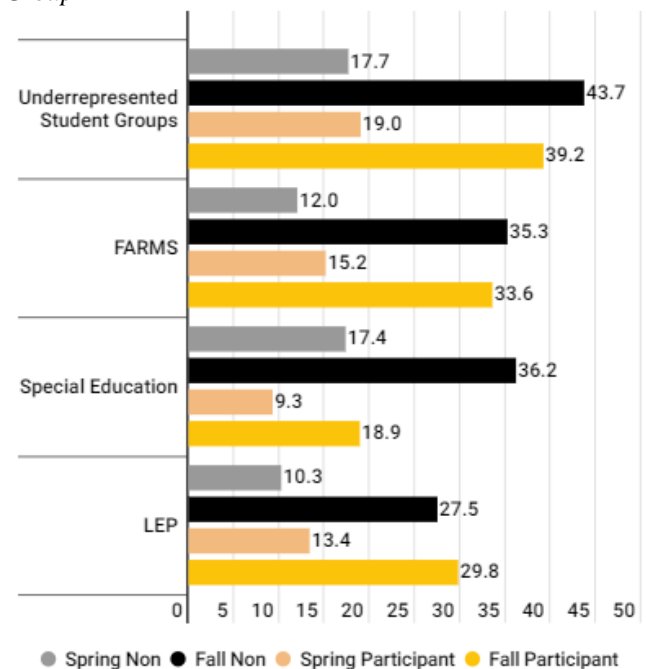
Compared to students who did not attend summer school, did summer school program participants' fall 2021 academic outcomes in **literacy** vary by subgroups? If yes, by how much?

Yes .

**Grade 3.** The data show an upward trend from spring- to fall for summer program participants and nonparticipants among the underrepresented student groups and students receiving services. The spring-to-fall increase in the proportion of students attaining the 50th percentile score ranged between 9.6 (special education) and 26.0 (underrepresented student group) percentage points across the student groups. Among these student groups; in every instance, the spring-to-fall improvement was greater for nonparticipants than for participants in general (Figure 20).

**Figure 20**

Proportion of Grade 3 Who Attained Spring 2<sup>nd</sup> Grade MAP-RF Expectations and 50<sup>th</sup> Percentile on Fall MAP-R Assessment: Participants vs. Nonparticipants by Focus Group



While comparing within student groups, additional analyses detected statistical significance in differences between the proportions of participants and nonparticipants who attained the 50<sup>th</sup> percentile on the fall 2021 MAP-R. The results indicated that the performance levels were similar (not statistically different) between participants and nonparticipants among students receiving FARMS or English language services:

- In the fall, 34% of participants receiving FARMS services attained the 50<sup>th</sup> percentile score on fall MAP-R, compared with 35% among nonparticipants.
- In the fall, 30% of participant LEP students attained the 50<sup>th</sup> percentile score on fall MAP-R compared with 28% of nonparticipants ( Figure 20).

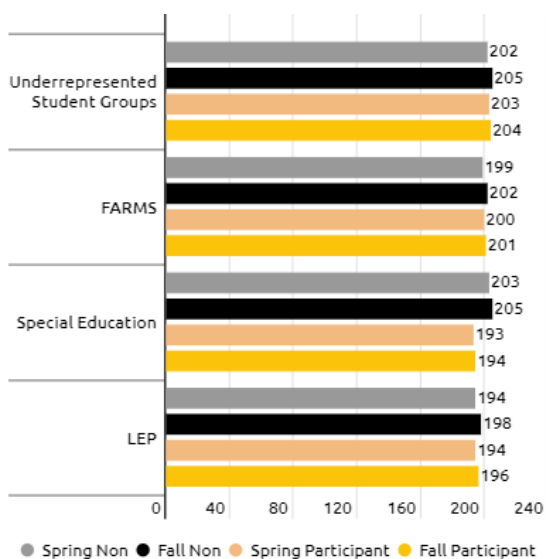
However, the difference between the performance of participants and nonparticipants was statistically different among underrepresented students and students receiving special education services. In the fall, 39% of participants among the underrepresented students attained the 50<sup>th</sup> percentile score on fall MAP-R compared to about 44% among nonparticipants. In the fall, 19% of participants among students receiving special education services attained the 50<sup>th</sup> percentile score on fall MAP-R compared to about 36% among nonparticipants.

*Grade 6.* Similar to the pattern for the entire grade, the participants and nonparticipants identified as traditionally underrepresented student groups and students receiving services made gains of one to three RIT scores from spring to fall. (Figure 21)

*Grade 9.* Across the student groups, participants and nonparticipants alike, either maintained or increased their MAP score by only one to two points from spring to fall (Figure 22).

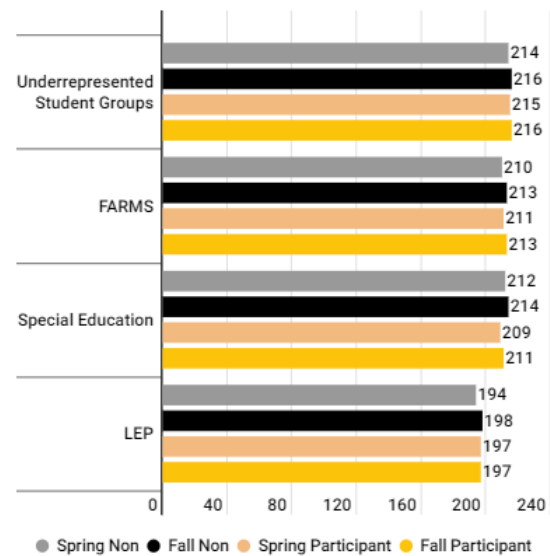
**Figure 21**

*Grade 6 Spring and Fall Mean MAP-R RIT Scores for Students Identified as LEP and Students Receiving Special Services*



**Figure 22**

*Grade 9 Fall Mean MAP-R RIT Scores for Students Identified as LEP and Students Receiving Special Services*



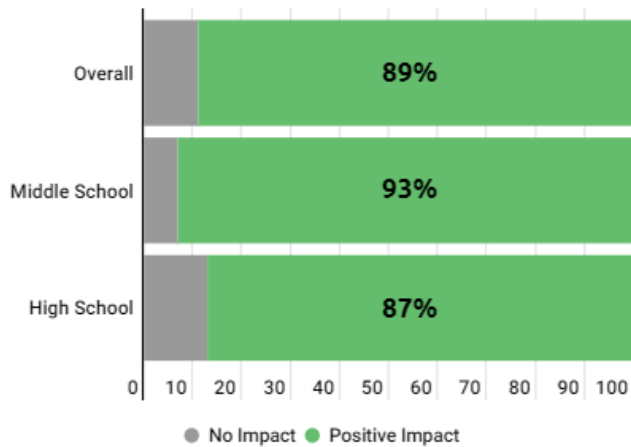
#### Question 4. What impact did the summer school program have on students' social-emotional learning (SEL)?

To better understand the impact of the summer school program had on students SEL and developmental skills (e.g., critical thinking, problem solving, communication, time management, and communication), responses from 1,466 students who completed the survey were analyzed.

##### *Positive impact in supporting students SEL*

The results from the survey data suggest the summer school program at MCPS had a positive impact on students' socioemotional skills. Over four fifths (89%) percent of student survey respondents cited that the summer school program provided a safe and positive learning environment (Figure 23). In addition, when examining the students' responses by grade level, a six percent difference was observed between high school and middle school students, indicating that a higher proportion of the middle school summer school program experienced a positive learning environment (Figure 23).

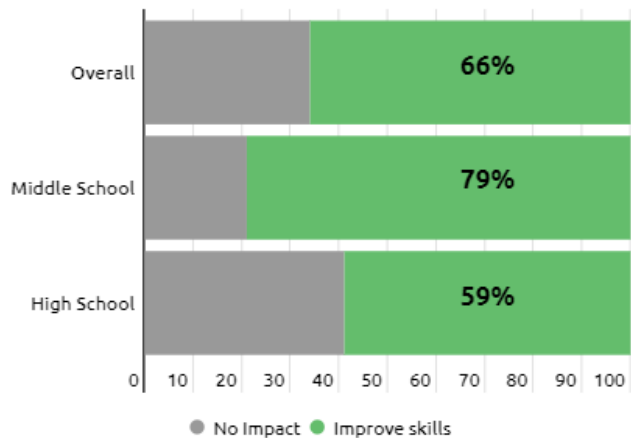
**Figure 23**  
*Survey Results Examining Student's Perception towards the Summer School Programs Learning Environment.*



**Improved students' relationship building and collaboration skills**

The results from the survey data show that the summer school program at MCPS also had a positive impact on developing students' interpersonal skills such as building positive relationships and improving their collaboration skills. For example, two thirds of the student survey respondents (66%) cited that they learned strategies to build positive relationships and work collaboratively in group settings (Figure 24). The data revealed that there was a significant difference (20 percent) between middle school students' experiences when compared to their high school counterparts. Additional follow up research is recommended to better understand this phenomenon.

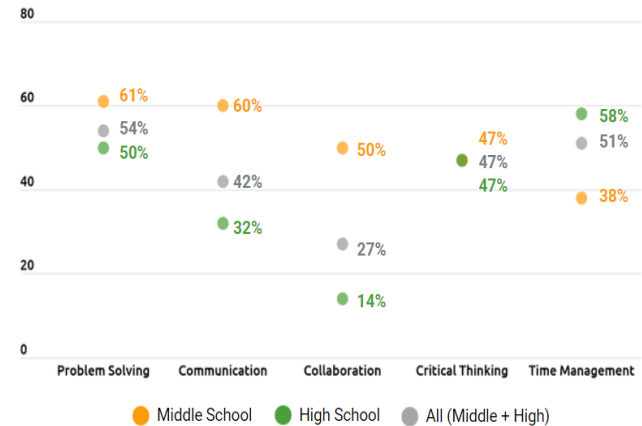
**Figure 24**  
*Percent of Students who felt They Improved Their Relationship and Collaboration Skills*



**Reported levels of learning and skill development by level**

To help further assess the impact summer school had on students learning and development, the student survey asked respondents to indicate whether they learned or strengthened the following five skills (problem solving, communication, collaboration, critical thinking, and time management) via the summer school program. The results of the survey findings are shown in Figure 25.

**Figure 25**  
*Percent of students who cited they learned or strengthened the following skills*



Overall, a higher proportion of middle school survey respondents reported that they learned or strengthened more skills over the course of the summer school program than their high school classmates. As shown in Figure 25, more middle school students expressed that they felt they learned or strengthened their problem solving (+11%), communication (+28%), and collaboration skills (+36%) when compared to high school student survey respondents. The responses reversed when students were asked about summer program impact on time management skills. Twenty percent more high school students indicated that they learned or enhanced this skill compared to middle school survey respondents.

**Did the summer school program have a positive impact on students SEL and skill development?**

Yes. The evidence from the student survey suggests that the summer school program had a positive influence on students SEL outcomes. In addition, the survey data also suggest that the summer school program had a positive influence in facilitating and enhancing student's development in different skills (e.g., problem solving, communication, critical thinking). For example, 54 percent of all summer school

participants indicated that they learned or enhanced their ability to solve problems, and nearly 50 percent of student survey respondents cited that the summer school program helped improve or enhance their critical thinking skills (Figure 26). While the magnitude of impact varied by level, the data suggests that the summer school program was more beneficial and effective for middle school students.

**Figure 26**  
*Percent of students who cited they learned or strengthened their problem solving and critical thinking skills*



Limitations

One limitation of the study is the voluntary nature or self-selection of the summer program participants. Although we created a matched sample of nonparticipant peers, the matching does not capture any information on how the nonparticipants spent their summer. In matching, researchers can only ensure equal distribution of characteristics of students for which data are available. Therefore, caution is needed when interpreting the data; one cannot generalize that nonparticipants did not participate in any instructional programs similar to the MCPS summer programs.

Another limitation is that the data related to attendance did not specify the number of days each student attended per se, but a record of absences was available. Therefore, attendance rates were derived indirectly using records of absences. As such, analyses on how summer program daily attendance influenced student performance on posttest summer program assessments were not completed, as intended.

The pre-posttest assessment data had inconsistencies in that they included data only for students with records on the Unify *Performance Matters* (PM) systems. In addition, the participant and nonparticipants samples are composed of students who took both the spring and fall 2021 administration of the MAP assessments. Notably, this restriction excludes students who may have benefited from summer programs but did not have MAP scores for either fall or spring.

Conclusion

Recognizing COVID-19 impacted many students and created missed learning opportunities, MCPS offered voluntary summer programs to meet students' educational recovery and socioemotional learning needs. Overall, the immediate gains from the summer programs as gauged through the pretest and posttest during the summer school program were statistically significant across elementary and middle school grade levels included in the analysis, except for Grade 7 literacy. These results indicated that the summer program helped increase students' knowledge and skills in mathematics and literacy, contributing to the recovery of unfinished learning. Similarly, the findings from the student surveys showed that students reported many socioemotional benefits. Over one half of the respondents reported that they learned or strengthened their problem-solving (54%) and time management skills (51%). Close to one-half conveyed that attending the summer program strengthened their critical thinking skills. Furthermore, over four-fifths (89%) reported that their summer school program provided a positive learning environment, and two-thirds (66%) reported they learned strategies to build positive relationships and collaboration.

The expectation was that summer programs would combat learning loss during the break and accelerate learning toward recovery of any unfinished learning from the prior year. Overall, the majority of program participants maintained or improved on their spring MAP performance in mathematics and literacy. When compared with peers who did not attend the summer programs, the participants were performing at the same level as nonparticipants on the fall MAP mathematics and literacy assessments. Notably, the finding that participants and nonparticipants performed at the same level on fall MAP assessments did not necessarily indicate that the summer programs did not contribute to recovery and accelerate learning of academic knowledge and skills. Re-establishing strong teacher-student relationships, fostering time management and critical thinking skills, building positive relationships, and collaboration are essential to supporting students' learning recovery. Researchers point out

that even when there was no substantial solid evidence of effectiveness, there is often suggestive evidence that voluntary programs yield benefits in reading and/or mathematics achievement (Bakle, 2010; Concentric Research and Evaluation, 2018). In any case, in the absence of data on how the nonparticipants spent their summer, it is important to note the participants may have participated in activities similar to those offered in MCPS schools.

## Discussion

Taken as a whole, the findings from this study align with reports that few summer programs are effective in meeting all measured outcomes (National Academy of Sciences, 2019; Augustine, 2016; McCough et al., 2019; Xie, Neitzel, Cheung, & Slavin, 2021; Barshay, 2021). The majority of programs studied (about 75 percent) improve at least one outcome (McCombs, Augustine, Pane, Schweig, 2020; Hegarty, 2020). The most robust and widely cited randomized control study on summer learning was designed by researchers at RAND, a nonprofit research organization drawing upon expert opinions and academic theories (Augustine et al., 2016). The project investigated the impact of summer academic programs on fall performance and beyond in five urban school districts. With one small exception of the performance of Grade 4 students in mathematics, the results were disappointing. There was no evidence that the students who attended the summer programs did any better academically or by social-emotional measures than their counterparts who did not attend. Specifically, there was no causal evidence that the summer programs produced benefits in language arts, social-emotional outcomes, or student attendance or grades during the school year.

Unless considerations about the fidelity of implementation are made, it cannot be determined whether a lack of explicit impact using rigorous post-summer academic measures is due to inconsistent implementation or inadequacies inherent in the summer programs themselves (Stains & Vickrey, 2017). Evidence-based practice assumes that an intervention such as the summer programs was implemented in full accordance with intended goals and design. As such, researchers often explain that typically summer programs do not accomplish the purpose of raising literacy or mathematics achievement because summer programs 1) do not engage students sufficiently and 2) are not well run (Xie, C., Neitzel, A., Cheung, A., & Slavin, R. E., 2021; Barshay, 2021). Ensuring fidelity assumes a strong theory of action and a consensus on specific outcomes that a summer program can reasonably accomplish in a short period.

In addition to taking into account the fidelity of implementation in the analysis of the effectiveness of summer programs, researchers point to several factors that are correlated with the efficacy of summer programs. For reading and language arts, the quality of instruction (focused on explicit instruction, on-task behavior, and teachers' ensuring that all students understood the material) was correlated with strong evidence of program effectiveness on academic achievement (Augustine et al., 2016). To provide sufficient content to demonstrably improve student achievement, researchers recommend that districts offering voluntary summer programs: 1) target the needs of participants, 2) have programming linked to desired, clearly defined academic outcomes, 3) be of sufficient duration (at least five weeks, preferably six) of full-day programming, and 4) document strong attendance (Augustine et al., 2016; National Academies of Sciences, 2019; McCombs, Augustine, Pane, Schweig, 2020; Hegarty, 2020).

In this study, the pre-posttest assessments—developed by district personnel and the standardized assessments used for the middle school literacy pre and posttest and the fall MAP assessments by NWEA are fundamentally different in scope, structure, and purpose. By design, the end-of-program measures are aligned and sensitive to changes in mathematics and literacy skills resulting from the program. The nationally normed standardized assessments are broader in scope and are not customized to a local instructional program.



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## Appendices

Appendix A Table A1

PROGRAM	DESCRIPTION	FORMAT	LENGTH
<b>Local Summer School Program (Non-Title I and Non-Summer UP)</b>	School-based programs combining mathematics, literacy and specials/enrichment	In-person, with rotational models as needed based on enrollment  4.5 hours daily; available at all elementary and middle schools; students are encouraged to attend at their home school; schools that offer ELO-SAIL will offer in-person and virtual options based on family preference	4 Weeks: July 6-30;  July 6-Aug. 6 in Title I schools
<b>Summer UP</b>	Same as local summer school programs with enhanced programming in six elementary schools (Fox Chapel, Highland View, Oakland Terrace, Pine Crest, Rock View, Stedwick) and four middle schools (A. Mario Loiederman, Argyle, Gaithersburg, Neelsville).	In-person, with rotational models as needed based on enrollment	3-4 Weeks: July 6-30 Window
<a href="#"><u>Extended Learning Opportunities (ELO) SAIL</u></a>	Same as above with enhanced programming in Title I schools	In-person or virtual based on family preference	5 Weeks: July 6-August 6
<a href="#"><u>NEW! MCPS Virtual Summer School</u></a>	Central all-virtual programs combining mathematics, literacy and specials/enrichment	<b>All virtual</b>	4 Weeks: July 6 - July 30
<a href="#"><u>Extended School Year (ESY)</u></a>	Special education for qualified students	In-person or virtual based on family preference	4 or 5 Weeks: Starting July 6

Appendices

**Table 1a***2021 Summer Program One Group Pretest-Posttest Design*

<b>Group:</b>	<b>1st observation (pre-summer program measurement) of Mathematics, English language arts (ELA) (O<sub>1</sub>)</b>	<b>Attended summer school (X) (independent variable)</b>	<b>2nd observation (post-summer measurement) of Mathematics, English language arts (ELA), (O<sub>2</sub>)</b>
2021 Summer program participants	the average score on summer program pre-test assessments	X (19 days of summer program)	the average score on summer program posttest assessments

**Table 1b***Fall Outcomes Matched Comparison Group Design*

<b>Group:</b>	<b>1st observation (pre-summer program measurement) of Mathematics and Literacy (O<sub>1</sub>)</b>	<b>Attended summer school (X) (independent variable)</b>	<b>2nd observation (post-summer measurement) of Mathematics and Literacy (O<sub>2</sub>)</b>
2021 Summer program participants	The average score on spring 2021 MAP mathematics and literacy RIT scores achievement measures and proportion of students performing at 50th percentile on spring 2021 MAP assessments.	X (19 days of summer program)	the average score on fall 2021 MAP mathematics and literacy achievement measures and proportion of students performing at 50th percentile on fall 2021 MAP mathematics and literacy
Nonparticipants	The average score on spring 2021 MAP mathematics and literacy RIT scores achievement measures and proportion of Grade 3 students performing at 50 <sup>th</sup> percentile on spring 2021 MAP assessments.		the average score on fall 2021 MAP mathematics and literacy achievement measures and proportion of Grade 3 students performing at 50th percentile on fall 2021 MAP mathematics and literacy

**Table 1C. Profile of Analytical Samples for Question 3**

Percent of Students Included in MAP-M Analysis by Grade and Student Group										
	N students included in analysis		% Underrepresented Students		% FARMS		% Special Education		% LEP	
MAP-M	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants
Grade 3	3859	3859	56.4	62.3	43.0	46.9	11.2	16.0	33.1	34.7
Grade 6	3029	3029	53.4	57.7	40.8	42.5	17.2	21.1	26.8	28.7
Grade 9	1478	1478	52.9	51.8	39.0	35.1	23.3	25.2	16.4	15.2
MAP-R	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants
Grade 3	3809	3809	53.2	62.4	41.5	47.1	7.8	15.7	26.4	34.9
Grade 6	3001	3001	54.6	57.4	40.3	42.0	13.6	21.6	30.2	29.0
Grade 9	1556	1556	53.7	51.5	38.6	33.1	14.8	23.0	18.7	14.8