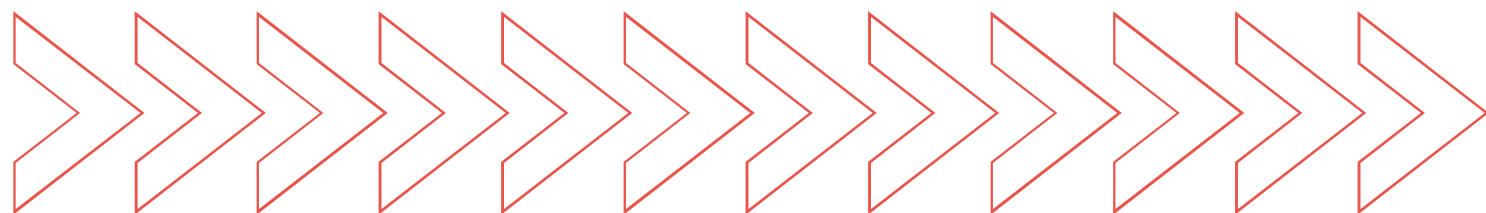


# Innovative School Calendar: Outcomes Evaluation 2022–2023

**August 2023**



**Prepared by:**

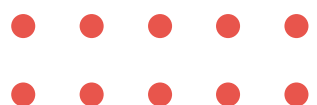
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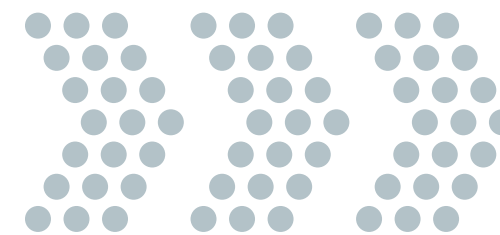
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**Shared Accountability**

Applied Research and Evaluation





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# Innovative Schools Calendar

## Outcomes Evaluation: 2022–2023



## Executive Summary

### Evaluation Scope

**This evaluation investigates the effect of the Innovative School Calendar (ISC) on student reading and mathematics performance during the 2022–2023 school year.** This study is a follow-up to the 2021-2022 evaluation conducted. Two MCPS elementary schools use the ISC model. These schools extended the school year by 28 days to increase students' exposure to academic content and access to enriched science and social-emotional learning programs.

### Methods

To identify the effect of ISC on student achievement, groups of ISC students were matched to groups of comparison students based on their prior mathematics or reading performance and their grade, gender, race/ethnicity, and service receipt. Comparison student records were weighted to ensure baseline equivalence between ISC and non-ISC groups. The effect of ISC on student mathematics and reading performance in Fall 2022, Winter 2023, and Spring 2023 was estimated using weighted regression models to increase precision and accuracy.

### Results

Despite an additional 28 days of instruction, **no statistically significant differences were evident between ISC and comparison students in mathematics or reading scores in Spring 2023**, after accounting for baseline student performance, demographic characteristics, and service receipt.

ISC students did see a very slight increase in mathematics performance at the time of the Fall 2022 assessment when ISC students scored slightly higher than did comparison students. This difference was trivial, equivalent to a 1.6 percentile point gain for an average student. Moreover, **by Winter 2023, the slight difference between ISC and comparison students on mathematics that emerged in Fall 2022 had closed.**

Furthermore, no statistically significant differences were detectable between ISC and comparison students during any assessment period.

### Conclusion

**Despite five-and-a-half weeks of additional instruction, ISC did not have a detectable effect on student reading and mathematics performance by year end.** It is possible that ISC had effects on outcomes not investigated by the current study; additional research would be needed to investigate these possibilities. Meanwhile, **although MCPS has considered plans to scale up the ISC initiative, study results suggest caution is warranted in doing so.** If goals of the ISC program include improving student mathematics and reading performance, program modifications will likely be required.



# Evaluation Scope

## Background

This evaluation investigates whether student enrollment in an Innovative School Calendar (ISC) school was associated with increased student reading and mathematics performance in Fall 2022, Winter 2023, or Spring 2023. There are 2 ISC schools within MCPS, which extend the school year calendar by up to 30 days to increase students' exposure to academic content and access to enriched science and social-emotional learning programs.

This study builds off of prior analyses of the relationship between ISC participation and student reading and mathematics performance, which revealed limited and mixed results. An examination of fall data from 2017 through 2021 found that, relative to comparison schools, ISC schools had higher Grade 5 but lower Grade 2 math scores with no overall differences evident in reading (Wilson, 2021). In the same study, Hispanic fifth graders scored higher in reading and math in ISC schools than in comparison schools. Using a similar analytic approach, a follow-up analysis using 2022 data found no statistically significant differences favoring students in ISC schools versus comparison schools in Grades 2, 3, and 5 in mathematics or reading performance after adjusting for service receipt, race ethnicity, and prior year test score (Wilson, 2023). Students in comparison schools in Grade 2 scored higher in mathematics than in ISC schools.

The current study builds off this prior work, using a quasi-experimental approach to examine results from the most recent school year, taking advantage of student- as opposed to school-level matching, and analyzing three assessments of student reading and mathematics knowledge per year instead of one, to better identify and understand any effects of ISC on student achievement outcomes.

## Purpose of Evaluation



To analyze the effect of the ISC model on student reading and mathematics achievement in 2022–23.



To investigate within-school-year trends in student reading and mathematics achievement by ISC participation.

## Research Question



To what extent, was ISC participation associated with different trajectories in student reading and mathematics performance from spring 2022 through spring 2023?



# Program Description

## Overview

Starting in summer 2019, Montgomery County Public Schools (MCPS) began implementing the Innovative School Calendar (ISC) at Arcola and Roscoe R. Nix (Nix) elementary schools. The initiative extends the school year calendar by up to 30 days to increase students' exposure to academic content and access to enriched science and social-emotional learning programs.

During the 2022-2023 school year, students in ISC schools had 28 additional days of schooling, all during the first marking period.

## Program Goals



Increased exposure to **academic content** for students



Exposure to enriched programs in **science** and **social-emotional learning**

## Program Components



### Extra Instructional Days

Additional 28 days added to traditional school calendar



### Project Lead the Way (PLTW) (K-5) and Children Study Their World (PreK)

Engineering science modules for each grade level based on project-based learning



### Mindfulness

Lessons for staff and students integrated into the classroom learning environment



This outcomes study is an observational analysis of the effect of ISC on student reading and mathematics performance. The study matched groups of ISC students to groups of comparison students based on their prior mathematics or reading performance, grade, gender, race/ethnicity, and service receipt. To boost statistical power to detect effects, all matched students are included in the analysis. Comparison student observations were weighted to ensure that ISC and non-ISC groups had equivalent baseline performance, on average, as well as identical demographic and service receipt characteristics.



### Data & Measures

- **Outcomes of interest** were mathematics and reading achievement as measured by MAP Growth Mathematics (MAP-M) (Grades K–5) and MAP Growth Reading (MAP-R) (Grades 3–5) scale scores.
- The **predictor of interest** was enrollment in an ISC school.
- Matching and control variables included:
  - **Prior-year spring mathematics and reading achievement**
    - MAP-M and MAP-R scale scores (RIT) were used for covariate adjustment; Five RIT score point bands were constructed for matching on prior year MAP-M and MAP-R data;
  - **Student race/ethnicity** Asian; Black or African American; Hispanic/Latino; White; Two or More Races; All Other student groups (Including American Indian or Alaskan Native and Native Hawaiian or Other Pacific Islander)
  - **Receipt of services** Emergent Multilingual Learner/Recently Exited Emergent Multilingual Learner (EML/ReEML), Free and Reduced-Price Meals System (FARMS), and special education



### Sample

- The **mathematics** analysis included 673 (out of 706) ISC students enrolled in Grades K-5 with Spring 2022 MAP-M scores matched with 10,339 comparison students (out of 50,581 non-ISC students).
- The **reading** analysis included 116 ISC students (out of 121) enrolled in Grades 3-5 with Spring 2022 MAP-R scores, along with 1,787 matched comparison students (out of 18,266 non-ISC students).



### Analysis

- This analysis relied on **coarsened exact matching**. Comparison students were selected for the analysis by matching exactly on: student race/ethnicity; receipt of services (EML/ReEML, FARMS, and special education); and prior year Spring mathematics (MAP-M RIT score 5-point band) or reading achievement (MAP-R RIT score 5-point band). The comparison group was weighted to ensure balance on baseline performance, grade, race/ethnicity, gender, and service receipt.
- Analyses were **doubly-robust** in that they also accounted statistically for any remaining minor imbalance after matching via a weighted regression model that adjusted for prior achievement and the other matching variables.



# Results

Average baseline RIT score and percentage distribution by grade, gender, race/ethnicity, and service receipt for mathematics and reading analytic samples.



## Analytic Samples

- After matching comparison students to ISC students and appropriately weighting the comparison student sample, **ISC and comparison student samples were equivalent** on average with respect to baseline RIT scores and percentage distributions by grade, gender, race/ethnicity, and service receipt. **The statistics reported on this slide apply to both the ISC and the non-ISC comparison students.**
- The mathematics analysis applied to Grades K–5. There was a higher percentage for Grade 1 (24%) and Grade 2 (29%) because one of the two ISC schools was a K–2 school. The percentage for kindergarteners was the lowest because most of them did not have a prior year Spring math score. Students in the reading analysis were concentrated in Grades 4 and 5 (44%) because MAP-R was only given to students in Grades 3–5, and a prior year score was required.
- With respect to race/ethnicity, 65% of students in the mathematics analysis and 76% of students in the reading analysis were Hispanic/Latino. Twenty-five percent of students in the mathematics analysis and 18% of students in the reading analysis were Black or African American.
- With respect to service receipt, in the mathematics analysis, 49% of the analytic sample were classified as EML/ReEML students, 81% received FARMS services, and 11% received special education services. In the reading analysis, 60% of the sample were EML/ReEML students, 82% received FARMS services, and 14% received special education services.

Characteristics	Math		Reading	
	Matched & Matched ISC (n=673)	Matched & Weighted (n=10,339)	Matched & Matched ISC (n=116)	Matched & Weighted (n=1,787)
Average Baseline RIT Score		172.4		188.1
Grade				
Kindergarten		10.0		—
Grade 1		23.9		—
Grade 2		29.1		—
Grade 3		14.9		12.1
Grade 4		11.3		44.0
Grade 5		10.8		44.0
Gender				
Female		48.1		50.0
Race/Ethnicity				
Asian		3.7		1.7
Black or African American		25.0		18.1
Hispanic/Latino		65.4		75.9
Two or More Races		1.9		2.6
White		3.7		1.7
Other		0.3		—
Service Receipt				
EML/ReEML		49.2		59.5
FARMS		81.0		81.9
Special Education		11.3		13.8

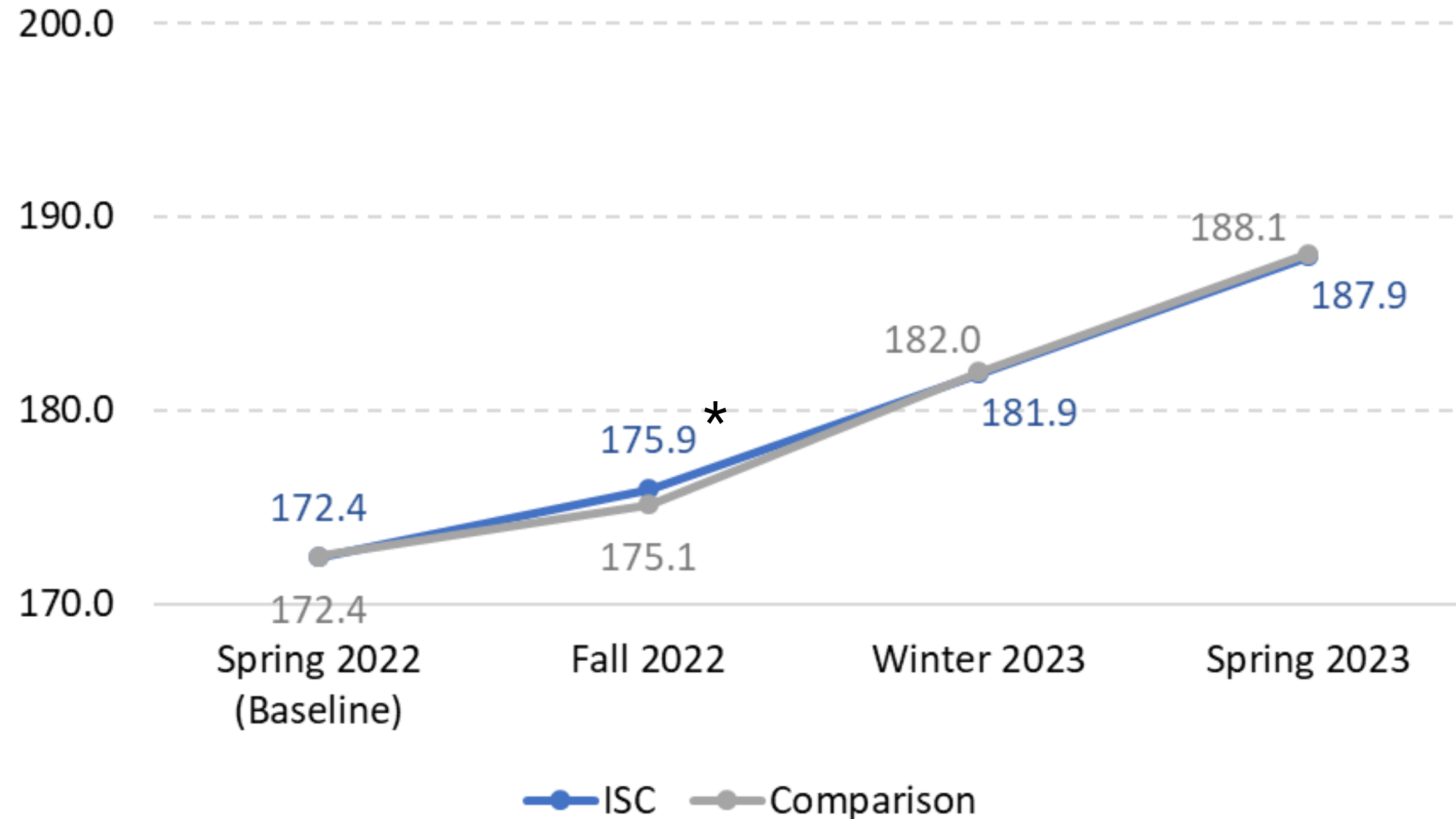
—Not applicable.



# Results

Average MAP-M mathematics scores for ISC and matched and weighted comparison students: Spring 2022 through Spring 2023

## Math RIT Score



\* Statistically significant at the  $p < 0.05$  level after adjusting for baseline performance and covariates.



## Mathematics Findings

- At baseline (Spring 2022), ISC students and comparison students scored equivalently, on average, in mathematics.
- By Fall 2022, after receiving 28 additional days of instruction, ISC students scored slightly higher in mathematics than did comparison students ( $t=2.81$ ,  $p=0.005$ ). This difference was 0.8 points on the MAP-M scale—a trivial effect ( $g=0.04$ ) equivalent to a 1.6 percentile point gain for an average student.
- By Winter 2023, however, the gap between ISC and comparison students that emerged in the fall had closed.
- No statistically significant differences were evident between ISC and comparison students in math in Winter or Spring 2023.

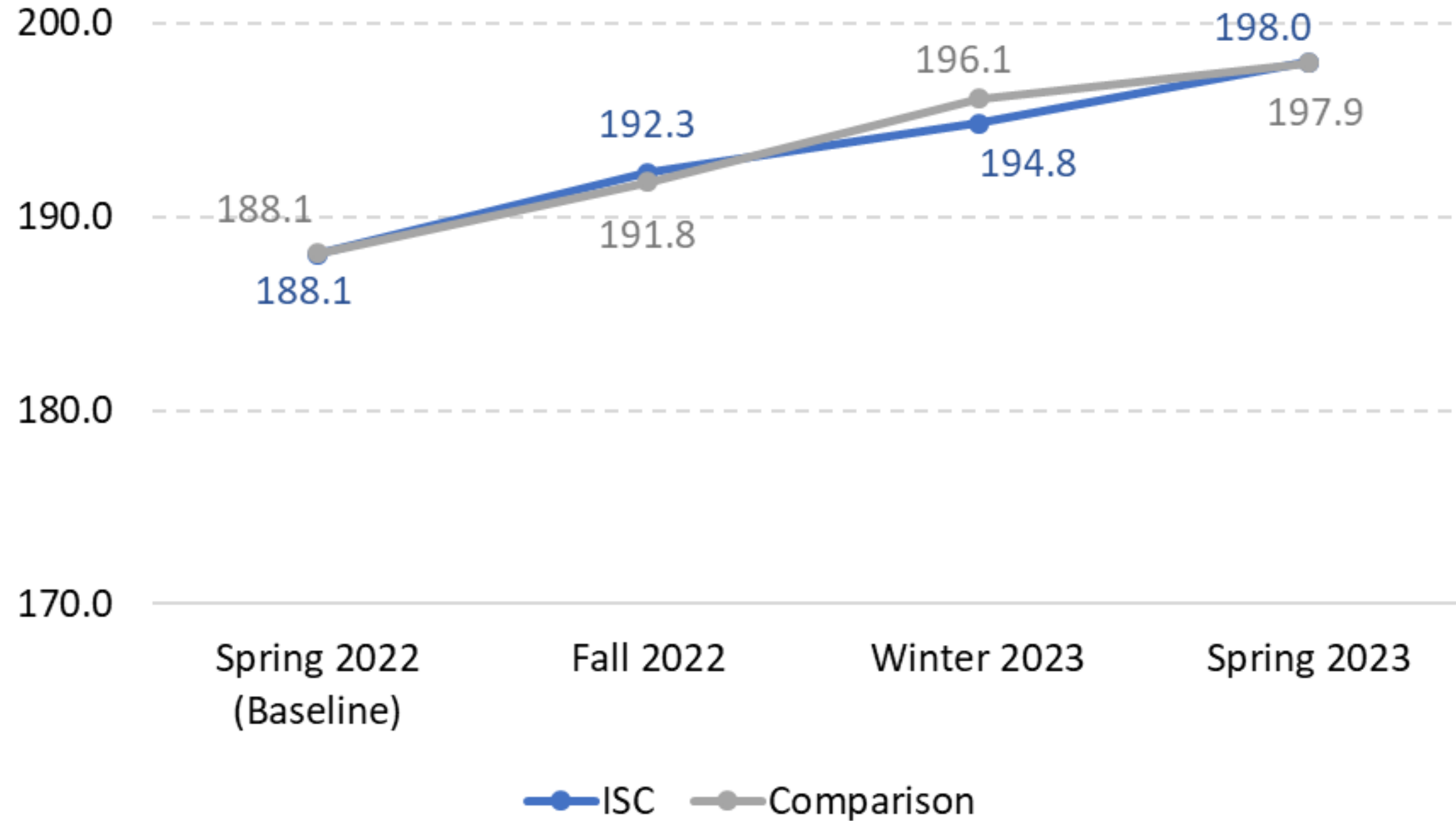




# Results

Average MAP-R reading scores for Grades 3–5 ISC and matched and weighted comparison students: Spring 2022 through Spring 2023

## Reading RIT Score



\* Statistically significant at the  $p < 0.05$  level after adjusting for baseline performance and covariates.



## Reading Findings

- At baseline (Spring 2022), Grades 3–5 ISC students and comparison students had the same average reading score.
- By Fall 2022, after receiving 28 additional days of instruction, ISC students did not score statistically significantly higher than comparison students in reading.
- As of Winter 2023, ISC students reading scores appeared lower than those of comparison students, but again this difference was not statistically significant.
- No statistically significant differences were evident between ISC and comparison students in reading as of Spring 2023.

Despite an additional 28 days of instruction, no statistically significant differences were evident between ISC and comparison students with respect to Spring 2023 student mathematics or reading performance after accounting for Spring 2022 student performance, demographic factors, and service receipt.

A very slight increase in mathematics performance among ISC students, relative to comparison students, was evident at the time of the Fall 2022 assessment. At that point, ISC students had at least twice as many school days completed as comparison students because the extra ISC school days occur before the traditional start of school. Nevertheless, the mathematics performance difference was trivial, equivalent to a 1.6 percentile point gain for an average student. In addition, by Winter 2023, differences in mathematics were no longer evident between ISC and comparison students.

No statistically significant differences were detectable between ISC and comparison students in reading during any assessment period in 2022–2023.

## Implications



Despite almost six weeks of additional student seat time during the 2022–23 school year, ISC did not have a detectable effect on student reading and mathematics performance by the Spring administration of the MAP.



It is possible that ISC had effects on outcomes not investigated by the current study, such as student reading performance in the early grades, science learning, social and emotional development, or safety during the additional time the students were in school.



Although MCPS is developing plans to scale up the ISC initiative, study results suggest caution is warranted in doing so. If goals of the ISC program include improving student mathematics and reading performance, program modifications will likely be required.

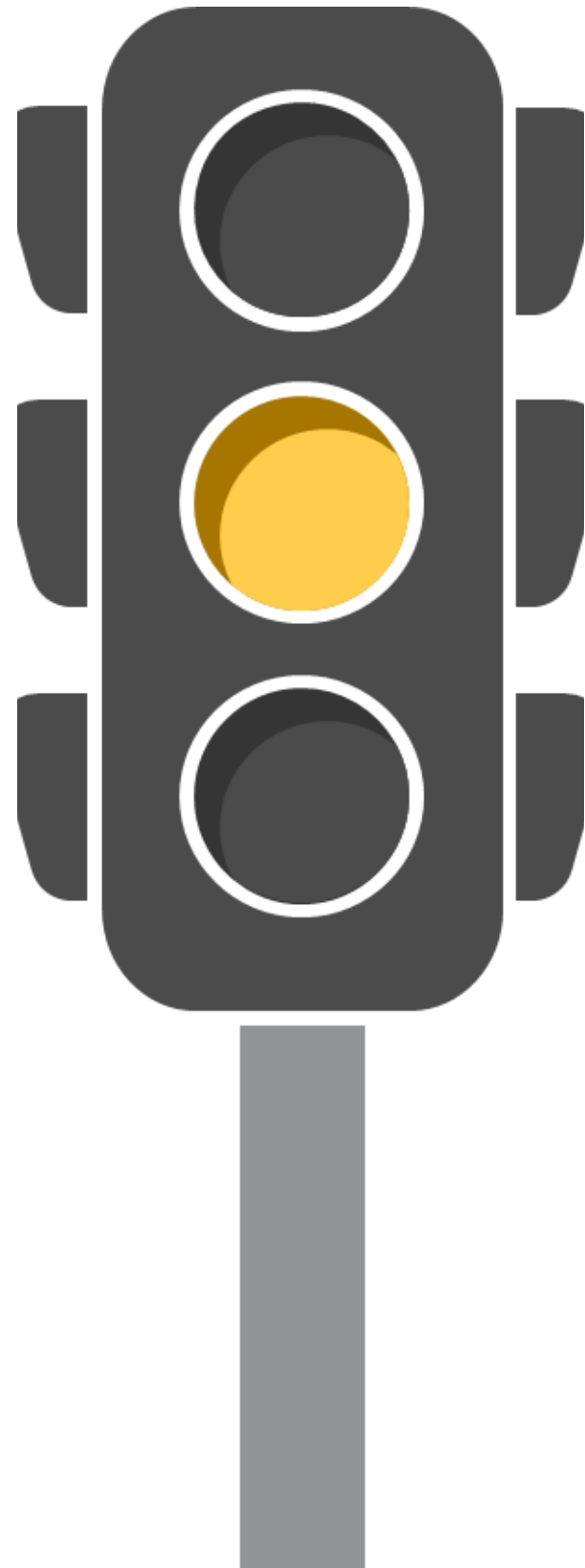
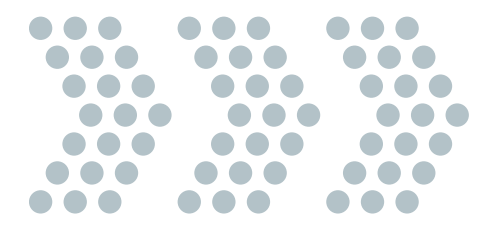
## Recommendations



Revisit the ISC program elements as recommended in Year-1 evaluation report. Drawing on the research literature, determine what concrete changes are needed to ensure that the additional school time is both sufficient and well-spent. That may involve incorporating new evidence-based interventions into the school day and year, building in time for increased teacher planning, collaboration, and professional development, and establishing additional student enrichment activities.



Based on findings from academic examinations, at this time, expanding ISC should not be undertaken.



## **MAINTAIN CURRENT IMPLEMENTATION FOR ONE YEAR**

It is recommended for the district to maintain current implementation of ISC for one additional year in alignment with the recommendations. The one additional year of implementation is intended to provide an opportunity for the program to demonstrate greater progress towards its goals and objectives. Findings from the outcome evaluation did not reveal a detectable impact on the reading and mathematics performance of students attending schools implementing the innovative calendar.



# References



Wilson, H. W. (2021). Innovative School Calendar (ISC) initiative: Evaluation summary report. Rockville, MD: Montgomery County Public Schools.

