SUMMER BOOST 2023 EVALUATION Final Report

SUMMER BOOST

Launched by Bloomberg Philanthropies

May 2024

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EXECUTIVE SUMMARY

ABOUT SUMMER BOOST

Summer Boost is an initiative supported by Bloomberg Philanthropies in partnership with co-funders. In response to COVID learning loss, the program supports rising 1st to 9th Grade charter students in select cities across the nation to accelerate learning and drive academic recovery in English Language Arts and math.

Summer Boost required grantees to provide a minimum of **20 days of programming,** with daily **in-person instruction** of at least **90 minutes each of English Language Arts (ELA) and math.** Grantees were required to maintain a maximum **student to teacher ratio of 25:1,** and administer standardized **pre- and post-assessments** provided by Summer Boost. Otherwise, grantees had **flexibility** in how they implemented their programs, such as curriculum used, inclusion of enrichment activity, and length of program day.

In 2023, Summer Boost served:

35,163 students *across* **447 Schools** *offering an* **Average of 22 days of programming** *in* **8 cities**

EVALUATION APPROACH

To assess the impact of Summer Boost on student achievement and its potential to drive academic recovery, Bloomberg Philanthropies commissioned an evaluative study that sought to answer the following research questions:

- ✓ **Does Summer Boost work?**
- ✓ **Who does Summer Boost work for?**
- ✓ **What practices are linked to outcomes?**

Researchers used a quasi-experimental research design (“Difference in Differences”) that analyzed i-Ready and MAP Growth standardized test data for Summer Boost participants and non-participant peers in their schools *before* and *after* the program to determine the impact of Summer Boost on student growth.

This study also analyzed demographic, attendance, a pre- and post-program assessment, and program characteristic data to identify potential demographic and implementation differences in impact. The total data set for this study included multiple data points for ~160,000 students including the comparison group.

KEY FINDINGS

1. DOES SUMMER BOOST WORK?

IN SHORT, YES!

Participating students experienced positive growth in both math and ELA. **Students gained on average an additional ~4-5 weeks of math learning and ~3-4 weeks of ELA learning compared to their peers who did not participate in the program**. Similar to other research, this evaluation found more impact and confidence in math than in ELA results.

Implications: There is value in continuing to invest in summer learning to drive student growth.

2. WHO DOES SUMMER BOOST WORK FOR?

ALL STUDENT SUBGROUPS SHOWED POSITIVE IMPACT

Summer Boost had impact across **demographic groups, cities, achievement levels, and grades**, with some particular **bright spots for English Language Learners and later grade levels** (Grades 4-8).

Implications: Summer Boost is effective for students from various backgrounds, and may be particularly helpful for English Language Learners. Summer Boost primarily serves students below grade level, and while students at all achievement levels grew it may be worth exploring strategies to further accelerate those starting the farthest behind.

3. WHAT PRACTICES ARE LINKED TO OUTCOMES?

BALANCED CONTENT APPROACH

Those programs that spent **balanced time on enrichment and instruction** (45 - 90 minutes of enrichment programming in addition to academic instruction) saw the strongest results.

70% ATTENDANCE RATE

Student **attendance rates were linked to positive math and ELA growth,** particularly over the 70% threshold.

Implications: Summer Boost should continue to incentivize 70%+ attendance and encourage a balanced content approach.

INTRODUCTION

SUMMER BOOST
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INTRODUCTION

ABOUT SUMMER BOOST

Over the past several years, students have suffered significant learning setbacks due to COVID-19, compounding pre-existing summer learning loss challenges. On average, 3rd - 8th Grade students lost half a year of learning in math and a quarter of a year in reading during the pandemic, while every summer students lose an average of 4 weeks of learning. These impacts disproportionally affect students of color and those from low-income backgrounds. Although some students have shown promising learning recovery since the COVID-19 pandemic, many students, particularly from low-income communities, still lag behind. In 2023, low-income districts were still half a grade below 2019 levels, compared to wealthier districts that were only one fifth of a grade level behind.

To address persistent gaps in learning recovery, Bloomberg Philanthropies, in partnership with co-funders, launched Summer Boost to offer high-quality summer learning for rising 1st to 9th Grade public charter school students. During its first year in 2022, Summer Boost programs served 16,383 students in New York City. **In 2023, Summer Boost more than doubled its reach to serve 35,163 students across 447 schools in 8 US cities**.

8 CITIES

- Baltimore
- Birmingham
- Indianapolis
- Memphis
- Nashville
- New York City
- San Antonio
- Washington, D.C.

35,163 STUDENTS

- 76% Students of Color
  - 56% Black
  - 9% Hispanic or Latinx
  - 6% Multiracial
  - 5% American Indian & AAPI
- 75% Free/Reduced Lunch
- 26% English Language Learners
- 18% Special Education

Summer Boost required grantees to provide a minimum of **20 days of programming,** with daily **in-person instruction** of at least **90 minutes each of English Language Arts (ELA) and math.** Grantees were required to maintain a maximum **student to teacher ratio of 25:1,** and administer standardized **pre- and post-assessments** provided by Summer Boost. If grantees reached an average daily attendance threshold of 70%, they received their full grant disbursement; grantees who did not reach that threshold received some grant funding regardless. Otherwise, grantees had **flexibility** in how they implemented their programs including:

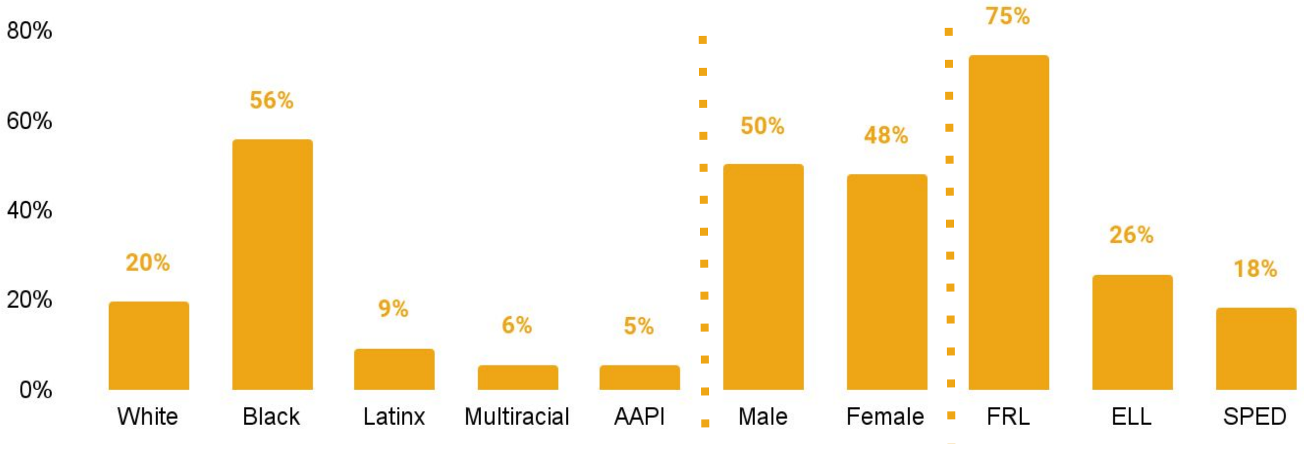
- Ability to select the Lavinia RISE curriculum and professional development provided by Summer Boost or a curriculum of their choice (over half of students participated in the Lavinia RISE curriculum).
- Flexibility in student recruitment methods, with encouragement to recruit those who could benefit the most from summer programming.
- Choice to provide enrichment activities alongside instruction.
- Variation in length of program day (half or full).

INTRODUCTION

ABOUT SUMMER BOOST

STUDENT DEMOGRAPHICS

Summer Boost served predominantly students of color and those who met criteria to be eligible for Free or Reduced Lunch (FRL), an indication that students were from from low-income households. Additionally, about a quarter of students who participated were considered English Language Learners (ELL), and 18% received Special Education services (SPED).



RESEARCH QUESTIONS

In an effort to understand the potential of high quality summer programming to support students to recover from the impact of COVID and accelerate learning, Bloomberg Philanthropies commissioned a quasi-experimental study on the impact of Summer Boost 2023 on student achievement. Bloomberg Philanthropies partnered with MGT – a social impact firm – and Dr. Geoffrey Borman at Arizona State University to answer the following questions:

1. Does Summer Boost work?

2. Who does Summer Boost work for?

3. What practices are linked to outcomes?

EVALUATION METHODOLOGY

Researchers used a Difference in Differences (DiD) study as the primary method to gauge Summer Boost's impact on student growth. This method **compares achievement gains between students who attended Summer Boost (the participant group) and other students from the same schools/grades who didn't attend (the comparison group)**. A DiD study estimates Summer Boost's impact by assuming that without the program, participating students' gains would mirror those of non-participants. The difference in gains between the groups from Spring '23 to Fall '23 indicates Summer Boost's causal impact.

To further validate the program's impact, researchers conducted an event study. This compared achievement data for both groups at multiple time points before Summer Boost '23, confirming a parallel trajectory before the program. Analyzing outcomes over a longer time frame prior to Summer Boost supported its effect. Additionally, researchers employed a Value Added Model (VAM) to further validate Summer Boost's impact. For an overview of each methodology, see Appendix B.

To discern if Summer Boost had differential impacts on subgroups or under certain conditions, researchers manipulated variables like race, gender, and socioeconomic status, along with qualitative implementation data, to isolate impact by each variable.

The total dataset comprised over 160,000 students across 193 grantees, including approximately 35,000 Summer Boost students and 125,000 comparison group students.

MGT collaborated with grantees and with Curriculum Associates (i-Ready) and NWEA (MAP Growth) to collect:

- i-Ready and MAP Growth assessment data from Fall '21 - Fall '23
- Demographic information
- Attendance data *(program participants only)*
- Qualitative data on program implementation obtained through grantee and site surveys
- Lavinia pre- and post- assessments *(program participants only)*

In addition to i-Ready and MAP Growth standardized test data used in the Difference in Differences (DiD) study, **Summer Boost also administered pre- and post-assessments developed by the Lavinia Group** and vetted by third-party evaluators. The assessments focused on prioritized summer standards that map onto state academic standards. Administering the assessments to all Summer Boost students was a grant requirement in order to measure student growth from the beginning to the end of the program. Pre/post data and the quasi-experimental evaluation provide a complementary picture of the growth of Summer Boost students and impact of the program:

Pre/Post Assessments *Lavinia Group*	**Quasi-Experimental Evaluation** *i-Ready and MAP Growth*
Shows **summer gains made by Summer Boost participants on specific Math and ELA standards**, tied to **prioritized** Common Core and state standards. (note: no comparison group)	**Compares gains between Summer Boost participants *and* a comparison group** from the same school to **estimate the program's causal impact** using nationally normed tests (e.g. did students learn *more* than they would have otherwise?)

Further detail on pre- and post-assessments can be found in Appendix D.

KEY FINDINGS

SUMMER BOOST
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KEY FINDINGS

1. DOES SUMMER BOOST WORK?

IN SHORT, YES!

Participating students experienced positive growth in both math and ELA. **Students gained on average an additional ~4-5 weeks of math learning and ~3-4 weeks of ELA learning compared to their peers who did not participate in the program**. Similar to other research, this evaluation found more impact and confidence in math than in ELA results.

2. WHO DOES SUMMER BOOST WORK FOR?

ALL STUDENT SUBGROUPS SHOWED POSITIVE IMPACT

Summer Boost had impact across **demographic groups, cities, achievement levels, and grades**, with some particular **bright spots for English Language Learners and later grade levels** (Grades 4-8).

3. WHAT PRACTICES ARE LINKED TO OUTCOMES?

BALANCED CONTENT APPROACH

Those programs that spent **balanced time on enrichment and instruction** (45 - 90 minutes of enrichment programming in addition to academic instruction) saw the strongest results.

70% ATTENDANCE RATE

Student **attendance rates were linked to positive math and ELA growth,** particularly over the 70% threshold.

The following section includes detailed findings as well as some implications, hypotheses, field context, and notes on data analysis.

1 Research Question

MATH: DOES SUMMER BOOST WORK?

Summer Boost had a **statistically significant, positive impact on student growth in math**. These impacts were evident in Fall 2023 i-Ready and MAP Growth tests, which students took weeks, or in some cases months, after the summer program ended.

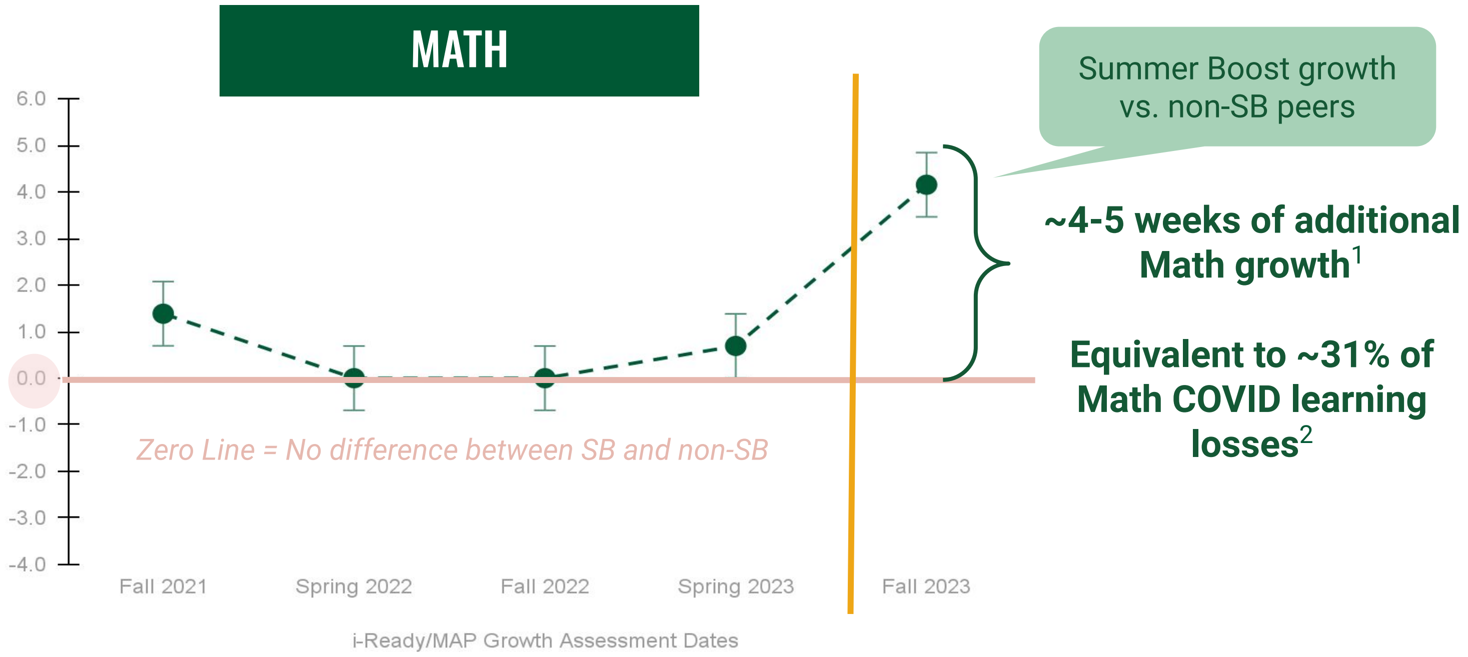
Analysis revealed that **students gained the equivalent of an additional ~4-5 weeks of math learning compared to their peers who did not participate in Summer Boost**.[1] This represents the equivalent of **recovering ~31% of math COVID learning losses.**[2]

Looking at the chart below, *prior to Summer Boost (SB)*, SB students and non-participants in their schools performed at a similar level. *After Summer Boost*, the Summer Boost students showed a jump in growth as a result of the program that was equivalent to ~4-5 weeks of additional learning in math.

HOW TO READ THIS CHART

Each point on the graph represents the **difference in growth between SB and non-SB students on assessments over time**. A data point equal to **zero** means there is no difference in growth between SB and non-SB students.The error bars represent the standard error, converted to additional weeks of learning.

i-Ready/MAP Growth: Differences between SB and comparison group growth
(in weeks of learning)



1. Weeks of learning is based on an average 3 grader's achievement growth across a typical 9-month school year. See Appendix C for equation.

2. Learning loss recovered estimates are based on the national average for Grade 4 and 8 Learning losses on NAEP testing. Metric uses national data from NAEP indicating differences in test scores between 2019 and 2022. Note that NYC is not included in this metric. Exact learning loss recovery rates vary based on specific geographical COVID impact. See Appendix C for equation.

3. The reported difference in Fall 2021 between SB and non-SB students does comply with the parallel trends assumption despite the error bars not crossing the zero line, due to rounding the original value in visual above using the conversion metrics in Appendix C.

1 Research Question

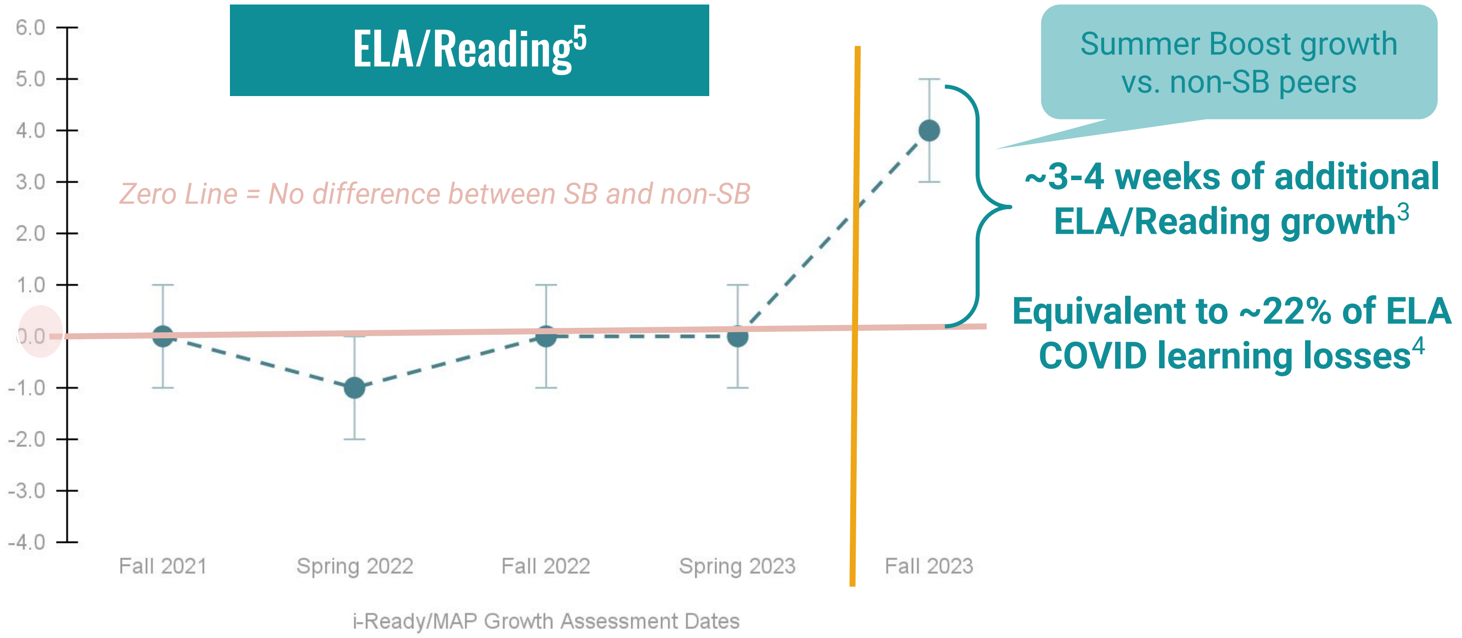
ELA: DOES SUMMER BOOST WORK?

Summer Boost had a **positive impact on student growth in ELA/Reading**. Of four robustness checks, three found statistically significant effects, while one showed positive but not statistically significant effects.[1] These findings – including the difference in impact for math vs. ELA/Reading growth – are consistent with other research.[2]

Analysis revealed that **students gained the equivalent of an additional ~3-4 weeks of ELA/Reading learning compared to their peers who did not participate in Summer Boost**.[3] This represents the equivalent of **recovering ~22% of ELA COVID learning losses.**[4]

Looking at the chart below, *prior to Summer Boost (SB)*, SB students and non-participants in their schools performed at a similar level (with minor, non-statistically significant, deviations). *After Summer Boost*, the Summer Boost students showed a jump in growth as a result of the program that was equivalent to ~3-4 weeks of additional learning in ELA/Reading.

i-Ready/MAP Growth: Differences between SB and comparison group growth
(in weeks of learning)



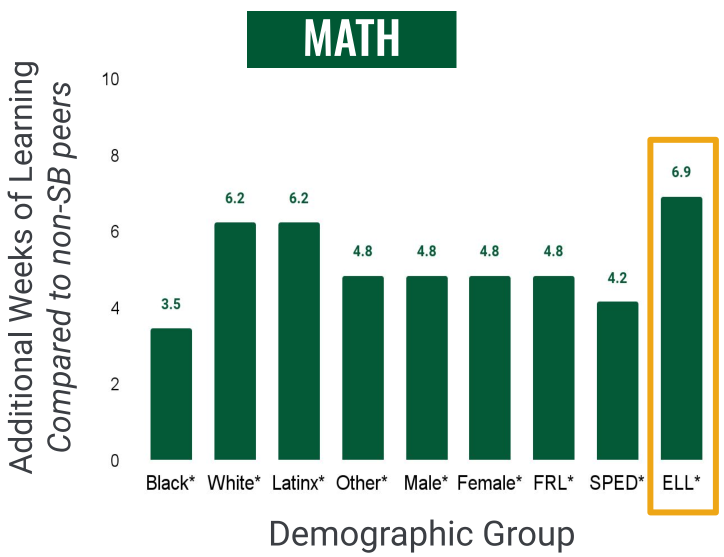
Why do students grow more in math than ELA in summer learning? Researchers hypothesize that while students may read outside of school, they rarely practice math outside of school; so students who receive extra math instruction during the summer may show more growth compared to their peers.

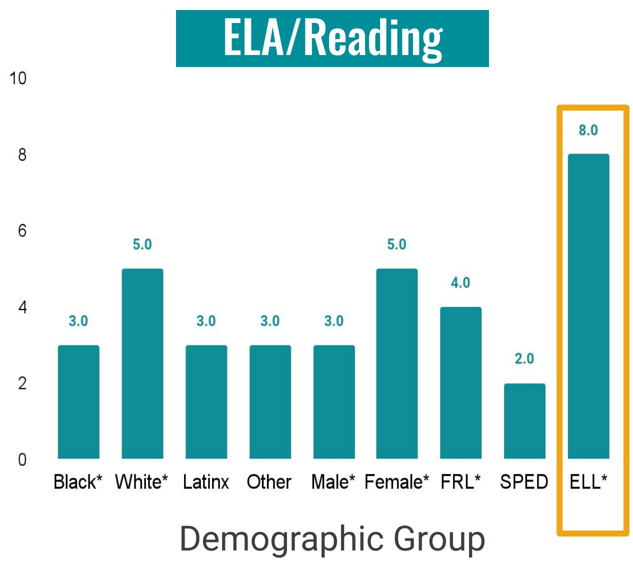
1. Checks were done to see if results held up under different assumptions through a Difference in Differences Event Study and a Value Added Model.
2. The difference in impact between math and ELA is consistent with findings from similar studies – 2020 CALDER/AIR study and the 2014 RAND study – on the impact of summer programming on math and ELA growth. See Appendix A for additional information.
3. Weeks of learning is based on an average 3 grader's achievement growth across a typical 9-month school year. See Appendix C for equation.
4. Learning loss recovered estimates are based on the national average for Grade 4 and 8 Learning losses on NAEP testing. Metric uses national data from NAEP indicating differences in test scores between 2019 and 2022. Note that NYC is not included in this metric. Exact learning loss recovery rates vary based on specific geographical COVID impact. See Appendix C for equation.
5. MAP Growth measures Reading, specifically.

2 Research Question

WHO DOES SUMMER BOOST WORK FOR?
ALL DEMOGRAPHIC GROUPS

Students across all demographic groups benefited from Summer Boost, gaining **2 to 8 weeks of additional learning** compared to their peers who did not attend Summer Boost. **English Language Learners (ELL) showed the strongest growth, achieving ~7-8 weeks worth of learning in just 4 weeks.** Although Black students and students receiving special education services also made gains, their progress was less than that of the other groups who attended Summer Boost.





** Denotes statistical significance where p-value is less than 0.05*

HYPOTHESIS

On average, ELL students may be exposed to less English during the summer when they are out of school, leading to increased learning loss when they return to school in the fall.

Since Summer Boost students continued to experience instruction in English over the summer, this additional in-class time may have bolstered their language skills and may explain the large gain in comparison to their ELL peers who didn't participate in Summer Boost.

IMPLICATION

Summer Boost is effective across students from different backgrounds and may be particularly beneficial to English Language Learners.

It may be worth exploring strategies to further support Black students and Special Education students.

8,856 ELL students
were served by Summer Boost in 2023

2 Research Question

WHO DOES SUMMER BOOST WORK FOR?

GEOGRAPHY

Students across participating cities benefited from Summer Boost. For many geographies the sample size is too small to publicize city-level results. NYC, the Summer Boost city with the largest and most reliable data sample, saw the equivalent of ~4.8 weeks of additional learning in Math and ~4 weeks of additional learning in ELA/Reading compared to their peers who didn't attend the program.

8 CITIES SERVED

- Baltimore
- Birmingham
- Indianapolis
- Memphis
- Nashville
- New York City
- San Antonio
- Washington, D.C.

NYC Summer Boost Learning Gains

Additional Weeks of Learning Compared to non-SB peers

** Denotes statistical significance where p-value is less than 0.05*

IMPLICATION

The program can be implemented effectively across multiple geographies and contexts.

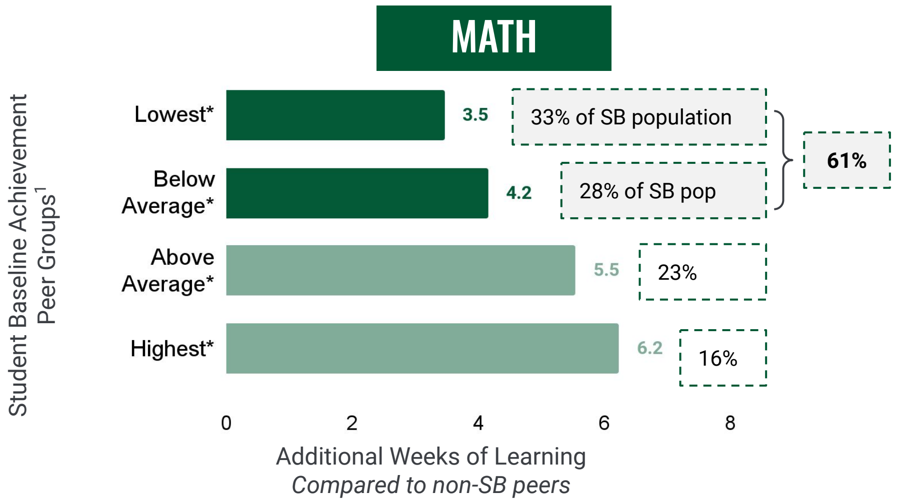
15,773 Summer Boost students (62%) were served by grantees in NYC.

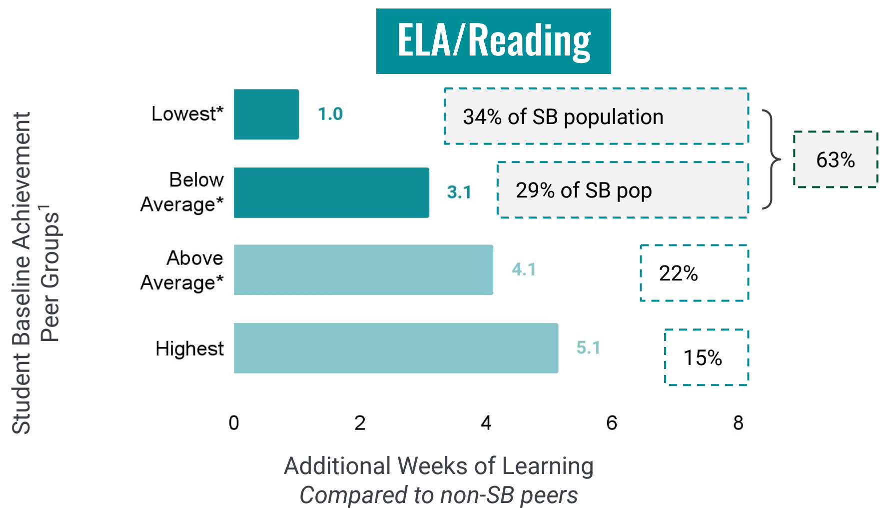
2 Research Question

WHO DOES SUMMER BOOST WORK FOR?

ACHIEVEMENT LEVELS

Summer Boost targets support for summer learning to students who are the farthest behind.[1] **After Summer Boost, students at all achievement levels grew relative to their non-Summer Boost peers. Findings were consistent with other research that shows the higher the achiever at the beginning of Summer Boost, the more they grew compared to their non-Summer Boost peers**. Although this is consistent with other research, future analysis may explore grantees or strategies that were able to further accelerate the students with the lowest starting achievement levels.





** Denotes statistical significance where p-value is less than 0.05*

IMPLICATION

Summer Boost works for students at all levels, and it may be worth exploring strategies to further accelerate students farthest behind.

1. Relative achievement was defined across all schools and students, regardless of Summer Boost participation, by quartile performance on Spring 2023 assessments (e.g top and bottom 25%)

2 Research Question

WHO DOES SUMMER BOOST WORK FOR?

LATER GRADE LEVELS

While all grade levels grew, students moving into Grades 4-8 saw accelerated growth, which is consistent with other research.[1] Some grades saw more than double as many weeks of additional learning than actual weeks of instruction provided in the Summer Boost program.

FIELD ALIGNMENT

Past research suggests that students in the upper grades may gain more simply because they tend to lose the most ground when not offered summer programming.[2]

Research also suggests that during the transition from the early to the later elementary grades students are transitioning from more basic to more conceptually oriented skills.[2] Formal summer school instruction through Summer Boost may have helped 4th Grade students make these transitions more effectively than their peers who did not attend Summer Boost.

MATH

ELA/Reading

Greater than 0 → Growth higher than non-SB peers

** Denotes statistical significance where p-value is less than 0.05*

18,816 of Summer Boost students (54%)
were rising 4-8th Graders.

IMPLICATION

The program has impact across grade levels, and consistent with other research, produces even greater growth in the later grades.

*Weeks of learning is based on the amount of achievement growth experienced by an average 3rd Grade student across a typical 9-month school year. See Appendix C for equation.

1. Cooper et al. (2000) and Borman & D'Agostino (1996)

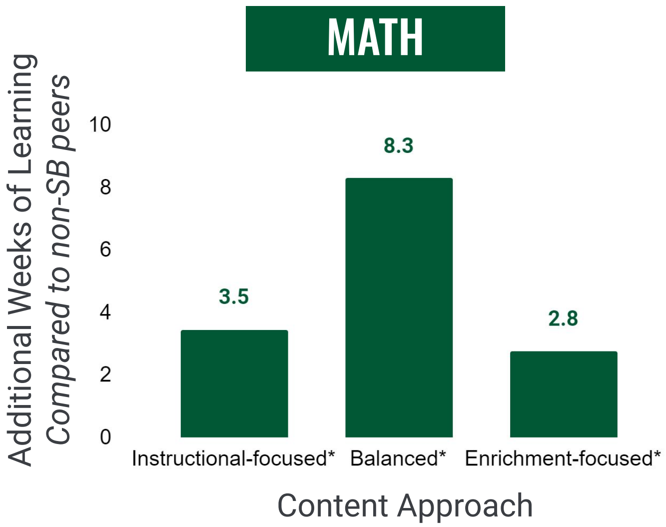
2. Ibid.

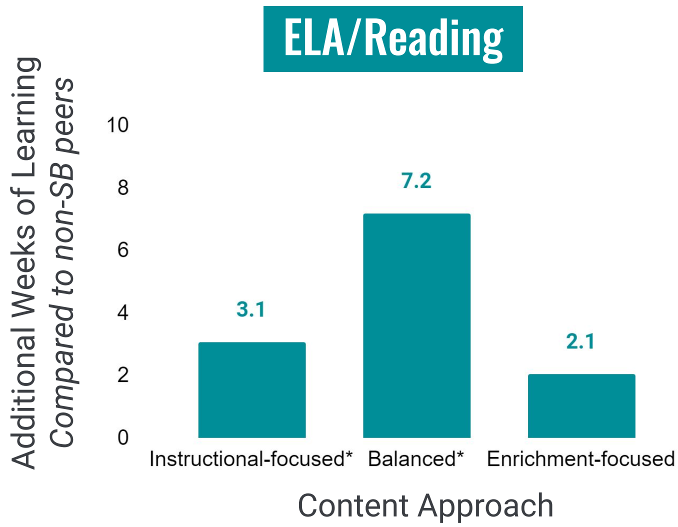
③ Research Question

WHAT PRACTICES ARE LINKED TO OUTCOMES?

BALANCED CONTENT APPROACH

While all content structures boosted student growth, programs that balanced time between enrichment and instruction saw stronger results than programs with either enrichment- or instruction- heavy schedules. Enrichment activities included but weren't limited to athletics, arts, robotics, cooking, gardening, and community engagement. Roughly **27% of Summer Boost grantees used a balanced approach** to enrichment and instruction.





** Denotes statistical significance where p-value is less than 0.05*

Instructional Focused	Balanced	Enrichment Focused
• Enrichment: 0-45 min • ELA: 90 min • Math: 90 min	• Enrichment: 45-90 min • ELA: 90 min • Math: 90 min	• Enrichment: 90-120 min • ELA: 90 min • Math: 90 min

FIELD ALIGNMENT

This balanced approach to summer school is aligned with best practices noted by previous research.[1] In addition, research suggests that embedding academic content in the enrichment activity, such as using music as an enrichment activity (where students might also use fractions to measure rhythms), tends to accelerate students' academic learning.[2] This content and enrichment mix may be useful to explore in future programs and research.

IMPLICATION

Providing programs with content design best practices could increase Summer Boost impact.

1. Beckett, et al., 2009; Quinn & Polikoff, 2017; Schwartz, et al., 2018
2. Schwartz et al., 2018

3 Research Question

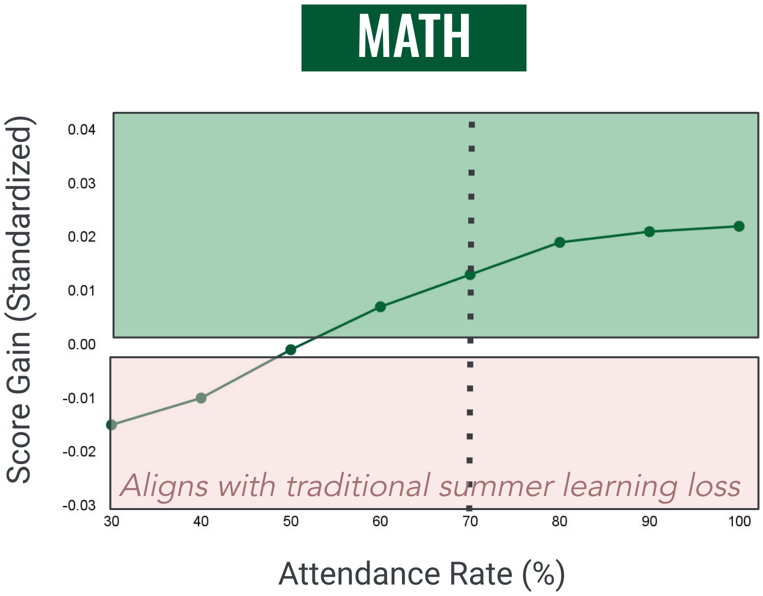
WHAT PRACTICES ARE LINKED TO OUTCOMES?

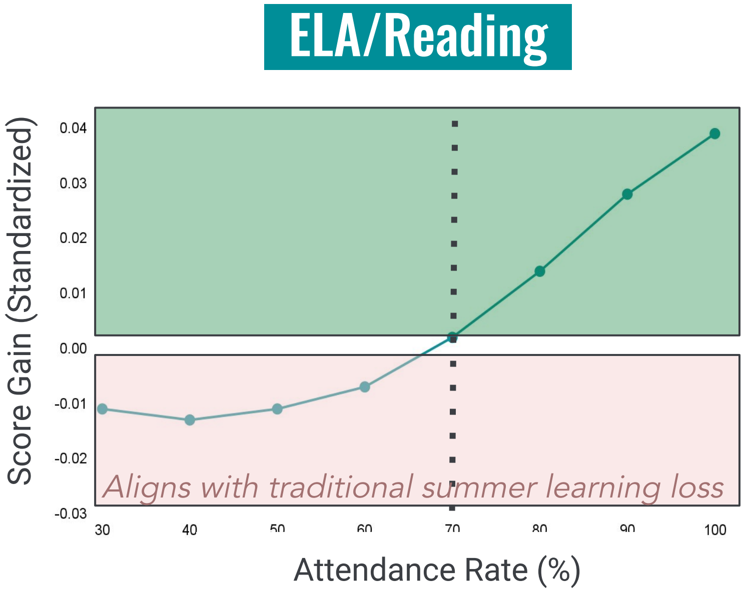
70% ATTENDANCE RATE

Student attendance rates were linked to positive growth, particularly over the 70% threshold. Those attending over 70% were able to increase their learning and **avoid traditional summer learning loss and mitigate COVID impact** in math and ELA compared to their "observable" peers.*

All Summer Boost grantees reported using **at least one method to encourage student attendance**, such as communications with families and student incentives to attend (e.g., field trips, prizes, pizza lunch, etc.), with the majority of grantees using three or more methods.

Given this trend, it may be worth thinking about how to share the most impactful strategies with grantees to further encourage or incentivize students and families to commit to high Summer Boost attendance.





Note: Graph is plotted using each student's individual attendance rate to their i-Ready/MAP Growth score gain.

**Those with higher attendance rates may differ in other unobserved ways which may also contribute to the differentiated gains between students*

IMPLICATION

Continued focus on incentivizing attendance is likely to have a positive impact on student outcomes.

Summer Boost incentivized attendance
through grant funding disbursements
(30% of grant conditional on achieving an Average Daily Attendance of 70%)

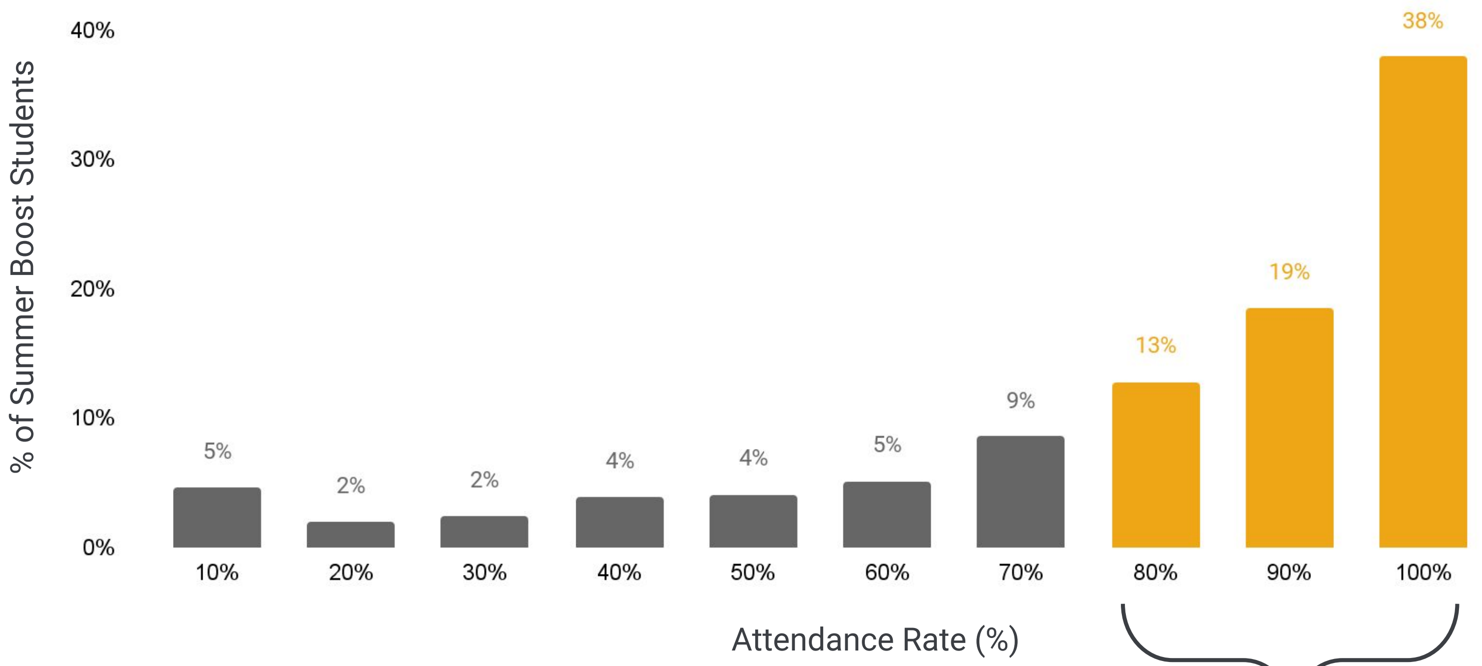
3 Research Question

WHAT PRACTICES ARE LINKED TO OUTCOMES?

70% ATTENDANCE RATE (continued)

In Summer 2023, nearly **4 of 5 students attended more than 70%** of the program. When combined with the accelerated learning observed after the 70% attendance rate mark, this indicates that a 70% attendance threshold is both an achievable and meaningful goal towards which summer school practitioners can strive.

SUMMER BOOST ATTENDANCE



70% of Summer Boost Students attended more than 70% of programming

IMPLICATION

Continued focus on attendance is likely to have a positive impact on student outcomes.

3 Research Question

WHAT PRACTICES ARE LINKED TO OUTCOMES?

ADDITIONAL PROGRAM CHARACTERISTICS

To analyze program characteristics that may be linked to student outcomes, the research team collected data from grantee surveys and aggregated variables into "profiles."

Apart from balancing instruction and enrichment (as described earlier), higher minutes of math instruction and lower student teacher ratios may lead to greater student impact. However, the vast majority of grantees implemented similar minutes of instruction and student teacher ratios (as aligned with grant requirements), without many positive or negative outliers. Given the small number of grantees, we would caution interpretation of one year of data.

Other singular metrics did not result in programmatic findings which tracks with expectations and with prior research, as there are no single silver bullets that generate outsized student impact.

Singular Characteristics
Teacher Experience
Days of Summer Boost
Minutes of ELA & Math Instruction Per Day
Student Teacher Ratio

Program Profiles
Teacher Recruitment Strategy *Methods and rigor used to recruit teachers*
Student Selection Criteria *Rationale used to select students categorized into Assessment, Non Academic Needs, and Classroom Referral-based selection methods*
Content Approach *Proportion of time spent between instruction and enrichment*
Classroom Environment Challenges *Factors affecting program delivery categorized into Safety, Facilities, Attendance and Classroom Environment Challenges*

IMPLICATION

Programs can be effective within the flexibilities offered by Summer Boost.

RECOMMENDATIONS

RECOMMENDATIONS

Based on the evaluation findings, the following considerations are recommended for potential future summer programming:

1. CONTINUE INVESTMENTS IN SUMMER LEARNING

- Summer learning works to accelerate student growth. This is critical as learning gaps resulting from COVID-19 still present concerns, especially for students from underserved communities and since summer learning loss will continue going forward.
- Previous research also indicates that multiple years of summer learning can have a cumulative impact (RAND, 2014).

2. INVESTIGATE PRACTICES TO SUPPORT STUDENTS FARTHEST BEHIND

- Consider conducting further research review and/or consult with experts in the field to identify practices that accelerate learning for students farthest behind.

3. CONTINUE REQUIRING 70% ATTENDANCE

- Maintain the average daily attendance requirement at 70% to receive full funding for Summer Boost.
- Continue to encourage schools to use incentives and best practices to drive higher attendance.

4. CONTINUE TO OFFER IMPLEMENTATION FLEXIBILITY

- Grantees have shown impact across a variety of program characteristics, indicating that there is not one single profile for a successful program and Summer Boost can continue to offer flexibility in choices like curriculum and program structure.

5. SHARE BEST PRACTICES FOR EVEN GREATER IMPACT

- Offer best practices from research to enhance impact. For instance, share data with grantees on balancing instruction and enrichment, and promote recruitment of ELL students where relevant.
- Share learnings with the field to encourage funders and policymakers to invest in programs like Summer Boost.

These recommendations are based on one year of data. Additional years of data should be considered before making program design decisions.

APPENDIX

SUMMER BOOST

Bloomberg Philanthropies

ABOUT THE AUTHORS

MGT

MGT is a social impact firm and leading provider of high-impact technology and advisory solutions for public agencies, philanthropic organizations, and Fortune 500 companies across the U.S. and abroad. Since 1975, MGT has expanded its education solutions and technology portfolio with the addition of Davis Demographics, EH&A, Kitamba, Ed Direction, Cira Infotech, Layer 3 Communications, Step By Step Learning, GovHR, and AMS.NET. Leveraging a half-century track record and reputation, MGT's industry experts provide highly specialized solutions addressing mission-critical client priorities that improve outcomes and help organizations and communities thrive. For more information, please visit [www.mgtconsulting.com.](http://www.mgtconsulting.com)

Erin McGoldrick, Chief Data Officer

Erin McGoldrick is the Chief Data Officer at MGT. With over 20 years of experience in data innovation, Erin has worked with a variety of clients including the Bill and Melinda Gates Foundation, the College Board, and dozens of state and district school systems. She was the Chief of Data and Accountability for the District of Columbia Public Schools under Chancellor Michelle Rhee. She also held data-focused positions at the California Charter Schools Association, Los Angeles Unified School District, and Los Angeles Educational Partnership. Erin earned an undergraduate degree at the University of Notre Dame and a master's degree in Public Policy at U.C.L.A.

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Trained as a quantitative methodologist at the University of Chicago, Dr. Geoffrey Borman is President of Measured Decisions, Inc., Alice Wiley Snell Endowed Professor at Arizona State University, and Editor of Educational Evaluation and Policy Analysis. He is the author of over 150 publications, including the edited volume, *Summer Learning: Research, Policies, and Programs*. His main substantive research interests revolve around the social distribution of the outcomes of schooling and the ways in which policies and practices can help address and overcome educational inequality.

Dr. Borman's methodological background includes directing multiple federally funded Institute of Education Sciences (IES) Ph.D. training programs in causal inference and interdisciplinary research and advancing the design and analysis of large-scale randomized trials to answer "real-world," field-based cause-effect questions. He has led more than 25 randomized field trials, which have included randomization of students, classrooms or teachers, schools, and districts. His national awards include the American Educational Research Association (AERA) Early Career Award, Palmer O. Johnson Award, and Review of Research Award. He has been selected on multiple occasions by Education Week as one of the top 200 scholars having the most significant influence on U.S. education practice and policy. His significant contributions to the field of education research were recognized by his selection as Fellow of the AERA.

Measured Decision Inc. (MDI)'s staff implements a range of state-of-the-art analytical methods to support a variety of research and development projects. Affiliated Scholars offer technical assistance and provide design and analysis support. MDI Affiliated Scholars who have contributed to this report include:

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Dr. Jaymes Pyne is a research associate at the Stanford Graduate School of Education and earned his Ph.D. from the University of Wisconsin–Madison's Department of Sociology in August 2019. While at UW-Madison he was an Institute of Education Sciences (IES) Predoctoral Fellow and a Graduate Research Fellow at the Institute for Research on Poverty. He studies engagement and punishment in schools and other social institutions. Dr. Pyne serves as lead analyst on several projects conducted through Measured Decisions.

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APPENDIX A
PREVIOUS RESEARCH ON SUMMER LEARNING PROGRAMS

The “summer slide” has been widely documented across the literature. Students tend to lose critical knowledge and skills over the summer when they are out of school. This is especially true for students from low-income communities. To address this issue, many schools have decided to implement summer learning programs with the intention of improving student outcomes and preventing summer learning loss.

Previous studies on district-led summer learning programs have shown that these programs can be effective at increasing student achievement over the summer in math. In a randomized control trial, researchers at RAND found that on average, students who attended the summer program had significantly higher math scores the following fall than students who did not attend (0.09 standard deviation; $p<.05$) (RAND, 2014). Students who attended the summer program had higher ELA scores the following fall than students who did not attend (0.02 standard deviation); however, the ELA results were not statistically significant (RAND, 2014). In a more recent study conducted using value-added modeling on COVID-19 learning loss, researchers found that students who attended a summer learning program had a statistically significant increase in math (0.03 standard deviation; $p<0.01$), but no difference in ELA (CALDER/AIR, 2022).

Some studies have also found an effect in reading. In 2006, researchers conducted a randomized control trial to examine the effects of a multi-year summer learning program on summer learning loss. The program, staffed by college students, was studied across 3 years (Teach Baltimore, 2006). Researchers found that students who attended the summer program had statistically significant growth equivalent to 40 to 50% of one grade level in ELA compared to students who did not attend (Teach Baltimore, 2006).

APPENDIX B
DETAILED METHODOLOGY

OVERVIEW

As described previously, the primary method of analysis was the Difference in Differences approach with a Value Added Model was utilized as an additional robustness measure. A brief description of each methodology is below.

Difference In Differences (DiD)

The Difference in Differences (DiD) approach compares two group means over multiple time points before and after a treatment. DiD assumes that the trends in the group means over time are identical in the absence of treatment. This is the parallel trends assumption. With DiD, we test whether the changes in the two groups' (SB and non-SB) average achievement levels between the final two time points—spring 2023 and fall 2023—remain parallel. If SB students experience a larger increase in test scores over this final period school year (and the trends, therefore, do not remain parallel), we can attribute this achievement advantage to the SB program, which effectively disrupted the parallel achievement trends between the two groups.

Value Added Models (VAM)

Value Added Models (VAMs) use students' pre-program measures, such as prior test scores and demographic characteristics, to predict their post-program scores. These predicted scores are then compared to the actual observed scores, and if the program students' observed scores are better than their statistically predicted scores, this advantage is attributed to the program. With VAM, we predict student achievement based on pre-SB characteristics and compare these predicted values to the students' observed values. This "selection-on-observables" research design assumes that the relevant information about the non-random selection process is accounted for by the pre-program measures.

APPENDIX B
DETAILED METHODOLOGY

DETAILED METHODOLOGY

The analyses were designed to answer three research questions:

1. Does Summer Boost work?
2. Who Does Summer Boost work for?
3. What practices are linked to outcomes?

We use Spring and Fall achievement data from the fall of 2021 through the fall of 2023 to document the impacts of Bloomberg Philanthropies' investment in summer learning programs across multiple participating cities. NWEA and Curriculum Associates, who collectively administer the spring and fall math and reading assessments in the vast majority of participating charter schools, provided access to all necessary student-level achievement data needed for the study (with grantee authorization). These data enable a comparison of the summer math and ELA outcomes for those students who participate in Summer Boost and those who do not participate.

We address research question #1 by employing a quasi-experimental methodology called Difference in Differences (DiD). The DiD approach is effectively used when we have two groups (Summer Boost participants and non-participants) and at least two time periods during which the students were tested - in this case, one period just prior to Summer Boost in spring 2023 and one period just after Summer Boost in fall 2023. This strategy permits comparisons of the relative achievement gains of participants and non-participants during summer 2023, when *some* students participated in Summer Boost and others did not. This analysis can provide an intuitive estimate of the Summer Boost impact under the assumption that the participating students would have had gains similar to non-participating students in the absence of the summer program during 2023. The extent of the difference between the spring-fall gains made by the two groups provides an indication of the causal impact of Summer Boost.

To gain greater confidence that the Summer Boost program *caused* the spring-fall achievement differences between participants and non-participants, we employ several additional strategies. First, using achievement data from four time points prior to Summer Boost (i.e., fall 2021, spring 2022, fall 2022, spring 2023), we can gain evidence that the participants and non-participants were making similar achievement gains before the summer program was implemented. By investigating whether the Summer Boost and non-participating students were experiencing similar gains before the summer program started through an *event study*, we can assess the underlying *parallel trends assumption* necessary to verify each DiD model's validity. That is, if the two groups' pre-Summer Boost achievement trends were on parallel trajectories before the program, any subsequent difference between the achievement gains of the two groups, from spring 2023 to fall of 2023, can be interpreted as the Summer Boost impact.

APPENDIX B
DETAILED METHODOLOGY

By exploring estimates from the DiD outcomes by various student groups (e.g., by race/ethnicity, gender, free/reduced priced lunch status), we can assess whether certain student groups benefited more or less from their Summer Boost participation. These analyses, performed by each of a number of student subgroups, provides answers to research question #2. Finally, we explore the relative performance of Summer Boost students across the grantees who participated in the initiative. These analyses allow us to evaluate whether certain hypothesized program characteristics that varied across the grantees, including factors such as the city in which the program was offered, the curriculum used, and teacher experience levels, may have been related to differences in Summer Boost students' achievement gains.

SAMPLE

To answer the research questions, we combine (1) test score data from i-Ready and MAP Growth providers and (2) data gathered from MGT from each of the 193 grantees about their summer program and the students they served during the summer and during school year 2023-24. These 193 grantees shared demographic information on students in rising Grades 1-9 in Fall 2023.

In evaluating missing data, or data attrition, the largest source of missing data is due to incomplete MAP Growth or i-Ready pre- and post-program test scores administered by each grantee. In order to measure student progress before and after program participation, full information on these pre- and post-program ELA/Reading and math test scores is essential for inclusion in the analytic sample. In total, 71,404 student records available are missing one or more of the pre/post math test scores and 72,401 student records available are missing one or more of the pre/post ELA/Reading test scores. The remaining source of attrition is due to missing demographic characteristics of students. Once removing all sources of missingness, the math test sample to be used for the DiD analyses consists of 26,217 students in the math test sample with full information on all variables of interest, 8,467 of whom attended Summer Boost in 2023 and the ELA/Reading test sample to be used for the DiD analyses consists of 25,333 students with full information on all variables of interest, 8,113 of whom attended Summer Boost in 2023. This amount of data attrition is consistent with other large scale studies of this nature. The descriptive analyses reveal that the available sample remains reasonably representative of the larger baseline sample of students across many demographic characteristics, giving us confidence in the robustness of the results.

MEASURES

The main variables of interest in the analytic sample are changes in each student's i-Ready or MAP Growth test scores in English Language Arts (ELA)/Reading and mathematics (math), determined by drawing on pre-program ELA/Reading and math test scores taken in spring 2023 (i.e., the school year before participating in Summer Boost) compared to post-program scores in fall 2023 (i.e., the school year after Summer Boost).

APPENDIX B

DETAILED METHODOLOGY

We independently converted the MAP Growth test scores and i-Ready test scores to a common scale, with a mean of 0 and standard deviation of 1. In addition, we create a binary variable indicating each test type in all the analytic models to account for any potential differences between the two tests.

Additional student-level variables used in the analyses include each student's demographic characteristics. Race/ethnicity is coded by differentiating whether students are identified as white, Black/African American, Hispanic/Latinx, Asian/Native Hawaiian/Pacific Islander, American Indian/Alaska Native, or multiracial. Gender is coded by differentiating students who identify as male and female. A non-binary option was included in templates which accounted for less than 50 total students and was excluded from descriptive analysis due to this small sample size. Some additional school-related demographics for students include binary measures of whether the student participated in a subsidized (i.e., free or reduced-price) school meal program, whether they are English Language Learners, and whether they received special education services during the school year prior to participating in Summer Boost.

We also record each student's grade level. Grade level refers to the rising grade students entered after Summer Boost during the fall of 2023-24. For example, a student identified with a "1" entered Grade 1 during the 2023-24 school year and is called a "rising 1st Grader" while a student identified with a "2" entered Grade 2 during 2023-24 and is referred to as a "rising 2nd Grader" and so on up to those who are "rising 9th Graders." Some students are retained at grade level; in these instances, we match their MAP Growth or i-Ready score to a non-participant's score within the retained grade rather than within the expected fall 2023 grade level they would have attained with promotion.

When comparing this analytic sample to samples of students who were excluded due to missing information, students in the analytic sample tend to have lower pre-program spring ELA/Reading and math test scores. In addition, relative to the attrition sample, the analytic sample contains a smaller proportion of white students. Counts of Multiracial/other and Hispanic/Latinx students were statistically equivalent, while Black students were significantly overrepresented in the analytic sample. In all cases but one, the magnitudes of these racial/ethnic differences were modest, ranging between 0 and 4 percentage points. The difference for white students, though, was somewhat larger–a 5 percentage point difference. Female students and special education students were significantly more likely to be represented within the analytic sample. Students receiving subsidized meals and special education students, though, were somewhat overrepresented in the analytic sample. By grade level, rising 1st, 6th, and 9th Graders were under-represented in the analytic sample, while rising 3rd, 4th, 5th, 7th, and 8th Graders were relatively over-represented.

APPENDIX B

METHODOLOGY OVERVIEW

CAVEATS AND LIMITATIONS

While the findings from this evaluation showed a significant positive impact of Summer Boost on student outcomes, there are some caveats and limitations to note. While the ELA findings held up across most models, the model that used a Value-Added approach did not find a significant effect of Summer Boost in ELA. This does not invalidate the original results but does mean that results should be interpreted with caution as the impact of Summer Boost on ELA could be slightly overstated in the Difference in Differences model.

Additionally, there are a number of reasons that students participated in Summer Boost, including recommendations from teachers, care needs, etc., that are not captured in the data. This could limit the generalizability of the study findings to other types of summer learning programs that may have different enrollment requirements.

Finally, the data in this evaluation is based on only one year. It is possible that the findings may change as more years of data are added and the sample size increases. As it currently stands, this evaluation only shows the impact of one year and cannot provide evidence of the persistence of program impact over time.

This evaluation can be replicated with additional years of data to understand whether these short-term effects hold up and whether there are longer-term effects.

APPENDIX C

ADDITIONAL WEEKS OF LEARNING METHODOLOGY

To translate the observed effect sizes for the variety of analytical subgroups selected during the analysis, additional weeks of learning learning was calculated using estimates from 7 nationally normed tests.[1] These values were then utilized to calculate the weeks of additional earning for the appropriate subgroup. **For analyses that were not directly related to the rising grade level, the conversion for rising 4th Graders was the standard for all student groups.** This was selected due to their proximity to the median of the full analytical sample as well as their average annual gain in comparison to other grade levels.

General Equation Used

$$\text{Additional Weeks of Learning} = \left(\frac{\text{Observed Effect Size}}{\text{Effect Size for Grade Level}} \times \text{36 weeks} \right)$$

Equal to 9 months of school

Average Annual Gain in Effect Size From Seven Nationally Normed Tests[1]

Rising Grade Level	Math	ELA
1st	1.14	1.52
2nd	1.03	0.97
3rd	0.89	0.60
4th	0.52	0.36
5th	0.56	0.40
6th	0.41	0.32
7th	0.30	0.23
8th	0.32	0.26

1. Hill, C. J., Bloom, H. S., Black, A. R., & Lipsey, M. W. (2007).

APPENDIX C

LEARNING LOSS RECOVERED METHODOLOGY

In addition, the effect sizes observed were converted to measure the amount of COVID learning loss recovered through the program. Estimates were based on the national average for rising 4th and 8th grade results from NAEP, utilizing national data between 2019 and 2022. While exact learning loss recovery rates vary based on the specific contexts of the region and grade level, the estimates offer insight into the degree to which Summer Boost programming played a role in impacting recovery.

General Equation Used

$$\text{Weighted Average of Percent Recovered} = \frac{\sum \left(\frac{\text{Observed Effect Size in City}}{\text{GLE of COVID Learning Loss}} \times \text{Sample Size within City} \right)}{\sum \text{Weighted Average of Percent Recovered}}$$

Grade Level Equivalent (GLE) of COVID Learning Loss, By City[1; 2]

Geography	Math	ELA
Baltimore	0.347	0.103
Birmingham	0.176	0.049
Indianapolis	0.168	0.071
Memphis	0.363	0.182
Nashville	0.244	0.169
San Antonio	0.344	0.126
Washington, D.C.	0.322	0.039

1. NYC was not able to be included due to data abnormalities.
2. Reardon, S. F., Ho, A. D., Shear, B. R., Fahle, E. M., Kalogrides, D., Saliba, J. (2024). Stanford Education Data Archive (Version 5.0). Retrieved from https://purl.stanford.edu/cs829jn7849

APPENDIX D
PRE/POST ASSESSMENT RESULTS

This evaluation and report was primarily focused on a quasi-experimental research design (“Difference in Differences”) that analyzed i-Ready and MAP Growth standardized test data for Summer Boost participants and non-participant peers in their schools *before* and *after* the program to determine the impact of Summer Boost on student growth. **Summer Boost also collected Lavinia Group pre- and post-assessment data** taken by participating students (but not a comparison group).

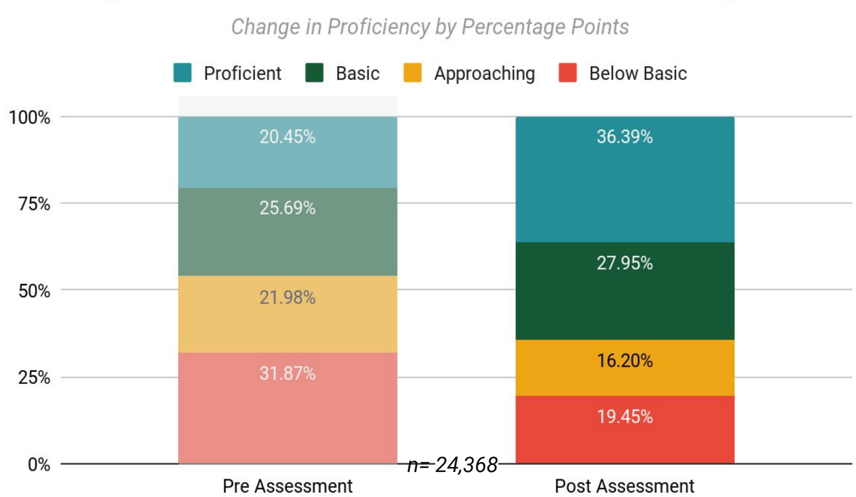
Pre/post data and the quasi-experimental evaluation provide a complementary picture of the growth of Summer Boost students and impact of the program:

Pre/Post Assessments *Lavinia Group*	**Quasi-Experimental Evaluation** *i-Ready and MAP Growth*
Shows **summer gains made by Summer Boost participants on specific Math and ELA standards**, tied to **prioritized** Common Core and state standards.	**Compares gains between Summer Boost participants *and* a comparison group** from the same school to **estimate the program’s causal impact** (e.g. did students learn *more* than they would have otherwise?)

Lavinia Group designed the standards-aligned Math and Literacy pre- and post-assessments for all rising 1st through rising 9th grade students participating in Summer Boost. These assessments were vetted by third-party evaluators. They focused on prioritized summer standards that map to state academic standards, and measured student growth from the beginning to the end of the program.

The pre/post data below show a strong descriptive increase in the number of participating students scoring “proficient,” and a decrease in students scoring “below basic” and “approaching” following participation in Summer Boost.

Average Growth in the Math Assessment Proficiency Levels



Key Takeaways

15.94 percentage point <u>increase</u> in students scoring “Proficient.”

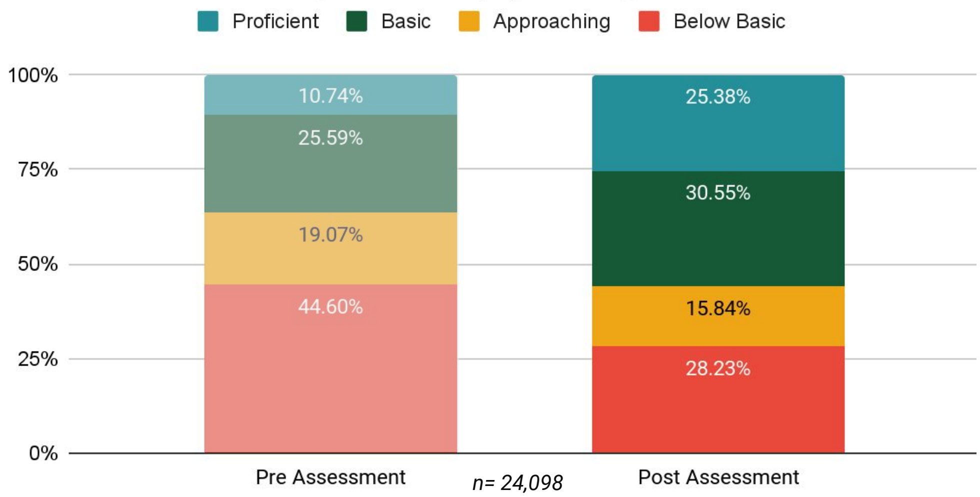
18.20 percentage point <u>decrease</u> in students scoring “Below Basic” and “Approaching.”

APPENDIX D

PRE/POST ASSESSMENT RESULTS

Average Growth in the ELA Assessment Proficiency Levels

Change in Proficiency by Percentage Points



Key Takeaways

14.64 percentage point increase in students scoring “Proficient.”

19.60 percentage point decrease in students scoring “Below Basic” and “Approaching.”