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RESEARCH COUNCIL OF  
ALABAMA

# Analysis of Intercession for Birmingham City Schools

IS THERE A CORRELATION BETWEEN INTERCESSION  
PARTICIPATION AND GAINS ON TEST SCORES?

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## Summary

PARCA was asked by the Birmingham City Schools to assess the impact of participation in Intersession on measures of student achievement.

In this analysis, PARCA is not providing a cost-benefit analysis of the Intersession. Intersession provides Birmingham City Schools (BCS) students with up to 4 weeks of additional in-school time. The cost of opening and staffing schools would have to be weighed against the benefits provided to students, their parents, and the faculty and staff of BCS.

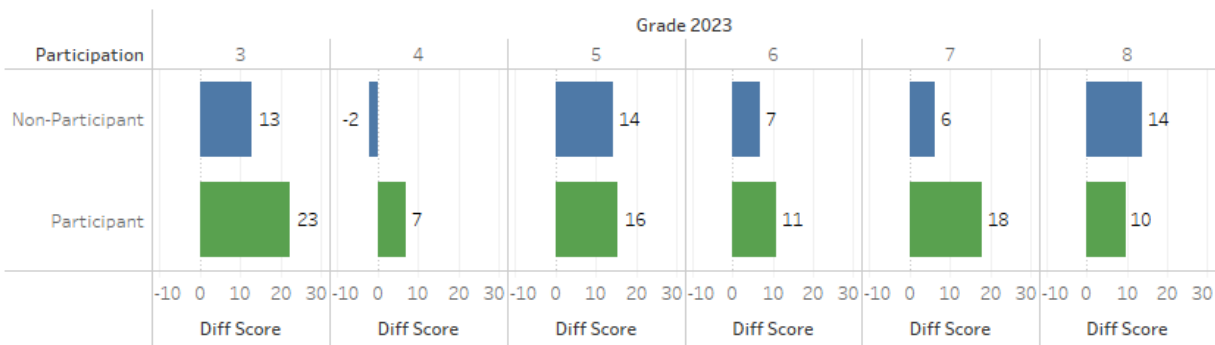
This analysis only attempts to detect whether Intersession attendance is associated with gains on measures of student achievement. Based on two separate analyses, using two different measures of student achievement and in two different time frames, PARCA found a positive correlation between Intersession attendance and student achievement.

Across most grades and metrics, children who attended Intersession showed greater improvement on the Alabama Comprehensive Assessment Program (ACAP) and on assessments produced by the i-Ready assessment tool. On the ACAP, only math scores were evaluated since the English Language Arts test changed between the two years.

It should be noted that students and parents choose whether or not to participate in Intersession. Thus, the comparison groups are not chosen at random. The choice of whether or not to participate may be influenced by the underlying characteristics of the child and that child's interest and attitude toward school. That may, in turn, influence the observed results.

However, at least in the early grades, the students who attended Intersession were not predominantly the highest-scoring students. In fact, the average baseline ACAP score of 3rd—and 4th-grade participating students was lower than for non-participating students. Yet, those students who participated made greater score gains than nonparticipants and ended with higher average scores.

Figure 1. Scale Score Difference Between ACAP 2022 and ACAP 2023, Math. Students participating in Intersession vs. Nonparticipants



Participating students in grades 5-7 had higher beginning scores and made greater gains. In eighth grade, the scores of the nonparticipants increased more than the participants, the one exception to the positive ACAP results. However, the score change in that grade was minimal, and the results were not statistically significant.

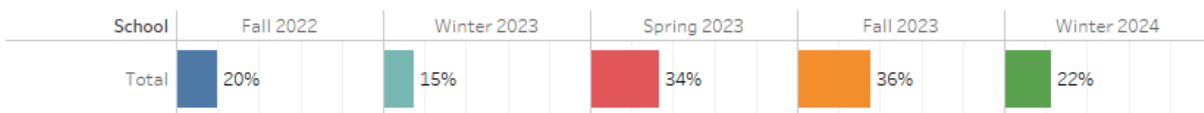
A separate analysis using the iReady assessment tool found that students who participated in the Fall of 2023 intersession made greater gains in both reading and math from baseline scores. Baseline scores were generated at the beginning of the school year and were compared to assessments in the middle of the year iReady scores.

The ACAP analysis also produced evidence that students who attended Intersession more times a student had greater score gains on the ACAP (Four out of six cases). The students who attended all three intersessions offered generally made the greatest gains. Generally, students who attended two intersessions made greater gains than those who attended just one or who did not attend at all.

Again, the results may be related to the fact that the students who were most engaged in school overall were more likely to take advantage of Intersession. Regardless, the results show a correlation between more time in school and greater score gains.

The percentage of students participating in Intersession varied greatly and diminished significantly as the students aged. Do all middle schools and high schools need to be open for Intersession? What are the best practices that encourage attendance?

*Figure 2. Percentage of Students Participating in Intersession, by session*



Overall, Intersession attendance was correlated with larger gains in test scores for students who participated; the question remains: are enough students participating to justify the expense? This analysis does not consider the cost or the other benefits of Intersession to children and families.

## **Analysis of Intersession Attendance and ACAP Score Change 2022-20223**

Birmingham City Schools (BCS) provided PARCA with its records of students registered by schools as having participated in intersessions during the 2022-2023 school year and the 2023-2024 school year. PARCA matched student attendance data with previously supplied ACAP and iReady test scores. To estimate attendance by school, PARCA used Fall 2022 and Fall 2023 enrollment data.

### **Attendance by school**

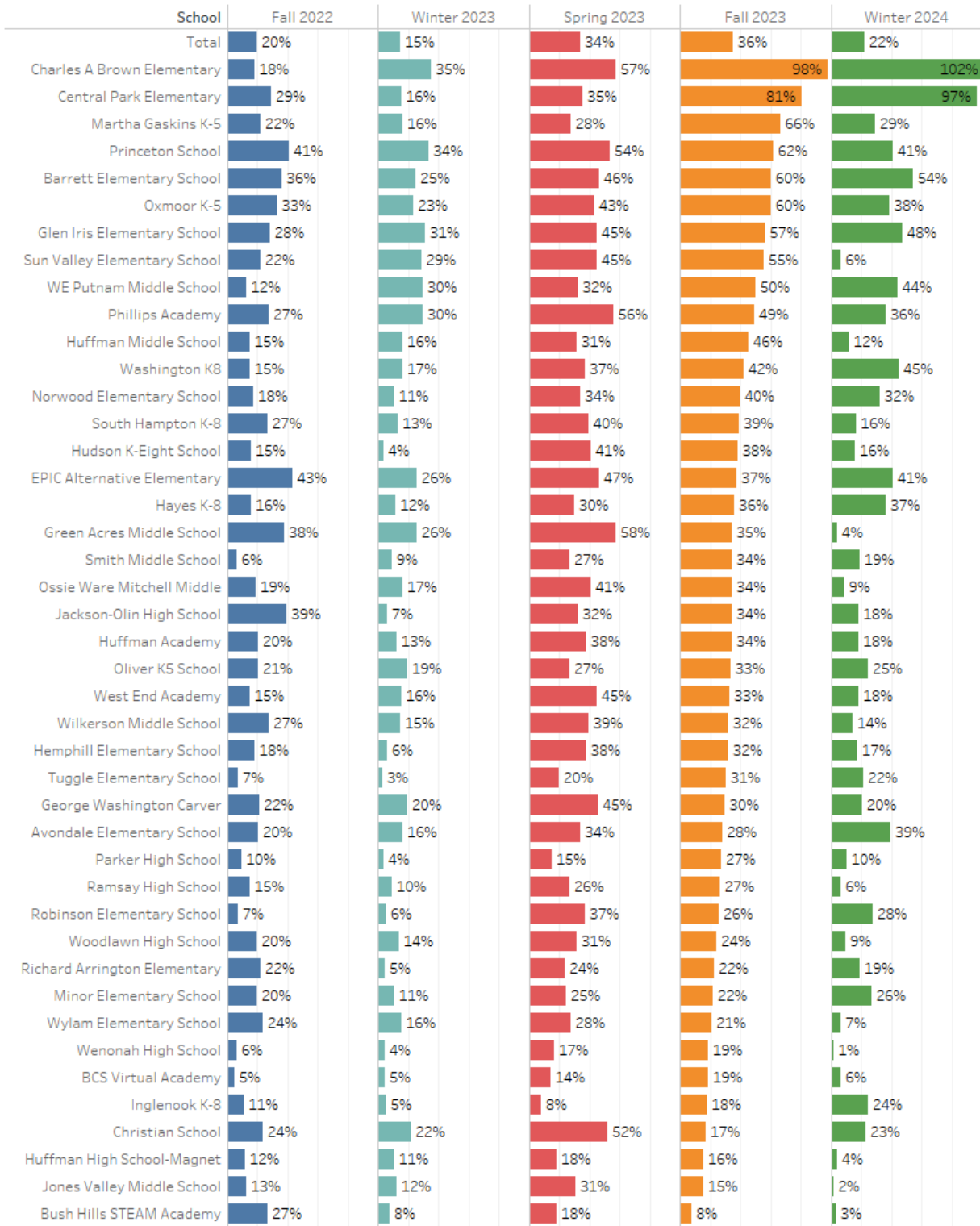
Participation in Intersession varied significantly across the period across schools and across grades. This attendance percentage was generated by comparing the number of Intersession participants to the reported fall enrollment of the school in each of the years.

That comparison sometimes yielded a participation calculation of over 100%. This could occur because attendance was high at intersession, and the fall enrollment report did not capture all the students who were attending the school by the time of the Fall Intersession.

The school system is improving its recording of who attends and how often the students attend. The variance in attendance across schools and across grades indicates that many schools, parents, and students are not taking advantage of the opportunity. It would be useful to understand how and why high attendance occurred at some schools and determine why.

The total system statistics are on the first line of the graph, and the schools follow in rank order by the Fall 2023 intersession attendance. That Fall Intersession was the best attended. The school system should take note of what efforts were made to recruit students in that instance. Schools with high attendance levels should be asked how they were successful in drawing students.

Figure 3. Intersession Calculated Attendance, by term

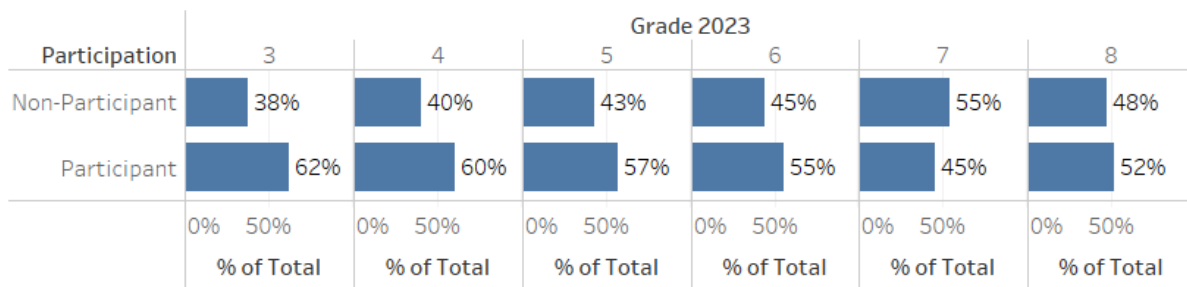


## 2022-2023 Intersession Analysis of Participation

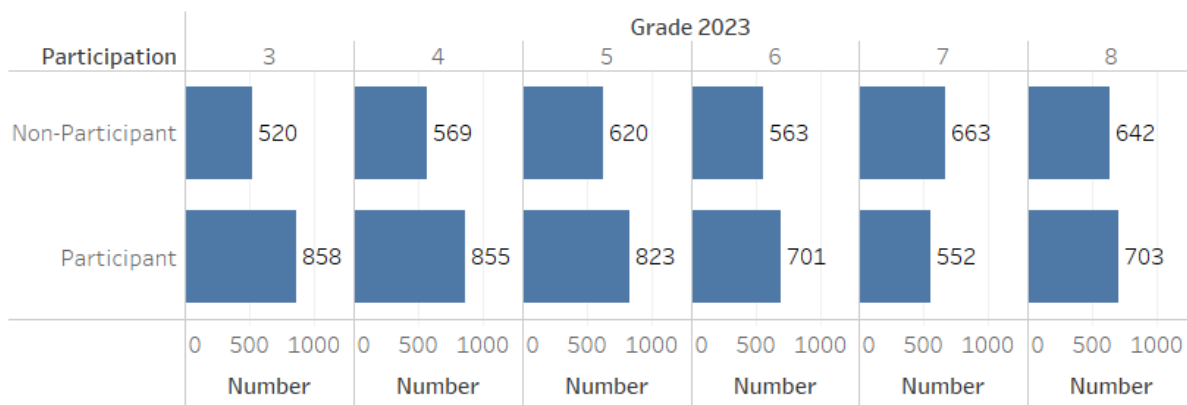
For the 2022-2023 school year, we compared participating students with non-participating students using ACAP Mathematics for the test years 2022 and 2023. The ELA test changed significantly between 2022 and 2023, specifically regarding the Reading section of the assessment. The 2023 ACAP is now aligned to the 2021 Course of Study (as compared to the 2022 assessment, which was aligned to the 2016 Course of Study). Therefore, we chose to focus the analysis on math rather than ELA.

While a third or fewer of students attended each intersession, a greater share attended at least one of the Intersessions offered between the 2022 ACAP and the 2023 ACAP. Intersession attendance varied by grade, with the younger children participating at higher rates.

Figure 4. Percentage and Number of Students Participating in one or more Intersession in the 2022-2023 School Year, by Grade



### Number of Participants



Breaking out the students by the number of times they participated revealed patterns.

The smallest number and percentage of students were those who attended all three intersessions. Not only did the percentage of students attending Intersession drop as

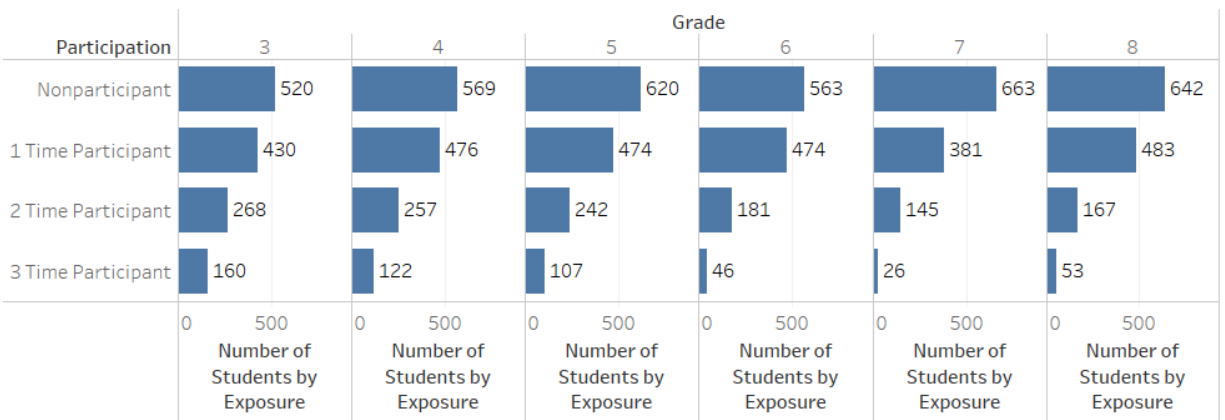
the students got older, but also the percentage of those participating multiple times decreased. These changing patterns may have a bearing on observed results.

Figure 5. Participation by Number of Intersessions Attended, 2022-2023

### % Participation Exposures, by Grade

Participation	Grade					
	3	4	5	6	7	8
Nonparticipant	38%	40%	43%	45%	55%	48%
1 Time Participant	31%	33%	33%	38%	31%	36%
2 Time Participant	19%	18%	17%	14%	12%	12%
3 Time Participant	12%	9%	7%	4%	2%	4%

### # of Students, # of Exposures, by Grade



## Intersession and ACAP Math Score Change Comparison (2022-2023)

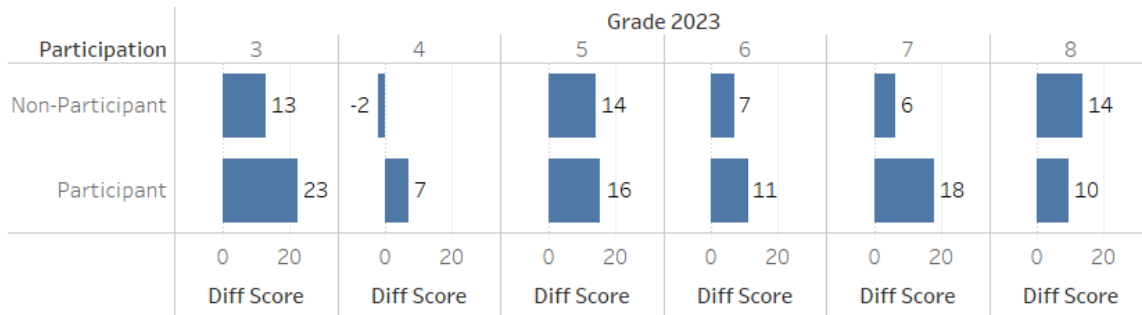
The students who attended Intersession in almost all instances (5 out of 6 cases) showed greater improvement on ACAP Mathematics from 2022 to 2023 than students who did not participate. The correlation between score improvement and participation was strongest in the earliest grades.

In the earliest grades, the average baseline score of those attending Intersession was lower than nonparticipants, but that changed in the 5<sup>th</sup> grade. From 5<sup>th</sup> to 7<sup>th</sup> grade, students with higher baseline scores participated more frequently. Since the gains from participating students were greater, the ending gap in performance between participating and non-participating students widened.



The scores of the 8th-grade students in the 2022-2023 school year defied the pattern. Both participating and non-participating 8<sup>th</sup>-grade students started with a low baseline and made only small gains. It was the only grade at which the nonparticipants outgained participants. However, the score change difference between the participants and nonparticipants was not statistically significant.

Figure 6. Score change on ACAP Map 2022-2023, Intercession Participants vs Nonparticipants.



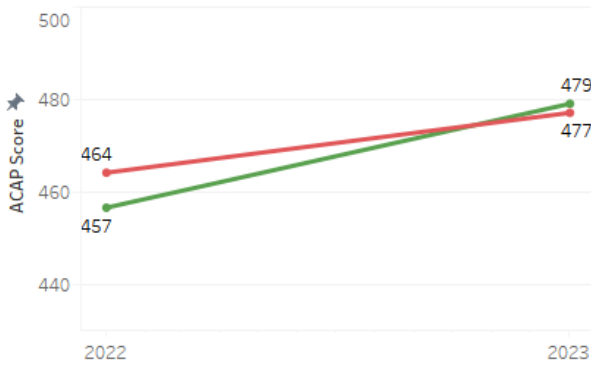
- 3<sup>rd</sup> through 4<sup>th</sup> grades – The math jump for students who participated in Intercession was significantly stronger than the change in math scores for non-participating students.
  - In 3<sup>rd</sup> grade, participating students had average baseline scores on the 2022 Math ACAP, almost seven points lower than the non-participating students.
  - On the 2023 ACAP, the average score for participating students was 2 points higher than the non-participating group.
  - Participating students gained 22 points on the ACAP vs. a 13-point gain for non-participating students.
- In 4<sup>th</sup> grade, participating students jumped 7 points while non-participating students declined 2 points.
  - Participating students started out lower but ended higher, with a 9-point positive swing for participating students.
- In 5<sup>th</sup> grade, the pattern shifts. Participation declines in percentage terms, and the participating students start with higher ACAP scores than the nonparticipants.
  - Participants still make a higher gain on the ACAP, but the margin is smaller.
- In 6<sup>th</sup> grade, the percentage of students who participated in Intercession declined again, though more than half of the students (55%) went to at least one intercession.
  - Participating students had a significantly higher score to start with and ended up posting higher gains than non-participating students, an 11-point gain for participants vs. a 7-point gain for nonparticipants.
- In 7<sup>th</sup> grade, participation is at its lowest, with only 45% attending at least once.
  - Again, participating students outgained nonparticipants, gaining 18 points compared to a 6-point gain for nonparticipants.

- 8<sup>th</sup> grade breaks the pattern. The percentage of students who attended Intersession at least once rises to 52%.
  - However, the non-participating students gained more on the ACAP, 14 points compared to a 10-point gain for participating students. As a group, non-participating students ended the year with higher scores than participating students.
  - In 8<sup>th</sup> grade, both participating and non-participating students started with low baseline scores and made very modest gains. Is there something unique about this cohort of students? Was their fundamental math instruction particularly disrupted during COVID-19?

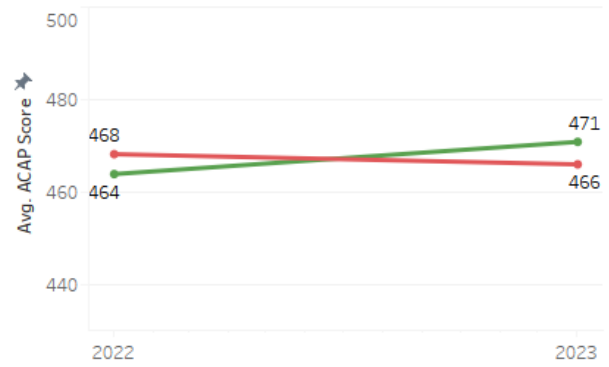
Figure 7. Change in ACAP Math Scale Scores, Intersession Participants vs. NonParticipants, 2022-2023, by grade

Participation  
■ Non-Participant ■ Participant

Grade 2023  
3



Grade 2023  
4



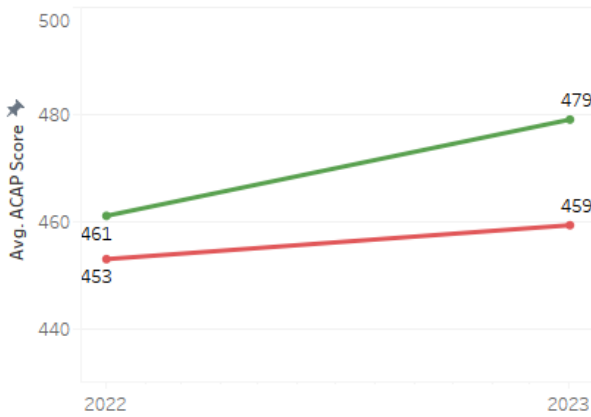
Grade 2023  
5



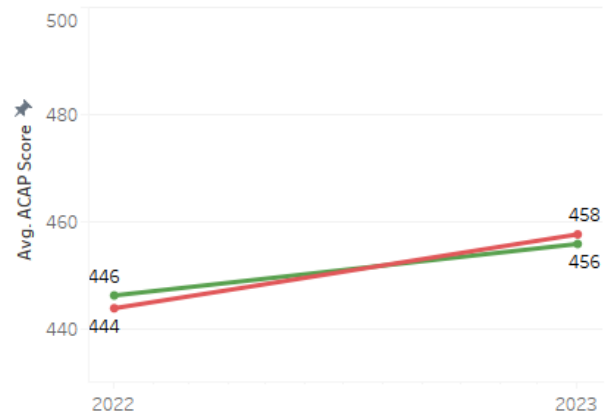
Grade 2023  
6



Grade 2023  
7



Grade 2023  
8



## Participation and impact by number of exposures

A deeper look at attendance by frequency reveals that the percentage of students who participated in all three intersessions offered in the 2022-2023 school year was highest in the early grades and declined steadily as the children age. Its lowest point was in 7th grade when only 2% of students attended Intersession all three times.

In 4 of 6 cases (Grades 3-5 and 7), students with three exposures to Intersession outperformed students with no exposure. In 6<sup>th</sup> grade, the number of students with three exposures was small, and that group started and ended with far higher scores than non-participating students. In 8<sup>th</sup> grade, the non-participating students made greater gains and scored higher, but the difference in performance was small and not statistically significant. The sample size of three exposure students was also small in the 8th grade.

Students who participated in one or two exposures of Intersession outperformed the non-participating students at every grade level except 8<sup>th</sup>.

Figure 8. ACAP Math Score Difference, by number of exposures, by grade

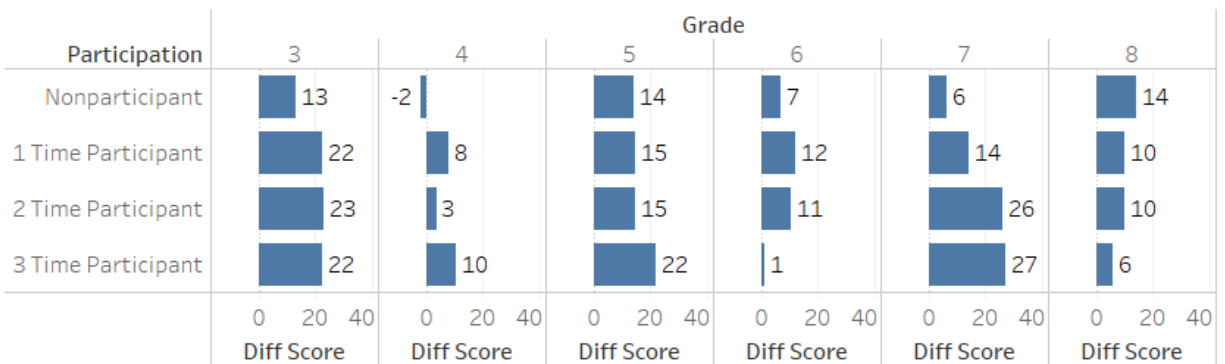


Figure 9. Change in ACAP Math Scale Scores, Intersession Participants vs. NonParticipants, 2022-20223, by grade and number of intersession exposures.



# Analysis of Intersession Participation and iReady Results in the 2023-2024 School Year

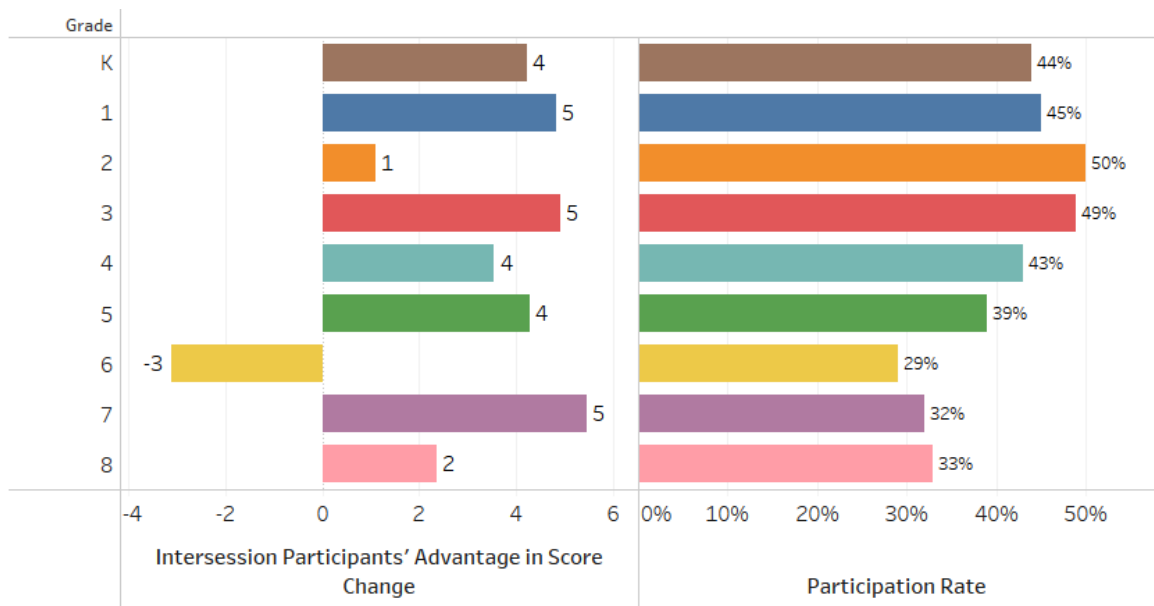
For the 2023-2024 school year, we compared students who attended the Fall intersession with those who didn't, examining their baseline (pre-intersession) and mid-year iReady scores (post-intersession) to see if there were differences.

With iReady, we have access to both reading and math scores. In both subjects, students who participated in Intersession in the Fall of 2023 made larger score gains than nonparticipants in almost all cases.

This analysis provides a different lens in that it focuses on a shorter span of time and with fewer confounding variables. Having both subject matter tests increases the opportunities for detecting impact. The same confounding variables exist: the students and parents choosing to attend Intersession may be students who are more engaged with school already and thus more likely to attend. Regardless, the analysis produces positive results for Fall Intersession 2023: Participation was correlated with greater score gains at most grade levels and in both subjects.

## English Language Arts (ELA)

Figure 10. Fall 2023 Intersession Participants' Score Gain Advantage on iReady, baseline to the middle of the year, ELA

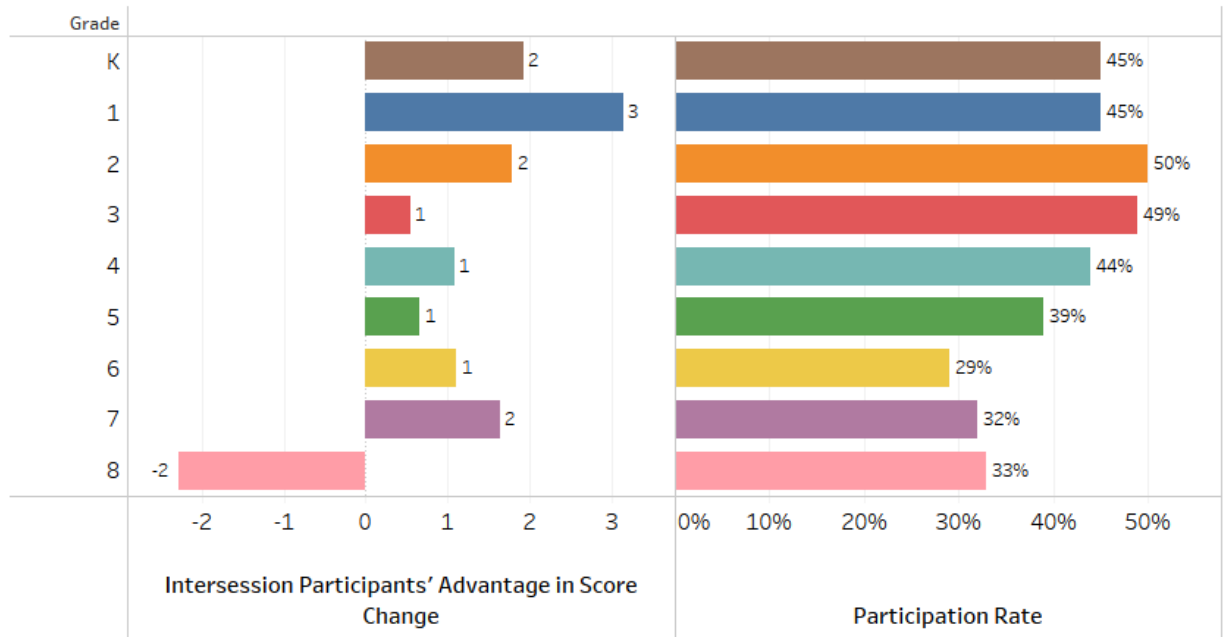


Comparing two groups of students, those who attended Fall Intersession and those who didn't, The performance measure used to compare the two groups were the assessments built into the iReady product.

- Statistically, there were differences between the two groups at six grades (Kindergarten, 1st, 3rd, 4th, 5th, and 7th), with the participating students posting greater gains than non-participation students.
- At no point was there a statistical difference in favor of nonparticipants
- Generally, students in lower grades showed the greatest gain from baseline to midpoint compared to students in higher grades.
- Of those that had iReady ELA scores ... participation generally decreased as grade levels increased. For example, the percentage of 2nd graders who participated in Intersession (of those who had taken iReady) was close to 50%. Compare that to 6th grade, where the percentage falls to 28.8%.
- Unlike the ACAP analysis, the baseline score of participants and nonparticipants wasn't consistently different.

## Math

Figure 11. Fall 2023 Intersession Participants' Score Gain Advantage on IReady, baseline to middle of the year, Math



Comparing the iReady math scores of students who attended Fall 2023 intersession and those who didn't also showed Intersession participants posting higher gains in five of the six cases, though the advantage gained was not as great.

- Statistically, there were differences between the two groups at three grades (Kindergarten, 1st, and 2nd). There were no statistical differences (for either group) above 2nd grade in Math.
- At no point was there a statistical difference in favor of nonparticipants.
- Generally, students in lower grades showed the greatest gain from baseline to midpoint compared to students in higher grades.
- Of those who had iReady Math scores, participation generally decreased as grade levels increased. For example, the percentage of 2nd graders who participated in Intersession (of those who had taken iReady) was above 50%. By 6th grade, the percentage falls to 28.9%.