

ADDENDUM



Student Attendance and Star Assessment Performance: 2022-23 School Year

An Addendum to the “End of Year Analysis of Participation and Performance on the Star Assessments at the School District of Philadelphia: 2022-23” Report

Key Findings

- A higher percentage of students who attended more days throughout the year scored at/above benchmark in both reading and math in spring Star assessments.
- A higher percentage of students who attended fewer days throughout the year scored in the intensive intervention level in both reading and math in spring Star assessments.
- There was an overall positive association between attendance and performance in reading and math assessments.
- While the positive association between attendance and performance in reading and math assessments held true for all racial/ethnic student groups, the difference in performance between high and low attendance groups was not the same for all racial/ethnic groups: the differences in the percentage of students scoring at/above benchmark in high and low attendance groups were more pronounced for Asian and White students than for Black/African American and Hispanic/Latino students.

Ebru Erdem, Ph.D.

*Director, Research, Policy, and
Practice*

Office of Research and
Evaluation

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Attendance is related to student achievement

Research has consistently found that high attendance is associated with positive educational outcomes such as reading at grade level and college and career readiness, and that absenteeism is associated with lower academic achievement in reading and math and higher dropout rates.¹ Research on data from students in Philadelphia is consistent with national findings. For example, there are strong associations between kindergarten attendance and reading at grade level as well as between 9th grade attendance and on-time graduation rates.²

In this addendum to the end-of-year report on participation, performance, and growth on Star assessments in the 2022-23 school year,³ we extend our previous analyses examining the relationship between attendance and future student outcomes to focus on the relationship between attendance and student performance on the District’s universal academic screeners, the Star Early Literacy/Star Reading and Star Math computer-adaptive tests (CAT).⁴

What we examined

For this addendum to the 2022-23 end-of-year Star participation and performance report, we examined the following research questions that focused on the relationship between attendance and Star assessment performance:

1. Did a higher percentage of students who attended more days of school in the 2022-23 school year score in at/above benchmark in the spring Star assessments?
2. Did a higher percentage of students who attended fewer days of school in the 2022-23 school year score in intensive intervention in the spring Star assessments?
3. Did the patterns between attendance and spring Star performance levels vary by grade and by race/ethnicity?

¹ For example, Every School Day Counts: The Forum Guide to Collecting and Using Attendance Data by National Center for Education Statistics, available at: <https://nces.ed.gov/pubs2009/attendancedata/index.asp> and Gottfried, M.A. (2014) “Chronic Absenteeism and Its Effects on Students’ Academic and Socioemotional Outcomes,” *Journal of Education for Students Placed at Risk*, 19:2, 53–75, available at: <https://www.tandfonline.com/doi/abs/10.1080/10824669.2014.962696>

² Why Kindergarten Attendance Matters, available at: <https://www.philasd.org/research/2017/10/16/kindergarten-attendance-and-reading-on-grade-level/> How Much Does 9th Grade Attendance Matter?, available at: <https://www.philasd.org/research/2017/09/24/9th-grade-attendance-and-graduation/>

³ End of Year Analysis of Participation and Performance on the Star Assessments at the School District of Philadelphia: 2022-23, available at: <https://www.philasd.org/research/2023/12/01/end-of-year-analysis-of-participation-and-performance-on-the-star-assessments-at-the-school-district-of-philadelphia-2022-23/>

⁴ Different assessments within the Star suite of assessments and the Star metrics used for analyses of outcomes are described in detail in the main report (footnote 3 above) and in the “Star Tests in the School District of Philadelphia: A Summary of Metrics that Describe Achievement and Growth” reference document, available at: <https://www.philasd.org/research/2022/06/09/star-tests-in-the-school-district-of-philadelphia-a-summary-of-metrics-that-describe-achievement-and-growth/>

Data collection and analysis

We analyzed end-of-year attendance and Star data from the Climate Matters and Academic Screeners QlikBAM applications respectively. We examined whether the percentage of students who scored in the at/above benchmark and intensive intervention performance levels⁵ in the spring 2022-23 administration of Star reading assessments and Star Math varied for students who attended 95% of days or more, 90 to 95%, 85 to 90%, 80 to 85%, and fewer than 80% of days.⁶ School District of Philadelphia (SDP) students take Star Early Literacy CAT in grades K-2 and transition to Star Reading when they achieve a scaled score of 852, typically in second grade. Combined performance in Star Early Literacy (SEL) and Star Reading are reported here for Star reading assessments. Star Math is required for grades 3-12, and there is not a separate, required math CAT for grades K-2; hence Star Math performance is only reported for grades 3-12 in this addendum.⁷

What we found

We found a very consistent association between attendance levels and performance on Star reading and math assessments overall and for all grade levels separately in the 2022-23 school year. For both reading and math, a higher percentage of students in the highest attendance group (attended 95% of days or more) scored at/above benchmark compared to the lowest attendance group (attended fewer than 80% of days), and a higher percentage of students in the lowest attendance group scored in the intensive intervention level compared to the highest attendance group. These associations hold true for all attendance levels as well: as attendance rate increased, the percentage of student scoring at/above benchmark also tended to increase, and as attendance rate decreased, the percentage of students scoring in intensive intervention also tended to increase.

We should emphasize that our analyses in this addendum are relationships or associations, and not causal connections.⁸ The causal relationship between attendance and assessment performance is more complex: it is likely attendance and assessment performance are mutually causal in addition to having spurious causal factors that contribute to both. Although we are not establishing causality in this addendum, it is still important to analyze the patterns of associations between attendance and performance.

⁵ See Table 3 in the main report (footnote 3 above) for a description of Star assessment performance levels.

⁶ For the metrics used to track attendance at the School District of Philadelphia, see the brief “Student Attendance Patterns in Philadelphia, 2017-18 to 2021-22, available at: <https://www.philasd.org/research/2023/06/09/student-attendance-patterns-in-philadelphia-2017-18-to-2021-22/>

⁷ See our end-of-year report (footnote 3) for business rules used for the Star outcomes reported here; same business rules were applied in this addendum.

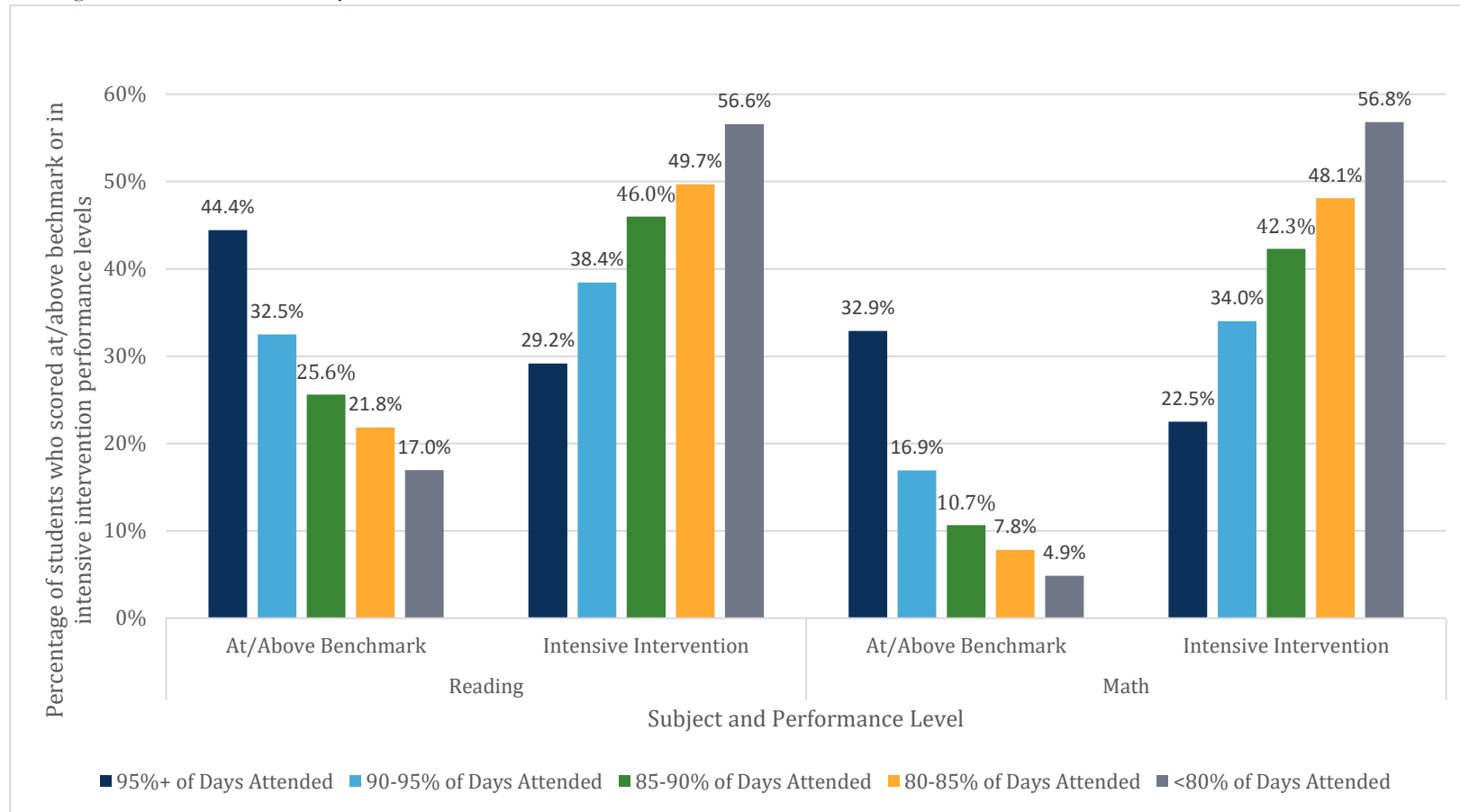
⁸ See this infographic for more information about correlational studies: https://ies.ed.gov/ncee/edlabs/infographics/pdf/REL_SE_Correlational_Studies.pdf

For Star reading assessments, 44.4% of students who attended 95% of days or more throughout the 2022-23 school year scored at/above benchmark in the spring (Figure 1). There was a 27.4 percentage-point difference between the highest and lowest attendance groups, with only 17% of students who attended fewer than 80% of the days scoring at/above benchmark. For Star Math, the difference between the highest and lowest attendance groups was just as striking at 28 percentage points: of students who attended 95% of days or more, 32.9% were at/above benchmark, whereas only 4.9% of students who attended fewer than 80% of days scored at this level.

The pattern between attendance and performance was reversed for the intensive intervention performance level for both Star reading and math assessments (Figure 1). For Star reading assessments, 56.6% of students who attended fewer than 80% of days in 2022-23 scored in intensive intervention, while 29.2% of students who attended 95% of days or more scored at this level, a 27.4 percentage-point difference. For Star Math, a similar percentage of students in the lowest attendance group, 56.8%, scored in intensive intervention and only 22.5% of students in the highest attendance group scored at this level, a 34.3 percentage-point difference.

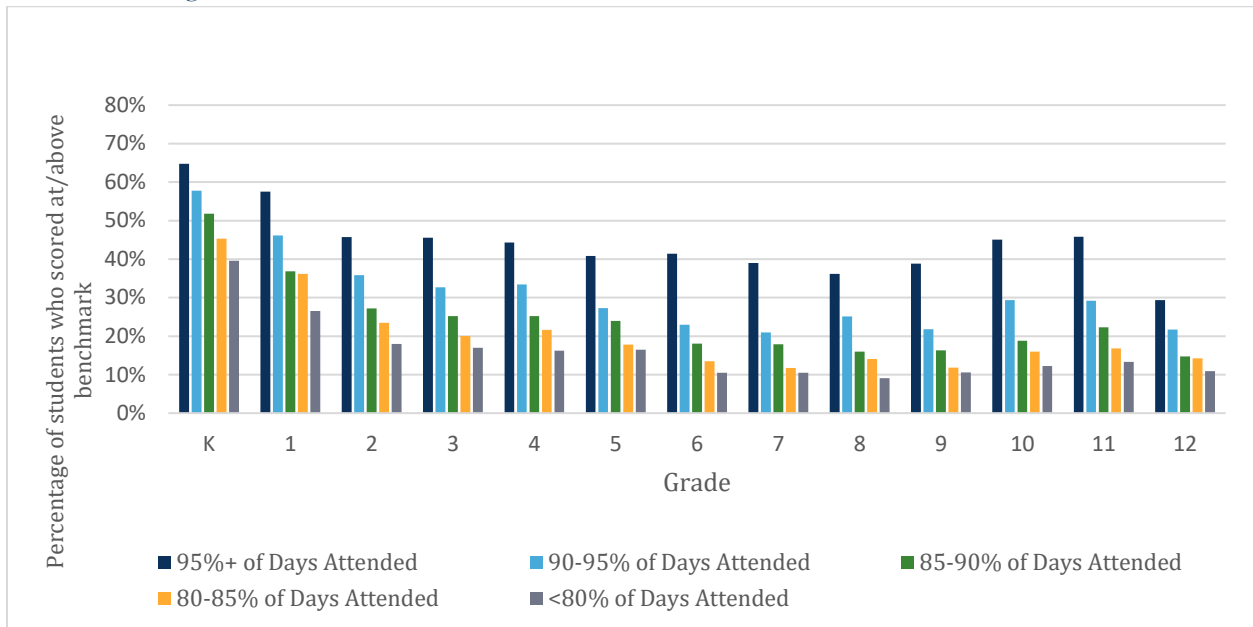
The patterns repeat at the grade level for both subjects. It is notable that for Star reading, the drop in the percentage of students scoring at/above benchmark between students who attended 95% of days or more and 90-95% of days is larger for grades 3-7 than for K-2 (Figure 2). For Star Math, attending 95% of days or more also made a difference in the percentage of students scoring in at/above benchmark for all grade levels, even when compared to the next highest attendance level (attending 90-95% of the days) (Figure 3). Near-perfect attendance showed to be different than good attendance in terms of assessment outcomes.

Figure 1. Overall percentage of students scoring in the at/above benchmark and intensive intervention performance levels in spring 2022-23 Star reading and math assessments by attendance



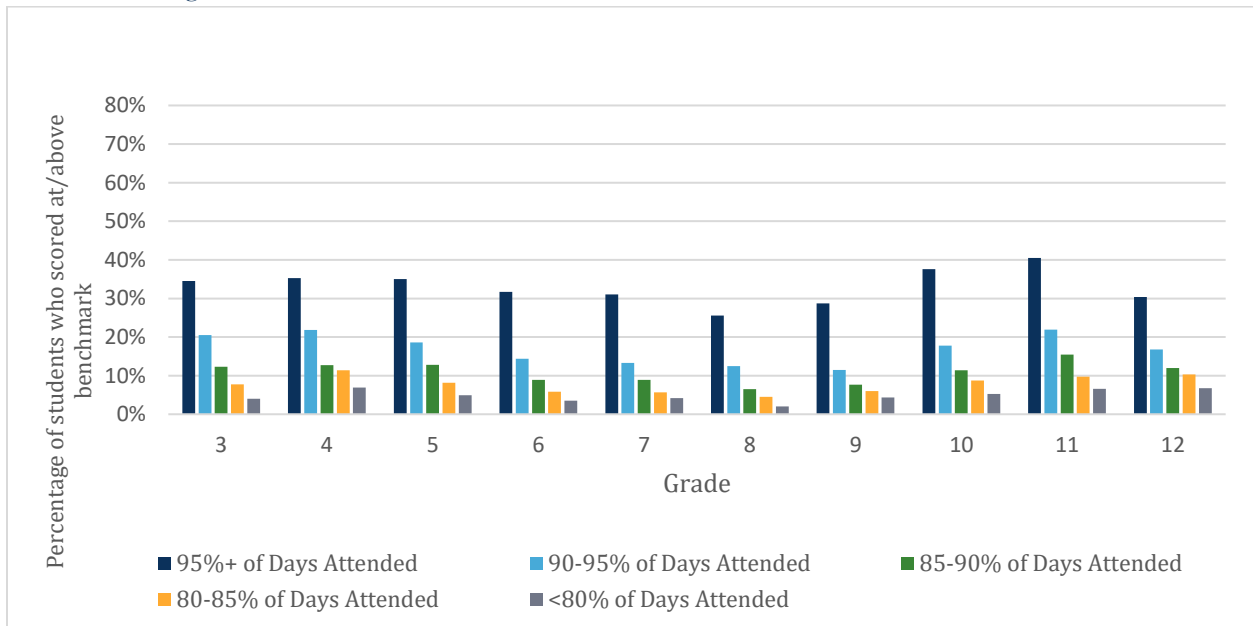
Note: Star Math CAT is not required for grades K-2; only grades 3-12 CAT outcomes are reported here.

Figure 2. Percentage of students scoring at/above benchmark in spring 2022-23 Star reading assessments by attendance and grade



Note: See Appendix A, Table A.1 for values.

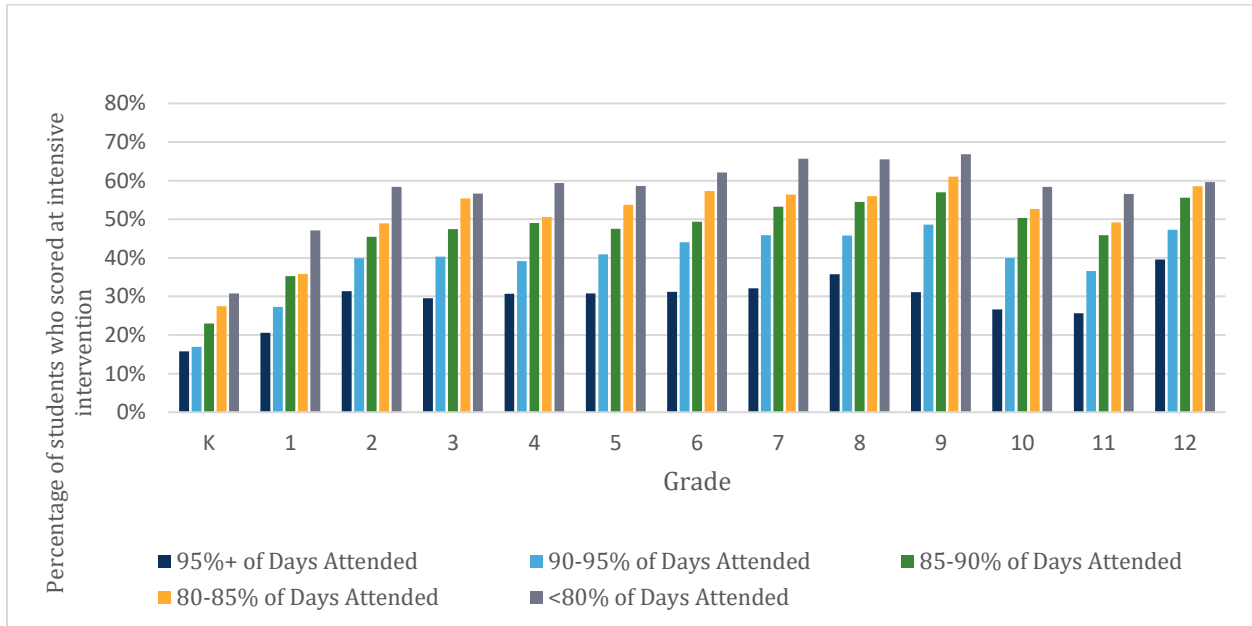
Figure 3. Percentage of students scoring at/above benchmark in spring 2022-23 Star math assessments by attendance and grade



Note: Star Math CAT is not required for grades K-2; only grades 3-12 CAT outcomes are reported here. See Appendix A, Table A.2 for values.

For all grades K-12, the percentage of students who scored in the intensive intervention performance level in Star reading was lowest among students who attended 95% of days or more and highest for students who attended fewer than 80% of days, although the difference was relatively small for students in 12th grade (Figure 4). It is also noteworthy that the percentage of students scoring in intensive intervention consistently decreased as attendance levels increased.

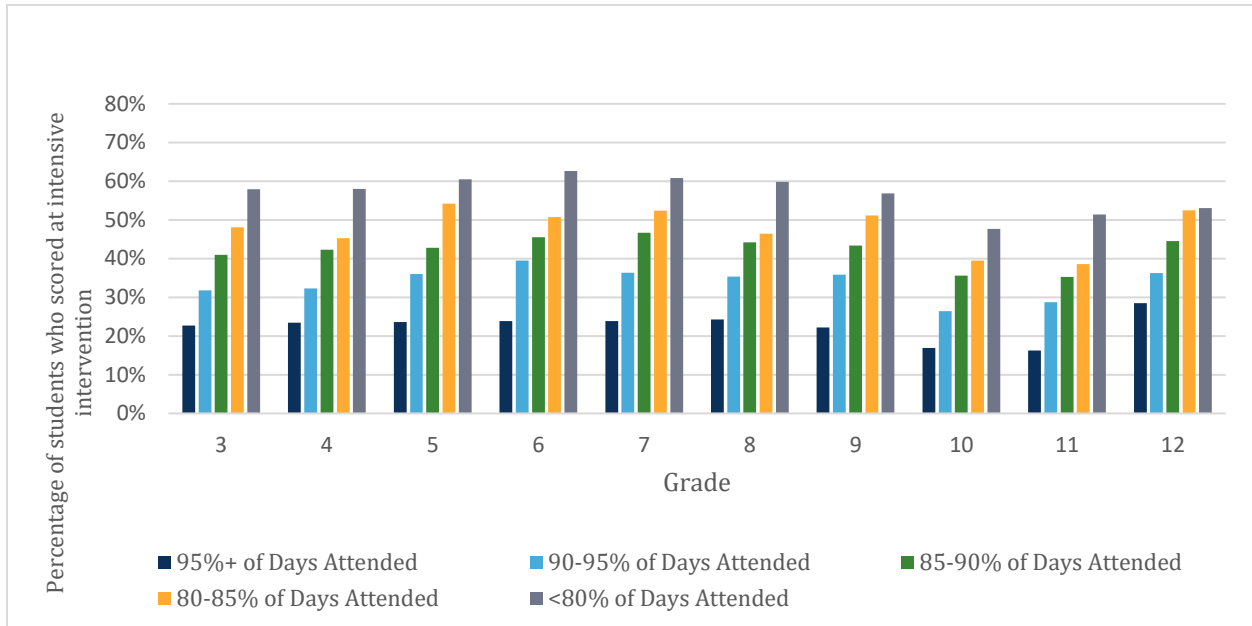
Figure 4. Percentage of students scoring in the intensive intervention performance level in spring 2022-23 Star reading assessments by attendance and grade



Note: See Appendix A, Table A.1 for values.

The patterns for students in grades 3-12 who scored in intensive intervention in Star Math were similar: a smaller percentage of students in the highest attendance group scored in intensive intervention compared to all other attendance groups (Figure 5). The difference in the percentage of students who scored in the intensive intervention performance level in Star Math between highest and lowest attendance groups was larger than 30 percentage points for all grades except 12th grade, where the difference was 25 percentage points.

Figure 5. Percentage of students scoring in the intensive intervention performance level in spring 2022-23 Star math assessments by attendance and grade



Note: Star Math CAT is not required for grades K-2; only grades 3-12 CAT outcomes are reported here. See Appendix A, Table A.2 for values.

We next analyzed the association between attendance and performance in Star reading and math assessments by student race/ethnicity. While the overall positive relationship held, with a higher percentage of students in higher attendance groups scoring at/above benchmark for all racial/ethnic groups, the differences in percentages varied. For example, 64% of White students and 60% of Asian students who attended 95% of days or more scored at/above benchmark in Star reading, but 34% of Black/African American students and 31% of Hispanic/Latino students who attended 95% of days or more scored at this performance level (Figure 6). The difference in the percentage of students who scored at/above benchmark in Star reading between highest and lowest attendance groups was more than 30 percentage points for White, Asian, and Multi Racial/Other students, but this difference was 20 percentage points for Black/African American students and 13 percentage points for Hispanic/Latino students.

The percentage of students who scored at/above benchmark on Star Math was highest among students who attended 95% of days or more for all racial/ethnic groups, but while 60% of Asian students and 51% of White students scored at/above benchmark at this attendance level, only 18% of both Black/African American and Hispanic/Latino students scored at/above benchmark when attending 95% of days or more (Figure 7). The difference between highest and lowest attendance groups was greater than 40 percentage points for Asian and White students but about 15 percentage points for Black/African American and Hispanic/Latino students.

Figure 6. Percentage of students scoring at/above benchmark in spring 2022-23 Star reading assessments by attendance and race/ethnicity

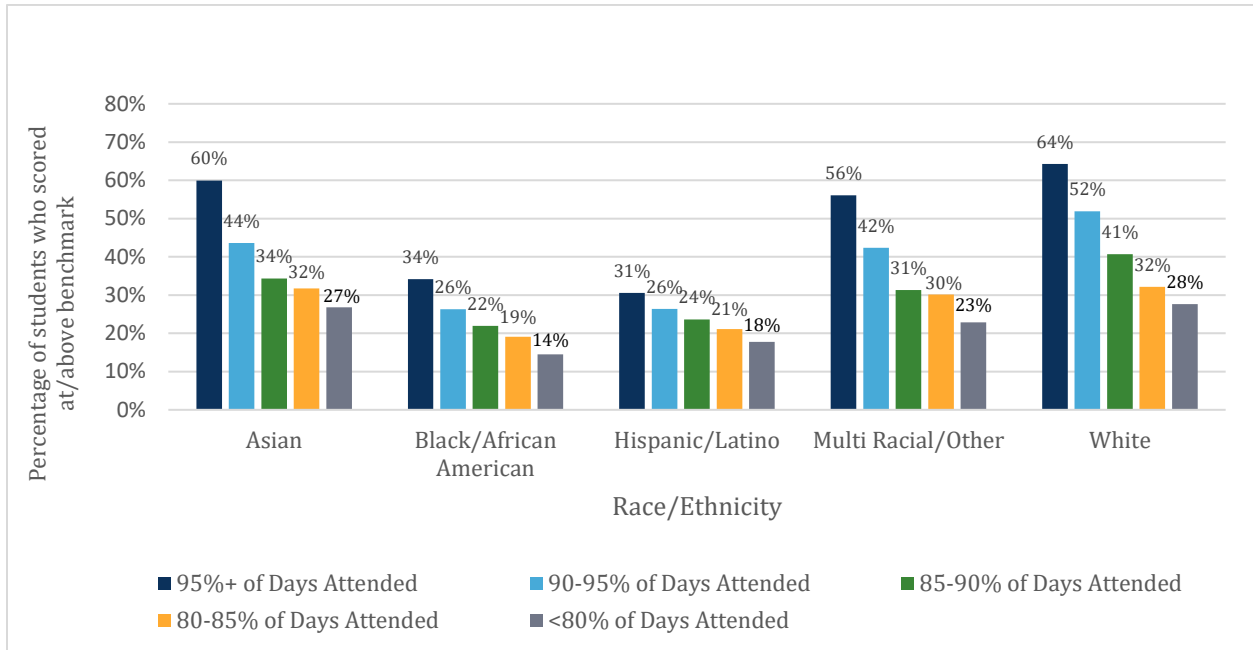
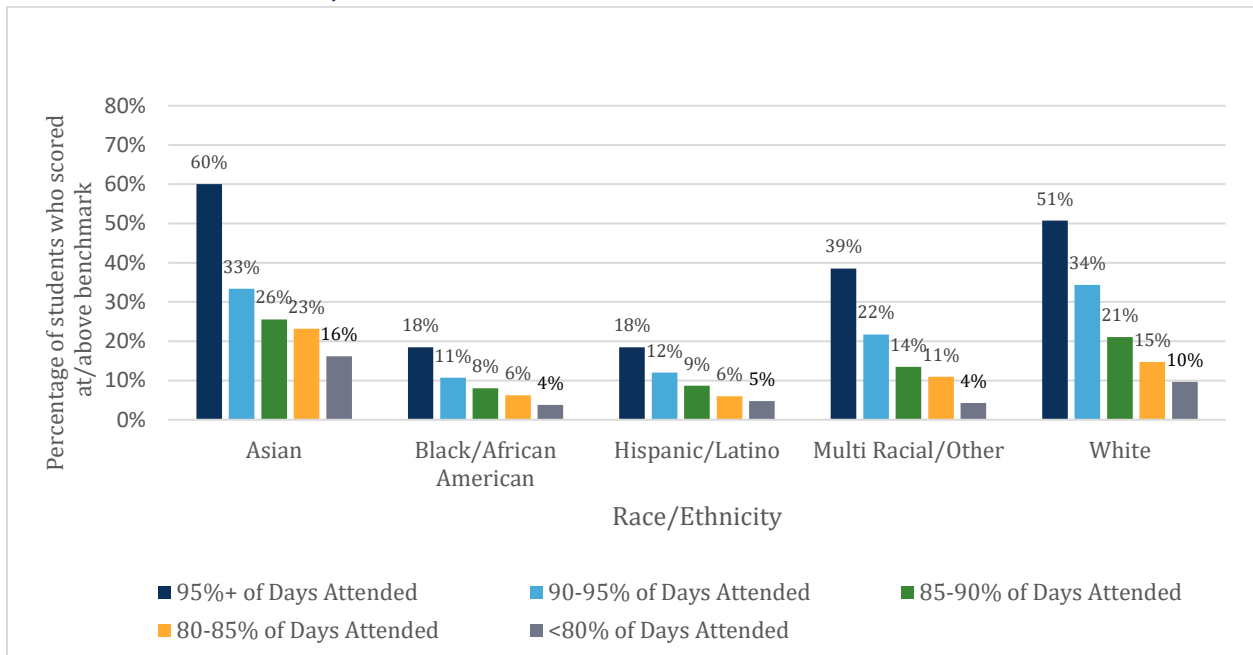


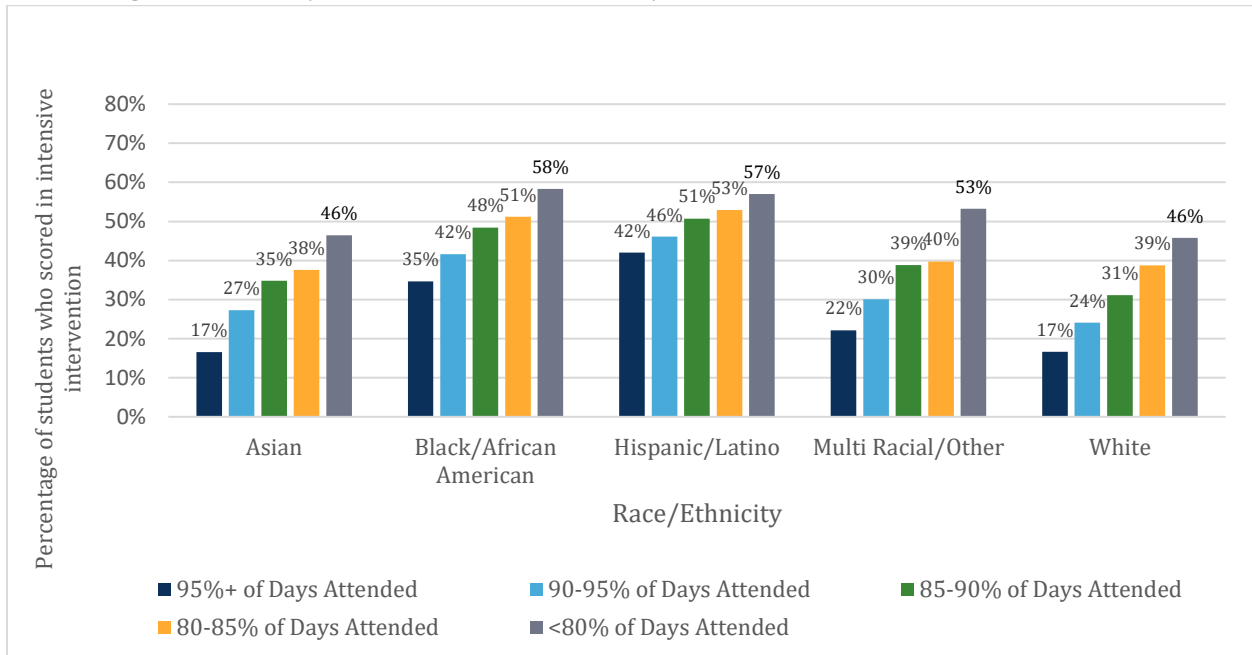
Figure 7. Percentage of students scoring at/above benchmark in spring 2022-23 Star math assessments by attendance and race/ethnicity



Note: Star Math CAT is not required for grades K-2; only grades 3-12 CAT outcomes are reported here.

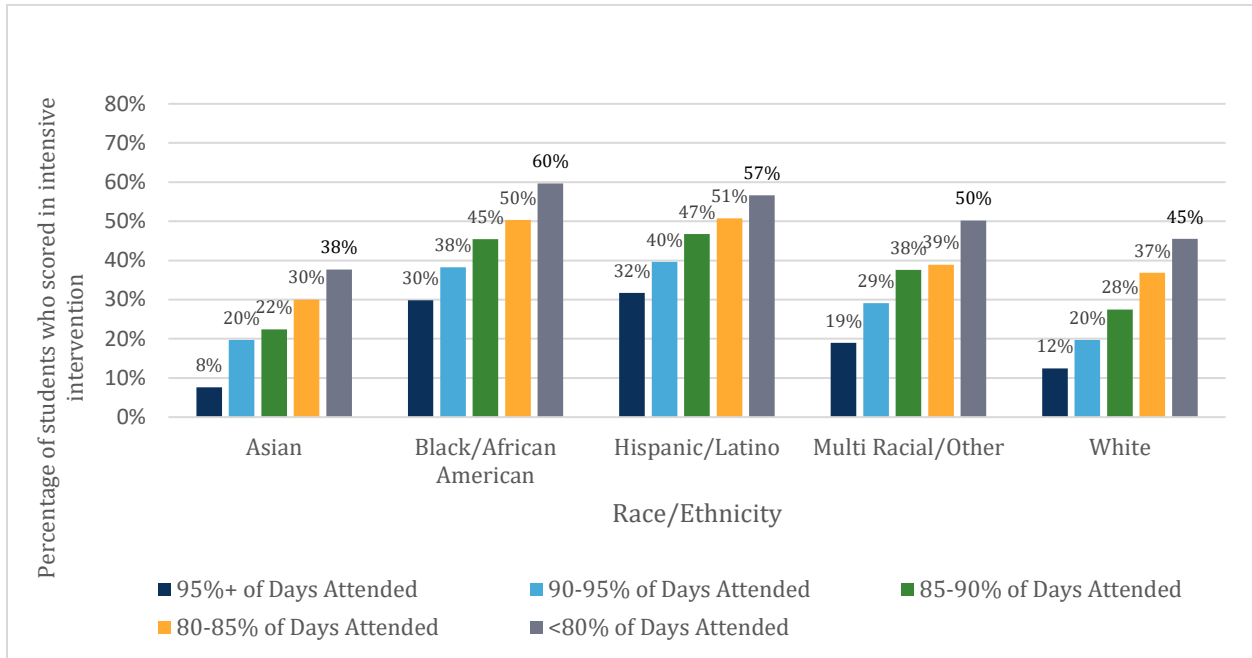
A higher percentage of students with lower attendance levels scored in the intensive intervention level in both Star reading and math assessments across all student racial/ethnic groups; however, the relationship varied between racial/ethnic groups. For example, 17% of both Asian and White students who attended school 95% of days or more scored in intensive intervention level in Star reading assessments, but 35% of Black/African American students and 42% of Hispanic/Latino students scored in intensive intervention despite the same level of attendance (Figure 8). The difference in the percentage of students who scored intensive intervention in Star reading assessments between the highest and the lowest attendance group was about 30 percentage points for all racial/ethnic groups except for Black/African American students (24 percentage points) and Hispanic/Latino students (15 percentage points).

Figure 8. Percentage of students scoring in the intensive intervention performance level in spring 2022-23 Star reading assessments by attendance and race/ethnicity



For Asian and White students, the percentage of students who scored in the intensive intervention level in Star Math was low among those who attended 95% of days or more (8% and 12% respectively, Figure 9). The intensive intervention rate was higher for Black/African American and Hispanic/Latino students who attended 95% of days or more (30% and 32% respectively). The difference in the percentage of students who scored in the intensive intervention level in Star Math among highest and lowest attendance groups was around 30 percentage points for all racial/ethnic groups, except for Hispanic/Latino students, for whom the difference was 25 percentage points.

Figure 9. Percentage of students scoring in the intensive intervention performance level in spring 2022-23 Star math assessments by attendance and race/ethnicity



Note: Star Math CAT is not required for grades K-2; only grades 3-12 CAT outcomes are reported here.

Conclusions

There is a clear relationship between students’ attendance and performance levels on spring 2022-23 Star reading and math assessments for all grade levels and all student racial/ethnic groups.

Across grade levels, there were varying differences in the percentage of students who performed at/above benchmark in Star reading assessments among those who attended 95% days or more vs. fewer than 80% of days. For students in 12th grade, the percentage scoring at/above benchmark differed by only 19 percentage points between the highest and lowest attendance groups, while this difference ranged from 24–33 percentage points for other grades.

Across student racial/ethnic groups, again there were varying differences in the percentage of students who performed at/above benchmark in Star reading assessments among those who attended 95% or more days vs. fewer than 80% of days. The differences in the percentage of students scoring at/above benchmark in the highest and lowest attendance groups were more pronounced for Asian, White, and Multi Racial/Other students (33–36 percentage points) than for Black/African American and Hispanic/Latino students (20 and 13 percentage points, respectively). Overall proficiency levels also varied by student race/ethnicity. For example, among students who attended 95% or more days, more than 60% of Asian and White students scored at/above benchmark in Star reading assessments compared to about 30% of Black/African American and Hispanic/Latino students. Star Math results followed similar patterns.

Appendix A:

Table A1. Percentage of students scoring in the at/above benchmark and intensive intervention performance levels in spring 2022-23 Star reading assessments by attendance and grade

| Percentage of students who scored at/above benchmark | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Attendance | Grade | | | | | | | | | | | | |
| | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 95%+ of Days Attended | 64.8% | 57.5% | 45.7% | 45.5% | 44.3% | 40.8% | 41.4% | 39.0% | 36.2% | 38.8% | 45.0% | 45.8% | 29.4% |
| 90-95% of Days Attended | 57.8% | 46.2% | 35.8% | 32.7% | 33.4% | 27.3% | 22.9% | 20.9% | 25.1% | 21.8% | 29.3% | 29.2% | 21.7% |
| 85-90% of Days Attended | 51.8% | 36.9% | 27.2% | 25.2% | 25.2% | 23.9% | 18.0% | 17.9% | 16.0% | 16.3% | 18.8% | 22.3% | 14.8% |
| 80-85% of Days Attended | 45.3% | 36.1% | 23.4% | 20.1% | 21.7% | 17.8% | 13.5% | 11.7% | 14.1% | 11.9% | 16.0% | 16.8% | 14.2% |
| <80% of Days Attended | 39.6% | 26.6% | 17.9% | 17.0% | 16.2% | 16.5% | 10.5% | 10.5% | 9.1% | 10.5% | 12.2% | 13.3% | 10.9% |
| Percentage of students who scored in intensive intervention | | | | | | | | | | | | | |
| Attendance | Grade | | | | | | | | | | | | |
| | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 95%+ of Days Attended | 15.8% | 20.6% | 31.4% | 29.6% | 30.7% | 30.8% | 31.2% | 32.1% | 35.8% | 31.1% | 26.6% | 25.7% | 39.6% |
| 90-95% of Days Attended | 17.0% | 27.3% | 39.9% | 40.3% | 39.1% | 40.9% | 44.0% | 45.9% | 45.8% | 48.6% | 40.0% | 36.6% | 47.3% |
| 85-90% of Days Attended | 23.0% | 35.2% | 45.5% | 47.4% | 49.0% | 47.5% | 49.3% | 53.2% | 54.5% | 57.0% | 50.3% | 45.9% | 55.6% |
| 80-85% of Days Attended | 27.5% | 35.9% | 48.9% | 55.4% | 50.6% | 53.8% | 57.3% | 56.4% | 56.0% | 61.1% | 52.7% | 49.2% | 58.5% |
| <80% of Days Attended | 30.8% | 47.1% | 58.4% | 56.6% | 59.4% | 58.6% | 62.1% | 65.7% | 65.5% | 66.9% | 58.4% | 56.5% | 59.6% |

Table A2. Percentage of students scoring in the at/above benchmark and intensive intervention performance levels in spring 2022-23 Star math assessments by attendance and grade

| Percentage of students who scored at/above benchmark | | | | | | | | | | |
|--|--------------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| Attendance | Grade | | | | | | | | | |
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 95%+ of Days Attended | 34.5% | 35.3% | 35.0% | 31.7% | 31.0% | 25.6% | 28.7% | 37.6% | 40.5% | 30.3% |
| 90-95% of Days Attended | 20.5% | 21.8% | 18.6% | 14.4% | 13.3% | 12.5% | 11.5% | 17.8% | 21.9% | 16.8% |
| 85-90% of Days Attended | 12.3% | 12.8% | 12.8% | 8.9% | 8.9% | 6.5% | 7.6% | 11.4% | 15.5% | 12.0% |
| 80-85% of Days Attended | 7.8% | 11.4% | 8.2% | 5.8% | 5.7% | 4.6% | 6.0% | 8.8% | 9.7% | 10.3% |
| <80% of Days Attended | 4.0% | 7.0% | 4.9% | 3.5% | 4.2% | 2.0% | 4.3% | 5.3% | 6.6% | 6.7% |
| Percentage of students who scored in intensive intervention | | | | | | | | | | |
| Attendance | Grade | | | | | | | | | |
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 95%+ of Days Attended | 22.7% | 23.5% | 23.6% | 23.9% | 23.9% | 24.3% | 22.2% | 16.9% | 16.3% | 28.5% |
| 90-95% of Days Attended | 31.8% | 32.3% | 36.0% | 39.4% | 36.4% | 35.3% | 35.9% | 26.4% | 28.7% | 36.3% |
| 85-90% of Days Attended | 40.9% | 42.3% | 42.8% | 45.5% | 46.7% | 44.2% | 43.4% | 35.6% | 35.3% | 44.6% |
| 80-85% of Days Attended | 48.1% | 45.3% | 54.2% | 50.8% | 52.3% | 46.4% | 51.2% | 39.5% | 38.5% | 52.5% |
| <80% of Days Attended | 57.9% | 58.1% | 60.5% | 62.7% | 60.8% | 59.8% | 56.8% | 47.7% | 51.4% | 53.1% |