



THE SCHOOL DISTRICT OF
PHILADELPHIA

Star Reading Curriculum Based Measures (CBM) Participation and Performance: 2021-22

Curriculum Based Measures (CBMs) are tests of targeted skills that align to the teaching curriculum for a particular grade and subject. Unlike computer adaptive tests (CATs), CBMs do not change based on student responses. This report complements other reports we have published that summarize participation and performance on the Star Math and Reading CATs in the School District of Philadelphia (SDP).

Key Findings Include:

- Between 80%-94% of SDP students in grades K-5 took the Reading Star CBMs in each testing window. Students in grades K-2 had higher average participation than students in grades 3-5.
- In Spring, more than 40% of kindergarteners scored in the At/Above Benchmark performance group on all CBMs, an increase of 20-39 percentage points from the Fall.
- In Spring, more than 40% of second-grade students scored At/Above Benchmark in both Star Reading CBMs—an increase of 17 percentage points from Fall.
- In Spring, more than 50% of third-grade students scored At/Above Benchmark—an increase of more than 20 percentage points from Fall.
- In Winter 2, about 50% of fourth- and fifth-grade students scored At/Above Benchmark, which was an increase of about 9-12 percentage points from Fall. There was a decline for both grade levels from Winter 2 to Spring.

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Background

In the 2021-22 school year, the School District of Philadelphia (SDP) transitioned to Star Assessments as the District-wide universal screener for reading and math for all students in grades K-12. SDP uses universal screening tools to track District-wide performance, monitor academic growth, and inform instructional planning. These assessments are administered four times throughout the school year within designated screening windows. Unlike end-of-year standardized assessments that provide a summative description of student performance, within-year assessments administered multiple times in a school year provide real-time information about students' knowledge of reading and math skills that teachers and school administrators use to inform instructional decisions and monitor student progress. The data collected also serves to track progress towards the Board Goals and Guardrails, which set annual targets for the percentage of students scoring proficient or advanced on summative state assessments through August 2026. Information on the Math CBMs can be found in the [Star Math Curriculum Based Measures \(CBM\) Participation and Performance: 2021-22](#) report.

Star Assessments

Star assessments, developed by Renaissance, are a collection of tests that can be organized into two categories: computer-adaptive tests (CATs) and curriculum-based measures (CBMs). Beginning in the 2021-22 school year, all grades were administered the Star CATs to assess reading and math skills with the exception of K-2 math.¹ Star Reading CBMs are administered to students in grades K-5, and Star Math CBMs are administered to students in grades K-3.² Information from the Star assessments is used to inform instruction and help support student progress towards meeting grade-level standards.

Star CBMs are probes designed to measure proficiency on foundational skills in reading or math. Unlike computer adaptive tests (CATs), CBMs are aligned to the grade level curriculum, and do not change based on student responses. CBMs take about 1 minute to administer, and scores provide information on how students are progressing on the skills measured. For example, in kindergarten, reading CBMs include *Letter Naming* and *Letter Sounds* and math CBMs include *Numerical Recognition* and *Quantity Comparison*. As grade level increases, the CBMs shift to other skill areas: for example, second- and third-grade reading CBMs include *Expressive Nonsense Words* and *Passage Oral Reading*, and math CBMs include *Subtraction from 10* and *Multiplication to 100*.

After each within-year administration of the tests, student performance is categorized according to scoring thresholds that are specific to each grade and testing window. Students are assigned a score called the correct per minute (CPM) score. The CPM score indicates the number of items that students answered correctly while accounting for the length of the testing session. Based on the CPM score, students are categorized into one of three performance groups: At/Above Benchmark (i.e., students scored at or above grade level), On Watch (i.e., students scored below grade level, but students do not appear to require intensive support), or Intervention (i.e., students require

¹ For more information about the CATs visit <https://www.philasd.org/era/assessment/star-information/>

² Star CBMs have their own set of instructional tier levels but they are not used for District-Wide tracking.

strategic or intensive intervention to improve performance). The scoring thresholds that define each performance group vary depending on grade, testing window, and the CBM taken.

This report examines student participation in and performance on Star Reading CBM assessments in the four testing windows during the 2021-22 school year.

Research Questions

The following research questions guided the analyses and findings presented in this report:

1. What percentage of the SDP K-5 student population participated in the Star Reading CBMs in 2021-22?
2. What percentage of the SDP K-5 student population performed in the At or Above Benchmark performance group on the Star Reading CBMs in 2021-22?

Please note that this report compares overall student participation and performance in each testing window during the 2021-22 school year and does not reflect individual student growth. When it comes to performance, we are only focusing on the percentage of students with scores in each performance group during each testing window.

Assessment Data Used for this Analysis

This report focuses on students' participation in, and performance on, the Curriculum Based Measures (CBMs).

Curriculum Based Measures (CBMs)

Star CBMs are 1-minute probes that measure foundational skills in reading or math. Unlike Star computer adaptive tests (CATs), which estimate student proficiency and skill levels across a number of domains, CBMs are administered on a 1:1 basis and are designed to directly measure performance on a specific skill. During each testing window, kindergarten students take four CBMs, first graders take three, second graders take two, and third through fifth graders each take one CBM (see Table 1 for the CBMs students take by grade level). CBMs were administered during four testing windows in 2021-22: Fall, Winter 1, Winter 2, and Spring.

Table 1: Star Reading CBMs for students in Grades K-5

Reading CBM	Description	K	1	2	3	4	5
Letter Naming (LN)	The number of upper- and lowercase letters students can identify in a random sequence.	X					
Letter Sounds (LS)	The number of letter sounds (consonants only; no vowels a, e, i, o, u, or y are included) that students can pronounce.	X	X				
Phoneme Segmentation (PS)	The number of phoneme components students can pronounce in common 3-phoneme grade-level appropriate words.	X	X				
Receptive Nonsense Words (RNW)	The number of nonsense words students can identify when presented with both CVC words and CVC nonsense words. Administered as a verbal assessment.	X					
Expressive Nonsense Words (ENW)	The number of nonsense words students can identify when presented with both CVC words and CVC nonsense words. Administered as a written assessment.		X	X			
Passage Oral Reading (POR)	The number of words students can identify in a grade-level appropriate text.		X	X	X	X	X

Note: This report summarizes participation and performance on CBMs administered during all four windows. *Letter Sounds* is also administered to first graders only in the Fall.

Key Outcome Data Points

In response to the research questions outlined above, this report examines two sets of data: student participation and performance in the Star Reading CBMs during the 2021-22 school year.

Participation

Student participation is calculated as the percentage of eligible students in grades K-5 that completed the CBM in each testing window.

Performance Groups

Student performance on CBMs is based on their correct per minute (CPM) score for each of the CBMs. CPM scores correspond to a national percentile ranking that is used to place students into one of three performance groups:

- 1st to 19th percentile: Intervention
- 20th to 39th percentile: On Watch
- 40th to 99th percentile: At/Above Benchmark.

Each performance group has different definitions that represent the percentiles: At/Above Benchmark (i.e., students scored at or above grade level), On Watch (i.e., students scored below

grade level, but students do not appear to require intensive support), or Intervention (i.e., students require strategic or intensive intervention to improve performance).

Student Sample

The analyses described in this report use data for all students who were eligible to take Star Reading CBMs during the four 2021-22 testing windows. While some students are included in the data for all windows, students only needed to have data for at least one testing window to be included in this report.

Between about 8,400 and 9,100 students in each grade level were eligible to take the Star Reading CBMs in 2021-22 in each testing window (Table 2).

Table 2. The number of students eligible to take the Star Reading CBMs in 2021-22 by grade level

Grade Level	Fall	Winter 1	Winter 2	Spring
Kindergarten	8,429	8,707	8,789	8,793
1st Grade	8,465	8,594	8,678	8,684
2nd Grade	8,867	8,899	8,921	8,924
3rd Grade	9,056	9,091	9,086	9,082
4th Grade	9,103	9,118	9,080	9,074
5th Grade	8,928	8,932	8,906	8,874

Source: Qlik Academic Screeners App – Participation Details, Data Accessed June 16, 2022

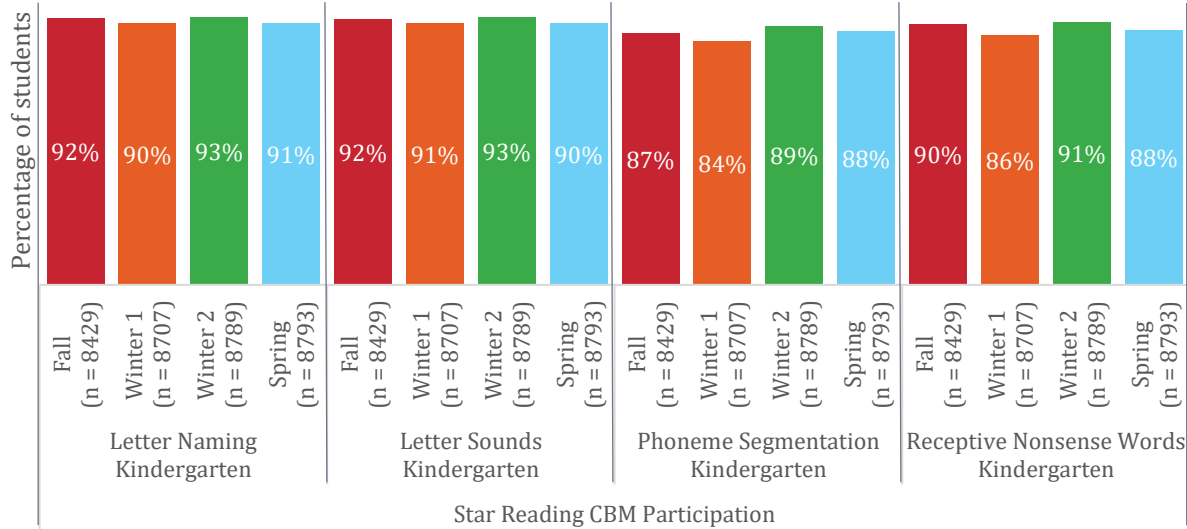
Findings

What percentage of the SDP K-5 student population participated in the Star Reading CBMs in 2021-22?

Between 80% to 94% of eligible students in K-5 took the Star Reading CBMs in each window. Participation was generally highest in the Fall and Winter 2 testing windows.

Between 84% to 93% of kindergarten students took the *Letter Naming*, *Letter Sounds*, *Phoneme Segmentation*, and *Receptive Nonsense Words* Star Reading CBMs in each testing window in 2021-22 (Figure 1). Kindergarten participation declined by one to four percentage points from the Fall to Winter 1 windows, increased by two to five percentage points from the Winter 1 to Winter 2 windows, and declined by one to three percentage points from Winter 2 to the Spring testing windows.

Figure 1. Percentage of students in kindergarten who participated in Star Reading CBMs in 2021-22

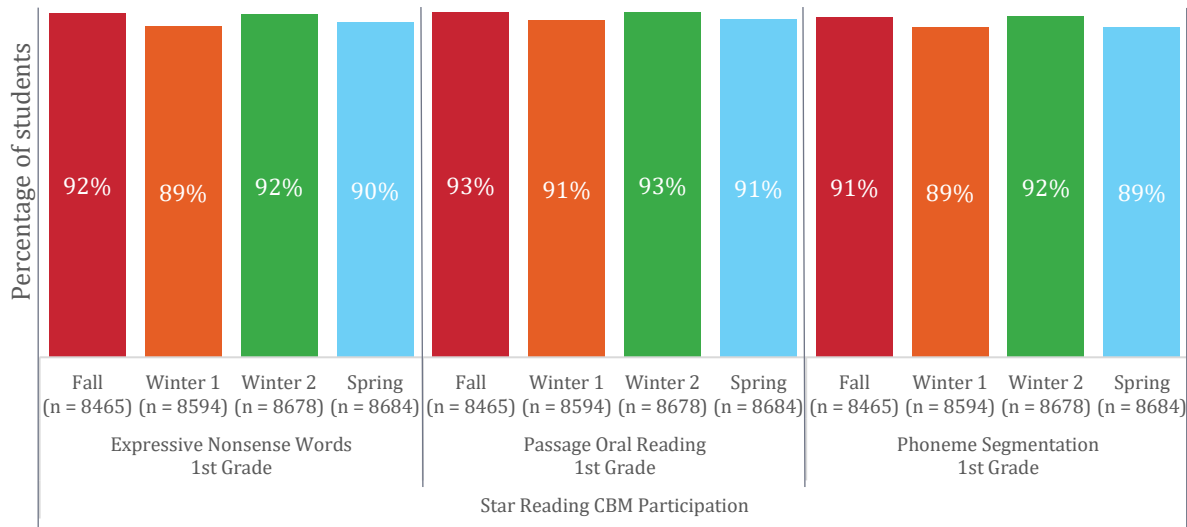


Note: The n count under the columns represents the number of students eligible to take the assessment in each window. To calculate the number of students who participated, multiple the n count by the percentage in the column.

Source: Qlik Academic Screeners App – Participation Details, Data Accessed June 16, 2022

Between 89% to 93% of first-grade students took the *Expressive Nonsense Words*, *Passage Oral Reading*, and *Phoneme Segmentation* Star Reading CBMs in each testing window in 2021-22 (Figure 2). First-grade participation declined by two to three percentage points from the Fall to Winter 1 windows, increased by two to three percentage points from the Winter 1 to Winter 2 windows, and declined by two to three percentage points from Winter 2 to the Spring testing windows.

Figure 2. Percentage of students in 1st grade who participated in Star Reading CBMs in 2021-22

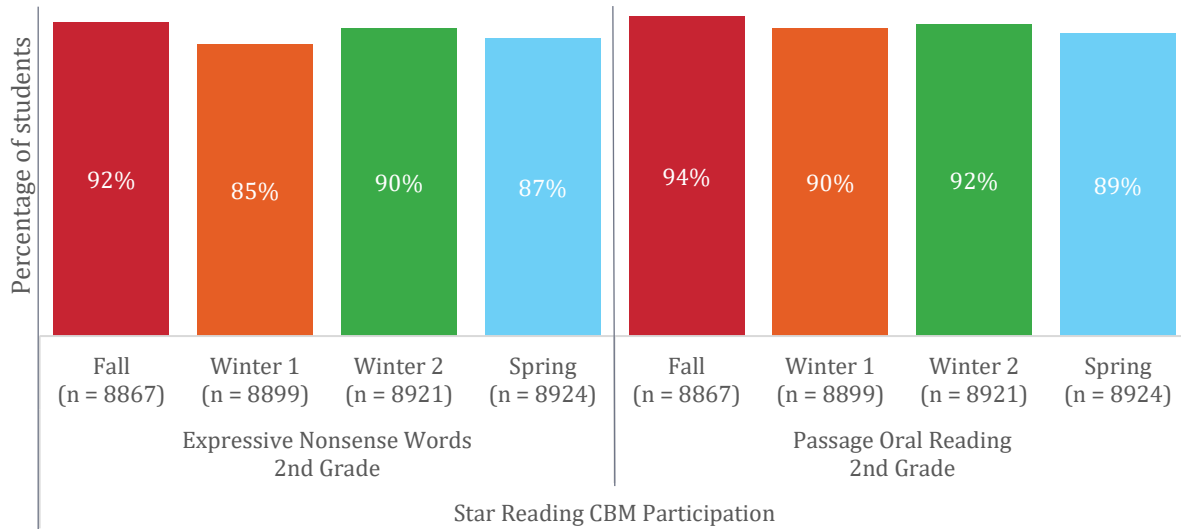


Note: The n count under the columns represents the number of students eligible to take the assessment in each window. To calculate the number of students who participated, multiple the n count by the percentage in the column.

Source: Qlik Academic Screeners App – Participation Details, Data Accessed June 16, 2022

Between 85% to 94% of second-grade students took the *Expressive Nonsense Words* and *Passage Oral Reading* Star CBMs in each testing window in 2021-22 (Figure 3). Second-grade participation declined by four to seven percentage points from the Fall to Winter 1 windows, increased by two to five percentage points from the Winter 1 to Winter 2 windows, and declined by three percentage points from Winter 2 to the Spring testing windows.

Figure 3. Percentage of students in 2nd grade who participated in Star Reading CBMs in 2021-22

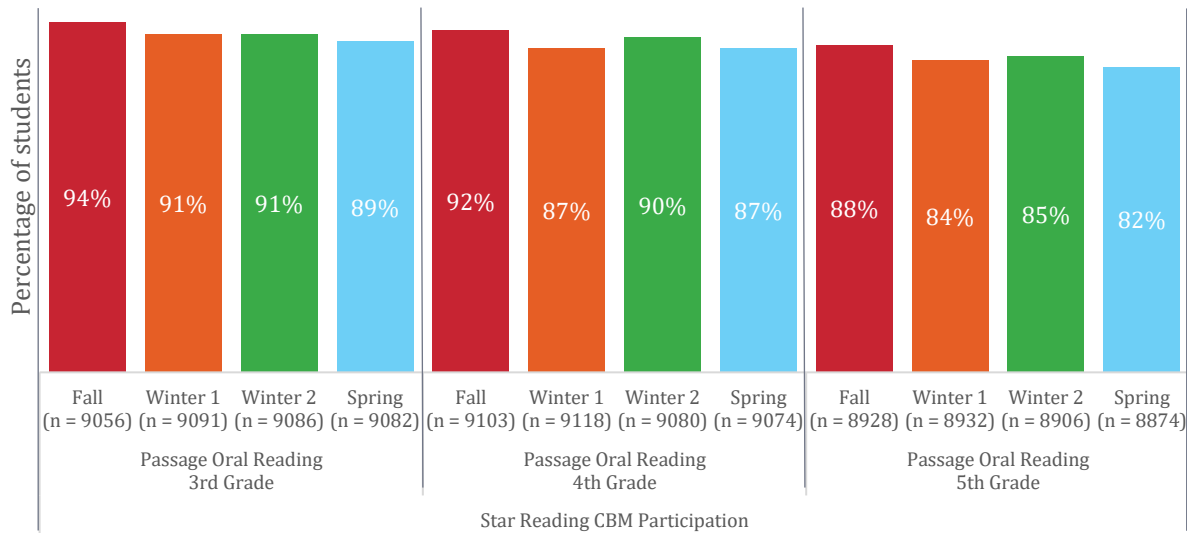


Note: The n count under the columns represents the number of students eligible to take the assessment in each window. To calculate the number of students who participated, multiply the n count by the percentage in the column.

Source: Qlik Academic Screeners App – Participation Details, Data Accessed June 16, 2022

Between 82% to 94% of third-grade, fourth-grade, and fifth-grade students took the *Passage Oral Reading* Star CBM in each testing window in 2021-22 (Figure 4). Third-grade participation declined by five percentage points from the Fall to Spring windows. Fourth-grade participation declined by five percentage points from the Fall to Winter 1 windows, increased by three percentage points from the Winter 1 to Winter 2 windows, and declined by three percentage points from Winter 2 to the Spring testing windows. Fifth-grade participation declined by six percentage points from the Fall to Spring windows.

Figure 4. Percentage of students in 3rd grade, 4th grade, and 5th grade who participated in Star Reading CBMs in 2021-22



Note: The n count under the columns represents the number of students eligible to take the assessment in each window. To calculate the number of students who participated, multiple the n count by the percentage in the column.

Source: Qlik Academic Screeners App – Participation Details, Data Accessed June 16, 2022

What percentage of the SDP K-5 student population performed in the At or Above Benchmark performance group on the Star Reading CBMs in 2021-22?

In Fall, fewer than 20% of kindergarten students scored in the At/Above Benchmark performance group in the *Letter Sounds, Phoneme Segmentation, and Receptive Nonsense Words* Star Reading CBMs; by Spring, more than 40% of students scored At/Above Benchmark—an increase of 20 percentage points or more from Fall to Spring on all kindergarten CBMs.

Between 6% to 58% of kindergarten students scored in the At/Above Benchmark performance group in each testing window in 2021-22 on the *Letter Naming, Letter Sounds, Phoneme Segmentation, and Receptive Nonsense Words* Star Reading CBMs (Figure 5).

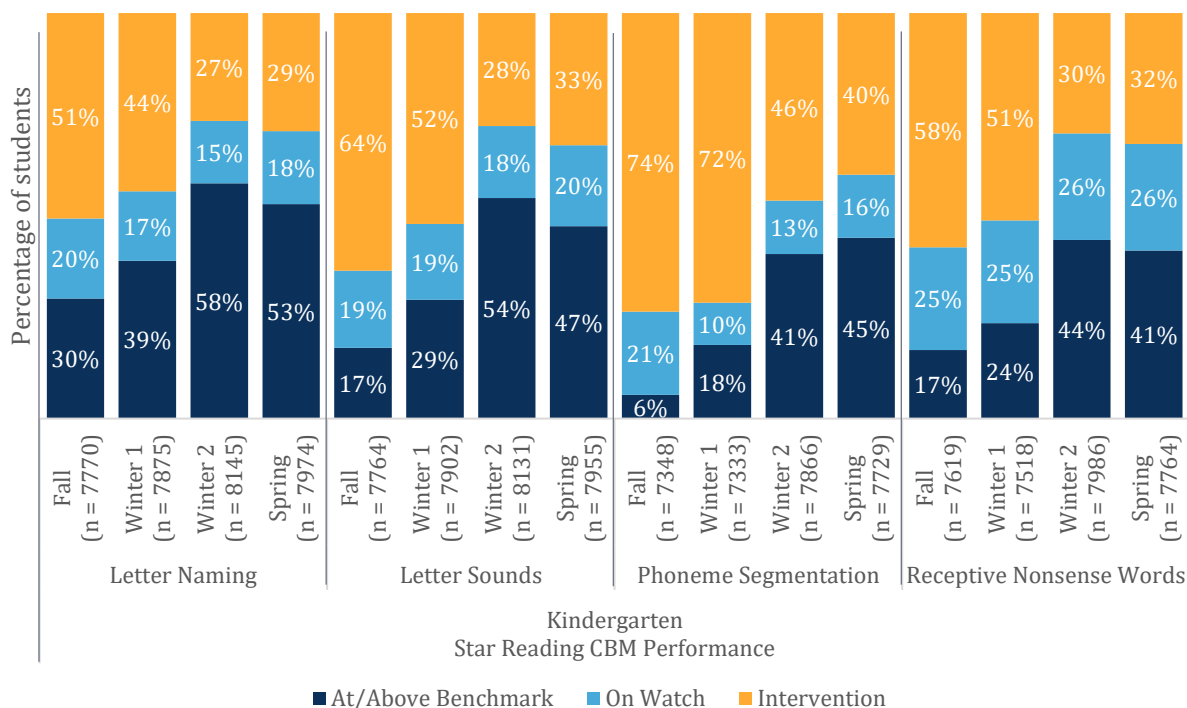
Kindergarten At/Above Benchmark performance for the *Letter Naming* Star Reading CBM increased from 30% in the Fall testing window to 58% in the Winter 2 testing window, an increase of 28 percentage points, and declined by five percentage points to 53% in the Spring testing window.

Kindergarten At/Above Benchmark performance for the *Letter Sounds* Star Reading CBM increased from 17% in the Fall testing window to 54% in the Winter 2 testing window, an increase of 37 percentage points, and declined by seven percentage points to 47% in the Spring testing window.

Kindergarten At/Above Benchmark performance for the *Phoneme Segmentation* Star Reading CBM increased from 6% in the Fall testing window to 45% in the Spring testing window, an increase of 39 percentage points.

Kindergarten At/Above Benchmark performance for the *Receptive Nonsense Words* Star Reading CBM increased from 17% in the Fall testing window to 44% in the Winter 2 testing window, an increase of 27 percentage points, and declined by three percentage points to 41% in the Spring testing window.

Figure 5. Percentage of students in kindergarten who scored At or Above Benchmark on the Star Reading CBMs in 2021-22



Note: The n count under the columns represents the number of students who took the assessment in each window. To calculate the number of students who scored in each performance group, multiply the n count by the percentage in the block in the column.

Source: Qlik Academic Screeners App – Performance Details, Data Accessed June 16, 2022

From Fall to Spring, the first-grade At/Above Benchmark performance group increased by 45 percentage points for the *Phoneme Segmentation* Star Reading CBM and increased by 18 to 23 percentage points for the *Expressive Nonsense Words* and *Passage Oral Reading* Star Reading CBMs.

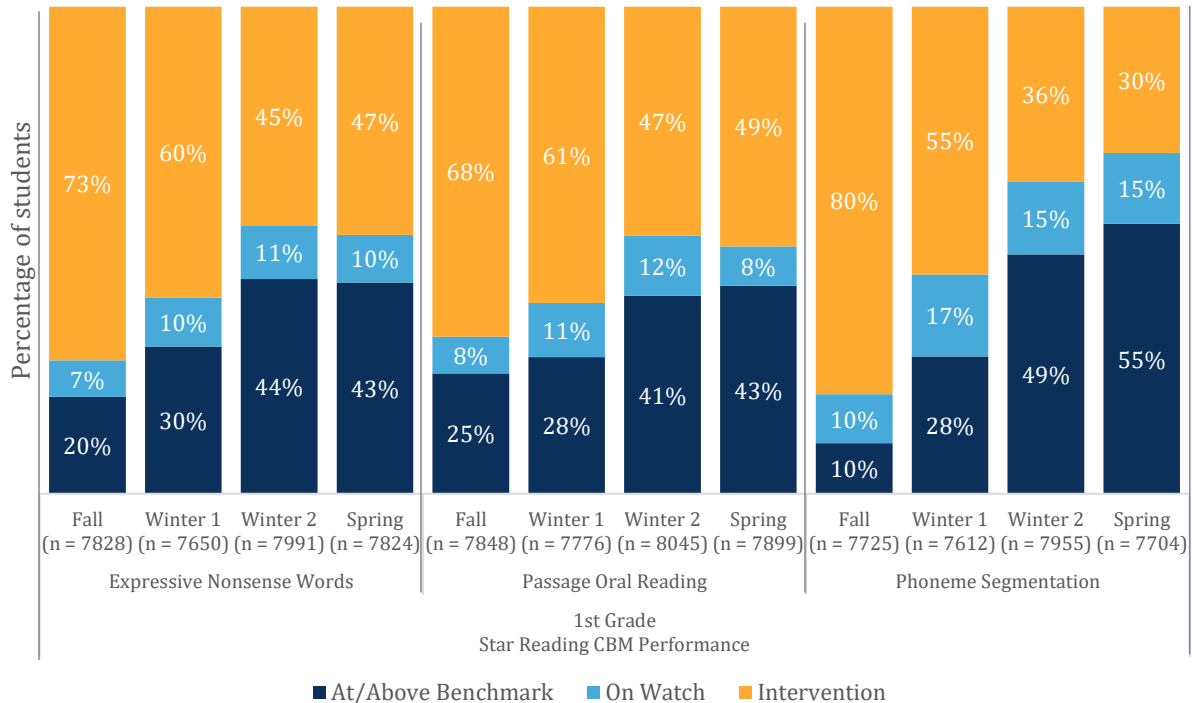
Between 10% to 55% of first-grade students scored in the At/Above Benchmark performance group in each testing window in 2021-22 on the *Expressive Nonsense Words*, *Passage Oral Reading* and *Phoneme Segmentation* Star Reading CBMs (Figure 6).

First-grade At/Above Benchmark performance for the *Expressive Nonsense Words* Star Reading CBM increased from 20% in the Fall testing window to 44% in the Winter 2 testing window, an increase of 24 percentage points, and declined by one percentage point in the Spring testing window.

First-grade At/Above Benchmark performance for the *Passage Oral Reading* Star CBM increased from 25% in the Fall testing window to 43% in the Spring testing window, an increase of 18 percentage points.

First-grade At/Above Benchmark performance for the *Phoneme Segmentation* Star Reading CBM increased from 10% in the Fall testing window to 55% in the Spring testing window, an increase of 45 percentage points.

Figure 6. Percentage of students in 1st grade who scored At or Above Benchmark on the Star Reading CBMs in 2021-22



Note: The n count under the columns represents the number of students who took the assessment in each window. To calculate the number of students who scored in each performance group, multiply the n count by the percentage in the block in the column.

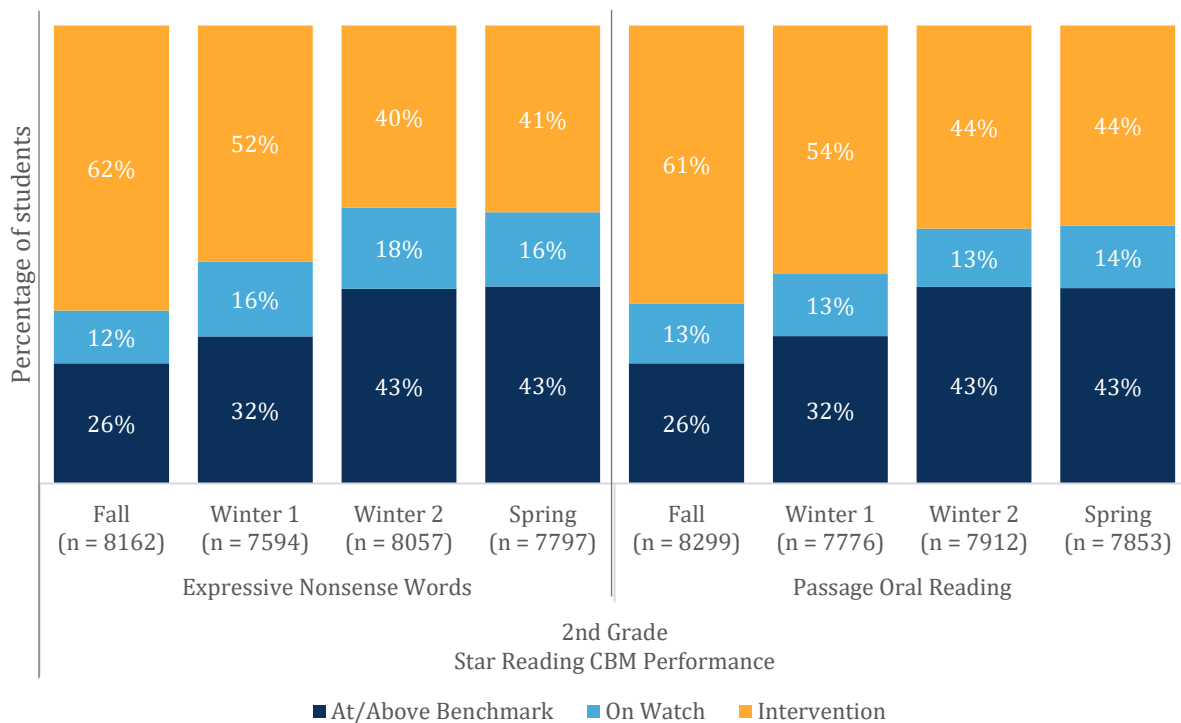
Source: Qlik Academic Screeners App – Performance Details, Data Accessed June 16, 2022

From Fall to Spring, the second-grade At/Above Benchmark performance group increased by 17 percentage points for both the *Expressive Nonsense Words* and *Passage Oral Reading* Star CBMs.

Between 26% to 43% of second-grade students scored in the At/Above Benchmark performance group in each testing window in 2021-22 on the *Expressive Nonsense Words* and *Passage Oral Reading* Star Reading CBMs (Figure 7).

Second-grade At/Above Benchmark performance for the *Expressive Nonsense Words* and *Passage Oral Reading* Star Reading CBMs increased from 26% in the Fall testing window to 43% in the Spring testing window, an increase of 17 percentage points.

Figure 7. Percentage of students in 2nd grade who scored At or Above Benchmark on the Star Reading CBMs in 2021-22



Note: The n count under the columns represents the number of students who took the assessment in each window. To calculate the number of students who scored in each performance group, multiple the n count by the percentage in the block in the column.

Source: Qlik Academic Screeners App – Performance Details, Data Accessed June 16, 2022

From Fall to Winter 2, the third-grade At/Above Benchmark performance group increased by 21 percentage points for the *Passage Oral Reading* Star Reading CBM, whereas fourth- and fifth-grade At/Above Benchmark performance increased by 9 to 12 percentage points during that time. All groups experienced a decline in the percentage of students scoring At/Above Benchmark from Winter 2 to Spring.

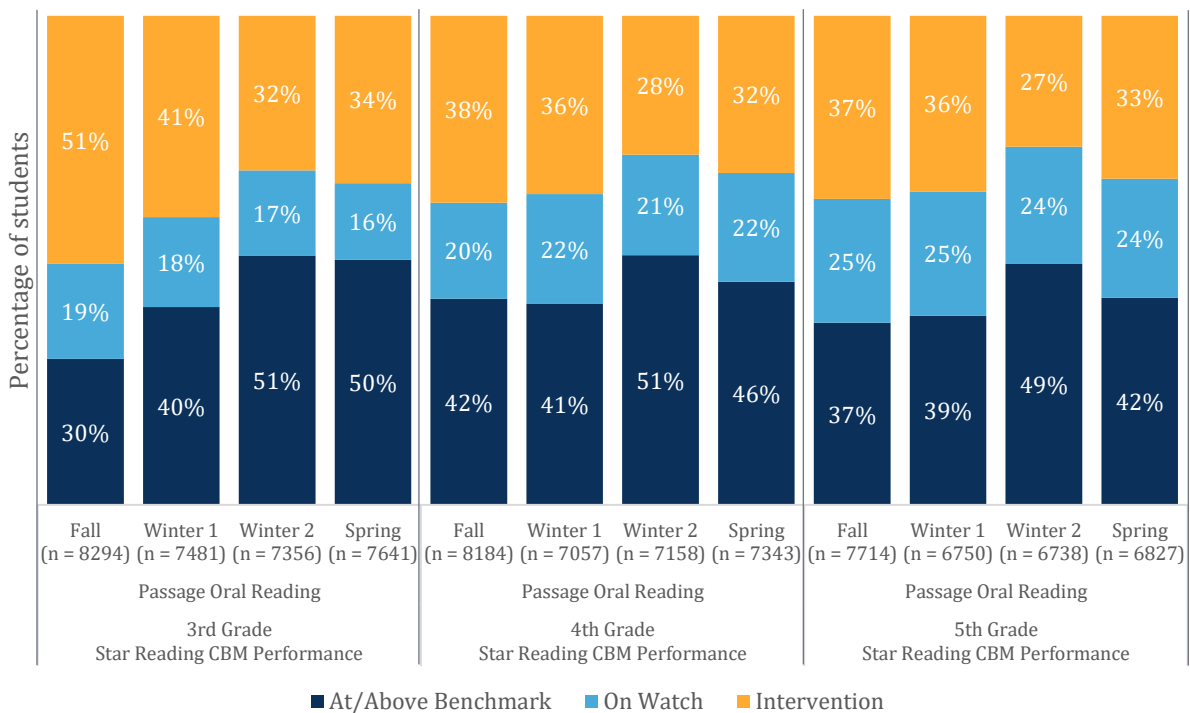
Between 30% to 51% of third-grade, fourth-grade, and fifth-grade students scored in the At/Above Benchmark performance group in each testing window in 2021-22 on the *Passage Oral Reading Star Reading CBM* (Figure 8).

Third-grade At/Above Benchmark performance for the *Passage Oral Reading Star CBM* increased from 30% in the Fall testing window to 51% in the Winter 2 testing window, an increase of 21 percentage points, and declined by one percentage point in the Spring testing window.

Fourth-grade At/Above Benchmark performance for the *Passage Oral Reading Star CBM* increased from 42% in the Fall testing window to 51% in the Winter 2 testing window, an increase of 19 percentage points, and declined by seven percentage points in the Spring testing window.

Fifth-grade At/Above Benchmark performance for the *Passage Oral Reading Star CBM* increased from 37% in the Fall testing window to 49% in the Winter 2 testing window, an increase of 12 percentage points, and declined by seven percentage points in the Spring testing window.

Figure 8. Percentage of students in 3rd grade, 4th grade, and 5th grade who scored At or Above Benchmark on the Star Reading CBMs in 2021-22



Note: The n count under the columns represents the number of students who took the assessment in each window. To calculate the number of students who scored in each performance group, multiply the n count by the percentage in the block in the column.

Source: Qlik Academic Screeners App – Performance Details, Data Accessed June 16, 2022

Conclusions

In the 2021-22 school year, the School District of Philadelphia (SDP) transitioned to Star Assessments as the District-wide universal screener for reading and math for all students in grades K-12. SDP uses universal screening tools to track District-wide performance, monitor academic growth, and inform instructional planning. These assessments are administered four times throughout the school year within designated screening windows. Star assessments, developed by Renaissance, are a collection of tests that can be organized into two categories: computer-adaptive tests (CATs) and curriculum-based measures (CBMs). Beginning in the 2021-22 school year, all grades were administered the Star CATs to assess reading and math skills, with the exception of K-2 math.³ Star Reading CBMs are administered to students in grades K-5 and Star Math CBMs are administered to students in grades K-3.⁴ Information from the Star assessments is used to inform instruction and help support student progress towards meeting grade-level standards.

In terms of Star Reading CBM participation, 80%-94% of students in K-5 took the Star Reading CBMs in each testing window—this is just a bit shy of the District goal of 100% student participation. Additionally, students in K-2 had higher average participation than students in grades 3-5, and participation was generally highest in the Fall and Winter 2 testing windows, which is expected as the Winter 1 window overlapped with the COVID-19 Omicron surge in the 2021-22 year, and Spring participation is typically lower than in other windows.⁵

Across all grade levels, At/Above Benchmark performance on the Star Reading CBMs increased from 17 to 45 percentage points from Fall to Winter 2 or Spring. For some CBMs, At/Above Benchmark performance was greater in Winter 2 than in Spring. There was also variability in the percentage of students who scored in the At/Above Benchmark performance group in Fall by CBMs. For example, only 6% of kindergarteners scored in the At/Above Benchmark performance group in Fall on *Phoneme Segmentation*; in comparison, 42% of fourth graders scored in the At/Above Benchmark performance group in Fall on *Passage Oral Reading*. This demonstrates the importance of the CBMs and how each test captures very different skills.

Patterns slightly differed for the [Math CBMs](#); both performance and participation on the Reading and Math CBMs should continue to be explored.

Correction

This report originally included a reference to “Box 1” in the *Curriculum Based Measures (CBMs)* section on p. 5, but there is no corresponding Box 1 in the report. The reference has been removed.

³ For more information about the CATs visit <https://www.philasd.org/era/assessment/star-information/>

⁴ Star CBMs have their own set of instructional tier levels but they are not used for District-Wide tracking.

⁵ For more information on Star participation by assessment window visit:

<https://dashboards.philasd.org/extensions/goals-and-guardrails/index.html#/goal2/winter>