Research on
Unfinished Learning

i-Ready®

Academic Achievement at the End of the 2020–2021 School Year

Insights after More Than a Year of Disrupted Teaching and Learning

Curriculum Associates Research Brief | June 2021

Curriculum Associates®

Executive Summary

The pandemic disrupted every facet of our lives, including Grades K–8 education. Our nation's students and teachers adapted to numerous changes to schooling and learning environments. Some students learned remotely, others learned in school. Some were forced to shift back and forth due to local outbreaks or other concerns. Despite all of the complexity, teaching and learning continued.

The data we present in this report is the culmination of a year of reporting on how COVID-19 learning disruptions impacted the academic progress of students. Using the *i-Ready Diagnostic*'s criterion-referenced grade-level placement data from more than nine million students across the country, we examined student achievement data from students testing in school across the 2020–2021 school year. Our data shows that while students made notable progress in a very disruptive year, there is still ground to make up.

Because we were interested in students' academic achievement this spring compared to what we would expect during a typical school year, we chose to use in-school testing data because it is the closest to a "true" comparison to prior-year achievement. In particular, we sought to understand whether students had reduced the learning gaps that research had pointed to this past fall (Curriculum Associates, 2020; Kuhfeld, Tarasawa, Johnson, Ruzek, & Lewis, 2020; Dorn, Hancock, Sarakatsannis, & Viruleg, 2020).

Our spring findings on the in-school testing data show that learning, growth, and progress did occur during the 2020–2021 school year as in prior school years. However, more students are underprepared for grade-level work compared with historical benchmarks, and the degree of unfinished learning is greater for students in schools serving a majority of Black and Latino students compared to a majority of White students as well as for students attending schools in lower-income zip codes compared to students attending schools in higher-income zip codes. Our analysis reveals how preexisting inequities in learning that existed for students of color and students in lower-income communities before the pandemic are being exacerbated by the condition of education during the pandemic.

Key Findings

- Fewer students are on grade level this spring compared to prior school years.
- Fewer students are on grade level in reading in all grades, particularly in the early elementary grades.
- Fewer students are on grade level in mathematics in all grades, particularly in elementary and early middle school grades.
- Fewer students in schools serving mostly Black and Latino students are on grade level compared to schools serving mostly White students.
- Fewer students in schools located in lower-income zip codes are on grade level than in schools located in higher-income zip codes.
- Students have made progress this year across all grades, but they continue to fall behind historical performance in elementary school grades.

Contents

The Language We Use to Describe Learning

At Curriculum Associates, we are committed to becoming a fully inclusive, anti-racist, multicultural organization. We recognize that systemic bias and racism negatively impact students and educators of color, and common terms and characterizations of student achievement data have been and continue to be problematic. In particular, we are cognizant of how bias is embedded in the language we use to describe what students know and are able to do. For example, deficit-based labels, such as "underperforming," unfairly place blame on students who, in truth, have been underprepared by our society. We know that while teachers and school and district leaders deeply invest in these learners, the cumulative and compounding effects of an array of societal factors have systematically disadvantaged people of color.

One of our goals as a curriculum and assessment provider is to objectively measure learning to inform instruction, reveal inequities, and contribute to the field of education research. We believe that the deficit-based labels that have long been used to describe student learning have nothing to do with their intellectual capacity, effort, or aptitude. Instead, we choose to honor the potential of students and decouple the words we use to describe student achievement from unfair assumptions and habits. This will take some time, but we take our role in changing the system very seriously and our work is ongoing.

For the purposes of this research paper, we recognize that the disruptions in schooling due to COVID-19 happened due to circumstances outside of schools and classrooms, and teaching and learning remains unfinished rather than lost. As such, when we describe where students are not yet prepared for grade-level work, we will use the terms "unfinished teaching and learning" or "unfinished learning" instead of "learning loss." When we describe where students are on grade level, we will use the terms "on grade level" or "not on grade level" instead of "performing on grade level" or "not performing on grade level."

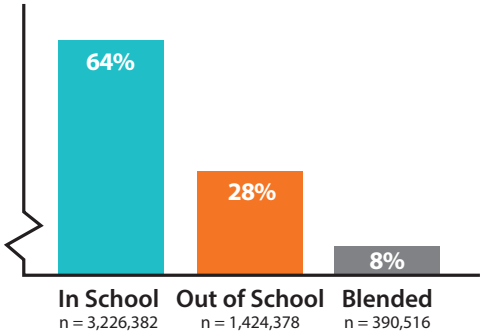
As our learning journey continues, we will keep reflecting on the impact of our words and strive to use asset-based language that is empowering for all students, teachers, and educators.

Why Focus on In-School Assessment Data?

The *i-Ready Diagnostic* assessment asks students to indicate whether they are taking the test in school or out of school, which allows us to look at data trends by testing location. We have been examining the data after each testing window (i.e., fall, winter, and spring), and found that while out-of-school testing data consistency has improved over time, in-school testing data is the closest to a "true" comparison to prior-year achievement. To have an apples-to-apples comparison throughout the 2020–2021 school year, we will again focus on the in-school testing data for the current report. This analysis focused on assessment data from in-school testing locations because it is:

- More consistent with historical testing conditions
- Less variable from student to student
- A more valid comparison to historical performance

Percentage of Completed Diagnostics by Testing Location, Current Spring



Introduction

Over the last year, teachers and students overcame unprecedented disruption to learn in a variety of environments. Most students started the school year learning remotely, but over the course of the school year, a much larger percentage of students returned to school full time or in hybrid environments. The impact of this past year will not be fully understood for years to come, but students in many schools took interim assessments administered by Curriculum Associates or other vendors. This interim assessment data can help paint a picture of where students are, relative to where we would expect, and the progress that has been made.

More than nine million students who are enrolled in public, private, and charter schools nationwide have taken Curriculum Associates' *i-Ready Diagnostic* this school year. Using the results of these tests, Curriculum Associates has been closely following how COVID-19 school closures impacted student learning. In fall 2020, our data revealed how unfinished learning had emerged across all grades in mathematics and reading, but more significantly across the board in mathematics and in the early grades for reading. In addition, the degree of unfinished learning had begun to exacerbate existing inequities in learning that existed for students of color and students in lower-income communities before the pandemic. These results remained largely the same in our winter 2021 analysis.

This paper is the third in a series of reports on student academic progress in reading and mathematics over the course of the 2020–2021 school year. For this report, Curriculum Associates analyzed the results of the spring *i-Ready Diagnostic* tests taken between March and June 2021. The findings drawn from the Diagnostic assessment represent a subset of approximately 25% of the Grades K–8 public school population who take the Diagnostic each year and shed light on student achievement one year after schools closed their doors.

The results from this analysis find that after 15 months of school disruptions due to the pandemic, fewer students are ready to access grade-level work compared to prior years at this point in the school year, compared to a typical school year before the pandemic. The spring results confirm what we saw emerge in fall and winter: Some of our youngest students, particularly those historically underserved, have been impacted the most.

Our findings are not immune to the challenges we faced in navigating a national and global public health crisis while continuing to offer educational opportunities to students in Grades K–8. The 2020–2021 school year was a year unlike any other this generation of students has experienced on a national scale. At times, the challenges seemed insurmountable, and yet, educators and students persevered. The data in this report should be interpreted with the pandemic in mind. While progress was made on the whole, the gap between the current year and the historical average has grown larger for some student groups. It is our hope that by publishing a report on what we see in the *i-Ready Diagnostic* national data trends and discussing the implications, we can inform and inspire state and local leaders to use their own data to identify and address students' instructional needs and determine how to best support them.

Methodology

Research Questions

The primary research questions addressed in this paper are as follows:

1. Are more or fewer students on grade level during spring 2020–2021 compared to what we have seen in those same schools historically?
2. How does the proportion of students who are on grade level vary by subject and grade level?
3. How does the proportion of students who are on grade level vary by the racial or ethnic makeup of schools?
4. How does the proportion of students who are on grade level vary by the median household income of schools' locations?
5. Have differences in grade-level learning increased or decreased since the fall, relative to what we would expect based on the historical average?

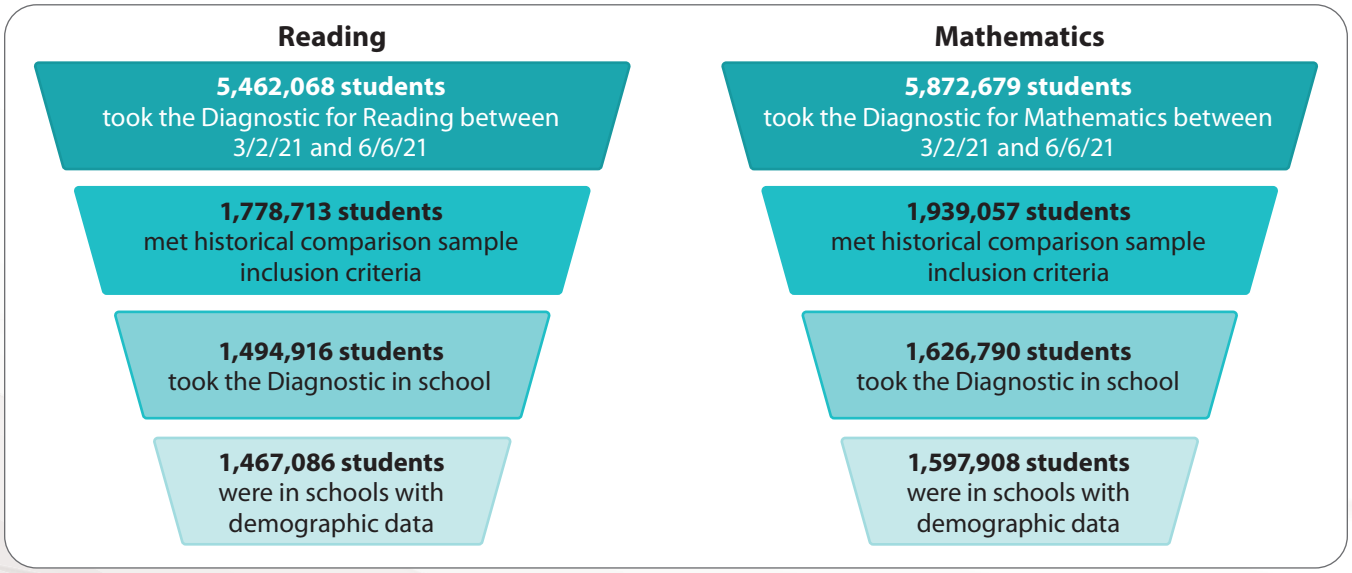
Sample Description

For this study, we examined grade-level placement results from students in the spring of 2020–2021 compared to prior school years. We constructed a historical average to represent typical performance for students in Grades 1–8 across the two most recent school years when data was available: 2017–2018 and 2018–2019. The 2019–2020 school year was not included, as very few students tested when the pandemic first closed schools in spring 2020. Student-level data was matched at the school level, so the current and historical samples consist of students in the same schools.

In order to have what we considered to be a fair basis of comparison for this analysis, we only included students who tested in school in spring 2020–2021 between March 2, 2021 and June 6, 2021. With these criteria in place, the final analytic sample consisted of 1,494,916 students in Grades 1–8 in the Diagnostic for Reading analysis and 1,626,790 students in Grades 1–8 in the Diagnostic for Mathematics analysis. School-level demographic data was sourced from the National Center for Education Statistics (NCES) Common Core of Data.

This analysis represents students from 49 states, plus the District of Columbia. The number of students per state varied by subject and is not statistically representative of each state. See Appendix A for more details on the methodology and sample description.

Figure 1: How Was the Spring Assessment Sample Selected?



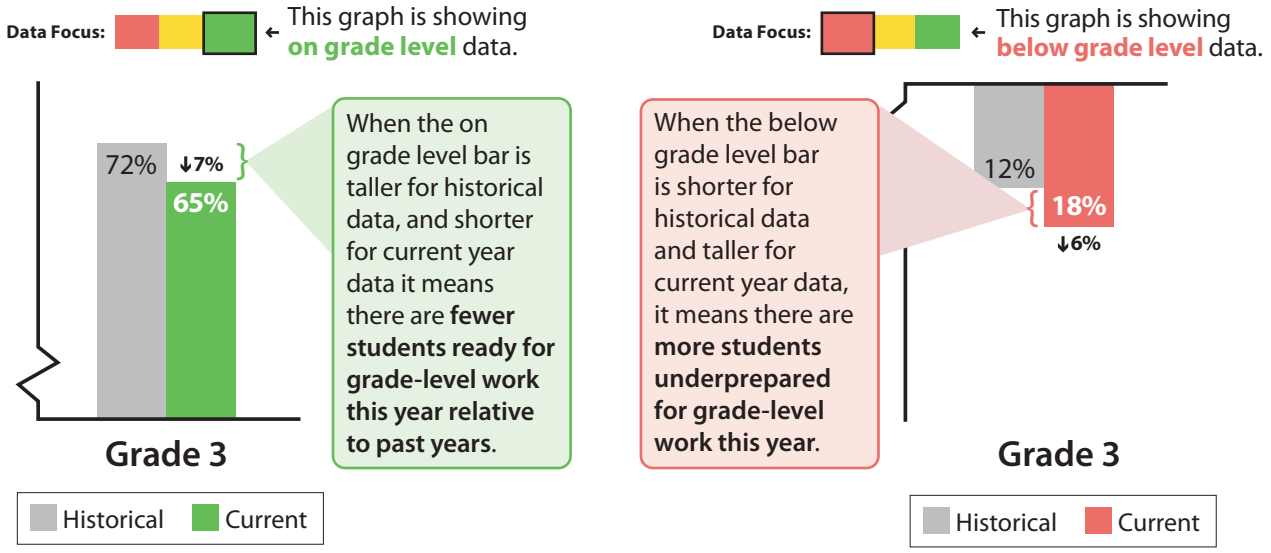
Results

Overview

The following section reports the findings from assessment data for students who took the Diagnostic for Reading and Diagnostic for Mathematics in school. We will begin by sharing the national trends across grade levels for each subject this school year, relative to the historical average, and then discuss the findings for demographic groups by race and ethnicity and income level. We will also look at a subset of students who tested in school during both fall and spring and look at how the percentage of students on grade level changed from fall to spring as well as relative to the historical average performance for each testing window.

For the purposes of this analysis, students who placed Early On Grade Level or higher were considered on grade level and students who placed Two or More Grade Levels Below were considered below grade level. Students who are Early On Grade Level have partially met grade-level college- and career-readiness standards, and students who are Mid or Above Grade Level have met grade-level college- and career-readiness standards. Students who are Two or More Grade Levels Below are not yet close to meeting grade-level college- and career-readiness standards and may need additional instruction to fill in gaps in foundational concepts and knowledge.

Understanding Grade-Level Placements in This Paper



What Are Grade-Level Placements?

When students take the *i-Ready Diagnostic*, they are given a placement level relative to their chronological grade level that designates the student performance as being on grade level, below grade level, or above grade level. For example, a Grade 5 student can place below grade level at the Grade 4 level (i.e., One Grade Level Below), at the Grade 3 level (i.e., Two Grade Levels Below), and at the Grades K–2 levels (i.e., Three or More Grade Levels Below). A Grade 5 student can also place above grade level at the Grades 6–8 levels (i.e., Above Grade Level). See Appendix for *i-Ready* placement-level descriptors.

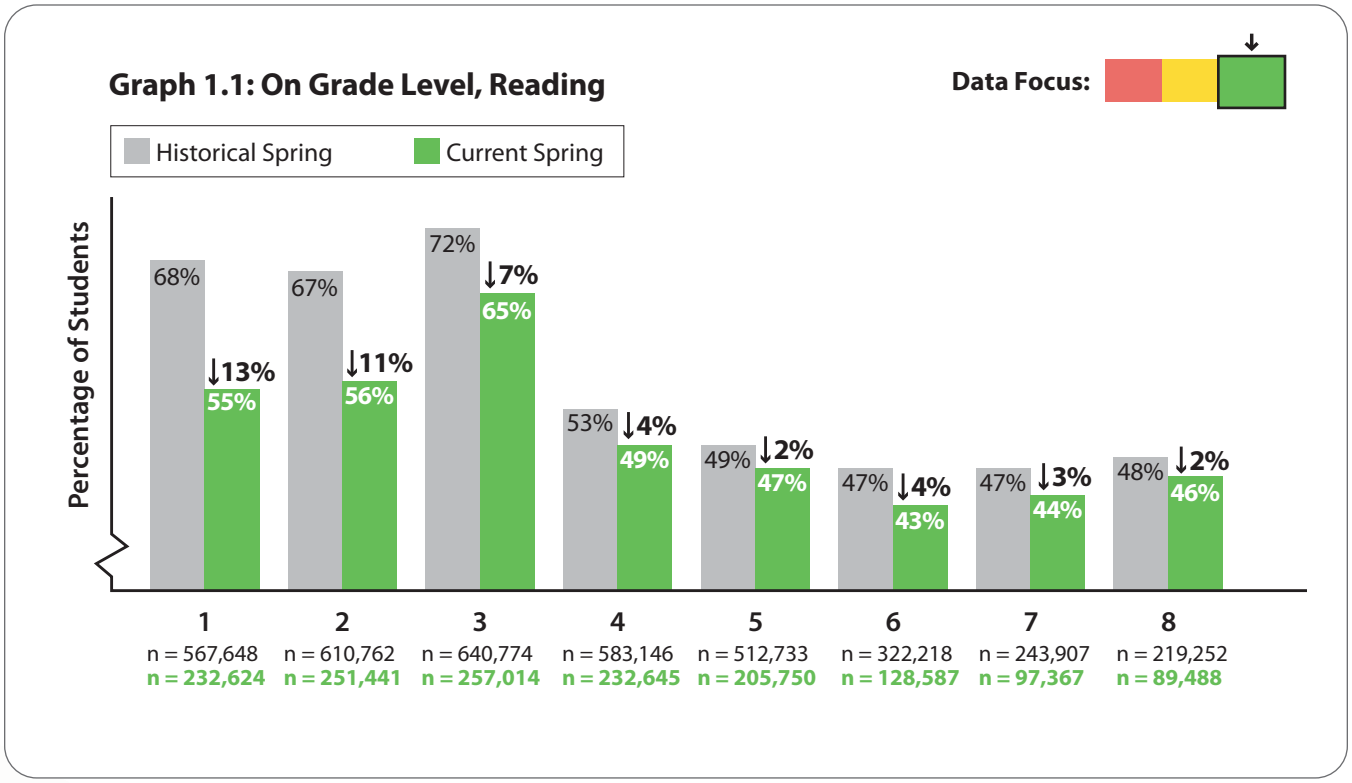
Finding 1

Fewer Students Are On Grade Level in Reading This Spring Compared to Historical Averages

Reading

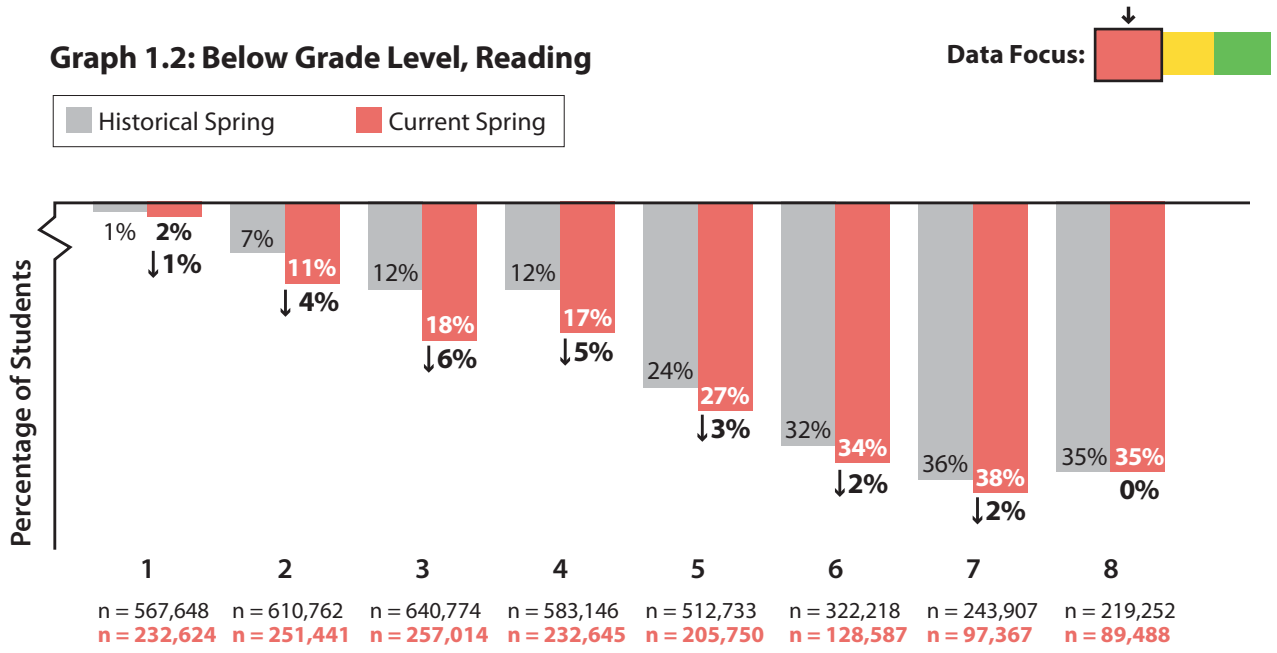
In reading, there is a greater amount of unfinished learning in nearly all grade levels, particularly in Grades 1 and 2. The percentage of students who are ready for grade-level work (i.e., Early On Grade Level or Above) has decreased during the 2020–2021 school year relative to the historical average across all Grades 1–8. The largest decreases are in Grade 1 (13 percentage points lower) and Grade 2 (11 percentage points lower).

Graph 1.1: On Grade Level, Reading



Within the same sample, we also looked at the percentage of students who are underprepared for grade-level work (i.e., Two or More Grade Levels Below). In reading, the percentage of students who are underprepared for grade-level work has increased during the 2020–2021 school year relative to the historical average for students in Grades 1–7, while Grade 8 remains flat. The largest increase in underprepared students is in Grade 3 (6 percentage points).

Graph 1.2: Below Grade Level, Reading

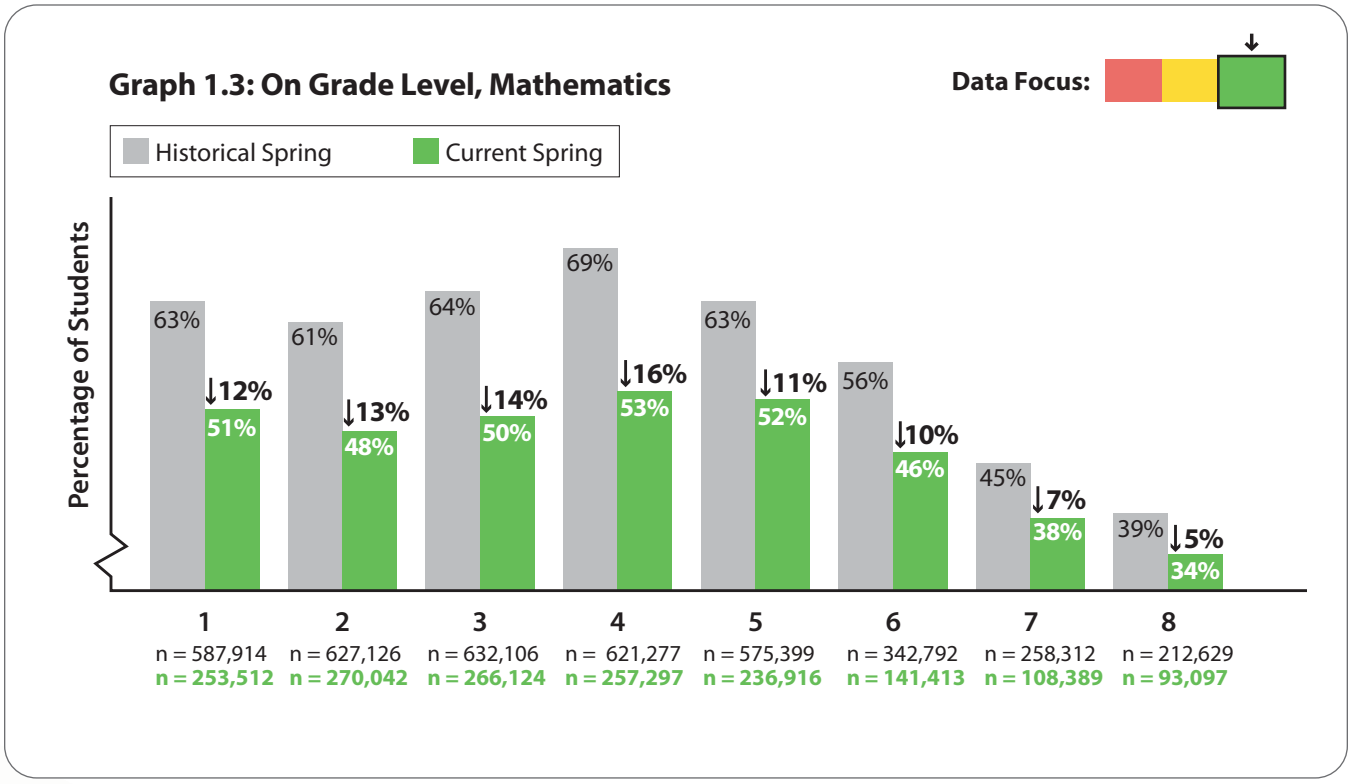


Finding 1

Fewer Students Are On Grade Level in Mathematics This Spring Compared to Historical Averages

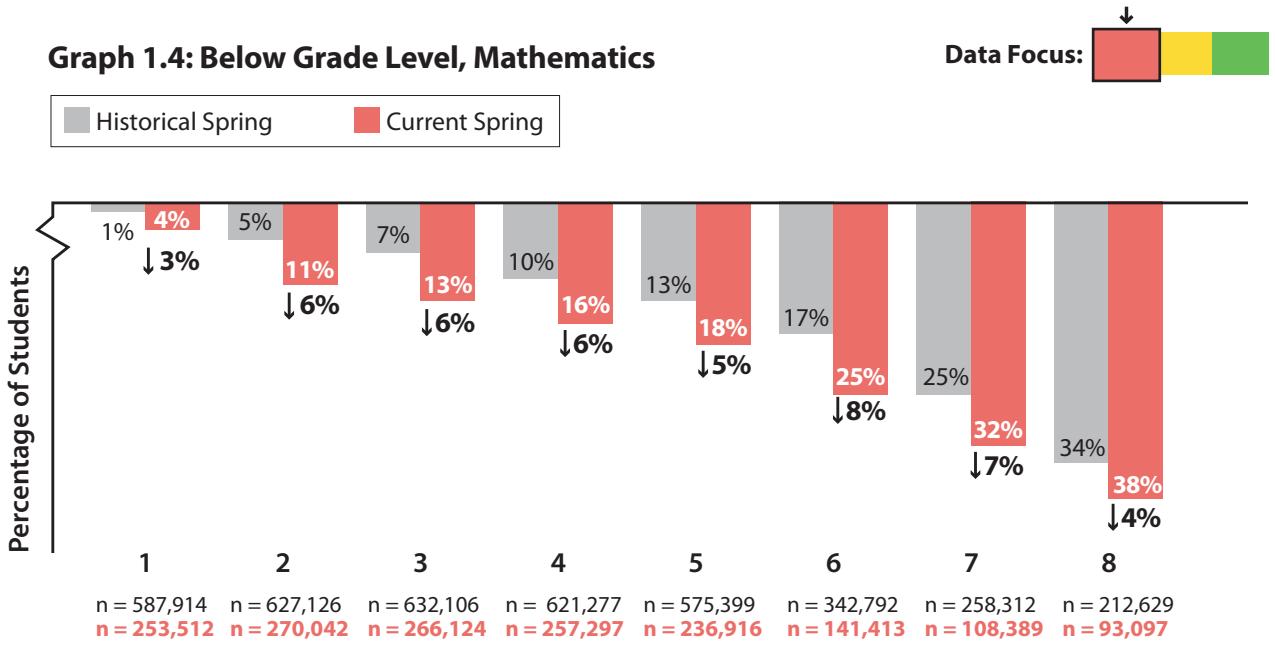
Mathematics

In mathematics, there is a greater amount of unfinished learning across all grades. The percentage of students who are ready for grade-level work (i.e., Early On Grade Level or Above) has decreased during the 2020–2021 school year relative to the historical average across all grades. Elementary Grades 1–5 and early middle school Grade 6 show the greatest amount of unfinished learning, ranging from 10 to 16 percentage points lower.



Within the same sample, we also looked at the percentage of students who are underprepared for grade-level work (i.e., Two or More Grade Levels Below). In mathematics, the percentage of students who are underprepared for grade-level work has increased during the 2020–2021 school year relative to the historical average for students across all grades. Grades 2–7 show the greatest increases in unfinished learning, ranging from 5 to 8 percentage points.

Graph 1.4: Below Grade Level, Mathematics



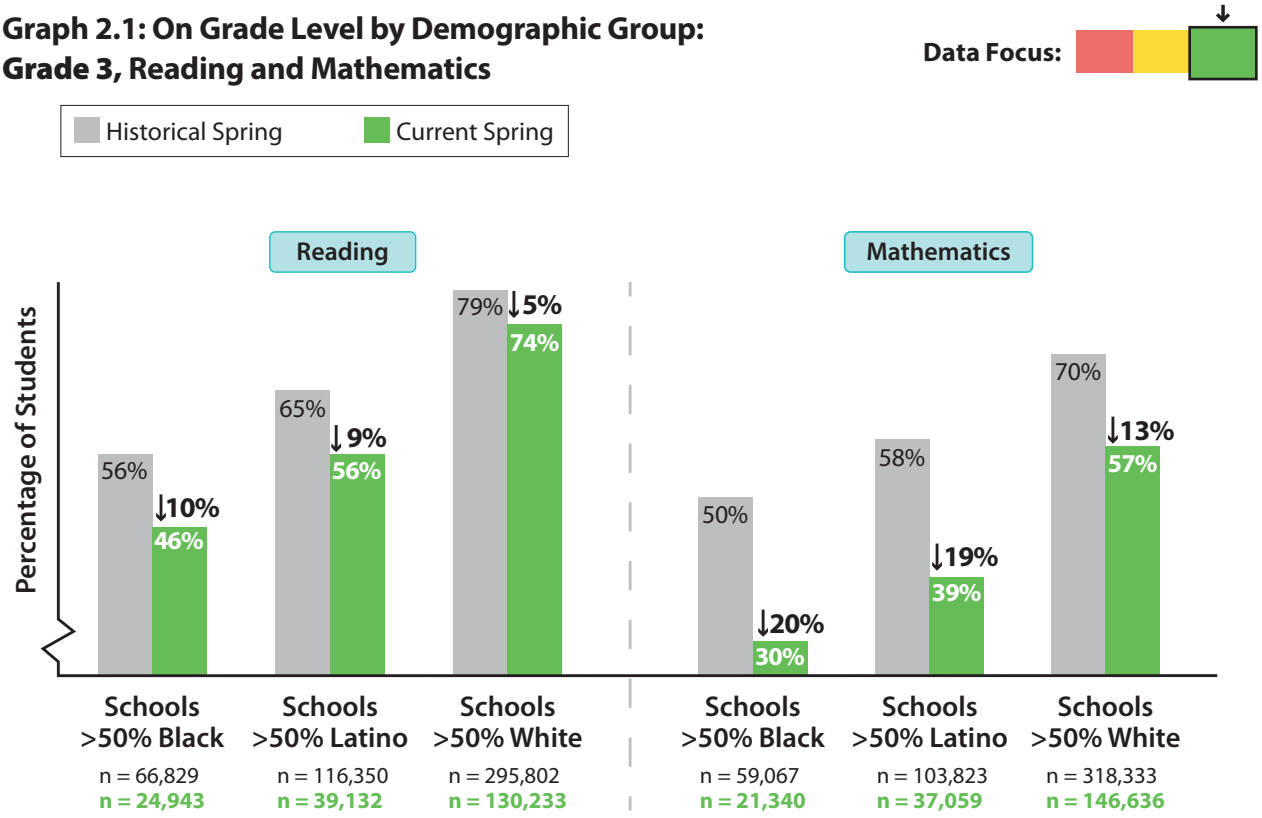
Finding 2

Fewer Students in Schools Serving Mostly Black or Latino Students Are On Grade Level Compared to Schools Serving Mostly White Students

In this section, we examine the data disaggregated by school-level demographic information to look at schools that serve a majority of Black, Latino, and White students. While schools with a majority of Black, Latino, and White students may contain varying levels of diversity, we chose to group schools this way to ensure we had a sufficient sample size for each school-level demographic group.

To illustrate this finding, we are highlighting the results for Grade 3. In reading and mathematics, the percentage of Grade 3 students who are ready for grade-level work has decreased relative to the historical average for students in the three demographic groups described below. In reading, the decreases are larger for students in schools serving a majority of Black students (10 percentage points) or Latino students (9 percentage points) than for students in schools serving mostly White students (5 percentage points). In mathematics, the decreases are also larger for students in schools serving a majority of Black students (20 percentage points) or Latino students (19 percentage points) than for students in schools serving mostly White students (13 percentage points). The historical averages reveal inequities that predate the pandemic.

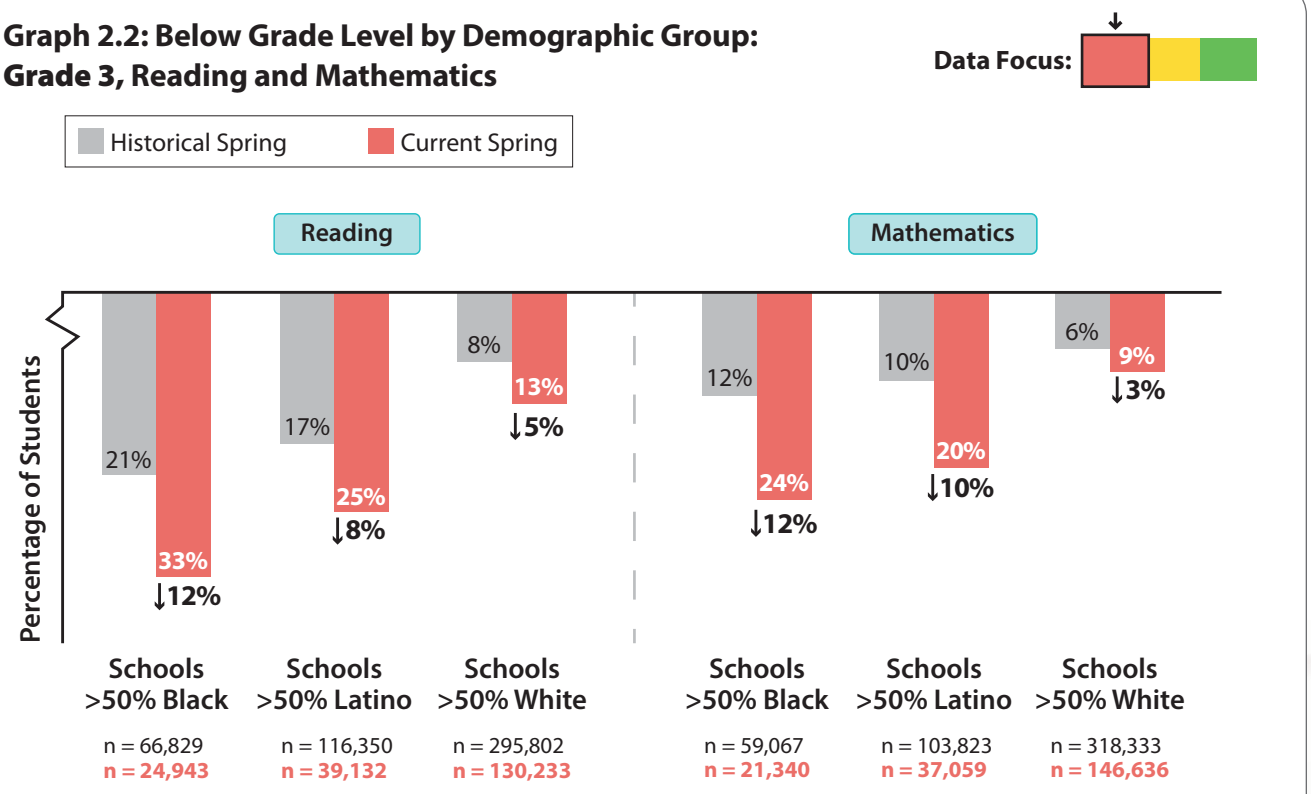
Graph 2.1: On Grade Level by Demographic Group: Grade 3, Reading and Mathematics



Why Focus on Grade 3? Throughout this paper, results for Grade 3 students will be illustrated as Grade 3 is a pivotal year for student learning, and research shows performance in Grade 3 is predictive of high school outcomes (Hernandez, 2011).

When looking within the same sample at the percentage of Grade 3 students who are underprepared for grade-level work, we can see a larger increase in unfinished learning in reading for students in schools serving a majority of Black students (12 percentage points) than schools serving a majority of Latino students (8 percentage points) or White students (5 percentage points). In mathematics, there is a larger increase in unfinished learning among schools serving a majority of Black students (12 percentage points) or Latino students (10 percentage points) compared to schools serving mostly White students (3 percentage points). The historical averages reveal inequities that predate the pandemic.

Graph 2.2: Below Grade Level by Demographic Group: Grade 3, Reading and Mathematics



Across all grades, the percentage of students who are ready for grade-level work has decreased across schools that serve a majority of Black, Latino, and White students in reading and mathematics. The following tables present the percentage of students by placement level, subject, and grade for each of the three demographic groups represented in the figures on the previous pages. The results for students in schools serving less than 25% Black, Latino, and White students, as well as students in schools serving between 25% and 50% Black, Latino, and White students, are included in the Appendix.

Table 1: Percentage of Students On Grade Level by Demographic Group—Spring Testing Window: Reading and Mathematics, Grades 1–8

	Percentage On Grade Level					
	Grade	>50% Black		>50% Latino		>50% White	
		Historical Spring	Current Spring	Historical Spring	Current Spring	Historical Spring	Current Spring
Reading	1	55%	38%	63%	46%	74%	62%
	2	50%	35%	60%	45%	74%	63%
	3	56%	46%	65%	56%	79%	74%
	4	35%	27%	47%	39%	61%	57%
	5	31%	27%	43%	38%	56%	54%
	6	30%	25%	41%	36%	53%	49%
	7	32%	25%	43%	38%	53%	49%
	8	34%	27%	44%	42%	53%	51%
Mathematics	1	48%	32%	57%	39%	70%	58%
	2	43%	26%	55%	36%	67%	56%
	3	50%	30%	58%	39%	70%	57%
	4	57%	33%	63%	42%	73%	59%
	5	47%	33%	57%	42%	69%	58%
	6	37%	28%	46%	35%	62%	52%
	7	28%	21%	39%	32%	52%	43%
	8	27%	21%	28%	26%	45%	38%

Table 2: Percentage of Students Below Grade Level by Demographic Group—Spring Testing Window: Reading and Mathematics, Grades 1–8

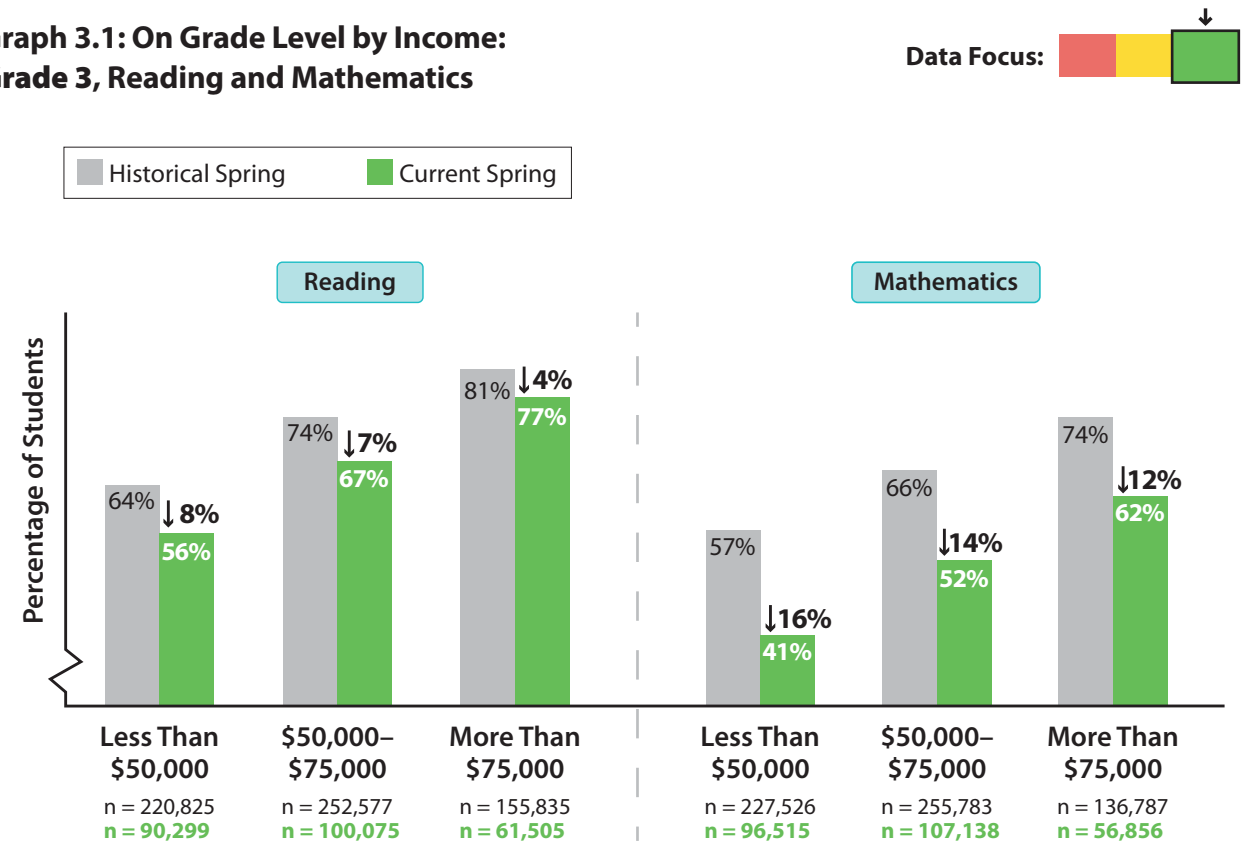
	Percentage Below Grade Level					
	>50% Black		>50% Latino		>50% White	
Grade	Historical Spring	Current Spring	Historical Spring	Current Spring	Historical Spring	Current Spring
Reading						
1	2%	5%	2%	4%	1%	1%
2	13%	22%	10%	18%	4%	7%
3	21%	33%	17%	25%	8%	13%
4	21%	33%	16%	24%	9%	12%
5	38%	45%	30%	35%	18%	21%
6	48%	52%	37%	41%	26%	28%
7	53%	58%	41%	44%	30%	32%
8	49%	55%	39%	40%	30%	31%
Mathematics						
1	2%	7%	2%	6%	1%	2%
2	10%	21%	7%	17%	3%	7%
3	12%	24%	10%	20%	6%	9%
4	15%	29%	12%	23%	7%	11%
5	21%	31%	17%	25%	10%	14%
6	29%	39%	24%	34%	13%	20%
7	41%	50%	32%	40%	20%	27%
8	47%	54%	46%	48%	27%	32%

Finding 3

Fewer Students Attending Schools in Lower-Income Zip Codes Are On Grade Level Compared to Schools in Higher-Income Zip Codes

In this section, we examine the data disaggregated by the median annual household income associated with a school's zip code. Across grade levels and subjects, the percentage of students who are ready for grade-level work has decreased this spring relative to the historical average for students, regardless of income bracket. To illustrate this finding, we are highlighting the results for Grade 3. In reading, the Grade 3 decline relative to the historical average is larger for students in schools where the median income is less than $50,000 (8 percentage points) than the decline for students in schools where the median income is between $50,000 and $75,000 (7 percentage points) or more than $75,000 (4 percentage points). In mathematics, the Grade 3 decline relative to the historical average is larger for students in schools where the median income is less than $50,000 (16 percentage points) than the decline for students in schools where the median income is between $50,000 and $75,000 (14 percentage points) or more than $75,000 (12 percentage points).

Graph 3.1: On Grade Level by Income: Grade 3, Reading and Mathematics



As shown below, the percentage of Grade 3 students who are underprepared for grade-level work increased for students across schools regardless of income bracket. In reading, the Grade 3 declines relative to the historical average are steeper for students in schools in zip codes where the median household income is below $50,000 annually (8 percentage points) compared with students in schools in zip codes where the median household income is between $50,000 and $75,000 (6 percentage points) and students in schools in zip codes where the median household income is greater than $75,000 (3 percentage points). This is also true for Grade 3 mathematics (7, 5, and 3 percentage points, respectively).

Graph 3.2: Below Grade Level by Income: Grade 3, Reading and Mathematics

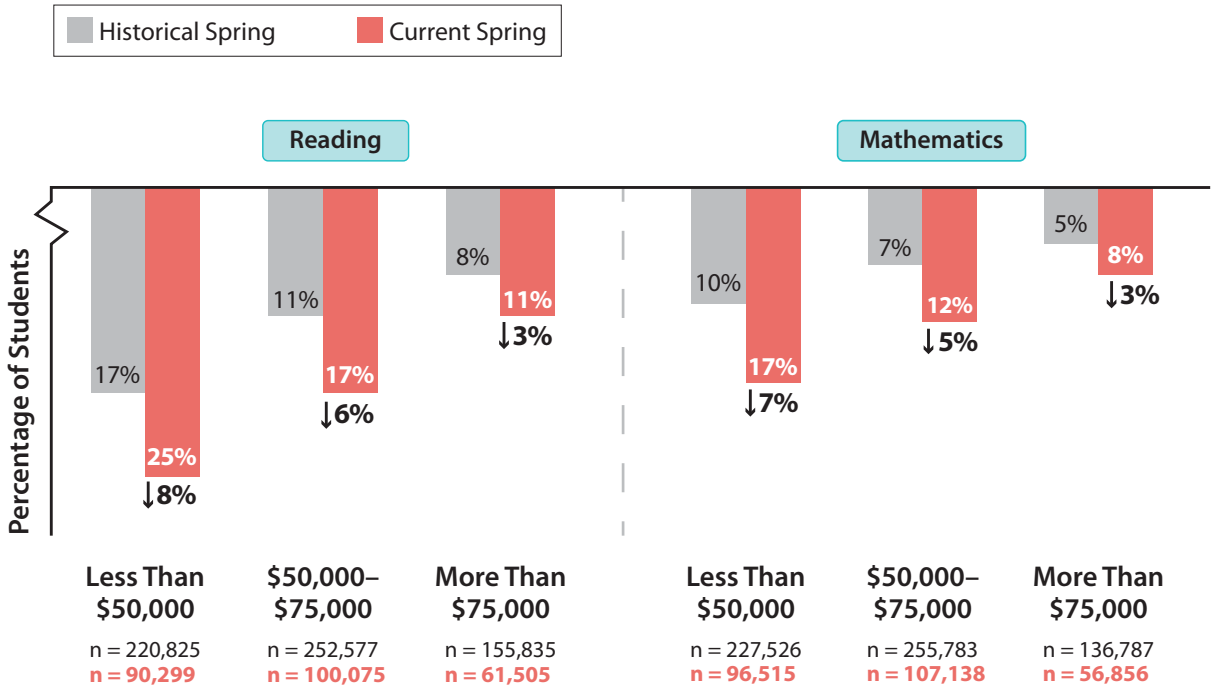


Table 3: Percentage of Students On Grade Level and Below Grade Level by Income Group—Spring Testing Window: Reading and Mathematics, Grades 1–8

	Percentage On Grade Level					
	Grade	<$50,000		$50,000–$75,000		>$75,000	
		Historical	Current	Historical	Current	Historical	Current
Reading	1	60%	46%	69%	56%	78%	68%
	2	58%	46%	68%	57%	78%	68%
	3	64%	56%	74%	67%	81%	77%
	4	44%	38%	55%	50%	65%	62%
	5	40%	38%	51%	48%	61%	59%
	6	39%	36%	47%	44%	58%	53%
	7	40%	36%	48%	44%	59%	56%
	8	41%	38%	49%	47%	59%	57%
Mathematics	1	56%	42%	65%	53%	73%	62%
	2	53%	39%	62%	50%	71%	60%
	3	57%	41%	66%	52%	74%	62%
	4	62%	44%	70%	54%	77%	64%
	5	55%	44%	65%	53%	74%	64%
	6	48%	39%	57%	48%	66%	57%
	7	38%	31%	47%	40%	55%	48%
	8	33%	29%	40%	34%	48%	43%

	Percentage Below Grade Level					
	Grade	<$50,000		$50,000–$75,000		>$75,000	
		Historical	Current	Historical	Current	Historical	Current
Reading	1	2%	3%	1%	2%	1%	2%
	2	10%	16%	6%	11%	3%	6%
	3	17%	25%	11%	17%	8%	11%
	4	17%	24%	12%	16%	8%	10%
	5	31%	34%	22%	25%	16%	18%
	6	38%	41%	31%	33%	22%	25%
	7	43%	45%	35%	37%	25%	26%
	8	42%	43%	34%	35%	26%	25%
Mathematics	1	2%	5%	1%	3%	1%	3%
	2	7%	14%	5%	9%	3%	7%
	3	10%	17%	7%	12%	5%	8%
	4	13%	21%	9%	15%	6%	10%
	5	16%	23%	12%	18%	8%	12%
	6	22%	30%	16%	24%	11%	17%
	7	31%	39%	24%	31%	18%	23%
	8	40%	43%	32%	37%	26%	28%

Finding 4

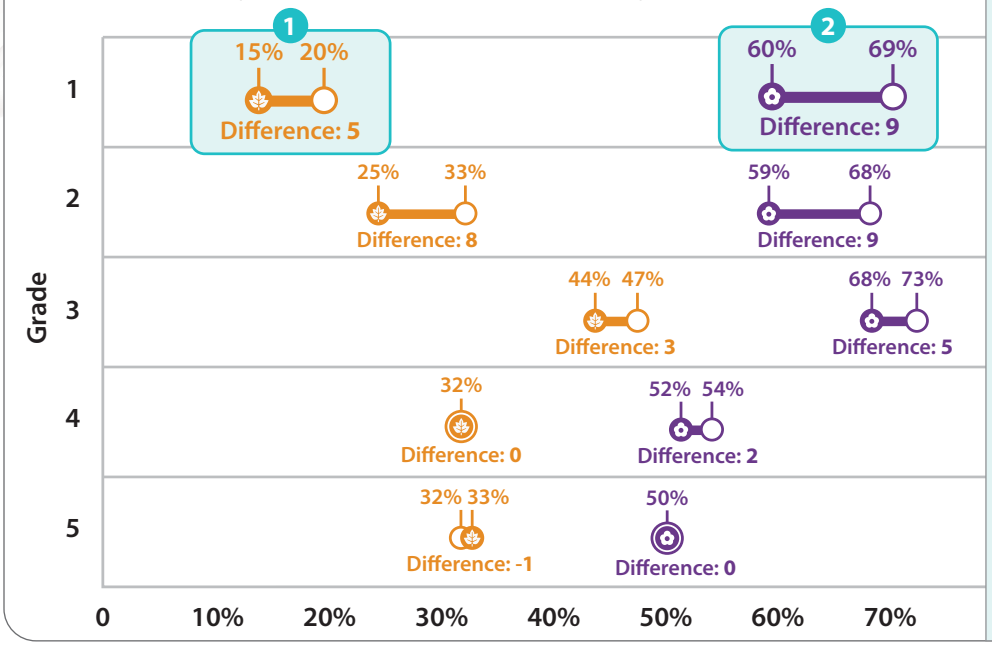
Students Have Made Progress from Fall to Spring but Continue to Fall Behind Historical Performance in Most Grades

In this section, we examine the change in percentage of students who are on grade level for a subset of students who indicated they took the Diagnostic in school during both the fall and spring assessment windows. Within this matched sample, students made progress from fall to spring in all subjects and grade levels during the 2020–2021 school year, as we would expect during a typical school year.

When comparing the fall to spring progress this year with the historical averages within and across the two time points, however, our visual analysis shows there is variability across subjects and grade levels. In some subjects and grade levels, the gap between the current school year and the historical average increased from fall to spring, and in some subjects and grade levels, the gap decreased. When looking at the percentage of students who were ready for grade-level work, a decrease in the differences indicates that students are catching up from starting behind in the fall, and an increase in the differences indicates that students have moved further from the historical baseline since the fall.

Graphs 4.1 and 4.2 display the differences from fall to spring for the percentage of students who were on grade level for reading in elementary school and middle school, respectively. Graphs 4.3 and 4.4 display the differences from fall to spring for the percentage of students who were on grade level for mathematics in elementary school and middle school, respectively. We recommend interpreting these results with caution, as the results are limited in generalizability due to the sample constraints. Specifically, the number of students in this subsample who had both a fall and spring Diagnostic taken in school is just under half of the total number of students whose findings are reported in the other sections of this report.

Graph 4.1: Difference between Percentage of Students On Grade Level in Fall and Spring Compared to Historical Average in Grades 1–5



Current, Fall — Difference — Historical, Fall

Current, Spring — Difference — Historical, Spring

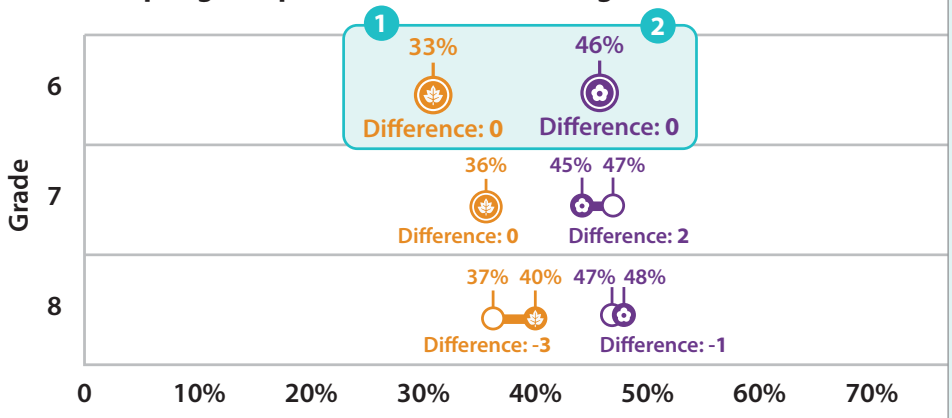
See Appendix Table 6 for the differences and the variation in differences.

Are We Catching Up in Elementary School?

1. The students in Grade 1 began the year behind the historical starting point of comparable students: 15% versus 20% on grade level, a difference of 5 points.
2. While more students placed on grade level in spring, the difference relative to historical performance has grown: 60% versus 69% on grade level, a difference of 9 points.

The increase from 5 to 9 points shows that the gap between this year and the historical average is getting *wider* for Grade 1.

Graph 4.2: Difference between Percentage of Students On Grade Level in Fall and Spring Compared to Historical Average in Grades 6–8



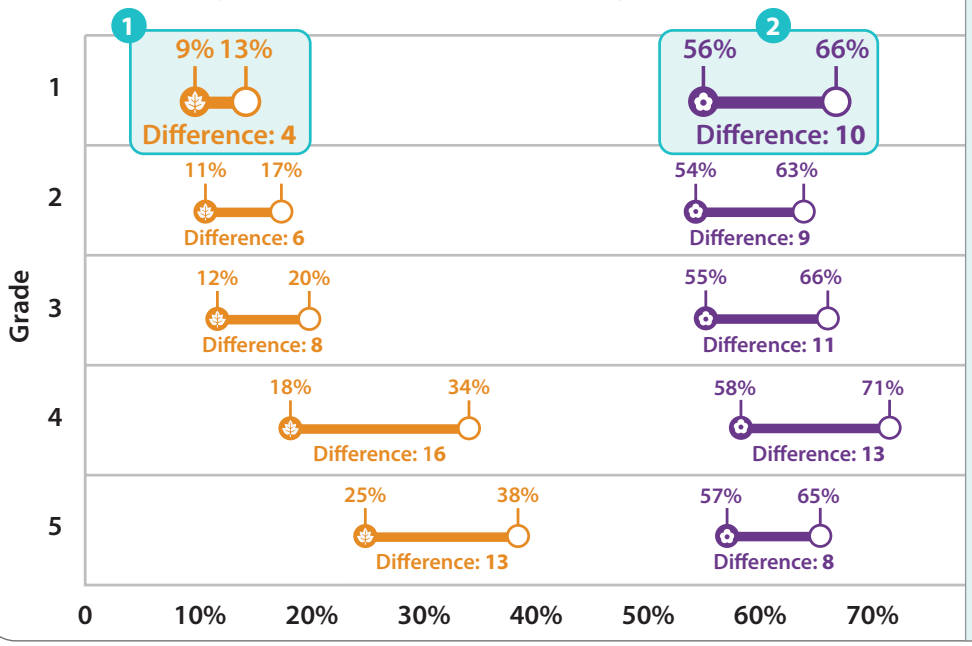
Are We Catching Up in Middle School?

1. The students in Grade 6 began the year at the same historical starting point of comparable students: 33% versus 33% on grade level, a difference of 0 points.
2. While more students placed on grade level in spring, the difference relative to historical performance was 0: 46% versus 46% on grade level.

There is *no difference* (0 points) between this year and the historical average at either time point.

In reading, the gaps between the current school year and the historical average have generally grown wider from fall to spring, with the exception of Grade 6 where there was no difference at either time period. This increase was largest in Grade 1, where the gap between the current school year and the historical average increased from 5% in the fall to 9% in the spring.

Graph 4.3: Difference between Percentage of Students On Grade Level in Fall and Spring Compared to Historical Average in Grades 1–5



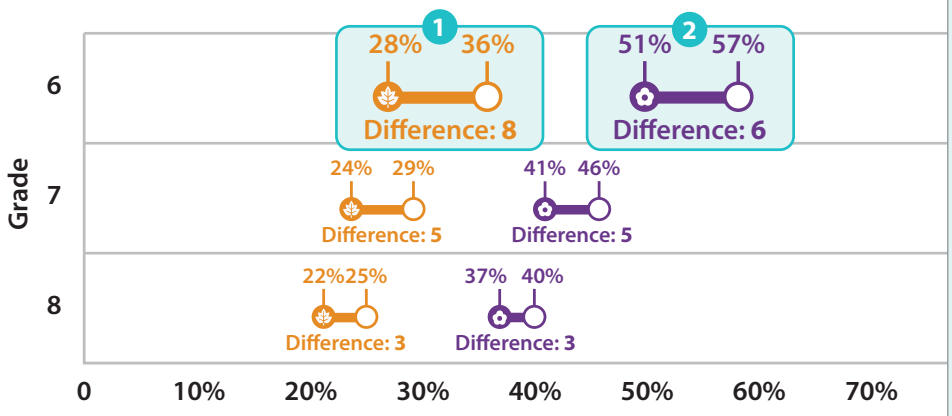
See Appendix Table 6 for the differences and the variation in differences.

Are We Catching Up in Elementary School?

1. The students in Grade 1 began the year behind the historical starting point of comparable students: 9% versus 13% on grade level, a difference of 4 points.
2. While more students placed on level in spring, the difference relative to historical performance is growing: 56% versus 66% on grade level, a difference of 10 points.

The increase from 4 to 10 points shows that the gap between this year and the historical average is getting *wider* for Grade 1.

Graph 4.4: Difference between Percentage of Students On Grade Level in Fall and Spring Compared to Historical Average in Grades 6–8



Are We Catching Up in Middle School?

1. The students in Grade 6 began the year at the same starting point as the historical average: 28% versus 36% on grade level, a difference of 8 points.
2. More students placed on level in spring, and the difference relative to historical performance decreased: 51% versus 57% on grade level, a difference of 6 points.

The decrease from 8 to 6 points shows that the gap between this year and the historical average is getting *smaller* for Grade 6.

In mathematics, the gaps between the current school year and the historical average increased from fall to spring in Grades 1–3, decreased in Grades 4–6, and stayed the same in Grades 7–8. The largest increase was in Grade 1, where the gap between the current school year and the historical average increased from 4% in the fall to 10% in the spring. The largest decrease was in Grade 5, where the gap changed from 13% in the fall to 8% in the spring.

Limitations

The findings in this paper rely on student self-reported data on the location of where they took the *i-Ready Diagnostic* test. We acknowledge this is an imperfect measure. About one-third of the students who took the *i-Ready Diagnostic* this spring tested remotely and are not reflected in this report. In addition, we know from comparing the in-school and out-of-school data that students who tested in school were more likely to attend schools serving majority White students and are more likely to be in towns and rural areas. Ultimately, we chose to focus our findings on the in-school testing results due to higher data consistency with in-school testing data as compared to out-of-school testing data.

Even though we know the location of where students took the *i-Ready Diagnostic* based on self-report data, we do not any have visibility into where students spent most of their time learning during the 2020–2021 school year. Where a student took an assessment should not be conflated with where a student is learning (e.g., entirely in a traditional school building, entirely remote in their home or another location outside of their school building, or in multiple locations as part of a hybrid model). In this analysis, student use of *i-Ready Personalized Instruction*, a supplemental online learning program, was not considered.

The findings in this paper also rely on school-level demographics, which is not the same as using student-level demographics. Schools consisting of more than 50% of one racial or ethnic group may still be fairly diverse, and we recognize that using school-level demographics does not capture that diversity nor the variability in unfinished learning within each school demographic group.

To describe the change in grade-level performance from fall to spring, we limited the analysis to only those students who took an *i-Ready Diagnostic* in school during both the fall and spring assessment window. This group represents just more than 45% of the general analysis population described in this paper and less than 15% of the total *i-Ready Diagnostic* testing population. Given the further-constrained sample in combination with the variation in grade- and subject-level results, we see more variability in the percentage of students who are on grade level than we saw in the main analysis.

Despite these limitations, we want to share what we know with educators in a timely manner, and we plan to continue with further analysis of student assessment data—including growth and location—from this past school year that we will be releasing as it becomes available.

Discussion

The findings from the spring *i-Ready Diagnostic* assessment data in reading and mathematics show how our nation's elementary and middle school children are performing after a year of disrupted learning. Nationwide, we see that fewer students are on grade level, particularly in the elementary grades, the needs in mathematics are greater than in reading, and students from historically marginalized communities experienced larger amounts of unfinished learning.

We know from decades of research that students' early reading and mathematics knowledge are essential building blocks, directly tied to long-term learning and predictive of success in life. For example, reading with comprehension by Grade 3 is important not only for continued academic success, but also to break the cycle of intergenerational poverty (Annie E. Casey Foundation, 2013; Hernandez, 2011). Similarly, early mathematics achievement is directly related to later mathematics achievement, and mathematics achievement is predictive of labor market success (NCTM, 2014; Watts, Duncan, Chen, Claessens, Davis-Kean, Duckworth, Engel, Siegler, & Susperreguy, 2015; Watts, 2020).

Our imperative is clear: We must teach children how to read fluently and with comprehension and to think procedurally and conceptually, beginning with foundational reading skills and mathematical concepts and skills they will continue to build on throughout their education and lives. Moreover, we must take care to prioritize supporting students from historically marginalized and underserved groups, including students of color and students living in poverty, because the pandemic is having a disparate impact on these particular communities (United States Department of Education, 2021).

How Can We, as a Nation, Better Prepare All Students for Academic Success in School and Enable Future Generations to Reach Their Full Potential?

- **Maximize instructional opportunities**, including expanded access to summer programs that include an academic component as well as before- and after-school programs.
- **Teach prerequisite skills and strategies in combination with grade-level instruction** and appropriate scaffolding to accelerate student learning.
- **Align resources with the greatest instructional needs** to ensure equitable educational opportunities and outcomes for historically marginalized students and communities.

At the state, district, school, and classroom level, we encourage educators to use locally available data to inform decision-making, determine essential areas to address with instruction, and allocate and align resources accordingly.

The pandemic exacerbated things for all students—particularly students in historically marginalized communities. Remarkably but not surprisingly, students, teachers, parents, caregivers, principals, superintendents, researchers, community organizations—the list is long and goes on—did not give up. Instead, they adapted to teaching and learning remotely, identified and shared best practices, unlocked and distributed crucial school supplies and funding, and ultimately did the best they possibly could for classroom learning during what was, for many of us, the worst of times. We commend every single person who made a positive contribution. Your efforts mattered.

Conclusion

Our analysis of spring assessment data shows fewer students are on grade level this spring than in prior school years in both reading and mathematics. The students who are most affected are students in elementary school, students attending schools that serve a higher proportion of Black and Latino students, and students attending schools in lower-income zip codes. Our grade-level analysis for the subset of students who took their assessments in school during both the fall and spring testing windows shows that, on average, after starting behind this fall, students have not caught up.

It is our hope that this report provides a clearer picture of where students are at the end of the 2020–2021 school year to support educators in their work this summer and next year. We will continue to investigate the impact of the pandemic on student learning and release subsequent research publications and issue briefs as the data becomes available.

Appendix

Methodology and Sample Description

Students who took an *i-Ready Diagnostic* test in school during spring of the 2020–2021 school year were eligible for inclusion in this study. To be considered "in school," the student had to both self-report that their test was taken in school and belong to a school where the number of students testing in school this year was comparable to the number of students who tested during spring of the 2018–2019 school year—the latest year for which we have quality spring data.

In the historical sample, we kept all students from the selected schools under the assumption that all students tested in school prior to school closures. Because many schools contain a mixture of in-school and remote testers this year, the 2020–2021 student counts will generally appear lower than the average single-year student counts from the historical sample.

All analyses were conducted at the student level. For analyses with school-level demographic variables, the school-level demographic group is treated as a student-level variable. Therefore, the interpretation is, for example, "students in schools located in lower-income zip codes tend to perform lower than students in schools located in higher-income zip codes."

Out-of-school testing data had more variability in terms of both scores and test administration data, such as test duration, number of testing sessions, and number of devices used. For this reason, we focus our findings on the in-school testing population as it is the fairest basis of comparison to a typical school year.

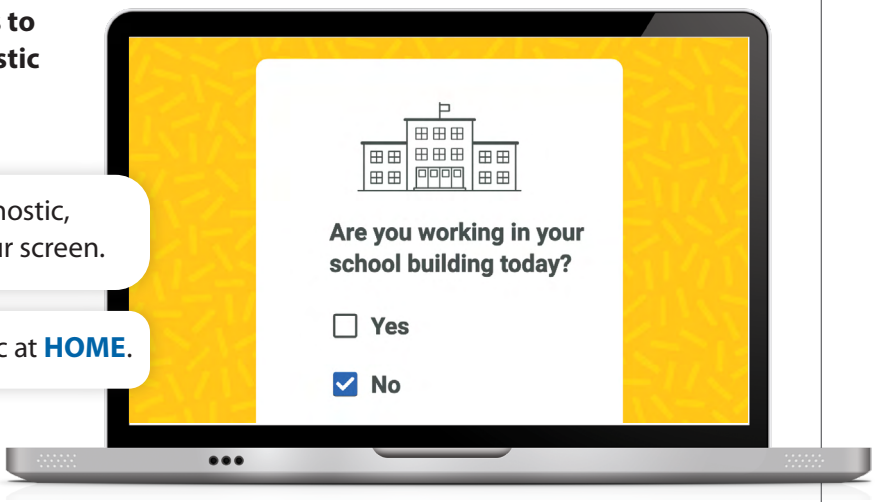
How Was Student Testing Location Determined?

Figure 2: How Was Location Determined?

Platform Popup Question for Students to Select If They Were Taking the Diagnostic in School or in an Out-of-School Test Environment

Once you **START** or **RESUME** your Diagnostic, you will see this question pop up on your screen.

Click **NO** if you are taking the Diagnostic at **HOME**.



Sample Inclusion Criteria

First, we selected schools:

- In districts where at least one student was enrolled in the three most current school years (i.e., 2018–2019, 2019–2020, 2020–2021) for their test subject
- Where at least one student tested in their subject and grade during the spring of the 2018–2019 and 2020–2021 school years
- Where the percentage of students tested in school in spring of 2020–2021 was between 50% and 200% of the same testing window in 2018–2019

Next, we included students from the selected schools for both 2020–2021 and historical samples:

- Who were enrolled in Grades 1–8
- Who did not rush on their spring test
- Who self-reported that their spring test was taken in school (2020–2021 only)

To be included in the demographic analyses, students had to belong to a school that was included in the NCES Common Core of Data in 2018–2019. In order to be included in the fall-to-spring sub-analysis, students also had to have taken a non-rushed Diagnostic in school during the fall testing window (i.e., August 1, 2020 through November 15, 2020).

School-Level Demographic Groups

To answer the research questions pertaining to race and ethnicity and median household income, we developed the following reporting groups based on available school-level demographics for the population of students who tested in school. Students were grouped based on whether their school:

- Served less than 25% Black students, 25% to 50% Black students, or more than 50% Black students
- Served less than 25% Latino students, 25% to 50% Latino students, or more than 50% Latino students
- Served less than 25% White students, 25% to 50% White students, or more than 50% White students
- Was located in zip codes where the median household income is less than $50,000, ranges from $50,000 to $75,000, or is more than $75,000

While the more than 50% Black, Latino, and White schools may contain varying levels of diversity, we chose to group schools this way to ensure we had a sufficient sample size for each school-level demographic group.

The school-level data on race and ethnicity used in this analysis was sourced from the NCES, which asks students to identify as American Indian or Alaska Native, Asian, Black or African American, Hispanic, Native Hawaiian or Other Pacific Islander, White, or Two or More Races. Throughout this paper, we use the term "Black" to refer to the NCES category of Black or African American and the term "Latino" to refer to the NCES category of Hispanic.

We recognize language changes with time, and each demographic group described is not monolithic, nor are all individuals within any designated demographic group in agreement on preferred language. As a company, we will continue to review, reflect on, and evolve the terminology with the goal of using bias-free, inclusive, and sensitive-language labels.

Additional Sample Description Data

Student counts and school-level demographic data are provided for both the in-school testing population (reported) and the out-of-school testing population (not reported).

Appendix Table 1.1: Number of Students by Subject and Grade Level In-School Testing Population: Spring

In School				
Grade	Reading		Mathematics	
	Historical	Current	Historical	Current
1	567,648	232,624	587,914	253,512
2	610,762	251,441	627,126	270,042
3	640,774	257,014	632,106	266,124
4	583,146	232,645	621,277	257,297
5	512,733	205,750	575,399	236,916
6	322,218	128,587	342,792	141,413
7	243,907	97,367	258,312	108,389
8	219,252	89,488	212,629	93,097

Appendix Table 1.2: Number of Students by Subject and Grade Level Out-of-School Testing Population: Spring

Out of School				
Grade	Reading		Mathematics	
	Historical	Current	Historical	Current
1	71,521	27,969	78,860	31,957
2	96,982	38,031	98,173	39,133
3	103,085	36,641	108,797	39,916
4	112,824	39,249	122,401	43,792
5	110,116	39,034	120,776	44,359
6	103,519	35,011	105,371	37,828
7	93,721	34,733	98,248	37,545
8	90,425	33,129	95,347	37,737

Note: Diagnostic test results for students who tested out of school are not included in the report findings.

Appendix Table 2.1: School-Level Demographic Characteristics, In-School Testing Population: Spring

In School				
	Reading		Mathematics	
	Average	Range	Average	Range
% American Indian	.5%	0–100%	.5%	0–100%
% Asian	3.4%	0–81%	3.1%	0–81%
% Black	15.8%	0–100%	14.8%	0–100%
% Hawaiian or Pacific Islander	.5%	0–82%	.5%	0–82%
% Latino	23.8%	0–100%	22.6%	0–100%
% White	51.3%	0–100%	53.9%	0–100%
Median Annual Household Income	$56,206	$10,554–$235,714	$55,387	$10,554–$237,454
Student Enrollment	540	9–11,173	531	9–11,173

Appendix Table 2.2: School-Level Demographic Characteristics, Out-of-School Testing Population: Spring

Out of School				
	Reading		Mathematics	
	Average	Range	Average	Range
% American Indian	.6%	0–100%	.7%	0–100%
% Asian	10.7%	0–78%	10.4%	0–86%
% Black	20.3%	0–100%	22.1%	0–100%
% Hawaiian or Pacific Islander	.9%	0–74%	.9%	0–74%
% Latino	43.7%	0–100%	42.2%	0–100%
% White	19.7%	0–99%	19.6%	0–99%
Median Annual Household Income	$62,161	$14,484–$223,434	$61,445	$14,484–$223,434
Student Enrollment	614	41–11,173	609	41–11,173

Note: Diagnostic test results for students who tested out of school are not included in the report findings.

Additional Results

Appendix Table 3: Percentage of Students On or Below Grade Level in Reading by Demographic Group, In-School Testing Population: Spring

Percentage On Grade Level												
Grade	Less Than 25% Black		25%–50% Black		Less Than 25% Latino		25%–50% Latino		Less Than 25% White		25%–50% White	
	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current
1	71%	59%	62%	47%	70%	58%	67%	54%	59%	42%	68%	55%
2	71%	59%	60%	47%	70%	59%	65%	53%	56%	40%	67%	55%
3	75%	69%	66%	57%	75%	69%	71%	63%	61%	50%	73%	65%
4	57%	53%	44%	38%	56%	52%	52%	46%	41%	33%	53%	47%
5	53%	50%	40%	37%	52%	50%	47%	44%	38%	34%	48%	45%
6	50%	46%	37%	34%	49%	46%	41%	38%	36%	31%	43%	38%
7	51%	47%	36%	32%	50%	46%	42%	41%	38%	33%	41%	37%
8	51%	49%	38%	35%	50%	48%	44%	43%	39%	36%	43%	39%

Percentage Below Grade Level												
Grade	Less Than 25% Black		25%–50% Black		Less Than 25% Latino		25%–50% Latino		Less Than 25% White		25%–50% White	
	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current
1	1%	2%	2%	3%	1%	2%	1%	3%	2%	5%	1%	2%
2	6%	10%	9%	15%	5%	10%	7%	13%	11%	20%	6%	12%
3	11%	16%	15%	24%	11%	16%	13%	20%	19%	29%	12%	18%
4	11%	15%	16%	24%	11%	15%	13%	19%	19%	28%	12%	18%
5	21%	24%	30%	35%	22%	24%	25%	29%	33%	39%	24%	28%
6	29%	31%	41%	44%	29%	32%	36%	38%	43%	46%	35%	39%
7	33%	34%	47%	51%	33%	36%	41%	41%	47%	50%	42%	45%
8	32%	32%	45%	47%	33%	34%	39%	38%	44%	47%	40%	42%

Appendix Table 4: Percentage of Students On or Below Grade Level in Mathematics by Demographic Group, In-School Testing Population: Spring

Percentage On Grade Level												
Grade	Less Than 25% Black		25%–50% Black		Less Than 25% Latino		25%–50% Latino		Less Than 25% White		25%–50% White	
	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current
1	66%	54%	56%	42%	66%	54%	60%	47%	53%	36%	62%	48%
2	64%	52%	53%	38%	64%	52%	58%	44%	51%	32%	59%	45%
3	67%	53%	59%	41%	67%	54%	63%	46%	55%	35%	65%	48%
4	71%	56%	63%	44%	71%	56%	67%	48%	60%	38%	68%	50%
5	66%	55%	55%	44%	66%	55%	61%	48%	53%	39%	61%	49%
6	59%	49%	46%	38%	59%	50%	49%	39%	41%	30%	52%	42%
7	49%	41%	34%	28%	49%	41%	38%	32%	33%	26%	39%	32%
8	42%	36%	29%	24%	43%	37%	33%	27%	27%	23%	32%	28%

Percentage Below Grade Level												
Grade	Less Than 25% Black		25%–50% Black		Less Than 25% Latino		25%–50% Latino		Less Than 25% White		25%–50% White	
	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current
1	1%	3%	2%	5%	1%	3%	2%	5%	2%	7%	1%	4%
2	4%	9%	7%	15%	4%	9%	6%	13%	8%	19%	5%	12%
3	7%	12%	9%	18%	7%	11%	8%	15%	11%	22%	7%	14%
4	9%	14%	13%	22%	9%	14%	11%	18%	14%	26%	10%	17%
5	11%	17%	16%	24%	11%	16%	14%	20%	18%	28%	13%	20%
6	15%	22%	24%	32%	15%	22%	21%	31%	27%	38%	19%	28%
7	22%	29%	35%	43%	22%	30%	31%	37%	37%	46%	30%	38%
8	31%	35%	46%	49%	30%	35%	41%	44%	48%	52%	41%	44%

Additional Results for Students with Fall and Spring Data

Appendix Table 5: Number of Students by Subject and Grade Level
In-School Testing Population: Fall and Spring

In School for Current School Year				
Grade	Reading		Mathematics	
	Historical	Current	Historical	Current
1	382,702	113,816	383,741	127,475
2	415,178	121,912	415,815	133,193
3	451,756	118,928	446,982	129,476
4	401,755	106,658	425,749	121,387
5	346,102	94,334	387,852	112,441
6	224,465	57,437	242,048	65,965
7	171,889	40,980	180,763	48,325
8	151,374	38,591	150,273	40,854
All	2,545,221	692,656	2,633,223	779,116

Appendix Table 6: Percentage of Students On Grade Level
In-School Testing Population: Fall and Spring

	Percentage On Grade Level						
	Grade	Fall			Spring			Variation in Differences
		Historical	Current	Difference	Historical	Current	Difference	
Reading	1	20%	15%	5	69%	60%	9	4
	2	33%	25%	8	68%	59%	9	1
	3	47%	44%	3	73%	68%	5	2
	4	32%	32%	0	54%	52%	2	2
	5	32%	33%	-1	50%	50%	0	1
	6	33%	33%	0	46%	46%	0	0
	7	36%	36%	0	47%	45%	2	2
	8	37%	40%	-3	47%	48%	-1	2
Mathematics	1	13%	9%	4	66%	56%	10	6
	2	17%	11%	6	63%	54%	9	3
	3	20%	12%	8	66%	55%	11	3
	4	34%	18%	16	71%	58%	13	-3
	5	38%	25%	13	65%	57%	8	-5
	6	36%	28%	8	57%	51%	6	-2
	7	29%	24%	5	46%	41%	5	0
	8	25%	22%	3	40%	37%	3	0

To calculate the variation in differences, spring differences were subtracted from fall differences.

Appendix Table 7: Change in Percentage of Students On Grade Level In-School Testing Population: Fall and Spring

	Percentage On Grade Level					
	Grade	Historical			Current		
		Historical Fall	Historical Spring	Change	Current Fall	Current Spring	Change
Reading	1	20%	69%	49%	15%	60%	45%
	2	33%	68%	35%	25%	59%	34%
	3	47%	73%	26%	44%	68%	24%
	4	32%	54%	22%	32%	52%	20%
	5	32%	50%	18%	33%	50%	17%
	6	33%	46%	13%	33%	46%	13%
	7	36%	47%	11%	36%	45%	9%
	8	37%	47%	10%	40%	48%	8%
Mathematics	1	13%	66%	53%	9%	56%	47%
	2	17%	63%	46%	11%	54%	43%
	3	20%	66%	46%	12%	55%	43%
	4	34%	71%	37%	18%	58%	40%
	5	38%	65%	27%	25%	57%	32%
	6	36%	57%	21%	28%	51%	23%
	7	29%	46%	17%	24%	41%	17%
	8	25%	40%	15%	22%	37%	15%

Figure 3: *i-Ready Diagnostic* Placement-Level Descriptors

	Three or More Grade Levels Below	Two Grade Levels Below	One Grade Level Below	Early On Grade Level	Mid or Above Grade Level	
Placement relative to grade-Level college and career-readiness standards	Are not close to meeting			Only partially met	Met	
Instructional Recommendations	**Likely need intensive intervention of foundational concepts.** Students who perform below grade level are not likely to be proficient on their state summative test, though it is possible.	**May need intensive intervention** of material that is **two grade levels below** to help fill in gaps in students' foundational knowledge.	**May benefit from review or remediation of material** that is **one grade level below**.	**Will benefit from on-grade level instruction** to help them meet the expectations of college- and career-readiness standards for their grade level.	**Mid On Grade Level:**	Will benefit from instruction in late on-grade level topics.
					Late On Grade Level:	Will benefit from late on-grade level enrichment and will be ready for instruction focused on topics typically covered in the beginning of the subsequent grade level.
					Above Grade Level:	Will benefit from above-grade level instruction.

About the *i-Ready Diagnostic*

The Diagnostic is a computer-adaptive assessment for students in Grades K–12 for Reading and Mathematics that provides valid and reliable criterion-referenced and normative scores. The Diagnostic can be administered, typically, at three time points during the school year: fall, winter, and spring.

In addition to a scale score and a norm-referenced percentile-rank score, the Diagnostic provides five criterion-referenced Grade-Level Placements: Mid or Above Grade Level, Early On Grade Level, One Grade Level Below, Two Grade Levels Below, and Three or More Grade Levels Below. Unlike normative scores, these placement levels articulate the high expectations students must achieve to be considered as having attained grade-level knowledge and skills. These placement levels are designed to help educators understand what level of instruction students are prepared for across the school year.

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