

Understanding Student Learning

Insights from Fall 2021

Curriculum Associates Research Brief | November 2021

Curriculum Associates

The mission of Curriculum Associates is to make classrooms better places for teachers and students.

Executive Summary

At Curriculum Associates, we have been studying the effects of the COVID-19 pandemic since schools first closed their buildings and moved to remote learning in the spring of the 2019–2020 school year. This report provides a snapshot of where students are as they return to school in fall 2021 relative to grade-level standards and historical averages. It is the fourth publication in a series of research papers that examine students' academic achievement during the pandemic. Using the i-Ready Diagnostic's criterion-referenced grade-level placement data from more than nine million students across the country, our findings are focused on students who are on grade level and below grade level as of the present fall compared to a pre-pandemic historical average. We also examine the progress made since last fall by comparing a subset of students who tested in school during fall 2020 and 2021 within a matched sample of schools.

In the current report's on-grade level analysis, we see that students in the early elementary grades who are typically still learning to read have not yet caught up to pre-pandemic on-grade level performance. By contrast, the academic achievement of students in the upper-elementary and middle school grades who are typically reading to learn is closer to where it was before the pandemic disrupted teaching and learning. In mathematics, a different story emerges. The percentage of students who are on grade level is not yet reaching pre-pandemic levels in most grades, and the gaps are largest in upper-elementary and middle school grades. This difference in mathematics performance could be attributable to the content standards as students typically shift from number sense and fluency in early grades to problem solving and algebraic thinking in later grades. Furthermore, demographic data results show that some of the historical inequities pre-dating the pandemic persist today: fewer students in schools serving mostly Black and Latino students than White students and fewer students in schools located in lower-income zip codes than higher-income zip codes are starting this school year on grade level.

However, looking at students who are on grade level does not show us the full picture of student achievement. Our below-grade level analysis reveals that more students are two or more grade levels below their actual grade level this fall than before the pandemic began. This means that teachers will not only have fewer students beginning the school year on grade level, but they will also have more students in need of intensive intervention and support. The pattern of the below-grade level results is similar to that of the on-grade level analysis: the pandemic has been detrimental for students in mathematics more than in reading, for students in schools serving mostly Black and Latino students more than White students, and for students in schools located in lower-income rather than higherincome neighborhoods.

When we compare performance in schools where students tested in school during both fall 2020 and fall 2021, we see a fair amount of variability based on subject and grade level. Overall, a similar number of students are on grade level in reading, and more students are on grade level in mathematics this fall compared to last fall. The below-grade level analysis reveals that more students are below grade level in reading in the upper-elementary and middle school grades and that fewer students are below grade level in mathematics across nearly all grades.

The findings in this paper shed light on the state of unfinished learning across the nation in a way that we hope is useful for educators as they seek to understand how to best support students in their local communities during the remainder of the current school year and beyond.

Key Findings

- In reading, the percentage of students who are on grade level in the upper-elementary and middle school grades is close to pre-pandemic levels, whereas in the early grades the percentage of students who are on grade level is lower than before the pandemic.
- In mathematics, the percentage of students who are on grade level is lower in nearly all grades than what we saw prior to the pandemic.
- Fewer students attending schools serving mostly Black and Latino students are on grade level this fall than students attending schools serving mostly White students, and these inequities pre-date the pandemic.
- Fewer students attending schools in lower-income zip codes are on grade level than students attending schools in higher-income zip codes, and these inequities also pre-date the pandemic.
- As for students who are below grade level, more students are below grade level in the early grades
 for reading and across all grades for mathematics; both observations are even more so for students
 in schools serving mostly Black and Latino students as well as for students in schools in lowerincome zip codes.
- Compared to last fall, the percentage of students who are on grade level or below grade level this fall varies depending on the grade level and subject. Overall, students have made improvements in mathematics, and there are mixed results (i.e., small upticks and downticks) in reading.

Contents

Executive Summary	<u>3</u>
Key Findings	
Introduction	<u>7</u>
Methodology	<u>7</u>
Research Questions	<u>7</u>
Sample Description	<u>8</u>
Results	<u>9</u>
Limitations	<u>26</u>
Discussion	<u>26</u>
Conclusion	<u>27</u>
Appendix	
The Language We Use to Describe Learning	
Methodology and Sample Description	<u>28</u>
Determining Student Testing Location	<u>29</u>
Focusing on In-School Testing Data	<u>29</u>
Sample Inclusion Criteria	<u>30</u>
School-Level Demographic Groups	<u>30</u>
Additional Sample Description Data	<u>31</u>
Additional Results	<u>33</u>
Additional Results for Students with Fall 2020 Data	<u>35</u>
About the i-Ready Diagnostic	<u>36</u>
References	37

Introduction

In spring 2020 and throughout the 2020–2021 school year, students experienced ongoing and repeated disruptions to learning due to the COVID-19 pandemic. The research of Curriculum Associates and others found the impact to be significant and concerning (Curriculum Associates, 2020; Kuhfeld, Tarasawa, Johnson, Ruzek, & Lewis, 2020; Dorn, Hancock, Sarakatsannis, & Viruleg, 2020). Overall, more students are underprepared for grade-level work compared to historical benchmarks, and pre-existing 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.

We have been following the impact of the pandemic since schools first shut down in spring of the 2019–2020 school year (Curriculum Associates, 2020a, 2020b, 2021a, 2021b). We acknowledge that the pandemic has most likely affected our students' education in ways we have yet to fully comprehend. To shed light on what we do know about students' academic achievement as of fall 2021, we have prepared our findings—the fourth in a series on what many call learning loss and we call unfinished learning. In this latest publication, we examine student learning as they returned to school for the 2021–2022 school year. As with our previous research on unfinished learning, we will continue to focus on assessment data for students who tested in school, which now provides a much clearer picture of overall student achievement since the vast majority of students tested in school this fall.

To learn more about the language we use to describe learning and why we focus on in-school assessment data, please see the Appendix.

Methodology

Research Questions

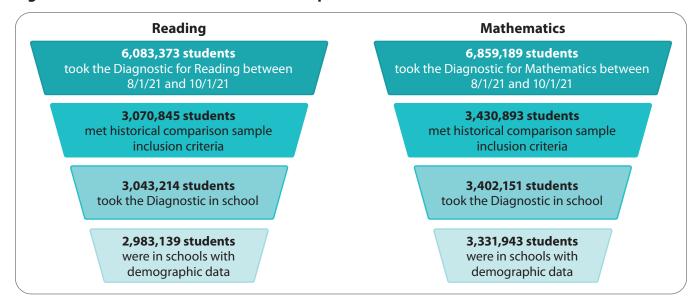
The primary research questions addressed in this paper are as follows:

- 1. Are more or fewer students on grade level during fall 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 fall 2020, 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 fall 2021 compared to prior school years. We constructed a historical average to represent typical performance for students in Grades 1–8 across the three most recent fall testing windows prior to the pandemic: 2017, 2018, and 2019. Student-level data was matched at the school level, so the current and historical samples consist of students in the same schools. To have what we consider to be a fair basis of comparison for this analysis, we have only included students who tested in school in fall of the 2021–2022 school year between August 1 and October 1, 2021. With these criteria in place, the final analytic sample consisted of 3,043,214 students in Grades 1–8 in the Diagnostic for Reading analysis and 3,402,151 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 all 50 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.

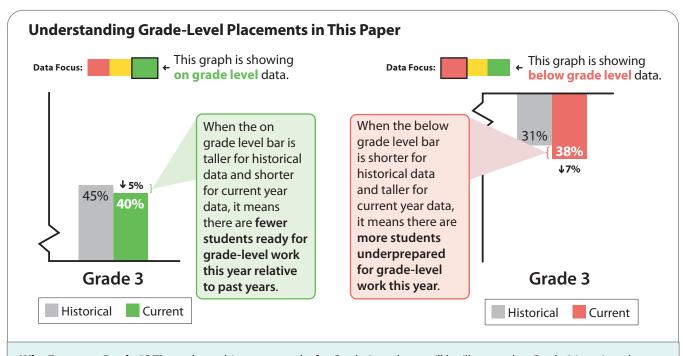
Figure 1: How Was the Fall Assessment Sample Selected?



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 and grade level 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 2021 and fall 2020 and look at how student performance changed from fall to fall as well as relative to the historical average fall performance. For the purposes of these analyses, 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.



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).

What Are Grade-Level Placements?

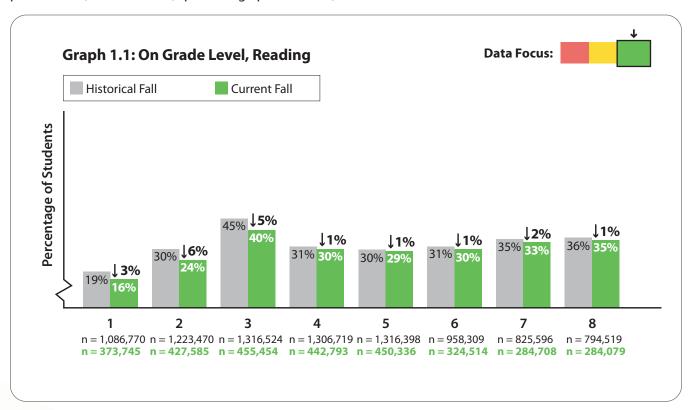
When students take the i-Ready Diagnostic, they are given a placement level relative to their chronological grade level that designates the student performance as being on grade level, below grade level, or above grade level. For example, a Grade 5 student can place below grade level at the Grade 4 level (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

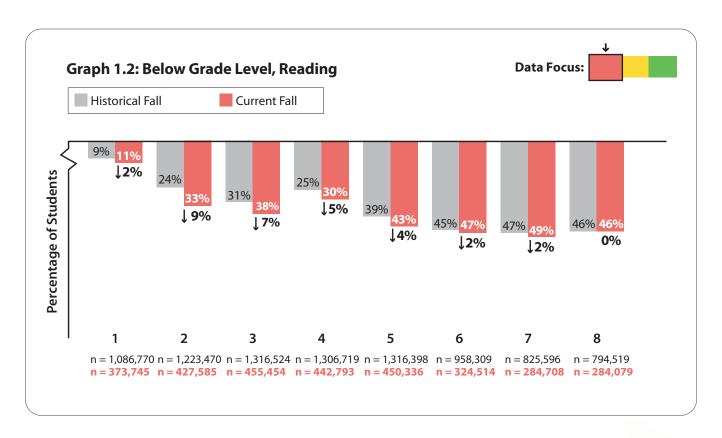
Fewer Students Are On Grade Level in Reading This Fall Compared to Historical Averages

Reading

In reading, the percentage of students who are on grade level is nearly that of pre-pandemic levels in the upper-elementary and middle school grades. However, there is a greater amount of unfinished learning in the early elementary grade levels, particularly in Grades 2 and 3. The percentage of students who are ready for grade-level work (i.e., Early On Grade Level or Above) remains lower during the fall of the 2021–2022 year relative to the historical average across all Grades 1–8. The largest decreases are in Grade 2 (6 percentage points lower) and Grade 3 (5 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 reading, the percentage of students who are underprepared for grade-level work is higher during fall of the 2021–2022 school year relative to the historical average for students in Grades 1-7, while Grade 8 remains flat. The largest increases are in Grade 2 (9 percentage points higher) and Grade 3 (7 percentage points higher).



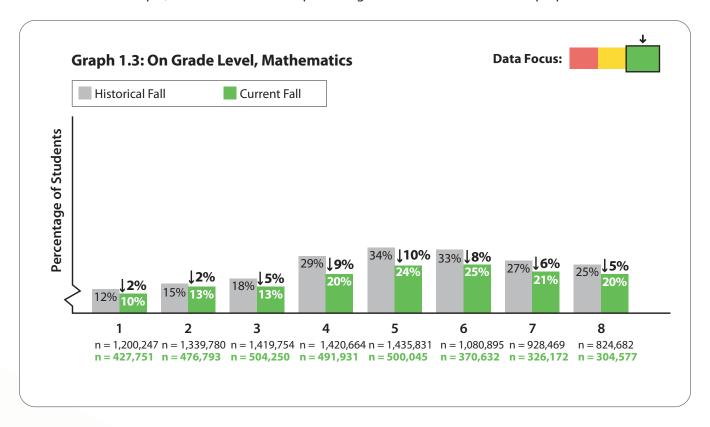
Finding 1

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

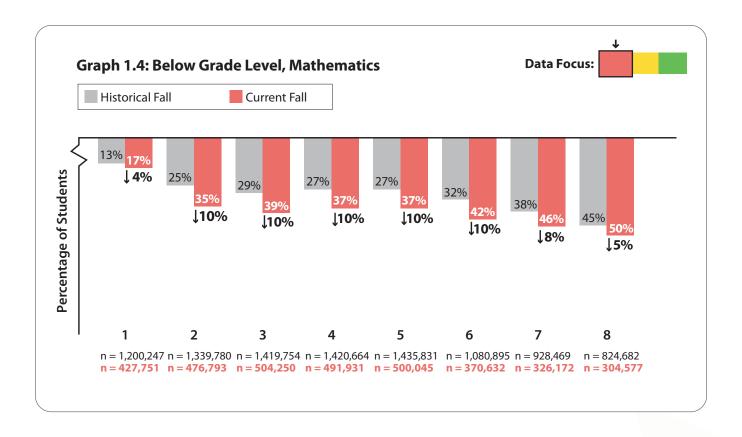
Mathematics

In mathematics, there is a greater amount of unfinished learning in fall 2021 compared to the historical average across all grade levels, particularly in upper-elementary and early middle school grades. The percentage of students who are ready for grade-level work (i.e., Early On Grade Level or Above) is lower during fall of the 2021–2022 school year relative to the historical average across all Grades 1–8. The largest decreases are in Grades 4, 5, and 6 (9, 10, and 8 percentage points lower, respectively).

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 is higher during the fall of the 2021–2022 school year relative to the historical average for students across all grades. Grades 2–7 show the greatest increases in unfinished learning, ranging from 8 to 10 percentage points.



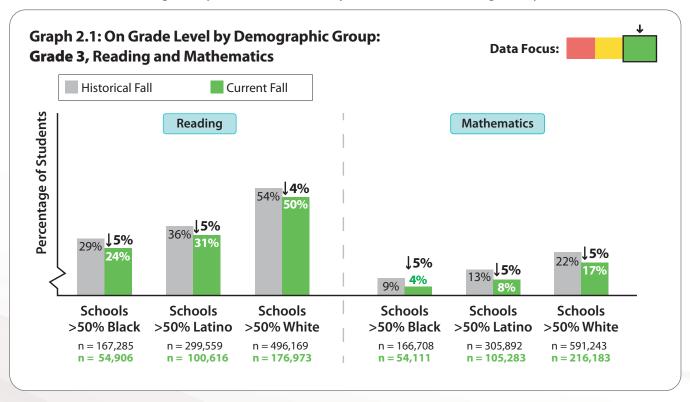
Finding 2

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, or White students. While schools with a majority of Black, Latino, or 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.

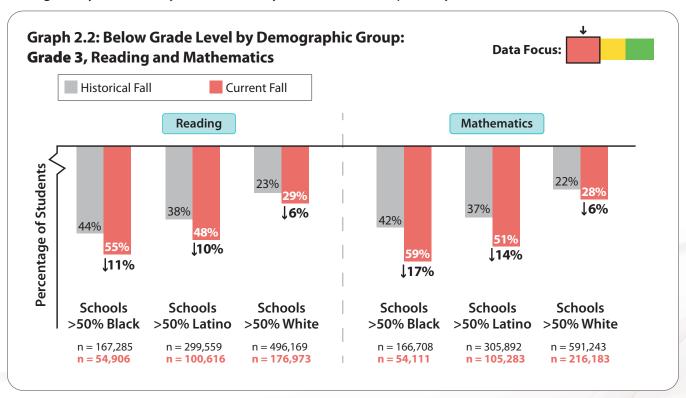
Across all grades, the percentage of students who are ready for grade-level work has decreased across schools that serve a majority of Black, Latino, and White students in reading and mathematics. To illustrate this finding, we are highlighting the results for Grade 3 below. In reading and mathematics, the percentage of Grade 3 students who are ready for grade-level work has decreased, relative to the historical average for students across all three demographic groups examined. In reading, the decreases are similar for students in schools serving a majority of Black students (5 percentage points), Latino students (4 percentage points), or White students (4 percentage points). In mathematics, the decreases are the same for students in schools serving a majority of Black students (5 percentage points), Latino students (5 percentage points), or White students (5 percentage points).

While the decreases across the three demographic groups are similar, the actual percentages of students who are on grade level are not, and historical averages reveal inequities that pre-date the pandemic. In fall 2021, 50% of Grade 3 students are on grade level in reading in schools serving mostly White students compared with 31% in schools serving mostly Latino students and 24% in schools serving mostly Black students. In mathematics, 17% of Grade 3 students are on grade level in schools serving mostly White students compared with 8% in schools serving mostly Latino students and just 4% in schools serving mostly Black students.



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 (11 percentage points) or Latino students (10 percentage points) than schools serving a majority of White students (6 percentage points). In mathematics, there is a larger increase in unfinished learning for Grade 3 students among schools serving a majority of Black students (17 percentage points) or Latino students (14 percentage points) compared to schools serving mostly White students (6 percentage points).

As with the data for students who are on grade level, the data for students who are below grade level reveal inequities in both the current averages of students who are below grade level as well as historical averages that pre-date the pandemic. In reading, 55% of Grade 3 students in schools serving mostly Black students began the school year two or more grade levels behind, compared to 48% in schools serving mostly Latino students and 29% in schools serving mostly White students. In mathematics, the data follows a similar trend with 59%, 51%, and 29% of Grade 3 students scoring two or more grade levels below their chronological grade in schools serving mostly Black, mostly Latino, or mostly White students, respectively.



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—Fall Testing Window: Reading and Mathematics, Grades 1–8

		Р	ercentage On Gra	ade Level		
Cun di		Black	>50%	Latino	>50%	White
Grade	Historical Fall	Current Fall	Historical Fall	Current Fall	Historical Fall	Current Fall
1	12%	10%	15%	13%	21%	18%
2	18%	13%	23%	18%	35%	29%
3	29%	24%	36%	31%	54%	50%
4 5	17%	15%	23%	22%	39%	38%
5	16%	15%	23%	22%	38%	38%
6	17%	16%	25%	23%	39%	37%
7	19%	18%	29%	28%	43%	40%
8	21%	20%	30%	30%	44%	41%
1	5%	4%	8%	6%	15%	13%
2	7%	4%	10%	7%	20%	17%
3	9%	4%	13%	8%	22%	17%
4	17%	8%	22%	12%	35%	26%
5	19%	9%	26%	15%	41%	31%
6	18%	11%	25%	17%	40%	32%
7	13%	9%	19%	15%	34%	27%
8	12%	9%	16%	13%	32%	25%

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

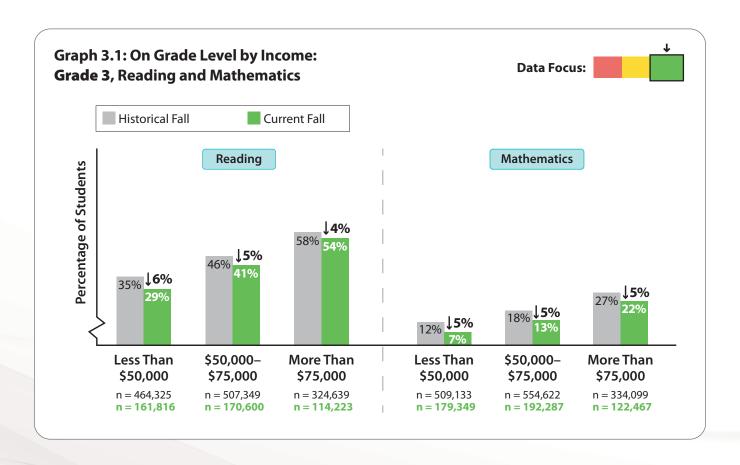
			Per	centage Below G	rade Level		
	Grade	>50%	Black	>50%	Latino	>50%	White
	Grade	Historical Fall	Current Fall	Historical Fall	Current Fall	Historical Fall	Current Fall
	1	12%	16%	13%	16%	5%	6%
	2	35%	49%	31%	43%	17%	24%
	3	44%	55%	38%	48%	23%	29%
Reading	4	37%	46%	32%	38%	18%	22%
Read	5	55%	62%	47%	52%	30%	32%
_	6	63%	64%	53%	54%	36%	38%
	7	65%	67%	54%	55%	38%	40%
	8	62%	63%	53%	53%	37%	38%
	1	17%	26%	17%	24%	9%	12%
	2	36%	53%	33%	47%	18%	25%
ics	3	42%	59%	37%	51%	22%	28%
mat	4	39%	58%	33%	48%	20%	26%
Mathematics	5	41%	57%	34%	47%	20%	27%
Ma	6	47%	60%	40%	53%	24%	33%
	7	54%	64%	46%	55%	28%	37%
	8	62%	67%	57%	60%	35%	41%

Finding 3

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

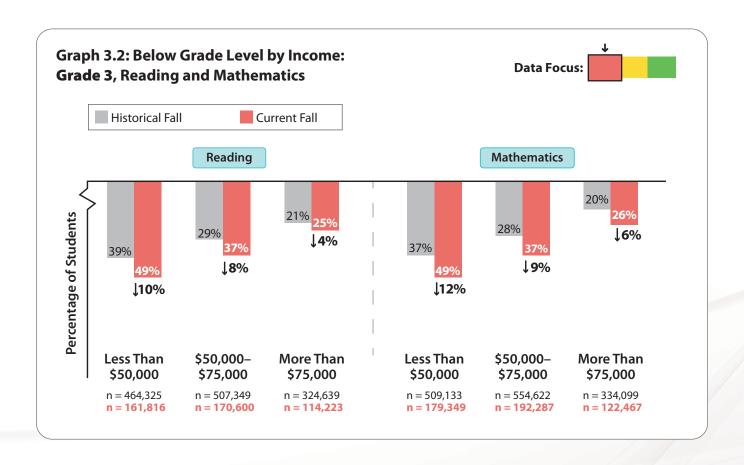
In this section, we examine the data disaggregated by the median annual household income associated with a school's zip code. Across all grades, the percentage of students who are ready for grade-level work has decreased this fall relative to the historical average, regardless of income bracket, in reading and mathematics. As in the previous section, to illustrate this finding, we are highlighting the results for Grade 3. In reading, the Grade 3 decline relative to the historical average is marginally larger for students in schools where the median income is less than \$50,000 (6 percentage points) than in schools where the median income is between \$50,000 to \$75,000 (5 percentage points) or more than \$75,000 (4 percentage points). In mathematics, the Grade 3 decline relative to the historical average is the same across all three income brackets (5 percentage points).

While the declines in each school-level income group in both subjects are similar, the actual percentages of students who are on grade level are not, and historical averages reveal inequities that pre-date the pandemic. In fall 2021, 54% of Grade 3 students are on grade level in reading in higher-income schools compared with 29% in lower-income schools. In mathematics, 22% of Grade 3 students are on grade level in higher-income schools, whereas just 7% of students in lower-income schools are on grade level.



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 increases in unfinished learning relative to the historical average are steeper in schools where the median household income is below \$50,000 annually (10 percentage points) compared with between \$50,000 to \$75,000 (8 percentage points) or more than \$75,000 (4 percentage points). For Grade 3 mathematics, the increases in unfinished learning are larger across all three income groups (12, 9, and 6 percentage points, respectively), and the overall percentages of students who are below grade level are higher than in reading.

The median household income results show that there are not only historical inequities that pre-date the pandemic, but also growing disparities between income groups due to the pandemic's disruptions to teaching and learning.



Across all grades, the percentage of students who are ready for grade-level work has decreased across schools located in zip codes where the median household income is less than \$50,000, between \$50,000 and \$75,000 and more than \$75,000 in reading and mathematics. The following tables present the percentage of students by placement level, subject, and grade for each of the three income groups represented in the figures on the previous pages.

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

		Percentage On Grade Level											
	Cuada	<\$50	,000	\$50,000	-\$75,000	>\$75,000							
	Grade	Historical Fall	Current Fall	Historical Fall	Current Fall	Historical Fall	Current Fall						
	1	13%	10%	19%	16%	26%	25%						
	2	21%	16%	30%	24%	40%	35%						
	3	35%	29%	46%	41%	58%	54%						
Reading	4	22%	20%	31%	30%	43%	42%						
tead	5	21%	20%	31%	30%	42%	41%						
_	6	22%	21%	32%	30%	43%	41%						
	7	25%	24%	35%	33%	47%	46%						
	8	27%	26%	37%	35%	48%	47%						
	1	7%	6%	11%	10%	19%	17%						
	2	10%	7%	15%	12%	24%	21%						
2	3	12%	7%	18%	13%	27%	22%						
Matnematics	4	22%	12%	29%	20%	40%	30%						
ב	5	25%	15%	34%	23%	46%	35%						
M	6	24%	17%	33%	25%	45%	37%						
	7	19%	15%	27%	21%	39%	31%						
	8	18%	14%	25%	19%	36%	30%						

Table 4: Percentage of Students Below Grade Level by Income Group—Fall Testing Window: Reading and Mathematics, Grades 1–8

		Percentage Below Grade Level											
	Cuada	<\$50	,000	\$50,000	-\$75,000	>\$75,000							
	Grade	Historical Fall	Current Fall	Historical Fall	Current Fall	Historical Fall	Current Fall						
	1	11%	14%	8%	10%	6%	7%						
	2	32%	44%	23%	32%	16%	21%						
_	3	39%	49%	29%	37%	21%	25%						
Keading	4	32%	39%	24%	29%	16%	20%						
Lead	5	49%	54%	38%	41%	27%	30%						
_	6	55%	57%	44%	46%	33%	35%						
	7	58%	59%	46%	48%	35%	35%						
	8	56%	56%	45%	46%	34%	34%						
	1	16%	22%	12%	17%	9%	12%						
	2	32%	44%	24%	34%	17%	24%						
CS	3	37%	49%	28%	37%	20%	26%						
mat	4	34%	47%	26%	35%	18%	25%						
Matnematics	5	34%	47%	26%	35%	18%	25%						
Ma	6	40%	52%	31%	42%	22%	30%						
	7	46%	55%	36%	45%	26%	34%						
	8	54%	59%	45%	50%	33%	38%						

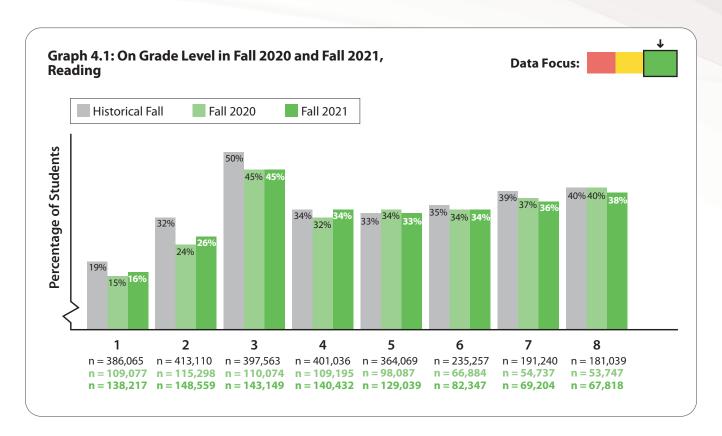
Finding 4

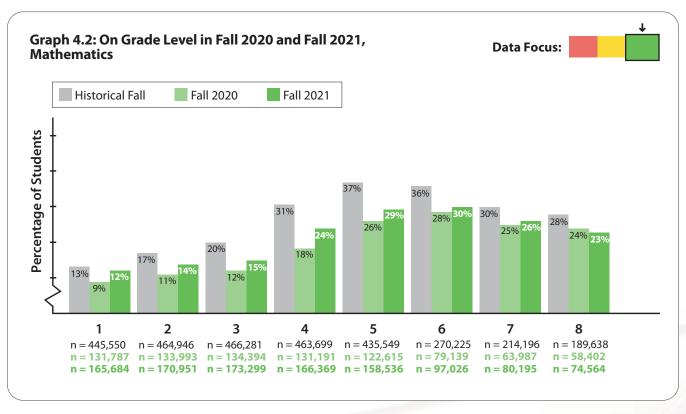
Fewer Students Are On Grade Level for the Second Fall in a Row Compared to Historical Benchmarks

In this section, we examine the change in percentage of students who are on grade level and below grade level for a subset of schools whose students indicated they took the Diagnostic in school during both fall 2020 and fall 2021. Within this sample, we compared student performance from the two most recent falls as well as the historical fall average within these schools from before the pandemic. We recommend interpreting these results with caution, as the results are limited in generalizability due to the sample constraints. Specifically, the number of students included in fall 2021 and historical samples in this analysis includes less than 40% of the number included in the analyses in the rest of this report.

For the on-grade level analysis, our visual analysis shows there is variability across subjects and grade levels. In reading, the percentage of students who are on grade level as of the current fall compared to the prior fall has increased for some of the elementary grades (i.e., Grades 1, 2, and 4), decreased for some of the upper-elementary and middle school grades (i.e., Grades 5, 7, and 8), or remained the same (i.e., Grades 3 and 6). In early elementary school, the percentage of students who are on grade level this fall is lower than the historical average but close to that of last fall. For example, 26% of students in Grade 2 are on grade level this fall compared with 24% last fall and 32% historically. In upper elementary and middle school, the percentage of students who are on grade level is similar to both that of last fall as well as the historical average. For example, 34% of students in Grade 6 are on grade level this fall compared with 34% last fall and 35% historically.

In mathematics, the percentage of students who are on grade level as of the current fall compared to the prior fall has increased for nearly all grades (i.e., Grades 1–7) though we do see a small decrease in Grade 8. While the percentage of students who are on grade level this fall is still lower than the historical average for all grades in mathematics, more students are on grade level this fall compared with last fall. For example, 24% of students in Grade 4 are on grade level this fall compared with 18% last fall and 31% historically.



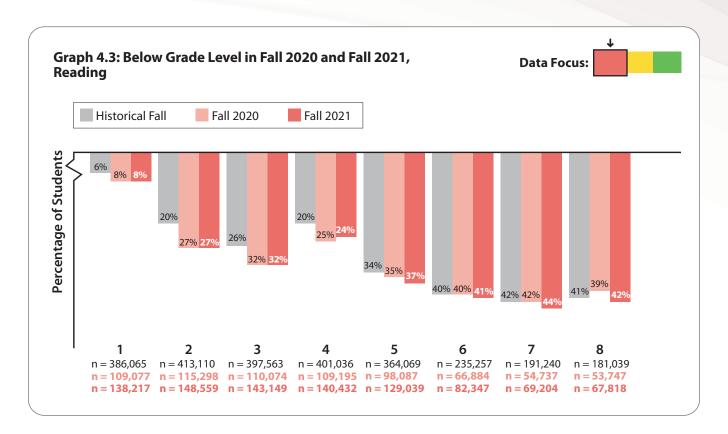


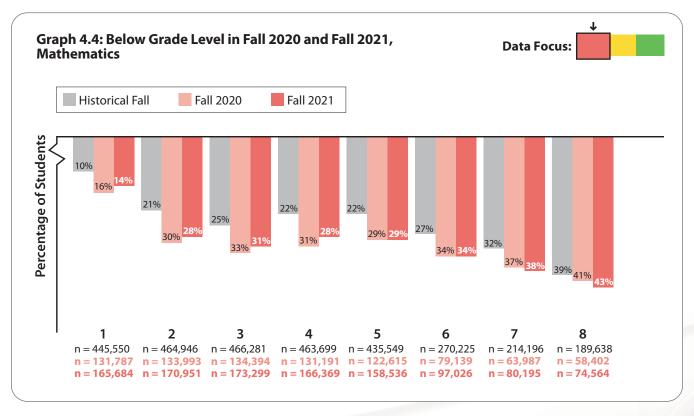
Finding 4

More Students Are Below Grade Level for the Second Fall in a Row Compared to Historical Benchmarks

Our visual analysis of the below grade level data shows that the gap between the current fall and the prior fall has increased, decreased, or remained the same, depending on the subject and grade level. In reading, the percentage of students who are below grade level as of the current fall compared to the prior fall has increased in the upper grades (i.e., Grades 5-8) and decreased (i.e., Grade 4) or remained the same (i.e., Grades 1-3) in the elementary grades. In early elementary school, the percentage of students who are below level this fall is higher than the historical average but did not change from where it was at the beginning of last fall. In upper elementary school, there are mixed results: the percentage of students who are below grade level is higher than the historical average for both Grade 4 and Grade 5. However, in Grade 4, there is a small decrease this fall relative to last fall, whereas in Grade 5, there is a small increase. For example, 27% of students in Grade 2 are below grade level this fall compared with 27% last fall and 20% historically. In middle school, a similar percentage of students are below grade level this fall compared to both last fall as well as the historical average. For example, 41% of students in Grade 6 are below grade level this fall compared with 40% last fall and 40% historically.

In mathematics, the percentage of students who are below grade level as of the current fall compared to the prior fall has increased in middle school (i.e., Grades 7–8), decreased in early elementary school (i.e., Grades 1-4), or remained the same (i.e., Grades 5 and 6). While the percentage of students who are below grade level this fall is greater than the historical average across all grades, fewer students in elementary Grades 1–4 are below grade level this fall compared with last fall. For example, 28% of students in Grade 4 are below grade level this fall compared with 31% last fall and 22% historically.





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. 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. The high in-school testing volume this fall gives us our clearest picture of student performance since the pandemic began. Just under 10% of the students who took the i-Ready Diagnostic this fall tested remotely and are not reflected in this report.

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 pandemic. 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-level demographic group nor at the student-level demographic group either.

To describe grade-level performance over three time periods (i.e., historical fall, fall 2020, and fall 2021), we limited the analysis to only those schools and students who met our business rules (i.e., tested in school) in fall 2020 and fall 2021. Based on a separate analysis of which factors contributed to students' testing location during the 2020-2021 school year, we know that students who tested in school in the fall of last year were more likely to be White, attend schools in suburban and rural areas, and attend schools in states in the Midwest and South (Curriculum Associates, 2021c). This group represents less than 40% of the general analysis population described in this paper. 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, testing location, and i-Ready Personalized Instruction usage—from this past school year that we will be releasing as it becomes available.

Discussion

The results of this analysis describe what many educators are already painfully aware of: the pandemic has hindered the academic achievement of most students and has had an outsized impact on underserved students. Many of the academic challenges that educators face in the classroom this school year will be familiar ones: Some students are ready to tackle grade-level work, and some students will need additional support to access and master grade-level content to "catch up" to their grade-level peers.

What is decidedly different since the pandemic began is the magnitude of the challenge. In schools across the country, there are fewer students ready for grade-level work and more students in need of additional and likely intensive academic support, particularly within student populations who are living in historically marginalized communities of color and within student populations who are living in poverty. In some cases, students are both living in poverty as well as attending schools serving mostly Black or Latino students which could be further compounding the impact of the pandemic on academic achievement.

Overall, our data points to how the pandemic interrupted all teaching and learning but not equally so. While educators did a heroic job last year in the face of unprecedented challenges, many students were unable to make up the ground they lost since the onset of the pandemic, and for some students, the unfinished learning was exacerbated by having experienced more than one disrupted year of learning. We are hopeful that more ground will be made up, over the course of the current school year, particularly for the students who need the most support. Across the country, educators must once again reach deep into their breadth of understanding about what students know and need through experience, evidence-based strategies, curriculum, assessment, and other available supports.

The scope of the issue is large in scale and deserves districtwide, statewide, and national attention to support classroom teachers in addressing unfinished learning. In both reading and mathematics, we must remain laser focused on maintaining high expectations for all students, providing a path to accelerated learning, and offering ample opportunities for all students to engage with grade-level content. At the same time, we would be remiss not to focus on effective strategies for differentiating and accelerating learning, as well as understanding and addressing the foundational and prerequisite skills that students may not have had the privilege of experiencing due to the pandemic's school closures.

We encourage educators and policymakers to review the data available for their classroom, school, district, or state in order to allocate resources and design the necessary curricular and extra-curricular supports needed to serve the students and teachers who need to not only catch up to pre-pandemic levels, but also, more importantly, exceed them.

Conclusion

Our analysis of fall assessment data shows fewer students are on grade level and more students are below grade level this fall than in prior school years in both reading and mathematics. The students who are most affected are students who are still learning to read, students who are moving from procedural to conceptual mathematics problem solving, students attending schools that serve a higher proportion of Black and Latino students, and students attending schools in lower-income zip codes. Since the vast majority of students who took the i-Ready Diagnostic are back in school, we believe that this paints a clear picture of where students are as we began the 2021-2022 school year. Our analysis of a subset of students who took their assessments in school during both fall 2020 and fall 2021 shows that, on average, fewer students are on grade level and more students are underprepared for grade-level work this year compared to last 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

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 use the terms "unfinished teaching and learning" or "unfinished learning" instead of "learning loss." When we describe where students are on grade level, we use the terms "on grade level" or "not on grade level" instead of "performing on grade level" or "not performing on grade level."

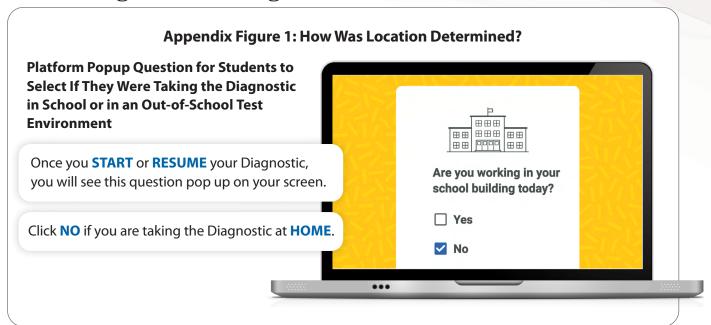
As our learning journey continues, we will keep reflecting on the impact of our words and strive to use asset-based language that is empowering for all students, teachers, and educators.

Methodology and Sample Description

Students who took an *i-Ready Diagnostic* in school during fall of the 2021–2022 school year were eligible for inclusion in this study. 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. 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 fall of the 2019–2020 school year—the last fall testing window before the pandemic. 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. 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."

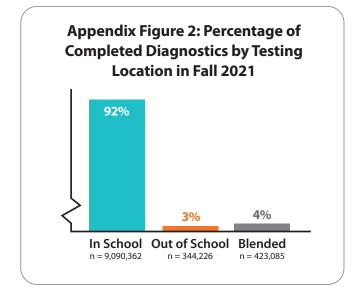


Determining Student Testing Location



Focusing on In-School Testing Data

The *i-Ready Diagnostic* 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) since schools first closed in spring 2020, and we 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 applesto-apples comparison throughout our series on unfinished learning research, 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

As shown in Figure 2 above, the in-school testing data in fall 2021 represents the vast majority of students who took the i-Ready Diagnostic (92%).

Sample Inclusion Criteria

First, we selected schools:

- In districts where at least one student was enrolled in the current year (i.e., 2021–2022) and the two most recent years in the historical sample (i.e., 2018–2019 and 2019–2020) for their test subject
- Where at least five students tested in their subject and grade during the fall of the 2019–2020 and 2021– 2022 school years
- Where the percentage of students tested in school in fall 2021–2022 was between 50% and 200% of the same testing window in 2019–2020

Next, we included students from the selected schools for both 2021–2022 and historical samples:

- Who were enrolled in Grades 1–8
- · Who did not rush on their fall test
- · Who self-reported that their fall test was taken in school
 - For the historical sample, we assumed this was all students.

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 2019–2020. In order to be included in the three-time point analysis, schools and students also had to meet the above business rules (including testing in school) during fall 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 (i.e., reported) and the out-of-school testing population (i.e., not reported).

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

		In School					
Grade	Read	ding	Mathematics				
Grade	Historical	Current	Historical	Current			
1	1,086,770	373,745	1,200,247	427,751			
2	1,223,470	427,585	1,339,780	476,793			
3	1,316,524	455,454	1,419,754	504,250			
4	1,306,719	442,793	1,420,664	491,931			
5	1,316,398	450,336	1,435,831	500,045			
6	958,309	324,514	1,080,895	370,632			
7	825,596	284,708	928,469	326,172			
8	794,519	284,079	824,682	304,577			

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

		Out of Scho	ool				
Grade	Rea	ding	Mathematics				
Grade	Historical	Current	Historical	Current			
1	10,749	3,540	10,882	4,498			
2	8,286	3,431	7,215	2,900			
3	10,286	4,506	8,567	3,697			
4	10,763	4,511	12,031	3,612			
5	7,001	2,574	6,566	2,716			
6	7,824	3,073	9,793	4,201			
7	8,085	3,284	7,848	3,313			
8	7,296	2,712	9,054	3,805			

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—Fall

	li	n School		
	R	eading	Matl	hematics
	Average	Range	Average	Range
% American Indian	.5%	0%-100%	.5%	0%–100%
% Asian	5.4%	0%-92%	4.9%	0%-92%
% Black	18.5%	0%-100%	17.5%	0%-100%
% Hawaiian or Pacific Islander	.7%	0%-82%	.7%	0%-82%
% Latino	30.1%	0%-100%	28.9%	0%-100%
% White	40.2%	0%-100%	42.8%	0%-100%
Median Annual Household Income	\$57,219	\$10,554-\$250,001	\$57,219	\$10,554-\$250,001
Student Enrollment	552	3-9,294	543	3–4,456

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

	Out	t of School		
	R	eading	Matl	hematics
	Average	Range	Average	Range
% American Indian	.4%	0%-7%	.4%	0%–7%
% Asian	3.8%	0%-40%	3.6%	0%-31%
% Black	14.8%	0%–97%	12.1%	0%–98%
% Hawaiian or Pacific Islander	.3%	0%-30%	.3%	0%-30%
% Latino	26.0%	0%-99%	27.2%	0%-99%
% White	45.8%	.1%-95%	46.8%	0%-95%
Median Annual Household Income	\$64,375	\$16,442-\$130,337	\$64,375	\$16,442-\$124,996
Student Enrollment	841	31–9,294	906	31–9,294

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

Additional Results

Appendix Table 3.1: Percentage of Students On Grade Level in Reading by Demographic Group, **In-School Testing Population—Fall**

	Percentage On Grade Level												
Grade	<25%	Black	25%-50% Black		<25% L	.atino	25%-50%	6 Latino	<25% \	White	25%-50% White		
Grade	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	
1	20%	18%	15%	13%	20%	17%	19%	17%	14%	13%	22%	19%	
2	32%	27%	24%	18%	32%	26%	29%	24%	22%	17%	33%	27%	
3	49%	44%	37%	32%	49%	44%	44%	39%	34%	29%	49%	44%	
4	34%	33%	24%	22%	34%	33%	31%	29%	22%	20%	35%	33%	
5	33%	33%	24%	22%	34%	33%	30%	28%	21%	20%	34%	32%	
6	34%	33%	25%	24%	35%	33%	29%	28%	23%	22%	33%	32%	
7	38%	36%	28%	27%	38%	36%	34%	32%	27%	26%	35%	34%	
8	40%	38%	30%	29%	39%	37%	36%	34%	28%	28%	37%	36%	

Appendix Table 3.2: Percentage of Students Below Grade Level in Reading by Demographic **Group, In-School Testing Population—Fall**

	Percentage Below Grade Level													
Cuada	<25%	Black	25%-50% Black		<25% L	.atino	25%-50%	% Latino	<25% \	White	25%-50% White			
Grade	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current		
1	8%	10%	10%	13%	7%	9%	9%	11%	13%	16%	8%	9%		
2	22%	30%	29%	40%	21%	29%	25%	34%	32%	45%	21%	30%		
3	28%	34%	36%	46%	28%	34%	31%	38%	40%	49%	27%	34%		
4	22%	27%	30%	37%	22%	27%	24%	30%	33%	41%	21%	27%		
5	35%	39%	46%	51%	35%	39%	39%	44%	50%	55%	36%	40%		
6	41%	43%	52%	54%	41%	43%	47%	49%	55%	57%	43%	45%		
7	43%	45%	55%	56%	44%	46%	48%	50%	57%	58%	47%	48%		
8	42%	43%	53%	53%	42%	44%	46%	47%	55%	55%	45%	46%		

Appendix Table 4.1: Percentage of Students On Grade Level in Mathematics by Demographic **Group, In-School Testing Population—Fall**

	Percentage On Grade Level												
Grade	<25%	Black	25%-50% Black		<25% L	<25% Latino		25%-50% Latino		White	25%-50% White		
Grade	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	
1	13%	12%	8%	7%	13%	12%	11%	9%	7%	6%	13%	12%	
2	17%	14%	10%	8%	18%	15%	14%	11%	10%	7%	17%	14%	
3	20%	15%	13%	8%	20%	15%	17%	12%	12%	7%	20%	15%	
4	32%	22%	23%	13%	32%	23%	28%	18%	21%	11%	32%	22%	
5	37%	27%	27%	16%	37%	28%	32%	21%	24%	14%	36%	25%	
6	36%	28%	27%	19%	36%	29%	31%	23%	24%	16%	36%	28%	
7	30%	24%	21%	15%	31%	25%	25%	19%	18%	14%	28%	23%	
8	28%	22%	19%	14%	29%	23%	23%	17%	16%	13%	25%	21%	

Appendix Table 4.2: Percentage of Students Below Grade Level in Mathematics by Demographic **Group, In-School Testing Population—Fall**

	Percentage Below Grade Level											
Cuada	<25% Black		25%-50% Black		<25% Latino		25%-50% Latino		<25% White		25%-50% White	
Grade	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current	Historical	Current
1	12%	16%	15%	21%	11%	15%	14%	19%	17%	25%	12%	16%
2	23%	31%	30%	43%	22%	30%	26%	37%	33%	48%	24%	33%
3	27%	35%	35%	48%	26%	34%	30%	41%	38%	53%	28%	37%
4	24%	33%	32%	45%	24%	32%	27%	39%	35%	51%	25%	34%
5	24%	33%	32%	45%	24%	32%	27%	39%	36%	50%	25%	35%
6	29%	39%	37%	50%	28%	37%	33%	44%	41%	54%	30%	40%
7	34%	42%	44%	55%	33%	42%	39%	49%	48%	57%	37%	45%
8	41%	46%	53%	59%	40%	45%	48%	54%	57%	61%	45%	50%

Additional Results for Students with Fall 2020 Data*

Appendix Table 5: Number of Students by Subject and Grade Level—In-School Testing **Population at Three Time Points**

Cyada		Reading		Mathematics			
Grade	Historical Fall	Fall 2020	Fall 2021	Historical Fall	Fall 2020	Fall 2021	
1	386,065	109,077	138,217	445,550	131,787	165,684	
2	413,110	115,298	148,559	464,946	133,993	170,951	
3	397,563	110,074	143,149	466,281	134,394	173,299	
4	401,036	109,195	140,432	463,699	131,191	166,369	
5	364,069	98,087	129,039	435,549	122,615	158,536	
6	235,257	66,884	82,347	270,225	79,139	97,026	
7	191,240	54,737	69,204	214,196	63,987	80,195	
8	181,039	53,747	67,818	189,638	58,402	74,564	

Appendix Table 6: Percentage of Students Placing On Grade Level—In-School Testing **Population at Three Time Points**

Grade		Reading		Mathematics			
Grade	Historical Fall	Fall 2020	Fall 2021	Historical Fall	Fall 2020	Fall 2021	
1	19%	15%	16%	13%	9%	12%	
2	32%	24%	26%	17%	11%	14%	
3	50%	45%	45%	20%	12%	15%	
4	34%	32%	34%	31%	18%	24%	
5	33%	34%	33%	37%	26%	29%	
6	35%	34%	34%	36%	28%	30%	
7	39%	37%	36%	30%	25%	26%	
8	40%	40%	38%	28%	24%	23%	

Appendix Table 7: Percentage of Students Placing Below Grade Level—In-School Testing **Population at Three Time Points**

Curdo		Reading		Mathematics			
Grade	Historical Fall	Fall 2020	Fall 2021	Historical Fall	Fall 2020	Fall 2021	
1	6%	8%	8%	10%	16%	14%	
2	20%	27%	27%	21%	30%	28%	
3	26%	32%	32%	25%	33%	31%	
4	20%	25%	24%	22%	31%	28%	
5	34%	35%	37%	22%	29%	29%	
6	40%	40%	41%	27%	34%	34%	
7	42%	42%	44%	32%	37%	38%	
8	41%	39%	42%	39%	41%	43%	

	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 meetin	g	Only partially met		Met
ntructional ecommendations	Likely need intensive intervention of foundational	May need intensive intervention of material that is two grade levels below to help fill in gaps in students' foundational knowledge.	from review or remediation of material that is one grade level below. on-grade instruction the pthem the expect of college- career-read standards	Will benefit from on-grade level instruction to	Mid On Grade Level:	Will benefit from instruction in late on-grade level topics.
	concepts. Students who perform below grade level are not likely to be proficient on their			help them meet the expectations of college- and career-readiness standards for their grade level.	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.
	state summative test, though it is possible.				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 criterionreferenced 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 gradelevel 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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Built to address the rigor of the new standards, i-Ready helps students make real gains. i-Ready collects a broad spectrum of rich data on student abilities that identifies areas where a student needs support, measures growth across a student's career, supports teacher-led differentiated instruction, and provides a personalized instructional path within a single online solution.

To learn more about evidence on the impact of i-Ready, please visit CurriculumAssociates.com/Research.











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