Council *of the* Great City Schools

BETWEEN THE LINES

Large City Performance on NAEP Over the Last 20 Years (2002-2022)

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About the Council

The Council of the Great City Schools is the only national organization exclusively representing the needs of America's urban public-school districts. Composed of 78 large city school districts, the organization's mission is to promote the cause of urban schools and to advocate for inner-city students through legislation, research, instructional support, leadership, management, technical assistance, and media relations. The organization also provides a network for school districts sharing common problems to exchange information and to collectively address new challenges as they emerge to deliver the best education for urban youth.

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Background

As parents, communities, educators, and policymakers continue to assess the impact of the COVID-19 pandemic on student learning in America, many have turned to recently released results from the National Assessment of Educational Progress (NAEP). NAEP measures what students know and what they can do in several tested subjects, including reading, mathematics, and science. Large urban school districts often use NAEP to understand their performance and progress in relation to the nation as a whole. The purpose of this brief is to understand differences in student performance between large cities and students nationally over the last 20 years, from 2002 through 2022, as well as after the effect of the COVID-19 pandemic. We also detail the possibilities of large city performance in the years to come.

In looking longitudinally, we find that the gap between student performance in large cities and students nationally has been steadily shrinking in most tested subject and grade level combinations, demonstrating growth and progress in urban schooling over the last 20 years. The most recent NAEP results also tell a compelling story of resilience despite challenges that state and local education agencies faced while navigating the complexities of a global public health emergency. Results from the most recently released urban districts' spring 2023 state assessments provide additional positive signs of student recovery and growth in both reading and mathematics. Leaning on these promising recovery results, indications are that, if there is a continued push to invest in urban school districts, the gap in performance between students in large cities and students nationally could continue on its historical course toward closure.

Measuring Student Progress using NAEP

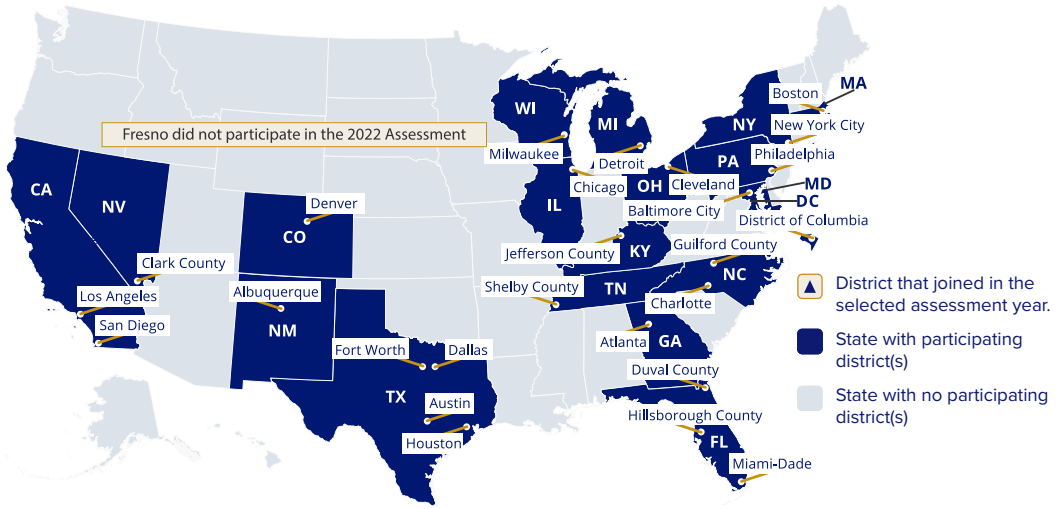
According to the National Center for Education Statistics (NCES), NAEP "provides an essential measurement of student achievement in the United States"[1]. The main NAEP is typically administered to students in grades four and eight and in various subject areas, with mathematics and reading tests being the focus of this brief. NCES provides results from these tests on The Nation's Report Card, which also disaggregates results based on gender, race/ethnicity, disability status, status as an English learner, National School Lunch Program eligibility status, and test-taking jurisdiction, among many other groups of disaggregation.

A nationally representative sample of students are selected to take the NAEP assessment every two years. In 2022, reading and mathematics assessments were administered to nearly 500,000 fourth and eighth graders in nearly 11,000 schools nationwide.

The Trial Urban District Assessment (TUDA) Program

In 2001, NCES, the National Assessment Governing Board (NAGB), and the Council of the Great City Schools (CGCS) successfully advocated for the federal appropriation of funds for a district-level NAEP assessment on a trial basis, launching the Trial Urban District Assessment (TUDA) program. The TUDA program continues today where participating large urban school districts volunteer to have a larger sample of students participate in the NAEP assessment to receive results that are district-specific. Districts meeting the selection criteria—namely district enrollment, representation of students from historically-marginalized racial/ethnic communities, and representation of economically-disadvantaged students—are invited by NAGB to participate. The TUDA program began with six urban districts in 2002 and has since expanded to the 27 currently participating TUDAs[2]. The results of the latest administration of NAEP, which are a focus of this report, include 26 participating TUDA districts (Figure 1 and Table 1).

Figure 1. Map of districts participating in the 2022 Trial Urban District Assessment (TUDA)*



Source: *National Center for Education Statistics & National Assessment Governing Board. (2023, February 8). Trial Urban District Assessment. National Assessment of Educational Progress.* https://nces.ed.gov/nationsreportcard/tuda/*. Accessed February 15, 2023. *Orange County School District joined as a TUDA after the 2022 administration of NAEP.*

1 National Assessment Governing Board, *Trial Urban District Assessment (2023),* https://www.nagb.gov/naep/trial-urban-district-assessment.html.

2 National Center for Education Statistics, *Trial Urban District Assessment,* https://www.nagb.gov/naep/trial-urban-district-assessment.html.

Table 1. Urban Districts Participating in TUDA, 2022

- Albuquerque Public Schools
- Atlanta Public Schools
- Austin Independent School District
- Baltimore City Public Schools
- Boston Public Schools
- Charlotte-Mecklenburg Schools
- Chicago Public Schools
- Clark County (NV) School District
- Cleveland Metropolitan School District
- Dallas Independent School District
- Denver Public Schools
- Detroit Public Schools
- District of Columbia Public Schools
- Duval County Public Schools
- Fort Worth Independent School District
- Guilford County (NC) Schools
- Hillsborough County (FL) Public Schools
- Houston Independent School District
- Jefferson County (KY) Public Schools
- Los Angeles Unified School District
- Miami-Dade County Public Schools
- Milwaukee Public Schools
- New York City Department of Education
- San Diego Unified School District
- School District of Philadelphia
- Shelby County (TN) Schools

Source: *National Center for Education Statistics & National Assessment Governing Board. (2023, February 8). Trial Urban District Assessment. National Assessment of Educational Progress.* https://nces.ed.gov/nationsreportcard/tuda/

Research Questions and Methodology

This study examines and answers four research questions related to the NAEP performance of students in large cities:

1. How have the gaps between student performance on NAEP in Large City and National Public jurisdictions changed over time?
2. How have performance patterns on NAEP of students by percentile rank group in large cities and students nationally changed over time?
3. How have gaps in performance on NAEP between the highest performing students in large cities and students nationally changed over time?
4. How have gaps in performance on NAEP between the lowest performing students in large cities and students nationally changed over time?

Jurisdictions

In answering the study's research questions, this brief analyzes the performance of students on NAEP assessments in 28 jurisdictions. These jurisdictions, using NCES's definition, are:

- **National Public,** a commonly-used benchmark for comparing results that includes all test-taking students that were identified as attending a public school;
- **Large City,** which includes all students attending public schools 'residing in an urbanized area and inside a principal city with population of 250,000 or more';
- and the 26 urban districts participating in TUDA in 2022, as previously defined in this brief.

Tested Grades and Subjects

Results are reported in summary by each NAEP tested grade and subject combination – fourth grade reading, eighth grade reading, fourth grade mathematics, and eighth grade mathematics. This brief examines trends in performance from the first administration of NAEP reading assessments in 2002 and mathematics assessments in 2003 through the most recent 2022 administration of both NAEP assessments, focusing on the National Public, Large City, and TUDA jurisdictions.

Analysis

Descriptive results are reported using mean NAEP scale scores as a measure of achievement, with comparisons made by taking the difference in these achievement scores across administrations. The brief also examines mean achievement estimates among students, disaggregated by select percentile rank groups (90th, 75th, 50th, 25th, and 10th percentile), as reported by NAEP. In answering the last two research questions, performance scores are examined among the highest performing students in the 90th percentile and the lowest performing students in the 10th percentile.

Projections of scale scores and score gap closures, included in the summaries of each section, were calculated through simple linear regression, incorporating the known relevant scale scores for each jurisdiction from the first administration of NAEP (2002 for reading assessments, 2003 for mathematics assessments) through 2022 and assuming linear growth in scores from 2022 forward. This analysis is added to illustrate the potential for continued growth and progress in urban school districts.

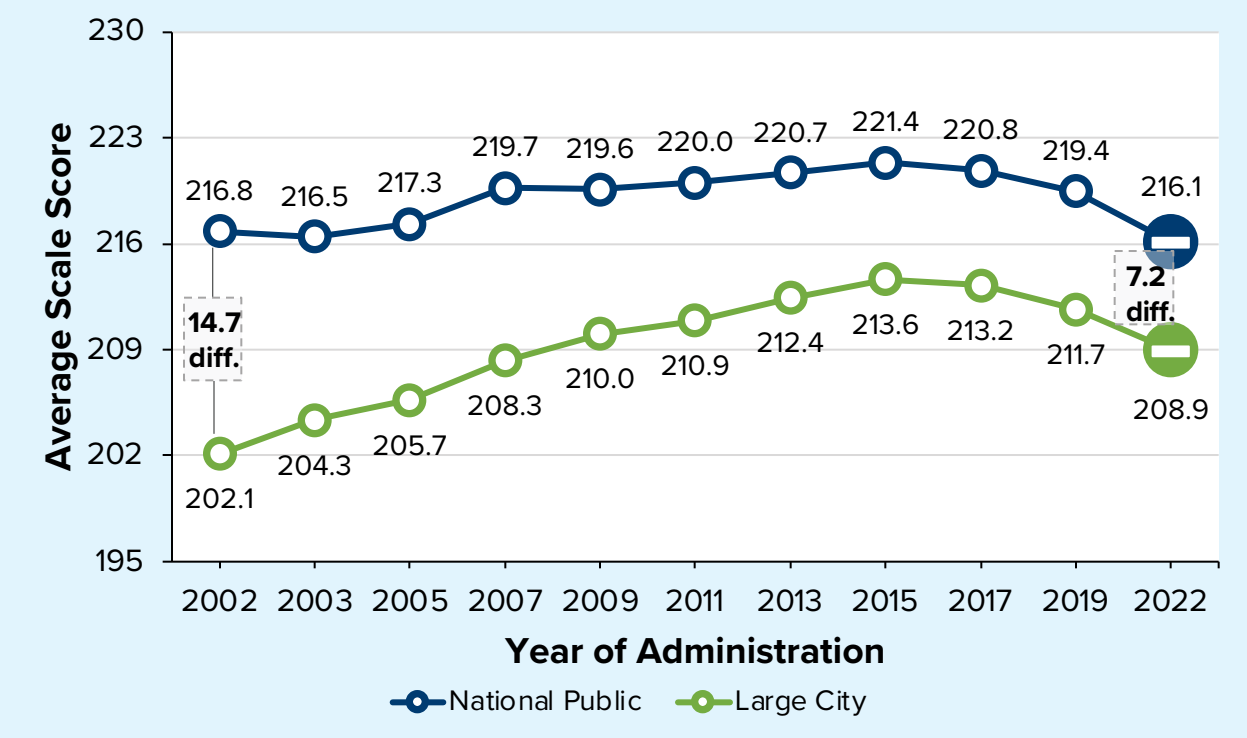
Fourth Grade Reading

This section of the brief considers NAEP results among students that took fourth grade reading assessments from 2002 through 2022. It starts by examining average scale scores of all students in the Large City and National Public jurisdictions taking reading assessments, continues by looking at results disaggregated by select percentile rank groups (90th, 75th, 50th, 25th, and 10th percentile), and is followed by a more intense look at, and comparisons of, students with scores in the highest and lowest percentile rank groups across jurisdictions. Included in the comparisons of performance groups is discussion of performance among students in TUDA districts relative to the National Public jurisdiction.

Large City vs. National Public

Longitudinal analyses of NAEP results tell a story of a consistent narrowing of differences in student performance on fourth grade reading tests between students in large cities and public-school students nationwide. From 2002 through 2015, scores on fourth grade reading assessments increased gradually among students nationally, while there were noticeably sharper increases among students in large cities reaching their 20-year apex in 2015, when they began to trend downward. Both nationally and in large cities, there were significant declines in fourth grade reading scores on the most recent administration of NAEP (2022). Despite the downward turn, reading scores among fourth grade Large City students in 2022 remained significantly greater than scores seen at the start of NAEP in 2002. Meanwhile, National Public scores hit their lowest average performance since the start of NAEP. Despite these declines, the gap in fourth grade reading scores between students in large cities and students nationally continued to shrink to less than half the size of the gap observed in 2002 (14.7 scale score point gap)—reaching a twenty-year low in 2022 (7.2 scale score point gap; Figure 2).

Figure 2. Average Scale Score on NAEP in Fourth Grade Reading by Large City and National Public, 2002-2022[¶]



No significant change in average scale score from 2019 to 2022.

Among the 26 districts participating in TUDA in 2022, eight districts returned assessment results that were either significantly greater than (Hillsborough County-FL, Miami-Dade, and San Diego), or not significantly different from (Austin, Charlotte, Duval County-FL, District of Columbia, and Denver), scores observed nationally (Table 2).

Table 2. Average Scale Score on NAEP Fourth Grade Reading for Select TUDA Districts Compared to the National Public, 2022[§]

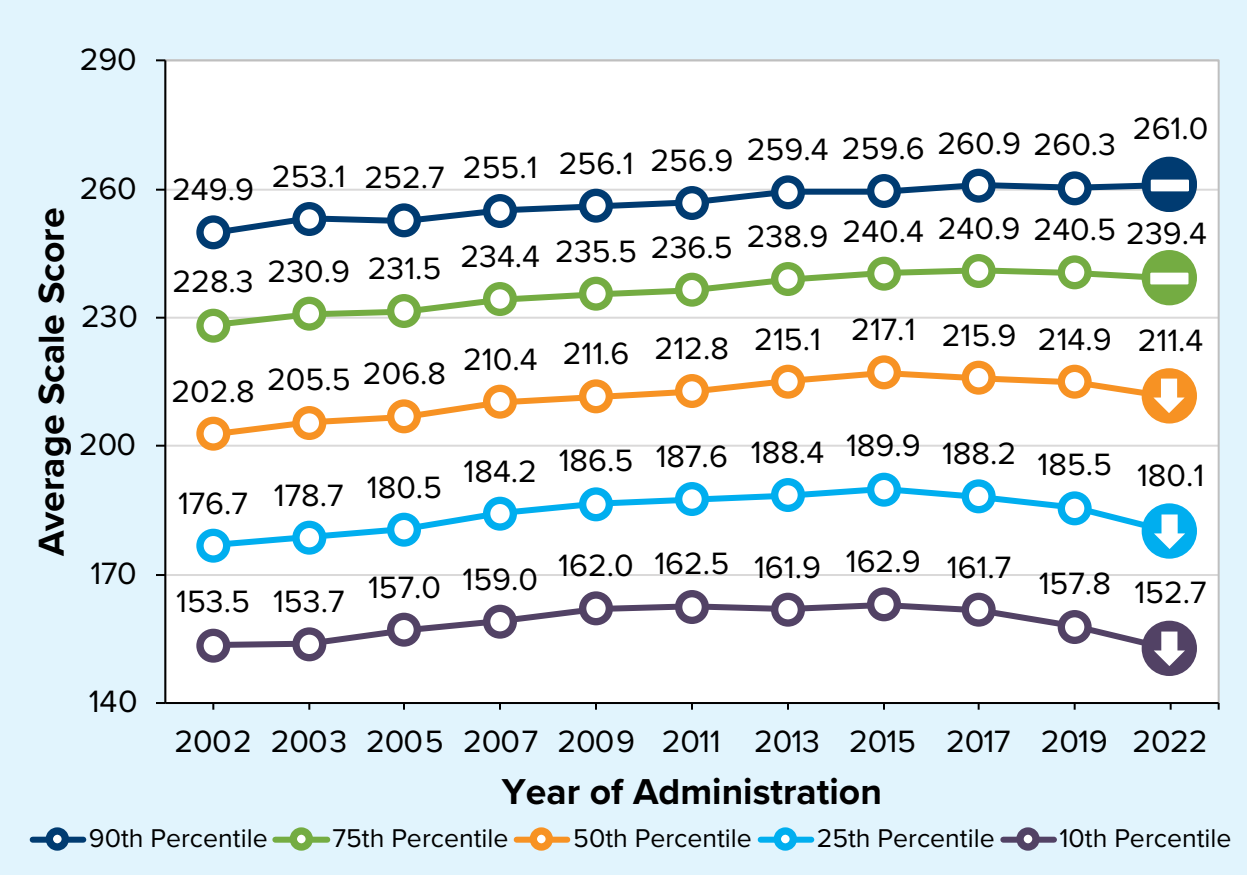
Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Hillsborough County (FL)	226.5	Significantly Greater than National Public
Miami-Dade	224.5	
San Diego	221.5	
Austin	220.3	Not significantly different from National Public
National Public	**216.1**	
Charlotte	214.9	Not significantly different from National Public
Duval County (FL)	214.6	
District of Columbia (DCPS)	213.5	
Denver	212.2	

Percentile Rank Group Performance

An examination of average reading scale scores for students disaggregated by select percentile rank groups (90th, 75th, 50th, 25th, and 10th percentile), provides an additional dimension of understanding student performance on NAEP fourth grade reading assessments.

In examining results by percentile rank group among students in the Large City jurisdiction, there were several key findings. First, students in the lowest percentile rank group (10th percentile) reached their highest scores in the examined 20-year span of NAEP by 2015. Declines in average scale score from 2019 to 2022 among Large City students in the 10th percentile brought average scale scores on fourth grade reading assessments to a 20-year low. In addition, students in the 25th and 50th percentile rank groups saw significant decreases in average fourth grade reading scale scores from 2019 to 2022. Students in the top percentile rank groups (the 75th and 90th percentile ranks) maintained scores that were greater than scores observed in 2002, as no significant change in reading scores from 2019 to 2022 was observed (Figure 3).

Figure 3. Average Scale Score on NAEP in Fourth Grade Reading by Percentile Rank Groups for Large Cities, 2002-2022[1]

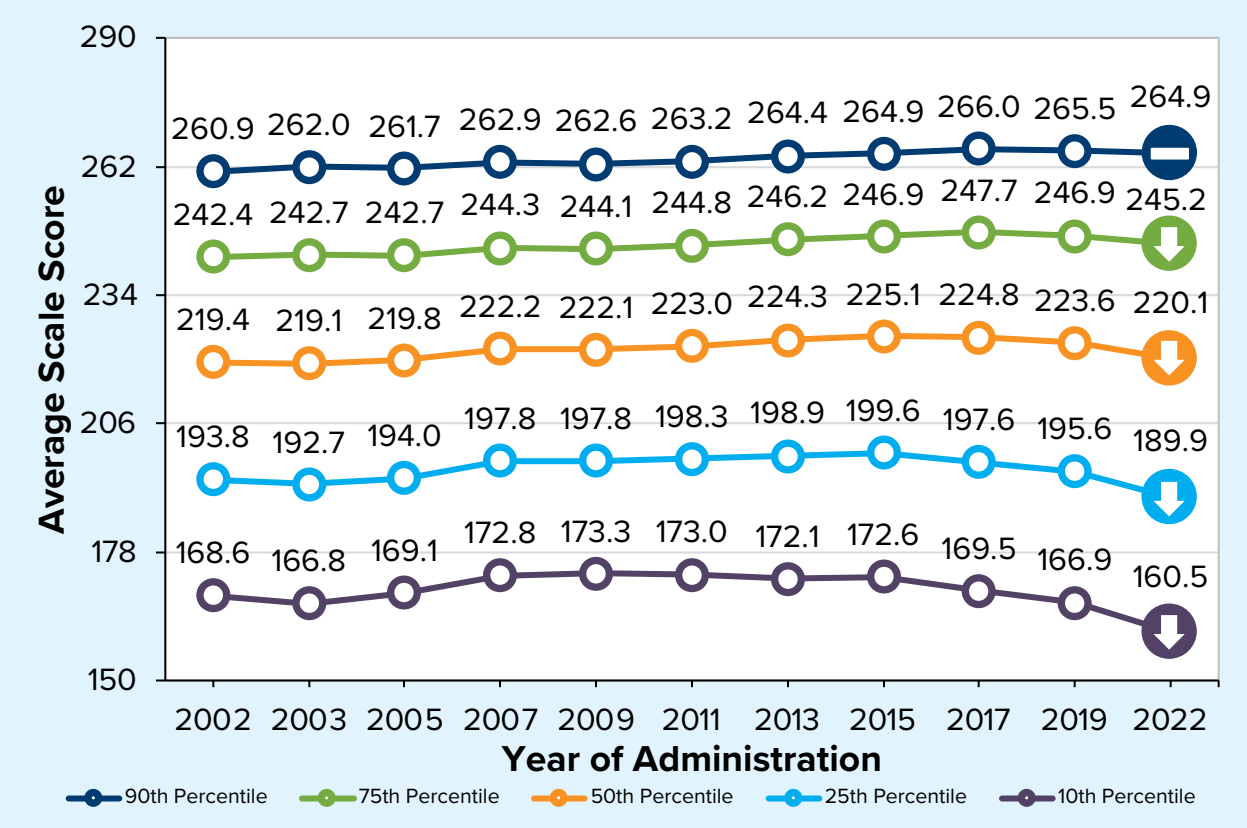


No significant change in average scale score from 2019 to 2022.

Significant decrease in average scale score from 2019 to 2022.

Four of the five percentile groups among public-school students nationally had significant declines in average fourth grade reading scale scores in 2022 compared to three of the five percentile rank groups in the Large City jurisdiction. Only students in the 90th percentile rank group in the National Public jurisdiction saw no significant change in fourth grade reading scores from 2019 to 2022, and students in the lowest two percentile rank groups in the National Public jurisdiction had their average reading score decline to the lowest in 20 years (Figure 4).

Figure 4. Average Scale Score on NAEP in Fourth Grade Reading by Percentile Groups for the National Public, 2002-2022[1]



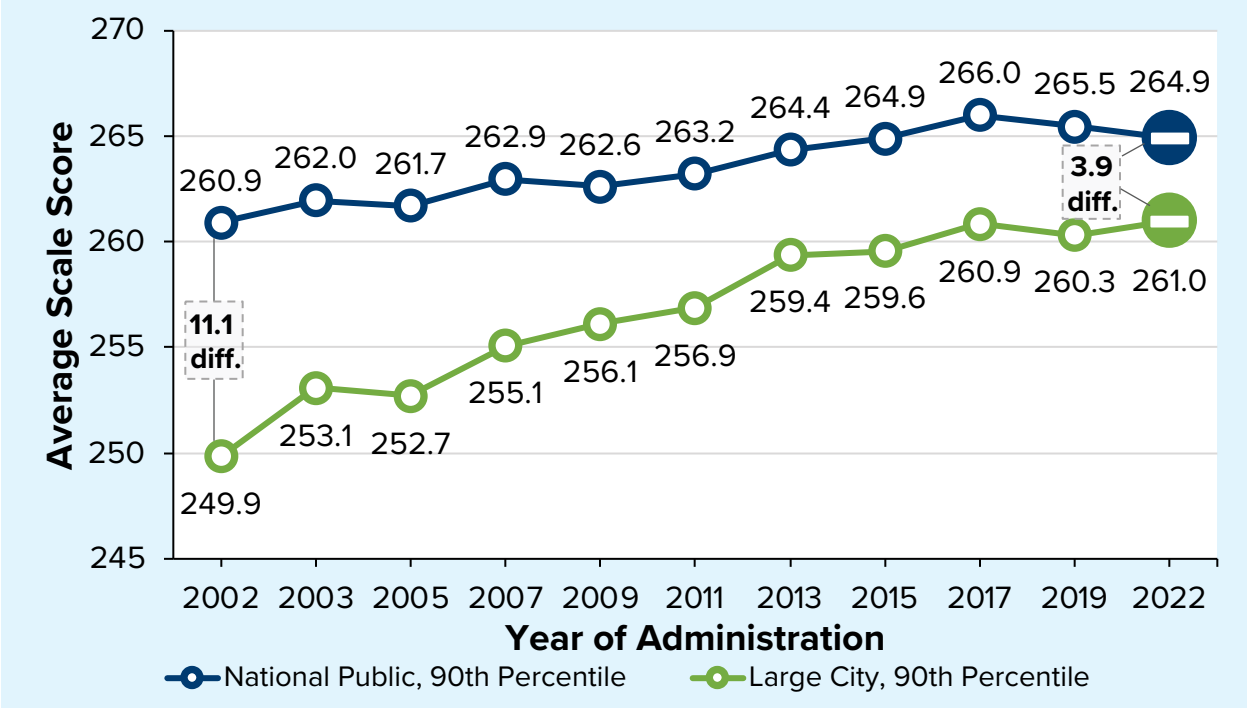
No significant change in average scale score from 2019 to 2022.

Significant decrease in average scale score from 2019 to 2022.

Students Performing in the 90th Percentile

Comparisons of average reading scale scores among the highest performing students across jurisdictions provide a more compelling story of student performance over time as, generally, rates of growth in fourth grade reading scores appear to be noticeably larger among students in large cities than students in public schools nationally. Put simply, the change in fourth grade reading scale scores between 2002 and 2022 was significantly greater among high-achieving students in large cities compared to high-achieving students nationwide. As a result, the difference in average fourth grade reading scale scores between high-achieving students across jurisdictions declined from its largest level in 2002 (11.1 scale score points) to the smallest observed difference (3.9 scale score points in 2022) in the 20 years observed (Figure 5).

Figure 5. Average Scale Score on NAEP in Fourth Grade Reading among Students in the 90th Percentile by Large City and National Public, 2002-2022[1]



No significant change in average scale score from 2019 to 2022.

Looking at the most recent results of students performing at or above the 90th percentile from the 26 TUDA districts, three districts – District of Columbia, Austin, and Hillsborough County-FL – had high-achieving students with average fourth grade reading scores that were significantly greater than those of high-achieving students nationwide in 2022. Average fourth grade reading scores among high-achieving students in 11 TUDA jurisdictions did not differ significantly from those of high-achieving students nationally (Table 3).

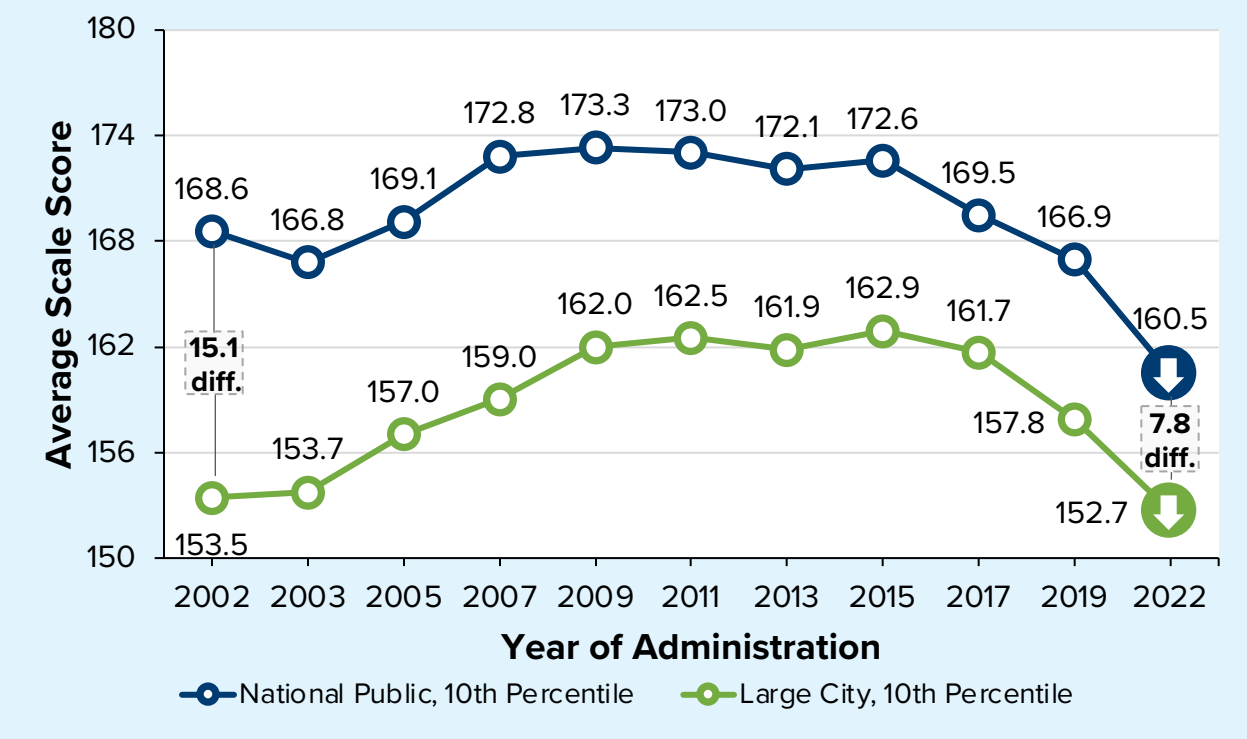
Table 3. Average Scale Score on NAEP in Fourth Grade Reading among Students in the 90th Percentile for Select TUDA Districts Compared to the National Public, 2022[§]

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
District of Columbia (DCPS)	275.6	Significantly Greater than National Public
Austin	272.6	
Hillsborough County (FL)	270.8	
San Diego	270.6	Not significantly different from National Public
Charlotte	268.7	
Denver	267.9	
Miami-Dade	265.9	
National Public	**264.9**	
New York City	263.7	Not significantly different from National Public
Boston	262.5	
Atlanta	261.3	
Guilford County (NC)	260.8	
Jefferson County (KY)	260.6	
Albuquerque	260.6	
Duval County (FL)	260.1	

Students Performing in the 10th Percentile

The analysis of average reading scale scores among students in the 10th percentile across jurisdictions indicates that the decline in average fourth grade reading scale scores between 2002 and 2022 was significantly smaller among students in large cities (0.8 scale score points) compared to students nationwide (8.1 scale score points). In 2022, the gap in fourth grade reading scores between students in the 10th percentile in large cities and those nationally was nearly cut in half, dropping to 7.8 scale score points from the 15.1 scale score point gap seen in 2002 (Figure 6). However, the performance of students in Large Cities and the National Public in this percentile group has declined each year since 2015.

Figure 6. Average Scale Score on NAEP in Fourth Grade Reading among Students in the 10th Percentile by Large City and National Public, 2002-2022[1]



Significant decrease in average scale score from 2019 to 2022.

Looking at the 2022 results of NAEP fourth grade reading assessments among students in the 10th percentile across TUDA districts, Hillsborough County-FL and Miami-Dade returned average reading scores that were significantly greater than those of students in the 10th percentile nationwide in 2022. Average fourth grade reading scores among students in this group in 14 TUDA jurisdictions did not differ significantly from those of students in the 10th percentile nationally in 2022 (Table 4).

Table 4. Average Scale Score on NAEP Fourth Grade Reading for Students in the 10th Percentile for Select TUDA Districts Compared to the National Public, 2022[§]

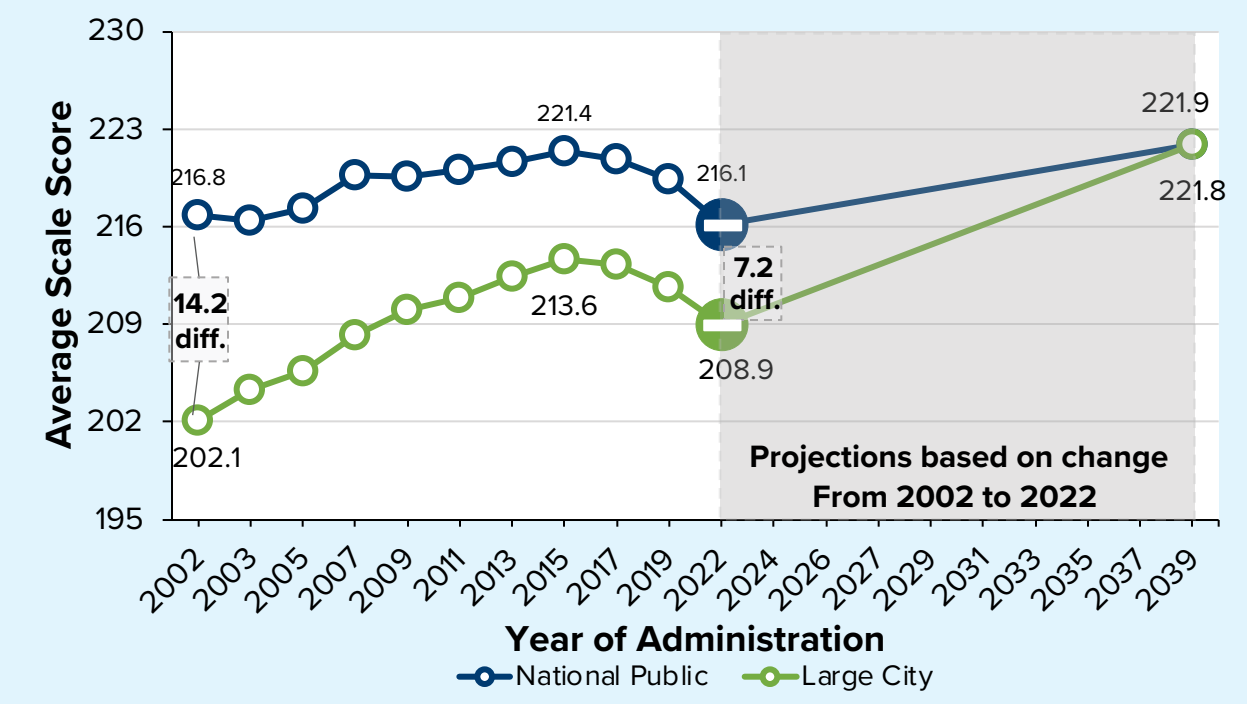
Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Hillsborough County (FL)	178.1	Significantly Greater than National Public
Miami-Dade	176.1	
San Diego	166.4	Not significantly different from National Public
Austin	163.3	
Duval County (FL)	163.0	
National Public	**160.5**	
Guilford County (NC)	157.4	Not significantly different from National Public
New York City	157.0	
Denver	156.8	
Boston	155.5	
Dallas	154.7	
Jefferson County (KY)	154.7	
Clark County (NV)	154.6	
Charlotte	154.6	
Fort Worth (TX)	152.3	
District of Columbia (DCPS)	150.7	
Los Angeles	150.6	

Summary – Fourth Grade Reading

The achievement gap reduction in results on fourth grade reading tests between large cities and the nation over time—even with the pandemic's impact on student learning—suggests that schools and districts in large major cities have been increasingly effective in improving opportunities for student learning or better at mitigating against declines in student outcomes. Comparisons of year-to-year changes in fourth grade average reading scale scores between the National Public and Large City jurisdictions show that—across nearly all years considered—gains in average scale score have typically been greater and losses in average scores have typically been smaller in the Large City jurisdiction. The result of this trend is a fourth grade reading gap that was reduced by nearly seven percent with every NAEP administration since 2002 and, assuming consistent growth rates, continuing on that pace would eliminate the achievement gap between large cities and the nation by 2039 (Figure 7). Higher performing students, those performing in the 90th percentile, in large cities are slated to eliminate the gap far sooner. If high-achieving students were to maintain their rate of growth in fourth grade reading scores observed between 2002 and 2022, it is possible that the gap in scores between high-achieving students in large cities and those nationally would be insignificant by at least 2031 and disappear entirely by 2033.

The achievement gap reduction in results on fourth grade reading tests between large cities and the nation over time—even with the pandemic's impact on student learning—suggests that schools and districts in large major cities have been increasingly effective in improving opportunities for student learning.

Figure 7. Average Scale Score on NAEP in Fourth Grade Reading by Large City and National Public, with Predicted Year of Gap Closure[¶]



⊖ No significant change in average scale score from 2019 to 2022.

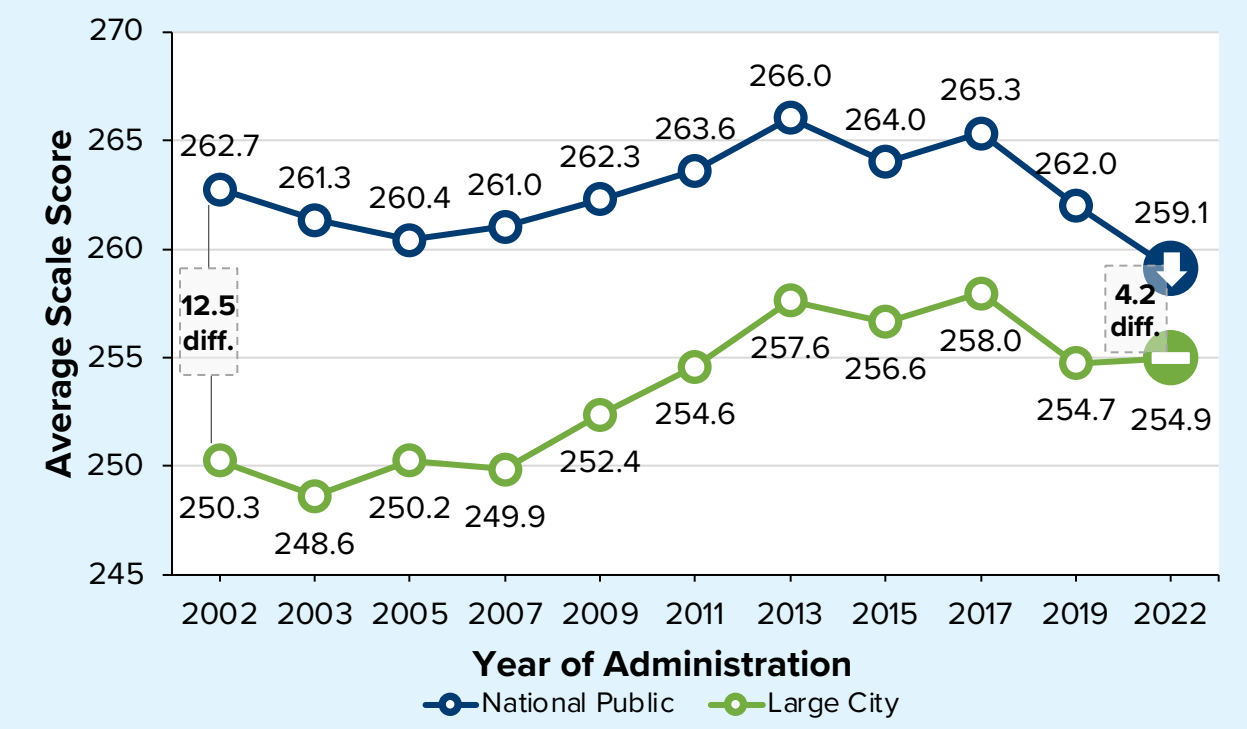
Eighth Grade Reading

This section of the brief discusses results from eighth grade reading assessments from 2002 through 2022. The section begins with a look at average scale scores of all students in the Large City and National Public jurisdictions, continues with an examination of trends in average scale scores among students taking eighth grade reading assessments disaggregated by select percentile rank groups (90th, 75th, 50th, 25th, and 10th percentile), and concludes with a deeper look at students with scores in the highest and lowest percentile rank groups across jurisdictions.

Large City vs. National Public

Trends of eighth grade average reading scale scores among students in the National Public and Large City jurisdictions, at first glance, appear to be similar. Students in both jurisdictions showed consistent growth in eighth grade reading scores from 2002 to 2013, followed by a gradual decline in scores from 2013 through the most recent administration of NAEP in 2022. Two meaningful differences, however, are the rates of growth and decline between the jurisdictions over this period of time—where students in large cities saw significantly greater gains and did not experience a decline after the pandemic, when student scores declined nationally. The gap in eighth grade reading scores between students in large cities and students at the national level shrank significantly, to about one-third of the gap in 2002 (from 12.5 scale score points in 2002 to 4.2 scale score points in 2022)—the smallest gap observed in the 20-year timeframe (Figure 8).

Figure 8. Average Scale Score on NAEP in Eighth Grade Reading by Large City and National Public, 2002-2022[1]



No significant change in average scale score from 2019 to 2022.

Significant decrease in average scale score from 2019 to 2022.

Among TUDA districts in 2022, six TUDA districts returned assessment results that were not significantly different from scores observed nationally, with one TUDA district, San Diego, having an average scale score that was significantly greater than national scores in 2022 (Table 5).

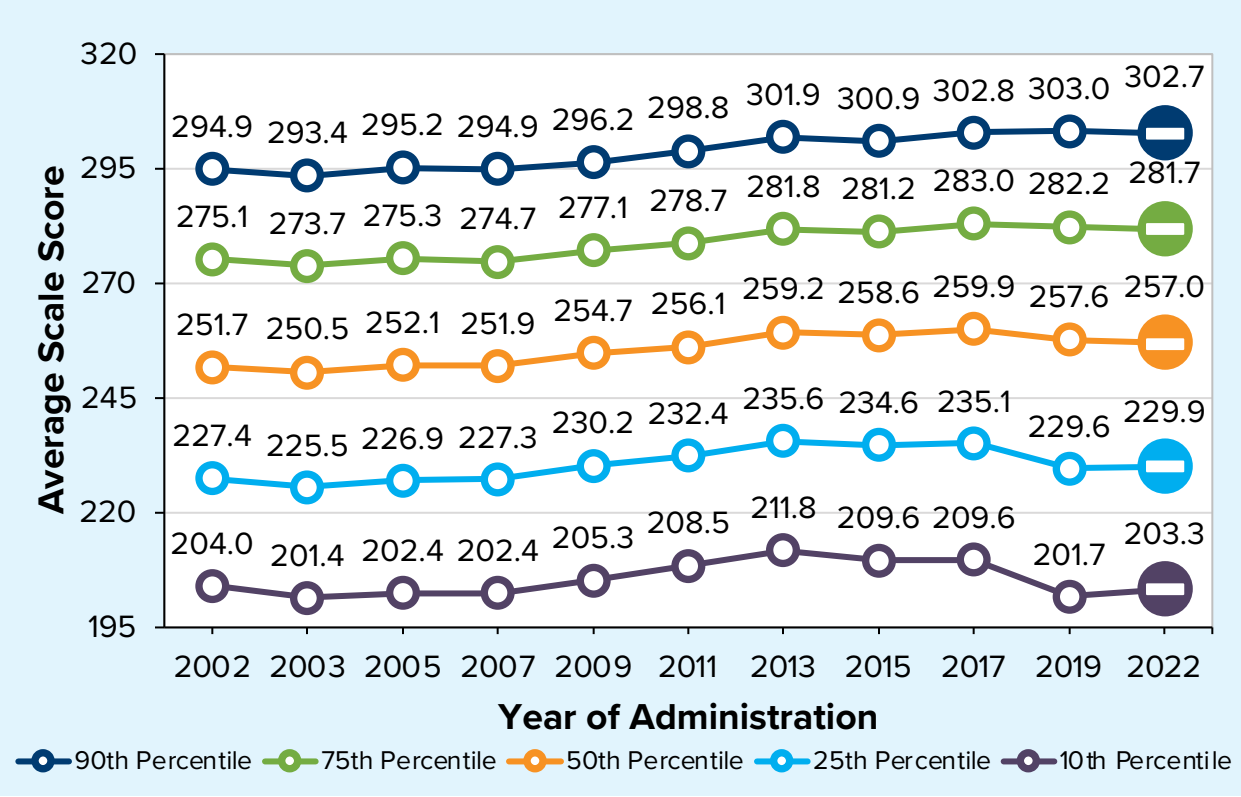
Table 5. Average Scale Score on NAEP Eighth Grade Reading for Select TUDA Districts Compared to the National Public, 2022[§]

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
San Diego	263.6	Significantly Greater than National Public
Miami-Dade	262.1	Not significantly different from National Public
National Public	**259.1**	
Hillsborough County (FL)	258.6	
Duval County (FL)	257.9	
Charlotte	257.7	Not significantly different from National Public
Los Angeles	257.3	
New York City	255.2	

Percentile Rank Group Performance

Considering eighth grade reading scores for students in large cities, it was found that no percentile rank groups saw significant changes in average scale scores from 2019 to 2022, with eighth grade reading scores remaining stable—even among the lowest performing students. All percentile rank groups followed a trend of consistent growth in reading scores from 2002, reaching some of their highest scores in the 20-year span by 2013. Students in the 75th and 50th percentile groups reached new highs in 2017, while students in the lower percentile rank groups had their trajectory flatten and later decrease after 2013 (Figure 9).

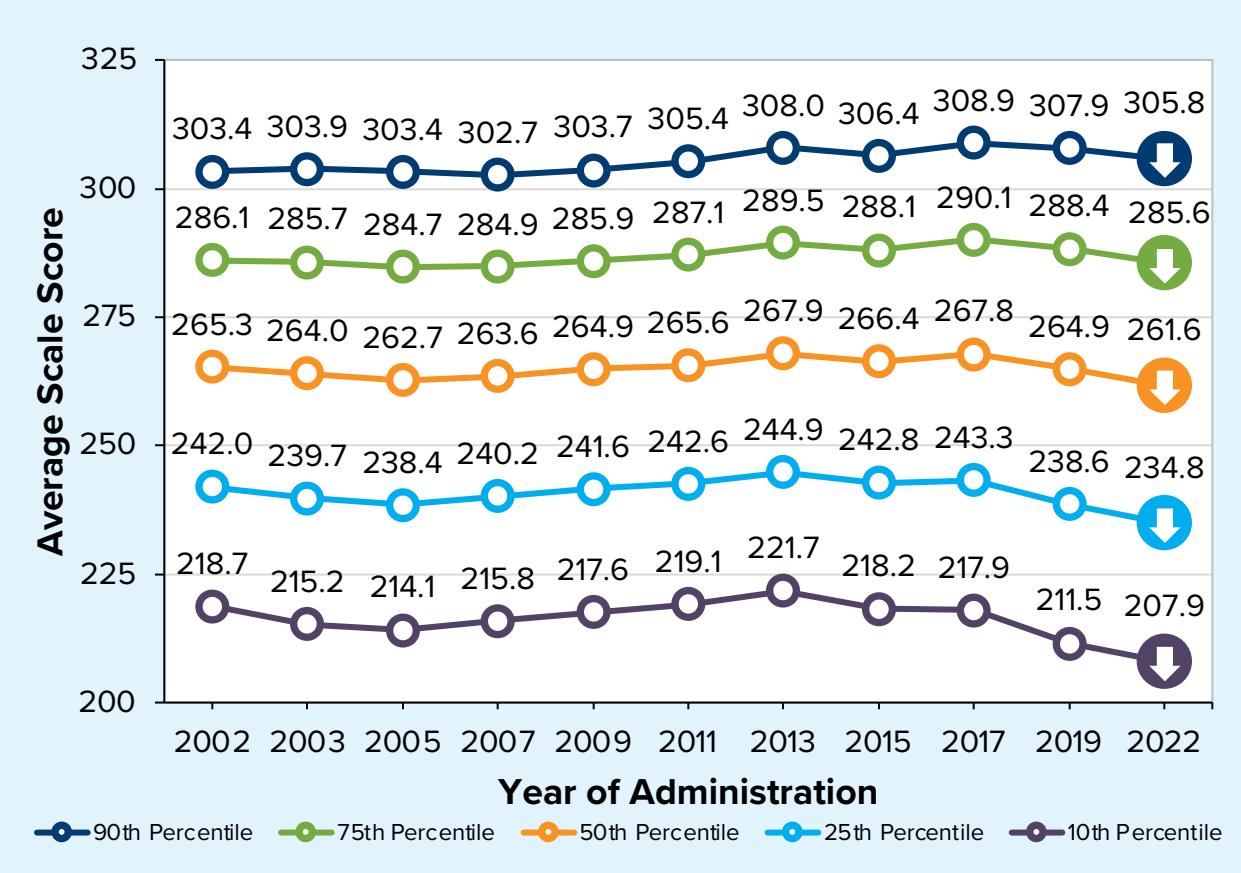
Figure 9. Average Scale Score on NAEP in Eighth Grade Reading by Percentile Rank Groups for Large Cities, 2002-2022 [1]



No significant change in average scale score from 2019 to 2022.

By comparison, eighth grade reading scores in all percentile rank groups among students in the National Public jurisdiction saw significant decreases in average scale score from 2019 to 2022. In the early years, all percentile rank groups followed a trend of growth in average scale scores comparable to those of students in large cities, with the lower percentile rank groups approaching their highest average scale scores in the 20-year span by 2013, and higher performing groups (90th and 75th percentile rank groups) reaching their 20-year highs by 2017, yet these gains have diminished since these peaks in performance. Observed decreases in average scale score from 2019 to 2022 among students in the 10th, 25th and 50th percentile ranks brought average scale scores among students in the National Public on eighth grade reading assessments to 20-year lows (Figure 10).

Figure 10. Average Scale Score on NAEP in Eighth Grade Reading by Percentile Groups for the National Public, 2002-2022[1]

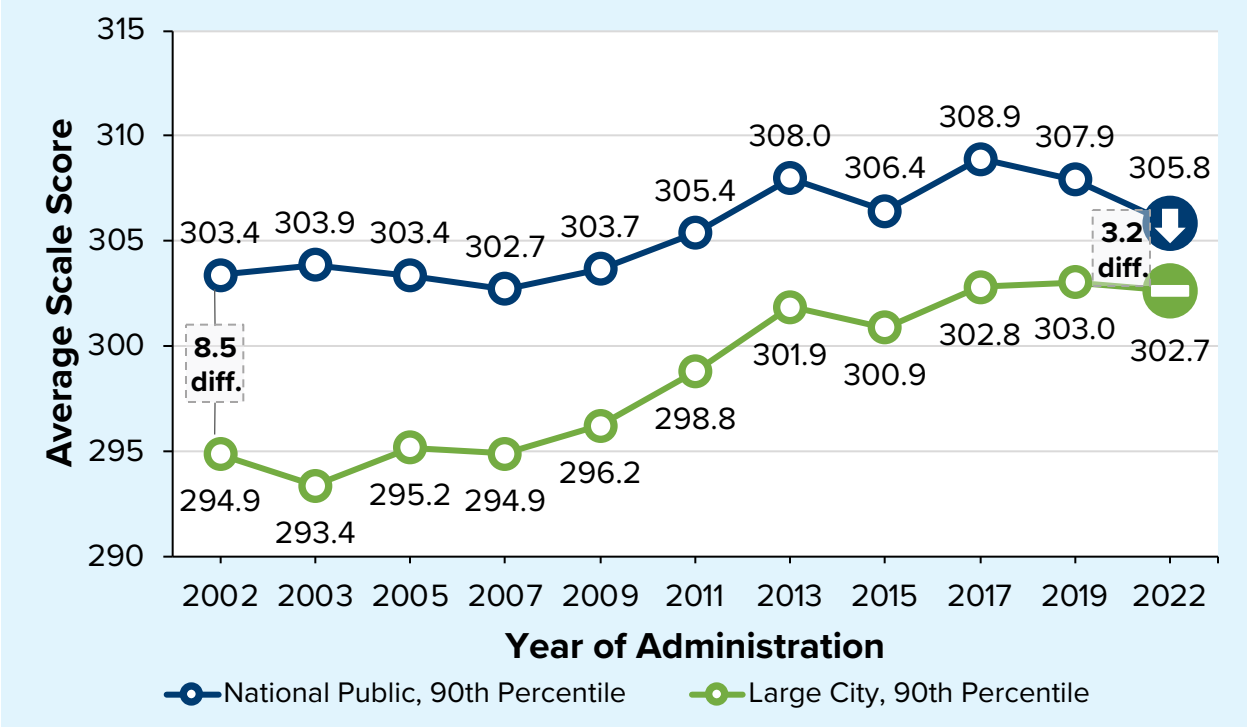


Significant decrease in average scale score from 2019 to 2022.

Students in the 90th Percentile

As was the case for fourth grade reading average scale scores, the highest performing students show rates of growth in eighth grade reading scores that appear to be larger among students in large cities than those of students nationally. The gap between high-achieving students in large cities and students nationwide decreased significantly over the 20-year period observed, from 8.5 scale score points in 2002 to 3.2 scale score points in 2022 (Figure 11).

Figure 11. Average Scale Score on NAEP in Eighth Grade Reading among Students in the 90th Percentile by Large City and National Public, 2002-2022[1]



No significant change in average scale score from 2019 to 2022.

Significant decrease in average scale score from 2019 to 2022.

Average eighth grade reading scores among high-achieving students in 15 TUDA jurisdictions did not differ significantly from those of high-achieving students nationally (Table 6).

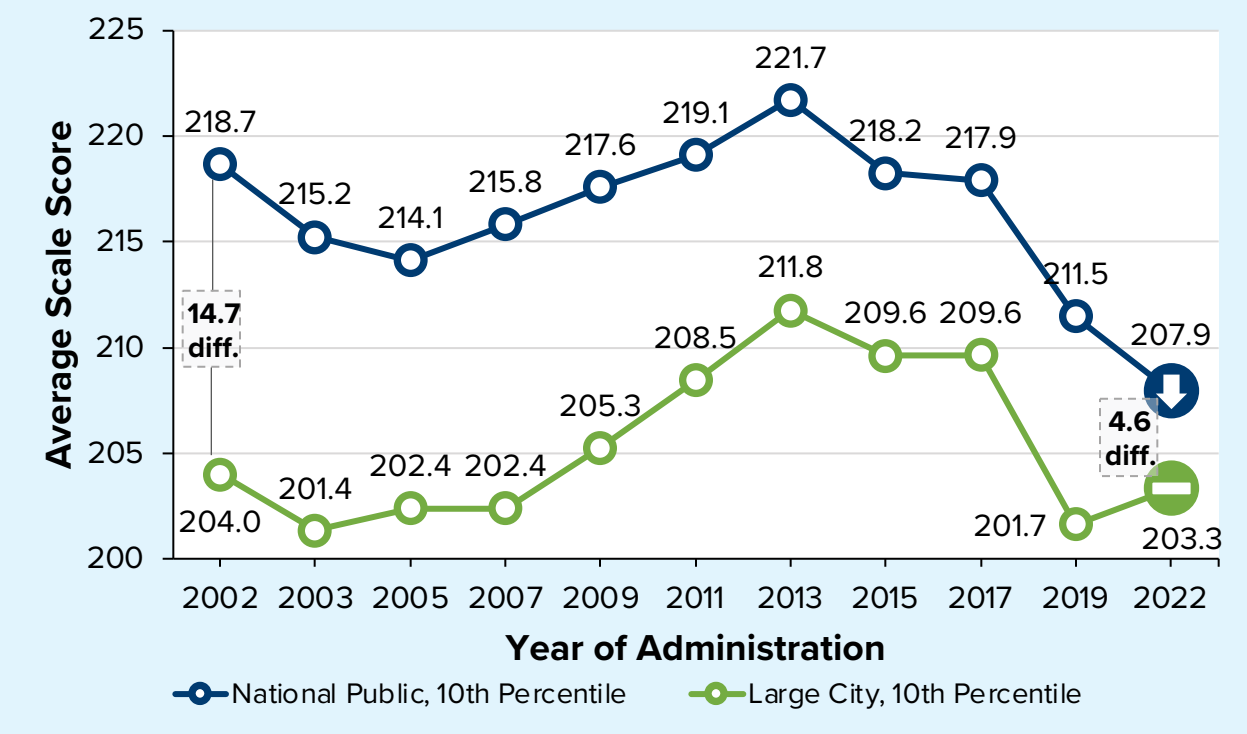
Table 6. Average Scale Score on NAEP Eighth Grade Reading among Students in the 90th Percentile for Select TUDA Districts Compared to the National Public, 2022[§]

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
San Diego	312.8	Not significantly different from National Public
Boston	310.1	
New York City	307.4	
Denver	306.9	
Charlotte	306.2	
National Public	**305.8**	
Miami-Dade	305.8	Not significantly different from National Public
Atlanta	304.8	
Hillsborough County (FL)	304.8	
Los Angeles	304.3	
Clark County (NV)	303.7	
Duval County (FL)	303.3	
District of Columbia (DCPS)	303.2	
Jefferson County (KY)	303.0	
Austin	302.1	
Guilford County (NC)	298.6	

Students in the 10th Percentile

A notable trend in eighth grade reading scores among students in the 10th percentile shows larger increases and smaller declines in average scale scores in large cities since 2002 compared to the 10th percentile nationally. Consequently, the gap in eighth grade reading scores between students in the 10th percentile in large cities and those nationally, in 2022, was less than one-third (4.6 scale score points) of the observed gap in 2002 (14.7 scale score points), a 20-year low (Figure 12). However, the performance of students in the 10th percentile in 2022 for both jurisdictions was significantly lower or unchanged compared to their performance in 2002.

Figure 12. Average Scale Score on NAEP in Eighth Grade Reading among Students in the 10th Percentile by Large City and National Public, 2002-2022[1]



No significant change in average scale score from 2019 to 2022.

Significant decrease in average scale score from 2019 to 2022.

Among the lowest performing students in 13 TUDA districts, students in the 10th percentile, average eighth grade reading scores did not differ significantly from those of students in the 10th percentile nationally (Table 7).

Table 7. Average Scale Score on NAEP Eighth Grade Reading among Students in the 10th Percentile for Select TUDA Districts Compared to the National Public, 2022[§]

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Miami-Dade	215.2	Not significantly different from National Public
San Diego	210.3	
Duval County (FL)	210.1	
Hillsborough County (FL)	209.3	
National Public	**207.9**	
Los Angeles	205.1	Not significantly different from National Public
Clark County (NV)	204.6	
Chicago	203.8	
Atlanta	202.8	
Charlotte	202.6	
New York City	201.1	
Guilford County (NC)	201.1	
Boston	198.4	
Denver	198.3	

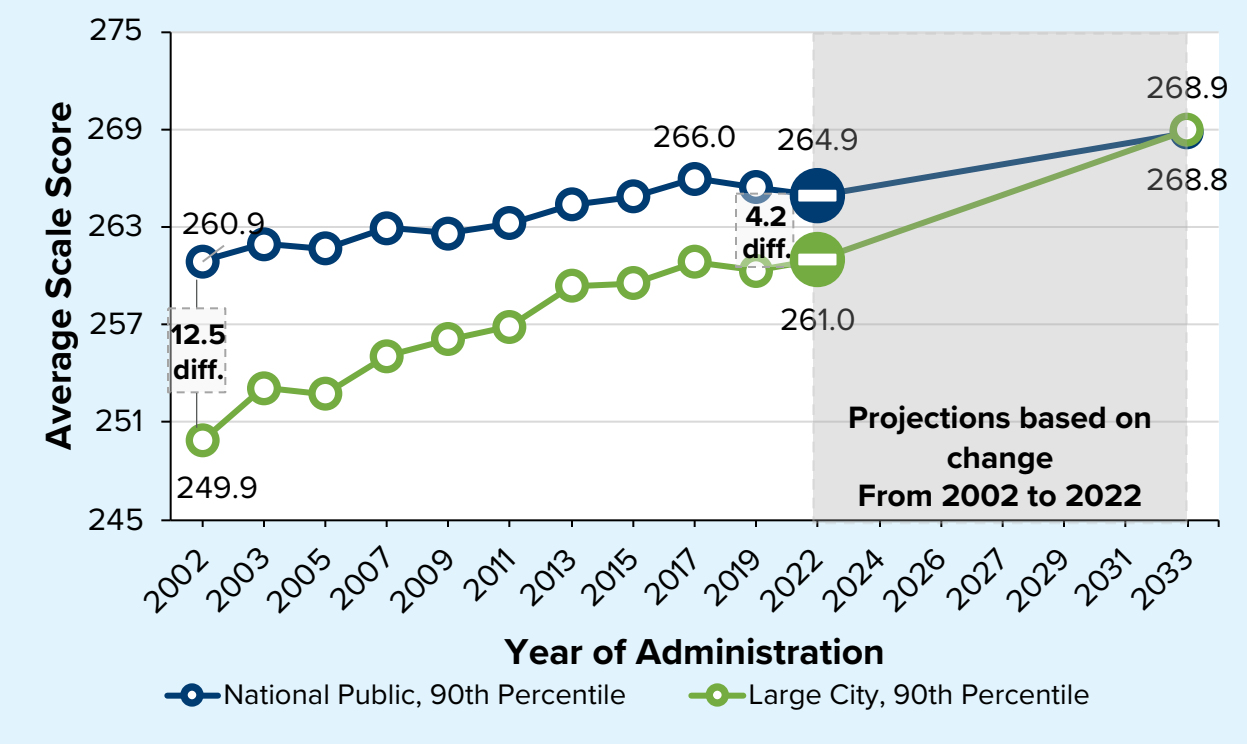
Summary – Eighth Grade Reading

On NAEP eighth grade reading, the achievement gap between the National Public and Large Cities is declining over time. The decline in the achievement gap is faster in eighth grade reading compared fourth grade reading. Just as compelling in the eighth grade reading results is that the pandemic's impact on Large City students appears marginal compared to the impact nationally, pointing to resilience among students in our nation's major cities. Comparisons of year-to-year changes in eighth grade reading average scale scores between the National Public and Large Cities shows gains that have typically been greater, and losses that have typically been smaller, in large cities. In examining 2022 results specifically, declines in eighth grade reading scores were only observed at the national level. As a result, if the trend that shrank the eighth grade reading gap by approximately nine percent with each NAEP administration since 2002 continues, and consistent growth is assumed, the gap would be eliminated within the next 10 years, by 2033 (Figure 13). The highest performing students in large cities are on track to eliminate the gap between students nationally at about the same time.

Comparisons of year-to-year changes in eighth grade reading average scale scores between the National Public and Large City jurisdictions once again show gains that have typically been greater, and losses have typically been smaller in the Large City jurisdiction.

As a result, the eighth grade reading gap that shrank by approximately nine percent with each NAEP administration since 2002, will practically disappear within the next 10 years.

Figure 13. Average Scale Score on NAEP in Eighth Grade Reading by Large City and National Public, with Predicted Year of Gap Closure[1]



No significant change in average scale score from 2019 to 2022.

Significant decrease in average scale score from 2019 to 2022.

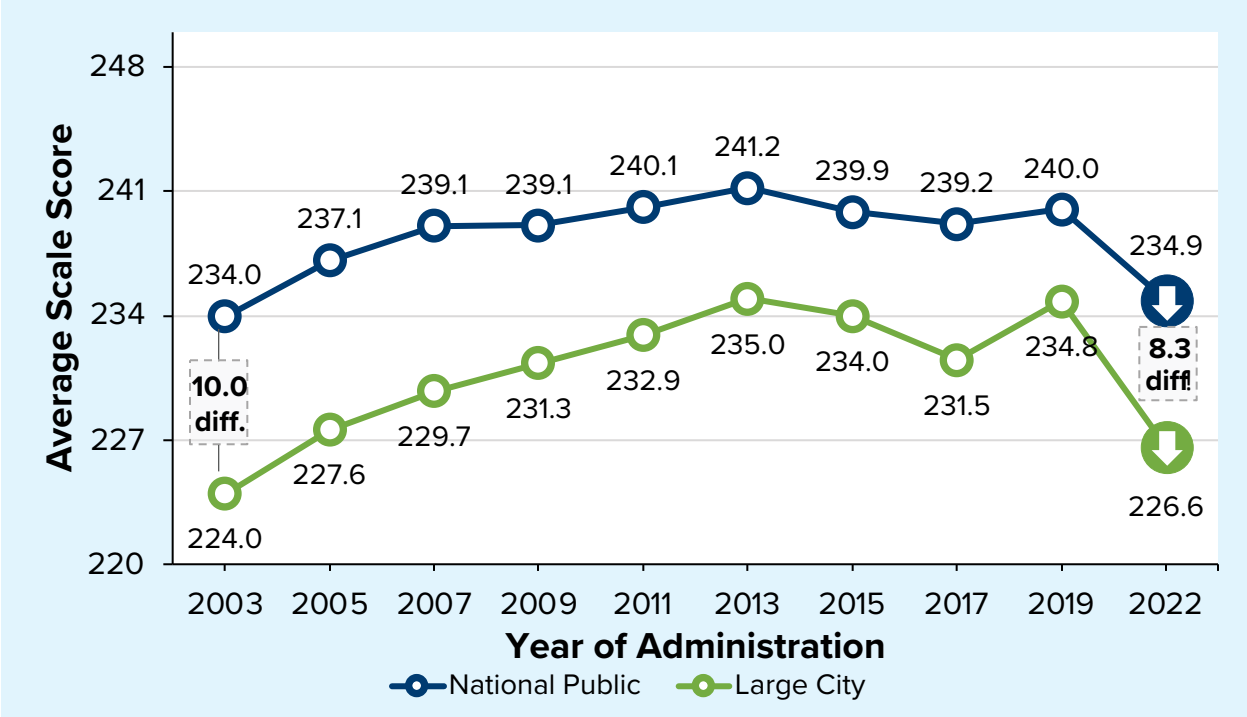
Fourth Grade Mathematics

This section of the brief examines results from fourth-grade mathematics assessments from 2003 through 2022. Like the sections above, this section starts with an examination of average scale scores of students in the Large City and National Public jurisdictions, overall and then disaggregated by percentile rank groups (90th, 75th, 50th, 25th, and 10th percentile), followed by a look at students with scores in the highest and lowest percentile rank groups across jurisdictions.

Large City vs. National Public

Across both the National Public and Large City jurisdictions, average scale scores on fourth grade mathematics assessments reached their 20-year high in 2013, followed by declines through 2017, a spike in 2019, and a dramatic drop in 2022—most likely the effect of the pandemic. Unlike other assessment results discussed in this report, the impact of the pandemic diminished gains in Large City performance that occurred prior to the pandemic. Moreover, while the gap in average scale scores between students in large cities and those of students nationally was cut in half from 2003 (10.0 scale score points) to 2019 (5.2 scale score points), the gap expanded significantly in 2022 to 8.3 scale score points (Figure 14). Average fourth grade mathematics scale scores among large city students in 2022 remained significantly greater than those observed in 2003.

Figure 14. Average Scale Score on NAEP in Fourth Grade Mathematics by Large City and National Public, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

Despite the national trend, there were some notable instances of urban districts that managed to stave off significant declines in fourth grade mathematics. Three TUDA districts—Hillsborough County-FL, Austin, and Dallas—returned results that indicate no significant change in fourth grade mathematics scores from 2019 to 2022. Three TUDA districts, Hillsborough County-FL, Miami-Dade, and San Diego, were also found to have significantly higher scores on fourth grade mathematics assessments in 2022 than those observed among public-school students nationally (Table 8).

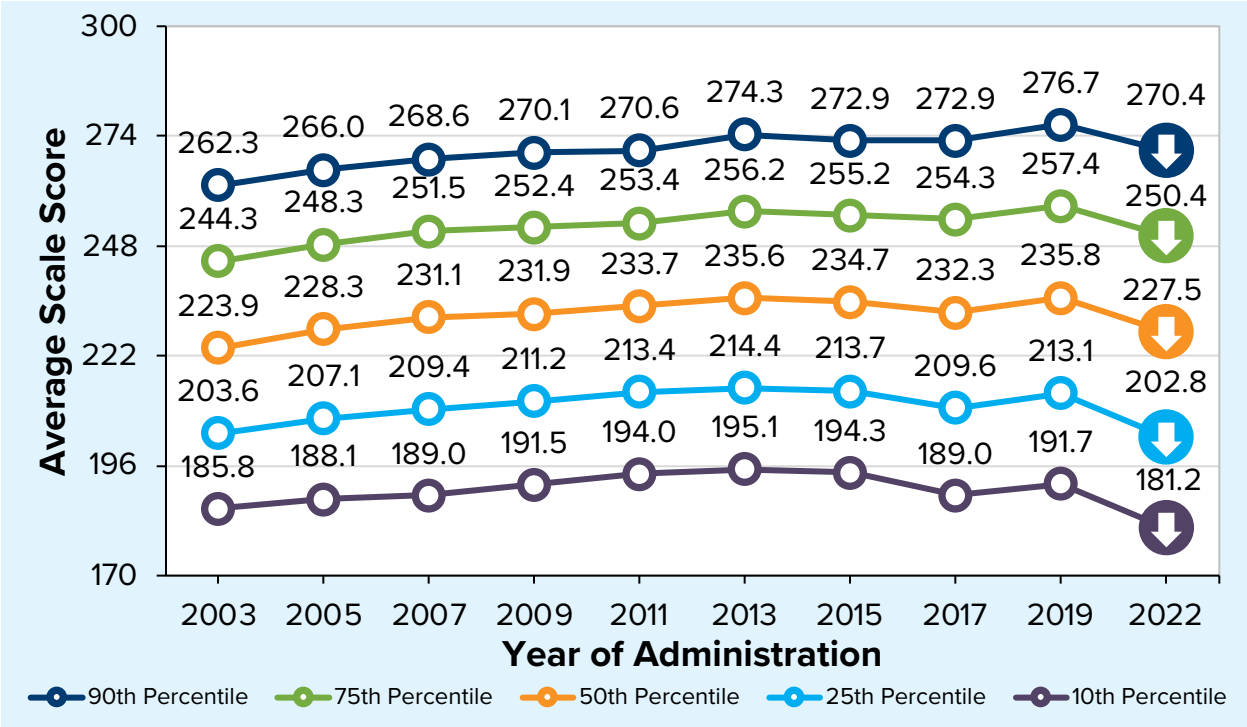
Table 8. Average Scale Score on NAEP Fourth Grade Mathematics, Select TUDA Districts Compared to the National Public, 2022‡

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Hillsborough County (FL)	240.9	Significantly Greater than National Public
Miami-Dade	240.6	
San Diego	238.6	
Duval County (FL)	236.8	Not significantly different from National Public
National Public	234.9	
Charlotte	233.5	Not significantly different from National Public
San Diego	232.0	

Percentile Rank

When disaggregated by percentile rank, high-achieving students had lower declines in scale scores than students in the lower percentile rank groups. In 2022, students in the 50th, 75th and 90th percentiles in large cities saw fourth grade mathematics test results that were above their 2003 results. Students in the lowest two percentile rank groups, on the other hand, saw declines in average scale scores on fourth grade mathematics that resulted in scores lower than in 2003 (Figure 15).

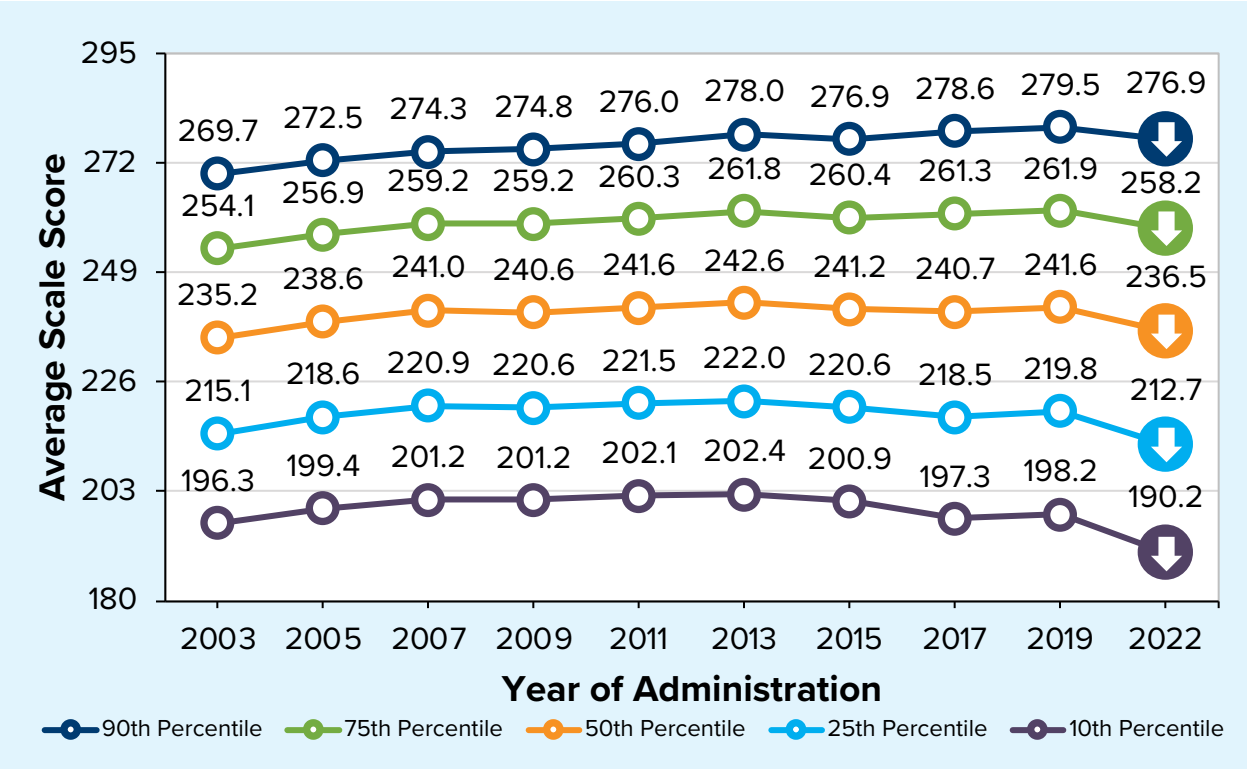
Figure 15. Average Scale Score on NAEP in Fourth Grade Mathematics by Percentile Rank Groups for Large Cities, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

Looking at average fourth grade mathematics scale scores for public-school students nationally, disaggregated by percentile rank group, the same trend occurred. Students in all five percentile groups experienced significant declines in performance from 2019 to 2022 (Figure 16). Average scale scores among students in the 50th, 25th, and 10th percentiles in 2022 were lower than or no different from average scale scores in 2003.

Figure 16. Average Scale Score on NAEP in Fourth Grade Mathematics by Percentile Rank Groups for the National Public, 2003-2022†

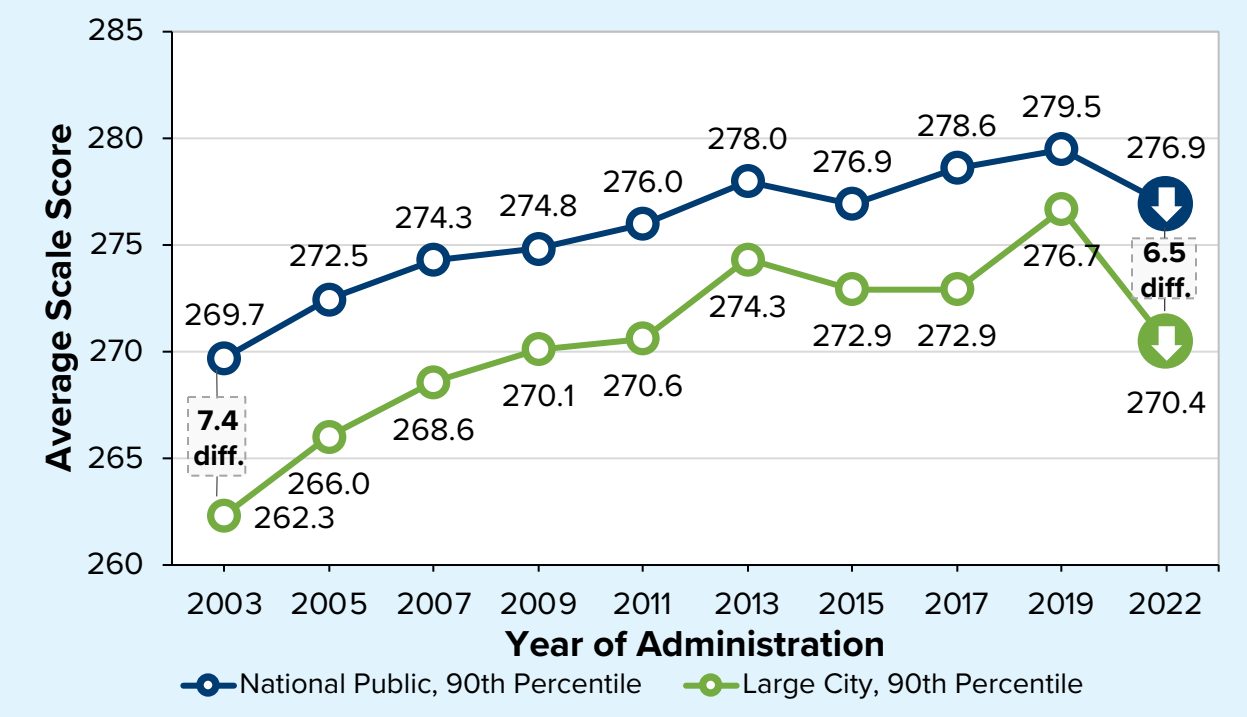


Significant decrease in average scale score from 2019 to 2022.

Students in the 90th Percentile

Looking closer at students on NAEP in fourth grade mathematics in the 90th percentile in large cities and students nationally, gaps were declining from 2003 (7.4 scale score points) to its smallest gap in 2019 (2.8 scale score points), although the gap increased between 2019 and 2022 to 6.5 scale score points (Figure 17).

Figure 17. Average Scale Score on NAEP in Fourth Grade Mathematics among Students in the 90th Percentile by Large City and National Public, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

Average fourth grade mathematics scores among high-achieving students in 12 TUDA jurisdictions did not differ significantly from those of high-achieving students nationally (Table 9).

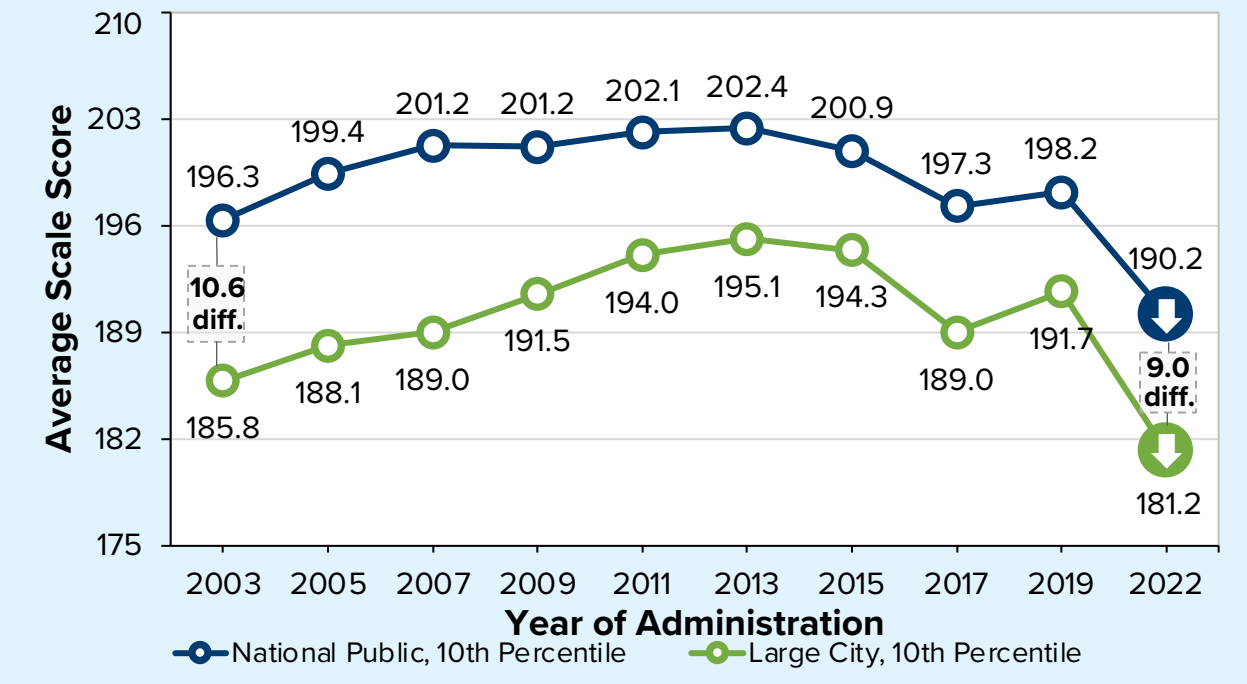
Table 9. Average Scale Score on NAEP in Fourth Grade Mathematics among Students in the 90th Percentile for Select TUDA Districts Compared to the National Public, 2022‡

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Austin	281.7	
Hillsborough County (FL)	279.4	
Charlotte	277.7	Not significantly different from National Public
San Diego	277.4	
Duval County (FL)	277.2	
National Public	**276.9**	
Miami-Dade	276.7	
District of Columbia (DCPS)	276.5	
Denver	275.2	
Atlanta	274.6	Not significantly different from National Public
Boston	272.9	
Guilford County (NC)	272.6	
Houston	269.4	

Students in the 10th Percentile

In examining average scale scores among students in the 10th percentile, the increase in average fourth grade mathematics scale scores between 2003 and 2019 was significantly greater in large cities compared to students nationwide (Figure 18). In 2022, however, the gap in fourth grade mathematics scores between students in the 10th percentile in large cities and those nationally increased significantly from 6.5 scale score points in 2019 to 9.0 scale score points in 2022.

Figure 18. Average Scale Score on NAEP in Fourth Grade Mathematics among Students in the 10th Percentile by Large City and National Public, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

Students in the 10th percentile in two TUDA districts, Hillsborough County-FL and Miami-Dade, had significantly greater average fourth grade mathematics scores than those of students in the 10th percentile nationally, and in six TUDA districts, students in this group did not differ significantly from those of students in this same group nationally (Table 10).

Table 10. Average Scale Score on NAEP Fourth Grade Mathematics for Students in the 10th Percentile for Select TUDA Districts Compared to the National Public, 2022‡

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Hillsborough County (FL)	202.2	Significantly Greater than National Public
Miami-Dade	201.2	
Austin	194.7	Not significantly different from National Public
Duval County (FL)	193.2	
Dallas	193.0	
National Public	**190.2**	
Charlotte	187.5	Not significantly different from National Public
Fort Worth (TX)	187.4	
Guilford County (NC)	185.9	

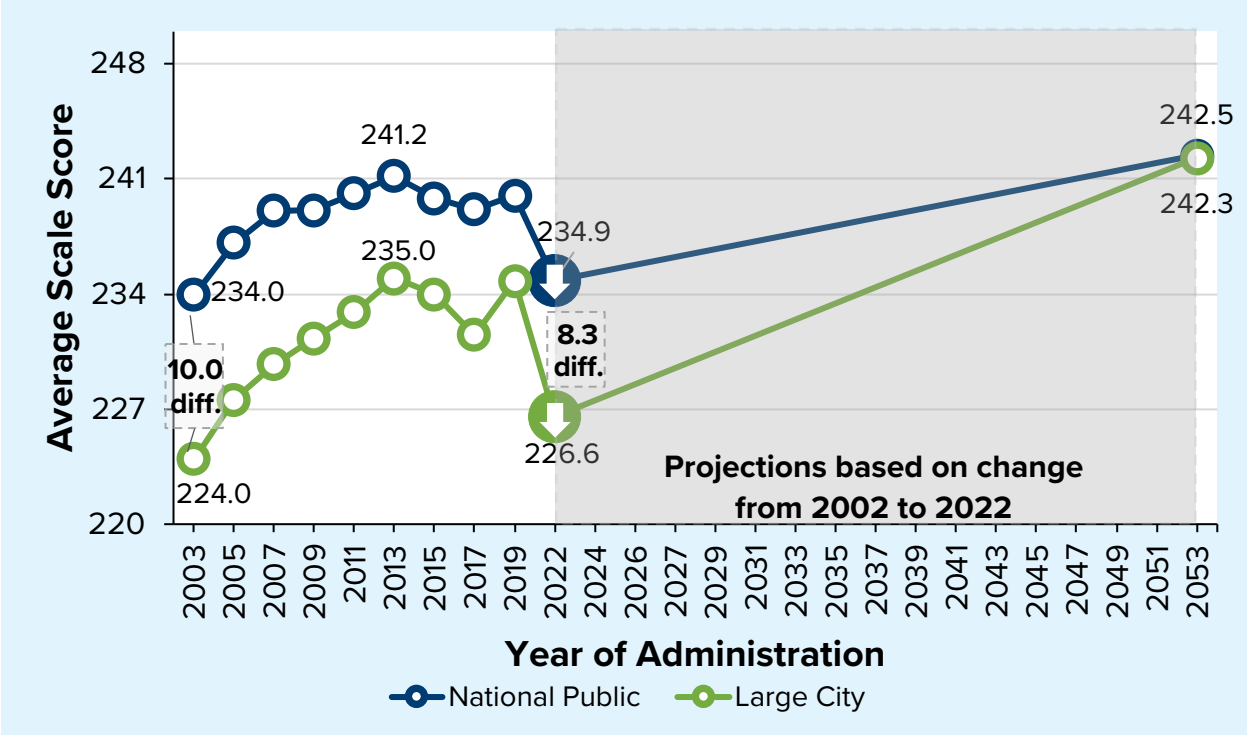
Summary – Fourth Grade Mathematics

Trends in fourth grade mathematics performance are unlike the results for other grades and subjects. The progress that was made toward closing the gap in fourth grade mathematics NAEP scores between Large City students and public-school students nationally since 2003 was significantly diminished between 2019 and 2022. Of the grade-subject tests examined in this brief, only fourth grade mathematics results show any significant increase in the difference in student outcomes between Large City and National Public students from 2019 to 2022. Prior to the 2022 administration of NAEP fourth grade mathematics assessments, and assuming the growth trends that occurred pre-pandemic, students in large cities were on track to eliminate the average scale score gap between National Public and Large Cities by 2037, as the gap was closing by nearly seven percent with each administration of NAEP tests. Considering the impact of the pandemic, the gap is not likely to close until 2053 without significant intervention and instructional focus (Figure 19). Prior to the 2022 administration of fourth grade mathematics NAEP assessments, the highest performing students in large cities were on track to eliminate the gap with the National Public by 2033.

The relatively unique outcomes on fourth grade mathematics tests from 2022 especially point to a need to address the pandemic's impact on Large City students.

If there is a point of emphasis regarding NAEP results in fourth grade mathematics to be made, it should be that recovery among students at this grade level is essential if large cities are expecting to continue or accelerate closure of the fourth grade mathematics scale score gap.

Figure 19. Average Scale Score on NAEP in Fourth Grade Mathematics by Large City and National Public, with Predicted Year of Gap Closure†



Significant decrease in average scale score from 2019 to 2022.

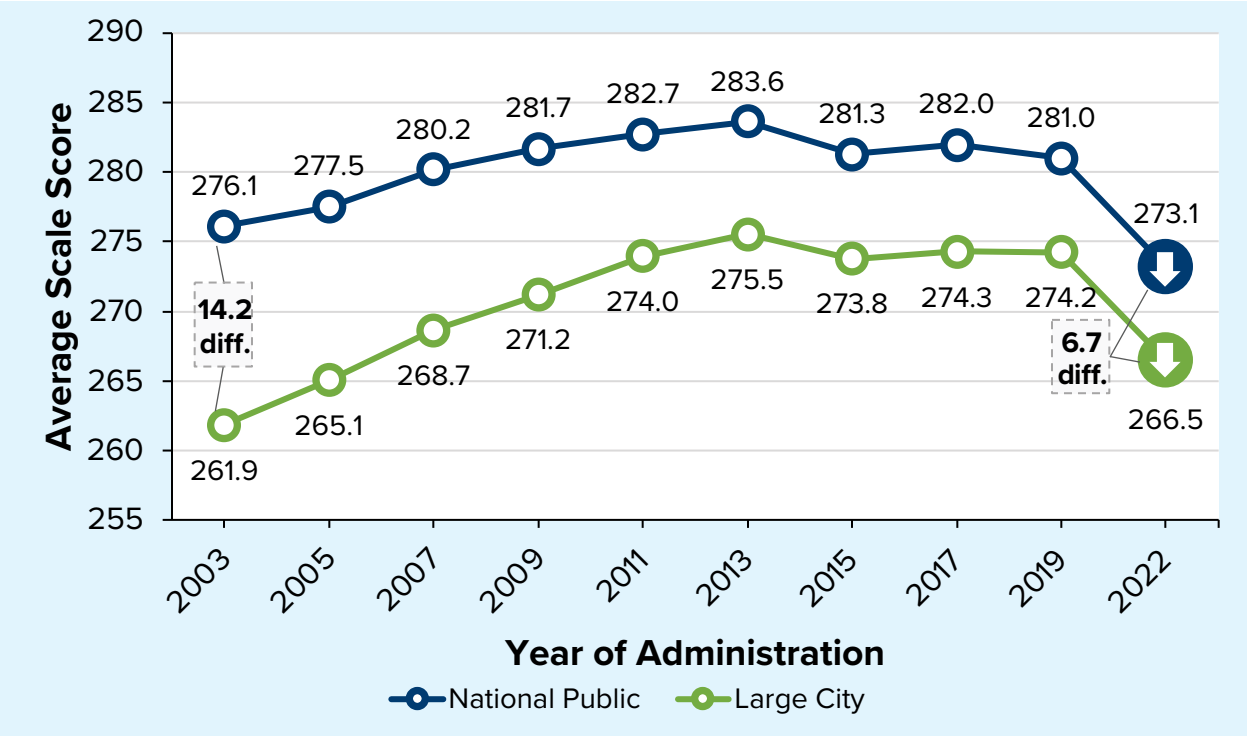
Eighth Grade Mathematics

This section of the brief examines results from eighth grade mathematics assessments from 2003 through 2022. Beginning with a discussion of average scale scores of all students in the Large City and National Public jurisdictions, followed by a look at performance disaggregated by selected percentile rank groups (90th, 75th, 50th, 25th, and 10th percentile), and concluding with an examination of students with scores in the highest and lowest percentile rank groups across jurisdictions.

Large City vs. National Public

The performance patterns of eighth grade mathematics scores among students in the National Public and Large City jurisdictions are relatively similar. Students in both jurisdictions showed steady growth in eighth grade mathematics performance from 2003 to 2013, followed by a decline in scores from 2013 through the most recent administration of NAEP in 2022. Analyses of the observed change between the jurisdictions from 2003 through 2022 revealed that students in large cities saw significantly greater gains during that time, and that scores observed in 2022 remain significantly greater than those seen in 2003. The difference in eighth grade mathematics scores between students in large cities and students at the national level shrank to less than half of the difference observed in 2003, from 14.2 scale score points to 6.7 scale score points in 2022—the smallest gap observed over the 20-year period (Figure 20).

Figure 20. Average Scale Score on NAEP in Eighth Grade Mathematics by Large City and National Public, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

In 2022, five TUDA districts—San Diego, Miami-Dade, Austin, Guilford County-NC, and Hillsborough County-FL—had average eighth grade mathematics scores that were not significantly different from scores observed among public-school students nationally, with one district, Charlotte-Mecklenburg, having an average scale score that was significantly greater than national scores (Table 11).

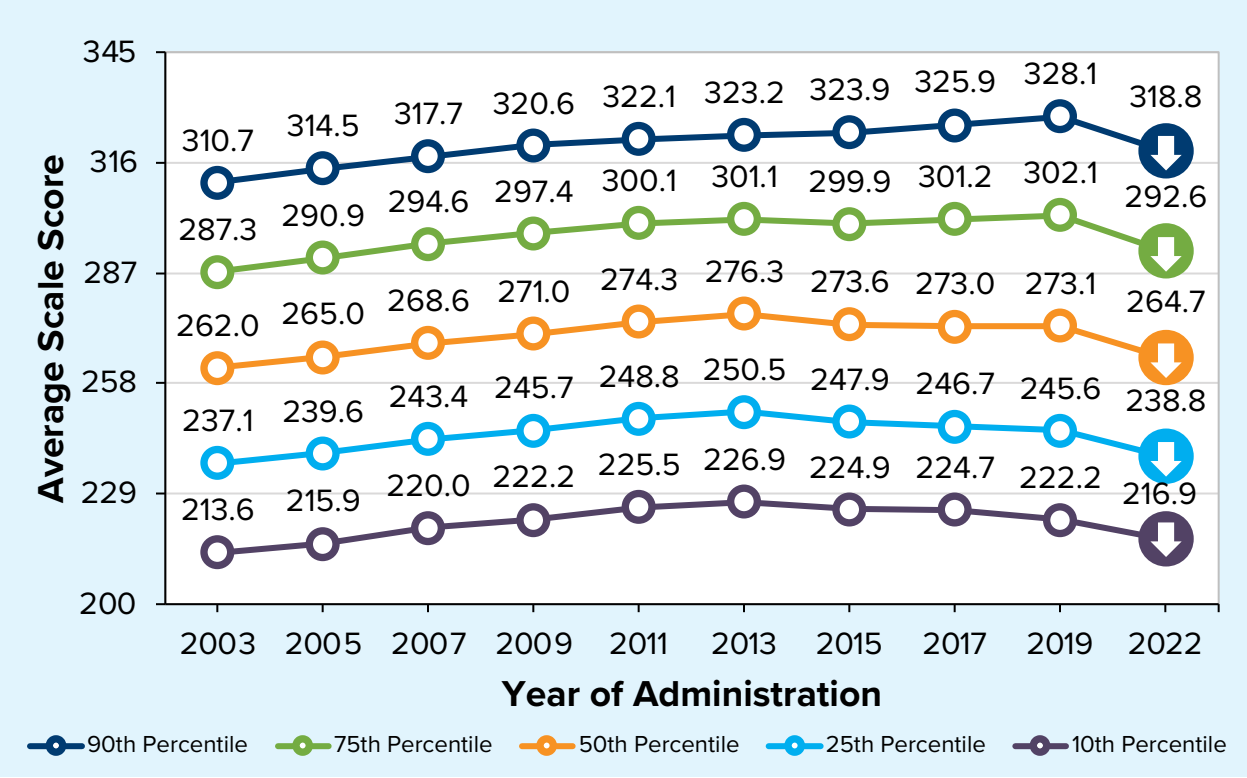
Table 11. Average Scale Score on NAEP Eighth Grade Mathematics for Select TUDA Districts Compared to the National Public, 2022‡

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Charlotte-Mecklenburg	277.6	Significantly Greater than National Public
San Diego	274.4	Not significantly different from National Public
Miami-Dade	274.2	
National Public	**273.1**	
Austin	273.0	Not significantly different from National Public
Guilford County (NC)	270.2	
Hillsborough County (FL)	269.3	

Percentile Rank

In large cities, changes in eighth grade mathematics scores over time and across percentile rank groups were consistent with the trend in assessment results seen nationally. All percentile rank groups followed a trend of consistent growth in average scale scores and, in 2013, reached their highest (or close to their highest) average scale scores in the 20-year span examined. Students in the 90th and 75th percentile groups reached their best outcomes in 2019, while students in the remaining percentile rank groups had their trajectory flatten or decline after 2013. Despite the declines seen from 2019 to 2022, all percentile group performance scores remained higher than their observed values in 2002. The largest declines were observed among the students in the higher percentile rank groups, moving average scale scores among all students to 15-17-year lows (Figure 21).

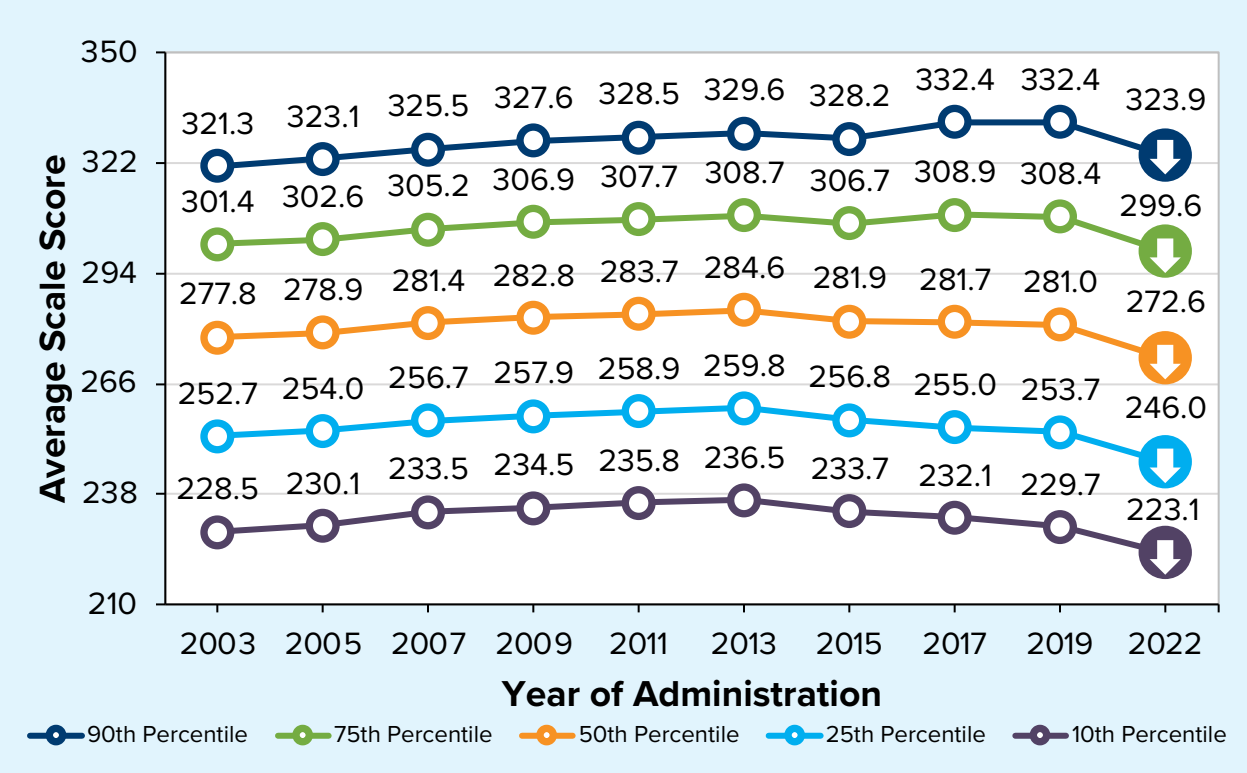
Figure 21. Average Scale Score on NAEP in Eighth Grade Mathematics by Percentile Rank Groups for Large Cities, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

A notable difference between outcomes of students in public schools nationally and those seen among students in large cities is that observed decreases in average scale scores from 2019 to 2022 among students in the 10th, 25th, 50th, and 75th percentile ranks brought average scale scores for students nationally on eighth grade mathematics assessments to 20-year lows. The observed declines in eight grade mathematics scores among students in the 90th percentile rank group brought the average to a 17-year low in 2022 (Figure 22).

Figure 22. Average Scale Score on NAEP in Eighth Grade Mathematics by Percentile Rank Groups for the National Public, 2003-2022†

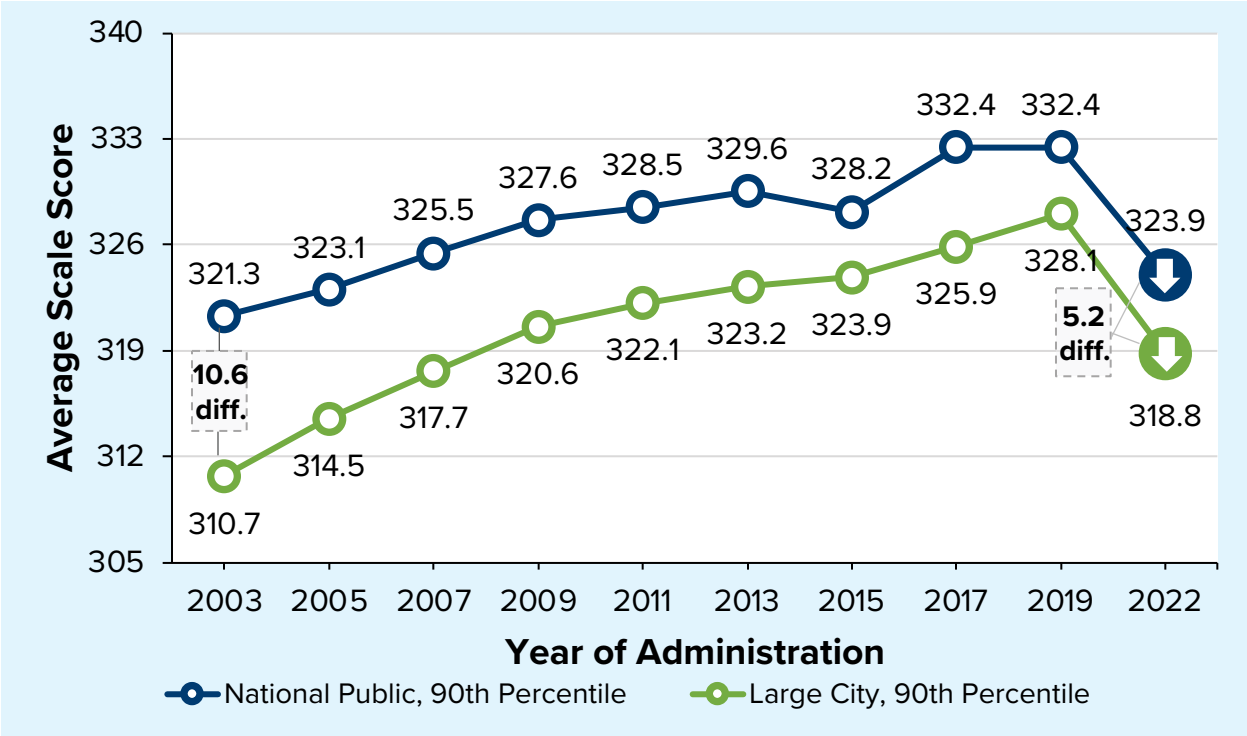


Significant decrease in average scale score from 2019 to 2022.

Students in the 90th Percentile

As was the case for outcomes on reading assessments, eighth grade mathematics average scale scores among the highest performing students show rates of growth that are larger among students in large cities than those of students nationally between 2003 and 2019. The gap in average scale score between the Large City and National Public jurisdictions in 2022 was less than half of the gap observed in 2003, 5.2 and 10.6 scale score points, respectively (Figure 23).

Figure 23. Average Scale Score on NAEP in Eighth Grade Mathematics among Students in the 90th Percentile by Large City and National Public, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

High-achieving students in one TUDA district, New York City, returned mathematics results that were significantly greater than those among high-achieving students nationally in 2022, while 11 TUDA districts had average eighth grade mathematics scores that did not differ significantly from those observed among high-achieving students nationally (Table 12).

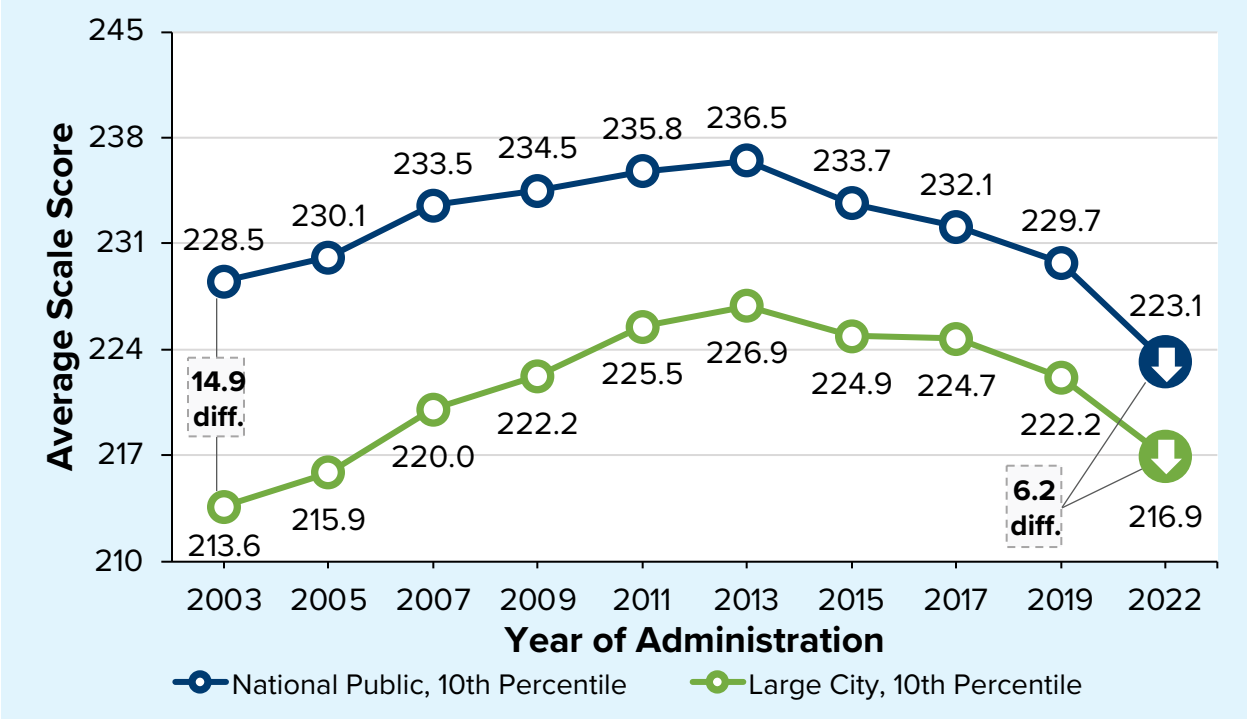
Table 12. Average Scale Score on NAEP Eighth Grade Mathematics among Students in the 90th Percentile for Select TUDA Districts Compared to the National Public, 2022‡

Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Boston	331.5	Not significantly different from National Public
New York City	331.4	Significantly Greater than National Public
San Diego	329.7	
Charlotte	328.8	Not significantly different from National Public
Austin	327.1	
National Public	**323.9**	
Miami-Dade	320.7	
Denver	320.6	
Duval County (FL)	319.7	
Guilford County (NC)	319.6	Not significantly different from National Public
Clark County (NV)	317.0	
Albuquerque	313.1	
Philadelphia	307.5	

Students in the 10th Percentile

The results of analysis of average scale scores among the lowest performing students since 2003 indicate that gains in scores among students in the 10th percentile in large cities were generally larger, and declines smaller, than those of students in this same group enrolled in public schools nationally. Scores among students in the 10th percentile declined significantly among students in both the Large City and National Public jurisdictions from 2013 to 2022, with the decline being significantly steeper among students in the National Public jurisdiction during that period. In 2022, the gap in eighth grade mathematics scores between students in the 10th percentile in large cities and those nationally was less than half the gap observed in 2003 (14.9 scale score points in 2003 and 6.2 scale score points in 2022)—the smallest gap over the nearly 20-year period (Figure 24).

Figure 24. Average Scale Score on NAEP in Eighth Grade Mathematics among Students in the 10th Percentile by Large City and National Public, 2003-2022†



Significant decrease in average scale score from 2019 to 2022.

Average eighth grade mathematics scores among students in this group in 11 TUDA jurisdictions did not differ significantly from those of students in the 10th percentile nationally, and one jurisdiction, Miami-Dade, was found to have an average eighth grade mathematics scale score that was greater than those of students in the 10th percentile nationally (Table 13).

Table 13. Average Scale Score on NAEP Eighth Grade Mathematics among Students in the 10th Percentile for Select TUDA Districts Compared to the National Public, 2022‡

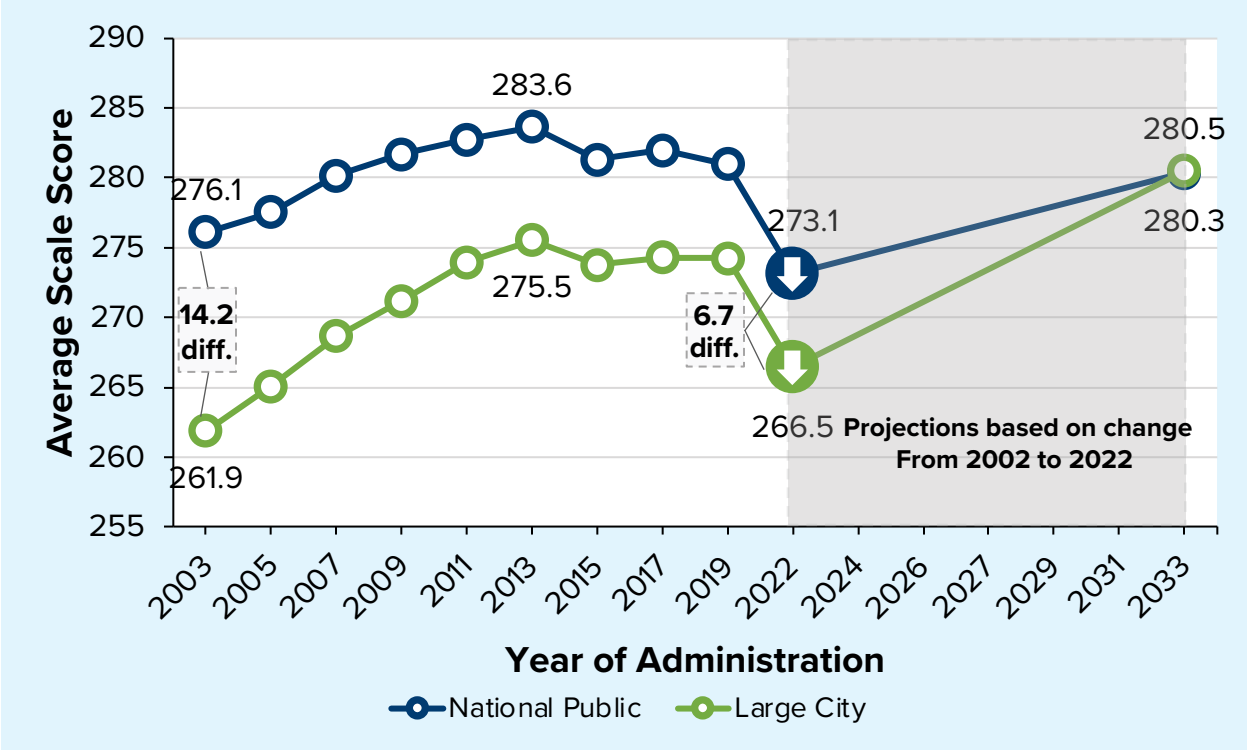
Jurisdiction	Avg. Scale Score, 2022	Difference from National Public
Miami-Dade	228.7	Significantly Greater than National Public
Charlotte	227.2	Not significantly different from National Public
Hillsborough County (FL)	223.3	
Duval County (FL)	223.3	
National Public	223.1	
Guilford County (NC)	223.1	Not significantly different from National Public
Austin	222.3	
San Diego	221.7	
Fort Worth (TX)	220.0	
Clark County (NV)	219.6	
Dallas	219.6	
Chicago	218.8	
Boston	214.1	

Summary – Eighth Grade Mathematics

Eighth grade mathematics NAEP results show the gap in average scale scores between the Large City and National Public jurisdictions is declining over time at a greater rate than results from reading assessments discussed above. Comparisons of year-to-year changes in eighth grade mathematics average scale scores between the National Public and Large City jurisdictions also show gains that have typically been greater, and declines that have typically been smaller, among students in large cities. While the results of the 2022 administration of eighth grade mathematics NAEP tests show larger declines when compared to other grade-subject tests, the difference in those declines across jurisdictions is among the lowest in the time span examined—indicating that the gap was not affected. The eighth grade mathematics gap between National Public and Large City shrank by approximately eight percent with each NAEP administration since 2003 and, assuming pre-pandemic growth rates, is on pace to be eliminated in the next ten years by 2033, despite the pandemic (Figure 25). The highest performing students in large cities are on track to eliminate the gap in eighth grade mathematics scores with students nationally at around the same time.

While the results of the 2022 administration of eighth grade mathematics NAEP tests show larger declines when compared to other grade-subject tests, the difference in those declines across jurisdictions is among the lowest in the time span examined—indicating that the gap [between the National Public and Large City jurisdictions] was not affected.

Figure 25. Average Scale Score on NAEP in Eighth Grade Mathematics by Large City and National Public, with Predicted Year of Gap Closure†



Significant decrease in average scale score from 2019 to 2022.

Conclusions

Broader discussions about the status of urban school districts—especially on the heels of the COVID-19 pandemic—often do the disservice of highlighting very general differences in outcomes in a way that portrays city schools and districts as failing. Nuanced discussions about contextual differences between urban districts and students in the National Public—or even between the urban districts themselves—are needed to truly understand how the discrepancies we see in student performance data come to be. Historical disinvestment in urban centers, mass exodus of economic bases that supported urban schools, political conflict over state funding of urban schools, and deeply-entrenched and intergenerational poverty—among other elements that could be named—have been identified and studied *ad infinitum* as root causes of disparities in student achievement. The discussion of NAEP test results contained within this report points to the fact that **urban districts are closing gaps in national assessment outcomes.**

In three of the four assessments discussed here, a prominent trend in the results was year-over-year achievement benefits among students in large cities, outpacing students enrolled in public schools nationally. In the face of a global health crisis, Large City schools appear to have mitigated declines in test scores to such a degree that progress that had been made in closing achievement gaps between cities and public schools across the country was preserved in three of the four grade and subject combinations in this report. One could question whether or not the work of urban schools to address the needs of students during the pandemic and staying on course to close achievement gaps is sustainable, but student assessment data has been trending in the direction of NAEP achievement gap closure for approximately 20 years.

Large City schools appear to have staved off the deep declines in test scores to such a degree that any progress that had been made in closing achievement gaps between cities and public schools across the country was preserved.

An area of concern, given the findings discussed in this report, are outcomes on fourth grade mathematics assessments, which deviate from other NAEP grades and subjects. The significant increase in the gap in fourth grade mathematics NAEP results between students in Large City schools and those of public-school students nationwide should give educators and decisionmakers pause and inspire conversation to get Large City students back on track to close achievement gaps. Once again it should be noted that the impact of efforts to recover from the pandemic has yet to be seen, and reports on state mathematics assessments since 2021 provide encouraging signs to that end, so the possibility of recovery is well within reach given the trend toward gap closure prior to the recent health crisis.

Overall, Large City schools should find encouragement in this analysis of NAEP results given the challenges facing educators since 2020. On the surface, the results of NAEP assessments tell a story of unfinished learning and achievement declines. A closer look at these results in the context of a long-standing issue (the disparities in student outcomes between students in large cities and those of students at the state or national levels) show that large city students have the potential to

recover from the pandemic and continue to close the achievement gap with their national peers. In addition, recently released state assessment outcomes in reading and mathematics are pointing to meaningful progress of returning to (and possibly exceeding) pre-pandemic levels of achievement. Given these findings, the importance of continuing federal investments like the American Rescue Plan and other funding streams thought to drive progress, are imperative.

Sources

¶ U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2002, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, and 2022 Reading Assessments.

§ U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2022 Reading Assessments.

† U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, and 2022 Mathematics Assessments.

‡ U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2022 Mathematics Assessments.

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