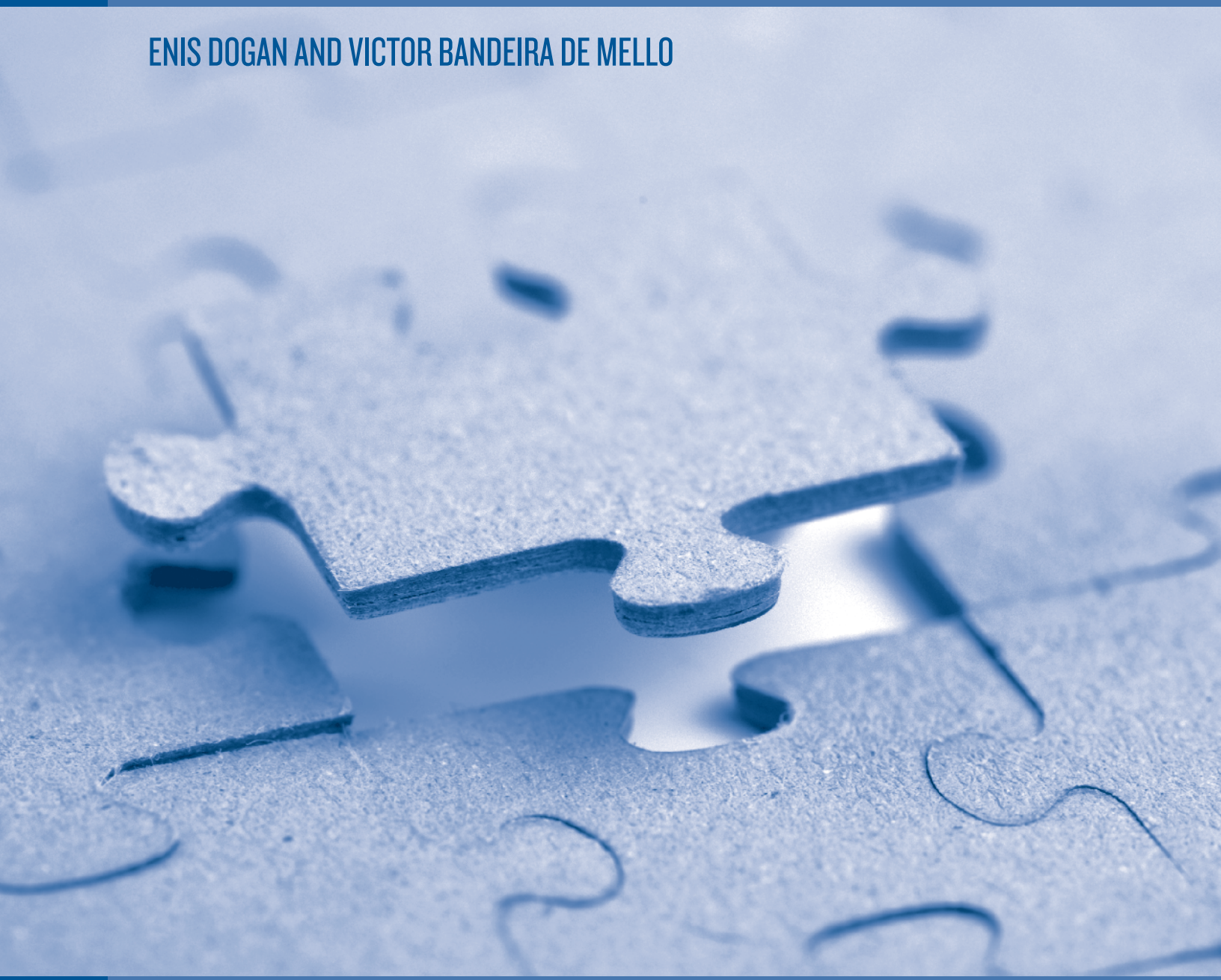
ADDENDUM TO
PIECES OF THE PUZZLE

RECENT PERFORMANCE TRENDS IN URBAN DISTRICTS: A CLOSER LOOK AT 2009 NAEP TUDA RESULTS

ENIS DOGAN AND VICTOR BANDEIRA DE MELLO



Research conducted for
The Council of the Great City Schools
Spring 2011

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RECENT PERFORMANCE TRENDS OF URBAN DISTRICTS: A CLOSER LOOK AT 2009 NAEP RESULTS

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Spring, 2011

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Executive Summary

In this study, we examined the academic performance of 18 urban districts that participated in the 2009 Trial Urban District Assessment (TUDA) of the National Assessment of Education Progress (NAEP). The districts participated in grade 4 and grade 8 reading and mathematics assessments. Eleven of these districts also participated in the 2007 TUDA. We examined the changes in student performance in these 11 districts from 2007 to 2009.

Our analyses focused on the following questions:

- How did each district perform in 2009--
    - compared to the national public sample and the large city populations?
    - compared to one another when we control for relevant student background characteristics?
    - compared to their expected performance based on relevant student background characteristics?
    - across mathematics and reading subscales?
    - at the item level?
- How did each district's performance change from 2007 to 2009?

In the District Profiles section of this report, we answer these questions and also provide relevant fiscal and non-fiscal information on each district.

District Performance Compared to National Public (NP) and Large Cities (LC), 2009

In order to describe the most recent performance of the 18 districts on NAEP grade 4 and 8 reading and mathematics, we computed their average scores in 2009 and compared the average score of each district to the national public school sample and the large city (LC) averages.

In the reading assessment, Charlotte performed above the national public **and** the LC averages at grade 4.

Average scores for students in Austin, Jefferson County, Miami-Dade County, and New York City were not significantly different from the national average at grade 4. While none of the districts performed above the national public average at grade 8, scores for students in Austin and Miami-Dade County were not statistically different from the national public averages at grade 8.

Furthermore, when compared to the LC grade 4 and 8 reading averages, scores were higher in Austin, Boston, Charlotte, Jefferson County, and Miami-Dade County. Scores for New York City were higher than the LC average at grade 4 and no different from it at grade 8. In addition, average scores in Atlanta, Houston, and San Diego were not significantly different from the LC

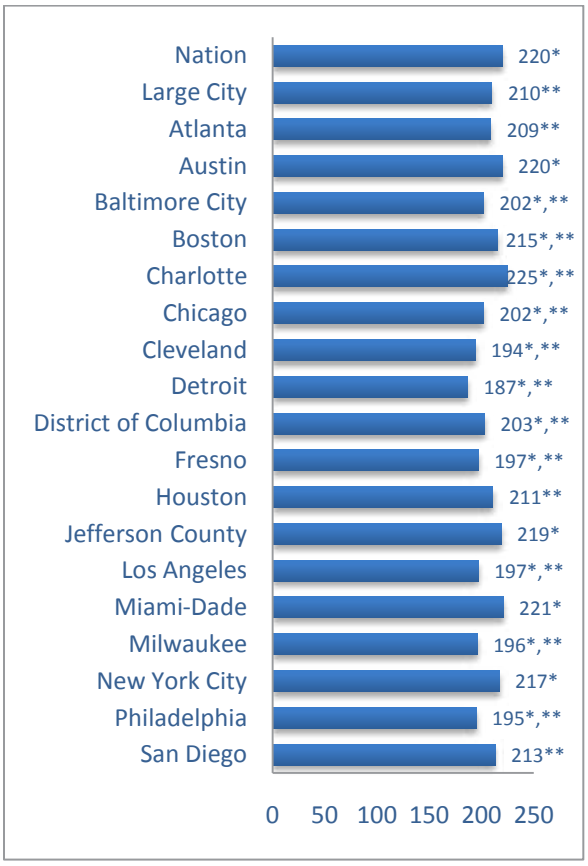
average at grade 4; and average scores in Atlanta, Chicago, Houston, New York City, Philadelphia, and San Diego were not significantly different than the LC average at grade 8.

In the mathematics assessment, only Charlotte performed above the national public **and** the LC averages at grade 4 and only Austin performed above the national public **and** the LC averages at grade 8.

When compared to the national average in mathematics, average scores in Austin**,** New York City, and San Diego were no different at grade 4. The same was true for Boston, Charlotte, and San Diego at grade 8.

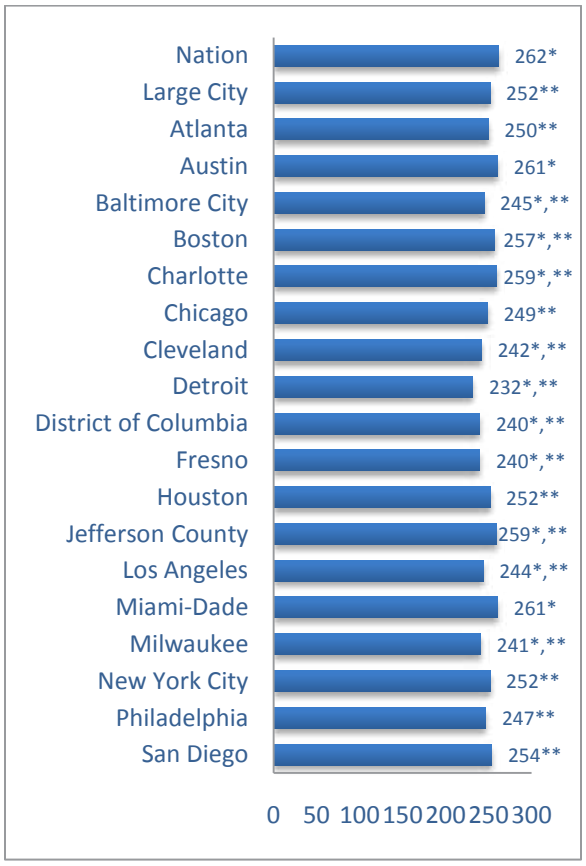
Furthermore, students in Austin, Boston, Charlotte, Houston, and San Diego outperformed their LC peers in mathematics in both grades 4 and 8. On the other hand, average scores for students in Miami-Dade County and New York City were higher than the LC average at grade 4 but no different from it at grade 8. Finally, Jefferson County students' average scores were not significantly different from the LC average at both grade 4 and grade 8.

FIGURE 1. GRADE 4 AVERAGE READING SCALE SCORES FOR TUDA DISTRICTS, LC AND NP, 2009



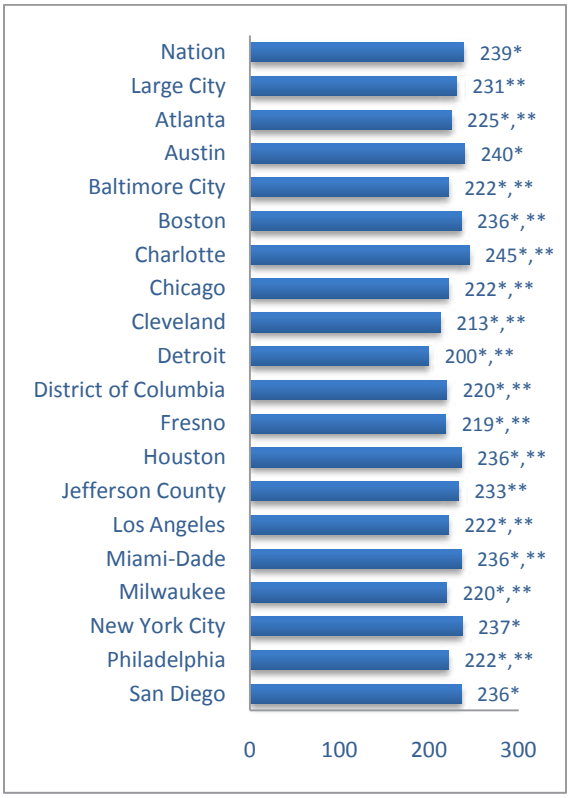
*Significantly different (p< .05) from large city.
** Significantly different (p< .05) from the nation.

FIGURE 2. GRADE 8 AVERAGE READING SCALE SCORES FOR TUDA DISTRICTS, LC AND NP, 2009



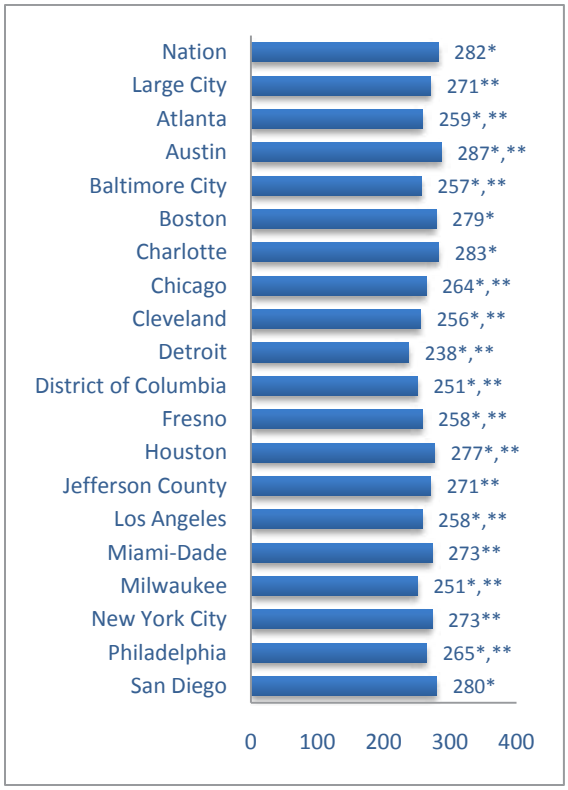
*Significantly different (p< .05) from large city.
** Significantly different (p< .05) from the nation.

FIGURE 3. GRADE 4 AVERAGE MATHEMATICS SCALE SCORES FOR TUDA DISTRICTS, LC AND NP, 2009



*Significantly different (p< .05) from large city.
** Significantly different (p< .05) from the nation.

FIGURE 4. GRADE 8 AVERAGE MATHEMATICS SCALE SCORES FOR TUDA DISTRICTS, LC AND NP, 2009



*Significantly different (p< .05) from large city.
** Significantly different (p< .05) from the nation.

District Performance Compared to Other Districts After Adjusting for Student Background Characteristics, 2009

In addition, we compared the performance of each district against the other districts after adjusting (or controlling) for a number of relevant student background characteristics. We estimated the performance of each district had its demographic profile been the same as the average profile of all 18 districts on relevant student background variables. These analyses put the districts on a more level playing field. With these controls, the highest performers were Austin, Boston, Charlotte, Miami-Dade County, and New York City in grade 4 reading; Austin, Boston, and Miami-Dade County, in grade 8 reading; Austin, Boston, Charlotte, Houston, and New York City in grade 4 mathematics; and Austin and Boston in grade 8 mathematics.

TABLE 1. TOP-PERFORMING DISTRICTS AFTER ADJUSTING FOR STUDENT CHARACTERISTICS, 2009

	Grade 4	Grade 8
Reading	Austin, Boston, Charlotte, Miami-Dade County, New York City	Austin, Boston, Miami-Dade County
Mathematics	Austin, Boston, Charlotte, New York City, Houston	Austin, Boston

District Expected Performance Compared to Actual Performance, 2009

We also computed the expected performance of each district based on its profile in terms of the selected student background characteristics. Next, we compared each district's actual performance to the expected performance for that district. In grade 4 reading, six districts performed higher than expected: Austin, Boston, Charlotte, Houston, Miami-Dade County, and New York City. In grade 8 reading, five districts performed higher than expected: Austin, Boston, Charlotte, Houston, and Miami-Dade County. In both grade 4 and grade 8 mathematics, six districts performed higher than expected statistically: Austin, Boston, Charlotte, Houston, Miami-Dade County, and New York City.

TABLE 2. DISTRICTS PERFORMING HIGHER THAN EXPECTED BASED ON SELECTED STUDENT BACKGROUNDS, 2009

	Grade 4	Grade 8
Reading	Austin, Boston, Charlotte, Houston, Miami-Dade County, New York City	Austin, Boston, Charlotte, Houston, Miami-Dade County
Mathematics	Austin, Boston, Charlotte, Houston, Miami-Dade County, New York City	Austin, Boston, Charlotte, Houston, Miami-Dade County, New York City

District Performance Across Subscales, 2009

In addition to comparing each district's average scale scores to other districts and to the national public and LC averages, we looked at the relative performance of each district across subscales. The 2009 reading assessment had two subscales: reading for a literary experience and reading for information. The mathematics assessment for the same year had the following subscales: number properties and operations, measurement, geometry, data analysis and probability, and algebra. Note that the NAEP subscales are not reported on the same metric; hence the subscale means are not directly comparable. Instead, we conducted normative comparisons between subscales (within a district) by looking at the percentile that a given district's subscale mean corresponded to on the score distribution of the national public school sample.

In reading, the differences between the percentiles for the two subscales were relatively small. At grade 4, only Boston and Fresno had differences of five or more percentage points. At grade 8,

Jefferson County had the largest difference at five percentage points. Across districts and subscales, Detroit showed the weakest performance in reading, with average performance on the information subscale corresponding to the 16th percentile (grade 4) and 17th percentile (grade 8) on the score distribution of the national public school sample.

The range among the percentiles for the five subscales in mathematics was wider than the range in reading. At grade 4, seven districts showed differences of 10 or more percentage points: Baltimore City, Boston, Charlotte, Fresno, Jefferson County, Miami-Dade County, and San Diego. At grade 8, only, Austin and Charlotte had a range of 10 or more percentage points. Across districts and subscales, Detroit showed the weakest performance in mathematics with its average performance on the number subscale in grade 4 corresponding to the 9th percentile on the score distribution of the national public school sample. At grade 8, this district's average performance on the measurement, geometry, and data subscales was at the 12th percentile.

TABLE 3. DISTRICTS WITH LARGE PERFORMANCE DIFFERENCES ACROSS SUBSCALES, 2009

	Grade 4	Grade 8
Reading*	Boston, Fresno	Jefferson County
Mathematics (Subscale difference of at least 10 percentile points)**	Baltimore City, Boston, Charlotte, Fresno, Jefferson County, Miami-Dade County, San Diego	Austin, Charlotte

* Difference of at least 5 percentile points across subscales
**Difference of at least 10 percentile points across subscales

District Performance at the Item Level, 2009

In addition to examining composite and subscale average scores, we looked at district performance at the item level. For grade 4 and 8 reading assessments, we computed average percent correct (p-values) and average omission-rates by subscale and item type (multiple-choice, short constructed-response, and extended constructed-response). For grade 4 and 8 mathematics assessments we computed average percent correct and average omission-rates by subscale, item type, and mathematical complexity (low, moderate, and high).[1]

The average overall percent-correct (p-value) in the grade 4 reading assessment ranged from 38 percent in Detroit to 59 percent in Charlotte. In fact, Charlotte had the highest and Detroit had the lowest average p-values across the two subscales and the three item types (multiple-choice, short constructed-response, extended constructed-response). Austin was similar to Charlotte at 65 percent correct on multiple choice items. Average omission-rates were relatively low across all districts except for extended constructed-response (ECR) items in Detroit, where the average omission-rate reached 9 percent.

The picture in grade 8 reading was similar. The average overall p-values ranged from 49 percent in Detroit to 65 percent in Austin. Detroit also had the lowest average p-values across all

[1] For more information on mathematical complexity, see Chapter 3 of the Mathematics Framework for the 2009 National Assessment of Educational Progress at http://nagb.org/publications/frameworks/math-framework09.pdf

subscales and item types. Austin had the highest average p-values across subscales and item types, with the exception of short constructed-response items, where Jefferson County, Boston, and Miami had the highest overall average p-value (55 percent). Average omission-rates for ECR items were relatively high, exceeding 10 percent in Baltimore, Boston, Detroit, District of Columbia, Houston, Miami-Dade County, New York City, and Philadelphia. Detroit had the highest omission-rate for this item type with 15 percent.

In grade 4 mathematics, the average overall p-values ranged from 32 percent in Detroit to 58 percent in Charlotte. Charlotte had the highest and Detroit had the lowest average p-values across the five subscales, the three item types, and the three mathematical complexity levels (low, moderate, and high). The only exception was in measurement, where Austin had the highest p-value: 56 percent. Average omission-rates were relatively low across all districts except for ECR items, where the average omission-rate reached 8 percent in Los Angeles.

In grade 8 mathematics, the average overall p-values ranged from 30 percent in Detroit to 54 percent in Austin. More specifically, Austin had the highest and Detroit had the lowest average p-values across the five subscales, the three item types, and the three mathematical complexity levels with the exception of short constructed-response where Charlotte had the highest p-value at 46 percent. Average omission-rates were relatively high for several districts for ECR items and high mathematical complexity items. Atlanta, Baltimore, Boston, Cleveland, Detroit, District of Columbia, Houston, Los Angeles, New York City, and Philadelphia all had omission-rates exceeding 10 percent for both extended constructed-response items, and high mathematical complexity items. The District of Columbia had the highest omission-rate for constructed-response items, at 17 percent.

TABLE 4. HIGHEST AND LOWEST AVERAGE PERCENT CORRECT RATES FOR READING AND MATHEMATICS, 2009

	Average Overall Percent Correct	
	Highest District	**Lowest District**
Grade 4 Reading	Charlotte (59%)	Detroit (38%)
Grade 8 Reading	Austin (65%)	Detroit (49%)
Grade 4 Mathematics	Charlotte (58%)	Detroit (32%)
Grade 8 Mathematics	Austin (54%)	Detroit (30%)

Changes in District Performance from 2007 to 2009

As discussed earlier, we examined the changes in district performance from 2007 to 2009 for the 11 districts that participated in both 2007 and 2009 assessments.[2] We tested whether the changes were statistically significant. We also tested whether these changes were significantly different from the changes observed in the national public sample and the LC populations for the same period. We also computed the effect size corresponding to the change in average scores observed from 2007 to 2009. The effect size was computed as the ratio of the change in average scores to the standard deviation of the corresponding scale in 2007 for the national public school sample.

In the composite reading scores at grade 4, Boston, District of Columbia, Houston, and New York City posted significant gains from 2007 to 2009. In the effect size measure, Houston showed the largest gain, with an effect size of 0.18 in the literary subscale. In other words, the change in average score from 2007 to 2009 in Houston was nearly equal to 1/5 of a standard deviation on the 2007 national public school score distribution. On the other hand, Cleveland showed the largest decrease, with an effect size of -0.20 in the literary subscale.

In the composite reading scores at grade 8, Atlanta, District of Columbia, and Los Angeles posted significant gains from 2007 to 2009. In the effect size measure, Atlanta and Austin showed the largest gain, with effect sizes of 0.18, in the information subscale. On the other hand, Cleveland showed the largest decrease, with an effect size of -0.23 in the literary subscale.

In the composite mathematics scores at grade 4, Boston, and District of Columbia posted significant gains from 2007 to 2009. In the effect size measure, Boston and the District of Columbia showed the largest gains, with an effect size of 0.28 in geometry and algebra, respectively. On the other hand, Cleveland showed the largest decrease, with an effect size of -0.16 in the data subscale.

In the composite mathematics scores at grade 8, only Austin, District of Columbia, and San Diego showed significant gains from 2007 to 2009. In the effect size measure, San Diego showed the largest gain, with an effect size of 0.26 in geometry. On the other hand, Los Angeles had the largest decrease, with an effect size of -0.10 in the geometry subscale.

[2] This report includes charters in the TUDA analysis according to the rules that were in place in 2007 and 2009. Beginning in 2009, TUDA samples included only those charter schools that each district included for the purpose of reporting Adequate Yearly Progress to the US Department of Education under the Elementary and Secondary Education Act. This rule did not exist in 2007, so the TUDA sample that year included charters without this AYP distinction. The inclusion or exclusion of charter schools from the TUDA samples did not affect the significance of the change in reported scores between 2007 and 2009, with the exception of the District of Columbia. Therefore, we removed charters from the District of Columbia sample in both years in order to ensure that the scores in 2007 and 2009 for DCPS were comparable.

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TABLE 5. DISTRICTS THAT SHOWED THE LARGEST POSITIVE AND LARGEST NEGATIVE CHANGES FROM 2007 TO 2009 ACROSS NAEP READING AND MATHEMATICS SUBSCALES IN TERMS OF EFFECT SIZE[3]

	Largest Positive Change			Largest Negative Change		
	District	Subscale	Effect size	District	Subscale	Effect size
Grade 4 Reading	Houston	Literary	0.18	Cleveland	Literary	-0.20
Grade 8 Reading	Atlanta, Austin	Information	0.18	Cleveland	Literary	-0.23
Grade 4 Mathematics	Boston, District of Columbia	Geometry, Algebra	0.28	Cleveland	Data	-0.16
Grade 8 Mathematics	San Diego	Geometry	0.26	Los Angeles	Geometry	-0.10

Final Thoughts

It is evident that the academic performance of public school students in many of the urban districts we examined in this report is nowhere near what we would like it to be. However, the story is not uniform across all districts. Some districts, such as Charlotte, Boston, and Austin performed at levels similar to, in some cases even higher than, the national average. We also see districts that are performing below the large city and national averages, yet are making significant progress. The District of Columbia, for example, demonstrated significant gains in both grades and subjects.

On the other hand, some districts have a longer path to travel in order to achieve their targets. For example, among the 11 districts that participated in 2007 and 2009 NAEP assessments, Cleveland and Chicago were the only two districts that performed lower than the national and the large city averages and showed no gains from 2007 to 2009.

Like several other studies that use NAEP data, this study illustrates the depth and wealth of information available about academic performance of public school students in urban districts in the United States. Policy makers and practitioners can use this information. The variation in the profiles of the 18 urban districts examined in this report makes the case that there is much these districts can learn from each other.

[3] Largest effect size was determined independent of statistical significance.

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Pieces of the Puzzle: Recent Performance Trends in Urban Districts—A Closer Look at 2009 NAEP Results (An Addendum)

Background and Purpose

The purpose of this study was to examine the most recent trends in academic performance in reading and mathematics for urban districts participating in the Trial Urban District Assessment (TUDA) of the National Assessment of Education Progress (NAEP). Representative samples of fourth- and eighth-grade public school students from 18 urban districts participated in the 2009 reading and mathematics assessments. Eleven of these districts participated in earlier assessment years, and seven districts participated for the first time in 2009. Between 800 and 2,400 fourth- and eighth-grade students were assessed in each district (NCES, 2010). Table 6 indicates the districts that participated in 2007 and 2009 assessments.

TABLE 6. 2007 AND 2009 NAEP ASSESSMENTS AND TUDA PARTICIPATION, BY DISTRICT

Districts	2007		2009	
	Reading	Mathematics	Reading	Mathematics
Atlanta	√	√	√	√
Austin	√	√	√	√
Baltimore City			√	√
Boston	√	√	√	√
Charlotte	√	√	√	√
Chicago	√	√	√	√
Cleveland	√	√	√	√
Detroit			√	√
District of Columbia	√	√	√	√
Fresno			√	√
Houston	√	√	√	√
Jefferson County (KY)			√	√
Los Angeles	√	√	√	√
Miami-Dade County			√	√
Milwaukee			√	√
New York City	√	√	√	√
Philadelphia			√	√
San Diego	√	√	√	√

Research Questions

We answered the following research questions for each TUDA district for grades 4 and 8, based on data from the two most recent NAEP assessments, 2007 and 2009, in reading and mathematics:

1. How did the district perform compared to the national public sample and the large city (LC) populations in 2009?

2. How did the district perform in 2009, compared to the other districts when we control for relevant background variables?
3. How did the district perform in 2009, compared to their expected performance based on relevant background variables?
4. How did the district's performance vary across subscales in 2009?
5. At the item level, what was the average percentage correct for the district in 2009?
6. In the 2009 assessment, what were the objectives (mathematics) or cognitive targets (reading) of the top five differentially most difficult items for the district?
7. Did the district show significant gain from 2007 to 2009 in terms of overall and subscale performance?
8. What were the changes in the district's overall and subscale averages from 2007 to 2009 expressed as effect size?

We answer these questions in the District Profiles section of this report.

Methods and Data Analysis

District Performance in 2009

In order to describe the most recent performance of the 18 districts on NAEP grade 4 and 8 reading and mathematics, we first report their average scores and associated standard errors. Next, we compare the average score of each district to the national public school sample and the large city (LC) averages. We conducted pairwise comparisons to test whether district means were significantly different from the national and LC averages. As the number of comparisons that are conducted at the same significance level increases, it becomes more likely that at least one of the estimated differences will be significant merely by chance. To control for multiple comparisons, these analyses were conducted using the Benjamini-Hochberg (1995) false discovery rate (FDR) procedure.

In addition, we compared the performance of each district against the other districts after adjusting for certain student background characteristics. These analyses address a particular concern raised by many stakeholders when comparisons are made among states or districts with differing student background characteristics. A natural question is whether the differences we observe would have been different if all the jurisdictions being compared had the same demographic profile in terms of relevant student background characteristics.

Fortunately, we have statistical methods that allow us to make comparisons among states or districts by controlling for these characteristics. We conducted regression analyses to estimate the performance of a district had its demographic profile, in terms of the selected students background characteristics, been the same as the average profile of all 18 districts. These analyses put the districts on a more level playing field with regard to these characteristics.

Based on a literature review, we identified the following NAEP background variables as most relevant: race/ethnicity; special education status; English language learner status; indicators of the socioeconomic status of students, i.e., eligibility for free- or reduced-price lunch under the National School Lunch Program; the highest level of education attained by either parent; and

information on the availability of literacy materials and computers in the students' homes.[4] We identified other studies where similar or identical background variables were used to estimate adjusted means. For example, Braun, Jenkins and Grigg (2006a) examined the differences in mean NAEP reading and mathematics scores between public and private schools, adjusting for gender, race/ethnicity, disability status, and identification as an English language learner (ELL). Braun, Jenkins, and Grigg (2006b) compared charter schools to public schools using the same approach.

Based on the same regression analyses discussed above, we also computed the expected performance of each district based on their profile in terms of the selected student background characteristics. Next, we compared each district's actual performance to the expected performance for that district. We call the difference between the two the "district effect."[5] Positive effects indicate that the district is performing higher than expected statistically and negative effects indicate that the district is performing lower than expected statistically. Note that there are limitations to these analyses. The adjusted performance and expected performance are both estimated based on variables that may affect student achievement and are beyond the control of the educators and policy-makers.

It is obvious that we do not, and cannot, control for all such variables. There may be other variables that are related to achievement that we are not controlling for. Some of these variables are not measured in NAEP, and possibly some are not measurable in the first place. District effect is a product of our best attempt to estimate if a given district is performing any different from expected levels given their student profile on a limited number of variables measured in NAEP.

In addition to comparing each district's average scale scores to other districts and the national public sample and LC averages, we also looked at the relative performance of each district across subscales. The 2009 reading assessment included two subscales: reading for a literary experience and reading for information.[6] The mathematics assessment for the same year included the following subscales: number properties and operations, measurement, geometry, data analysis and probability, and algebra.[7]

Note that the NAEP subscales are not all reported on the same metric; hence, the subscale means are not directly comparable. Instead, we conducted normative comparisons between subscales (within a district) by looking at the percentile to which a given district's subscale mean corresponds to on the score distribution of the national public school sample, for one subscale compared to the others.

[4] See appendix A for information about how the variables we used in the regression analyses were operationally defined.

[5] Appendix A illustrates how the 'district' effect is estimated based on regression analysis.

[6] We refer to these subscales as literary and information in the remainder of this report.

[7] We refer to these subscales as numbers, measurement, geometry, data, and algebra in the remainder of this report.

Districts' Item-Level Performance in 2009

In addition to examining composite and subscale average scores, we looked at each district's performance at the item level. For grade 4 and 8 reading assessments, we computed average percent correct (p-values) and average omission-rates by subscale and item type (multiple-choice, short constructed-response, and extended constructed-response). For grade 4 and 8 mathematics assessments we computed average percent correct and average omission-rates by subscale, item type, and mathematical complexity[8] (low, moderate, and high).

Next, in order to identify items that are differentially more difficult for each district, we computed the standardized p-values (in z-score format) for the national public sample and the 18 districts. An item with a standardized p-value of 0 is an item of average difficulty for the given sample. Items with standardized p-values greater than zero are relatively easier for that sample and, conversely, items with standardized p-values less than zero are relatively more difficult for that sample. Next, we computed the difference between the standardized p-values for the national public sample and each district. Larger differences indicate that the item was differentially more difficult for the district compared to the nation. We identified the items with the largest differences, and we reported the cognitive targets measured by the top five differentially most difficult items in grade 4 and 8 reading assessments for each district. For grade 4 and 8 mathematics assessments, we listed the objectives measured by the top five differentially most difficult items.

Changes in District Performance from 2007 to 2009

We examine the changes in district performance from 2007 to 2009 for the 11 districts that participated in both assessments.[9] We looked at the changes both at the composite and subscale levels. We reported if the changes were statistically significant. We tested if these changes were significantly different from the changes observed in the national public samples and the LC populations for the same period.

We also computed the effect size corresponding to the change in average scores observed from 2007 to 2009. The effect size is computed as the ratio of the change in average scores to the standard deviation of the corresponding scale in 2007 for the national public school sample. Effect size is another measure that allows comparisons across different subscales.

[8] For more information on mathematical complexity, see chapter 3 of the Mathematics Framework for the 2009 National Assessment of Educational Progress at http://nagb.org/publications/frameworks/math-framework09.pdf

[9] This report includes charters in the TUDA analysis according to the rules that were in place in 2007 and 2009. Beginning in 2009, TUDA samples included only those charter schools that each district included for the purpose of reporting Adequate Yearly Progress to the US Department of Education under the Elementary and Secondary Education Act. This rule did not exist in 2007, so the TUDA sample that year included charters without this AYP distinction. The inclusion or exclusion of charter schools from the TUDA samples did not affect the significance of the change in reported scores between 2007 and 2009, with the exception of the District of Columbia. Therefore, we removed charters from the District of Columbia sample in both years in order to ensure that the scores in 2007 and 2009 for DCPS were comparable.

Results

The results of all of our analyses are reported mainly in the District Profiles section of this report where we answer seven research questions listed above for each district. The following sections briefly summarize the overall findings.

District Performance in 2009

First, we looked at district performance using average scores on the 2009 NAEP assessments.

In the reading assessment, Charlotte performed above the national public **and** the LC averages at grade 4.

Average scores in Austin, Jefferson County, Miami-Dade County, and New York City were not significantly different from the national average at grade 4. None of the districts performed above the national public average at grade 8.

Furthermore, when compared to the LC grade 4 and 8 reading averages, average scores were higher in Austin, Boston, Charlotte, Jefferson County, and Miami-Dade County. New York City scored higher than the LC average at grade 4 and no different from it at grade 8.

Tables B1 and B2 display the district means and associated standard errors, along with the national and LC means for grade 4 and 8 reading assessments. The tables also indicate whether the district averages are significantly different from the national public and the LC averages.

In the mathematics assessment, only Charlotte performed above the national public **and** the LC averages at grade 4 and only Austin performed above the national public **and** LC averages at grade 8.

Students in Austin, New York City, and San Diego scored no different from the national average in mathematics at grade 4. Similarly, students in Boston, Charlotte, and San Diego scored no different from the national average at grade 8.

Furthermore, students in Austin, Boston, Charlotte, Houston, and San Diego scored higher than the LC average in mathematics at both grades 4 and 8. The average scores in Miami-Dade County and New York City were higher than the LC average at grade 4 and no different from it at grade 8. Finally, Jefferson County's students performed no different from the LC average at grade 4 and grade 8.

Tables B3 and B4 display the district means, and associated standard errors, along with the national and LC means for grade 4 and 8 mathematics assessments. The tables also indicate if the district averages are significantly different from the national public and LC averages.

In terms of the districts' relative performance compared to each other when we controlled for relevant background variables, in grade 4 reading, the highest performers were Austin, Boston, Charlotte, Miami-Dade County, and New York City. Similarly, no district performed higher than Miami-Dade County, Boston, or Austin in grade 8 reading. Tables C1 and C2 display the relative

performance of districts after adjusting for student background characteristics in grade 4 and 8 reading assessments.

In grade 4 mathematics, no district outperformed, Austin, Boston, Charlotte, Houston, or New York City when we controlled for relevant background variables. Similarly, no district performed higher than Austin or Boston at grade 8. Tables C3 and C4 display the relative performance of districts after adjusting for student background characteristics in grade 4 and 8 mathematics assessments.

Table 7 shows how each district's actual performance compared to its expected performance based on its profile on selected student background characteristics. In grade 4 reading, six districts performed higher than expected statistically, while nine performed lower. Atlanta, Jefferson County, and San Diego were the only three districts that performed no differently than expected. Table D1 displays the expected mean and district effects for grade 4 reading for all 18 districts.

In grade 8 reading, five districts performed higher than expected statistically, while six performed lower. Atlanta, Baltimore City, Chicago, Cleveland, New York, Philadelphia, and San Diego were the districts that performed no differently than expected. Table D2 displays the expected mean and district effects for grade 8 reading for all 18 districts.

In grade 4 mathematics, six districts performed higher than expected, while nine performed lower. Atlanta, Baltimore City, and San Diego were the only three districts that performed no differently than expected. Table D3 displays the expected mean and district effects for grade 4 mathematics for all 18 districts.

In grade 8 mathematics, six districts performed higher than expected statistically, while seven performed lower. Atlanta, Baltimore City, Chicago, Philadelphia, and San Diego were the districts that performed no differently than expected. Table D4 displays the expected mean and district effects for grade 8 mathematics for all 18 districts.

Across grades and subjects, Atlanta and San Diego performed no differently than expected. Austin, Boston, Charlotte, Houston, and Miami-Dade County performed consistently higher than expected across the four subject and grade combinations. On the other hand, Detroit, District of Columbia, Fresno, Los Angeles, and Milwaukee performed lower than expected at both grades and in both subjects.

TABLE 7. DISTRICT PERFORMANCE COMPARED TO EXPECTED PERFORMANCE BASED ON STUDENT BACKGROUND CHARACTERISTICS, BY SUBJECT AND GRADE: 2009

Districts	Grade 4		Grade 8	
	Reading	Mathematics	Reading	Mathematics
Atlanta	=	=	=	=
Austin	>	>	>	>
Baltimore City	<	=	=	=
Boston	>	>	>	>
Charlotte	>	>	>	>
Chicago	<	<	=	=
Cleveland	<	<	=	<
Detroit	<	<	<	<
District of Columbia	<	<	<	<
Fresno	<	<	<	<
Houston	>	>	>	>
Jefferson County (KY)	=	<	<	<
Los Angeles	<	<	<	<
Miami-Dade County	>	>	>	>
Milwaukee	<	<	<	<
New York City	>	>	=	>
Philadelphia	<	<	=	=
San Diego	=	=	=	=

< District performed lower than statistically expected.
> District performed higher than statistically expected.
= District performed no differently than statistically expected.

Tables E1 and E2 display the percentiles to which the districts' overall and subscale performance in 2009 correspond to on the national score distribution on the grade 4 and grade 8 reading assessments. In reading, the differences between the percentiles for the two subscales were relatively small. At grade 4, Boston and Fresno were the two district where this difference was 5 percentage points or higher. At grade 8, Jefferson County had the largest difference with 5 percentage points.

Tables E3 and E4 display the percentiles to which the districts' overall and subscale performance in 2009 correspond to on the national score distribution on the grade 4 and grade 8 mathematics assessments. In mathematics, the range among the percentiles for the five subscales was higher than in reading. At grade 4, there were seven districts where the range was 10 percentage points or higher: Baltimore City, Boston, Charlotte, Fresno, Jefferson County, Miami-Dade County, and San Diego. On the other hand, at grade 8, only Austin and Charlotte had a range of 10 percentage points or higher.

Districts Item Level Performance in 2009

In addition to scale scores, we examined each district's performance at the item level. The average overall percent-correct (p-value) on the grade 4 reading assessment ranged from 38

percent in Detroit to 59 percent in Charlotte. In fact, Charlotte had the highest and Detroit had the lowest average p-values across the two subscales and the three item types (multiple-choice, short constructed-response, extended constructed-response). Average omission-rates were relatively low across all districts except for extended constructed response (ECR) items, where the average omission-rate reached 9.4 percent in Detroit at grade 4. Table F1 displays the average percent-correct and omission-rates for all 18 districts by subscale and item type.

Grade 8 reading showed a similar picture. The average overall p-values ranged from 49 percent in Detroit to 65 percent in Austin. Detroit also had the lowest average p-values across all subscales and item types. Austin had the highest overall average p-value (65 percent) and the highest average p-values across subscales and item types except SCR items, where Jefferson County had the highest overall average p-value (55 percent). For ECR items, average omission-rates were relatively high for several districts. Baltimore, Boston, Detroit, District of Columbia, Houston, Miami-Dade County, New York City, and Philadelphia all had omission-rates exceeding 10 percent for this item type, with Detroit reaching 15 percent. Table F2 displays the average percent correct and omission-rates for all 18 districts by subscale and item type.

In grade 4 mathematics, the average overall p-values ranged from 32 percent in Detroit to 58 percent in Charlotte. Detroit had the lowest average p-values across the five subscales, the three item types, and the three mathematical complexity levels (low, moderate, and high). Charlotte had the highest p-values across the board, except in the measurement subscale, where Austin had the highest p-value: 56 percent. Average omission-rates were relatively low across all districts except for ECR items, where Los Angeles had an 8.4 percent omission-rate in grade 4. Table F3 displays the average percent-correct and omission-rates for all 18 districts by subscale, item type, and mathematical complexity.

At grade 8 mathematics, the average overall p-values ranged from 30 percent in Detroit to 54 percent in Austin. Detroit had the lowest average p-values across the five subscales, the three item types, and the three mathematical complexity levels. Austin had the highest p-values across the board, except in short constructed-response items, where Charlotte had the highest p-value: 46 percent. Average omission-rates were relatively high for several districts for ECR items and high mathematical complexity items. Atlanta, Baltimore, Boston, Cleveland, Detroit, District of Columbia, Houston, Los Angeles, New York City, and Philadelphia all had omission-rates exceeding 10 percent for both extended constructed-response items and high mathematical complexity items. The District of Columbia had the highest omission-rate for extended constructed-response items: 17 percent. Table F4 displays the average percent correct and omission-rates for all 18 districts by subscale, item type, and mathematical complexity.

As discussed earlier under the Methods and Data Analysis section, in order to identify items that were differentially more difficult for each district, we computed the standardized p-values (in z-score format) for the national public sample and the 18 districts. A large positive difference between the standardized p-value for the national public sample and a given district for a specific item indicates that the item is differentially more difficult for the district compared to the nation.

In grade 4 reading, Detroit had the item with the largest discrepancy between the standardized p-values for the national public sample and the districts. This was a multiple-choice (MC) item in the information subscale measuring the cognitive target "integrate and interpret information and

ideas presented in text." In the national public sample, 78 percent of the students answered this item correctly. In Detroit, 41 percent of students answered the same item correctly. Table G1 displays the cognitive targets of the top five differentially most difficult items for each district measured in grade 4 reading in 2009.

In grade 8 reading, Atlanta had the item with the largest discrepancy between the standardized p-values for the national public sample and the districts. This was again an MC item in the literary subscale measuring the cognitive target "integrate and interpret information and ideas presented in text." In the national public sample, 67 percent of the students answered this item correctly. In Atlanta, 34 percent of students answered the same item correctly. Table G2 displays the cognitive targets of the top five differentially most difficult items for each district measured in grade 8 reading in 2009.

In grade 4 mathematics, Cleveland had the item with the largest discrepancy between the standardized p-values for the national public sample and the districts. This was a SCR type item in the numbers subscale that measured the following objective: Use place value to model and describe integers and decimals. In the national public sample, 69 percent of the students answered this item correctly. In Cleveland, 32 percent of students answered the same item correctly. Table G3 displays the objectives of the top five differentially most difficult items for each district measured in grade 4 mathematics in 2009.

In grade 8 mathematics, Boston had the item with the largest discrepancy between the standardized p-values for the national public sample and the districts. This was a MC item in the numbers subscale where item measured the following objective: Use place value to model and describe integers and decimals. In the national public sample, 66 percent of the students answered this item correctly. In Boston, 43 percent of students answered the same item correctly. Table G4 displays the objectives of the top five differentially most difficult items for the district measured in grade 8 mathematics in 2009.

Changes in District Performance from 2007 to 2009[10]

In terms of changes in composite reading scores among the TUDA districts at grade 4, Boston, District of Columbia, Houston, and New York City posted significant gains from 2007 to 2009. In terms of effect size measure, Houston showed the largest gain with an effect size of 0.18 in the literary subscale.[11] On the other hand, Cleveland showed the largest decrease, with an effect size of -0.20 in the literary subscale. Table H1 displays the changes in districts' overall and subscale averages in grade 4 reading assessment from 2007 to 2009 expressed in effect size and whether these changes were statistically significant.

[10] This report includes charters in the TUDA analysis according to the rules that were in place in 2007 and 2009. Beginning in 2009, TUDA samples included only those charter schools that each district included for the purpose of reporting Adequate Yearly Progress to the US Department of Education under the Elementary and Secondary Education Act. This rule did not exist in 2007, so the TUDA sample that year included charters without this AYP distinction. The inclusion or exclusion of charter schools from the TUDA samples did not affect the significance of the change in reported scores between 2007 and 2009, with the exception of the District of Columbia. Therefore, we removed charters from the District of Columbia sample in both years in order to ensure that the scores in 2007 and 2009 for DCPS were comparable.

[11] Largest effect size was determined independent of statistical significance.

In grade 8 composite reading scores, Atlanta, District of Columbia, and Los Angeles posted significant gains from 2007 to 2009. In terms of effect size measure, Atlanta and Austin showed the largest gain, both with an effect size of 0.18 in information subscale. On the other hand, Cleveland showed the largest decrease, with an effect size of -0.23 in literary subscale. Table H2 displays the changes in districts' overall and subscale averages in grade 8 reading assessment from 2007 to 2009, expressed in effect size and whether these changes were statistically significant.

In grade 4 composite mathematics scores, Boston and District of Columbia posted significant gains from 2007 to 2009. In terms of the effect-size measure, Boston and the District of Columbia showed the largest gain, with an effect size of 0.28 in geometry and algebra respectively. On the other hand, Cleveland showed the largest decrease, with an effect size of -0.16 in the data subscale. Table H3 displays the changes in the districts' overall and subscale averages in grade 4 mathematics assessment from 2007 to 2009, expressed in effect size and whether these changes were statistically significant.

In grade 8 composite mathematics scores, Austin, District of Columbia, and San Diego were the only districts that showed significant gains from 2007 to 2009. In terms of the effect-size measure, San Diego showed the largest gain, with an effect size of 0.26 in geometry. On the other hand, Los Angeles had the largest decrease, with an effect size of -0.10 in the geometry subscale. Table H4 displays the changes in districts' overall and subscale averages on the grade 8 mathematics assessment from 2007 to 2009, expressed in effect size and whether these changes were statistically significant. Table 3 lists the districts that showed the largest positive and largest negative changes across reading and mathematics subscales.

TABLE 8. DISTRICTS THAT SHOWED THE LARGEST POSITIVE AND LARGEST NEGATIVE CHANGES FROM 2007 TO 2009 ACROSS NAEP READING AND MATHEMATICS SUBSCALES IN TERMS OF EFFECT SIZE

	Largest Positive Change			Largest Negative Change		
	District	Subscale	Effect Size	District	Subscale	Effect Size
Grade 4 Reading	Houston	Literary	0.18	Cleveland	Literary	-0.20
Grade 8 Reading	Atlanta, Austin	Information	0.18	Cleveland	Literary	-0.23
Grade 4 Mathematics	Boston, District of Columbia	Geometry Algebra	0.28	Cleveland	Data	-0.16
Grade 8 Mathematics	San Diego	Geometry	0.26	Los Angeles	Geometry	-0.10

District Profiles

In this section of the report, we answer the seven research questions listed earlier for each of the 18 districts for each grade and subject. The first page of each district profile provides general fiscal and non-fiscal information for the district. Non-fiscal information includes the number of schools, number of students, student/teacher ratio, and percentage of students in poverty. Fiscal information includes total expenditures, instructional expenditures, and expenditures for student and staff support, administration, operations, food service and other support staff. We indicate the ranking of the district among the 18 examined in this report in terms of student/teacher ratio. We also point out the percentage of total expenditures that was instructional. All fiscal and non-fiscal information comes from Common Core of Data (CCD) public school district data.

Atlanta

Atlanta participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the third lowest student-teacher ratio among the 18 TUDA districts. Forty-nine percent of total expenditures were instructional.

TABLE 9. ATLANTA'S DEMOGRAPHICS, 2008-2009

Number of Schools	114
Number of Students	49,032
Student/Teacher Ratio	13.0
Free and Reduced-Price Lunch	76%
Expenditures ($/student)	
Total	13,516
Instructional	6,684
Student and Staff Support	1,728
Administration	2,252
Operations, Food Service, and Other Support Staff	2,853

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Atlanta: Grade 4 Reading

- Scored lower than the national and no differently from the LC averages in overall reading in 2009.

- Scored lower than five (Boston, Miami-Dade County, New York City, Austin, and Charlotte) and higher than nine districts (Baltimore, Chicago, District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores in overall reading and in the literary, and information subscales corresponded to the 34th, 36th, and 33rd percentiles respectively on the national score distribution. The average student was below the national median on all three measures.

- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 10. ATLANTA'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Atlanta	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.06	↔
Information	0.01	↔	0.06	↑	0.04	↔
Literary	-0.01	↔	0.03	↔	0.07	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 49 percent of the items correctly. The top five differentially most difficult items measured the following cognitive targets:

  - Integrate and interpret information and ideas presented in text (four items).
  - Locate and recall information from text.

Atlanta: Grade 8 Reading

- Scored lower than the national and no differently from the LC averages in overall reading in 2009.

- Scored lower than one (Miami-Dade County) and higher than seven districts (Los Angeles, Cleveland, Jefferson County, Milwaukee, District of Columbia, Fresno, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores in overall reading and the literary and information subscales in 2009 corresponded to the 33rd, 32nd, and 35th percentiles, respectively, on the national score distribution. The average student was below the national median on all three measures.

- Displayed significant gain in overall reading and no change in information or literary reading subscales from 2007 to 2009.

TABLE 11. ATLANTA'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Atlanta	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.14	↑
Information	0.04	↑	0.04	↔	0.18	↔
Literary	0.02	↑	0.05	↑	0.08	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 57 percent of the items correctly. The top five differentially most difficult items measured the following cognitive targets:

  - Integrate and interpret information and ideas presented in text (three items).
  - Locate and recall information from text.
  - Critique and evaluate information and ideas in text and the ways in which authors present text.

Atlanta: Grade 4 Mathematics

- Scored lower than the national and the LC averages in overall mathematics in 2009.
- Scored lower than six (Houston, Austin, Boston, Charlotte, New York City, and Miami-Dade County) and higher than nine districts (Philadelphia, Jefferson County, Chicago, District of Columbia, Los Angeles, Milwaukee, Cleveland, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 30th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 27th (data) to 33rd (geometry and algebra). The average student was around the first national quartile in data and below the national median on all other subscales.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 12. ATLANTA'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Atlanta	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.05	↔
Numbers	0.01	↔	0.05	↑	0.03	↔
Measurement	-0.01	↔	0.07	↑	0.14	↔
Geometry	0.03	↑	0.07	↑	0.05	↔
Data	-0.03	↓	0.01	↔	-0.14	↔
Algebra	0.00	↔	0.03	↔	0.10	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 46 percent of the items correctly. The top five differentially most difficult items measured the following objectives:
  - Determine a simple probability from a context.
  - Solve application problems involving numbers and operations.
  - Use informal probabilistic thinking to describe chance events.
  - Order/compare whole numbers, decimals, or fractions.
  - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments

Atlanta: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than five (Austin, Boston, Houston, Charlotte, and Miami-Dade County) and higher than six districts (Los Angeles, Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 26th percentile on the national score distribution. The percentile for the average subscale scores ranged from 23rd (measurement) to 29th (algebra and geometry). The average student was below the first national quartile in measurement and around the first national quartile in all other subscales.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 13. ATLANTA'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Atlanta	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.09	↔
Numbers	0.02	↑	0.09	↑	0.04	↔
Measurement	0.04	↑	0.08	↑	-0.05	↔
Geometry	0.05	↑	0.07	↑	0.20	↔
Data	0.00	↔	0.02	↔	0.02	↔
Algebra	0.06	↑	0.05	↔	0.16	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 39 percent of the items correctly. The top five differentially most difficult items measured the following objectives:
  - Compare objects with respect to length, area, volume, angle measurement, weight, or mass.
  - Model or describe rational numbers or numerical relationships using number lines and diagrams.
  - Draw or sketch from a written description polygons, circles, or semicircles.
  - Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.
  - Construct or solve problems involving scale drawings.

Austin

Austin participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the sixth lowest student-teacher ratio among the 18 TUDA districts. Fifty-seven percent of total expenditures were instructional.

TABLE 14. AUSTIN'S DEMOGRAPHICS, 2009

Number of Schools	**128**
Number of Students	83,483
Student/Teacher Ratio	14.2
Free and Reduced-Price Lunch	63%
Expenditures ($/student)	
Total	9,035
Instructional	5,156
Student and Staff Support	1,105
Administration	1,034
Operations, Food Service, and Other Support Staff	1,740

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Austin: Grade 4 Reading

- Scored no differently from the national and higher than the LC averages in overall reading in 2009.
- Scored higher than 12 districts (Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than Austin in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 46th percentile in both overall reading and the literary subscales, and at the 47th percentile in the information subscale on the national score distribution. The average student was close to the national median on all three measures.
- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 15. AUSTIN'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Austin	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.07	↔
Information	0.01	↔	0.06	↑	0.11	↔
Literary	-0.01	↔	0.03	↔	0.04	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 57 percent of the items correctly. The top five differentially most difficult items measured the cognitive targets:
  - Integrate and interpret information and ideas presented in text (three items).
  - Critique and evaluate information and ideas in text and the ways in which authors present text (two items).

Austin: Grade 8 Reading

- Scored no different from the national and higher than the LC averages in overall reading in 2009.

- Scored higher than 11 districts (New York City, San Diego, Philadelphia, Baltimore, Los Angeles, Cleveland, Jefferson County, Milwaukee, District of Columbia, Fresno, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than Austin in adjusted overall reading scores in 2009.

- Average scale scores corresponded to the 46th percentile in both overall reading and the information subscale, and the 45th percentile in the literary subscale on the national score distribution. The average student was close to the national median on all three measures.

- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 16. AUSTIN'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Austin	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.11	↔
Information	0.04	↑	0.04	↔	0.18	↔
Literary	0.02	↑	0.05	↑	0.04	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 65 percent of the items correctly. The top five differentially most difficult items all measured the cognitive target ‘Integrate and interpret information and ideas presented in text'.

Austin: Grade 4 Mathematics

- Scored no differently from the national and higher than the LC averages in overall mathematics in 2009.
- Scored higher than 13 districts (all except Boston, Charlotte, and New York City) in overall mathematics in 2009 after adjusting for relevant background characteristics. No district scored higher than Austin in adjusted overall mathematics scores in 2009.
- Average overall mathematics scale score corresponded to the 50th percentile on the national score distribution. The percentile for the average subscale scores ranged from 46th (data) to 51st (numbers). The average student was around the national median on all subscales.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 17. AUSTIN'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Austin	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	-0.01	↔
Numbers	0.01	↔	0.05	↑	0.02	↔
Measurement	-0.01	↔	0.07	↑	-0.02	↔
Geometry	0.03	↑	0.07	↑	-0.03	↔
Data	-0.03	↑	0.01	↔	0.01	↔
Algebra	0.00	↔	0.03	↔	-0.08	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 56 percent of the items correctly. The top five differentially most difficult items measured the following objectives:
  - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths.
  - Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane (two items).
  - Construct geometric figures with vertices at points on a coordinate grid.
  - Recognize or describe a relationship in which quantities change proportionally.

Austin: Grade 8 Mathematics

- Scored higher than the national and LC averages in overall mathematics in 2009.
- Scored higher than 16 (all except Boston) districts in overall mathematics in 2009 after adjusting for relevant background characteristics. No district scored higher than Austin in adjusted overall mathematics scores in 2009.
- Average overall mathematics scale score corresponded to the 55th percentile on the national score distribution. The percentile for the average subscale scores ranged from 50th (algebra) to 61th (geometry). The average student was at the national median in algebra and above the national median on all other subscales.
- Displayed significant gain in overall mathematics and in the algebra subscale from 2007 to 2009.

TABLE 18. AUSTIN'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Austin	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.12	↑
Numbers	0.02	↑	0.09	↑	0.04	↔
Measurement	0.04	↑	0.08	↑	0.13	↔
Geometry	0.05	↑	0.07	↑	0.19	↔
Data	0.00	↔	0.02	↔	0.06	↔
Algebra	0.06	↑	0.05	↔	0.14	↑

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered correctly 54 percent of the items correctly. The top five differentially most difficult items measured the following objectives:
  - Read or interpret data, including interpolating or extrapolating from data.
  - Identify lines of symmetry in plane figures or recognize and classify types of symmetries of plane figures.
  - Use place value to model and describe integers and decimals (two items).
  - Identify or represent functional relationships in meaningful contexts.

Baltimore City

Baltimore City participated in grade 4 and grade 8 NAEP reading and mathematics assessments for the first time in 2009. It had the fourth lowest student-teacher ratio among the 18 TUDA districts. Fifty-nine percent of total expenditures were instructional.

TABLE 19. BALTIMORE'S DEMOGRAPHICS, 2009

Number of Schools	204
Number of Students	82,266
Student/Teacher Ratio	14.1
Free and Reduced-Price Lunch	73%
Expenditures ($/student)	
Total	14,201
Instructional	8,355
Student and Staff Support	1,675
Administration	1,896
Operations, Food Service, and Other Support Staff	2,275

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Baltimore City: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than seven districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, and Atlanta) and higher than five districts (Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 28th percentile in both overall reading and the literary subscale, and the 27th percentile in the information subscale on the national score distribution. The average student was around the first national quartile in all three measures.
- 2009 was the first year Baltimore City participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 45 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
    - Integrate and interpret information and ideas presented in text (two items).
    - Locate and recall information from text (two items).
    - Critique and evaluate information and ideas in text and the ways in which authors present text.

Baltimore City: Grade 8 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than five districts (Miami-Dade County, Boston, Austin, Charlotte, and Houston) and higher than two districts (District of Columbia and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 28th percentile in both overall reading and the literary subscale, and the 29th percentile in the information subscale on the national score distribution. The average student was around the first national quartile in all three measures.
- 2009 was the first year Baltimore City participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 56 percent of items correctly. The top five differentially most difficult items all measured the cognitive target ‘integrate and interpret information and ideas presented in text'.

Baltimore City: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than six districts (Houston, Austin, Boston, Charlotte, New York City, and Miami-Dade County) and higher than nine districts (Philadelphia, Jefferson County, Chicago, District of Columbia, Los Angeles, Milwaukee, Cleveland, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 27th percentile on the national score distribution. The percentiles for the average subscale scores ranged from the 22nd (measurement) to the 34th (data). The average student was below the first national quartile in measurement, around the first national quartile in numbers, and below the national median in geometry and data subscales.
- 2009 was the first year Baltimore City participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 44 percent of items correctly. The top five differentially most difficult items measured the following objectives:
    - Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight.
    - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments (two items).
    - Solve problems involving perimeter of plane figures.
    - Order/compare whole numbers, decimals, or fractions.

Baltimore City: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.

- Scored lower than seven districts (Austin, Boston, Houston, Charlotte, Miami-Dade County, New York City, and San Diego) and higher than five districts (Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 24th percentile on the national score distribution. The percentiles for the average subscale scores ranged from the 23rd (algebra) to the 29th (data). The average student was below first national quartile in algebra and around the first national quartile in all other subscales.

- 2009 was the first year Baltimore City participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, the students answered 38 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.
    - Draw or sketch from a written description polygons, circles, or semicircles.
    - Determine the sample space for a given situation.
    - Demonstrate an understanding about the two- and three-dimensional shapes in our world through identifying, drawing, modeling, building, or taking apart.
    - Interpret probabilities within a given context.

Boston

Boston participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the lowest student-teacher ratio among the 18 TUDA districts. Fifty-eight percent of total expenditures were instructional.

Table 20. Boston's Demographics, 2009

Number of Schools	138
Number of Students	55,923
Student/Teacher Ratio	12.8
Free and Reduced-Price Lunch	74%
Expenditures ($/student)	
Total	20,324
Instructional	11,737
Student and Staff Support	3,440
Administration	1,464
Operations, Food Service, and Other Support Staff	3,682

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Boston: Grade 4 Reading

- Scored lower than the national and higher than the LC averages in overall reading in 2009.
- Scored higher than 13 districts (all except Austin, Charlotte, Miami-Dade County, and New York City) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than Boston in adjusted overall reading scores in 2009.
- Average scale scores in overall reading and in the literary, and information subscales corresponded to the 40th, 43rd, and 38th percentiles, respectively, on the national score distribution. The average student was below the national median on all three measures.
- Displayed significant gain in overall reading and in the literary reading subscale from 2007 to 2009.

TABLE 21. BOSTON'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Boston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.15	↑
Information	0.01	↔	0.06	↑	0.13	↔
Literary	-0.01	↔	0.03	↔	0.16	↑

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 53 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Integrate and interpret information and ideas presented in text (three items).
  - Locate and recall information from text (two items).

Boston: Grade 8 Reading

- Scored lower than the national and higher than the LC averages in overall reading in 2009.
- Scored higher than 14 districts (all except Austin, Atlanta, and Miami-Dade County) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than Boston in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 41st percentile in both overall reading and the information subscale, and the 42nd percentile in literary subscale on the national score distribution. The average student was below the national median in all three measures.
- Displayed no significant gain in overall reading and reading subscales from 2007 to 2009.

TABLE 22. BOSTON'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Boston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.10	↔
Information	0.04	↑	0.04	↔	0.03	↔
Literary	0.02	↑	0.05	↑	0.14	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 62 percent of items correctly. The top five differentially most difficult items all measured the cognitive target 'integrate and interpret information and ideas presented in text.'

Boston: Grade 4 Mathematics

- Scored lower than the national and higher than the LC averages in overall mathematics in 2009.
- Scored higher than 13 districts (all except Austin, Charlotte, Houston, and New York City) in overall mathematics in 2009 after adjusting for relevant background characteristics. No district scored higher than Boston in adjusted overall mathematics scores in 2009.
- Average overall mathematics scale score corresponded to the 44th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 38th (algebra and data) to 50th (geometry). The average student was below the national median in all subscales except Geometry.
- Displayed significant gain in overall mathematics and the geometry subscale from 2007 to 2009.

TABLE 23. BOSTON'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Boston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.13	↑
Numbers	0.01	↔	0.05	↑	0.11	↔
Measurement	-0.01	↔	0.07	↑	0.13	↔
Geometry	0.03	↑	0.07	↑	0.28	↑
Data	-0.03	↑	0.01	↔	0.04	↔
Algebra	0.00	↔	0.03	↔	0.03	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 51 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths (two items).
  - Use informal probabilistic thinking to describe chance events.
  - Determine a simple probability from a context that includes a picture.
  - Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight.

Boston: Grade 8 Mathematics

- Scored no differently from the national and higher than the LC averages in overall mathematics in 2009.

- Scored higher than 15 districts (all except Austin and Houston) in overall mathematics in 2009 after adjusting for relevant background characteristics. No district scored higher than Boston in adjusted overall mathematics scores in 2009.

- Average overall mathematics scale score corresponded to the 47th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 45th (algebra and geometry) to 49th (measurement and data). The average student was around the national median in all subscales.

- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 24. BOSTON'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Boston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.08	↔
Numbers	0.02	↑	0.09	↑	0.08	↔
Measurement	0.04	↑	0.08	↑	0.15	↔
Geometry	0.05	↑	0.07	↑	0.03	↔
Data	0.00	↔	0.02	↔	0.12	↔
Algebra	0.06	↑	0.05	↔	0.03	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 50 percent of items correctly. The top five differentially most difficult items measured the following objectives:

  - Use place value to model and describe integers and decimals (two items).
  - Identify, define, or describe geometric shapes in the plane and in three-dimensional space given a visual representation.
  - Solve problems involving coordinate pairs on the rectangular coordinate system.
  - Identify or represent functional relationships in meaningful contexts.

Charlotte

Charlotte participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the seventh lowest student-teacher ratio among the 18 TUDA districts. Sixty percent of total expenditures were instructional.

Table 25. Charlotte's Demographics, 2009

Number of Schools	168
Number of Students	135,064
Student/Teacher Ratio	14.5
Free and Reduced-Price Lunch	46%
Expenditures ($/student)	
Total	8,115
Instructional	5,045
Student and Staff Support	549
Administration	944
Operations, Food Service, and Other Support Staff	1,577

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Charlotte: Grade 4 Reading

- Scored higher than the national and LC averages in overall reading in 2009.
- Scored higher than 12 districts (Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than Charlotte in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 51st percentile on the national score distribution for overall reading, and on the literary and information subscales. Charlotte was the only district where the average student was above the national median in all three measures in this assessment.
- Displayed no significant change in overall reading or reading subscales from 2007 to 2009.

TABLE 26. CHARLOTTE'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Charlotte	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.06	↔
Information	0.01	↔	0.06	↑	0.05	↔
Literary	-0.01	↔	0.03	↔	0.07	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 59 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Integrate and interpret information and ideas presented in text (four items).
  - Critique and evaluate information and ideas in text and the ways in which authors present text.

Charlotte: Grade 8 Reading

- Scored lower than the national and higher than the LC averages in overall reading in 2009.

- Scored higher than eight districts (Baltimore, Los Angeles, Cleveland, Jefferson County, Milwaukee, District of Columbia, Fresno, and Detroit) and lower than two districts (Miami-Dade County and Boston) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores corresponded to the 44th percentile in both overall reading and the literary subscale, and the 43rd percentile in the information subscale on the national score distribution. The average student was below the national median in all three measures.

- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 27. CHARLOTTE'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Charlotte	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.00	↔
Information	0.04	↑	0.04	↔	0.04	↔
Literary	0.02	↑	0.05	↑	-0.06	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 62 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:

  - Critique and evaluate information and ideas in text and the ways in which authors present text (three items).
  - Locate and recall information from text.
  - Integrate and interpret information and ideas presented in text.

Charlotte: Grade 4 Mathematics

- Scored higher than the national and the LC averages in overall mathematics in 2009.
- Scored higher than 13 districts (all except Austin, Boston, Houston, and New York City) in overall mathematics in 2009 after adjusting for relevant background characteristics. No district scored higher than Charlotte in adjusted overall mathematics scores in 2009.
- Average overall mathematics scale score corresponded to the 56th percentile on the national score distribution. The percentile for the average subscale scores ranged from 49th (measurement) to 60th (data and algebra). The average student was above the national median in all subscales except measurement.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 28. CHARLOTTE'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Charlotte	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.04	↔
Numbers	0.01	↔	0.05	↑	0.08	↔
Measurement	-0.01	↔	0.07	↑	-0.02	↔
Geometry	0.03	↑	0.07	↑	-0.07	↔
Data	-0.03	↑	0.01	↔	0.15	↔
Algebra	0.00	↔	0.03	↔	0.00	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 58 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths.
  - Identify or describe real-world objects using simple plane figures and simple solid figures.
  - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments (two items).
  - Solve problems involving perimeter of plane figures.

Charlotte: Grade 8 Mathematics

- Scored no differently from the national and higher than the LC averages in overall mathematics in 2009.
- Scored higher than 14 districts (all except Austin, Boston, and Houston) and lower than three districts (Austin, Boston and Houston) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 50th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 45th (numbers) to 55th (geometry). The average student was at the national median on data, above the national median on geometry, and below the national median in the other three subscales.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 29. CHARLOTTE'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Charlotte	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	-0.01	↔
Numbers	0.02	↑	0.09	↑	-0.01	↔
Measurement	0.04	↑	0.08	↑	0.04	↔
Geometry	0.05	↑	0.07	↑	0.07	↔
Data	0.00	↔	0.02	↔	0.02	↔
Algebra	0.06	↑	0.05	↔	-0.09	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 51 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Explain or justify a mathematical concept or relationship.
  - Select or use an appropriate type of unit for the attribute being measured.
  - Compare objects with respect to length, area, volume, angle measurement, weight, or mass.
  - Solve problems involving conversions within the same measurement system.
  - Perform basic operations, using appropriate tools, on linear algebraic expressions.

Chicago

Chicago participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the third highest student-teacher ratio among the 18 TUDA districts. Sixty percent of total expenditures were instructional.

TABLE 30. CHICAGO'S DEMOGRAPHICS, 2009

Number of Schools	643
Number of Students	421,430
Student/Teacher Ratio	19.6
Free and Reduced-Price Lunch	73%
Expenditures ($/student)	
Total	10,392
Instructional	6,207
Student and Staff Support	1,381
Administration	966
Operations, Food Service, and Other Support Staff	1,838

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Chicago: Grade 4 Reading

- Scored lower than the national and the LC average in overall reading in 2009.
- Scored lower than eight districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, and San Diego) and higher than five districts (Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 28th percentile in both overall reading and the information subscale, and the 29th percentile in the literary subscale on the national score distribution. The average student was around the first national quartile in all three measures.
- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 31. CHICAGO'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Chicago	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.05	↔
Information	0.01	↔	0.06	↑	0.07	↔
Literary	-0.01	↔	0.03	↔	0.02	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 46 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets
  - Integrate and interpret information and ideas presented in text (two items).
  - Critique and evaluate information and ideas in text and the ways in which authors present text (two items).
  - Locate and recall information from text.

Chicago: Grade 8 Reading

- Scored lower than the national and no different from the LC averages in overall reading in 2009.

- Scored lower than two districts (Miami-Dade County and Boston) and higher than five districts (Jefferson County, Milwaukee, District of Columbia, Fresno, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores corresponded to the 32nd percentile in both overall reading and the information subscale, and the 34th percentile in the literary subscale on the national score distribution. The average student was below the national median on all three measures.

- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 32. CHICAGO'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Chicago	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	-0.01	↔
Information	0.04	↑	0.04	↔	-0.01	↔
Literary	0.02	↑	0.05	↑	-0.07	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 58 percent of items correctly. The top five differentially most difficult items all measured the cognitive target 'integrate and interpret information and ideas presented in text.'

Chicago: Grade 4 Mathematics

- Scored lower than the national and the LC averages in overall mathematics in 2009.
- Scored lower than nine districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, and Baltimore) and higher than three districts (Cleveland, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 27th percentile on the national score distribution. The percentile for the average subscale scores ranged from 25th (algebra) to 30th (measurement and geometry). The average student was around the first national quartile in all subscales except measurement and geometry.
- Displayed significant gains in the measurement and geometry subscales from 2007 to 2009.

TABLE 33. CHICAGO'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Chicago	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.08	↔
Numbers	0.01	↔	0.05	↑	0.05	↔
Measurement	-0.01	↔	0.07	↑	0.16	↑
Geometry	0.03	↑	0.07	↑	0.18	↑
Data	-0.03	↑	0.01	↔	-0.05	↔
Algebra	0.00	↔	0.03	↔	-0.03	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 43 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths.
  - Identify place value and actual value of digits in whole numbers.
  - Read or interpret a single set of data.
  - Solve problems by estimating and computing within a single set of data.
  - Order/compare whole numbers, decimals, or fractions.

Chicago: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than five districts (Austin, Boston, Houston, Charlotte, and Miami-Dade County) and higher than six districts (Los Angeles, Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 30th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 30th (numbers and algebra) to 33rd (measurement). The average student was below the national median in all subscales.
- Displayed significant gains in measurement subscales from 2007 to 2009.

TABLE 34. CHICAGO'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Chicago	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.09	↔
Numbers	0.02	↑	0.09	↑	0.03	↑
Measurement	0.04	↑	0.08	↑	0.16	↑
Geometry	0.05	↑	0.07	↑	0.06	↔
Data	0.00	↔	0.02	↔	0.03	↔
Algebra	0.06	↑	0.05	↔	0.12	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 41 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Model or describe rational numbers or numerical relationships using number lines and diagrams.
  - Write algebraic expressions, equations, or inequalities to represent a situation.
  - Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.
  - Identify or represent functional relationships in meaningful contexts.
  - Interpret probabilities within a given context.

Cleveland

Cleveland participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the eighth lowest student-teacher ratio among the 18 TUDA districts. Sixty-five percent of total expenditures were instructional.

TABLE 35. CLEVELAND'S DEMOGRAPHICS, 2009

Number of Schools	108
Number of Students	49,952
Student/Teacher Ratio	13.9
Free and Reduced-Price Lunch	100%
Expenditures ($/student)	
Total	12,393
Instructional	7,416
Student and Staff Support	1,552
Administration	1,392
Operations, Food Service, and Other Support Staff	2,033

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Cleveland: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than 13 districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, and Los Angeles) in overall reading in 2009 after adjusting for relevant background characteristics. Cleveland did not score higher than any other district in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 21st percentile in both overall reading and the literary subscale, and the 22nd percentile in the information subscale on the national score distribution. The average student was below the first national quartile in all three measures.
- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 36. CLEVELAND'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Cleveland	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	-0.14	↔
Information	0.01	↔	0.06	↑	-0.07	↔
Literary	-0.01	↔	0.03	↔	-0.20	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 42 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Locate and recall information from text (three items).
  - Integrate and interpret information and ideas presented in text (two items).

Cleveland: Grade 8 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than six districts (Miami-Dade County, Boston, Austin, Atlanta, Charlotte, and Houston) and higher than two districts (District of Columbia and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 26th percentile in both overall reading and the information subscale, and the 27th percentile in literary subscale on the national score distribution. The average student was around the first national quartile in all three measures.
- Displayed significant decrease in the literary subscale from 2007 to 2009.

TABLE 37. CLEVELAND'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Cleveland	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	-0.13	↔
Information	0.04	↑	0.04	↔	-0.11	↔
Literary	0.02	↑	0.05	↑	-0.23	↓

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 56 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Integrate and interpret information and ideas presented in text (three items).
  - Locate and recall information from text (two items).

Cleveland: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than 14 districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, Baltimore, Philadelphia, Jefferson County, Chicago, District of Columbia, and Los Angeles) and higher than one district (Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 18th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 18th (numbers) to 24th (geometry). The average student was below the first national quartile in all subscales.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 38. CLEVELAND'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Cleveland	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	-0.07	↔
Numbers	0.01	↔	0.05	↑	-0.13	↔
Measurement	-0.01	↔	0.07	↑	-0.04	↔
Geometry	0.03	↑	0.07	↑	0.09	↔
Data	-0.03	↑	0.01	↔	-0.16	↔
Algebra	0.00	↔	0.03	↔	0.00	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 39 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Read or interpret a single set of data
  - Recognize, describe, or extend numerical patterns.
  - Use place value to model and describe integers and decimals.
  - For a given set of data, complete a graph.
  - Represent numbers using models such as base 10 representations, number lines and two-dimensional models.

Cleveland: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than seven districts (Austin, Boston, Houston, Charlotte, Miami-Dade County, New York City, and San Diego) and higher than six districts (Los Angeles, Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 23rd percentile on the national score distribution. The percentiles for the average subscale scores ranged from 23rd (measurement and data) to the 26th (numbers and geometry). The average student was below the first national quartile in all subscales except numbers and geometry.
- Displayed no significant change in overall mathematics or mathematics subscales from 2007 to 2009.

TABLE 39. CLEVELAND'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Cleveland	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	-0.02	↔
Numbers	0.02	↑	0.09	↑	0.14	↔
Measurement	0.04	↑	0.08	↑	-0.06	↔
Geometry	0.05	↑	0.07	↑	-0.03	↔
Data	0.00	↔	0.02	↔	-0.08	↔
Algebra	0.06	↑	0.05	↔	-0.08	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 37 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Describe relative positions of points and lines using the geometric ideas of midpoint, points on common line through a common point, parallelism, or perpendicularity.
  - Model or describe rational numbers or numerical relationships using number lines and diagrams (two items).
  - Solve problems involving conversions within the same measurement system.
  - Interpret probabilities within a given context.

Detroit

Detroit participated in grade 4 and grade 8 NAEP reading and mathematics assessments for the first time in 2009. It had the sixth highest student-teacher ratio among the 18 TUDA districts. Fifty-four percent of total expenditures were instructional.

TABLE 40. DETROIT'S DEMOGRAPHICS, 2009

Number of Schools	199
Number of Students	97,577
Student/Teacher Ratio	16.4
Free and Reduced-Price Lunch	77%
Expenditures ($/student)	
Total	12,016
Instructional	6,522
Student and Staff Support	1,378
Administration	1,535
Operations, Food Service, and Other Support Staff	2,581

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Detroit: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than 14 districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, Los Angeles, and Fresno) in overall reading in 2009 after adjusting for relevant background characteristics. Detroit did not score higher than any other district in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 16th percentile in both overall reading and the information subscale, and the 18th percentile in the literary subscale on the national score distribution. The average student was below the first national quartile in all three measures.
- 2009 was the first year Detroit participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 38 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
    - Integrate and interpret information and ideas presented in text (two items).
    - Critique and evaluate information and ideas in text and the ways in which authors present text (two items).
    - Locate and recall information from text.

Detroit: Grade 8 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than 15 districts (Miami-Dade County, Boston, Austin, Atlanta, Charlotte, Houston, Chicago, New York City, San Diego, Philadelphia, Baltimore, Los Angeles, Cleveland, Jefferson County, and Milwaukee) in overall reading in 2009 after adjusting for relevant background characteristics. Detroit did not score higher than any other district in adjusted overall reading scores in 2009.
- Average scale scores in overall reading, and the literary and information subscales corresponded to the 18th, 21st, and 17th percentiles, respectively, on the national score distribution. The average student was below the first national quartile in all three measures.
- 2009 was the first year Detroit participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 49 percent of items correctly. The top five differentially most difficult items all measured the cognitive target 'integrate and interpret information and ideas presented in text.'

Detroit: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than all other districts in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 9th percentile on the national score distribution. The percentile for the average subscale scores ranged from 9th (numbers) to 13th (geometry). The average student was below the first national quartile in all subscales.
- 2009 was the first year Detroit participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 32 percent of items correctly. The top five differentially most difficult items measured the following objectives:
    - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths.
    - Use place value to model and describe integers and decimals.
    - Compose or decompose whole quantities by place value.
    - Select or use appropriate measurement instruments such as ruler, meter stick clock, thermometer, or other scaled instruments.
    - Order/compare whole numbers, decimals, or fractions.

Detroit: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than all other districts in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 12th percentile on the national score distribution. The percentile for the average subscale scores ranged from 12th (measurement, geometry and data) to 14th (numbers and algebra). The average student was below the first national quartile in all subscales.
- 2009 was the first year Detroit participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 30 percent of items correctly. The top five differentially most difficult items measured the following objectives:
    - Analyze a situation that involves probability of an independent event.
    - Use place value to model and describe integers and decimals.
    - Compare objects with respect to length, area, volume, angle measurement, weight, or mass.
    - Solve problems involving conversions within the same measurement system.
    - Perform computations with rational numbers.

District of Columbia[12]

District of Columbia participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the second lowest student-teacher ratio among the 18 TUDA districts. Forty-five percent of total expenditures were instructional.

TABLE 41. DISTRICT OF COLUMBIA'S DEMOGRAPHICS, 2009

Number of Schools	172
Number of Students	44,331
Student/Teacher Ratio	12.5
Free and Reduced-Price Lunch	69%
Expenditures ($/student)	
Total	14,594
Instructional	6,542
Student and Staff Support	2,069
Administration	2,359
Operations, Food Service, and Other Support Staff	3,625

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

[12] This report includes charters in the TUDA analysis according to the rules that were in place in 2007 and 2009. Beginning in 2009, TUDA samples included only those charter schools that each district included for the purpose of reporting Adequate Yearly Progress to the US Department of Education under the Elementary and Secondary Education Act. This rule did not exist in 2007, so the TUDA sample that year included charters without this AYP distinction. The inclusion or exclusion of charter schools from the TUDA samples did not affect the significance of the change in reported scores between 2007 and 2009, with the exception of the District of Columbia. Therefore, we removed charters from the District of Columbia sample in both years in order to ensure that the scores in 2007 and 2009 for DCPS were comparable.

District of Columbia: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored higher than five districts (Milwaukee, Fresno, Philadelphia, Cleveland and Detroit) and lower than nine districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, San Diego, and Jefferson County) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores in overall reading, and the literary and information subscales corresponded to the 29th, 31st, and 28th percentiles, respectively, on the national score distribution. The average student was around the first national quartile in overall reading and literary subscale and below the national median in the information subscale.
- Displayed significant gains in overall reading and both reading subscales from 2007 to 2009. Changes in average scores were statistically no different from those of the national and large city populations.

TABLE 42. DISTRICT OF COLUMBIA'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		District of Columbia	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.15	↑
Information	0.01	↔	0.06	↑	0.13	↑
Literary	-0.01	↔	0.03	↔	0.15	↑

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 47 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Locate and recall information from text (four items).
  - Integrate and interpret information and ideas presented in text.

District of Columbia: Grade 8 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than 14 districts (Miami-Dade County, Boston, Austin, Atlanta, Charlotte, Houston, Chicago, New York City, San Diego, Philadelphia, Baltimore, Los Angeles, Cleveland, and Jefferson County) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 24th percentile in overall reading and to the 25th percentile in the literary and information subscales on the national score distribution. The average student was around the first national quartile in all three measures.
- Displayed significant decrease in the literary subscale from 2007 to 2009. Changes in average scores were statistically no different from those of the national and large city populations

TABLE 43. DISTRICT OF COLUMBIA'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		District of Columbia	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.10	↑
Information	0.04	↑	0.04	↔	0.11	↔
Literary	0.02	↑	0.05	↑	0.00	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 55 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Integrate and interpret information and ideas presented in text (four items).
  - Critique and evaluate information and ideas in text and the ways in which authors present text.

District of Columbia: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored higher than three districts (Cleveland, Fresno, and Detroit) and lower than nine districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, and Baltimore) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 24th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 24th (measurement) to 29th (algebra). The average student was around the first national quartile in all subscales.
- Displayed significant gains in overall mathematics and all five mathematics subscales from 2007 to 2009. Changes in average scores were statistically higher than that of the national population in algebra.

TABLE 44. DISTRICT OF COLUMBIA'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		District of Columbia	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.19	↑
Numbers	0.01	↔	0.05	↑	0.13	↑
Measurement	-0.01	↔	0.07	↑	0.19	↑
Geometry	0.03	↑	0.07	↑	0.14	↑
Data	-0.03	↑	0.01	↔	0.24	↑
Algebra	0.00	↔	0.03	↔	0.28	↑

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 43 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Identify odd and even numbers.
  - Read or interpret a single set of data.
  - Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.
  - Recognize two-dimensional faces of three-dimensional shapes.
  - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments.

District of Columbia: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored higher than one district (Detroit) and lower than 12 districts (Austin, Boston, Houston, Charlotte, Miami-Dade County, New York City, San Diego, Chicago, Philadelphia, Atlanta, Cleveland, and Baltimore) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 20th percentile on the national score distribution. The percentile for the average subscale scores ranged from 19th (measurement and geometry) to 24th (data). The average student was below the first national quartile in all subscales.
- Displayed significant gains in overall mathematics and all subscales except data from 2007 to 2009.

TABLE 45. DISTRICT OF COLUMBIA'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		District of Columbia	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.19	↑
Numbers	0.02	↑	0.09	↑	0.20	↑
Measurement	0.04	↑	0.08	↑	0.22	↑
Geometry	0.05	↑	0.07	↑	0.22	↑
Data	0.00	↔	0.02	↔	0.14	↔
Algebra	0.06	↑	0.05	↔	0.13	↑

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 36 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.
  - Model or describe rational numbers or numerical relationships using number lines and diagrams.
  - Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.
  - Draw or sketch from a written description polygons, circles, or semicircles.
  - Construct or solve problems involving scale drawings.

Fresno

Fresno participated in grade 4 and grade 8 NAEP reading and mathematics assessments for the first time in 2009. It had the third highest student-teacher ratio among the 18 TUDA districts. Sixty percent of total expenditures were instructional.

TABLE 46. FRESNO'S DEMOGRAPHICS, 2009

Number of Schools	107
Number of Students	76,621
Student/Teacher Ratio	19.5
Free and Reduced-Price Lunch	79%
Expenditures ($/student)	
Total	10,053
Instructional	5,990
Student and Staff Support	1,420
Administration	859
Operations, Food Service, and Other Support Staff	1,784

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Fresno: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than 13 districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, and Los Angeles) and higher than one district (Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores in overall reading, and the literary and information subscales corresponded to the 23rd, 27th, and 21st percentiles, respectively, on the national score distribution. The average student was around the first national quartile in all three measures.
- 2009 was the first year Fresno participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 43 percent of items correctly. The top five differentially most difficult items all measured the cognitive target 'integrate and interpret information and ideas presented in text.'

Fresno: Grade 8 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than nine districts (Miami-Dade County, Boston, Austin, Atlanta, Charlotte, Houston, Chicago, New York City, and Los Angeles) in overall reading in 2009 after adjusting for relevant background characteristics. Fresno did not score higher than any other district in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 23rd percentile in both overall reading and the information subscales and to the 25th percentile in the literary subscale on the national score distribution. The average student was around the first national quartile in all three measures.
- 2009 was the first year Fresno participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 52 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
    - Locate and recall information from text (three items).
    - Integrate and interpret information and ideas presented in text.
    - Critique and evaluate information and ideas in text and the ways in which authors present text.

Fresno: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than 15 districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, Baltimore, Philadelphia, Jefferson County, Chicago, District of Columbia, Los Angeles, and Milwaukee) and higher than one district (Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 23rd percentile on the national score distribution. The percentiles for the average subscale scores ranged from 19th (measurement) to 29th (numbers). The average student was below the first national quartile in all subscales except numbers.
- 2009 was the first year Fresno participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 43 percents of items correctly. The top five differentially most difficult items measured the following objectives:
    - For a given set of data, complete a graph.
    - Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.
    - Solve problems by estimating and computing within a single set of data.
    - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments (two items).

Fresno: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.

- Scored lower than 13 districts (Austin, Boston, Houston, Charlotte, Miami-Dade County, New York City, San Diego, Chicago, Philadelphia, Atlanta, Cleveland, Baltimore, and Los Angeles) and higher than one district (Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 25th percentile on the national score distribution. The percentile for the average subscale scores ranged from 23rd (data) to 31st (numbers). The average student was below the national median in numbers, below the first national quartile in geometry and data, and around the first national quartile in the other three subscales.

- 2009 was the first year Fresno participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 39 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Read or interpret data, including interpolating or extrapolating from data.
    - Determine the probability of independent and dependent events.
    - Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes (2 items).
    - Interpret probabilities within a given context.

Houston

Houston participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the seventh highest student-teacher ratio among the 18 TUDA districts. Fifty-nine percent of total expenditures were instructional.

Table 47. Houston's Demographics, 2009

Number of Schools	305
Number of Students	200,225
Student/Teacher Ratio	16.7
Free and Reduced-Price Lunch	63%
Expenditures ($/student)	
Total	8,604
Instructional	5,048
Student and Staff Support	853
Administration	944
Operations, Food Service, and Other Support Staff	1,758

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Houston: Grade 4 Reading

- Scored lower than the national and no differently from the LC averages in overall reading in 2009.
- Scored higher than 11 districts (San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) and lower than two districts (Boston and Miami-Dade County) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 36th percentile in both overall reading and the information subscale, and to the 38th percentile in literary subscale on the national score distribution. The average student was below the national median in all three measures.
- Displayed significant gain in overall reading and in the two reading subscales from 2007 to 2009.

TABLE 48. HOUSTON'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Houston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.17	↑
Information	0.01	↔	0.06	↑	0.15	↑
Literary	-0.01	↔	0.03	↔	0.18	↑

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 51 percent of items correctly. The top five differentially most difficult items all measured the cognitive target 'integrate and interpret information and ideas presented in text.'

Houston: Grade 8 Reading

- Scored lower than the national and no differently from the LC averages in overall reading in 2009.

- Scored higher than eight districts (Baltimore, Los Angeles, Cleveland, Jefferson County, Milwaukee, District of Columbia, Fresno, and Detroit) and lower than two districts (Miami-Dade County and Boston) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores corresponded to the 35th percentile in both overall reading and the information subscale, and the 36th percentile in the literary subscale on the national score distribution. The average student was below the national median in all three measures.

- Displayed no significant change in overall reading and reading subscales from 2007 to 2009.

TABLE 49. HOUSTON'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Houston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.00	↔
Information	0.04	↑	0.04	↔	0.04	↔
Literary	0.02	↑	0.05	↑	-0.05	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 60 percent of items correctly. The top five differentially most difficult items all measured the cognitive target 'integrate and interpret information and ideas presented in text.'

Houston: Grade 4 Mathematics

- Scored lower than the national and higher than the LC averages in overall mathematics in 2009.
- Scored higher than 13 districts (all except Austin, Boston, Charlotte, and New York City) in overall mathematics in 2009 after adjusting for relevant background characteristics. No district scored higher than Houston in adjusted overall mathematics scores in 2009.
- Average overall mathematics scale score corresponded to the 44th percentile on the national score distribution. The percentile for the average subscale scores ranged from 38th (geometry) to 47th (measurement). The average student was around the national median on measurement and below the national median in all other subscales.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 50. HOUSTON'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Houston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.06	↔
Numbers	0.01	↔	0.05	↑	0.11	↔
Measurement	-0.01	↔	0.07	↑	0.12	↔
Geometry	0.03	↑	0.07	↑	-0.03	↔
Data	-0.03	↑	0.01	↔	-0.02	↔
Algebra	0.00	↔	0.03	↔	-0.03	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 52 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Explain or justify a mathematical concept or relationship.
  - Identify odd and even numbers.
  - Read or interpret a single set of data.
  - Construct geometric figures with vertices at points on a coordinate grid.
  - Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight.

Houston: Grade 8 Mathematics

- Scored lower than the national and higher than the LC averages in overall mathematics in 2009.

- Scored higher than 15 districts (all except Austin and Boston) and lower than one district (Austin) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 43rd percentile on the national score distribution. The percentile for the average subscale scores ranged from 40th (algebra) to 47th (measurement). The average student was around the national median in measurement, numbers and geometry and below the national median in the other two subscales.

- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 51. HOUSTON'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Houston	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.10	↔
Numbers	0.02	↑	0.09	↑	0.12	↔
Measurement	0.04	↑	0.08	↑	0.13	↔
Geometry	0.05	↑	0.07	↑	0.02	↔
Data	0.00	↔	0.02	↔	0.09	↔
Algebra	0.06	↑	0.05	↔	0.10	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 48 percent of items correctly. The top five differentially most difficult items measured the following objectives:

  - Solve linear equations or inequalities.
  - Perform basic operations, using appropriate tools, on linear algebraic expressions.
  - Visually choose the line that best fits given a scatterplot and informally explain the meaning of the line. Use the line to make predictions.
  - Identify functions as linear or nonlinear or contrast distinguishing properties of functions from tables, graphs, or equations.
  - Identify or represent functional relationships in meaningful contexts.

Jefferson County

Jefferson County participated in grade 4 and grade 8 NAEP reading and mathematics for the first time in 2009. It had the ninth lowest student-teacher ratio among the 18 TUDA districts. Fifty-four percent of total expenditures were instructional.

TABLE 52. JEFFERSON COUNTY'S DEMOGRAPHICS, 2009

Number of Schools	174
Number of Students	98,774
Student/Teacher Ratio	16.1
Free and Reduced-Price Lunch	56%
Expenditures ($/student)	
Total	9,966
Instructional	5,350
Student and Staff Support	1,401
Administration	1,144
Operations, Food Service and Other Support Staff	2,072

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Jefferson County: Grade 4 Reading

- Scored no differently from the national and higher than the LC average in overall reading in 2009.

- Scored lower than six districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, and Houston) and higher than seven districts (District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores in overall reading, and in the literary and information subscales corresponded to the 45th, 44th, and 47th percentiles, respectively, on the national score distribution. The average student was close to the national median in all three measures.

- 2009 was the first year Jefferson County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 54 percent of items correctly. The five differentially most difficult items measured the following cognitive targets:

    - Integrate and interpret information and ideas presented in text (four items).
    - Critique and evaluate information and ideas in text and the ways in which authors present text.

Jefferson County: Grade 8 Reading

- Scored lower than the national and higher than the LC averages in overall reading in 2009.

- Scored lower than seven districts (Miami-Dade County, Boston, Austin, Atlanta, Charlotte, Houston, and Chicago) and higher than two districts (District of Columbia and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores in overall reading, in the literary and information subscales corresponded to the 42nd, 40th, and 45th percentiles, respectively, on the national score distribution. The average student was below the national median in all three measures.

- 2009 was the first year Jefferson County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 64 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:

    - Integrate and interpret information and ideas presented in text (three items).
    - Locate and recall information from text.
    - Critique and evaluate information and ideas in text and the ways in which authors present text.

Jefferson County: Grade 4 Mathematics

- Scored lower than the national and no differently from the LC averages in overall mathematics in 2009.

- Scored lower than nine districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, and Baltimore) and higher than three districts (Cleveland, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 40th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 36th (numbers) to 48th (geometry). The average student was around the national median in geometry and below the national median in all other subscales.

- 2009 was the first year Jefferson County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 50 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths (three items).
    - Multiply whole numbers.
    - Divide whole numbers.

Jefferson County: Grade 8 Mathematics

- Scored lower than the national and no differently from the LC averages in overall mathematics in 2009.

- Scored lower than 12 districts (Austin, Boston, Houston, Charlotte, Miami-Dade County, New York City, San Diego, Chicago, Philadelphia, Atlanta, Cleveland, and Baltimore) and higher than one district (Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 38th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 36th (numbers) to 39th (geometry and algebra). The average student was below the national median in all subscales.

- 2009 was the first year Jefferson County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 44 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Calculate, use, or interpret mean, median, mode, or range.
    - Perform computations with rational numbers.
    - Recognize, describe, or extend numerical and geometric patterns using tables, graphs, words, or symbols.
    - Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.
    - Interpret relationships between symbolic linear expressions and graphs of lines by identifying and computing slope and intercepts.

Los Angeles

Los Angeles participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the highest student-teacher ratio among the 18 TUDA districts. Fifty-nine percent of total expenditures were instructional.

TABLE 53. LOS ANGELES' DEMOGRAPHICS, 2009

Number of Schools	868
Number of Students	687,534
Student/Teacher Ratio	19.6
Free and Reduced-Price Lunch	75%
Expenditures ($/student)	
Total	11,357
Instructional	6,666
Student and Staff Support	1,619
Administration	1,238
Operations, Food Service, and Other Support Staff	1,834

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Los Angeles: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than nine districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, San Diego, and Jefferson County) and higher than five districts (Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores in overall reading, and in literary and information subscales corresponded to the 24th, 25th, and 23rd percentiles, respectively, on the national score distribution. The average student was around the first national quartile in all three measures.
- Displayed no significant change in overall reading or in the reading subscales from 2007 to 2009.

TABLE 54. LOS ANGELES' CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Los Angeles	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.04	↔
Information	0.01	↔	0.06	↑	0.03	↔
Literary	-0.01	↔	0.03	↔	0.05	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 44 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Integrate and interpret information and ideas presented in text (three items).
  - Locate and recall information from text (two items).

Los Angeles: Grade 8 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than six districts (Miami-Dade County, Boston, Austin, Atlanta, Charlotte, and Houston) and higher than three districts (District of Columbia, Fresno, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 27th percentile in both overall reading and information subscale and to the 28th percentile in literary subscale on the national score distribution. The average student was around the first national quartile in all three measures.
- Displayed significant gain in overall reading from 2007 to 2009.

TABLE 55. LOS ANGELES' CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Los Angeles	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.09	↑
Information	0.04	↑	0.04	↔	0.08	↔
Literary	0.02	↑	0.05	↑	0.03	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 55 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Locate and recall information from text (three items).
  - Integrate and interpret information and ideas presented in text (two items).

Los Angeles: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than nine districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, and Baltimore) and higher than three districts (Cleveland, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 26th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 23rd (measurement) to 30th (numbers). The average student was above the first national quartile in numbers and around the first national quartile in all other subscales.
- Displayed no significant change in overall mathematics and mathematics subscales from 2007 to 2009.

TABLE 56. LOS ANGLES' CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		Los Angeles	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.03	↔
Numbers	0.01	↔	0.05	↑	0.04	↔
Measurement	-0.01	↔	0.07	↑	0.05	↔
Geometry	0.03	↑	0.07	↑	-0.01	↔
Data	-0.03	↑	0.01	↔	0.00	↔
Algebra	0.00	↔	0.03	↔	0.03	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 44 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Use place value to model and describe integers and decimals.
  - For a given set of data, complete a graph.
  - Identify the images resulting from flips (reflections), slides (translations), or turns (rotations).
  - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments.
  - Solve application problems involving numbers and operations.

Los Angeles: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than 11 districts (Austin, Boston, Houston, Charlotte, Miami-Dade County, New York City, San Diego, Chicago, Philadelphia, Atlanta, and Cleveland) and higher than three districts (Milwaukee, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 25th percentile on the national score distribution. The percentile for the average subscale scores ranged from 23rd (measurement) to 30th (numbers). The average student was below the national median on numbers and around the first national quartile in geometry and algebra and below the first national quartile in the other two subscales.
- Displayed significant gains in the numbers subscale from 2007 to 2009.

TABLE 57. LOS ANGELES' CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		Los Angeles	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.03	↔
Numbers	0.02	↑	0.09	↑	0.14	↑
Measurement	0.04	↑	0.08	↑	0.08	↔
Geometry	0.05	↑	0.07	↑	-0.10	↔
Data	0.00	↔	0.02	↔	0.01	↔
Algebra	0.06	↑	0.05	↔	0.01	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 39 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Read or interpret data, including interpolating or extrapolating from data.
  - Identify lines of symmetry in plane figures or recognize and classify types of symmetries of plane figures.
  - Determine the probability of independent and dependent events.
  - Draw or sketch from a written description polygons, circles, or semicircles.
  - Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.

Miami-Dade County

Miami-Dade County participated in grade 4 and grade 8 NAEP reading and mathematics assessments for the first time in 2009. It had the ninth lowest student-teacher ratio among the 18 TUDA districts. Sixty-one percent of total expenditures were instructional.

TABLE 58. MIAMI-DADE COUNTY'S DEMOGRAPHICS, 2009

Number of Schools	557
Number of Students	345,525
Student/Teacher Ratio	15.4
Free and Reduced-Price Lunch	63%
Expenditures ($/student)	
Total	9,933
Instructional	6,057
Student and Staff Support	1,070
Administration	880
Operations, Food Service, and Other Support Staff	1,927

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Miami-Dade County: Grade 4 Reading

- Scored no differently from the national and higher than the LC average in overall reading in 2009.

- Scored higher than 13 districts (Houston, Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than Miami-Dade County in adjusted overall reading scores in 2009.

- Average scale scores corresponded to the 47th percentile in both overall reading and in the information subscale, and to the 48th percentile in literary subscale on the national score distribution. The average student was close to the national median in all three measures.

- 2009 was the first year Miami-Dade County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 55 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:

    - Integrate and interpret information and ideas presented in text (three items).
    - Locate and recall information from text (two items).

Miami-Dade County: Grade 8 Reading

- Scored no differently from the national and higher than the LC averages in overall reading in 2009.

- Scored higher than 15 districts (Atlanta, Charlotte, Houston, Chicago, New York City, San Diego, Philadelphia, Baltimore, Los Angeles, Cleveland, Jefferson County, Milwaukee, District of Columbia, Fresno, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than Miami-Dade County in adjusted overall reading scores in 2009.

- Average scale scores in overall reading, and in the literary and information subscales in 2009 corresponded to the 45th, 46th, and 44th percentiles, respectively, on the national score distribution. The average student was close to the national median in these three measures.

- 2009 was the first year Miami-Dade County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 63 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:

    - Integrate and interpret information and ideas presented in text (three items).
    - Locate and recall information from text (two items).

Miami-Dade County: Grade 4 Mathematics

- Scored lower than the national and higher than the LC averages in overall mathematics in 2009.

- Scored higher than 11 districts (Atlanta, Baltimore, Philadelphia, Jefferson County, Chicago, District of Columbia, Los Angeles, Milwaukee, Cleveland, Fresno, and Detroit) and lower than five districts (Houston, Austin, Boston, Charlotte, and New York City) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 44th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 41st (numbers) to 51st (data). The average student was below the national median in numbers and measurement, around the national median in geometry and algebra, and slightly above the national median in the data subscale.

- 2009 was the first year Miami-Dade County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 53 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths.
    - Explain or justify a mathematical concept or relationship.
    - Assemble simple plane shapes to construct a given shape.
    - Describe the effect of operations on size (whole numbers).
    - Solve application problems involving numbers and operations.

Miami-Dade County: Grade 8 Mathematics

- Scored lower than the national and no differently from the LC averages in overall mathematics in 2009.

- Scored higher than 11 districts (Chicago, Philadelphia, Atlanta, Cleveland, Baltimore, Los Angeles, Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) and lower than four districts (Austin, Boston, Houston, and Charlotte) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 40th percentile on the national score distribution. The percentile for the average subscale scores ranged from 36th (numbers) to 41st (measurement). The average student was below the national median in all subscales.

- 2009 was the first year Miami-Dade County participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 45 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Describe relative positions of points and lines using the geometric ideas of midpoint, points on common line through a common point, parallelism, or perpendicularity.
    - Perform computations with rational numbers.
    - Identify, define, or describe geometric shapes in the plane and in three-dimensional space given a visual representation.
    - Perform basic operations, using appropriate tools, on linear algebraic expressions.
    - Construct or solve problems involving scale drawings.

Milwaukee

Milwaukee participated in grade 4 and grade 8 NAEP reading and mathematics assessments for the first time in 2009. It had the fifth highest student-teacher ratio among the 18 TUDA districts. Fifty-seven percent of total expenditures were instructional.

TABLE 59. MILWAUKEE'S DEMOGRAPHICS, 2009

Number of Schools	220
Number of Students	85,381
Student/Teacher Ratio	16.6
Free and Reduced-Price Lunch	77%
Expenditures ($/student)	
Total	12,705
Instructional	7,242
Student and Staff Support	1,430
Administration	1,840
Operations, Food Service and Other Support Staff	2,193

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Milwaukee: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than 13 districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, and Los Angeles) in overall reading in 2009 after adjusting for relevant background characteristics. Milwaukee did not score higher than any other district in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 22nd percentile in both overall reading and the information subscale, and the 24th percentile in literary subscale in 2009 on the national score distribution. The average student was below the first national quartile in all three measures.
- 2009 was the first year Milwaukee participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 41 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
    - Locate and recall information from text (three items).
    - Integrate and interpret information and ideas presented in text (two items).

Milwaukee: Grade 8 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than seven districts (Miami-Dade County, Boston, Austin, Atlanta, Charlotte, Houston, and Chicago) and higher than one district (Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 25th percentile in both overall reading and information subscale, and to the 27th percentile in literary subscale on the national score distribution. The average student was around the first national quartile in all three measures.
- 2009 was the first year Milwaukee participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 53 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
    - Integrate and interpret information and ideas presented in text (three items).
    - Locate and recall information from text (two items).

Milwaukee: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored higher than two districts (Fresno and Detroit) and lower than nine districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, and Baltimore) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 24th percentile on the national score distribution. The percentile for the average subscale scores ranged from 24th (numbers) to 29th (geometry). The average student was around the first national quartile in all subscales.
- 2009 was the first year Milwaukee participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 42 percent of items correctly. The top five differentially most difficult items measured the following objectives:
    - Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths.
    - Identify place value and actual value of digits in whole numbers.
    - Represent numbers using models such as base 10 representations, number lines and two-dimensional models.
    - Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.
    - Order/compare whole numbers, decimals, or fractions.

Milwaukee: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.

- Scored higher than one district (Detroit) and lower than 13 districts (Austin, Boston, Houston, Charlotte, Miami-Dade County, New York City, San Diego, Chicago, Philadelphia, Atlanta, Cleveland, Baltimore, and Los Angeles) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 20th percentile on the national score distribution. The percentile for the average subscale scores ranged from 19th (algebra) to 24th (numbers). The average student was below the first national quartile in all subscales.

- 2009 was the first year Milwaukee participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 35 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Use place value to model and describe integers and decimals.
    - Interpret relationships between symbolic linear expressions and graphs of lines by identifying and computing slope and intercepts.
    - Compare objects with respect to length, area, volume, angle measurement, weight, or mass.
    - Determine the probability of independent and dependent events.
    - Interpret probabilities within a given context.

New York City

New York City participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the fourth lowest student-teacher ratio among the 18 TUDA districts. Seventy-five percent of total expenditures were instructional.

TABLE 60. NEW YORK CITY'S DEMOGRAPHICS, 2009

Number of Schools	1452
Number of Students	960,553
Student/Teacher Ratio	14.3
Free and Reduced-Price Lunch	67%
Expenditures ($/student)	
Total	17,923
Instructional	13,529
Student and Staff Support	306
Administration	1,226
Operations, Food Service, and Other Support Staff	2,861

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

New York City: Grade 4 Reading

- Scored no differently from the national and higher than the LC averages in overall reading in 2009.
- Scored higher than 12 districts (Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics. No district scored higher than New York City in adjusted overall reading scores in 2009.
- Average scale scores corresponded to the 42nd percentile in both overall reading and the information subscales, and the 44th percentile in the literary subscale on the national score distribution. The average student was below the national median in all three measures.
- Displayed significant gain in both overall reading and information subscale from 2007 to 2009.

TABLE 61. NEW YORK CITY'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		New York City	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.10	↑
Information	0.01	↔	0.06	↑	0.13	↑
Literary	-0.01	↔	0.03	↔	0.08	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 53 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Locate and recall information from text (three items).
  - Integrate and interpret information and ideas presented in text (two items).

New York City: Grade 8 Reading

- Scored lower than the national and no differently from the LC averages in overall reading in 2009.
- Scored higher than three districts (District of Columbia, Fresno, and Detroit) and lower than three districts (Miami-Dade County, Boston, and Austin) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 36th percentile on the national score distribution for overall reading, and on the literary and information subscales. The average student was below the national median in all three measures.
- Displayed no significant change in overall reading or reading subscales from 2007 to 2009.

TABLE 62. NEW YORK CITY'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		New York City	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.09	↔
Information	0.04	↑	0.04	↔	0.04	↔
Literary	0.02	↑	0.05	↑	0.09	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 60 percent of items correctly. The five differentially most difficult items measured the following cognitive targets:
  - Integrate and interpret information and ideas presented in text (three items).
  - Locate and recall information from text.
  - Critique and evaluate information and ideas in text and the ways in which authors present text.

New York City: Grade 4 Mathematics

- Scored no differently from the national and higher than the LC averages in overall mathematics in 2009.
- Scored higher than 13 districts (all except Austin, Boston, Charlotte, and Houston) in overall mathematics in 2009 after adjusting for relevant background characteristics. No district scored higher than New York City in adjusted overall mathematics scores in 2009.
- Average overall mathematics scale score corresponded to the 46th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 42nd (data) to 48th (numbers). The average student was below the national median in data and algebra, and around the national median in the other three subscales.
- Displayed no significant change in overall mathematics or in the mathematics subscales from 2007 to 2009.

TABLE 63. NEW YORK CITY'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		New York City	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.05	↔
Numbers	0.01	↔	0.05	↑	0.05	↔
Measurement	-0.01	↔	0.07	↑	0.06	↔
Geometry	0.03	↑	0.07	↑	0.10	↔
Data	-0.03	↑	0.01	↔	0.03	↔
Algebra	0.00	↔	0.03	↔	0.00	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 52 percent of items correctly. The top five differentially most difficult items measured the following objectives:
  - Read or interpret a single set of data.
  - Determine a simple probability from a context that includes a picture.
  - Identify the images resulting from flips, slides, or turns.
  - Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight.
  - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments.

New York City: Grade 8 Mathematics

- Scored lower than the national and no differently from the LC average in overall mathematics in 2009.

- Scored higher than eight districts (Cleveland, Baltimore, Los Angeles, Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) and lower than four districts (Austin, Boston, Houston, and Charlotte) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 40th percentile on the national score distribution. The percentiles for the average subscale scores ranged from 36th (data) to 42nd (algebra). The average student was below the national median in all subscales.

- Displayed no significant change in overall mathematics or in the mathematics subscales from 2007 to 2009.

TABLE 64. NEW YORK CITY'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		New York City	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.08	↔
Numbers	0.02	↑	0.09	↑	0.11	↔
Measurement	0.04	↑	0.08	↑	0.12	↔
Geometry	0.05	↑	0.07	↑	0.07	↔
Data	0.00	↔	0.02	↔	0.01	↔
Algebra	0.06	↑	0.05	↔	0.08	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 46 percent of items correctly. The top five differentially most difficult items measured the following objectives:

  - Read or interpret data, including interpolating or extrapolating from data.
  - Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.
  - Use place value to model and describe integers and decimals.
  - Write algebraic expressions, equations, or inequalities to represent a situation.
  - Identify, define, or describe geometric shapes in the plane and in three-dimensional space given a visual representation.

Philadelphia

Philadelphia participated in grade 4 and grade 8 NAEP reading and mathematics assessments in 2009. It had the eighth highest student-teacher ratio among the 18 TUDA districts. Fifty-four percent of total expenditures were instructional.

TABLE 65. PHILADELPHIA'S DEMOGRAPHICS, 2009

Number of Schools	275
Number of Students	159,867
Student/Teacher Ratio	15.6
Free and Reduced-Price Lunch	73%
Expenditures ($/student)	
Total	9,399
Instructional	5,051
Student and Staff Support	782
Administration	1,117
Operations, Food Service and Other Support Staff	2,449

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

Philadelphia: Grade 4 Reading

- Scored lower than the national and LC averages in overall reading in 2009.
- Scored lower than 13 districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, Houston, Atlanta, San Diego, Jefferson County, Baltimore, Chicago, District of Columbia, and Los Angeles) in overall reading in 2009 after adjusting for relevant background characteristics. Philadelphia did not score higher than any other district in adjusted overall reading scores in 2009.
- Average scale scores in overall reading, and in the literary and information subscales corresponded to the 22nd, 24th, and 21st percentiles, respectively, on the national score distribution. The average student was below the first national quartile in all three measures.
- 2009 was the first year Philadelphia participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 42 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
    - Integrate and interpret information and ideas presented in text (three items).
    - Locate and recall information from text (two items).

Philadelphia: Grade 8 Reading

- Scored lower than the national and no differently from the LC averages in overall reading in 2009.

- Scored lower than three districts (Miami-Dade County, Boston, and Austin) and higher than two districts (District of Columbia and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores in overall reading, and in the literary and information subscales corresponded to the 30th, 32nd, and 29th percentiles, respectively, on the national score distribution. The average student was below the first national quartile in all three measures.

- 2009 was the first year Philadelphia participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 56 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:

    - Integrate and interpret information and ideas presented in text (four items).
    - Critique and evaluate information and ideas in text and the ways in which authors present text.

Philadelphia: Grade 4 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.
- Scored lower than nine districts (Houston, Austin, Boston, Charlotte, New York City, Miami-Dade County, San Diego, Atlanta, and Baltimore) and higher than three districts (Cleveland, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.
- Average overall mathematics scale score corresponded to the 26th percentile on the national score distribution. The percentile for the average subscale scores ranged from 24th (data) to 29th (numbers). The average student was around the first national quartile in all subscales except numbers.
- 2009 was the first year Philadelphia participated in NAEP TUDA. Thus, there are no trend data for this district.
- On average, students answered 43 percents of items correctly. The top five differentially most difficult items measured the following objectives:
    - For a given set of data, complete a graph (two items).
    - Identify the images resulting from flips (reflections), slides (translations), or turns (rotations).
    - Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments.
    - Order/compare whole numbers, decimals, or fractions.

Philadelphia: Grade 8 Mathematics

- Scored lower than the national and LC averages in overall mathematics in 2009.

- Scored lower than five districts (Austin, Boston, Houston, Charlotte, and Miami-Dade County) and higher than six districts (Los Angeles, Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 31st percentile on the national score distribution. The percentiles for the average subscale scores ranged from 30th (numbers and algebra) to 34th (data). The average student was below national median in all subscales.

- 2009 was the first year Philadelphia participated in NAEP TUDA. Thus, there are no trend data for this district.

- On average, students answered 42 percent of items correctly. The top five differentially most difficult items measured the following objectives:

    - Explain or justify a mathematical concept or relationship.
    - Perform computations with rational numbers.
    - Use place value to model and describe integers and decimals.
    - Graph or interpret points represented by ordered pairs of numbers on a rectangular coordinate system.
    - Solve problems involving coordinate pairs on the rectangular coordinate system.

San Diego

San Diego participated in grade 4 and grade 8 NAEP reading and mathematics assessments in both 2007 and 2009. It had the fourth highest student-teacher ratio among the 18 TUDA districts. Fifty-six percent of total expenditures were instructional.

TABLE 66. SAN DIEGO'S DEMOGRAPHICS, 2009

Number of Schools	223
Number of Students	132,256
Student/Teacher Ratio	19.3
Free and Reduced-Price Lunch	63%
Expenditures ($/student)	
Total	10,305
Instructional	5,767
Student and Staff Support	1,496
Administration	1,225
Operations, Food Service and Other Support Staff	1,817

Source: Common Core of Data public school district data for the 2008-2009 school year, grades PK through 12.
Note: Fiscal data are from 2007-2008 school year.

San Diego: Grade 4 Reading

- Scored lower than the national and no differently from the LC average in overall reading in 2009.
- Scored lower than six districts (Boston, Miami-Dade County, New York City, Austin, Charlotte, and Houston) and higher than eight districts (Chicago, District of Columbia, Los Angeles, Milwaukee, Fresno, Philadelphia, Cleveland, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.
- Average scale scores corresponded to the 38th percentile in both overall reading and the information subscale, and the 39th percentile in literary subscale on the national score distribution. The average student was below the national median in all three measures.
- Displayed no significant change in overall reading or the reading subscales from 2007 to 2009.

TABLE 67. SAN DIEGO'S CHANGES IN GRADE 4 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		San Diego	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.04	↔	0.07	↔
Information	0.01	↔	0.06	↑	0.09	↔
Literary	-0.01	↔	0.03	↔	0.05	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 53 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:
  - Integrate and interpret information and ideas presented in text (three items).
  - Locate and recall information from text (two items).

San Diego: Grade 8 Reading

- Scored lower than the national and no differently from the LC averages in overall reading in 2009.

- Scored lower than three districts (Miami-Dade County, Boston, and Austin) and higher than two districts (District of Columbia, and Detroit) in overall reading in 2009 after adjusting for relevant background characteristics.

- Average scale scores corresponded to the 38th percentile in overall reading and the literary subscale, and the 39th percentile in the information subscale on the national score distribution. The average student was below the national median in all three measures.

- Displayed no significant change in overall reading or in the reading subscales from 2007 to 2009.

TABLE 68. SAN DIEGO'S CHANGES IN GRADE 8 READING OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		San Diego	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.11	↔
Information	0.04	↑	0.04	↔	0.10	↔
Literary	0.02	↑	0.05	↑	0.09	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 62 percent of items correctly. The top five differentially most difficult items measured the following cognitive targets:

  - Integrate and interpret information and ideas presented in text (three items).
  - Locate and recall information from text (two items).

San Diego: Grade 4 Mathematics

- Scored no differently from the national and higher than the LC averages in overall mathematics in 2009.

- Scored lower than five districts (Houston, Austin, Boston, Charlotte, and New York City) and higher than nine districts (Philadelphia, Jefferson County, Chicago, District of Columbia, Los Angeles, Milwaukee, Cleveland, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 44th percentile on the national score distribution. The percentile for the average subscale scores ranged from 41st (data) to 51st (geometry). The average student was below the national median in data, algebra, and measurement, around the national median in numbers, and just above the national median in geometry.

- Displayed no significant change in overall mathematics or in the mathematics subscales from 2007 to 2009.

TABLE 69. SAN DIEGO'S CHANGES IN GRADE 4 MATHEMATICS OVERALL AND SUBSCALES SCORES, 2007-2009

	National Public		Large City		San Diego	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.00	↔	0.05	↑	0.07	↔
Numbers	0.01	↔	0.05	↑	0.10	↔
Measurement	-0.01	↔	0.07	↑	0.08	↔
Geometry	0.03	↑	0.07	↑	0.08	↔
Data	-0.03	↑	0.01	↔	0.07	↔
Algebra	0.00	↔	0.03	↔	-0.04	↔

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 53 percent of items correctly. The top five differentially most difficult items measured the following objectives:

  - Verify a conclusion using algebraic properties.
  - Identify factors of whole numbers.
  - Multiply whole numbers.
  - Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.
  - Represent the probability of a given outcome using a picture or other graphic.

San Diego: Grade 8 Mathematics

- Scored no differently from the national and higher than the LC averages in overall mathematics in 2009.

- Scored lower than four districts (Austin, Boston, Houston, and Charlotte) and higher than eight districts (Cleveland, Baltimore, Los Angeles, Jefferson County, District of Columbia, Milwaukee, Fresno, and Detroit) in overall mathematics in 2009 after adjusting for relevant background characteristics.

- Average overall mathematics scale score corresponded to the 47th percentile on the national score distribution. The percentile for the average subscale scores ranged from 39th (data) to 53rd (algebra). The average student was above the national median in algebra, around the national median in numbers and geometry, and below the national median in the other two subscales.

- Displayed significant gains in overall mathematics and in the numbers and algebra subscales from 2007 to 2009.

TABLE 70. SAN DIEGO'S CHANGES IN GRADE 8 MATHEMATICS OVERALL AND SUBSCALE SCORES, 2007-2009

	National Public		Large City		San Diego	
	Effect Size	Significance	Effect Size	Significance	Effect Size	Significance
Composite	0.04	↑	0.07	↑	0.20	↑
Numbers	0.02	↑	0.09	↑	0.24	↑
Measurement	0.04	↑	0.08	↑	0.13	↔
Geometry	0.05	↑	0.07	↑	0.26	↔
Data	0.00	↔	0.02	↔	0.09	↔
Algebra	0.06	↑	0.05	↔	0.22	↑

Note. ↑ Significant increase, ↔ Change not significant, ↓ Significant decrease

- On average, students answered 49 percent of items correctly. The top five differentially most difficult items measured the following objectives:

  - Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes (two items).
  - Estimate the size of an object with respect to a given measurement attribute.
  - Use proportional reasoning to model and solve problems (including rates and scaling).
  - Determine the sample space for a given situation.

Discussion

In this report, we examined the performance of 18 districts that participated in the 2009 NAEP grade 4 and 8 reading and mathematics assessments. Eleven of these districts had also participated in 2007 assessments. We analyzed the performance of all 18 districts in 2009 and also examined the changes in performance for the 11 districts from 2007 to 2009.

It is evident that the academic performance of public school students in many of the urban districts we examined this report is nowhere near what we would like it to be. However, the story is not uniform across all districts. There are districts that perform similar to, and, in some cases, even higher than the national average. Charlotte, Boston, and Austin are three examples. We also see districts that are performing below the large city and the national averages, yet are making significant progress. An example is the District of Columbia where significant gains were observed in reading and mathematics at both grades.

On the other hand, some districts have a longer path to travel in order to achieve their targets. For example, among the 11 districts that participated in the 2007 and 2009 NAEP assessments, Cleveland and Chicago were the only two districts that performed lower than the national and the large city averages and showed no gains from 2007 to 2009.

Policy makers, researchers and practitioners will be carefully watching the future performance of the nine TUDA districts that participated in NAEP for the first time in 2009. Despite their starting points, will Baltimore City, Detroit, Fresno, Milwaukee, and Philadelphia show progress in future assessments? Will Jefferson County perform as well in mathematics as it does in reading?

Knowing where one is and knowing where one is headed are the first steps in making better decisions about reaching future targets. Like several other studies that use NAEP data, this study illustrates the depth and wealth of information available about academic performance of public school students in urban districts in the United States. Policy makers and practitioners can use this information. The variation in the demographic profiles of the 18 urban districts examined in this report makes the case that there is much these districts can learn from each other.

References

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, Series B, 1*, 289–300.

Braun, H., Jenkins, F., & Grigg, W. (2006a). *Comparing private schools and public schools using hierarchical linear modeling* (NCES 2006-461). U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Braun, H., Jenkins, F., & Grigg, W. (2006b). *A closer look at charter schools using hierarchical linear modeling* (NCES 2006-460). U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

National Center for Education Statistics (2010). *The Nation's Report Card: Trial Urban District Assessment Reading 2009* (NCES 2010–459). Institute of Education Sciences, U.S. Department of Education, Washington, D.C.

Appendix A. Adjusted Mean Scores

Variables Used in Regression Analyses to Calculate "Adjusted" Scores

- **Race/ethnicity**
  In the NAEP files, student race/ethnicity information is obtained from school records and classified under six categories: *White*, *Black*, *Hispanic*, *Asian/Pacific Islander*, *American Indian/Alaska Native*, or *unclassifiable*. When school-reported information was missing, student-reported data from the Student Background Questionnaire were used to establish race/ethnicity. We categorized as *unclassifiable* the students whose race-ethnicity based on school-records was *unclassifiable* or *missing* and (1) who self-reported their race as *multicultural* but not *Hispanic* or (2) who did not self-report race information.

- **Special education status**
  Student has an Individualized Educational Program (IEP), for reasons other than being gifted or talented; or a student with a Section 504 Plan.

- **English language learner status**
  Student is currently classified as an English language learner and is receiving services**.**

- **Free- or reduced-price lunch eligibility**
  Eligibility for the National School Lunch Program is determined by a student's family income in relation to the federally established poverty level. Based on available school records, students were classified as either currently eligible for free/reduced-price lunch or currently not eligible. If the school record indicated the information was not available, the student was classified as not eligible.

- **Parental Education**
  Highest level of education attained by either parent: *did not complete high school, graduate high school*, *some education after high school*, and *graduated college*. This indicator is only available for grade 8 students.

- **Literacy Materials**
  The presence of literacy materials in the home is associated with both socioeconomic status and student achievement. The measure reported here is based on questions in both the grade 4 and grade 8 *Student Background Questionnaires* that ask about the availability of computer, newspapers, magazines, and more than 25 books in the home. A summary score has been created to indicate how many of these four types of literacy materials are present.[13]

Information on race/ethnicity, free-lunch, ELL and SD status come from the school and are available for all students. However, data on background characteristics for students that do not participate in NAEP are not available: excluded students do not fill the *Background Questionnaire*. Therefore, data on *literacy materials* and *parent education* are only available for the included population. Therefore, the calculation of adjusted scores controlling for background characteristics was conducted on the reported sample only.

[13] This summary score has been used for reporting NAEP background variables for a number of years and has been shown to be associated with students' achievement scores (for example, NAEP 1996 Mathematics Cross-State Data Compendium)

Estimating adjusted mean scores

The method used in calculating the adjusted district means is discussed below.

Let y_{ijv} be plausible value *v* of student *j* in district *i*, and

X_{ijk} be the demographic characteristic *k* of student *j* in district *i*.

Assume the mean plausible value student *j* in district *i*, $y_{ij\bullet}$, can be expressed as a function of an overall mean achievement μ, a differential effect α_i associated with district *i*, and differential effects β_k associate with characteristic *k* of student *j* in district *i*:

$$y_{ij\bullet} = \mu + \alpha_i + \sum_k \beta_k X_{ijk} + e_{ij}, \qquad [1]$$

where μ is the overall mean,

α_i is the district *i* effect, and

β_k is the effect of the demographic characteristic *k* of student *j* in district *i*.

Letting the subscript • indicate average, then the average scale score in district *i* is expressed as

$$y_{i\bullet\bullet} = \mu + \alpha_i + \sum_k \beta_k X_{i\bullet k} + e'_i, \qquad [2]$$

Subtracting [2] from [1] we can estimate the regression in [3]

$$z_{ij} = y_{ij\bullet} - y_{i\bullet\bullet} = \sum_k \beta_k [X_{ijk} - X_{i\bullet k}] + e''_{ij} \qquad [3]$$

and obtain estimates of β_k directly, without any contamination from the α_i because α_i has been subtracted out before the regression.

With the estimates $\hat{\beta}_k$, we compute the average effect of the demographic characteristics of student *j* in district *i*.

$$\hat{y}_{ij\bullet} = \sum_k \hat{\beta}_k [X_{ijk} - X_{\bullet\bullet k}] \qquad [4]$$

where $X_{\bullet\bullet k}$ is the overall mean of $X_{\bullet\bullet k}$.

The adjusted score, y'_{ijv} is estimated by subtracting $\hat{y}_{ij\bullet}$ from each y_{ijv}:

$$y'_{ijv} = y_{ijv} - \hat{y}_{ij\bullet} \qquad [5]$$

The adjusted score, $y'_{i\bullet\bullet}$ is the critical statistic for the analysis. It is an estimator for $\mu + \alpha_i$ and we can estimate its standard error by the usual NAEP procedures. Note that $\mu + \alpha_i$ is the overall mean plus the effect of district *i*. It is what the mean of district *i* would be if the mean of all demographics in district *i* were the same as the overall mean of demographics.

Appendix B. Average Scores by Subscale and District: 2009

TABLE B1. AVERAGE GRADE 4 READING SCORES, BY SUBSCALE AND JURISDICTION: 2009

State/jurisdiction	Composite	Information	Literary
National Public	220 (0.3)	218 (0.3)	221 (0.3)
Large City	210 (0.7)	207 (0.8)	212 (0.7)
Atlanta	209** (1.5)	206** (2.2)	212** (2.8)
Austin	220* (1.8)	219* (2.8)	222* (2)
Baltimore City	202 *,**(1.7)	199*,** (2.5)	204*,** (1.8)
Boston	215*,** (1.2)	211** (1.6)	219* (1)
Charlotte	225*,** (1.6)	223*, ** (2)	226*, ** (1.8)
Chicago	202*,** (1.5)	199*,** (1.6)	204*,** (1.7)
Cleveland	194*,** (2)	192*,** (1.6)	195*,** (2.8)
Detroit	187*,** (1.9)	183*,** (3)	190*,** (1.8)
District of Columbia	203*,** (1.2)	199*,** (1.1)	207*,** (1.6)
Fresno	197*,** (1.7)	192*,** (2.6)	202*,** (1.9)
Houston	211** (1.7)	208** (2)	214** (2)
Jefferson County	219* (1.8)	219* (2)	219* (1.9)
Los Angeles	197*,** (1.1)	194*,** (1.1)	200*,** (1.4)
Miami-Dade County	221* (1.2)	219* (1.6)	223* (1.3)
Milwaukee	196*,** (2)	192*,** (2.5)	199*,** (2.2)
New York City	217* (1.4)	214*,** (1.3)	219* (1.7)
Philadelphia	195*,** (1.8)	191*,** (2.6)	199*,** (1.7)
San Diego	213** (2.1)	210** (2.3)	215 (3.4)
***Significantly different (p < .05) from large city**			
****Significantly different (p < .05) from national public**			

TABLE B2. AVERAGE GRADE 8 READING SCORES, BY SUBSCALE AND JURISDICTION: 2009

State/jurisdiction	Composite	Information	Literary
National Public	262 (0.3)	264 (0.3)	261 (0.3)
Large City	252 (0.5)	254 (0.6)	251 (0.6)
Atlanta	250** (1.5)	253** (1.2)	246*,** (2.2)
Austin	261* (2)	263* (2.8)	259* (2.9)
Baltimore City	245*,** (1.7)	247*,** (1.8)	242*,** (2.4)
Boston	257*,** (1.5)	258*,** (2)	257*,** (2)
Charlotte	259*,** (1)	261*,** (1.2)	258* (1.3)
Chicago	249** (1.6)	250** (1.7)	248** (1.8)
Cleveland	242*,** (1.6)	244*,** (2.9)	240*,** (1.5)
Detroit	232*,** (2.4)	232*,** (2.4)	233*,** (4)
District of Columbia	240*,** (1.5)	242*,** (2.1)	238*,** (1.2)
Fresno	240*,** (2.4)	240*,** (2.9)	239*,** (2.4)
Houston	252** (1.2)	254** (1.8)	250** (1.6)
Jefferson County	259*,**(1)	262* (1.3)	254*,** (1.2)
Los Angeles	244*,** (1.1)	245*,** (1.6)	242*,** (1.1)
Miami-Dade County	261* (1.4)	262* (1.5)	260* (1.6)
Milwaukee	241*,** (2)	242*,** (2.3)	241*,** (2.4)
New York City	252** (1.4)	255** (1.5)	250** (1.6)
Philadelphia	247** (2.5)	248** (3)	246** (2.1)
San Diego	254** (2.8)	257 (3.8)	252** (2.3)
***Significantly different (p < .05) from large city**			
****Significantly different (p < .05) from national public**			

TABLE B3. AVERAGE GRADE 4 MATHEMATICS SCORES, BY SUBSCALE AND JURISDICTION: 2009

State/jurisdiction	Composite	Numbers	Measurement	Geometry	Data	Algebra
National Public	239 (0.2)	237 (0.3)	238 (0.3)	239 (0.3)	242 (0.3)	244 (0.3)
Large City	231 (0.5)	230 (0.5)	228 (0.7)	232 (0.6)	233 (0.6)	237 (0.5)
Atlanta	225*,** (0.8)	224*,**(1.1)	221*,**(2.9)	229** (2.5)	224*,** (1.8)	234** (1.9)
Austin	240* (1)	240* (1.9)	240* (2.9)	239* (1.7)	241* (2.1)	244 (3.5)
Baltimore City	222*,** (1)	221*,** (1.3)	212*,** (1.8)	226*,** (2.5)	231** (1.8)	229*,** (1.5)
Boston	236*,** (0.7)	236* (1.6)	234* (2.3)	240* (1.7)	234** (2)	237** (1.4)
Charlotte	245*,** (1.3)	245*,** (1.6)	239* (2.2)	243*,** (1.3)	251* ,** (2.2)	252*,** (2)
Chicago	222*,** (1.2)	218*,** (1.5)	221*,** (1.8)	226*,** (1.4)	226*,** (1.5)	227*,** (1.2)
Cleveland	213*,** (1)	208*,** (1)	209*,** (2.6)	221*,** (1.7)	218*,** (2.1)	223*,** (2.5)
Detroit	200*,** (1.7)	194*,** (2.6)	192*,** (2.8)	209** (2.4)	204*,** (3.3)	212*,** (1.8)
District of Columbia	220*,** (0.8)	217*,** (1.1)	214*,** (1.1)	222*,** (1)	226*,** (1)	230*,** (1.1)
Fresno	219*,** (1.4)	221*,** (2.2)	208*,** (3.9)	221*,** (1.7)	220*,** (3)	226*,** (2.2)
Houston	236*,** (1.2)	235* (2.2)	237* (2.5)	232** (1.3)	236** (1.9)	241 (1.9)
Jefferson County	233** (1.6)	228** (1.9)	232** (2.2)	238* (1.7)	238 (2.1)	238** (2.5)
Los Angeles	222*,** (1.2)	223*,** (1.3)	213*,** (2.2)	222*,** (1.1)	223*,** (1.3)	230*,** (1.5)
Miami-Dade County	236*,** (1.3)	232** (1.5)	235* (2.7)	239* (1.3)	244* (1.8)	242* (1.4)
Milwaukee	220*,** (1.5)	216*,** (1.8)	216*,** (2)	225*,** (1.7)	225*,** (2.6)	228*,** (1.9)
New York City	237* (1)	237* (1.2)	236* (1.7)	236* (1.4)	238*,** (1.6)	241*,** (1.1)
Philadelphia	222*,** (1.4)	221*,** (1.6)	218*,** (2)	222*,** (1.9)	222*,** (2.7)	228*,** (1.9)
San Diego	236,* (1.6)	235 (2.6)	233 (4.1)	240* (2.6)	237 (4.2)	239 (2.8)

***Significantly different (p < .05) from large city**
****Significantly different (p < .05) from national public**

TABLE B4. AVERAGE GRADE 8 MATHEMATICS SCORES, BY SUBSCALE AND JURISDICTION: 2009

State/jurisdiction	Composite	Numbers	Measurement	Geometry	Data	Algebra
National Public	282 (0.3)	279 (0.3)	278 (0.4)	279 (0.3)	283 (0.4)	286 (0.3)
Large City	271 (0.7)	269 (0.7)	266 (0.9)	270 (0.8)	270 (1)	276 (0.7)
Atlanta	259*,** (1.6)	256*,** (2.8)	245*,** (3.4)	261*,** (3.2)	260** (5.8)	267*,** (3.1)
Austin	287*,** (0.9)	281* (2.5)	291*,** (3.7)	289*,** (2.2)	288* (3)	288* (1.8)
Baltimore City	257*,** (1.9)	257*,** (2.8)	249*,** (4.2)	256*,** (3.2)	261** (4.2)	259*,** (1.8)
Boston	279* (1.3)	277* (3.3)	279* (3.9)	275* (2.3)	284* (4.3)	282 * (2.5)
Charlotte	283* (0.9)	276* (2)	280* (2.4)	284* (2.4)	286* (1.7)	286* (1.9)
Chicago	264*,** (1.4)	261*,** (1.9)	259*,** (2.5)	263*,** (2.1)	264*,** (1.8)	268*,** (1.6)
Cleveland	256*,** (1)	256*,** (3.3)	245*,** (5.5)	258*,** (3.9)	254*,** (4.8)	261*,** (1.9)
Detroit	238*,** (2.7)	240*,** (4.4)	222*,** (7.1)	237*,** (2.9)	235*,** (5.1)	247*,** (2.5)
District of Columbia	251*,** (1.3)	252*,** (1.7)	238*,** (1.8)	249*,** (2.1)	255*,** (3)	256*,** (1.6)
Fresno	258*,** (1.2)	262*,** (3)	247*,** (5.1)	256*,** (3)	254*,** (3.3)	265*,** (1.7)
Houston	277*,** (1.2)	276 (2.7)	276* (2.9)	275 (2.6)	277 (2.9)	278** (1.8)
Jefferson County	271** (0.9)	267** (1.6)	265** (1.2)	270** (1.6)	272** (2)	277** (1.5)
Los Angeles	258*,** (1)	261*,** (2)	246*,** (2.7)	257*,** (1.5)	255*,** (1.3)	266*,** (1.7)
Miami-Dade County	273** (1.1)	268** (1.9)	269** (1.7)	271** (2.2)	274** (2.7)	278** (1.9)
Milwaukee	251*,** (1.5)	255*,** (2.1)	243*,** (4)	251*,** (2.9)	250*,** (2.8)	254*,** (2.3)
New York City	273** (1.5)	270** (1.9)	270** (2.5)	271** (1.7)	269** (2.2)	279** (1.7)
Philadelphia	265*,** (2)	261*,** (2.8)	259** (3.8)	264** (2.5)	267** (4.5)	268*,** (2.8)
San Diego	280* (2)	278* (2.8)	272 (3.2)	278 (3.7)	273** (3)	290* (2.6)

***Significantly different (p < .05) from large city**
****Significantly different (p < .05) from national public**

Appendix C. Average Scores Adjusted for Relevant Background Variables, by District: 2009

TABLE C1. AVERAGE SCALE SCORES OF PUBLIC SCHOOL STUDENTS, ADJUSTED FOR RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 4 NAEP READING ASSESSMENT, BY DISTRICT

City/ jurisdiction	Boston	Miami-Dade	New York City	Austin	Charlotte	Houston	Atlanta	San Diego	Jefferson County	Baltimore	Chicago	District of Columbia	Los Angeles	Milwaukee	Fresno	Philadelphia	Cleveland	Detroit
Boston	217 (1.2)	=	=	=	=	>	>	>	>	>	>	>	>	>	>	>	>	>
Miami-Dade		217 (0.9)	=	=	=	>	>	>	>	>	>	>	>	>	>	>	>	>
New York City			216 (1.2)	=	=	=	>	>	>	>	>	>	>	>	>	>	>	>
Austin				215 (1.7)	=	=	>	>	>	>	>	>	>	>	>	>	>	>
Charlotte					215 (1.2)	=	>	>	>	>	>	>	>	>	>	>	>	>
Houston						213 (1.3)	=	>	>	>	>	>	>	>	>	>	>	>
Atlanta							210 (1.5)	=	=	>	>	>	>	>	>	>	>	>
San Diego								209 (1.5)	=	=	>	>	>	>	>	>	>	>
Jefferson County									208 (1.4)	=	=	>	>	>	>	>	>	>
Baltimore										204 (1.6)	=	=	=	>	>	>	>	>
Chicago											204 (1.2)	=	=	>	>	>	>	>
District of Columbia												203 (1.2)	=	>	>	>	>	>
Los Angeles													202 (0.9)	>	>	>	>	>
Milwaukee														198 (1.7)	=	=	=	=
Fresno															198 (1.4)	=	=	>
Philadelphia																196 (1.6)	=	=
Cleveland																	196 (2.0)	=
Detroit																		193 (1.8)

TABLE C2. AVERAGE SCALE SCORES OF PUBLIC SCHOOL STUDENTS, ADJUSTED FOR RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 8 NAEP READING ASSESSMENT, BY DISTRICT

City/ jurisdiction	Miami-Dade	Boston	Austin	Atlanta	Charlotte	Houston	Chicago	New York City	San Diego	Philadelphia	Baltimore	Los Angeles	Cleveland	Jefferson County	Milwaukee	District of Columbia	Fresno	Detroit
Miami-Dade	258 (1.2)	=	=	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>
Boston		257 (1.5)	=	=	>	>	>	>	>	>	>	>	>	>	>	>	>	>
Austin			256 (1.9)	=	=	=	=	>	>	>	>	>	>	>	>	>	>	>
Atlanta				253 (1.5)	=	=	=	=	=	=	=	>	>	>	>	>	>	>
Charlotte					253 (1.0)	=	=	=	=	=	>	>	>	>	>	>	>	>
Houston						252 (0.9)	=	=	=	=	>	>	>	>	>	>	>	>
Chicago							252 (1.3)	=	=	=	=	=	=	>	>	>	>	>
New York City								250 (1.1)	=	=	=	=	=	=	=	>	>	>
San Diego									249 (2.2)	=	=	=	=	=	=	>	=	>
Philadelphia										249 (1.9)	=	=	=	=	=	>	=	>
Baltimore											248 (1.5)	=	=	=	=	>	=	>
Los Angeles												248 (0.9)	=	=	=	>	>	>
Cleveland													248 (1.5)	=	=	>	=	>
Jefferson County														247 (1.0)	=	>	=	>
Milwaukee															246 (1.6)	=	=	>
District of Columbia																243 (1.4)	=	=
Fresno																	242 (2.4)	=
Detroit																		240 (1.9)

TABLE C3. AVERAGE SCALE SCORES OF PUBLIC SCHOOL STUDENTS, ADJUSTED FOR RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 4 NAEP MATHEMATICS ASSESSMENT, BY DISTRICT

City/ jurisdiction	Houston	Austin	Boston	Charlotte	New York City	Miami-Dade	San Diego	Atlanta	Baltimore	Philadelphia	Jefferson County	Chicago	District of Columbia	Los Angeles	Milwaukee	Cleveland	Fresno	Detroit
Houston	239 (1.1)	=	=	=	=	>	>	>	>	>	>	>	>	>	>	>	>	>
Austin		238 (0.9)	=	=	=	>	>	>	>	>	>	>	>	>	>	>	>	>
Boston			238 (0.7)	=	=	>	>	>	>	>	>	>	>	>	>	>	>	>
Charlotte				237 (0.8)	=	>	>	>	>	>	>	>	>	>	>	>	>	>
New York City					236 (0.8)	>	>	>	>	>	>	>	>	>	>	>	>	>
Miami-Dade						233 (0.9)	=	>	>	>	>	>	>	>	>	>	>	>
San Diego							231 (1.1)	=	=	>	>	>	>	>	>	>	>	>
Atlanta								228 (0.7)	=	>	>	>	>	>	>	>	>	>
Baltimore									228 (1.0)	>	>	>	>	>	>	>	>	>
Philadelphia										224 (1.2)	=	=	=	=	=	>	>	>
Jefferson County											224 (1.3)	=	=	=	=	>	>	>
Chicago												224 (1.0)	=	=	=	>	>	>
District of Columbia													224 (0.7)	=	=	>	>	>
Los Angeles														223 (1.0)	=	>	>	>
Milwaukee															222 (1.3)	=	>	>
Cleveland																219 (1.0)	=	>
Fresno																	217 (1.3)	>
Detroit																		207 (1.7)

TABLE C4. AVERAGE SCALE SCORES OF PUBLIC SCHOOL STUDENTS, ADJUSTED FOR RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 8 NAEP MATHEMATICS ASSESSMENT, BY DISTRICT

City/ jurisdiction	Austin	Boston	Houston	Charlotte	Miami-Dade	New York City	San Diego	Chicago	Philadelphia	Atlanta	Cleveland	Baltimore	Los Angeles	Jefferson County	District of Columbia	Milwaukee	Fresno	Detroit
Austin	282 (0.9)	=	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>
Boston		279 (1.3)	=	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>
Houston			278 (0.9)	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>
Charlotte				276 (0.8)	>	>	>	>	>	>	>	>	>	>	>	>	>	>
Miami-Dade					271 (1.0)	=	=	>	>	>	>	>	>	>	>	>	>	>
New York City						270 (1.2)	=	=	=	=	>	>	>	>	>	>	>	>
San Diego							269 (1.6)	=	=	=	>	>	>	>	>	>	>	>
Chicago								267 (1.1)	=	=	=	=	>	>	>	>	>	>
Philadelphia									267 (1.4)	=	=	=	>	>	>	>	>	>
Atlanta										266 (1.5)	=	=	>	>	>	>	>	>
Cleveland											265 (1.0)	=	>	>	>	>	>	>
Baltimore												264 (1.5)	=	>	>	>	>	>
Los Angeles													261 (0.8)	=	=	>	>	>
Jefferson County														260 (0.8)	=	=	=	>
District of Columbia															259 (1.2)	=	=	>
Milwaukee																258 (1.2)	=	>
Fresno																	257 (1.1)	>
Detroit																		249 (2.4)

Appendix D. Average Expected Scores Based on Relevant Background Variables and District Effects, by District: 2009

TABLE D1. AVERAGE EXPECTED SCALE SCORES OF PUBLIC SCHOOL STUDENTS, BASED ON RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 4 NAEP READING, BY DISTRICT

City/jurisdiction	Mean	Expected mean	District effect
Atlanta	209.1	208.2	0.9
Austin	220.4	213.9	6.5*
Baltimore City	202.0	206.3	-4.3*
Boston	215.0	206.4	8.6*
Charlotte	224.4	218.2	6.2*
Chicago	202.2	206.8	-4.6*
Cleveland	193.6	206.1	-12.4*
Detroit	187.2	203.1	-15.9*
District of Columbia	203.5	209.4	-5.9*
Fresno	197.3	208.3	-11.0*
Houston	211.4	206.7	4.7*
Jefferson County	219.4	220.4	-1.0
Los Angeles	197.4	203.7	-6.3*
Miami-Dade County	221.2	213.0	8.1*
Milwaukee	195.8	206.6	-10.8*
New York City	216.8	209.6	7.2*
Philadelphia	195.0	207.1	-12.1*
San Diego	212.8	212.6	0.2

Note. District effect is the difference between district mean and expected district mean.
* District effect is significantly different from zero

TABLE D2. AVERAGE EXPECTED SCALE SCORES OF PUBLIC SCHOOL STUDENTS, BASED ON RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 8 NAEP READING, BY DISTRICT

City/jurisdiction	Mean	Expected mean	District effect
Atlanta	249.7	246.9	2.8
Austin	261.1	254.9	6.1*
Baltimore City	244.6	246.5	-1.9
Boston	257.3	250.7	6.6*
Charlotte	259.3	256.8	2.5*
Chicago	249.1	247.7	1.5
Cleveland	242.3	244.4	-2.1
Detroit	232.2	242.8	-10.7*
District of Columbia	240.3	247.6	-7.3*
Fresno	239.6	247.8	-8.1*
Houston	251.9	249.6	2.2*
Jefferson County	258.5	261.4	-2.9*
Los Angeles	243.8	245.7	-1.9*
Miami-Dade County	260.6	253.1	7.5*
Milwaukee	241.4	245.9	-4.6*
New York City	252.4	252.8	-0.4
Philadelphia	247.0	248.3	-1.3
San Diego	254.4	255.6	-1.2

Note. District effect is the difference between district mean and expected district mean.
* District effect is significantly different from zero

TABLE D3. AVERAGE EXPECTED SCALE SCORES OF PUBLIC SCHOOL STUDENTS, BASED ON RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 4 NAEP MATHEMATICS, BY DISTRICT

City/jurisdiction	Mean	Expected mean	District effect
Atlanta	225.2	226.6	-1.4
Austin	240.5	232.1	8.3*
Baltimore City	222.2	223.8	-1.6
Boston	236.3	228.1	8.2*
Charlotte	244.7	237.4	7.3*
Chicago	221.9	227.6	-5.7*
Cleveland	213.4	223.9	-10.5*
Detroit	199.8	222.5	-22.7*
District of Columbia	220.0	226.0	-6.0*
Fresno	218.9	231.2	-12.3*
Houston	235.8	226.5	9.3*
Jefferson County	232.7	238.0	-5.3*
Los Angeles	221.9	228.1	-6.2*
Miami-Dade County	236.3	232.7	3.6*
Milwaukee	219.7	227.0	-7.3*
New York City	237.5	230.6	6.9*
Philadelphia	221.5	226.6	-5.1*
San Diego	236.3	235.4	0.9

Note. District effect is the difference between district mean and expected district mean.
* District effect is significantly different from zero

TABLE D4. AVERAGE EXPECTED SCALE SCORES OF PUBLIC SCHOOL STUDENTS, BASED ON RELEVANT BACKGROUND VARIABLES, IN 2009 GRADE 8 NAEP MATHEMATICS, BY DISTRICT

City/jurisdiction	Mean	Expected mean	District effect
Atlanta	259.4	260.5	-1.1
Austin	287.2	272.8	14.4*
Baltimore City	257.1	260.1	-3.0
Boston	279.4	267.3	12.1*
Charlotte	282.4	274.0	8.4*
Chicago	263.6	263.6	0.0
Cleveland	255.7	258.3	-2.6*
Detroit	238.1	256.4	-18.3*
District of Columbia	251.1	259.4	-8.4*
Fresno	258.3	268.3	-9.9*
Houston	276.9	265.8	11.1*
Jefferson County	271.1	278.2	-7.1*
Los Angeles	258.4	264.5	-6.1*
Miami-Dade County	272.7	269.1	3.6*
Milwaukee	251.2	260.8	-9.5*
New York City	272.8	270.1	2.7*
Philadelphia	264.5	265.0	-0.5
San Diego	280.1	278.1	2.0

Note. District effect is the difference between district mean and expected district mean.
* District effect is significantly different from zero

Appendix E. Average Scores Expressed in Percentiles, by Subscale and District: 2009

TABLE E1. AVERAGE SUBSCALE AND COMPOSITE SCALE SCORES EXPRESSED IN PERCENTILES ON THE NATIONAL PUBLIC SCORE DISTRIBUTION FOR 2009 GRADE 4 NAEP READING ASSESSMENT, BY DISTRICT

City/jurisdiction	Composite	Literary	Information
Atlanta	34	36	33
Austin	46	46	47
Baltimore City	28	28	27
Boston	40	43	38
Charlotte	51	51	51
Chicago	28	29	28
Cleveland	21	21	22
Detroit	16	18	16
District of Columbia	29	31	28
Fresno	23	27	21
Houston	36	38	36
Jefferson County	45	44	47
Los Angeles	24	25	23
Miami-Dade County	47	48	47
Milwaukee	22	24	22
New York City	42	44	42
Philadelphia	22	24	21
San Diego	38	39	38

TABLE E2. AVERAGE SUBSCALE AND COMPOSITE SCALE SCORES EXPRESSED IN PERCENTILES ON THE NATIONAL PUBLIC SCORE DISTRIBUTION FOR 2009 GRADE 8 NAEP READING ASSESSMENT, BY DISTRICT

City/jurisdiction	Composite	Literary	Information
Atlanta	33	32	35
Austin	46	45	46
Baltimore City	28	28	29
Boston	41	42	41
Charlotte	44	44	43
Chicago	32	34	32
Cleveland	26	27	26
Detroit	18	21	17
District of Columbia	24	25	25
Fresno	23	25	23
Houston	35	36	35
Jefferson County	42	40	45
Los Angeles	27	28	27
Miami-Dade County	45	46	44
Milwaukee	25	27	25
New York City	36	36	36
Philadelphia	30	32	29
San Diego	38	38	39

TABLE E3. AVERAGE SUBSCALE AND COMPOSITE SCALE SCORES EXPRESSED IN PERCENTILES ON THE NATIONAL PUBLIC SCORE DISTRIBUTION FOR 2009 GRADE 4 NAEP MATHEMATICS ASSESSMENT, BY DISTRICT

City/jurisdiction	Composite	Number	Measure	Geometry	Data	Algebra
Atlanta	30	32	30	33	27	33
Austin	50	51	50	48	46	48
Baltimore	27	29	22	30	34	28
Boston	44	46	44	50	38	38
Charlotte	56	57	49	56	60	60
Chicago	27	26	30	30	28	25
Cleveland	18	18	20	24	20	21
Detroit	9	9	10	13	11	12
District of Columbia	24	25	24	25	28	29
Fresno	23	29	19	24	22	24
Houston	44	44	47	38	40	44
Jefferson	40	36	42	48	43	39
Los Angeles	26	30	23	25	25	29
Miami-Dade County	44	41	44	48	51	46
Milwaukee	24	24	26	29	27	26
New York City	46	48	46	45	42	44
Philadelphia	26	29	28	25	24	26
San Diego	44	45	43	51	41	42

TABLE E4. AVERAGE SUBSCALE AND COMPOSITE SCALE SCORES EXPRESSED IN PERCENTILES ON THE NATIONAL PUBLIC SCORE DISTRIBUTION FOR 2009 GRADE 8 NAEP MATHEMATICS ASSESSMENT, BY DISTRICT

City/jurisdiction	Composite	Number	Measure	Geometry	Data	Algebra
Atlanta	26	26	23	29	28	29
Austin	55	51	59	61	53	50
Baltimore	24	26	26	25	29	23
Boston	47	46	49	45	49	45
Charlotte	50	45	49	55	50	48
Chicago	30	30	33	31	31	30
Cleveland	23	26	23	26	23	24
Detroit	12	14	12	12	12	14
District of Columbia	20	23	19	19	24	20
Fresno	25	31	25	24	23	27
Houston	43	45	47	45	43	40
Jefferson	38	36	37	39	38	39
Los Angeles	25	30	23	25	24	28
Miami-Dade County	40	36	41	40	40	40
Milwaukee	20	24	22	21	21	19
New York City	40	38	41	40	36	42
Philadelphia	31	30	33	33	34	30
San Diego	47	48	43	48	39	53

Appendix F. Average Percentage Correct and Omission Rates by District: 2009

TABLES F1. AVERAGE PERCENTAGE CORRECT AND OMISSION-RATES IN 2009 GRADE 4 NAEP READING ASSESSMENT BY SUBSCALE AND ITEM TYPE

	Percentage correct						Omission rate					
		Subscale		Item type				Subscale		Item type		
City/jurisdiction	Overall	Literary	Informational	MC	SCR	ECR	Overall	Literary	Informational	MC	SCR	ECR
National Public	55	55	55	61	47	40	1.7	1.7	1.8	0.6	2.8	5.6
Large City	50	50	49	55	42	36	2.2	2.2	2.1	0.8	3.6	6.4
Atlanta	49	51	47	55	41	35	1.8	1.8	1.9	0.7	3.3	4.9
Austin	57	58	56	65	47	40	2.9	2.9	2.9	1.2	4.7	7.9
Baltimore	45	46	45	50	41	31	2.6	2.7	2.5	1.2	3.9	7.5
Boston	53	54	52	58	47	38	2.5	2.4	2.5	0.9	4.2	7.5
Charlotte	59	59	59	65	50	43	1.7	1.4	2.0	0.9	2.2	5.1
Chicago	46	46	46	51	40	34	2.3	2.2	2.3	0.9	3.8	6.3
Cleveland	42	41	43	47	37	27	2.6	2.3	2.9	1.0	4.1	8.5
Detroit	38	38	39	43	32	25	2.7	2.6	2.8	0.8	4.4	9.4
District of Columbia	47	48	46	52	41	34	1.9	2.0	1.9	1.0	2.9	5.0
Fresno	43	44	43	49	35	30	2.5	2.4	2.6	0.5	4.7	8.7
Houston	51	52	50	58	42	34	2.1	2.1	2.0	0.7	3.5	6.3
Jefferson County	54	54	55	60	47	40	1.2	1.1	1.4	0.6	1.9	3.1
Los Angeles	44	45	44	49	38	30	2.3	2.3	2.4	0.7	4.1	7.2
Miami-Dade County	55	55	56	61	48	40	1.9	1.9	2.0	0.5	3.3	6.8
Milwaukee	41	42	41	46	34	30	1.9	1.8	2.1	0.6	3.4	6.0
New York City	53	53	53	57	48	42	1.9	2.0	1.7	0.8	3.2	4.8
Philadelphia	42	43	41	48	35	28	2.7	2.7	2.8	1.2	4.4	7.8
San Diego	53	53	52	58	45	39	2.3	2.5	2.2	0.6	4.2	7.4

Note. MC= Multiple-choice, SCR= Short constructed response, ECR = Extended constructed response.

TABLES F2. AVERAGE PERCENTAGE CORRECT AND OMISSION-RATES IN 2009 GRADE 8 NAEP READING ASSESSMENT BY SUBSCALE AND ITEM TYPE

	Percentage correct						Omission rate					
		Subscale		Item type				Subscale		Item type		
City/jurisdiction	Overall	Literary	Informational	MC	SCR	ECR	Overall	Literary	Informational	MC	SCR	ECR
National Public	64	64	64	71	55	51	1.5	1.9	1.3	0.3	2.6	5.4
Large City	59	59	59	66	50	46	2.4	2.9	2.0	0.4	4.3	8.1
Atlanta	57	55	58	64	48	41	2.4	2.9	1.9	0.4	3.9	9.3
Austin	65	63	66	73	54	49	2.4	2.9	2.0	0.8	3.9	7.6
Baltimore	56	56	56	61	50	41	3.8	4.7	3.0	0.7	6.5	13.0
Boston	62	62	61	68	55	46	3.3	4.0	2.7	0.6	6.1	10.9
Charlotte	62	62	63	69	53	47	1.8	2.5	1.2	0.5	2.9	6.1
Chicago	58	58	57	63	50	47	2.0	2.6	1.5	0.2	4.0	6.3
Cleveland	56	57	55	62	49	40	2.1	2.3	2.0	0.4	3.4	8.5
Detroit	49	48	49	56	40	34	4.2	5.3	3.2	0.5	7.6	15.4
District of Columbia	55	53	56	62	46	40	3.6	4.1	3.1	0.6	6.7	11.8
Fresno	52	52	51	59	44	37	2.2	2.8	1.6	0.3	4.1	7.2
Houston	60	60	59	69	48	42	3.2	3.8	2.7	0.5	5.8	11.2
Jefferson County	64	62	65	71	55	49	1.2	1.7	0.8	0.3	2.1	3.9
Los Angeles	55	55	56	61	47	44	2.2	2.7	1.8	0.4	4.1	7.2
Miami-Dade County	63	62	64	70	55	47	2.5	3.1	2.0	0.3	4.2	10.5
Milwaukee	53	53	54	61	45	38	1.9	2.5	1.4	0.2	3.7	6.3
New York City	60	59	60	65	53	48	3.3	4.4	2.4	0.6	5.8	11.2
Philadelphia	56	56	57	63	48	42	3.2	4.1	2.5	0.6	5.7	10.7
San Diego	62	60	63	68	53	49	1.7	2.0	1.4	0.3	2.8	6.1

Note. MC= Multiple-choice, SCR= Short constructed response, ECR = Extended constructed response

TABLES F3.A. AVERAGE PERCENTAGE CORRECT RATES IN 2009 GRADE 4 NAEP MATHEMATICS ASSESSMENT BY SUBSCALE, ITEM TYPE AND MATHEMATICAL COMPLEXITY

Percentage correct												
		Subscale					Item type			Mathematical Complexity		
City/jurisdiction	Overall	Numbers	Measurement	Geometry	Data	Algebra	MC	SCR	ECR	Low	Moderate	High
National Public	54	52	54	60	56	51	58	46	33	62	45	27
Large City	49	48	50	56	50	47	54	41	28	58	41	23
Atlanta	46	44	46	55	45	44	51	36	26	55	37	22
Austin	56	54	56	62	55	52	60	48	33	64	48	29
Baltimore	44	42	40	53	49	41	50	34	21	54	33	17
Boston	51	50	53	62	48	47	56	45	28	59	44	24
Charlotte	58	56	55	63	61	57	62	50	38	66	49	31
Chicago	43	41	46	51	45	39	48	35	23	52	35	18
Cleveland	39	35	39	48	40	36	44	29	20	47	31	16
Detroit	32	29	34	41	32	31	38	22	14	40	25	11
District of Columbia	43	41	43	50	46	42	49	34	23	52	35	19
Fresno	43	42	41	50	42	40	49	32	20	52	33	17
Houston	52	50	54	58	51	49	58	42	27	62	43	22
Jefferson County	50	47	51	59	53	47	54	44	28	57	43	24
Los Angeles	44	44	43	50	45	43	50	34	23	53	36	20
Miami-Dade County	53	48	54	61	60	51	59	43	30	63	44	23
Milwaukee	42	39	42	51	44	41	47	35	22	50	34	19
New York City	52	52	52	59	52	48	57	45	31	61	43	28
Philadelphia	43	42	43	50	42	40	48	34	21	52	34	20
San Diego	53	51	54	61	53	50	58	46	32	62	45	26

Note. MC= Multiple-choice, SCR= Short constructed response, ECR = Extended constructed response.

TABLES F3.B. AVERAGE PERCENTAGE OMISSION-RATES IN 2009 GRADE 4 NAEP MATHEMATICS ASSESSMENT BY SUBSCALE, ITEM TYPE AND MATHEMATICAL COMPLEXITY

Omission rate												
		Subscale					Item type			Mathematical Complexity		
City/jurisdiction	Overall	Numbers	Measurement	Geometry	Data	Algebra	MC	SCR	ECR	Low	Moderate	High
National Public	1.8	1.9	1.5	1.9	1.3	2.1	1.5	2.0	4.4	1.6	1.8	3.1
Large City	2.0	2.1	1.7	2.3	1.6	2.5	1.6	2.5	5.4	1.8	2.1	3.8
Atlanta	2.0	2.3	1.6	2.2	1.6	2.0	1.6	2.6	4.8	1.9	2.0	3.5
Austin	1.9	1.8	1.7	1.9	1.4	2.7	1.6	1.8	5.7	1.7	1.9	4.0
Baltimore	2.4	2.7	2.0	2.6	1.8	2.5	1.9	3.0	5.9	2.2	2.3	5.0
Boston	2.5	2.9	1.9	1.9	2.1	3.2	2.2	2.4	8.1	2.4	2.3	5.6
Charlotte	1.7	1.8	1.6	1.7	1.4	2.0	1.6	1.5	4.7	1.6	1.7	2.9
Chicago	2.3	2.3	1.8	2.9	1.7	2.7	1.7	3.2	4.5	2.1	2.2	4.0
Cleveland	2.6	2.5	2.1	3.0	2.3	3.1	1.7	4.0	5.8	2.2	2.7	5.2
Detroit	3.2	3.3	3.0	4.2	2.6	3.0	2.8	4.3	4.6	3.4	2.9	4.6
District of Columbia	2.6	2.9	2.1	3.0	1.9	3.0	2.0	3.5	7.2	2.4	2.6	4.9
Fresno	2.5	2.6	2.2	2.5	2.5	3.1	1.9	3.4	6.3	2.3	2.5	5.0
Houston	1.6	1.7	1.3	1.8	1.1	1.9	1.2	1.9	6.1	1.4	1.5	4.4
Jefferson County	1.8	2.1	1.4	1.8	1.4	2.0	1.4	2.1	6.0	1.6	1.9	3.5
Los Angeles	2.2	2.2	1.7	2.6	1.4	2.8	1.4	2.9	8.4	1.8	2.2	5.4
Miami-Dade County	1.4	1.6	1.2	1.6	1.0	1.6	1.0	2.1	3.5	1.3	1.5	2.9
Milwaukee	2.1	2.3	1.8	2.5	1.8	2.2	1.8	2.4	5.0	2.1	2.0	3.7
New York City	1.8	1.9	1.6	2.1	1.3	2.2	1.5	2.2	4.2	1.6	2.0	2.8
Philadelphia	2.8	2.7	2.3	3.1	2.3	3.4	2.1	3.9	6.5	2.6	2.7	5.0
San Diego	2.0	2.3	1.5	2.0	1.5	2.3	1.6	2.5	5.6	1.8	2.1	3.9

Note. MC= Multiple-choice, SCR= Short constructed response, ECR = Extended constructed response.

TABLES F4.A. AVERAGE PERCENTAGE CORRECT RATES IN 2009 GRADE 8 NAEP MATHEMATICS ASSESSMENT BY SUBSCALE, ITEM TYPE AND MATHEMATICAL COMPLEXITY

Percentage correct												
		Subscale					Item type			Mathematical Complexity		
City/jurisdiction	Overall	Numbers	Measurement	Geometry	Data	Algebra	MC	SCR	ECR	Low	Moderate	High
National Public	50	57	50	51	48	45	53	45	31	58	42	28
Large City	45	52	45	47	43	41	48	39	26	53	37	23
Atlanta	39	45	36	42	39	36	43	33	20	48	31	17
Austin	54	60	56	57	51	47	58	45	31	62	46	28
Baltimore	38	45	36	39	38	33	41	32	18	47	29	17
Boston	50	56	50	50	49	46	52	44	31	57	43	25
Charlotte	51	57	50	55	50	46	54	46	29	59	42	25
Chicago	41	47	41	43	39	36	43	36	23	48	33	20
Cleveland	37	44	36	41	37	33	40	32	21	45	30	16
Detroit	30	36	29	32	28	28	33	24	17	37	24	14
District of Columbia	36	44	35	36	37	33	39	31	20	43	30	17
Fresno	39	48	38	40	34	36	42	33	21	46	32	18
Houston	48	57	49	50	46	42	52	40	25	57	40	22
Jefferson County	44	51	44	46	42	40	46	40	30	52	37	25
Los Angeles	39	47	36	39	35	36	41	33	21	46	32	18
Miami-Dade County	45	51	45	48	44	41	49	39	25	54	37	22
Milwaukee	35	42	35	38	33	30	37	31	20	42	28	16
New York City	46	53	46	48	42	42	49	42	28	55	38	24
Philadelphia	42	47	41	45	41	37	44	36	23	49	34	18
San Diego	49	57	49	49	45	47	52	44	29	57	42	28

Note. MC= Multiple-choice, SCR= Short constructed response, ECR = Extended constructed response.

TABLES F4.B. AVERAGE PERCENTAGE OMISSION-RATES IN 2009 GRADE 8 NAEP MATHEMATICS ASSESSMENT BY SUBSCALE, ITEM TYPE AND MATHEMATICAL COMPLEXITY

Omission rate												
		Subscale					Item type			Mathematical Complexity		
State/jurisdiction	Overall	Numbers	Measurement	Geometry	Data	Algebra	MC	SCR	ECR	Low	Moderate	High
National Public	2.0	2.3	1.8	1.6	2.2	2.2	1.1	4.0	6.3	1.5	2.4	6.1
Large City	2.9	3.3	2.5	2.4	3.5	3.0	1.4	6.0	10.5	2.0	3.5	9.1
Atlanta	3.6	4.4	3.5	2.8	3.9	3.7	1.8	7.1	14.4	2.4	4.4	12.3
Austin	3.4	3.7	2.8	2.9	3.2	4.2	2.3	5.5	10.5	2.6	3.9	8.6
Baltimore	4.4	4.7	3.5	3.6	5.2	4.9	1.8	10.0	16.4	3.0	5.2	15.4
Boston	4.7	5.6	4.0	3.7	4.8	5.2	3.1	7.7	14.3	3.6	5.3	13.5
Charlotte	2.2	2.2	2.1	1.6	2.8	2.4	1.3	3.9	9.0	1.5	2.7	7.0
Chicago	2.5	3.2	2.1	1.9	3.0	2.7	1.0	6.0	10.0	1.7	3.1	8.5
Cleveland	3.2	3.6	2.5	2.3	4.0	3.6	1.5	6.6	11.7	2.2	3.6	11.4
Detroit	5.0	6.0	3.8	4.3	5.9	5.3	2.0	12.2	15.4	3.9	5.7	13.3
District of Columbia	4.3	4.7	3.3	3.9	5.5	4.4	1.9	9.3	16.6	3.2	4.8	15.3
Fresno	2.6	2.8	2.0	2.3	3.2	2.9	1.3	5.4	10.3	1.8	3.2	7.6
Houston	3.2	3.6	2.5	2.6	3.3	3.7	1.8	5.7	13.0	2.2	3.7	11.8
Jefferson County	1.9	2.4	1.6	1.2	2.4	2.2	0.9	4.2	7.3	1.3	2.4	5.5
Los Angeles	3.0	3.3	2.3	2.6	4.0	3.1	1.1	7.2	12.6	1.8	3.9	10.1
Miami-Dade County	2.7	3.4	2.0	2.0	4.1	2.4	1.0	6.2	11.5	1.6	3.4	9.0
Milwaukee	2.4	3.0	1.6	1.7	3.1	2.9	0.9	6.1	8.6	1.6	3.0	7.4
New York City	3.6	4.3	3.2	2.9	4.6	3.6	1.9	7.6	11.6	2.6	4.3	11.1
Philadelphia	4.1	4.7	3.7	3.1	4.7	4.5	2.3	7.6	14.6	3.1	4.5	14.4
San Diego	2.6	2.7	2.4	2.4	3.0	2.6	1.5	4.7	9.9	1.9	2.9	8.8

Note. MC= Multiple-choice, SCR= Short constructed response, ECR = Extended constructed response.

Appendix G. Characteristics of Differentially Difficult Items by District: 2009

TABLE G1. CHARACTERISTICS OF THE TOP FIVE DIFFERENTIALLY MOST DIFFICULT ITEMS IN 2009 GRADE 4 NAEP READING ASSESSMENT, BY DISTRICT

					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Atlanta	1	SCR	Informational	Integrate/Interpret	41	32	24
	2	MC	Informational	Integrate/Interpret	74	64	58
	3	MC	Literary	Integrate/Interpret	67	60	51
	4	MC	Informational	Integrate/Interpret	78	70	63
	5	MC	Informational	Locate/Recall	76	66	56
Austin	1	MC	Literary	Critique/Evaluate	39	39	29
	2	SCR	Literary	Critique/Evaluate	55	48	49
	3	MC	Informational	Integrate/Interpret	74	64	62
	4	MC	Informational	Integrate/Interpret	73	64	62
	5	MC	Literary	Integrate/Interpret	76	73	66
Baltimore	1	SCR	Informational	Critique/Evaluate	45	38	23
	2	MC	Literary	Integrate/Interpret	57	50	32
	3	MC	Informational	Integrate/Interpret	78	70	58
	4	MC	Literary	Locate/Recall	62	54	38
	5	MC	Literary	Locate/Recall	50	43	27
Boston	1	MC	Informational	Integrate/Interpret	64	60	48
	2	MC	Informational	Integrate/Interpret	73	66	61
	3	MC	Informational	Integrate/Interpret	78	70	67
	4	MC	Literary	Locate/Recall	50	43	35
	5	MC	Informational	Locate/Recall	60	54	49
Charlotte	1	SCR	Literary	Critique/Evaluate	77	74	76
	2	MC	Informational	Integrate/Interpret	73	67	68
	3	MC	Informational	Integrate/Interpret	44	39	39
	4	MC	Literary	Integrate/Interpret	61	56	58
	5	MC	Literary	Integrate/Interpret	49	44	45
Chicago	1	MC	Literary	Critique/Evaluate	61	53	44
	2	SCR	Literary	Integrate/Interpret	49	43	30
	3	MC	Literary	Integrate/Interpret	64	52	47
	4	MC	Literary	Locate/Recall	59	50	42

	5	MC	Informational	Locate/Recall	43	35	27
Cleveland	1	MC	Literary	Integrate/Interpret	63	55	38
	2	MC	Literary	Integrate/Interpret	71	67	48
	3	MC	Literary	Locate/Recall	62	54	32
	4	MC	Informational	Locate/Recall	76	66	52
	5	MC	Literary	Locate/Recall	50	43	26
Detroit	1	MC	Literary	Critique/Evaluate	58	54	25
	2	MC	Literary	Critique/Evaluate	61	53	29
	3	MC	Informational	Integrate/Interpret	78	70	41
	4	SCR	Informational	Integrate/Interpret	65	58	28
	5	MC	Informational	Locate/Recall	76	66	41
District of Columbia	1	SCR	Informational	Integrate/Interpret	65	58	46
	2	MC	Informational	Locate/Recall	43	35	20
	3	MC	Informational	Locate/Recall	66	60	44
	4	MC	Informational	Locate/Recall	50	44	31
	5	MC	Literary	Locate/Recall	50	43	33
					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Fresno	1	MC	Informational	Integrate/Interpret	78	70	53
	2	SCR	Literary	Integrate/Interpret	62	57	38
	3	MC	Literary	Integrate/Interpret	57	50	34
	4	MC	Literary	Integrate/Interpret	63	55	39
	5	MC	Informational	Integrate/Interpret	76	68	52
Houston	1	MC	Informational	Integrate/Interpret	74	64	61
	2	MC	Literary	Integrate/Interpret	61	56	47
	3	SCR	Literary	Integrate/Interpret	62	57	49
	4	MC	Informational	Integrate/Interpret	73	66	61
	5	MC	Informational	Integrate/Interpret	63	55	51
Jefferson	1	SCR	Informational	Critique/Evaluate	45	38	37
	2	MC	Literary	Integrate/Interpret	47	39	32
	3	SCR	Literary	Integrate/Interpret	32	29	21
	4	MC	Informational	Integrate/Interpret	61	58	52

	5	MC	Informational	Integrate/Interpret	78	70	71
Los Angeles	1	SCR	Informational	Integrate/Interpret	41	32	18
	2	MC	Informational	Integrate/Interpret	70	64	46
	3	MC	Informational	Integrate/Interpret	73	64	53
	4	MC	Informational	Locate/Recall	70	61	48
	5	MC	Informational	Locate/Recall	50	44	30
Miami-Dade County	1	MC	Literary	Integrate/Interpret	65	61	58
	2	MC	Informational	Integrate/Interpret	63	55	57
	3	MC	Literary	Integrate/Interpret	77	71	71
	4	MC	Literary	Locate/Recall	59	50	51
	5	MC	Informational	Locate/Recall	66	60	60
Milwaukee	1	MC	Informational	Integrate/Interpret	73	64	41
	2	MC	Informational	Integrate/Interpret	78	70	49
	3	MC	Literary	Locate/Recall	59	50	31
	4	MC	Informational	Locate/Recall	50	44	24
	5	MC	Literary	Locate/Recall	58	53	32
New York City	1	MC	Literary	Integrate/Interpret	64	52	42
	2	SCR	Informational	Integrate/Interpret	41	32	31
	3	MC	Informational	Locate/Recall	60	54	46
	4	MC	Literary	Locate/Recall	50	43	40
	5	MC	Informational	Locate/Recall	66	60	56
Philadelphia	1	MC	Literary	Integrate/Interpret	64	52	35
	2	MC	Informational	Integrate/Interpret	74	64	50
	3	MC	Informational	Integrate/Interpret	58	50	34
	4	MC	Informational	Locate/Recall	60	53	32
	5	MC	Informational	Locate/Recall	61	55	37
San Diego	1	MC	Informational	Integrate/Interpret	68	64	54
	2	MC	Informational	Integrate/Interpret	76	68	63
	3	MC	Literary	Integrate/Interpret	49	44	39
	4	MC	Informational	Locate/Recall	50	44	40
	5	MC	Informational	Locate/Recall	43	35	34

TABLE G2. CHARACTERISTICS OF THE TOP FIVE DIFFERENTIALLY MOST DIFFICULT ITEMS IN 2009 GRADE 8 NAEP READING ASSESSMENT, BY DISTRICT

					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Atlanta	1	MC	Literary	Integrate/Interpret	67	60	34
	2	MC	Informational	Locate/Recall	67	61	44
	3	MC	Literary	Integrate/Interpret	53	46	29
	4	SCR	Informational	Critique/Evaluate	74	70	52
	5	MC	Informational	Integrate/Interpret	81	77	61
Austin	1	SCR	Literary	Integrate/Interpret	54	48	43
	2	ECR	Literary	Integrate/Interpret	48	43	38
	3	MC	Literary	Integrate/Interpret	53	46	43
	4	MC	Literary	Integrate/Interpret	81	73	72
	5	SCR	Literary	Integrate/Interpret	70	64	60
Baltimore	1	MC	Informational	Integrate/Interpret	60	53	27
	2	MC	Literary	Integrate/Interpret	67	60	39
	3	MC	Informational	Integrate/Interpret	75	67	52
	4	MC	Informational	Integrate/Interpret	73	65	52
	5	MC	Literary	Integrate/Interpret	53	46	30
Boston	1	MC	Informational	Integrate/Interpret	56	50	37
	2	MC	Literary	Integrate/Interpret	67	60	49
	3	MC	Literary	Integrate/Interpret	81	75	65
	4	MC	Informational	Integrate/Interpret	61	58	46
	5	ECR	Informational	Integrate/Interpret	74	71	60
Charlotte	1	MC	Literary	Locate/Recall	70	64	55
	2	MC	Literary	Critique/Evaluate	86	81	73
	3	MC	Literary	Integrate/Interpret	81	75	70
	4	MC	Informational	Critique/Evaluate	76	72	65
	5	SCR	Informational	Critique/Evaluate	63	62	52
Chicago	1	MC	Informational	Integrate/Interpret	56	50	37
	2	MC	Literary	Integrate/Interpret	53	46	36
	3	MC	Informational	Integrate/Interpret	73	65	57

	4	MC	Literary	Integrate/Interpret	76	70	60
	5	SCR	Literary	Integrate/Interpret	54	48	38
Cleveland	1	MC	Literary	Locate/Recall	63	56	40
	2	MC	Literary	Integrate/Interpret	67	60	47
	3	MC	Informational	Integrate/Interpret	60	53	40
	4	MC	Literary	Locate/Recall	69	67	49
	5	MC	Informational	Integrate/Interpret	69	64	50
Detroit	1	MC	Informational	Integrate/Interpret	73	65	44
	2	MC	Literary	Integrate/Interpret	53	46	22
	3	MC	Informational	Integrate/Interpret	81	77	54
	4	SCR	Literary	Integrate/Interpret	59	53	29
	5	MC	Literary	Integrate/Interpret	76	70	48
District of Columbia	1	MC	Literary	Integrate/Interpret	86	80	63
	2	MC	Informational	Integrate/Interpret	59	55	36
	3	SCR	Literary	Critique/Evaluate	63	56	41
	4	MC	Informational	Integrate/Interpret	73	65	52
	5	ECR	Literary	Integrate/Interpret	61	57	40
					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Fresno	1	MC	Informational	Locate/Recall	67	61	38
	2	MC	Informational	Locate/Recall	72	67	45
	3	MC	Informational	Locate/Recall	72	64	49
	4	ECR	Informational	Critique/Evaluate	57	52	35
	5	MC	Informational	Integrate/Interpret	73	65	52
Houston	1	SCR	Literary	Integrate/Interpret	80	70	64
	2	MC	Informational	Integrate/Interpret	90	84	77
	3	SCR	Literary	Integrate/Interpret	54	48	36
	4	MC	Informational	Integrate/Interpret	79	73	65
	5	MC	Literary	Integrate/Interpret	67	60	52
Jefferson	1	MC	Literary	Locate/Recall	70	64	57
	2	MC	Literary	Integrate/Interpret	77	74	65
	3	MC	Literary	Integrate/Interpret	81	75	70

	4	SCR	Literary	Integrate/Interpret	59	53	49
	5	SCR	Literary	Critique/Evaluate	65	58	56
Los Angeles	1	MC	Literary	Locate/Recall	65	57	44
	2	MC	Informational	Integrate/Interpret	71	63	51
	3	MC	Literary	Integrate/Interpret	61	52	42
	4	MC	Informational	Locate/Recall	67	61	48
	5	MC	Informational	Locate/Recall	63	53	45
Miami-Dade County	1	MC	Informational	Integrate/Interpret	90	84	78
	2	SCR	Literary	Integrate/Interpret	64	56	52
	3	MC	Literary	Integrate/Interpret	60	53	49
	4	MC	Literary	Locate/Recall	53	47	42
	5	MC	Informational	Locate/Recall	72	67	63
Milwaukee	1	MC	Informational	Integrate/Interpret	75	67	49
	2	MC	Informational	Locate/Recall	63	53	39
	3	SCR	Informational	Locate/Recall	66	62	42
	4	MC	Literary	Integrate/Interpret	61	52	38
	5	MC	Informational	Integrate/Interpret	60	53	37
New York City	1	SCR	Literary	Critique/Evaluate	63	56	46
	2	MC	Literary	Integrate/Interpret	67	60	51
	3	MC	Literary	Integrate/Interpret	53	46	38
	4	MC	Literary	Integrate/Interpret	81	75	67
	5	MC	Literary	Locate/Recall	53	47	38
Philadelphia	1	MC	Literary	Integrate/Interpret	61	52	37
	2	SCR	Literary	Integrate/Interpret	58	52	38
	3	SCR	Literary	Critique/Evaluate	65	58	46
	4	MC	Literary	Integrate/Interpret	81	73	63
	5	MC	Informational	Integrate/Interpret	60	53	41
San Diego	1	MC	Informational	Integrate/Interpret	88	84	72
	2	MC	Literary	Locate/Recall	74	70	59
	3	SCR	Literary	Integrate/Interpret	80	70	65
	4	MC	Informational	Integrate/Interpret	75	73	61
	5	MC	Literary	Locate/Recall	70	64	56

TABLE G3. CHARACTERISTICS OF THE TOP FIVE DIFFERENTIALLY MOST DIFFICULT ITEMS IN 2009 GRADE 4 NAEP MATHEMATICS ASSESSMENT, BY DISTRICT

					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Atlanta	1	MC	Data	Use informal probabilistic thinking to describe chance events	78	72	57
	2	MC	Data	Determine a simple probability from a context that includes a picture	81	75	58
	3	MC	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	48	42	29
	4	MC	Numbers	Solve application problems involving numbers and operations	50	44	27
	5	MC	Numbers	Order/compare whole numbers, decimals, or fractions	57	50	37
Austin	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	46	46	27
	2	MC	Algebra	Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.	63	58	45
	3	SCR	Algebra	Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.	60	50	49
	4	ECR	Geometry	Construct geometric figures with vertices at points on a coordinate grid	44	35	29
	5	MC	Algebra	Recognize or describe a relationship in which quantities change proportionally	83	78	73
Baltimore	1	MC	Measurement	Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight	70	59	45
	2	SCR	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	37	28	9
	3	SCR	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	46	39	19
	4	MC	Measurement	Solve problems involving perimeter of plane figures	62	56	36
	5	MC	Numbers	Order/compare whole numbers, decimals, or fractions	57	50	30
Boston	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	73	68	49
	2	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	74	70	57
	3	MC	Data	Use informal probabilistic thinking to describe chance events	78	72	61
	4	MC	Data	Determine a simple probability from a context that includes a picture	81	75	64
	5	MC	Measurement	Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight	70	59	54
Charlotte	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	46	46	42
	2	SCR	Geometry	Identify or describe real-world objects using simple plane figures and simple solid figures	32	29	28
	3	SCR	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	37	28	31
	4	MC	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	28	23	22
	5	MC	Measurement	Solve problems involving perimeter of plane figures	65	61	54
Chicago	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	73	68	52
	2	MC	Numbers	Identify place value and actual value of digits in whole numbers	56	50	34
	3	MC	Data	Read or interpret a single set of data	43	31	19
	4	MC	Data	Solve problems by estimating and computing within a single set of data	78	70	53
	5	MC	Numbers	Order/compare whole numbers, decimals, or fractions	57	50	34

					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Cleveland	1	MC	Data	Read or interpret a single set of data	43	31	13
	2	SCR	Algebra	Recognize, describe, or extend numerical patterns	45	39	17
	3	SCR	Numbers	Use place value to model and describe integers and decimals	69	61	32
	4	SCR	Data	For a given set of data, complete a graph	53	45	24
	5	SCR	Numbers	Represent numbers using models such as base 10 representations, number lines and two-dimensional models	48	42	18
Detroit	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	73	68	36
	2	SCR	Numbers	Use place value to model and describe integers and decimals	69	61	30
	3	MC	Numbers	Compose or decompose whole quantities by place value	73	68	30
	4	SCR	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	46	39	8
	5	MC	Numbers	Order/compare whole numbers, decimals, or fractions	57	50	21
District of Columbia	1	MC	Numbers	Identify odd and even numbers.	73	63	52
	2	MC	Data	Read or interpret a single set of data	43	31	20
	3	SCR	Algebra	Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.	67	59	45
	4	MC	Geometry	Recognize two-dimensional faces of three-dimensional shapes	84	81	63
	5	MC	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	48	42	22
Fresno	1	SCR	Data	For a given set of data, complete a graph	75	64	51
	2	SCR	Algebra	Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.	67	59	41
	3	MC	Data	Solve problems by estimating and computing within a single set of data	78	70	55
	4	SCR	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	46	39	20
	5	MC	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	48	42	24
Houston	1	SCR	Numbers	Explain or justify a mathematical concept or relationship	41	34	24
	2	MC	Numbers	Identify odd and even numbers.	73	63	62
	3	MC	Data	Read or interpret a single set of data	43	31	19
	4	ECR	Geometry	Construct geometric figures with vertices at points on a coordinate grid	44	35	23
	5	MC	Measurement	Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight	70	59	52
Jefferson	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	67	63	48
	2	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	73	68	55
	3	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	79	75	61
	4	MC	Numbers	Multiply whole numbers	49	48	27
	5	MC	Numbers	Divide whole numbers	57	55	39
Los Angeles	1	SCR	Numbers	Use place value to model and describe integers and decimals	69	61	47
	2	SCR	Data	For a given set of data, complete a graph	75	64	47
	3	MC	Geometry	Identify the images resulting from flips (reflections), slides (translations), or turns (rotations)	74	67	53

	4	SCR	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	37	28	15
	5	SCR	Numbers	Solve application problems involving numbers and operations	59	52	36
					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Miami-Dade County	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	67	63	54
	2	SCR	Numbers	Explain or justify a mathematical concept or relationship	41	34	29
	3	SCR	Geometry	Assemble simple plane shapes to construct a given shape.	61	56	49
	4	MC	Numbers	Describe the effect of operations on size (whole numbers)	40	33	28
	5	SCR	Numbers	Solve application problems involving numbers and operations	59	52	49
Milwaukee	1	MC	Numbers	Add and subtract whole numbers, or fractions with like denominators, or decimals through hundredths	79	75	57
	2	MC	Numbers	Identify place value and actual value of digits in whole numbers	56	50	32
	3	SCR	Numbers	Represent numbers using models such as base 10 representations, number lines and two-dimensional models	48	42	22
	4	SCR	Algebra	Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.	67	59	45
	5	MC	Numbers	Order/compare whole numbers, decimals, or fractions	57	50	33
New York City	1	MC	Data	Read or interpret a single set of data	43	31	29
	2	MC	Data	Determine a simple probability from a context that includes a picture	81	75	70
	3	MC	Geometry	Identify the images resulting from flips (reflections), slides (translations), or turns (rotations)	74	67	63
	4	MC	Measurement	Determine appropriate size of unit of measurement in problem situation involving such attributes as length, time, capacity, or weight	70	59	48
	5	MC	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	48	42	34
Philadelphia	1	SCR	Data	For a given set of data, complete a graph	75	64	47
	2	SCR	Data	For a given set of data, complete a graph	53	45	28
	3	MC	Geometry	Identify the images resulting from flips (reflections), slides (translations), or turns (rotations)	74	67	47
	4	MC	Measurement	Select or use appropriate measurement instruments such as ruler, meter stick, clock, thermometer, or other scaled instruments	48	42	21
	5	MC	Numbers	Order/compare whole numbers, decimals, or fractions	57	50	32
San Diego	1	MC	Algebra	Verify a conclusion using algebraic properties	75	68	62
	2	MC	Numbers	Identify factors of whole numbers	44	42	34
	3	MC	Numbers	Multiply whole numbers	49	48	39
	4	SCR	Algebra	Graph or interpret points with whole number or letter coordinates on grids or in the first quadrant of the coordinate plane.	60	50	50
	5	MC	Data	Represent the probability of a given outcome using a picture or other graphic	66	62	57

TABLE G4. CHARACTERISTICS OF THE TOP FIVE DIFFERENTIALLY MOST DIFFICULT ITEMS IN 2009 GRADE 8 NAEP MATHEMATICS ASSESSMENT, BY DISTRICT

					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Atlanta	1	MC	Measurement	Compare objects with respect to length, area, volume, angle measurement, weight, or mass.	59	52	34
	2	MC	Numbers	Model or describe rational numbers or numerical relationships using number lines and diagrams.	72	64	48
	3	SCR	Geometry	Draw or sketch from a written description polygons, circles, or semicircles.	59	49	30
	4	MC	Measurement	Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.	46	44	22
	5	MC	Measurement	Construct or solve problems involving scale drawings.	73	66	46
Austin	1	MC	Data	Read or interpret data, including interpolating or extrapolating from data	59	52	50
	2	SCR	Geometry	Identify lines of symmetry in plane figures or recognize and classify types of symmetries of plane figures.	58	55	43
	3	MC	Numbers	Use place value to model and describe integers and decimals.	66	57	59
	4	SCR	Numbers	Use place value to model and describe integers and decimals.	63	60	58
	5	MC	Algebra	Identify or represent functional relationships in meaningful contexts	67	59	57
Baltimore	1	MC	Measurement	Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.	55	45	24
	2	SCR	Geometry	Draw or sketch from a written description polygons, circles, or semicircles.	59	49	30
	3	MC	Data	Determine the sample space for a given situation.	63	58	38
	4	MC	Geometry	Demonstrate an understanding about the two- and three-dimensional shapes	58	56	33
	5	SCR	Data	Interpret probabilities within a given context.	50	40	20
Boston	1	MC	Numbers	Use place value to model and describe integers and decimals.	66	58	43
	2	MC	Numbers	Use place value to model and describe integers and decimals.	66	57	52
	3	MC	Geometry	Identify, define, or describe geometric shapes in the plane and in three-dimensional space given a visual representation.	46	37	29
	4	MC	Algebra	Solve problems involving coordinate pairs on the rectangular coordinate system.	55	48	43
	5	MC	Algebra	Identify or represent functional relationships in meaningful contexts	67	59	53
Charlotte	1	MC	Numbers	Explain or justify a mathematical concept or relationship (e.g., explain why 17 is prime).	47	42	37
	2	MC	Measurement	Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.	55	45	38
	3	MC	Measurement	Compare objects with respect to length, area, volume, angle measurement, weight, or mass.	43	37	33
	4	MC	Measurement	Solve problems involving conversions within the same measurement system.	54	46	47
	5	MC	Algebra	Perform basic operations, using appropriate tools, on linear algebraic expressions.	35	32	28
Chicago	1	MC	Numbers	Model or describe rational numbers or numerical relationships using number lines and diagrams.	72	64	52
	2	MC	Algebra	Write algebraic expressions, equations, or inequalities to represent a situation.	66	59	47
	3	MC	Geometry	Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.	73	66	55
	4	MC	Algebra	Identify or represent functional relationships in meaningful contexts	67	59	47
	5	SCR	Data	Interpret probabilities within a given context.	50	40	30

					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Cleveland	1	MC	Geometry	Describe relative positions of points and lines using the geometric ideas	43	36	19
	2	SCR	Numbers	Model or describe rational numbers or numerical relationships using number lines and diagrams.	74	66	48
	3	MC	Numbers	Model or describe rational numbers or numerical relationships using number lines and diagrams.	72	64	48
	4	MC	Measurement	Solve problems involving conversions within the same measurement system.	54	46	28
	5	SCR	Data	Interpret probabilities within a given context.	50	40	25
Detroit	1	MC	Data	Analyze a situation that involves probability of an independent event.	77	67	34
	2	MC	Numbers	Use place value to model and describe integers and decimals.	66	57	29
	3	MC	Measurement	Compare objects with respect to length, area, volume, angle measurement, weight, or mass.	59	52	24
	4	MC	Measurement	Solve problems involving conversions within the same measurement system.	54	46	21
	5	SCR	Numbers	Perform computations with rational numbers.	59	53	25
District of Columbia	1	MC	Measurement	Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.	55	45	24
	2	MC	Numbers	Model or describe rational numbers or numerical relationships using number lines and diagrams.	72	64	45
	3	MC	Geometry	Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.	55	50	27
	4	SCR	Geometry	Draw or sketch from a written description polygons, circles, or semicircles.	59	49	29
	5	MC	Measurement	Construct or solve problems involving scale drawings.	73	66	46
Fresno	1	MC	Data	Read or interpret data, including interpolating or extrapolating from data	59	52	28
	2	MC	Data	Determine the probability of independent and dependent events.	70	62	46
	3	MC	Geometry	Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.	55	50	32
	4	MC	Geometry	Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.	65	59	43
	5	SCR	Data	Interpret probabilities within a given context.	50	40	29
Houston	1	SCR	Algebra	Solve linear equations or inequalities.	85	82	77
	2	MC	Algebra	Perform basic operations, using appropriate tools, on linear algebraic expressions.	59	52	46
	3	SCR	Data	Visually choose the line that best fits given a scatter plot and informally explain the meaning of the line.	52	45	40
	4	MC	Algebra	Identify functions as linear or nonlinear or contrast distinguishing properties of functions from tables, graphs, or equations.	51	48	40
	5	MC	Algebra	Identify or represent functional relationships in meaningful contexts	67	59	53
Jefferson	1	MC	Data	Calculate, use, or interpret mean, median, mode, or range.	66	64	46
	2	MC	Numbers	Perform computations with rational numbers.	65	59	47
	3	SCR	Algebra	Recognize, describe, or extend numerical and geometric patterns using tables, graphs, words, or symbols.	29	25	14
	4	MC	Measurement	Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.	55	45	41
	5	MC	Algebra	Interpret relationships between symbolic linear expressions and graphs of lines by identifying and computing slope and intercepts	64	62	49
Los Angeles	1	MC	Data	Read or interpret data, including interpolating or extrapolating from data	59	52	28
	2	SCR	Geometry	Identify lines of symmetry in plane figures or recognize and classify types of symmetries of plane figures.	58	55	33

	3	MC	Data	Determine the probability of independent and dependent events.	70	62	46
	4	SCR	Geometry	Draw or sketch from a written description polygons, circles, or semicircles.	59	49	34
	5	MC	Measurement	Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.	74	70	49
					Percent Correct		
District/ jurisdiction	**Item**	**Type**	**Subscale**	**Objective**	**National Public**	**LC**	**District**
Miami-Dade County	1	MC	Geometry	Describe relative positions of points and lines using the geometric ideas	43	36	25
	2	MC	Numbers	Perform computations with rational numbers.	65	59	47
	3	MC	Geometry	Identify, define, or describe geometric shapes in the plane and in three-dimensional space given a visual representation.	46	37	28
	4	MC	Algebra	Perform basic operations, using appropriate tools, on linear algebraic expressions.	59	52	44
	5	MC	Measurement	Construct or solve problems involving scale drawings.	53	47	40
Milwaukee	1	MC	Numbers	Use place value to model and describe integers and decimals.	66	57	39
	2	MC	Algebra	Interpret relationships between symbolic linear expressions and graphs of lines by identifying and computing slope and intercepts	64	62	36
	3	MC	Measurement	Compare objects with respect to length, area, volume, angle measurement, weight, or mass.	72	64	42
	4	MC	Data	Determine the probability of independent and dependent events.	49	42	20
	5	SCR	Data	Interpret probabilities within a given context.	50	40	22
New York City	1	MC	Data	Read or interpret data, including interpolating or extrapolating from data	59	52	41
	2	MC	Measurement	Select or use an appropriate type of unit for the attribute being measured such as length, area, angle, time, or volume.	55	45	39
	3	MC	Numbers	Use place value to model and describe integers and decimals.	66	57	52
	4	MC	Algebra	Write algebraic expressions, equations, or inequalities to represent a situation.	54	51	40
	5	MC	Geometry	Identify, define, or describe geometric shapes in the plane and in three-dimensional space given a visual representation.	46	37	25
Philadelphia	1	MC	Numbers	Explain or justify a mathematical concept or relationship (e.g., explain why 17 is prime).	47	42	27
	2	MC	Numbers	Perform computations with rational numbers.	65	59	44
	3	MC	Numbers	Use place value to model and describe integers and decimals.	66	57	43
	4	MC	Algebra	Graph or interpret points represented by ordered pairs of numbers on a rectangular coordinate system.	55	50	36
	5	MC	Algebra	Solve problems involving coordinate pairs on the rectangular coordinate system.	55	48	37
San Diego	1	MC	Geometry	Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.	55	50	39
	2	MC	Geometry	Recognize or informally describe the effect of a transformation on two-dimensional geometric shapes.	38	37	24
	3	MC	Measurement	Estimate the size of an object with respect to a given measurement attribute (e.g., area).	52	46	41
	4	MC	Numbers	Use proportional reasoning to model and solve problems (including rates and scaling).	67	59	54
	5	MC	Data	Determine the sample space for a given situation.	63	58	52

Appendix H. Changes in Average Scores by Subscale and District: 2007 to 2009

TABLE H1. CHANGES IN GRADE 4 NAEP READING SUBSCALE AND COMPOSITE SCORES (SIGNIFICANCE AND EFFECT SIZE MEASURES) FROM 2007 TO 2009, BY DISTRICT[14]

	Composite		Information		Literary	
State/jurisdiction	**Effect size**	**Significance**	**Effect size**	**Significance**	**Effect size**	**Significance**
National Public	0.00	↔	0.01	↔	-0.01	↔
Large City	0.04	↔	0.06	↑	0.03	↔
Atlanta	0.06	↔	0.04	↔	0.07	↔
Austin	0.07	↔	0.11	↔	0.04	↔
Baltimore City	(†)	(†)	(†)	(†)	(†)	(†)
Boston	0.15	↑	0.13	↔	0.16	↑
Charlotte	0.06	↔	0.05	↔	0.07	↔
Chicago	0.05	↔	0.07	↔	0.02	↔
Cleveland	-0.14	↔	-0.07	↔	-0.20	↔
Detroit	(†)	(†)	(†)	(†)	(†)	(†)
District of Columbia	0.15	↑	0.13	↑	0.15	↑
Fresno	(†)	(†)	(†)	(†)	(†)	(†)
Houston	0.17	↑	0.15	↑	0.18	↑
Jefferson County	(†)	(†)	(†)	(†)	(†)	(†)
Los Angeles	0.04	↔	0.03	↔	0.05	↔
Miami-Dade County	(†)	(†)	(†)	(†)	(†)	(†)
Milwaukee	(†)	(†)	(†)	(†)	(†)	(†)
New York City	0.10	↑	0.13	↑	0.08	↔
Philadelphia	(†)	(†)	(†)	(†)	(†)	(†)
San Diego	0.07	↔	0.09	↔	0.05	↔
— Not available						
† Not applicable						

[14] This report includes charters in the TUDA analysis according to the rules that were in place in 2007 and 2009. Beginning in 2009, TUDA samples included only those charter schools that each district included for the purpose of reporting Adequate Yearly Progress to the US Department of Education under the Elementary and Secondary Education Act. This rule did not exist in 2007, so the TUDA sample that year included charters without this AYP distinction. The inclusion or exclusion of charter schools from the TUDA samples did not affect the significance of the change in reported scores between 2007 and 2009, with the exception of the District of Columbia. Therefore, we removed charters from the District of Columbia sample in both years in order to ensure that the scores in 2007 and 2009 for DCPS were comparable.

TABLE H2. CHANGES IN GRADE 8 NAEP READING SUBSCALE AND COMPOSITE SCORES (SIGNIFICANCE AND EFFECT SIZE MEASURES) FROM 2007 TO 2009, BY DISTRICT

	Composite		Information		Literary	
State/jurisdiction	**Effect size**	**Significance**	**Effect size**	**Significance**	**Effect size**	**Significance**
National Public	0.04	↑	0.04	↑	0.02	↑
Large City	0.07	↑	0.04	↔	0.05	↑
Atlanta	0.14	↑	0.18	↔	0.08	↔
Austin	0.11	↔	0.18	↔	0.04	↔
Baltimore City	(†)	(†)	(†)	(†)	(†)	(†)
Boston	0.10	↔	0.03	↔	0.14	↔
Charlotte	0.00	↔	0.04	↔	-0.06	↔
Chicago	-0.01	↔	-0.01	↔	-0.07	↔
Cleveland	-0.13	↔	-0.11	↔	-0.23	↓
Detroit	(†)	(†)	(†)	(†)	(†)	(†)
District of Columbia	0.10	↑	0.11	↔	0.00	↔
Fresno	(†)	(†)	(†)	(†)	(†)	(†)
Houston	0.00	↔	0.04	↔	-0.05	↔
Jefferson County	(†)	(†)	(†)	(†)	(†)	(†)
Los Angeles	0.09	↑	0.08	↔	0.03	↔
Miami-Dade County	(†)	(†)	(†)	(†)	(†)	(†)
Milwaukee	(†)	(†)	(†)	(†)	(†)	(†)
New York City	0.09	↔	0.04	↔	0.09	↔
Philadelphia	(†)	(†)	(†)	(†)	(†)	(†)
San Diego	0.11	↔	0.10	↔	0.09	↔
— Not available						
† Not applicable						

TABLE H3. CHANGES IN GRADE 4 NAEP MATHEMATICS SUBSCALE AND COMPOSITE SCORES (SIGNIFICANCE AND EFFECT SIZE MEASURES) FROM 2007 TO 2009, BY DISTRICT

	Composite		Numbers		Measurement		Geometry		Data		Algebra	
State/jurisdiction	Effect size	Significance	Effect size	Significance	Effect size	Significance	Effect size	Significance	Effect size	Significance	Effect size	Significance
National Public	0.00	↔	0.01	↔	-0.01	↔	0.03	↑	-0.03	↑	0.00	↔
Large City	0.05	↑	0.05	↑	0.07	↑	0.07	↑	0.01	↔	0.03	↔
Atlanta	0.05	↔	0.03	↔	0.14	↔	0.05	↔	-0.14	↔	0.10	↔
Austin	-0.01	↔	0.02	↔	-0.02	↔	-0.03	↔	0.01	↔	-0.08	↔
Baltimore City	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Boston	0.13	↑	0.11	↔	0.13	↔	0.28	↑	0.04	↔	0.03	↔
Charlotte	0.04	↔	0.08	↔	-0.02	↔	-0.07	↔	0.15	↔	0.00	↔
Chicago	0.08	↔	0.05	↔	0.16	↑	0.18	↑	-0.05	↔	-0.03	↔
Cleveland	-0.07	↔	-0.13	↔	-0.04	↔	0.09	↔	-0.16	↔	0.00	↔
Detroit	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
District of Columbia	0.19	↑	0.13	↑	0.19	↑	0.14	↑	0.24	↑	0.28	↑
Fresno	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Houston	0.06	↔	0.11	↔	0.12	↔	-0.03	↔	-0.02	↔	-0.03	↔
Jefferson County	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Los Angeles	0.03	↔	0.04	↔	0.05	↔	-0.01	↔	0.00	↔	0.03	↔
Miami-Dade County	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Milwaukee	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
New York City	0.05	↔	0.05	↔	0.06	↔	0.10	↔	0.03	↔	0.00	↔
Philadelphia	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
San Diego	0.07	↔	0.10	↔	0.08	↔	0.08	↔	0.07	↔	-0.04	↔

— Not available

† Not applicable

TABLE H4. CHANGES IN GRADE 8 NAEP MATHEMATICS SUBSCALE AND COMPOSITE SCORES (SIGNIFICANCE AND EFFECT SIZE MEASURES) FROM 2007 TO 2009, BY DISTRICT

	Composite		Numbers		Measurement		Geometry		Data		Algebra	
State/jurisdiction	Effect size	Significance	Effect size	Significance	Effect size	Significance	Effect size	Significance	Effect size	Significance	Effect size	Significance
National Public	0.04	↑	0.06	↑	0.00	↔	0.05	↑	0.04	↑	0.02	↑
Large City	0.07	↑	0.05	↔	0.02	↔	0.07	↑	0.08	↑	0.09	↑
Atlanta	0.09	↔	0.16	↔	0.02	↔	0.20	↔	-0.05	↔	0.04	↔
Austin	0.12	↑	0.14	↑	0.06	↔	0.19	↔	0.13	↔	0.04	↔
Baltimore City	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Boston	0.08	↔	0.03	↔	0.12	↔	0.03	↔	0.15	↔	0.08	↔
Charlotte	-0.01	↔	-0.09	↔	0.02	↔	0.07	↔	0.04	↔	-0.01	↔
Chicago	0.09	↔	0.12	↔	0.03	↔	0.06	↔	0.16	↑	0.03	↑
Cleveland	-0.02	↔	-0.08	↔	-0.08	↔	-0.03	↔	-0.06	↔	0.14	↔
Detroit	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
District of Columbia	0.08	↔	0.00	↔	0.06	↔	0.13	↔	0.11	↑	0.09	↔
Fresno	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Houston	0.10	↔	0.10	↔	0.09	↔	0.02	↔	0.13	↔	0.12	↔
Jefferson County	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Los Angeles	0.03	↔	0.01	↔	0.01	↔	-0.10	↔	0.08	↔	0.14	↑
Miami-Dade County	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
Milwaukee	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
New York City	0.08	↔	0.08	↔	0.01	↔	0.07	↔	0.12	↔	0.11	↔
Philadelphia	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)	(†)
San Diego	0.20	↑	0.22	↑	0.09	↔	0.26	↔	0.13	↔	0.24	↑
— Not available												
† Not applicable												

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