

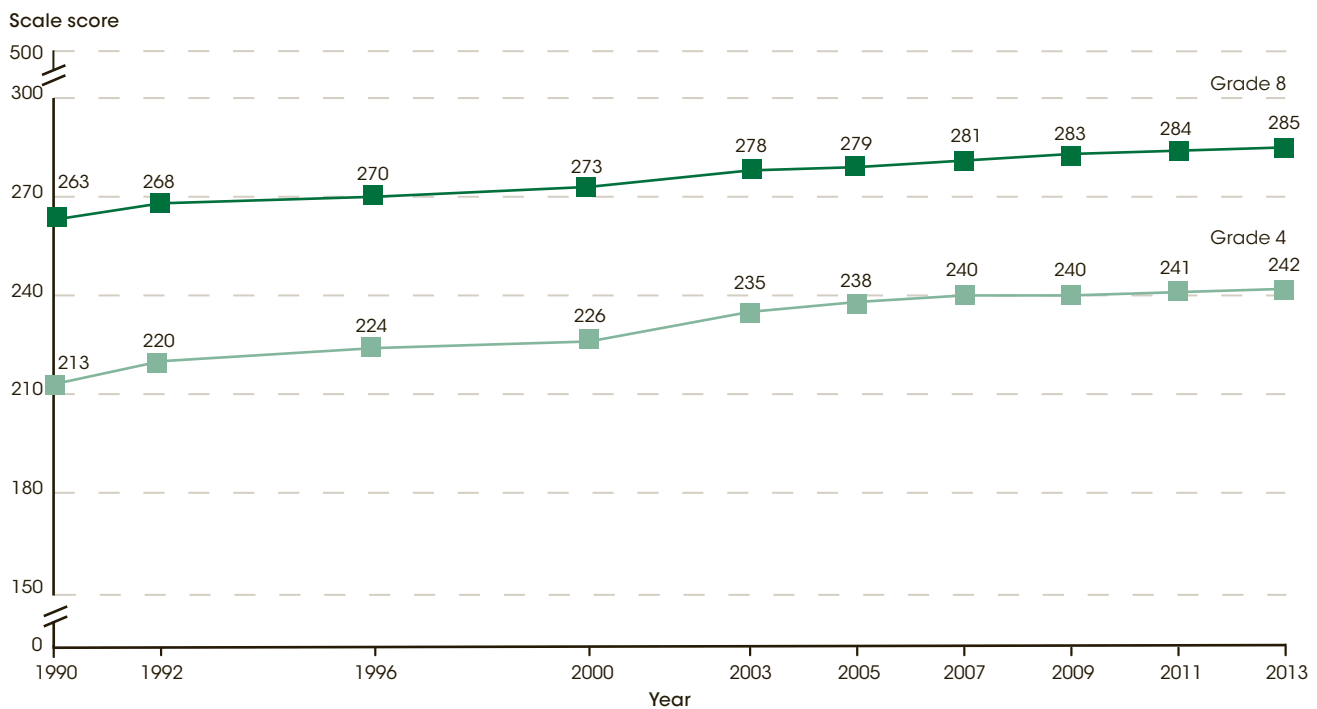
Mathematics Performance

At grades 4 and 8, the average mathematics scores in 2013 were higher than the average scores for those grades in all previous assessment years according to data from the National Assessment of Educational Progress.

The National Assessment of Educational Progress (NAEP) assesses student performance in mathematics at grades 4, 8, and 12. NAEP mathematics scores range from 0 to 500 for grades 4 and 8. The framework for the 12th-grade mathematics assessment was revised in 2005; as a result, the 2005 and 2009 results cannot be compared with those from previous years. At grade 12, mathematics scores on the revised assessment range from 0 to 300. NAEP achievement levels define what students should

know and be able to do: *Basic* indicates partial mastery of fundamental skills, and *Proficient* indicates demonstrated competency over challenging subject matter. This indicator presents data on NAEP mathematics achievement levels as well as achievement gaps between various subgroups in the population of students. The most recent mathematics assessment data were collected at grades 4 and 8 in 2013 and at grade 12 in 2009.

Figure 1. Average mathematics scale scores of 4th- and 8th-grade students: Selected years, 1990–2013



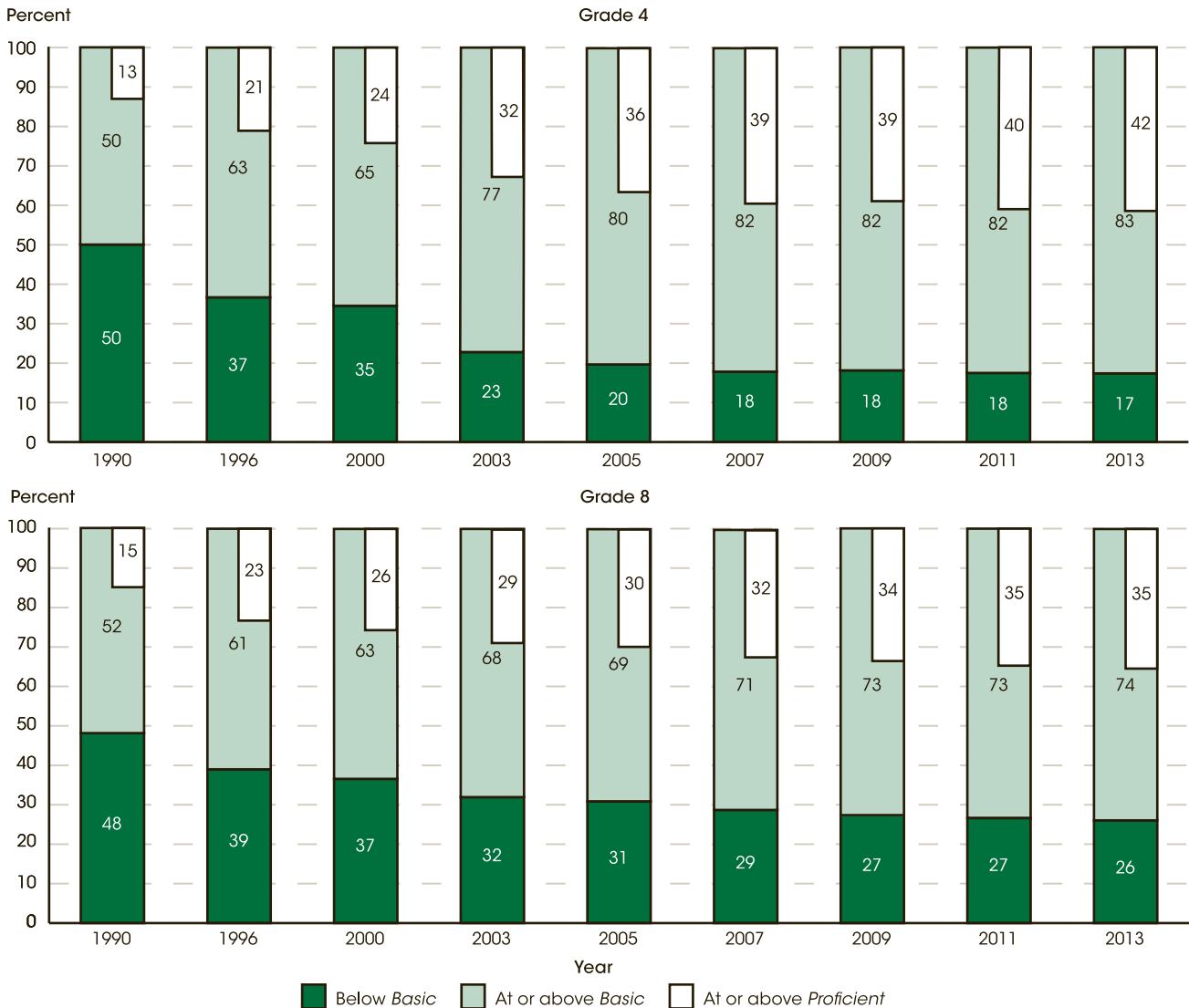
NOTE: At grades 4 and 8, the National Assessment of Educational Progress (NAEP) mathematics scale ranges from 0 to 500. Testing accommodations (e.g., extended time, small group testing) for children with disabilities and English language learners were not permitted in 1990 and 1992.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), selected years, 1990–2013 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2013*, table 222.10; and *The Nation's Report Card* (http://nationsreportcard.gov/reading_math_2013/#/performance-overview).

For more information, see the Reader's Guide and the Guide to Sources.

In 2013, the average NAEP mathematics scores for 4th-grade and 8th-grade students were higher than the average scores in all previous assessment years. From 1990 to 2013, the average 4th-grade NAEP mathematics score increased by 28 points, from 213 to 242. During that same period, the average 8th-grade score increased

by 22 points, from 263 to 285. Twelfth-graders were most recently assessed in 2009; in that year, the average 12th-grade mathematics score was 3 points higher than in 2005, the first year that the revised assessment was administered.

Figure 2. Percentage distribution of 4th- and 8th-grade students across National Assessment of Educational Progress (NAEP) mathematics achievement levels: Selected years, 1990–2013



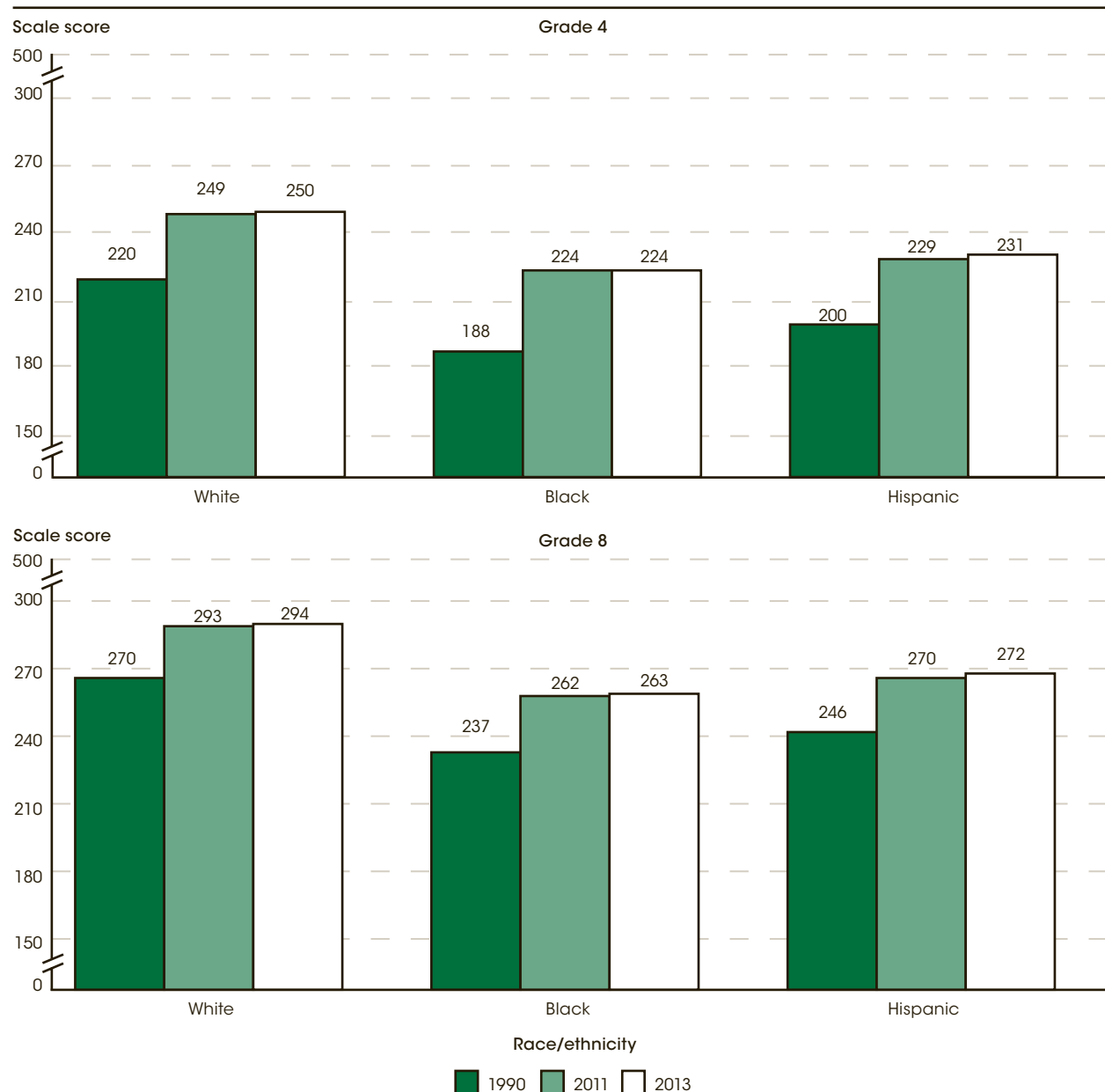
NOTE: Achievement levels define what students should know and be able to do: *Basic* indicates partial mastery of fundamental skills, and *Proficient* indicates demonstrated competency over challenging subject matter. Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), selected years, 1990–2013 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2013*, table 222.20; and *The Nation's Report Card* (http://nationsreportcard.gov/reading_math_2013/#/what-knowledge).

In 2013, some 83 percent of 4th-grade students performed at or above the *Basic* achievement level and 42 percent performed at or above the *Proficient* level in mathematics. While the percentage of students at or above the *Basic* level in 2013 was not measurably different from that in 2011 (82 percent), it was higher than the percentage in 1990 (50 percent). A higher percentage of 4th-grade students performed at or above *Proficient* in 2013 than in all previous assessment years. In 2013, some 74 percent of 8th-grade students performed at or above

Basic and 35 percent performed at or above *Proficient* in mathematics. The percentages at or above *Basic* and at or above *Proficient* in 2013 showed no measurable change from 2011, but they were higher than the percentages in all assessment years prior to 2011. The percentages of 12th-grade students performing at or above *Basic* (64 percent) and at or above *Proficient* (26 percent) in mathematics were each 3 percentage points higher in 2009 than in 2005.

For more information, see the Reader's Guide and the Guide to Sources.

Figure 3. Average mathematics scale scores of 4th- and 8th-grade students, by race/ethnicity: 1990, 2011, and 2013

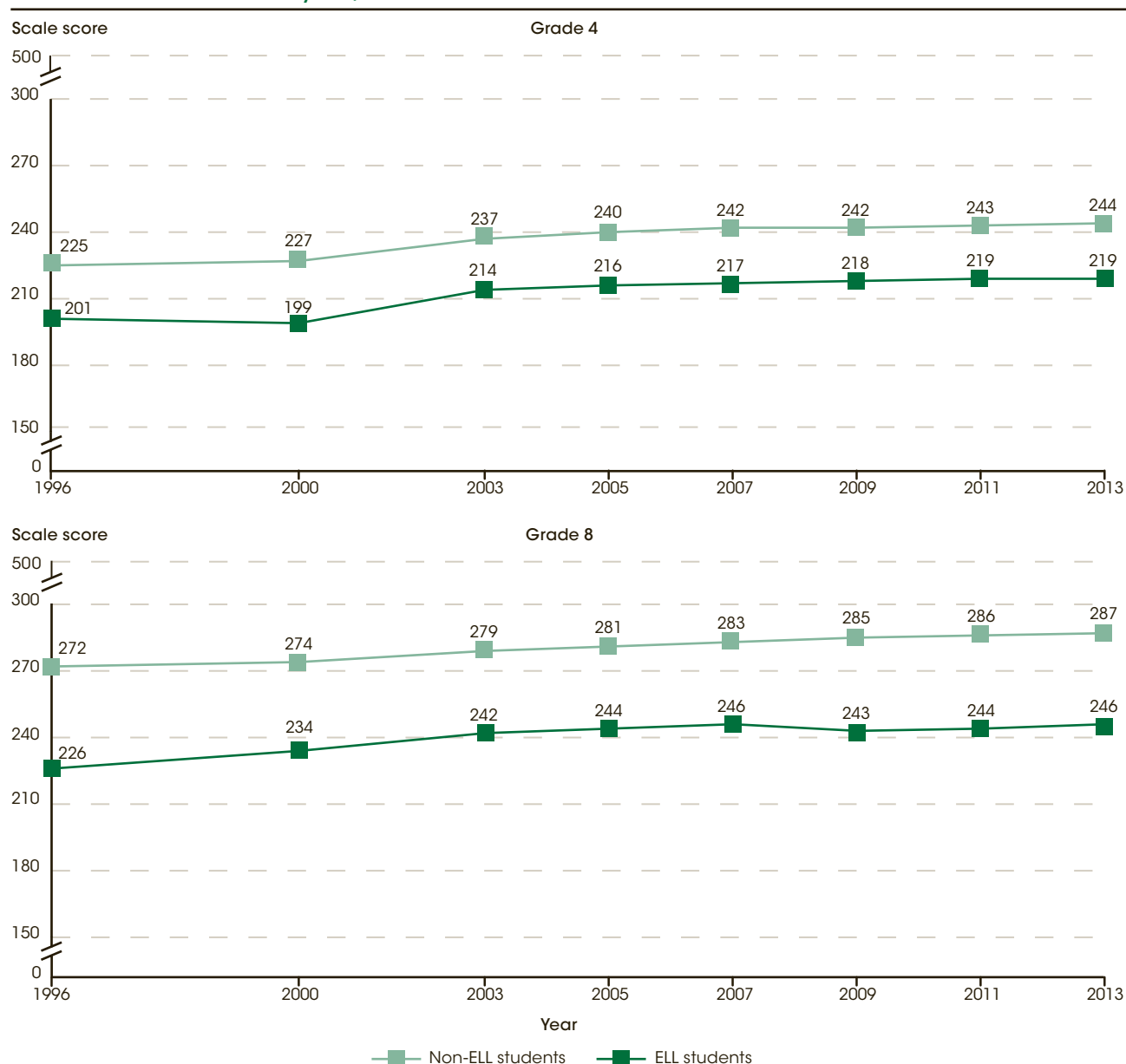


NOTE: At grades 4 and 8, the National Assessment of Educational Progress (NAEP) mathematics scale ranges from 0 to 500. Testing accommodations (e.g., extended time, small group testing) for children with disabilities and English language learners were not permitted in 1990.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 2011, and 2013 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2013*, table 222.10.

At grade 4, the average mathematics scores in 2013 for White (250) and Hispanic students (231) were higher than the scores in both 2011 and 1990. The 2013 score for Black 4th-graders (224) was not measurably different from the 2011 score, but it was higher than the 1990 score. Prior to 2011, separate data on Asians were not available; the 2013 score for Asian 4th-graders (259) was also not measurably different from the 2011 score. At grade 8, the average mathematics scores in 2013 for all

racial/ethnic groups were not measurably different from the 2011 scores. However, the 2013 scores for White (294), Black (263), and Hispanic (272) 8th-graders were higher than the scores in 1990. At grade 12, average mathematics scores were higher in 2009 than in 2005 for all racial/ethnic groups. For example, the average score for American Indian/Alaska Native students increased by 10 points (134 to 144).

Figure 4. Average mathematics scale scores of 4th- and 8th-grade students, by English language learner (ELL) status: Selected years, 1996–2013

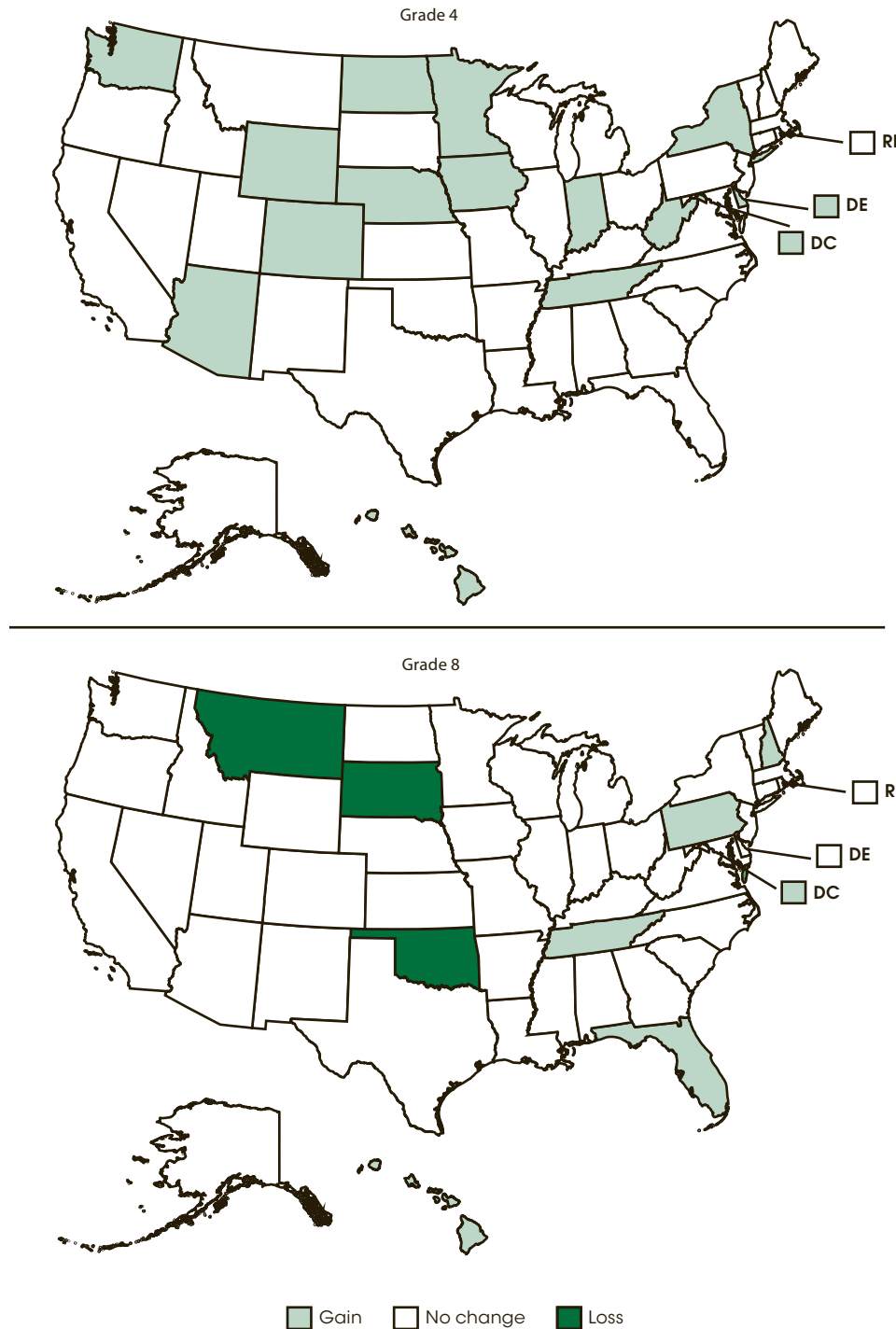


NOTE: At grades 4 and 8, the National Assessment of Educational Progress (NAEP) mathematics scale ranges from 0 to 500.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), selected years, 1996–2013 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2013*, table 222.10.

Since 1996, NAEP has collected data regarding student English language learner (ELL) status. In 2013 and in all previous assessment years since 1996, the NAEP mathematics scale scores for non-ELL 4th- and 8th-grade students were higher than their ELL peers' scores. This disparity is known as an achievement gap: in NAEP math scores, the achievement gap is the difference between the average scores of two student subgroups on the standardized assessment. In 2013, the achievement gap

between non-ELL and ELL students was 25 points at the 4th-grade level and 41 points at the 8th-grade level. At grade 4, this achievement gap was not measurably different from that in any assessment year since 1996. At grade 8, the achievement gap between non-ELL and ELL students in mathematics scores in 2013 was not measurably different from the achievement gaps in 2011, 2009, 2000, or 1996.

Figure 5. Change in average mathematics scale scores for 4th- and 8th-grade public school students, by state: Between 2011 and 2013



NOTE: At grades 4 and 8, the National Assessment of Educational Progress (NAEP) mathematics scale ranges from 0 to 500.
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2011 and 2013 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2013*, tables 222.50 and 222.60.

NAEP results also permit state-level comparisons of the mathematics achievement of 4th- and 8th-grade students in public schools. The average mathematics scores for 4th-grade public school students increased from 2011 to 2013 in 14 states and the District of Columbia (Arizona, Colorado, Delaware, Hawaii, Indiana, Iowa, Minnesota, Nebraska, New York, North Dakota, Tennessee, Washington, West Virginia, and Wyoming) and did not decrease for any states. At grade 8, scores were higher in 2013 than in 2011 in five states (Florida, Hawaii, New Hampshire, Pennsylvania, and Tennessee), the District of Columbia, and the Department of Defense dependents schools, and scores decreased in three states (Montana, Oklahoma, and South Dakota).

NAEP also collects data for Trial Urban Districts. The Trial Urban District Assessment (TUDA) is intended to focus attention on urban education and measure the educational progress of participating large urban districts. The results of the 21 urban districts are based on the same mathematics and reading assessment used to report national and state results. This allows each district to compare its performance to the performance of its home state as well as to that of other states and other participating urban districts.

Figure 6. Change in average mathematics scale scores for 4th- and 8th-grade public school students, by jurisdiction: Between 2011 and 2013

Jurisdiction	Mathematics	
	Grade 4	Grade 8
Nation (public)	↑ 1	↑ 1
Large city	↑ 2	◆ 2
Albuquerque	◆ -1	◆ -1
Atlanta	↑ 5	◆ 1
Austin	◆ #	◆ -2
Baltimore City	◆ -3	◆ -2
Boston	◆ #	◆ 2
Charlotte	◆ #	↑ 4
Chicago	↑ 7	◆ -1
Cleveland	◆ #	◆ -3
Dallas	◆ 1	◆ #
Detroit	◆ 1	↓ -6
District of Columbia (DCPS)	↑ 7	↑ 5
Fresno	◆ 2	↑ 4
Hillsborough County (FL)	◆ -1	◆ 2
Houston	◆ -1	◆ 1
Jefferson County (KY)	◆ -2	◆ -1
Los Angeles	↑ 5	◆ 4
Miami-Dade	◆ 2	◆ 2
Milwaukee	◆ 2	◆ 3
New York City	◆ 1	◆ 2
Philadelphia	◆ -2	◆ 2
San Diego	◆ 2	◆ -2

↑ Higher average score in 2013 ↓ Lower average score in 2013 ◆ No significant difference in 2013

Rounds to zero.

NOTE: At grades 4 and 8, the National Assessment of Educational Progress (NAEP) mathematics scale ranges from 0 to 500.

SOURCE: National Center for Education Statistics (2013). *The Nation's Report Card: A First Look: 2013 Mathematics and Reading Trial Urban District Assessment* (NCES 2014-466). Institute of Education Sciences, U.S. Department of Education, Washington, D.C. See *Digest of Education Statistics 2013*, table 222.80.

In 2013, four urban districts (Atlanta, Chicago, the District of Columbia, and Los Angeles) performed better in 4th-grade mathematics than they did in 2011. All of the other participating urban districts reported no change. In 8th-grade mathematics, three urban districts (Charlotte, the District of Columbia, and Fresno) improved from their 2011 performance. Detroit saw a decline, while all other participating urban districts showed no change. When looking at proficiency, 41 percent of the Nation's 4th-grade public school students were at or above the

Proficient level in mathematics. Four urban districts (Austin, Charlotte, Hillsborough County-FL, and San Diego) had 40 percent or more of students performing at or above the *Proficient* achievement level. At grade 8, about 34 percent of public school students nationwide performed at or above the *Proficient* level. Five urban districts (Austin, Boston, Charlotte, Hillsborough County-FL, and San Diego) had at least 30 percent of their students perform at or above the *Proficient* level.

Reference tables: *Digest of Education Statistics 2013*, tables 222.10, 222.20, 222.50, 222.60, and 222.80; *The Nation's Report Card* (http://nationsreportcard.gov/reading_math_2013/#/)

Glossary: Achievement levels