

## Mathematics Performance

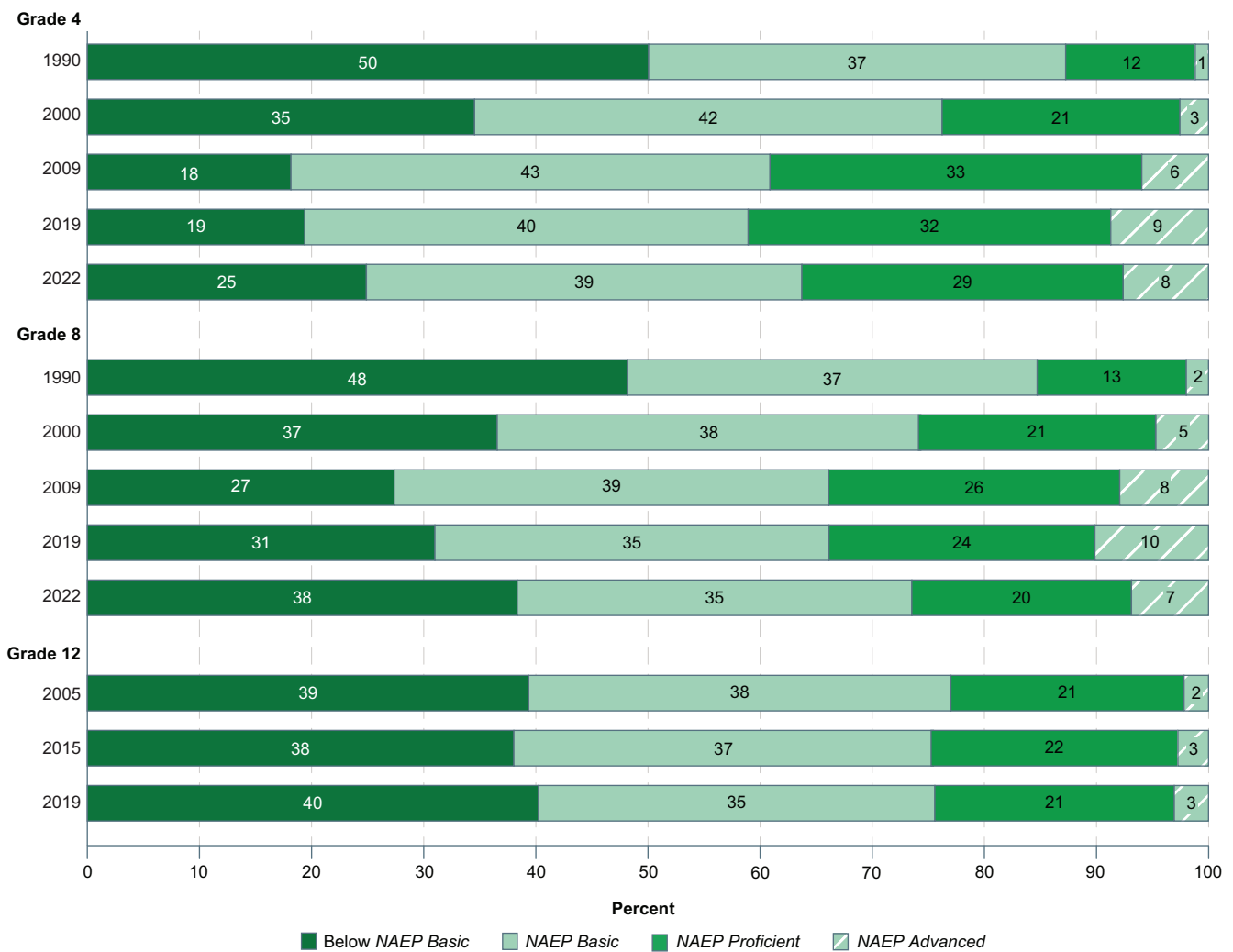
*The average 4th-grade National Assessment of Educational Progress (NAEP) mathematics score of 236 in 2022 was lower than the score of 241 in 2019, but it was higher than the score of 213 in 1990. Similarly, for 8th-grade students, the average mathematics score of 274 in 2022 was lower than the score of 282 in 2019, but it was higher than the score of 263 in 1990.*

The National Assessment of Educational Progress (NAEP) assesses student performance in mathematics at grades 4, 8, and 12 in both public and private schools across the nation. NAEP mathematics scale scores range from 0 to 500 for grades 4 and 8 and from 0 to 300 for grade 12.<sup>1</sup> NAEP achievement levels are performance standards that describe what students should know and be able to do: *NAEP Basic* indicates partial mastery of fundamental skills, *NAEP Proficient* indicates solid academic performance and demonstrated competency over challenging subject matter, and *NAEP Advanced* indicates superior performance beyond *NAEP Proficient*.<sup>2</sup> NAEP mathematics assessments have been administered periodically since 1990, more frequently in grades 4 and 8 than in grade 12.<sup>3</sup> The grade 4 and grade 8 assessments

are also administered at the state level and in selected urban districts.<sup>4</sup> For grades 4 and 8, the most recent mathematics assessments were conducted from January through March of 2022, about 2 years since the onset of the coronavirus pandemic in the United States. For grade 12, the most recent mathematics assessments were conducted in 2019, before the pandemic; the earliest data available are from 2005.<sup>5,6</sup> Throughout this indicator, mathematics scores from the most recent assessment year with available data are compared with scores from the immediate prior assessment year and the first assessment year. This indicator presents data on mathematics performance for lower and higher performing students,<sup>7</sup> as well as data by race/ethnicity, sex, English learner (EL) status, disability status, school poverty level, and state.

**Achievement Levels**

**Figure 1. Percentage distribution of 4th-, 8th-, and 12th-grade students, by National Assessment of Educational Progress (NAEP) mathematics achievement level: Selected years, 1990–2022**



NOTE: Includes students in public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. Achievement levels are performance standards that describe what students should know and be able to do: *NAEP Basic* indicates partial mastery of fundamental skills, *NAEP Proficient* indicates demonstrated competency over challenging subject matter, and *NAEP Advanced* indicates superior performance beyond *NAEP Proficient*. NAEP achievement levels are to be used on a trial basis and should be interpreted and used with caution. Testing accommodations (e.g., extended time, small-group testing) for children with disabilities and English learners were not permitted in 1990. Assessment was not conducted for grade 12 in 2022. Although rounded numbers are displayed, the figures are based on unrounded data. 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, 1990–2022 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, table 222.12.

Among 4th-grade students in 2022, some 75 percent performed at or above the *NAEP Basic* achievement level in mathematics, 36 percent performed at or above *NAEP Proficient*, and 8 percent performed at *NAEP Advanced*.

Lower percentages of 4th-grade students performed at or above *NAEP Basic*, at or above *NAEP Proficient*, and at *NAEP Advanced* in 2022 than in 2019. For 4th-grade students in 2022, the percentage who performed

- at or above *NAEP Basic* was lower than in 2019 (81 percent) but higher than in 1990 (50 percent);
- at or above *NAEP Proficient* was lower than in 2019 (41 percent) but higher than in 1990 (13 percent); and
- at *NAEP Advanced* was lower than in 2019 (9 percent) but higher than in 1990 (1 percent).

Among 8th-grade students in 2022, some 62 percent performed at or above the *NAEP Basic* achievement level in mathematics, 26 percent performed at or above *NAEP Proficient*, and 7 percent performed at *NAEP Advanced*. Similar to the patterns observed for 4th-grade mathematics performance, lower percentages of 8th-

grade students performed at or above *NAEP Basic*, at or above *NAEP Proficient*, and at *NAEP Advanced* in 2022 than in 2019. Specifically, for 8th-grade students in 2022, the percentage who performed

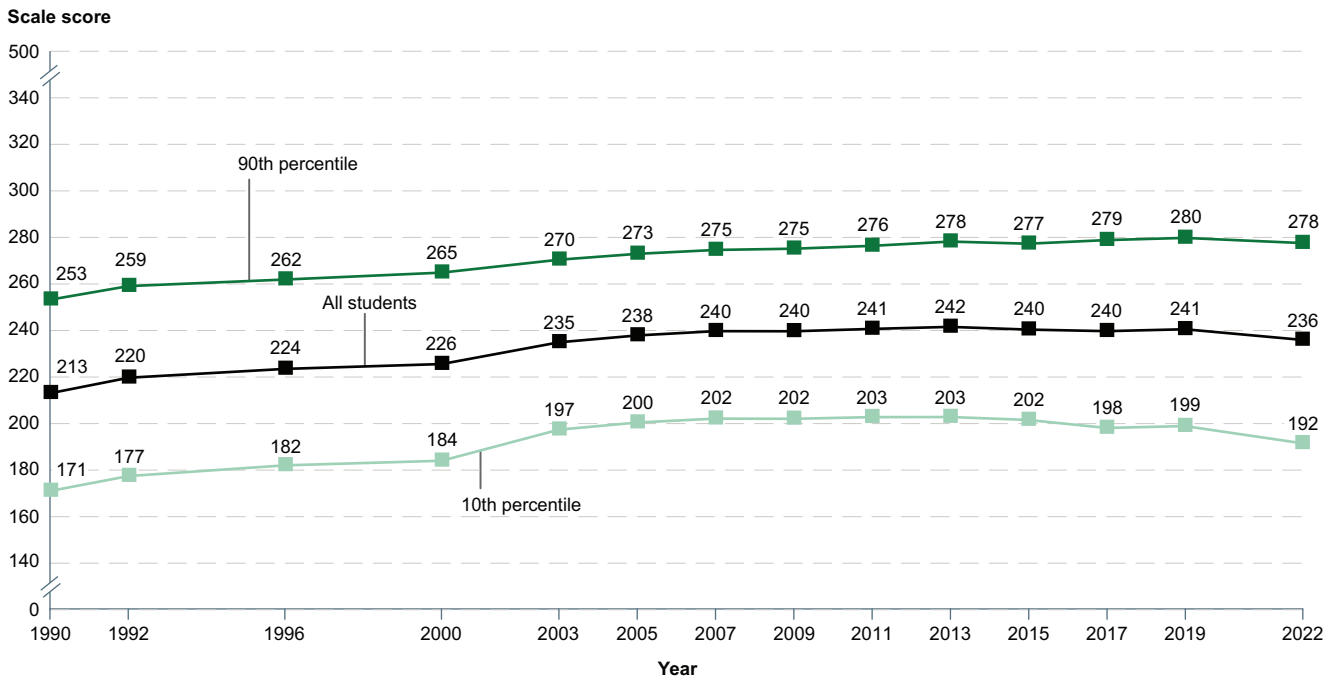
- at or above *NAEP Basic* was lower than in 2019 (69 percent) but higher than in 1990 (52 percent);
- at or above *NAEP Proficient* was lower than in 2019 (34 percent) but higher than in 1990 (15 percent); and
- at *NAEP Advanced* was lower than in 2019 (10 percent) but higher than in 1990 (2 percent).

As mentioned earlier in this indicator, the most recent NAEP mathematics assessment for grade 12 students was conducted in 2019, before the pandemic, and the earliest data available are from 2005. In 2019, some 60 percent of 12th-grade students performed at or above the *NAEP Basic* achievement level in mathematics, 24 percent performed at or above *NAEP Proficient*, and 3 percent performed at *NAEP Advanced*. For 12th-grade students in 2019, the percentage who performed

- at or above *NAEP Basic* was lower than in 2015 (62 percent) and not measurably different from 2005;
- at or above *NAEP Proficient* was not measurably different from 2015 or 2005; and
- at *NAEP Advanced* was not measurably different from 2015 but higher than in 2005 (2 percent).

Scale Score Trends for Lower and Higher Performers

Figure 2. Average National Assessment of Educational Progress (NAEP) mathematics scale scores of 4th-grade students, by selected percentiles: Selected years, 1990–2022



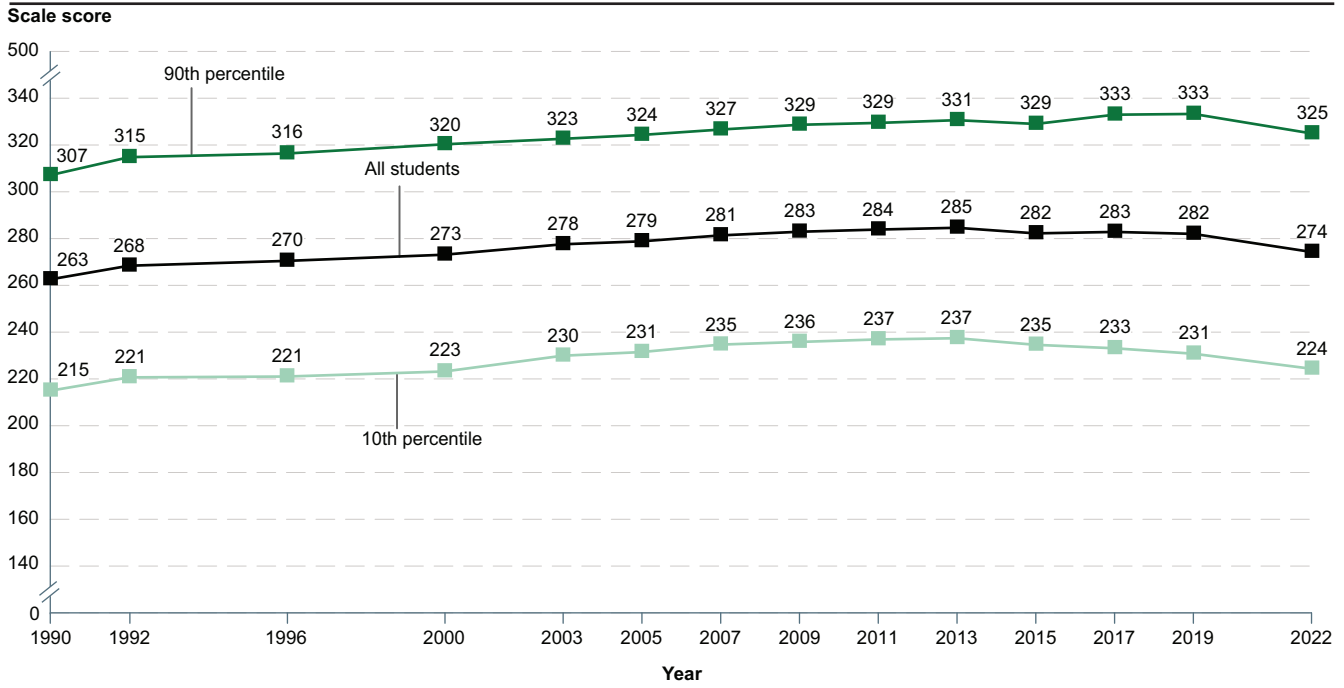
NOTE: The percentile represents a specific point on the percentage distribution of all students ranked by their mathematics score from low to high. For example, 10 percent of students scored at or below the 10th percentile score, while 90 percent of students scored above it. Includes students in public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. The 4th-grade mathematics scale scores range from 0 to 500. Testing accommodations (e.g., extended time, small-group testing) for children with disabilities and English learners were not permitted in 1990.  
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990–2022 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, table 222.77.

At grade 4, the average NAEP mathematics score was lower in 2022 than in 2019. However, changes in performance from 2019 to 2022 were not consistent for the lowest and highest performing students. Specifically, average 4th-grade mathematics scores

- for students at the 10th percentile fell by 7 points<sup>8</sup> (from 199 in 2019 to 192 in 2022);
- for all students fell by 5 points (from 241 in 2019 to 236 in 2022); and
- for students at the 90th percentile fell by 2 points (from 280 in 2019 to 278 in 2022).

As a result, the gap between the mathematics scores of the lowest performing (10th percentile) and highest performing (90th percentile) students was 5 points larger in 2022 (86 points) than in 2019 (81 points). This is part of a pattern of widening score gaps between the lowest and highest performers since 2007. In 2019, the score gap between the lowest and highest performers was already 8 points larger than it had been in 2007 (72 points). However, the score gaps in 2022 and 2019 were not measurably different from the gap in 1990 (82 points).

**Figure 3. Average National Assessment of Educational Progress (NAEP) mathematics scale scores of 8th-grade students, by selected percentiles: Selected years, 1990–2022**



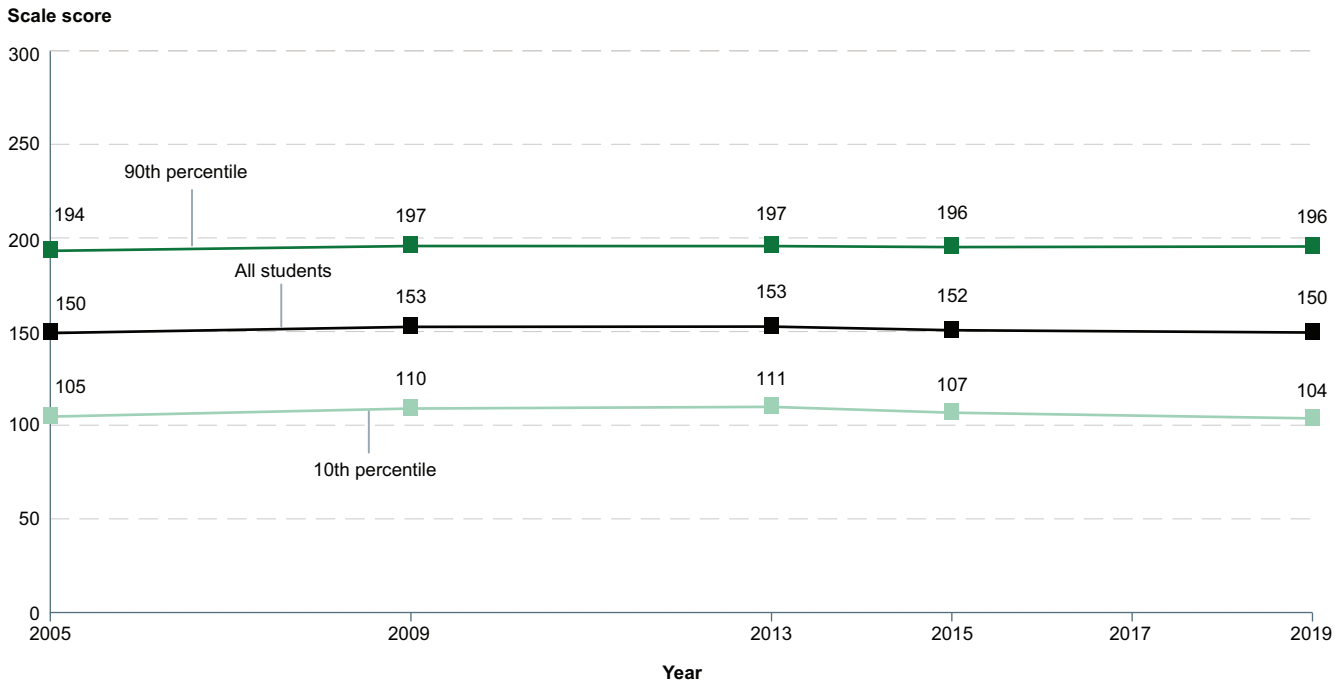
NOTE: The percentile represents a specific point on the percentage distribution of all students ranked by their mathematics score from low to high. For example, 10 percent of students scored at or below the 10th percentile score, while 90 percent of students scored above it. Includes students in public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. The 8th-grade mathematics scale scores range from 0 to 500. Testing accommodations (e.g., extended time, small-group testing) for children with disabilities and English learners were not permitted in 1990.  
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990–2022 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, table 222.77.

At grade 8, the average NAEP mathematics score was lower in 2022 than in 2019 for all students as well as for the lowest and highest performing students. Specifically, average 8th-grade mathematics scores

- for students at the 10th percentile fell by 6 points (from 231 in 2019 to 224 in 2022);
- for all students fell by 8 points (from 282 in 2019 to 274 in 2022); and
- for students at the 90th percentile fell by 8 points (from 333 in 2019 to 325 in 2022).

The mathematics score gap between the lowest and highest performing students was 101 points in 2022, which was not measurably different from the gap in either 2019 or 1990. However, the score gap between the lowest and highest performers has generally been increasing since 2007.

**Figure 4. Average National Assessment of Educational Progress (NAEP) mathematics scale scores of 12th-grade students, by selected percentiles: Selected years, 2005–2019**



NOTE: The percentile represents a specific point on the percentage distribution of all students ranked by their mathematics score from low to high. For example, 10 percent of students scored at or below the 10th percentile score, while 90 percent of students scored above it. Includes students in public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. The 12th-grade mathematics scale scores range from 0 to 300.  
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005–2019 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, table 222.77.

In 2019, before the pandemic, the average grade 12 NAEP mathematics score (150) was not measurably different from the average scores in 2015 and in 2005. However, patterns differed for the lowest and highest performing students:

- At the 10th percentile, the average mathematics score in 2019 (104) was lower than the score in 2015 (107), but it was not measurably different from the score in 2005.
- At the 90th percentile, the average mathematics score in 2019 (196) was not measurably different from the score in 2015, but it was higher than the score in 2005 (194).

As a result, the mathematics score gap between the lowest and highest performing students in 2019 (92 points) was larger than the gaps in both 2015 and 2005 (89 points each).

**Scale Scores by Student and School Characteristics**

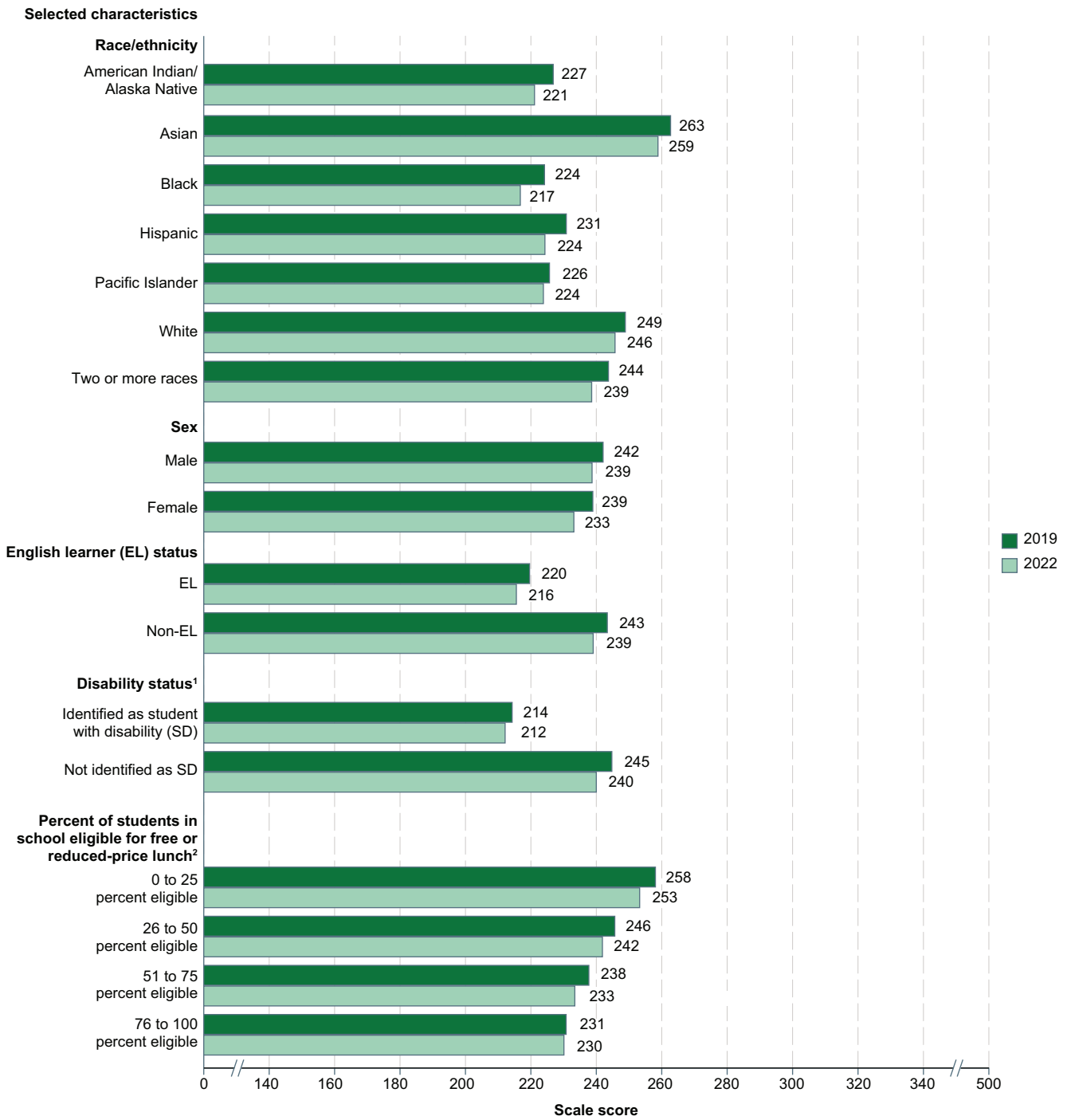
Average NAEP mathematics scores in 2022 differed by student characteristics. This section examines achievement by student race/ethnicity, sex, EL status, disability status, and school poverty level. Findings by school poverty level should be interpreted with caution, due to the relatively higher rate at which school poverty data are missing.<sup>9</sup>

Across grade levels, NAEP mathematics scores were generally

- higher for Asian and White students than for students of other racial/ethnic groups;
- higher for male students than for female students;
- lower for EL students than for non-EL students;
- lower for students identified as students with disabilities than for their peers without disabilities; and
- higher for students in low-poverty schools than for students in high-poverty schools.<sup>10</sup>

Changes over time in achievement gaps differed across grade levels.

**Figure 5. Average National Assessment of Educational Progress (NAEP) mathematics scale scores of 4th-grade students, by selected characteristics: 2019 and 2022**



<sup>1</sup> Students with disabilities include those with an Individualized Education Program (IEP) and those with a 504 plan.

<sup>2</sup> The nonresponse rate for free or reduced-price lunch was greater than 15 percent but not greater than 50 percent.

NOTE: Includes students in public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. The 4th-grade mathematics scale scores range from 0 to 500. Race categories exclude persons of Hispanic ethnicity. Although rounded numbers are displayed, the figures are based on unrounded data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2019 and 2022 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, tables 222.10 and 222.12.

At grade 4, the average NAEP mathematics score in 2022 was highest for Asian students (259), followed by White students (246). The average mathematics score was lowest for Black students (217) in 2022.

From 2011 through 2022,<sup>11</sup> the average NAEP mathematics scores for Asian and White 4th-grade students were generally higher than those of their peers of other racial/ethnic groups.<sup>12</sup> In addition, the achievement gaps between Asian and White students and students of other groups were generally larger in 2022 than in 2011.<sup>13</sup> For instance,

- the Asian-Black achievement gap was larger in 2022 than in 2011 (42 vs. 34 points);
- the Asian-Hispanic achievement gap was larger in 2022 than in 2011 (35 vs. 28 points);
- the White-Black achievement gap was larger in 2022 than in 2011 (29 vs. 25 points); and
- the White-Hispanic achievement gap was larger in 2022 than in 2011 (21 vs. 20 points).

In contrast, the achievement gap between Asian and White students and students of other racial/ethnic groups in 2022 was generally not measurably different from the corresponding gap in 2019. The only exceptions were the following:

- The Asian-Black achievement gap was larger in 2022 than in 2019 (42 vs. 39 points).
- The White-Black achievement gap was larger in 2022 than in 2019 (29 vs. 25 points).
- The White-Hispanic achievement gap was larger in 2022 than in 2019 (21 vs. 18 points).

At grade 4, the average NAEP mathematics score in 2022 was higher for male students than for female students (239 vs. 233). This pattern has held true for every assessment year since 2003. From 1990 to 2000, there was no measurable difference between the average

mathematics scores for male and female students. The 2022 achievement gap between male and female 4th-grade students (6 points) was larger than the male-female achievement gap in each assessment year from 2003 to 2019 (ranging from 1 to 3 points).

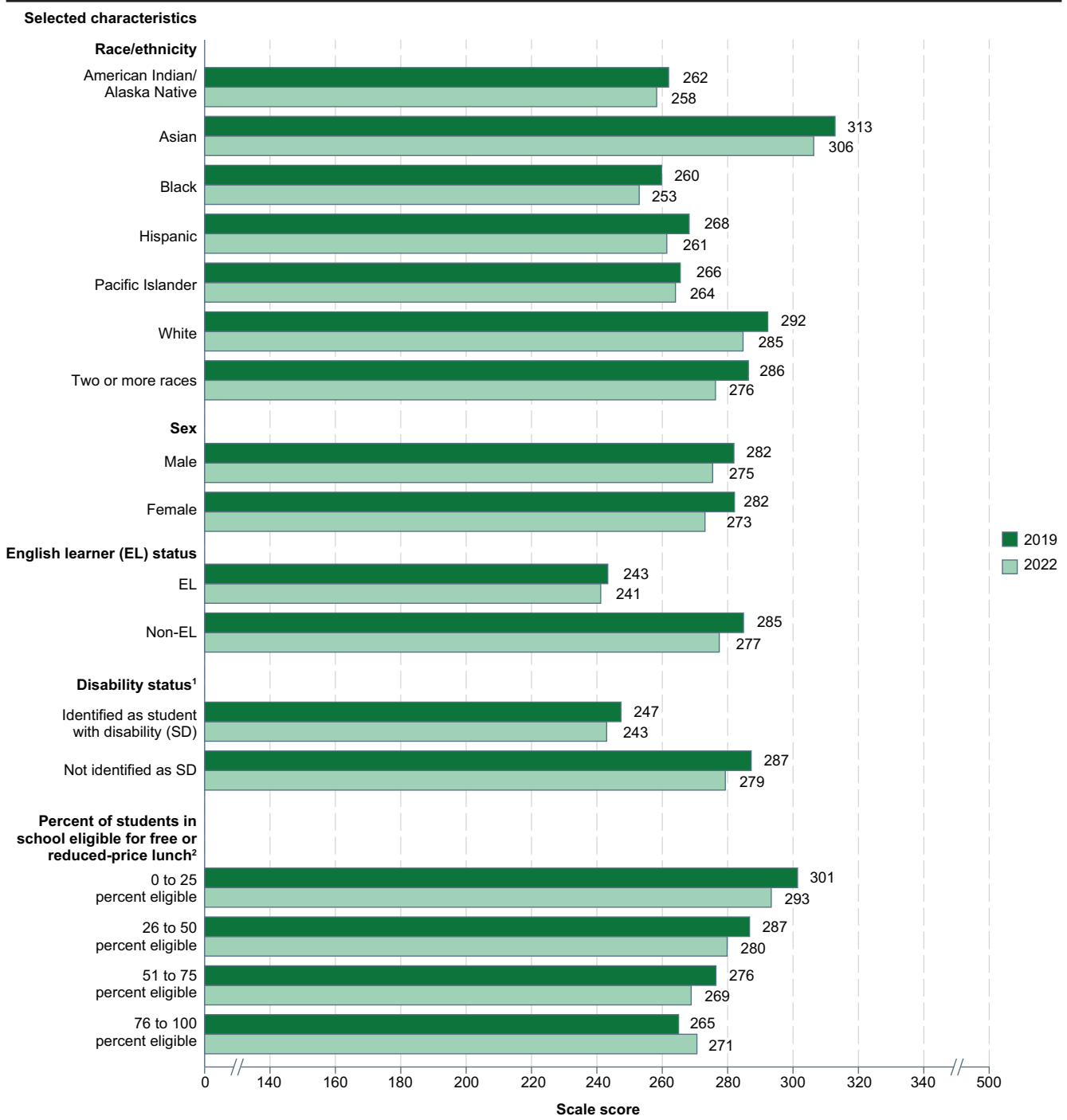
In 2022, the average NAEP mathematics score for 4th-grade EL students was lower than the score for their non-EL peers (216 vs. 239). This pattern has held true for every assessment year since 1996, when NAEP mathematics scores disaggregated by students' EL status first became available. The 2022 achievement gap between non-EL and EL 4th-grade students (23 points) was not measurably different from the gaps in 2019 or 1996.

In 2022, the average NAEP mathematics score for 4th-grade students identified as students with disabilities<sup>14</sup> (212) was lower than the average score for students who were not (240). This pattern has held true for every assessment year since 1996, when NAEP mathematics scores disaggregated by students' disability status first became available. The 2022 achievement gap by students' disability status (28 points) was smaller than the gap in 2019 (30 points) but it was not measurably different from the gap in 1996.

NAEP scores can also be disaggregated by the poverty level of the school students attended. In 2022, the average mathematics score for 4th-grade students in high-poverty schools (230) was lower than the scores for those in mid-low-poverty schools (242) and low-poverty schools (253). The 2022 achievement gap between 4th-grade students in low-poverty schools and those in high-poverty schools (23 points) was smaller than the achievement gap in 2019 (27 points). This was driven by a decline in the average mathematics score of students in low-poverty schools (from 258 in 2019 to 253 in 2022).



**Figure 6. Average National Assessment of Educational Progress (NAEP) mathematics scale scores of 8th-grade students, by selected characteristics: 2019 and 2022**



<sup>1</sup> Students with disabilities include those with an Individualized Education Program (IEP) and those with a 504 plan.

<sup>2</sup> The nonresponse rate for free or reduced-price lunch was greater than 15 percent but not greater than 50 percent.

NOTE: Includes students in public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. The 8th-grade mathematics scale scores range from 0 to 500. Race categories exclude persons of Hispanic ethnicity. Although rounded numbers are displayed, the figures are based on unrounded data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2019 and 2022 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, tables 222.10 and 222.12.

At grade 8, the 2022 patterns in average NAEP mathematics scores by race/ethnicity were similar to those observed for grade 4. At grade 8, the average mathematics score was highest for Asian students (306) in 2022, followed by White students (285). The average mathematics score was lowest for Black students (253) in 2022.

From 2011 through 2022, the average NAEP mathematics scores for Asian and White 8th-grade students were higher than those of their peers of other racial/ethnic groups. In addition, the achievement gaps between Asian students and students of other groups were generally larger in 2022 than in 2011, although the gap in 2022 was not measurably different from the gap in 2019.<sup>15</sup> For instance,

- the Asian-Black achievement gap in 2022 (53 points) was larger than the gap in 2011 (43 points) but was not measurably different from the gap in 2019; and
- the Asian-Hispanic achievement gap in 2022 (45 points) was larger than the gap in 2011 (35 points) but not measurably different from the gap in 2019.

In contrast, the 2022 achievement gaps between White students and students of other racial/ethnic groups with lower average scores were generally not measurably different from the corresponding gaps in 2019 or 2011. The only exception was the gap between White students and students of Two or more races, which was larger in 2022 (8 points) than in 2011 (5 points).

At grade 8, the average NAEP mathematics score in 2022 was higher for male students (275) than it was for female students (273). This pattern has held true for each assessment year between 2003 and 2011 and in 2017. In other assessment years since 1990, there was no measurable difference between the average mathematics scores for male and female students. The achievement gap

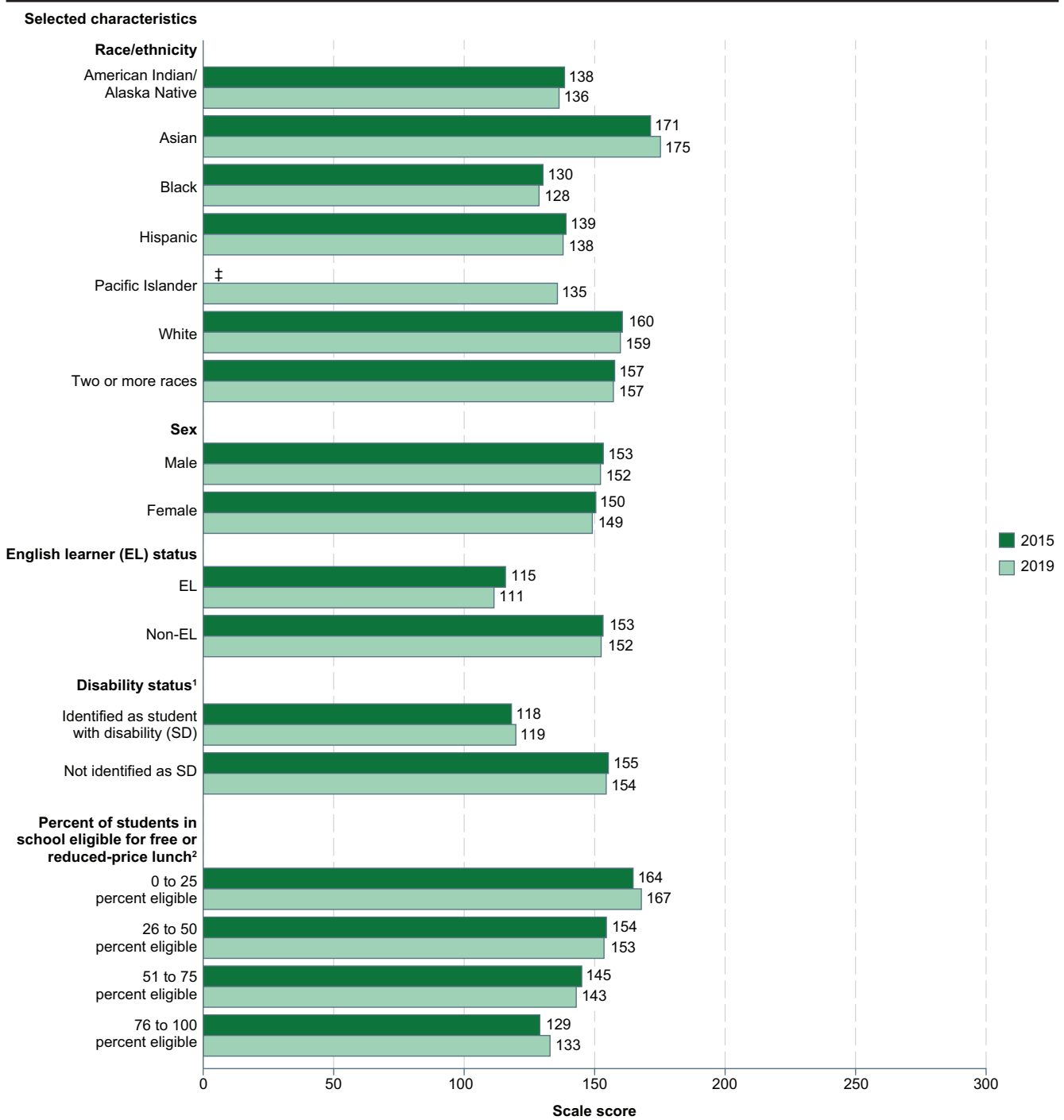
between male and female 8th-grade students was larger in 2022 (2 points) than in 2017 (1 point).

In 2022, the average NAEP mathematics score for 8th-grade EL students (241) was lower than the score for their non-EL peers (277). This pattern has held true for every assessment year since 1996, when these disaggregated scores first became available. The 2022 achievement gap between EL and non-EL 8th-grade students (36 points) was smaller than the gap in 2019 (42 points) and the gap in 1996 (46 points). This was driven by a decline in the average mathematics score of non-EL 8th-grade students (from 285 in 2019 to 277 in 2022).

In 2022, the average NAEP mathematics score for 8th-grade students identified as students with disabilities (243) was lower than the average score for their peers who were not (279). This pattern has held true for every assessment year since 1996, when these disaggregated scores first became available. The 2022 achievement gap by 8th-grade students' disability status (36 points) was smaller than the gap in 2019 (40 points) and the gap in 1996 (42 points).

In 2022, the average NAEP mathematics score for 8th-grade students in high-poverty schools (271) was lower than the scores for 8th-grade students in mid-low-poverty schools (280) and low-poverty schools (293).<sup>16</sup> The achievement gap between 8th-grade students in low-poverty schools and those in high-poverty schools was smaller in 2022 (23 points) than in 2019 (36 points). This was driven both by a decline in the average mathematics score of students in low-poverty schools (from 301 in 2019 to 293 in 2022) and an increase in the average mathematics score of students in high-poverty schools over the same period (from 265 in 2019 to 271 in 2022).

**Figure 7. Average National Assessment of Educational Progress (NAEP) mathematics scale scores of 12th-grade students, by selected characteristics: 2015 and 2019**



‡ Reporting standards not met. Either there are too few cases for a reliable estimate or the coefficient of variation (CV) is 50 percent or greater.

<sup>1</sup> Students with disabilities include those with an Individualized Education Program (IEP) and those with a 504 plan.

<sup>2</sup> The nonresponse rate for free or reduced-price lunch in 2019 was greater than 15 percent but not greater than 50 percent.

NOTE: Includes students in public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. The 12th-grade mathematics scale scores range from 0 to 300. Assessment was not conducted for grade 12 in 2022. Race categories exclude persons of Hispanic ethnicity. Although rounded numbers are displayed, the figures are based on unrounded data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2015 and 2019 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, tables 222.10 and 222.12.

As mentioned earlier in this indicator, the most recent NAEP mathematics assessments for grade 12 students were conducted in 2019, before the pandemic. At grade 12, the average mathematics score in 2019 was highest for Asian students (175), followed by White students (159) and students of Two or more races (157). The average mathematics scores of students in these racial/ethnic groups were higher than those for Hispanic students (138), American Indian/Alaska Native students (136), Pacific Islander students (135), and Black students (128).

Since 2013,<sup>17</sup> the average NAEP mathematics score was generally highest for 12th-grade students who were Asian and White. Generally speaking, however, the achievement gaps between these two racial/ethnic groups and other groups in 2019 did not differ measurably compared with the corresponding achievement gaps in 2015 or 2013. The only exceptions were the following:

- The Asian-Black achievement gap was larger in 2019 (46 points) than in 2013 (42 points).
- The Asian-Pacific Islander achievement gap was larger in 2019 (39 points) than in 2013 (23 points).

These growing achievement gaps were primarily driven by declines in the average mathematics scores of Black 12th-grade students (from 132 in 2013 to 128 in 2019) and Pacific Islander 12th-grade students (from 151 in 2013 to 135 in 2019).

In 2019, the average 12th-grade NAEP mathematics score was higher for male students (152) than for female

students (149). This pattern has held true for every assessment year since 2005. The 2019 achievement gap between male and female 12th-grade students (3 points) was not measurably different from the gap in each assessment year since 2005.

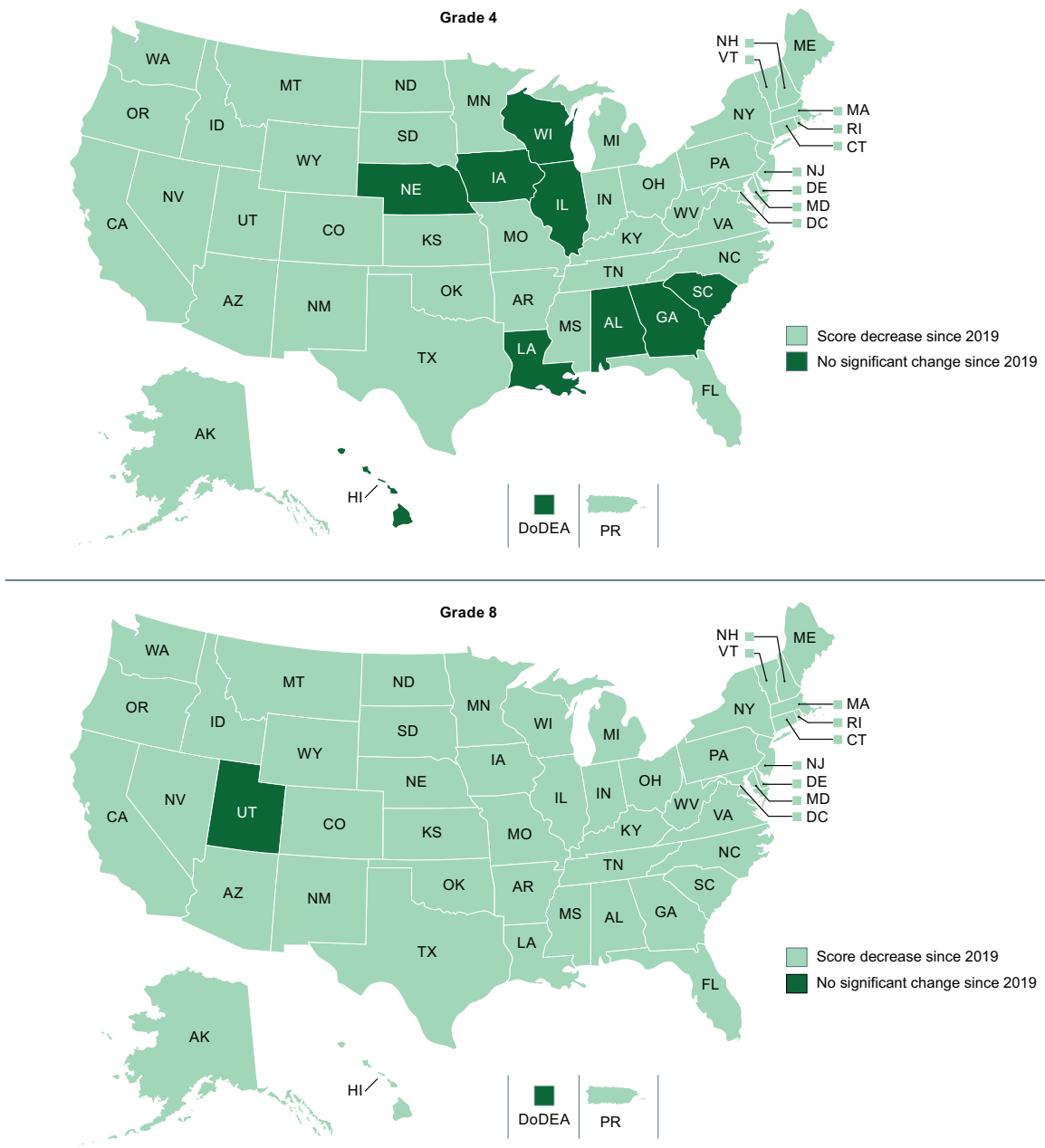
In 2019, the average NAEP mathematics score for 12th-grade EL students (111) was lower than the score for their non-EL peers (152). This pattern has held true in every assessment year since 2005. The achievement gap between non-EL and EL students in 2019 (41 points) was not measurably different from the achievement gap in 2015, but it was larger than the achievement gap in 2005 (31 points).

In 2019, the average NAEP mathematics score for 12th-grade students identified as students with disabilities (119) was lower than the score of students who were not (154). This pattern has held true in every assessment year since 2005. The 2019 achievement gap by 12th-grade students' disability status (35 points) was not measurably different from the gap in each assessment year since 2005.

In 2019, the average NAEP mathematics score for 12th-grade students in high-poverty schools (133) was lower than the scores for 12th-grade students in mid-high-poverty schools (143), mid-low-poverty schools (153), and low-poverty schools (167).

Scale Scores by State

Figure 8. Change in average National Assessment of Educational Progress (NAEP) mathematics scale scores of 4th- and 8th-grade public school students, by state or jurisdiction: 2019 to 2022



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2019 and 2022 Mathematics Assessments, NAEP Data Explorer. See *Digest of Education Statistics 2022*, 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.<sup>18</sup> The national average mathematics score for 4th-grade public school students decreased from 240 in 2019 to 235 in 2022. Among the 50 states and the District of Columbia, mathematics scores in 2022 for 4th-grade public school students

- were higher than the national average score in 16 states;
- were lower than the national average score in 13 states and the District of Columbia;
- were higher than the 2019 scores in 0 states;
- were lower than the 2019 scores in 41 states and the District of Columbia; and
- ranged from 221 in New Mexico to 243 in Wyoming.

In 2022, the average 4th-grade mathematics score was 178 for students in Puerto Rico public schools, which was lower than it was in 2019 (185). In Department of Defense Education Activity (DoDEA) public schools, the average 4th-grade mathematics score in 2022 was 250, which was not measurably different from the score in 2019.

At grade 8, the national average NAEP mathematics score for public school students decreased from 281 in 2019 to 273 in 2022. Among the 50 states and the District of Columbia, mathematics scores in 2022 for 8th-grade public school students

- were higher than the national average score in 18 states;
- were lower than the national average score in 16 states and the District of Columbia;
- were higher than the 2019 scores in 0 states;
- were lower than the 2019 scores in 49 states and the District of Columbia; and
- ranged from 259 in New Mexico to 284 in Massachusetts.

In 2022, the average 8th-grade mathematics score was 216 for students in Puerto Rico public schools, which was lower than it was in 2019 (222). In DoDEA public schools, the average 8th-grade mathematics score in 2022 was 292, which was not measurably different from the score in 2019.

**Endnotes:**

<sup>1</sup> Although average scores are reported on a 0-500 scale at grades 4 and 8, the scale scores were derived separately, and therefore scores cannot be compared across grades. For more information on NAEP, including the history of the assessment, sampling procedures, and the transition from paper-based assessments to digitally based assessments, please see <https://nces.ed.gov/nationsreportcard/>.

<sup>2</sup> The NAEP achievement-level setting is based on the judgments of a broadly representative panel of teachers, education specialists, and members of the general public. The authorizing legislation for NAEP requires that the achievement levels be used on a trial basis until the Commissioner of the National Center for Education Statistics (NCES) determines that the achievement levels are reasonable, valid, and informative to the public (20 USC § 9622(e)(2)(C)). The NCES Commissioner's determination is to be based on a congressionally mandated, rigorous, and independent evaluation. The latest evaluation of the achievement levels was conducted by a committee convened by the National Academies of Sciences, Engineering, and Medicine in 2016. The evaluation concluded that further evidence should be gathered to determine whether the achievement levels are reasonable, valid, and informative. Accordingly, the NCES Commissioner determined that the trial status of the achievement levels should be maintained at this time. Read more about the [NAEP mathematics achievement levels by grade](#).

<sup>3</sup> This indicator presents data from the Main NAEP mathematics assessment, which is not comparable to the Long-Term Trend NAEP mathematics assessment. The Main NAEP mathematics assessment was first administered in 1990 and assesses student performance at grades 4, 8, and 12, while the Long-Term Trend NAEP mathematics assessment was first administered in 1973 and assesses student performance at ages 9, 13, and 17. In addition, the two assessments differ in the content assessed, how often the assessment is administered, and how the results are reported.

<sup>4</sup> NAEP collects public school data from urban districts at grades 4 and 8 based on the same mathematics assessment used to report national and state results. Twenty-six districts participated in the 2022 Trial Urban District Assessment (TUDA). For TUDA results in mathematics, see <https://www.nationsreportcard.gov/mathematics/districts/scores/?grade=4> and <https://www.nationsreportcard.gov/mathematics/districts/scores/?grade=8>.

<sup>5</sup> NAEP mathematics scores for 4th-grade students in 2022 had a mean of 236 and a standard deviation (SD) of 33. NAEP mathematics scores for 8th-grade students in 2022 had a mean of 274 and an SD of 39. NAEP mathematics scores for 12th-grade students in 2019 had a mean of 150 and an SD of 36 (retrieved January 26, 2023, from the [Main NAEP Data Explorer](#)).

<sup>6</sup> The 2005 mathematics framework for grade 12 introduced changes from the previous framework in order to reflect

adjustments in curricular emphases and to ensure an appropriate balance of content. Consequently, the 12th-grade mathematics results in 2005 and subsequent years could not be compared to previous assessments, and a new trend line was established beginning in 2005.

<sup>7</sup> NAEP scores are reported at five selected percentiles to show the progress made by lower performing (10th and 25th percentiles), middle-performing (50th percentile), and higher performing (75th and 90th percentiles) students. This indicator focuses on the lowest performing (10th percentile) and the highest performing (90th percentile) students.

<sup>8</sup> Throughout this indicator, score differences (gaps) are calculated using unrounded data and, therefore, may differ from values calculated using the rounded scores presented.

<sup>9</sup> Nonresponse for this variable was greater than 15 percent but not greater than 50 percent.

<sup>10</sup> High-poverty schools are defined here as schools where 76 to 100 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high-poverty schools are schools where 51 to 75 percent of the students are eligible for FRPL; mid-low-poverty schools are schools where 26 to 50 percent of the students are eligible for FRPL; and low-poverty schools are schools where 25 percent or less of the students are eligible for FRPL.

<sup>11</sup> This indicator presents grades 4 and 8 trend analyses for race/ethnicity since 2011, when NAEP began reporting separate data for Asian students, Pacific Islander students, and students of Two or more races.

<sup>12</sup> The only exception was 2019, when the average mathematics score for Pacific Islander students was not measurably different from the score for White students.

<sup>13</sup> The only exception was the White-American Indian/Alaska Native scale score gap, which was not measurably different between 2011 and 2022.

<sup>14</sup> Students with disabilities include those with an Individualized Education Program (IEP) and those with a 504 plan.

<sup>15</sup> The only exception was the Asian-Pacific Islander scale score gap, which was not measurably different between 2011 and 2022.

<sup>16</sup> Nonresponse for this variable was greater than 15 percent but not greater than 50 percent.

<sup>17</sup> In 2013, NAEP began reporting separate data at the 12th-grade level for Asian students, Pacific Islander students, and students of Two or more races. Thus, this indicator presents grade 12 trend analyses for race/ethnicity since 2013.

<sup>18</sup> NAEP results serve as a common metric for all states and are not comparable to results from assessments administered by state education agencies.

**Reference tables:** *Digest of Education Statistics 2022*, tables 222.10, 222.12, 222.50, 222.60, and 222.77

**Related indicators and resources:** [Absenteeism and Achievement](#) [*Status and Trends in the Education of Racial and Ethnic Groups*]; [International Comparisons: Science, Reading, and Mathematics Literacy of 15-Year-Old Students](#); [International Comparisons: Mathematics and Science Achievement at Grades 4 and 8](#); [Mathematics Achievement](#) [*Status and Trends in the Education of Racial and Ethnic Groups*]; [Reading and Mathematics Score Trends](#); [Reading Performance](#); [Science Performance](#); [Technology and Engineering Literacy](#)

**Glossary:** Achievement gap; Achievement levels; Disabilities, children with; English learner (EL); NAEP; Public school or institution; Racial/ethnic group