

2

Average Mathematics Scale Score and Achievement-Level Results for the Nation and States

Overview

This chapter presents the NAEP 2003 mathematics results at grades 4 and 8 for public and nonpublic school students in the nation as a whole and by region of the country, and for public school students in participating states and other jurisdictions. The NAEP mathematics composite scale ranges from 0 to 500; the mathematics achievement levels are *Basic*, *Proficient*, and *Advanced*.

In addition to the results from the 2003 mathematics assessment, national results are presented from 1990, 1992, 1996, and 2000. Results for participating states and other jurisdictions are included for three previous years at grade 4 (1992, 1996, and 2000) and four previous years at grade 8 (1990, 1992, 1996, and 2000). The national sample at each grade in 2003 comprised the combined sample of students assessed in each participating state plus an additional private school sample.

Results presented in the figures and tables throughout this report distinguish between two different reporting samples. The most recent results, based on administration procedures in which testing accommodations were permitted for special-needs students (national results between 1996 and 2003 and state-level samples for 2000 and 2003), are denoted by solid lines or shading. Results from administrations where accommodations were not permitted (national

results between 1990 and 2000; state-level results from 1992 to 2000 at grade 4 and 1990 to 2000 at grade 8) are denoted by broken lines or unshaded areas. See chapter 1 for more information on the change in administration procedures.

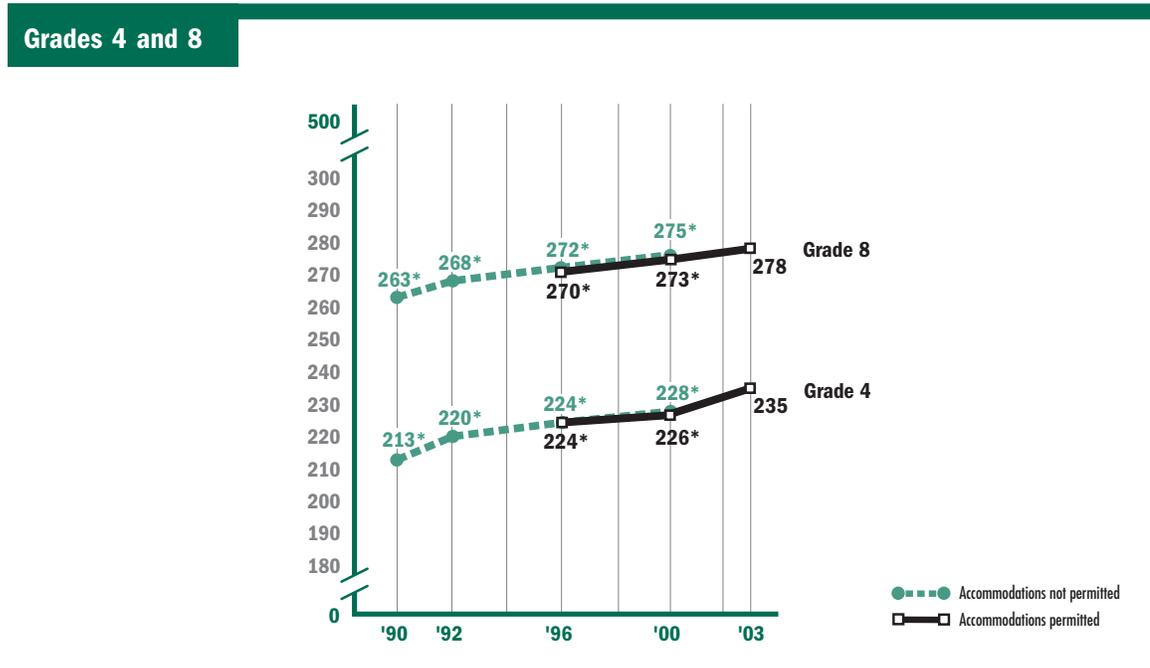
Both types of administration procedures were used in 1996 and 2000 at the national level and only in 2000 at the state level. Therefore there are two different sets of results in those years. Comparisons with data from 2003 are based on administrations where accom-

modations were permitted. Comparisons between the two sets of results in the years when both procedures were used are discussed in detail in other NAEP reports.¹

National Mathematics Scale Score Results

Figure 2.1 displays the average mathematics scores from 1990 to 2003 for fourth- and eighth-grade students. Average mathematics scores were higher in 2003 than in all the previous assessment years at both grades 4 and 8.

Figure 2.1 Average mathematics scale scores, grades 4 and 8: 1990–2003



* Significantly different from 2003.

NOTE: In addition to allowing for accommodations, the accommodations-permitted results (1996–2003) differ slightly from previous years' results, and from previously reported results for 1996 and 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, and 2003 Mathematics Assessments.

¹ Braswell, J. S., Lutkus, A. D., Grigg, W. S., Santapau, S. L., Tay-Lim, B., and Johnson, M. (2001). *The Nation's Report Card: Mathematics 2000* (NCES 2001–517). Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics.

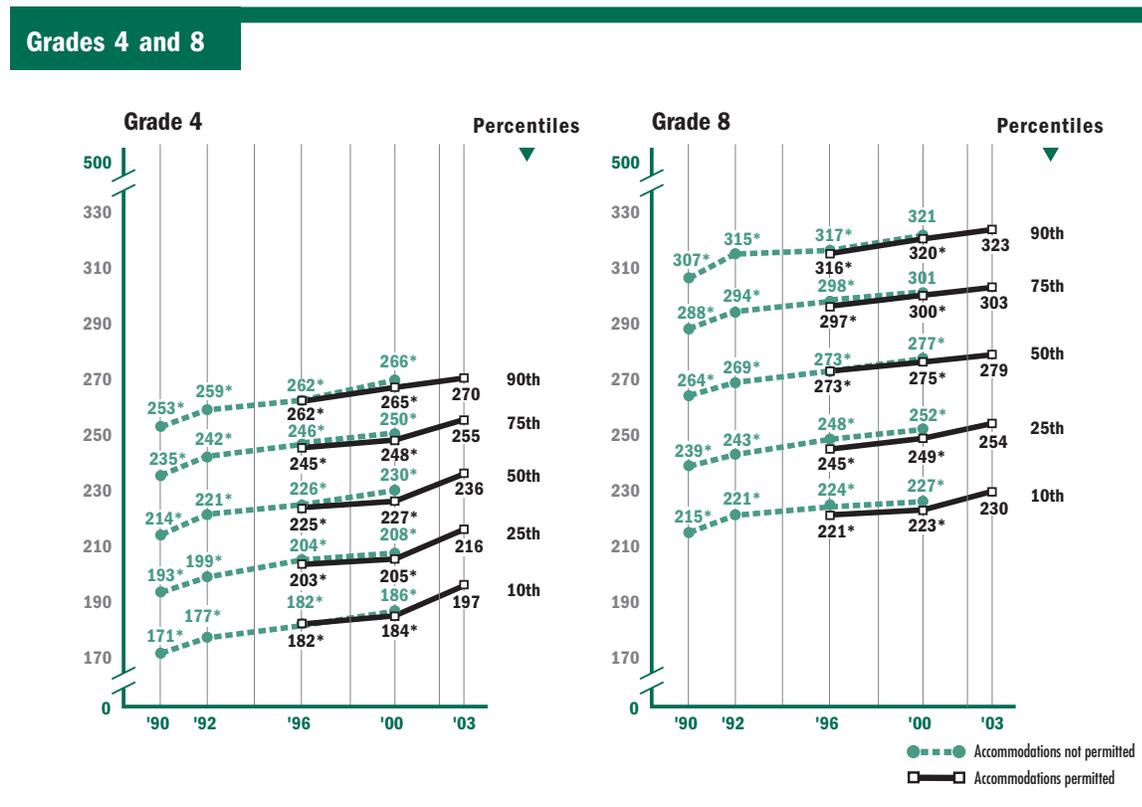
National Mathematics Scale Scores by Percentile

Another way to view students' performance is by looking at how scores have changed across the performance distribution. An examination of scores at different percentiles on the 0–500 mathematics scale at each grade indicates whether or not the changes seen in the overall national average score results are reflected in the performance of lower-, middle-, and higher-performing students. Figure 2.2 shows the average mathematics scale scores for students scoring at the 10th, 25th, 50th, 75th, and 90th percentiles at grades 4 and 8. The percentile indicates the percentage of students whose scores fell below a par-

ticular point on the NAEP mathematics scale. For example, the 75th percentile score at grade 4 was 255 in 2003, indicating that 75 percent of fourth-graders scored below 255.

At both grades 4 and 8, scores at the 10th, 25th, 50th, 75th, and 90th percentiles were higher in 2003 than in any of the previous assessment years. At grade 4, gains detected between 2000 and 2003 ranged from approximately 5 scale score points for students performing at the 90th percentile to 13 points for students at the 10th percentile. At grade 8, increases since 2000 ranged from approximately 3 scale score points at the 90th percentile to 7 points at the 10th percentile.

Figure 2.2 Mathematics scale score percentiles, grades 4 and 8: 1990–2003



* Significantly different from 2003.

NOTE: In addition to allowing for accommodations, the accommodations-permitted results (1996–2003) differ slightly from previous years' results, and from previously reported results for 1996 and 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, and 2003 Mathematics Assessments.

National Mathematics Achievement-Level Results

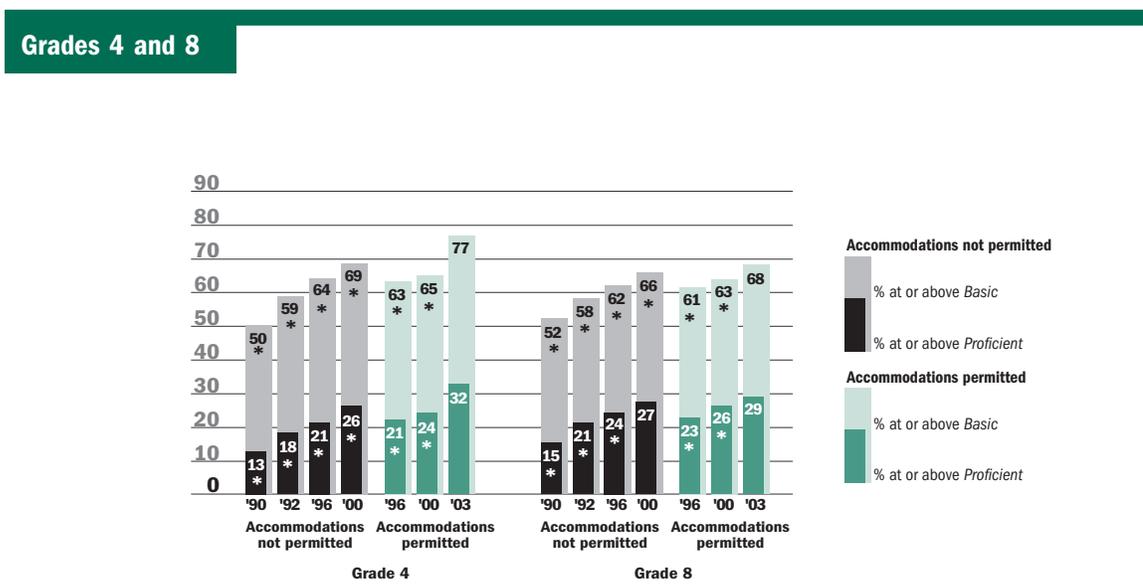
In addition to reporting average mathematics scale scores, NAEP reports mathematics performance by achievement levels. The mathematics achievement levels are *Basic*, *Proficient*, and *Advanced*. Discussion related to the setting of achievement levels is covered in chapter 1.

Figure 2.3 tracks the percentages of students performing at or above *Basic* and at or above *Proficient*—the level identified by the National Assessment Governing Board (NAGB) as the level at which all students should perform—across assessment years. Table 2.1 presents the achievement-level results in two ways for each grade: as the percentage of students performing within each achievement level and as the percentage of students at or above the *Basic* level and at or above the *Proficient* level. The percentages at or above specific achievement levels are cumulative. Included among the percentage of students performing at or above the *Basic* level are those who have

achieved the *Proficient* and *Advanced* levels of performance. Included among students at or above the *Proficient* level are those who have attained the *Advanced* level of performance. Although significant differences in the percentages of students performing within achievement levels are indicated in the table, only the differences at or above *Basic*, at or above *Proficient*, and at *Advanced* are discussed in this section.

In 2003, 32 percent of fourth-graders and 29 percent of eighth-graders performed at or above the *Proficient* level. Table 2.1 shows that the percentages of fourth-grade students performing at or above *Basic*, at or above *Proficient*, and at *Advanced* increased from 2000 to 2003, as did the percentages of eighth-graders performing at or above *Basic* and at or above *Proficient*. Further, the percentages of fourth- and eighth-graders performing at or above *Basic*, at or above *Proficient*, and at *Advanced* were higher in 2003 than in 1990.

Figure 2.3 Percentages of students at or above *Basic* and *Proficient* in mathematics, grades 4 and 8: 1990–2003



* Significantly different from 2003.

NOTE: In addition to allowing for accommodations, the accommodations-permitted results (1996–2003) differ slightly from previous years' results, and from previously reported results for 1996 and 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, and 2003 Mathematics Assessments.

Table 2.1 Percentages of students, by mathematics achievement level, grades 4 and 8: 1990–2003

						At or above	At or above
		Below Basic	At Basic	At Proficient	At Advanced	Basic	Proficient
Grade 4							
Accommodations not permitted	1990	50 *	37 *	12 *	1 *	50 *	13 *
	1992	41 *	41 *	16 *	2 *	59 *	18 *
	1996	36 *	43	19 *	2 *	64 *	21 *
	2000	31 *	43 *	23 *	3 *	69 *	26 *
Accommodations permitted	1996	37 *	43 *	19 *	2 *	63 *	21 *
	2000	35 *	42 *	21 *	3 *	65 *	24 *
	2003	23	45	29	4	77	32
Grade 8							
Accommodations not permitted	1990	48 *	37 *	13 *	2 *	52 *	15 *
	1992	42 *	37 *	18 *	3 *	58 *	21 *
	1996	38 *	39	20 *	4 *	62 *	24 *
	2000	34 *	38	22	5	66 *	27
Accommodations permitted	1996	39 *	38	20 *	4 *	61 *	23 *
	2000	37 *	38 *	21 *	5	63 *	26 *
	2003	32	39	23	5	68	29

* Significantly different from 2003.

NOTE: Detail may not sum to totals because of rounding. In addition to allowing for accommodations, the accommodations-permitted results (1996–2003) differ slightly from previous years' results, and from previously reported results for 1996 and 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

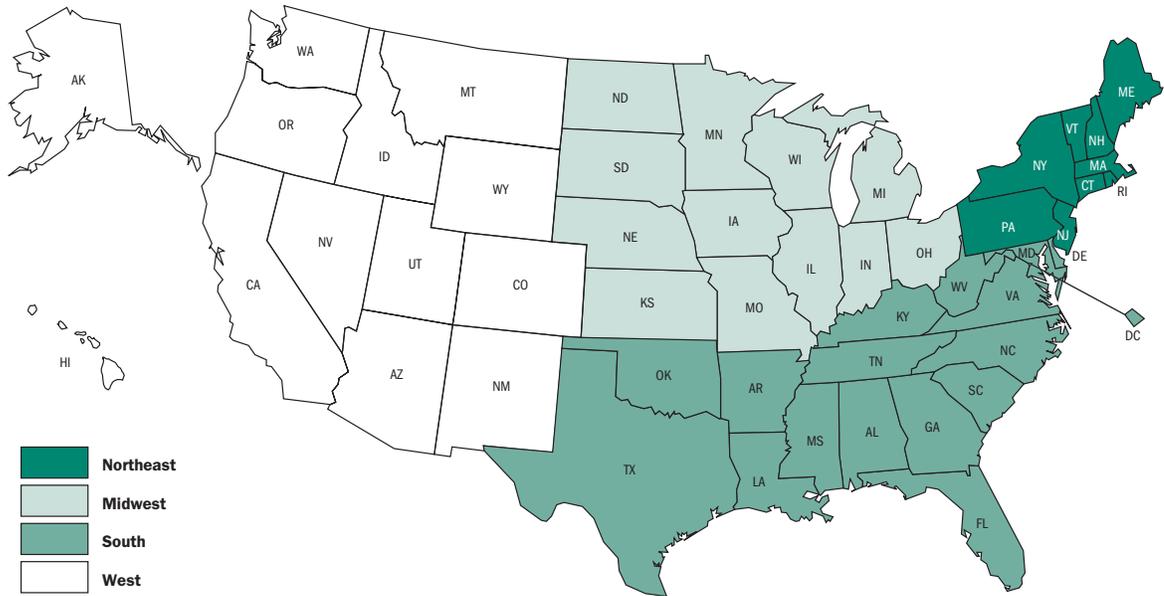
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, and 2003 Mathematics Assessments.

Mathematics Results by Region of the Country

Prior to 2003, NAEP results were reported for four NAEP-defined regions of the nation: Northeast, Southeast, Central, and West. As of 2003, to align NAEP with other federal data collections, NAEP analysis and reports have used the U.S. Census Bureau's definition of "region." The four regions defined by the U.S.

Census Bureau are Northeast, South, Midwest, and West. Figure 2.4 shows how states are subdivided into these regions (the two Department of Defense Educational Activities jurisdictions are not assigned to any region). As a result of this change in the region variable, the following section presents the results by region of the country for the 2003 assessment only. (See figure A.2 in appendix A.)

Figure 2.4 Map of regions of the country according to U.S. Census



SOURCE: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau.

Average mathematics scale scores by region are shown in table 2.2 for grades 4 and 8. At both grades 4 and 8, average mathematics scores were higher for students in the Northeast and Midwest than for students in the South and West,

and no measurable difference was detected between scores for students in the Northeast and Midwest. Average scores for students in the South were higher than for students in the West at both grade levels.

Table 2.2 Average mathematics scale scores, by region of the country, grades 4 and 8: 2003

2003	
Grade 4	
Northeast	238
Midwest	238
South	234
West	231
Grade 8	
Northeast	282
Midwest	283
South	275
West	273

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessment.

Table 2.3 displays achievement-level information by region for fourth- and eighth-graders both as the percentages of students performing within each achievement level and as the percentages of students performing at or above the *Basic* and *Proficient* levels.

At grade 4, the percentages of students performing at or above the *Basic* and *Proficient* and at *Advanced* levels were higher in the Northeast and Midwest

than in the South and West. Higher percentages of students performed at or above *Basic* and *Proficient* in the South than in the West.

At grade 8, higher percentages of students performed at or above *Basic* and at or above *Proficient* in the Northeast and Midwest than in the South and West. A higher percentage of eighth-graders performed at or above *Basic* in the South than in the West.

Table 2.3 Percentages of students, by mathematics achievement level and region of the country, grades 4 and 8: 2003

		Below <i>Basic</i>	At <i>Basic</i>	At <i>Proficient</i>	At <i>Advanced</i>	At or above <i>Basic</i>	At or above <i>Proficient</i>
Grade 4							
	Northeast	19	44	32	5	81	37
	Midwest	20	44	32	5	80	36
	South	23	46	27	4	77	31
	West	28	44	25	3	72	28
Grade 8							
	Northeast	28	39	27	6	72	33
	Midwest	26	40	27	6	74	33
	South	34	40	21	5	66	25
	West	37	37	21	5	63	26

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessment.

Mathematics Results for States and Other Jurisdictions

In addition to the national results, mathematics performance data were collected for fourth- and eighth-grade students attending public schools in 50 states and 3 other jurisdictions that participated in the 2003 assessment.² At both fourth and eighth grades, all jurisdictions met NCES participation rate standards. Variation in exclusion rates should be considered when interpreting state results, and is discussed in detail in the section on Students with Disabilities and Limited-English-Proficient Students in appendix A.

Statistically significant changes across years are indicated when examining only one jurisdiction at a time (*), or when using a multiple comparison procedure based on all the jurisdictions that participated (**). Differences discussed in this report are based on statistically significant findings detected using either comparison procedure (see appendix A for a more detailed discussion of comparison procedures).

Mathematics Scale Score Results by State/Jurisdiction

Average mathematics scale scores by jurisdiction are shown in table 2.4 for grade 4, and in table 2.5 for grade 8. Whereas the national and regional results presented in the previous sections of this chapter represent both public and nonpublic schools combined, the national and state average scores shown in the following tables and figures represent the performance of public school students only. The overall national public school results include the results for the District of Columbia, but not the results for the Department of Defense schools.

In 2003, average fourth-grade scores ranged from 205 to 243. Out of the 43 jurisdictions that participated in both the 2000 and 2003 fourth-grade assessments, all showed increases in average scores. Similarly, all 42 of the jurisdictions that participated in the 1992 and 2003 assessments showed average score increases.

Average eighth-grade scores ranged from 243 to 291 in 2003. Of the 42 jurisdictions that participated in both the 2000 and 2003 assessments at grade 8, 28 had higher average scores in 2003. All 38 jurisdictions that participated in both 1990 and 2003 had higher average scores in 2003.

² Throughout this chapter the term “jurisdiction” is used to refer to the 50 states, the District of Columbia, and the two Department of Defense school systems that participated in the NAEP mathematics assessments.

Table 2.4 Average mathematics scale scores, grade 4 public schools: By state, 1992–2003

Grade 4	Accommodations not permitted			Accommodations permitted	
	1992	1996	2000	2000	2003
Nation (public) ¹	219 *	222 *	226 *	224 *	234
Alabama	208 **	212 **	218 **	217 **	223
Alaska	—	224 **	—	—	233
Arizona	215 **	218 **	219 **	219 **	229
Arkansas	210 **	216 **	217 **	216 **	229
California	208 **	209 **	214 **	213 **	227
Colorado	221 **	226 **	—	—	235
Connecticut	227 **	232 **	234 **	234 **	241
Delaware	218 **	215 **	—	—	236
Florida	214 **	216 **	—	—	234
Georgia	216 **	215 **	220 **	219 **	230
Hawaii	214 **	215 **	216 **	216 **	227
Idaho	222 **	—	227 **	224 **	235
Illinois	—	—	225 **	223 **	233
Indiana	221 **	229 **	234 **	233 **	238
Iowa	230 **	229 **	233 **	231 **	238
Kansas	—	—	232 **	232 **	242
Kentucky	215 **	220 **	221 **	219 **	229
Louisiana	204 **	209 **	218 **	218 **	226
Maine	232 **	232 **	231 **	230 **	238
Maryland	217 **	221 **	222 **	222 **	233
Massachusetts	227 **	229 **	235 **	233 **	242
Michigan	220 **	226 **	231 **	229 **	236
Minnesota	228 **	232 **	235 **	234 **	242
Mississippi	202 **	208 **	211 **	211 **	223
Missouri	222 **	225 **	229 **	228 **	235
Montana	—	228 **	230 **	228 **	236
Nebraska	225 **	228 **	226 **	225 **	236
Nevada	—	218 **	220 **	220 **	228
New Hampshire	230 **	—	—	—	243
New Jersey	227 **	227 **	—	—	239
New Mexico	213 **	214 **	214 **	213 **	223
New York	218 **	223 **	227 **	225 **	236
North Carolina	213 **	224 **	232 **	230 **	242
North Dakota	229 **	231 **	231 **	230 **	238
Ohio	219 **	—	231 **	230 **	238
Oklahoma	220 **	—	225 **	224 **	229
Oregon	—	223 **	227 **	224 **	236
Pennsylvania	224 **	226 **	—	—	236
Rhode Island	215 **	220 **	225 **	224 **	230
South Carolina	212 **	213 **	220 **	220 **	236
South Dakota	—	—	—	—	237
Tennessee	211 **	219 **	220 **	220 **	228
Texas	218 **	229 **	233 **	231 **	237
Utah	224 **	227 **	227 **	227 **	235
Vermont	—	225 **	232 **	232 **	242
Virginia	221 **	223 **	230 **	230 **	239
Washington	—	225 **	—	—	238
West Virginia	215 **	223 **	225 **	223 **	231
Wisconsin	229 **	231 **	—	—	237
Wyoming	225 **	223 **	229 **	229 **	241
Other jurisdictions					
District of Columbia	193 **	187 **	193 **	192 **	205
DDESS ²	—	224 **	228 **	228 **	237
DoDDS ³	—	223 **	228 **	226 **	237

— Not available. The jurisdiction did not participate or did not meet minimum participation guidelines for reporting.

* Significantly different from 2003 when only one jurisdiction or the nation is being examined.

** Significantly different from 2003 when using a multiple-comparison procedure based on all jurisdictions that participated in both years.

¹National results for assessments prior to 2003 are based on the national sample, not on aggregated state samples.

²Department of Defense Domestic Dependent Elementary and Secondary Schools.

³Department of Defense Dependents Schools (Overseas).

NOTE: State-level data were not collected in 1990. Comparative performance results may be affected by changes in exclusion rates for students with disabilities and limited-English-proficient students in the NAEP samples. In addition to allowing for accommodations, the accommodations-permitted results for national public schools (2000 and 2003) differ slightly from previous years' results, and from previously reported results for 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992, 1996, 2000, and 2003 Mathematics Assessments.

Table 2.5 Average mathematics scale scores, grade 8 public schools: By state, 1990–2003

Grade 8	Accommodations not permitted				Accommodations permitted	
	1990	1992	1996	2000	2000	2003
Nation (public) ¹	262 *	267 *	271 *	274	272 *	276
Alabama	253 ***,	252 ***,	257 *	262	264	262
Alaska	—	—	278	—	—	279
Arizona	260 ***,	265 ***,	268	271	269	271
Arkansas	256 ***,	256 ***,	262 *	261 *	257 ***,	266
California	256 ***,	261 ***,	263	262 *	260 ***,	267
Colorado	267 ***,	272 ***,	276 ***,	—	—	283
Connecticut	270 ***,	274 ***,	280 ***,	282	281	284
Delaware	261 ***,	263 ***,	267 ***,	—	—	277
Florida	255 ***,	260 ***,	264 ***,	—	—	271
Georgia	259 ***,	259 ***,	262 ***,	266	265 ***,	270
Hawaii	251 ***,	257 ***,	262 ***,	263	262 *	266
Idaho	271 ***,	275 ***,	—	278	277 *	280
Illinois	261 ***,	—	—	277	275	277
Indiana	267 ***,	270 ***,	276 ***,	283	281	281
Iowa	278 ***,	283	284	—	—	284
Kansas	—	—	—	284	283	284
Kentucky	257 ***,	262 ***,	267 ***,	272	270 ***,	274
Louisiana	246 ***,	250 ***,	252 ***,	259 ***,	259 ***,	266
Maine	—	279 ***,	284	284	281	282
Maryland	261 ***,	265 ***,	270 ***,	276	272 ***,	278
Massachusetts	—	273 ***,	278 ***,	283 *	279 ***,	287
Michigan	264 ***,	267 ***,	277	278	277	276
Minnesota	275 ***,	282 ***,	284 ***,	288	287 *	291
Mississippi	—	246 ***,	250 ***,	254 ***,	254 ***,	261
Missouri	—	271 ***,	273 ***,	274 ***,	271 ***,	279
Montana	280 ***,	—	283	287	285	286
Nebraska	276 ***,	278 ***,	283	281	280	282
Nevada	—	—	—	268	265 ***,	268
New Hampshire	273 ***,	278 ***,	—	—	—	286
New Jersey	270 ***,	272 ***,	—	—	—	281
New Mexico	256 ***,	260 ***,	262	260	259 ***,	263
New York	261 ***,	266 ***,	270 ***,	276	271 ***,	280
North Carolina	250 ***,	258 ***,	268 ***,	280	276 ***,	281
North Dakota	281 ***,	283 ***,	284 ***,	283 ***,	282 ***,	287
Ohio	264 ***,	268 ***,	—	283	281	282
Oklahoma	263 ***,	268 ***,	—	272	270	272
Oregon	271 ***,	—	276 ***,	281	280	281
Pennsylvania	266 ***,	271 ***,	—	—	—	279
Rhode Island	260 ***,	266 ***,	269 ***,	273	269 *	272
South Carolina	—	261 ***,	261 ***,	266 ***,	265 ***,	277
South Dakota	—	—	—	—	—	285
Tennessee	—	259 ***,	263 ***,	263	262 ***,	268
Texas	258 ***,	265 ***,	270 ***,	275	273	277
Utah	—	274 ***,	277 ***,	275 ***,	274 ***,	281
Vermont	—	—	279 ***,	283	281 ***,	286
Virginia	264 ***,	268 ***,	270 ***,	277 *	275 ***,	282
Washington	—	—	276 ***,	—	—	281
West Virginia	256 ***,	259 ***,	265 ***,	271	266 ***,	271
Wisconsin	274 ***,	278 ***,	283	—	—	284
Wyoming	272 ***,	275 ***,	275 ***,	277 ***,	276 ***,	284
Other jurisdictions						
District of Columbia	231 ***,	235 ***,	233 ***,	234 ***,	235 ***,	243
DDESS ²	—	—	269 ***,	277	274 ***,	282
DoDDS ³	—	—	275 ***,	278 ***,	278 ***,	286

— Not available. The jurisdiction did not participate or did not meet minimum participation guidelines for reporting.

* Significantly different from 2003 when only one jurisdiction or the nation is being examined.

** Significantly different from 2003 when using a multiple-comparison procedure based on all jurisdictions that participated in both years.

¹National results for assessments prior to 2003 are based on the national sample, not on aggregated state samples.

²Department of Defense Domestic Dependent Elementary and Secondary Schools.

³Department of Defense Dependents Schools (Overseas).

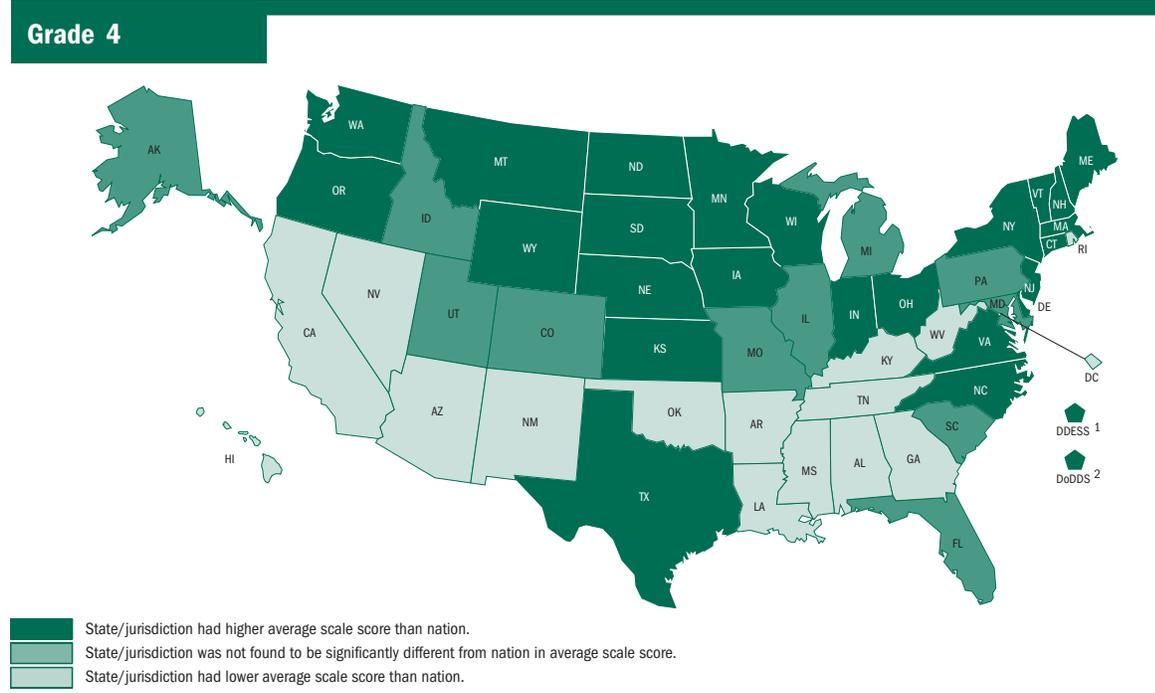
NOTE: Comparative performance results may be affected by changes in exclusion rates for students with disabilities and limited-English-proficient students in the NAEP samples. In addition to allowing for accommodations, the accommodations-permitted results for national public schools (2000 and 2003) differ slightly from previous years' results, and from previously reported results for 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, and 2003 Mathematics Assessments.

The maps in figures 2.5 and 2.6 compare jurisdictional to national average mathematics scores for public school students in 2003, at grades 4 and 8, respectively. In 2003, 26 of the 53 jurisdictions that participated at grade 4 had average scores that were higher than the

national average and 16 had average scores that were lower than the national average. Of the 53 jurisdictions that participated at grade 8, 30 had average scores that were higher than the national average and 16 had average scores that were lower than the national average.

Figure 2.5 Comparison of state and national public school average mathematics scale scores, grade 4: 2003



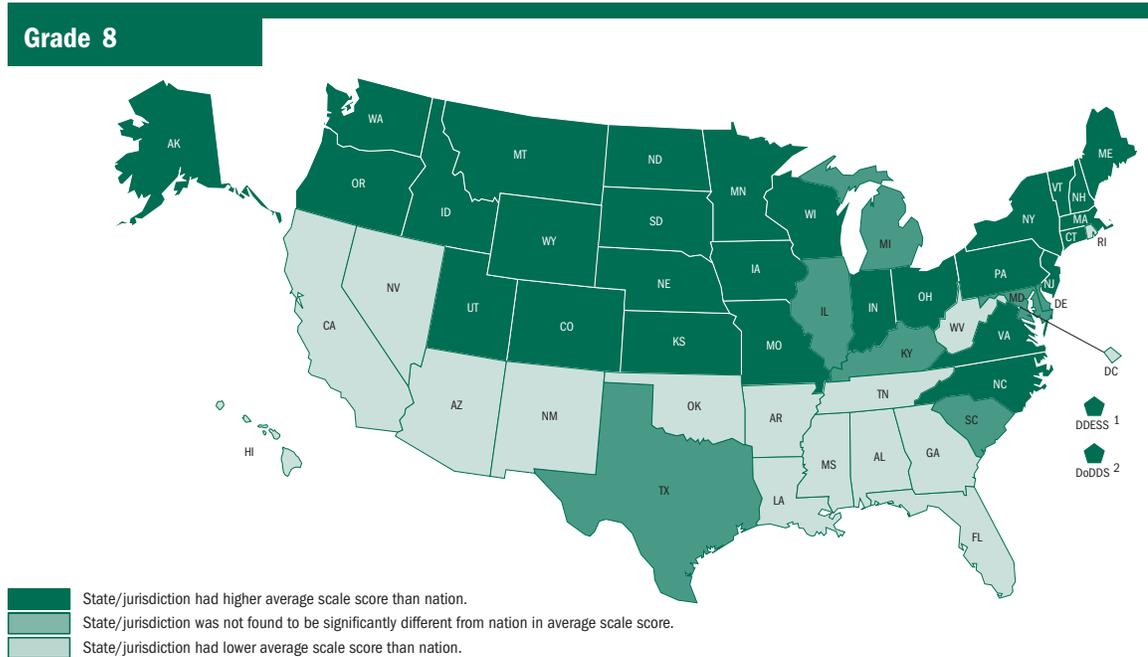
¹ Department of Defense Domestic Dependent Elementary and Secondary Schools.

² Department of Defense Dependents Schools (Overseas).

NOTE: NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessment.

Figure 2.6 Comparison of state and national public school average mathematics scale scores, grade 8: 2003



¹ Department of Defense Domestic Dependent Elementary and Secondary Schools.

² Department of Defense Dependents Schools (Overseas).

NOTE: NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessment.

Cross-State/Jurisdiction Mathematics Scale Score Comparisons

Figures 2.7 and 2.8 display the differences in the NAEP 2003 average mathematics scale scores between any two participating jurisdictions at grades 4 and 8, respectively. These figures are set up similarly to mileage charts on travel maps. On the line across the top of the figure, find the name of the target jurisdiction and follow the column below the target jurisdiction to the jurisdiction chosen for comparison. If the cell of the comparison jurisdiction is not shaded, no statistically significant difference between the scale scores of the two jurisdictions was detected. If the cell of the comparison jurisdiction is lightly shaded, the average scale score of that jurisdiction was higher than the average scale score of the target jurisdiction named at the top of the

column. Darkly shaded cells indicate that the average scale score of the comparison jurisdiction was lower than that of the target jurisdiction.

At grade 4, New Hampshire, North Carolina, Vermont, Minnesota, Kansas, Massachusetts, and Wyoming were among the highest performing jurisdictions. Any apparent differences in average scores between the seven top-performing states were not found to be statistically significant. Average fourth-grade scores in Connecticut and Virginia were lower only in comparison with New Hampshire.

At grade 8, Minnesota was the highest performing state. Eighth-graders in North Dakota, Massachusetts, New Hampshire, Montana, Vermont, Department of Defense Overseas schools, South Dakota, and Kansas were outperformed only by their counterparts in Minnesota.

Mathematics Achievement-Level Results by State/Jurisdiction

Achievement-level results for jurisdictions are presented both as the percentage of students scoring within each mathematics achievement-level range and as the percentage of students performing at or above the *Proficient* level. The percentage of students within each mathematics achievement-level range for participating jurisdictions in 2003 is presented in figure 2.9 for grade 4 and in figure 2.10 for grade 8. The shaded bars represent the proportion of students in each of the three achievement levels (*Basic*, *Proficient*, and *Advanced*), as well as the proportion of students who performed below the *Basic* level. The central vertical line divides the proportion of students who fell below the *Proficient* level (i.e., at *Basic* or below *Basic*) from those who performed at or above the *Proficient* level (i.e., at *Proficient* or at *Advanced*). Scanning down the horizontal bars to the right of the vertical line allows comparison of jurisdictions' percentages of students at or above *Proficient*. Jurisdictions are listed in the figures in three

clusters based on statistical comparison of the percentage of students performing at or above *Proficient* in each jurisdiction with the national percentage of public school students performing at or above *Proficient*. The jurisdictions in the top cluster of each figure had a higher percentage of students who performed at or above the *Proficient* level compared to the nation. The percentages of students in jurisdictions clustered in the middle were not found to be measurably different from the national percentage. Jurisdictions in the bottom cluster had percentages lower than the national percentage. Within each cluster, jurisdictions are listed alphabetically.

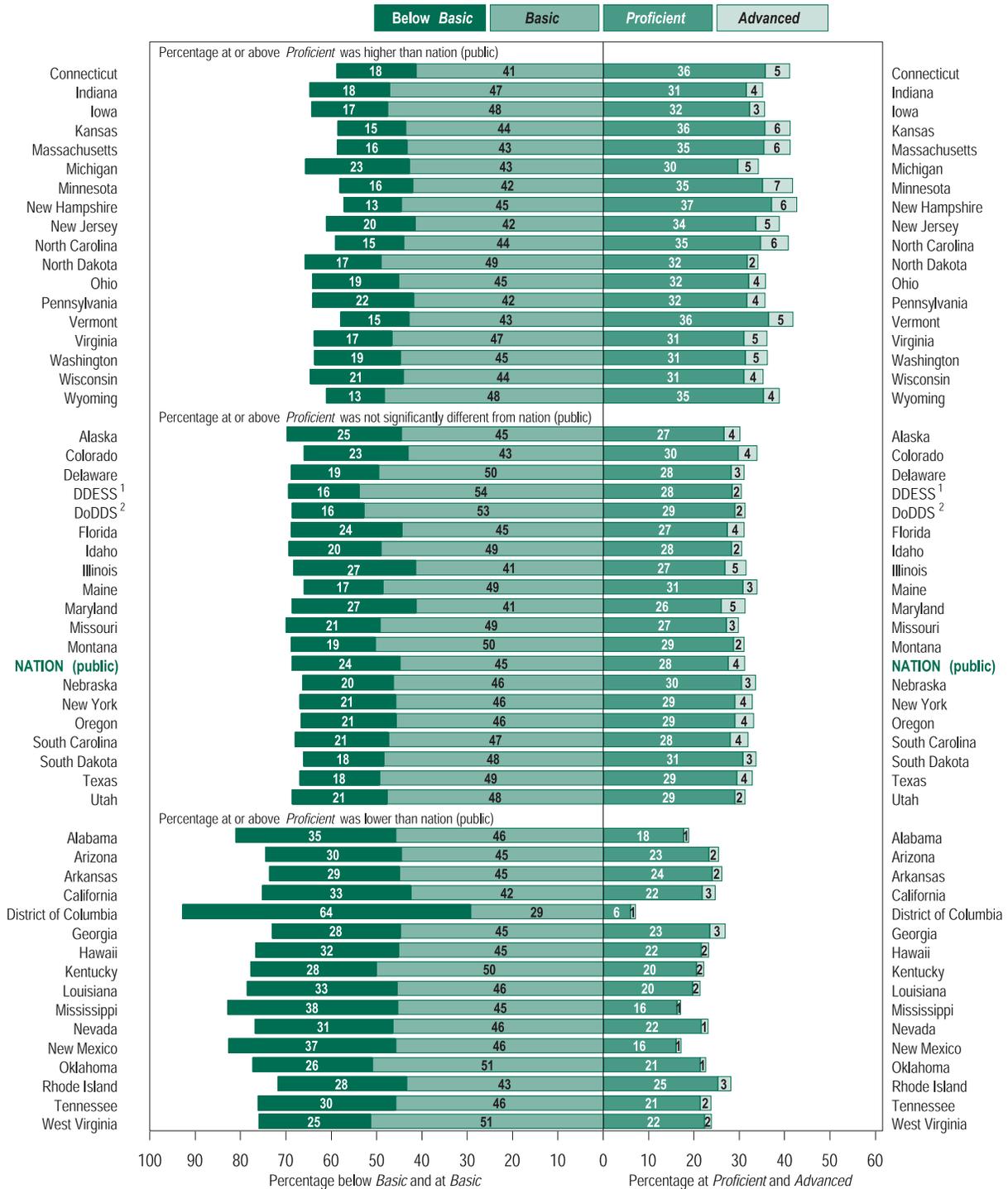
Figure 2.9 shows that, at grade 4, 18 jurisdictions had higher percentages of students performing at or above *Proficient* than the nation and 16 had percentages that were lower than the nation.

In figure 2.10, the results for grade 8 show that 24 jurisdictions had higher percentages of students performing at or above *Proficient* than the nation and 17 had percentages that were lower than the nation.

Figure 2.9 Percentage of students within each mathematics achievement level, grade 4 public schools: By state, 2003

Grade 4

The bars below contain percentages of students in each NAEP mathematics achievement-level range. Each population of students is aligned at the point where the *Proficient* category begins, so that they may be compared at *Proficient* and above. Jurisdictions are listed alphabetically within three groups: the percentage at or above *Proficient* was higher than, not found to be significantly different from, or lower than the nation.



¹ Department of Defense Domestic Dependent Elementary and Secondary Schools.

² Department of Defense Dependents Schools (Overseas).

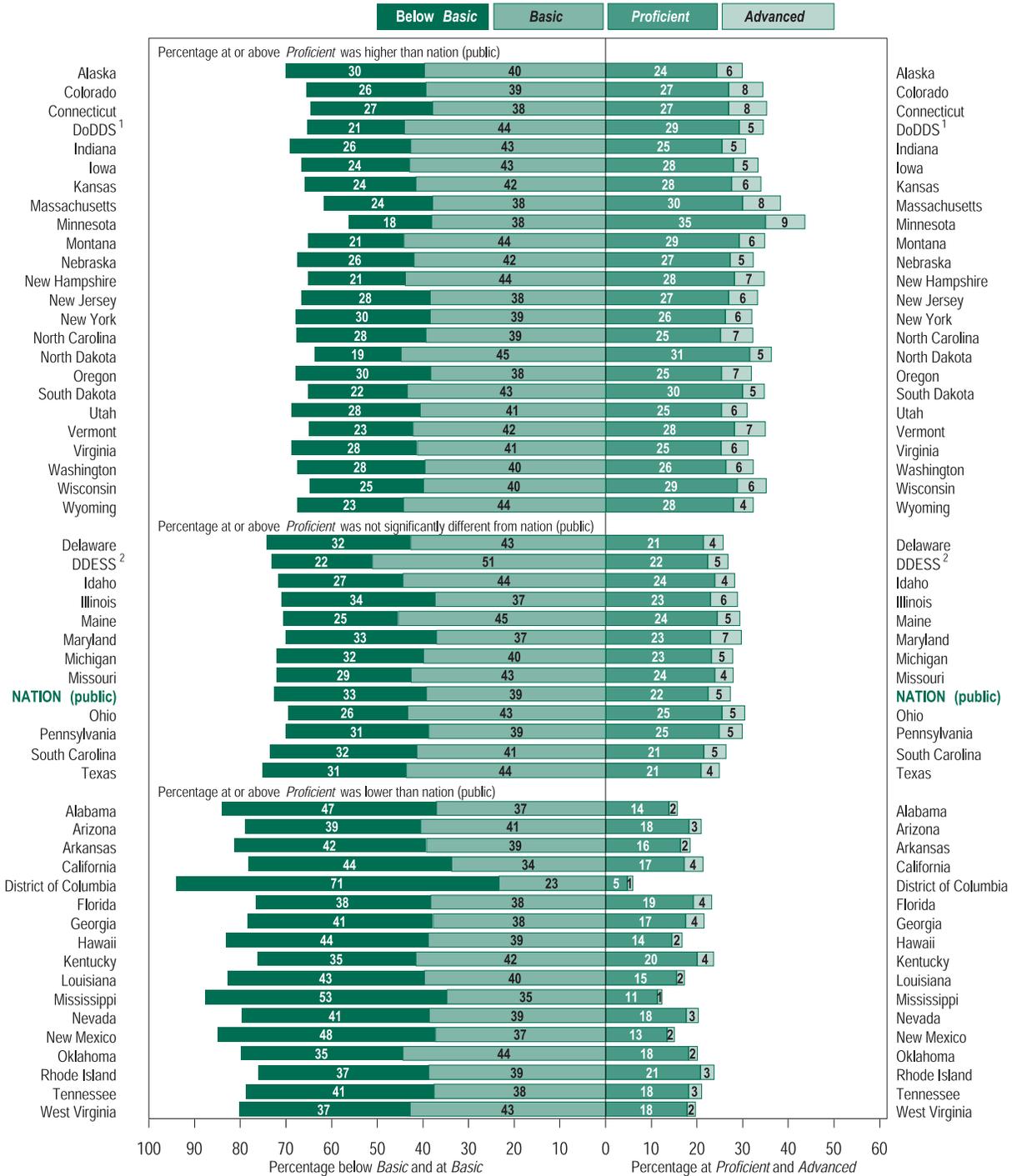
NOTE: Detail may not sum to totals because of rounding. The shaded bars are graphed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessment.

Figure 2.10 Percentage of students within each mathematics achievement level, grade 8 public schools: By state, 2003

Grade 8

The bars below contain percentages of students in each NAEP mathematics achievement-level range. Each population of students is aligned at the point where the *Proficient* category begins, so that they may be compared at *Proficient* and above. Jurisdictions are listed alphabetically within three groups: the percentage at or above *Proficient* was higher than, not found to be significantly different from, or lower than the nation.



¹ Department of Defense Dependents Schools (Overseas).

² Department of Defense Domestic Dependent Elementary and Secondary Schools.

NOTE: Detail may not sum to totals because of rounding. The shaded bars are graphed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2003 Mathematics Assessment.

The percentage of fourth-graders performing at or above the *Proficient* level for each jurisdiction that participated in the 1992, 1996, 2000, and 2003 assessments is presented in table 2.6. The percentage of fourth-graders performing at or above the *Proficient* level was higher in 2003 than in 2000 for all 43 jurisdictions that participated in both years. The percentages also increased from 1992 to 2003 for all 42 jurisdictions that participated in both of those assessment years.

The percentages of eighth-graders performing at or above *Proficient* for jurisdictions that participated in 1990, 1992, 1996, 2000, and 2003 are presented in table 2.7. Among the 42 jurisdictions that participated in both the 2000 and 2003 eighth-grade assessments, 18 showed an increase in the percentages of students performing at or above *Proficient*. The percentage of eighth-graders performing at or above *Proficient* was higher in 2003 than in 1990 for all 38 jurisdictions that participated in both years.

Table 2.6 Percentage of students at or above *Proficient* in mathematics, grade 4 public schools: By state, 1992–2003

Grade 4	Accommodations not permitted			Accommodations permitted	
	1992	1996	2000	2000	2003
Nation (public) ¹	17 *	20 *	25 *	22 *	31
Alabama	10 ***	11 ***	14 ***	13 ***	19
Alaska	—	21 ***	—	—	30
Arizona	13 ***	15 ***	17 ***	16 ***	25
Arkansas	10 ***	13 ***	13 ***	14 ***	26
California	12 ***	11 ***	15 ***	13 ***	25
Colorado	17 ***	22 ***	—	—	34
Connecticut	24 ***	31 ***	32 ***	31 ***	41
Delaware	17 ***	16 ***	—	—	31
Florida	13 ***	15 ***	—	—	31
Georgia	15 ***	13 ***	18 ***	17 ***	27
Hawaii	15 ***	16 ***	14 ***	14 ***	23
Idaho	16 ***	—	21 ***	20 ***	31
Illinois	—	—	21 ***	20 ***	32
Indiana	16 ***	24 ***	31 *	30 ***	35
Iowa	26 ***	22 ***	28 ***	26 ***	36
Kansas	—	—	30 ***	29 ***	41
Kentucky	13 ***	16 ***	17 ***	17 ***	22
Louisiana	8 ***	8 ***	14 ***	14 ***	21
Maine	27 ***	27 ***	25 ***	23 ***	34
Maryland	18 ***	22 ***	22 ***	21 ***	31
Massachusetts	23 ***	24 ***	33 ***	31 ***	41
Michigan	18 ***	23 ***	29 ***	28 ***	34
Minnesota	26 ***	29 ***	34 ***	33 ***	42
Mississippi	6 ***	8 ***	9 ***	9 ***	17
Missouri	19 ***	20 ***	23 ***	23 ***	30
Montana	—	22 ***	25 ***	24 ***	31
Nebraska	22 ***	24 ***	24 ***	24 ***	34
Nevada	—	14 ***	16 ***	16 ***	23
New Hampshire	25 ***	—	—	—	43
New Jersey	25 ***	25 ***	—	—	39
New Mexico	11 ***	13 ***	12 ***	12 ***	17
New York	17 ***	20 ***	22 ***	21 ***	33
North Carolina	13 ***	21 ***	28 ***	25 ***	41
North Dakota	22 ***	24 ***	25 ***	25 ***	34
Ohio	16 ***	—	26 ***	25 ***	36
Oklahoma	14 ***	—	16 ***	16 ***	23
Oregon	—	21 ***	23 ***	23 ***	33
Pennsylvania	22 ***	20 ***	—	—	36
Rhode Island	13 ***	17 ***	23 ***	22 ***	28
South Carolina	13 ***	12 ***	18 ***	18 ***	32
South Dakota	—	—	—	—	34
Tennessee	10 ***	17 ***	18 ***	18 ***	24
Texas	15 ***	25 ***	27 ***	25 ***	33
Utah	19 ***	23 ***	24 ***	23 ***	31
Vermont	—	23 ***	29 ***	29 ***	42
Virginia	19 ***	19 ***	25 ***	24 ***	36
Washington	—	21 ***	—	—	36
West Virginia	12 ***	19 ***	18 ***	17 ***	24
Wisconsin	24 ***	27 ***	—	—	35
Wyoming	19 ***	19 ***	25 ***	25 ***	39
Other jurisdictions					
District of Columbia	5 ***	5 ***	6	5 ***	7
DDESS ²	—	20 ***	24 ***	23 ***	30
DoDDS ³	—	19 ***	22 ***	21 ***	31

— Not available. The jurisdiction did not participate or did not meet minimum participation guidelines for reporting.

* Significantly different from 2003 when only one jurisdiction or the nation is being examined.

** Significantly different from 2003 when using a multiple-comparison procedure based on all jurisdictions that participated in both years.

¹National results for assessments prior to 2003 are based on the national sample, not on aggregated state samples.

²Department of Defense Domestic Dependent Elementary and Secondary Schools.

³Department of Defense Dependents Schools (Overseas).

NOTE: State-level data were not collected in 1990. Comparative performance results may be affected by changes in exclusion rates for students with disabilities and limited-English-proficient students in the NAEP samples. In addition to allowing for accommodations, the accommodations-permitted results for national public schools (2000 and 2003) differ slightly from previous years' results, and from previously reported results for 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992, 1996, 2000, and 2003 Mathematics Assessments.

Table 2.7 Percentage of students at or above Proficient in mathematics, grade 8 public schools: By state, 1990–2003

Grade 8	Accommodations not permitted				Accommodations permitted	
	1990	1992	1996	2000	2000	2003
Nation (public) ¹	15 *	20 *	23 *	26	25 *	27
Alabama	9 ***	10 **	12	16	16	16
Alaska	—	—	30	—	—	30
Arizona	13 **	15 **	18	21	20	21
Arkansas	9 ***	10 **	13 **	14 **	13 **	19
California	12 **	16 **	17 **	18 *	17 *	22
Colorado	17 **	22 **	25 **	—	—	34
Connecticut	22 **	26 **	31 *	34	33	35
Delaware	14 **	15 **	19 **	—	—	26
Florida	12 **	15 **	17 **	—	—	23
Georgia	14 **	13 **	16 **	19	19	22
Hawaii	12 **	14 **	16	16	16	17
Idaho	18 **	22 **	—	27	26	28
Illinois	15 **	—	—	27	26	29
Indiana	17 **	20 **	24 **	31	29	31
Iowa	25 **	31	31	—	—	33
Kansas	—	—	—	34	34	34
Kentucky	10 **	14 **	16 **	21	20	24
Louisiana	5 ***	7 **	7 **	12 **	11 **	17
Maine	—	25 *	31	32	30	29
Maryland	17 **	20 **	24 *	29	27	30
Massachusetts	—	23 **	28 **	32 **	30 **	38
Michigan	16 **	19 **	28	28	28	28
Minnesota	23 **	31 **	34 **	40	39 *	44
Mississippi	—	6 **	7 **	8 **	9 **	12
Missouri	—	20 **	22 **	22 **	21 **	28
Montana	27 **	—	32	37	36	35
Nebraska	24 **	26 **	31	31	30	32
Nevada	—	—	—	20	18	20
New Hampshire	20 **	25 **	—	—	—	35
New Jersey	21 **	24 **	—	—	—	33
New Mexico	10 **	11 **	14	13	12 *	15
New York	15 **	20 **	22 **	26 **	24 **	32
North Carolina	9 **	12 **	20 **	30	27 **	32
North Dakota	27 **	29 **	33	31 **	30 **	36
Ohio	15 **	18 **	—	31	30	30
Oklahoma	13 **	17 **	—	19	18	20
Oregon	21 **	—	26 **	32	31	32
Pennsylvania	17 **	21 **	—	—	—	30
Rhode Island	15 **	16 **	20 *	24	22	24
South Carolina	—	15 **	14 **	18 **	17 **	26
South Dakota	—	—	—	—	—	35
Tennessee	—	12 **	15 **	17	16 *	21
Texas	13 **	18 **	21	24	24	25
Utah	—	22 **	24 **	26 **	25 **	31
Vermont	—	—	27 **	32	31 *	35
Virginia	17 **	19 **	21 **	26 **	25 **	31
Washington	—	—	26 **	—	—	32
West Virginia	9 **	10 **	14 **	18	17	20
Wisconsin	23 **	27 **	32	—	—	35
Wyoming	19 **	21 **	22 **	25 **	23 **	32
Other jurisdictions						
District of Columbia	3 **	4	5	6	6	6
DDESS ²	—	—	21	27	24	27
DoDDS ³	—	—	23 **	27 **	27 **	35

— Not available. The jurisdiction did not participate or did not meet minimum participation guidelines for reporting.

* Significantly different from 2003 when only one jurisdiction or the nation is being examined.

** Significantly different from 2003 when using a multiple-comparison procedure based on all jurisdictions that participated in both years.

¹National results for assessments prior to 2003 are based on the national sample, not on aggregated state samples.

²Department of Defense Domestic Dependent Elementary and Secondary Schools.

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NOTE: Comparative performance results may be affected by changes in exclusion rates for students with disabilities and limited-English-proficient students in the NAEP samples. In addition to allowing for accommodations, the accommodations-permitted results for national public schools (2000 and 2003) differ slightly from previous years' results, and from previously reported results for 2000, due to changes in sample weighting procedures. See appendix A for more details. Significance tests were performed using unrounded numbers. NAEP sample sizes have increased in 2003, compared to previous years, resulting in smaller detectable differences than in previous assessments.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, and 2003 Mathematics Assessments.

Cross-State/Jurisdiction Mathematics Achievement-Level Comparisons

Figures 2.11 and 2.12 display the same type of cross-state/jurisdiction comparisons that were presented earlier for scale score results, but the performance measure being compared in these figures is the percentage of students performing at or above the *Proficient* level in 2003 for grades 4 and 8, respectively.

At grade 4, New Hampshire, Vermont, Minnesota, Kansas, Massachusetts, Connecticut, North Carolina, New Jersey, and Wyoming were among

the jurisdictions with the highest percentages of students at or above *Proficient*. The percentages of students at or above *Proficient* were not found to differ significantly between the nine jurisdictions.

At grade 8, Minnesota had a higher percentage of students at or above *Proficient* than any other jurisdiction. The percentages of students at or above *Proficient* in Massachusetts, North Dakota, Connecticut, Wisconsin, Vermont, and Montana were not measurably different from each other and were lower only than the percentage in Minnesota.

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