

3 MAPPING STATE PERFORMANCE STANDARDS

The results of the mapping procedure are presented below for reading and mathematics. Three jurisdictions are not included in the 2007 analyses because data were unavailable: District of Columbia, Nebraska, and Utah. In addition, California grade 8 mathematics data were unavailable.

Sample sizes and percentages of the 2007 NAEP samples used in the analyses are shown in appendix A. In some states, the student population represented by NAEP is less than 100 percent of the total population because state assessment scores are missing for some schools. Scores may be missing because of either the failure to match schools in the NAEP and state databases or the suppression of scores where there are too few students. Overall, with the exception of Wisconsin in both subjects and grades, the estimated percentages of the student population represented by the schools used in the analyses are at least 90 percent.¹⁸

Reading

Table 1 displays the NAEP scale equivalents of each state's reading standards for *proficient* performance for grades 4 and 8. Standard errors of the NAEP scale equivalent estimates and the relative error criterion, *K*, a measure of how well the procedure reproduces the percentages reported by the state to be meeting the standard in each school in the NAEP sample, are also included. As previously discussed, the criterion proposed is to consider relative errors greater than .5 as indicating that the mapping error is too large to support useful inferences from the placement of the standard on the NAEP scale without any additional evidence. Only one grade 4 reading standard (Texas) and one grade 8 reading standard (Virginia) have relative errors greater than .5. The within-school discrepancies between NAEP and Indiana grade 8 test results seem to be smaller than the discrepancies that we would expect owing to NAEP student within-school sampling error alone.¹⁹

In 2007, states' standards for proficient performance in reading varied greatly in difficulty as reflected in their NAEP scale equivalent scores. The NAEP scale equivalents of states' proficient standards ranged from below the NAEP *Basic* level to the NAEP *Proficient* level (see figure 2).

In reading, at grade 4, the average of the estimated standards for proficiency across states was equivalent to a score of 199 (data not shown) on the NAEP scale, below the NAEP cut point for *Basic* performance (208). Taking the standard errors into account, the estimated difference between the five states with the highest standards and the five states with the lowest standards was at least 29 points on the NAEP scale, comparable to the 30-point distance between the NAEP *Basic* standard (208) and the NAEP *Proficient* standard (238). Another way of looking at it is that the distance separating the five most difficult standards to achieve and the five least difficult standards to achieve was under one standard deviation in student performance on the

¹⁸ For Wisconsin, the grade 4 reading and mathematics analyses are based on 65 percent of the NAEP schools serving about 71 percent of the students represented by NAEP. Analyses for grade 8 reading and mathematics are based on 75 percent of the NAEP schools, serving about 83 percent of the students represented by NAEP.

¹⁹ Because the relative error is actually a sample statistic with its own random variation and because it can take on negative values (if the differences between school means on NAEP and the state test are smaller than would be expected given within-school sample sizes), those negative values are displayed with the \$ symbol.

grade 4 NAEP (36 points). Accounting for the margin of error, 31 of the 48 states set grade 4 standards for proficiency (as measured on the NAEP scale) that were lower than the *Basic* performance on NAEP (208).

For grade 8 reading, the average NAEP scale equivalent score was 246 (data not shown), above the NAEP cut point for *Basic* performance (243). The variation among states at grade 8 was as large as the variation at grade 4. The estimated difference between the five states with the highest standards and the five states with the lowest standards was at least 29 points on the NAEP scale (also taking the standard error into account), less than the 38-point distance between *Basic* (243) and *Proficient* performance (281) on NAEP, and below the one standard deviation in student performance on the grade 8 NAEP (35 points). Accounting for the margin of error, 15 of the 48 states set grade 8 standards for proficiency (as measured on the NAEP scale) that were lower than the *Basic* performance on NAEP.

In reading, Missouri, Minnesota, and South Carolina were among the five states with the most difficult standards for proficiency at both grade levels. Tennessee appears among the five states with the least difficult standards at both grade levels.

Table 1. Estimated NAEP scale equivalent scores for the state grades 4 and 8 reading proficient standards, their standard error and relative error, by state: 2007

State/jurisdiction	Grade 4			Grade 8		
	NAEP scale equivalent	Standard error	Relative error ¹	NAEP scale equivalent	Standard error	Relative error ¹
Alabama	179	1.5	0.4	234	1.5	0.2
Alaska	183	0.9	0.1	233	1.9	0.2
Arizona	198	1.4	0.1	245	1.1	#
Arkansas	213	1.4	0.2	249	1.4	0.4
California	210	0.9	0.1	261	0.6	#
Colorado	187	1.5	0.1	230	1.4	0.1
Connecticut	213	1.6	0.1	245	1.1	#
Delaware	202	0.9	0.3	240	1.0	0.4
District of Columbia	—	†	†	—	†	†
Florida	209	0.8	0.1	262	0.8	#
Georgia	185	1.3	0.5	215	1.7	0.4
Hawaii	212	1.0	0.2	245	0.7	0.1
Idaho	197	1.4	0.4	233	1.0	#
Illinois	200	1.4	0.3	236	1.5	0.5
Indiana	199	1.3	0.1	251	0.7	§
Iowa	199	1.7	0.4	252	1.1	0.1
Kansas	192	1.9	0.3	241	1.0	0.3
Kentucky	205	1.6	0.3	251	1.1	0.3
Louisiana	193	2.2	0.5	246	1.3	0.2
Maine	214	1.0	0.2	261	0.9	0.3
Maryland	186	1.5	0.3	250	1.2	0.1
Massachusetts	232	1.2	0.2	252	1.1	0.1
Michigan	178	2.5	0.4	238	1.2	0.1
Minnesota	215	1.4	0.2	265	0.7	0.3
Mississippi	163	1.3	0.3	251	0.6	0.1
Missouri	227	1.1	0.3	272	1.1	#
Montana	203	1.2	0.4	250	1.5	0.3
Nebraska	—	†	†	—	†	†
Nevada	207	1.1	0.2	247	1.0	0.3
New Hampshire	210	0.8	0.4	258	1.5	0.4
New Jersey	201	2.0	0.2	252	1.1	0.1
New Mexico	210	0.7	0.3	248	1.0	0.1
New York	209	1.4	0.1	260	0.9	0.1
North Carolina	183	1.0	0.3	217	1.2	0.3
North Dakota	201	1.0	0.4	251	1.4	0.4
Ohio	198	2.2	0.4	240	1.9	0.2
Oklahoma	172	3.7	0.4	232	1.6	0.2
Oregon	186	2.1	0.4	251	1.2	0.3
Pennsylvania	211	1.2	0.1	245	1.4	0.1
Rhode Island	210	1.1	0.2	253	1.1	0.1
South Carolina	223	1.5	0.2	281	1.0	0.2
South Dakota	185	1.7	0.4	249	0.9	0.3
Tennessee	175	1.7	0.4	211	2.5	0.3
Texas	188	1.6	0.6	222	1.1	0.2
Utah	—	†	†	—	†	†
Vermont	214	1.0	0.5	263	1.4	0.4
Virginia	191	1.6	0.5	239	1.2	0.6
Washington	203	2.1	0.4	253	1.2	0.2
West Virginia ²	182	1.4	0.3	229	1.3	0.4
Wisconsin ²	193	2.0	0.3	231	1.4	0.2
Wyoming	204	1.2	0.5	247	1.1	0.5

— State assessment data not available.

† Not applicable.

Rounds to zero.

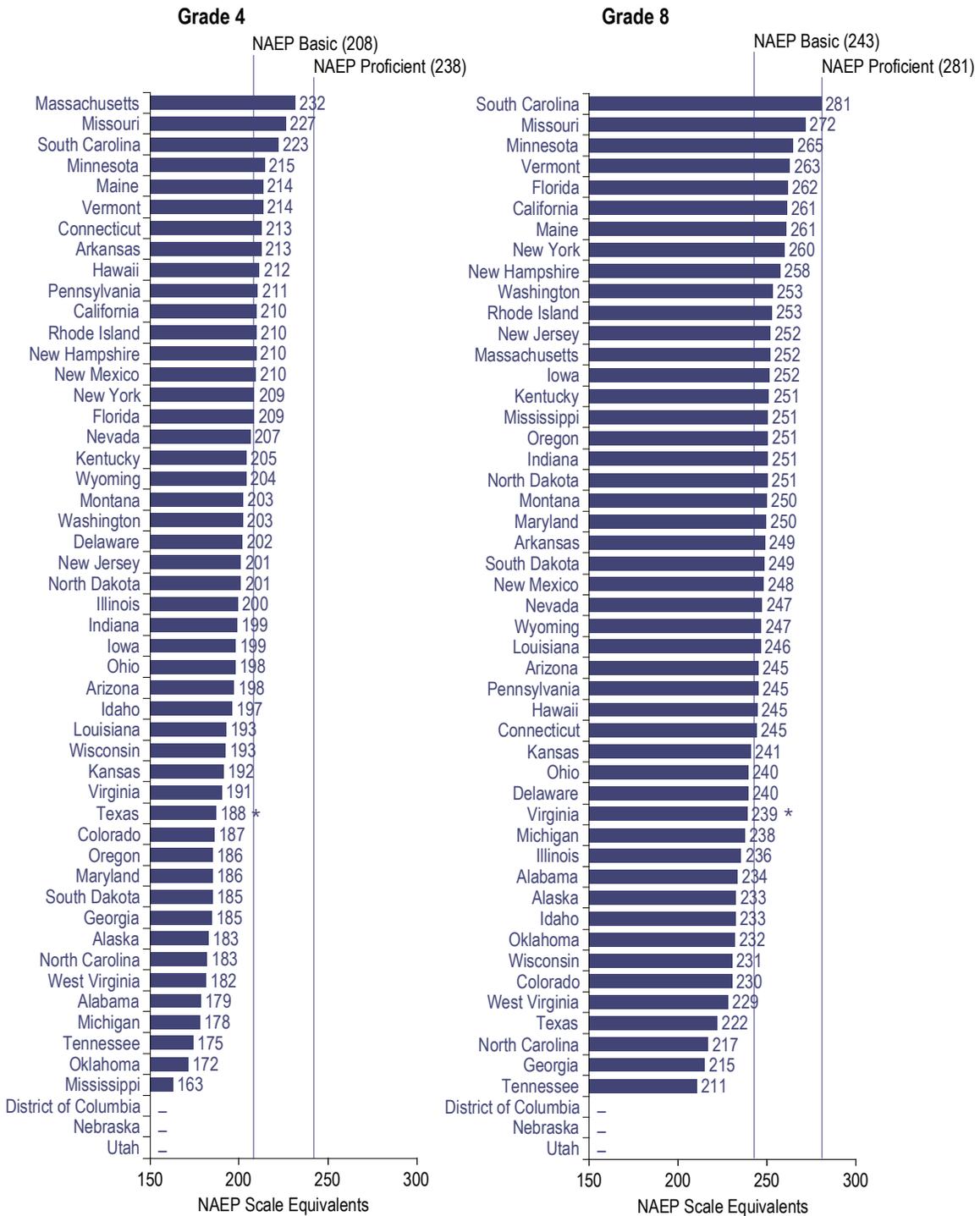
§ The within-school discrepancies between NAEP and state test results are no larger, and possibly smaller, than discrepancies that would be expected owing to NAEP student within-school sampling error alone.

¹ Inferences based on estimates with relative error greater than .5 may require additional evidence.

² The percentage of the student population represented by the NAEP schools used in the estimations was less than 90 percent in at least one grade.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Figure 2. NAEP scale equivalent scores for the state grades 4 and 8 reading standards for proficient performance, by state: 2007



— State assessment data not available.

* Relative error greater than .5.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, ED Facts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Mathematics

Table 2 displays the NAEP scale equivalent scores of each state's mathematics standards for proficient performance for grades 4 and 8. Standard errors of the NAEP scale equivalent estimates and the relative error criterion, K , are also included. Seven of the 48 grade 4 mathematics standards (Alabama, Georgia, Indiana, Michigan, New Hampshire, Oklahoma, and Virginia) have relative errors greater than .5 indicating that the variation in results for individual schools are large enough to call into question the use of these equivalents without additional supporting evidence. In grade 8, only Virginia has a mapping with relative error above .5. For two states, Connecticut and South Carolina, the within-school discrepancies between NAEP and state grade 8 test results are smaller than the discrepancies that we would expect owing to NAEP student within-school sampling error alone.

In mathematics at grade 4, the average NAEP scale equivalent across states was 223 (data not shown), about one-third of the way between the NAEP cut points for *Basic* (214) and *Proficient* (249) performance, as shown in figure 3. Taking the standard errors into account, the difference between the five states with the highest standards and the five states with the lowest standards was estimated to be 29 points on the NAEP scale, close to the distance between the NAEP *Basic* standard and the NAEP *Proficient* standard (35 points) and about a full standard deviation in grade 4 NAEP mathematics achievement (29 points). Accounting for the margin of error, 7 of the 48 states set grade 4 standards for proficiency (as measured on the NAEP scale) that were lower than the *Basic* performance level on NAEP, and 1 state set standards above the 249 NAEP *Proficient* cut point.

In mathematics at grade 8, the mean NAEP scale equivalent was 271 (data not shown) on the NAEP scale, above the NAEP cut point for *Basic* performance (262). The difference between the five states with the highest standards and the five states with the lowest standards was at least 29 points on the NAEP scale, less than the distance between the NAEP *Basic* standard and the NAEP *Proficient* standard (37 points) and close to one standard deviation in grade 8 NAEP mathematics achievement (36 points). Accounting for the margin of error, we see that 8 of the 47 states set grade 8 standards for proficiency (as measured on the NAEP scale) that were lower than the *Basic* performance on NAEP, and 2 states set standards above the 299 NAEP *Proficient* cut point.

In mathematics, Massachusetts, Missouri, South Carolina, and Washington were among the states with the most difficult standards at both grade levels in 2007. At both grade levels, Tennessee was the state with the least difficult standards.

Table 2. Estimated NAEP scale equivalent scores for the state grades 4 and 8 mathematics proficient standards, their standard error and relative error, by state: 2007

State/jurisdiction	Grade 4			Grade 8		
	NAEP scale equivalent	Standard error	Relative error ¹	NAEP scale equivalent	Standard error	Relative error ¹
Alabama	205	1.5	0.8	253	1.9	0.4
Alaska	216	1.3	0.3	265	1.2	0.3
Arizona	213	1.4	0.1	268	1.1	0.1
Arkansas	229	0.6	0.2	277	1.3	0.1
California	226	0.7	0.4	—	†	†
Colorado	201	1.6	0.2	259	1.3	0.1
Connecticut	220	0.7	0.1	252	2.0	§
Delaware	225	0.7	0.2	272	0.9	#
District of Columbia	—	†	†	—	†	†
Florida	230	0.8	0.2	266	0.9	#
Georgia	213	0.8	0.9	243	1.7	0.3
Hawaii	238	0.5	0.2	294	0.8	0.2
Idaho	217	0.9	0.5	265	1.6	#
Illinois	208	0.9	0.3	251	0.8	0.1
Indiana	228	0.9	0.6	266	1.6	0.1
Iowa	220	1.1	0.3	264	1.5	0.1
Kansas	219	1.3	0.5	270	1.6	0.4
Kentucky	229	1.0	0.4	279	0.7	0.2
Louisiana	223	1.3	0.3	267	1.2	0.1
Maine	236	0.8	0.2	286	0.9	0.1
Maryland	206	1.3	0.5	278	1.5	#
Massachusetts	254	1.0	0.3	302	1.1	0.1
Michigan	204	1.6	0.6	260	1.5	0.1
Minnesota	237	0.9	0.2	286	0.9	0.2
Mississippi	204	0.8	0.5	262	0.9	#
Missouri	245	0.8	0.4	289	1.2	0.1
Montana	234	1.0	0.3	281	1.7	0.1
Nebraska	—	†	†	—	†	†
Nevada	224	1.1	0.3	267	1.2	0.1
New Hampshire	239	1.1	0.6	282	0.8	0.3
New Jersey	220	1.1	0.4	272	0.8	0.1
New Mexico	233	0.8	0.3	285	0.9	0.1
New York	219	0.8	0.2	273	1.1	0.1
North Carolina	231	0.6	0.3	270	1.3	0.1
North Dakota ²	226	1.0	0.4	279	0.8	0.3
Ohio	225	1.3	0.5	265	1.2	0.2
Oklahoma	213	1.5	0.8	249	1.1	0.3
Oregon	220	0.8	0.4	262	1.2	0.2
Pennsylvania	223	0.9	0.2	271	1.0	0.1
Rhode Island	236	0.7	0.1	279	0.6	#
South Carolina	245	0.9	0.2	312	1.4	§
South Dakota	224	1.0	0.2	271	0.7	0.1
Tennessee	198	1.3	0.4	234	2.2	0.4
Texas	217	0.9	0.5	268	1.0	0.2
Utah	—	†	†	—	†	†
Vermont ²	239	1.0	0.3	284	0.9	0.1
Virginia	219	0.9	0.6	259	1.6	0.6
Washington	240	0.8	0.2	286	1.1	#
West Virginia ²	217	1.3	0.4	253	1.0	0.1
Wisconsin ²	222	2.3	0.2	262	1.7	0.1
Wyoming	216	0.6	0.5	279	0.8	0.4

— State assessment data not available.

† Not applicable.

Rounds to zero.

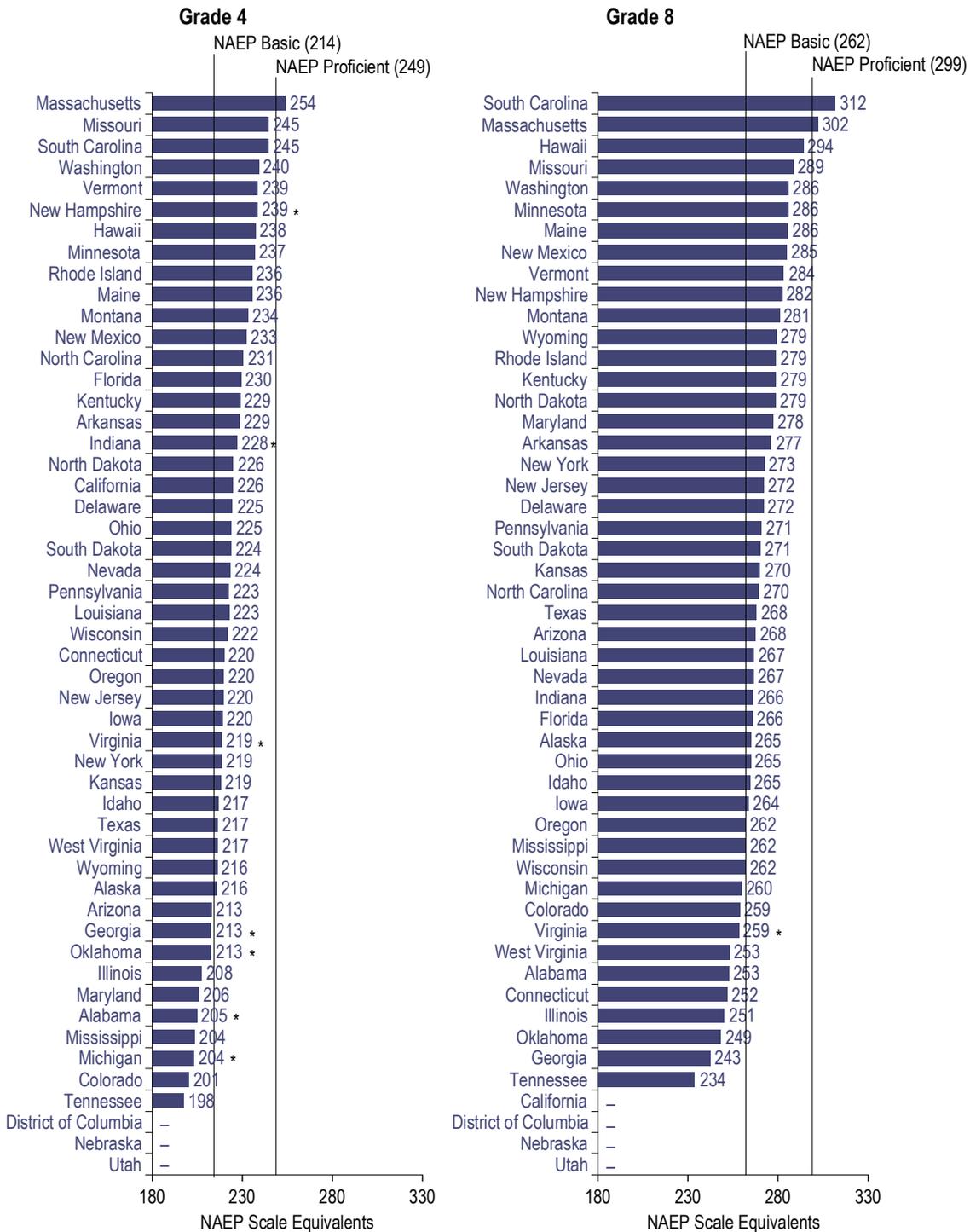
§ The within-school discrepancies between NAEP and state test results are no larger, and possibly smaller, than discrepancies that would be expected owing to NAEP student within-school sampling error alone.

¹ Inferences based on estimates with relative error greater than .5 may require additional evidence.

² The percentage of the student population represented by the NAEP schools used in the estimations was less than 90 percent in at least one grade.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, ED Facts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Figure 3. NAEP scale equivalent scores for the state grades 4 and 8 mathematics standards for proficient performance, by state: 2007



— State assessment data not available.

* Relative error greater than .5.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Cross-state comparisons

The majority of the states included in the analyses had state assessment results that were correlated with NAEP, with correlations of .7 or more: that is, both assessments identified similar patterns of achievement across schools within the state.²⁰ The school-level correlations between the percentage of schools' students meeting the NAEP and the state assessment standards for proficiency are summarized in table 3 and listed by state in table 4.

Table 3. Frequency of correlations between NAEP and state assessment school-level percentages meeting the proficient standards for reading and mathematics, grades 4 and 8: 2007

Correlation	Reading		Mathematics	
	Grade 4	Grade 8	Grade 4	Grade 8
$.3 \leq r < .4$	0	1	0	0
$.4 \leq r < .5$	0	1	2	0
$.5 \leq r < .6$	7	9	3	3
$.6 \leq r < .7$	14	13	12	6
$.7 \leq r < .8$	13	11	18	22
$.8 \leq r < .9$	14	12	13	14
$.9 \leq r$	0	1	0	2
Number of states ¹	48	48	48	47

¹ Test data for the District of Columbia, Nebraska, and Utah were not available to be included in the analysis. California does not test grade 8 mathematics.

NOTE: Frequency counts are based on unrounded correlation coefficients as opposed to the rounded coefficients shown in table 4.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading and Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts* SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

In reading, at both grade levels, at least half the states had correlations of .7 or more. Correlations were higher in mathematics than in reading. In mathematics, 31 of the 48 states included in grade 4 and 38 of the 47 states in grade 8 had correlations of .7 or higher.

Although the majority of states reported assessment results that identified the same patterns of achievement across schools as did NAEP, a small number of states (ranging from 3 to 11 depending on subject and grade) had test results that did not correlate as well with NAEP results, with correlations of less than .6, as shown in tables 3. For example, from table 4, North Dakota, Oklahoma, West Virginia, and Wyoming had correlations below .6 on at least three of the four assessments. This could be the result of small enrollments in schools in these states which affect the reliability of the percentages of students meeting a standard. Another possible explanation is that the tests measure different things. It is possible that assessments that sample and measure different parts of the reading and mathematics domain might still be highly correlated; that is, they might still identify the same schools as high achieving and low achieving.^{21,22} Nevertheless, the relatively low correlations in a few states need to be considered when we interpret the results of comparisons of NAEP and state assessment results.

²⁰ A correlation of .7 implies that 50% of the variance of one variable can be predicted from the other variable.

²¹ A variety of factors can lead to low correlations between tests covering the same content: size of the school sample of students on which the percentage is based, conditions of testing, time of testing, motivation to perform, similarity of accommodations provided, match of the student populations included in the statistics, etc.

²² Indiana, Iowa, Michigan, New Hampshire, North Dakota, Rhode Island, Vermont, and Wisconsin are states with testing in the fall and they may be measuring previous grade skills.

Table 4. Correlations between NAEP and state assessment school-level percentages meeting the proficient standard for reading and mathematics grades 4 and 8, by state: 2007

State/jurisdiction	Reading		Mathematics	
	Grade 4	Grade 8	Grade 4	Grade 8
Alabama	0.67	0.72	0.67	0.74
Alaska	0.81	0.81	0.75	0.78
Arizona	0.86	0.84	0.86	0.80
Arkansas	0.76	0.69	0.82	0.73
California	0.88	0.84	0.76	—
Colorado	0.84	0.75	0.80	0.80
Connecticut	0.90	0.90	0.90	0.90
Delaware	0.68	0.71	0.79	0.92
District of Columbia	—	—	—	—
Florida	0.80	0.81	0.81	0.82
Georgia	0.70	0.58	0.76	0.75
Hawaii	0.73	0.78	0.74	0.77
Idaho	0.59	0.68	0.61	0.74
Illinois	0.80	0.60	0.83	0.79
Indiana ¹	0.75	0.80	0.65	0.78
Iowa ¹	0.53	0.66	0.65	0.75
Kansas	0.60	0.65	0.60	0.61
Kentucky	0.67	0.63	0.65	0.72
Louisiana	0.71	0.71	0.79	0.83
Maine	0.64	0.54	0.75	0.72
Maryland	0.71	0.82	0.70	0.89
Massachusetts	0.80	0.82	0.75	0.86
Michigan ¹	0.71	0.79	0.78	0.88
Minnesota	0.73	0.65	0.78	0.72
Mississippi	0.65	0.80	0.67	0.81
Missouri	0.72	0.77	0.72	0.81
Montana	0.63	0.68	0.68	0.71
Nebraska	—	—	—	—
Nevada	0.82	0.70	0.82	0.78
New Hampshire ¹	0.61	0.60	0.63	0.69
New Jersey	0.82	0.84	0.77	0.87
New Mexico	0.74	0.71	0.75	0.79
New York	0.85	0.81	0.83	0.83
North Carolina	0.66	0.67	0.81	0.82
North Dakota ¹	0.63	0.50	0.59	0.58
Ohio	0.76	0.74	0.72	0.82
Oklahoma	0.59	0.56	0.43	0.53
Oregon	0.71	0.69	0.69	0.69
Pennsylvania	0.87	0.84	0.84	0.86
Rhode Island ¹	0.80	0.90	0.86	0.93
South Carolina	0.79	0.69	0.81	0.78
South Dakota	0.65	0.58	0.73	0.75
Tennessee	0.73	0.67	0.75	0.70
Texas	0.64	0.68	0.66	0.73
Utah	—	—	—	—
Vermont ¹	0.54	0.49	0.67	0.68
Virginia	0.56	0.55	0.60	0.63
Washington	0.68	0.68	0.85	0.79
West Virginia	0.56	0.38	0.59	0.55
Wisconsin ¹	0.82	0.81	0.87	0.85
Wyoming	0.56	0.53	0.45	0.65

— State assessment data not available.

¹ State with fall testing.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading and Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

In 2007, as was the case for the 2003 and 2005 mapping results, most of the variation between states in the proportion of proficient students on state assessments can be explained by the rigor of a state's standard for *proficient* performance. Table 5 shows the estimated linear relationships between the difficulty of each state's standard for proficiency, as measured by its NAEP scale equivalent and the percentage of students scoring *proficient* on the state test: states with a more difficult standard for proficiency (as measured on the NAEP scale) tend to have *fewer* students scoring proficient, whereas states with less difficult standards tend to have more students scoring proficient. The negative slopes of the lines fitted to the data points (states) show that each 1-point increase in the difficulty of a state's standard for proficiency in reading as measured by the NAEP scale is associated with .7 to .8 percentage point fewer students meeting the standards in grades 4 and 8, respectively. In mathematics, the relationship is similar.

Table 5. Relationship between the percentage of students scoring proficient on the state test and the difficulty of grades 4 and 8 state standards as measured by the state's respective NAEP scale equivalent, by subject: 2007

Percent proficient on state test = f(state standards as measured by the state's NAEP scale equivalent)							
Subject		Grade 4			Grade 8		
		Intercept	Slope	R ²	Intercept	Slope	R ²
Reading	Estimate	214.1	-.7 *	.70	272.7	-.8 *	.69
	Standard error	13.49	.07	†	19.96	.08	†
Mathematics	Estimate	268.5	-.9 *	.70	288.7	-.8 *	.71
	Standard error	19.10	.09	†	21.68	.08	†

† Not applicable.

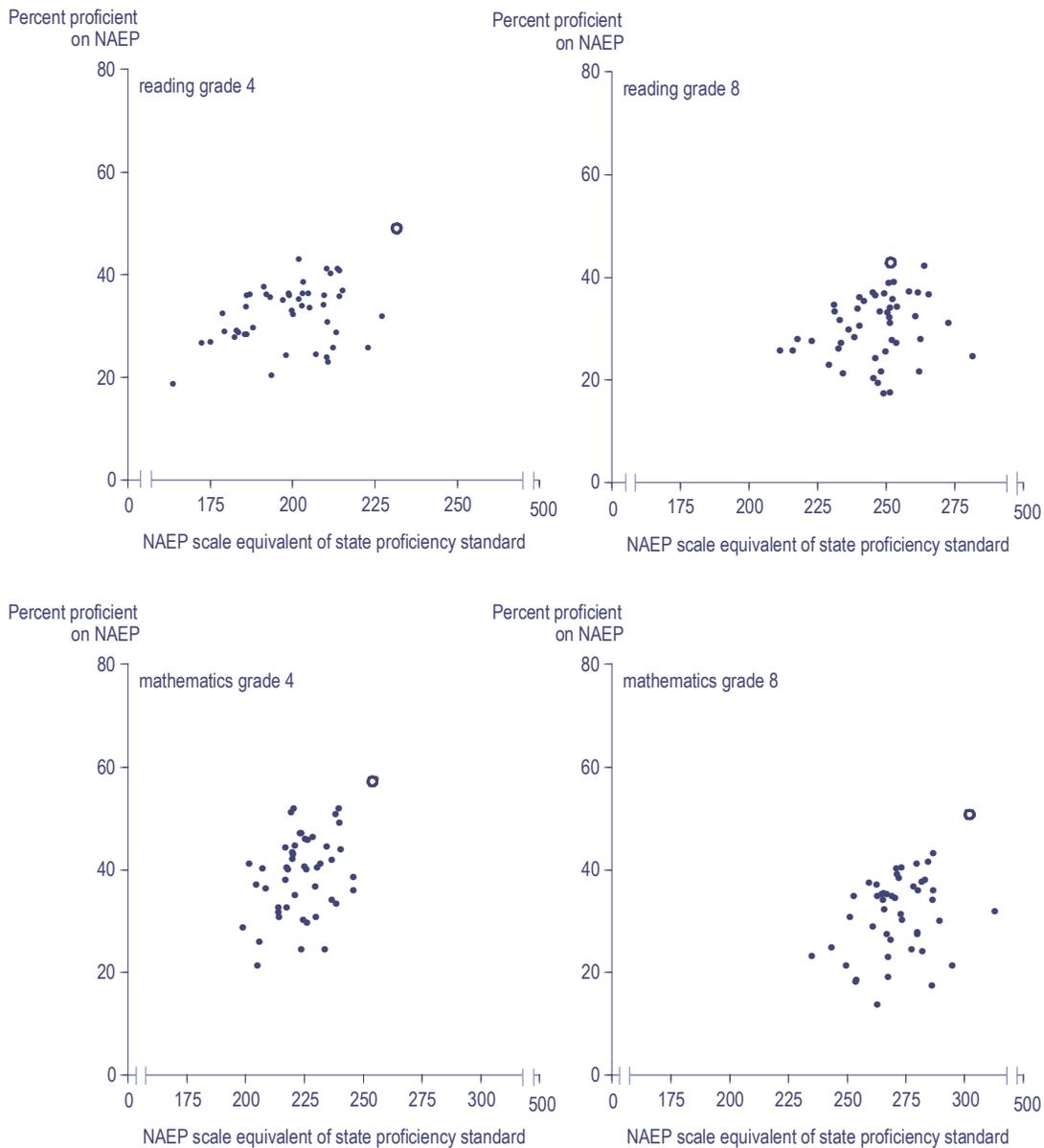
* Statistically significant at $p < .05$.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading and Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Whereas table 5 addresses the question of how the variability of performance standards relates to the percentages of students meeting the standards, figure 4 and table 6 address the question of how the variation among performance standards relates to the performance of students on NAEP. Figure 4 displays, for each subject and grade, the percentage of each state's students meeting the NAEP *Proficient* standard as a function of the placement of their own standard for *proficient* performance. Table 6 summarizes the linear relationships. Although three of the functions slope upward, this is mainly caused by a single state that set a high standard and had high scores. If that state is removed (the circled dot on figure 4), the squared correlations are .10 (from .16) for grade 4 reading, .04 (unchanged) for grade 8 reading, .09 (from .15) for grade 4 mathematics, and .06 (from .12) from grade 8 mathematics. The two squared correlations for grade 4 are statistically significant, but the two grade 8 relationships are not.

In general, from figure 4, we see that setting a higher state standard is not necessarily associated with higher performance on NAEP. In grade 8 at least, students in states with high standards for *proficient* performance score just about the same on NAEP as students in states with low standards for proficiency.

Figure 4. Relationship between the percentage of students scoring proficient on NAEP and the difficulty of grades 4 and 8 state standards for reading and mathematics as measured by the state's respective NAEP scale equivalent: 2007



SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading and Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts* SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Table 6. Relationship between the percentage of students scoring proficient on NAEP and the difficulty of grades 4 and 8 state standards as measured by the state's respective NAEP scale equivalent, by subject: 2007

<i>Percent proficient on NAEP = f(state standards as measured by the state's NAEP scale equivalent)</i>							
Subject		Grade 4			Grade 8		
		Intercept	Slope	R ²	Intercept	Slope	R ²
Reading	Estimate	-1.3	.2 *	.16	6.8	.1	.04
	Standard error	11.36	.06	†	16.12	.07	†
Mathematics	Estimate	-17.3	.3 *	.15	-18.9	.2 *	.12
	Standard error	19.92	.09	†	20.26	.07	†

† Not applicable.

* Statistically significant at $p < .05$.

NOTE: Removing one state that set a high standard and had high scores, the R² are .10 (from .16) for grade 4 reading, .04 (unchanged) for grade 8 reading, .09 (from .15) for mathematics grade 4, and .06 (from .12) from mathematics grade 8. The two R² for grade 4 are statistically significant, but the two grade 8 relationships are not.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2007 Reading and Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

4 COMPARING 2007 WITH 2005 STATE PERFORMANCE STANDARDS

Although the NAEP assessment in reading and mathematics did not change between 2005 and 2007, some states made changes in their state assessments in these subjects during the same period, changes substantial enough that these states indicated that their 2005 scores were not comparable to their 2007 scores.²³ Nevertheless, both 2005 and 2007 scores could be mapped onto the NAEP scale as a means for comparison. For these states, the analyses compared the NAEP equivalent scores estimated for 2007 with those for 2005. Significant differences in NAEP scale equivalents might reflect changes in policies and/or practices that occurred between the years in addition to the changes in state assessments and standards.

Other states reported no changes in their state assessments in the same period and indicated that their 2005 scores were comparable to their 2007 scores. For these states, the analyses compared the NAEP equivalent scores estimated for 2007 to those for 2005 to evaluate the stability of the mapping of each state's standard for proficient performance onto the NAEP scale.

When the 2005 and 2007 NAEP equivalents of the state standards are not stable, that is, the NAEP equivalent score for 2007 is statistically significantly different from that of the 2005, further investigation is warranted. Several factors could lead to such instability. For example, changes in classroom instructional practices or curricula might have placed more emphasis on subject matter covered more on the state test than on NAEP from one assessment year to the next, or changes in state exclusion policies might have changed the rates of participation of students with disabilities and/or English language learners in the NAEP or state assessments.²⁴

Regardless of whether states reported that 2005 scores are comparable to 2007 or not, when NAEP scale equivalents are significantly different, further investigations can help ascertain the factors that may have contributed to the differences in the NAEP scale equivalents of state standards seen in this study. When the 2005 NAEP equivalents of the state standards are not different from those for 2007, that is, when standards are considered stable, NAEP can be used to corroborate the state reported progress (or lack of progress) through further analysis, an issue discussed in Section 5.

This section makes comparisons between the 2005 and 2007 mappings in reading and mathematics for grades 4 and 8. The 2005 mappings in this report will not necessarily match previously published results (U.S. Department of Education 2007). Methodological differences between the procedures used in the two analyses may result in small differences.²⁵ Moreover, since the release of the 2005 mapping study, some states have revised their 2005 assessment data files and other states have made public previously unavailable results.

²³ This was reported in a survey conducted for this study to gain contextual information about the general characteristics of state assessment programs and, specifically, to help identify changes in states' assessments between the 2004-05 and 2006-07 school years that could affect the interpretation of the mapping results. See appendix B for more information on the survey.

²⁴ These issues were not covered by the survey of state assessment programs referenced above.

²⁵ The small differences are not large enough to change the whole number scale value reported as the NAEP equivalent.

Reading

Table 7 displays the availability of state assessment data in 2005 and 2007 suitable for implementing the mapping of the states' grades 4 and 8 reading standards onto the NAEP scale. Table 7 also shows, for each grade, whether changes in the states' assessments between 2005 and 2007 were deemed by state representatives to affect the comparability of the 2005 with the 2007 reported results.²⁶ States with both years of data are listed in table 8 by grade and by whether those data are comparable. In grade 4 reading, of the 34 states with valid test data in both years, 22 states indicated that no significant changes in their tests were made that would affect the comparability of test results across the two years. For grade 8 reading, of the 38 states with valid test data in both years, 14 indicated that their scores were not comparable and 24 indicated comparability of results.

For states with both years of data, tables 9 and 10 display, for each year, the number of public schools selected for NAEP in each state, the percentage of these schools included in the analyses, and the percentage of the student population represented by the schools.

Tables 11 and 12 compare the NAEP scale equivalents between the two years for grades 4 and 8, respectively, according to whether states reported comparable assessment results. Table 11 shows that, for the 12 states indicating substantive changes in their grade 4 reading assessments, 8 showed significant differences between the 2005 and 2007 estimates of the NAEP equivalents of their state standards. Half of these showed an increase of up to 12 points (Idaho), and half showed a decrease of up to 24 points (Wyoming). Table 11 also shows that, among the 22 states indicating no substantive changes in grade 4 state tests, 14 states did not show statistically significant differences between their NAEP scale equivalents in 2005 and 2007; 8 states showed statistically significant differences in the estimated NAEP scale equivalent, with 5 showing standards that are as much as 11 points higher (New Jersey) and 3 showing a decrease of up to 6 points (South Carolina).

Table 12 shows that among those states indicating substantive changes in their grade 8 reading assessments, seven showed significant differences between the 2005 and 2007 estimates of the NAEP equivalents of their state standards; all seven showed lower 2007 NAEP scale equivalent of their standards, by up to 31 points (Wyoming).

Table 12 also shows that, among the 24 states indicating no changes in their state tests, the NAEP equivalent standards of 13 states in 2007 were not statistically different from their standards in 2005. The 11 remaining states showed statistically significant differences in the estimates of the NAEP scale equivalent, 8 of which showed decreases in NAEP scale equivalent of state standards of up to 12 points (Pennsylvania) and 3 showed increases in NAEP equivalent of state standards of up to 5 points (Maryland).

²⁶ Tables B-1 to B-3 of appendix B summarize for each state selected changes to the main state assessment in reading and mathematics between 2005 and 2007 and information about the comparability of the reported results between 2005 and 2007.

Table 7. State assessment data availability and state reports of whether 2005 and 2007 assessment results are comparable in grades 4 and 8 reading, by state: 2005 and 2007

State/jurisdiction	Grade 4			Grade 8		
	2005 data	2007 data	Comparable results	2005 data	2007 data	Comparable results
Alabama	√	√	Yes	√	√	Yes
Alaska	√	√	Yes	√	√	Yes
Arizona	—	√	Yes	√	√	Yes
Arkansas	√	√	Yes	√	√	Yes
California	√	√	Yes	√	√	Yes
Colorado	√	√	Yes	√	√	Yes
Connecticut	√	√	No	√	√	No
Delaware	—	√	No	√	√	No
District of Columbia	—	—	No	—	—	No
Florida	√	√	Yes	√	√	Yes
Georgia	√	√	No	√	√	No
Hawaii	√	√	No	√	√	No
Idaho	√	√	No	√	√	No
Illinois	—	√	No	√	√	Yes
Indiana	√	√	Yes	√	√	Yes
Iowa	√	√	Yes	√	√	Yes
Kansas	—	√	No	√	√	No
Kentucky	√	√	No	—	√	No
Louisiana	√	√	Yes	√	√	Yes
Maine	√	√	No	√	√	No
Maryland	√	√	Yes	√	√	Yes
Massachusetts	√	√	Yes	—	√	No
Michigan	√	√	No	—	√	No
Minnesota	—	√	No	—	√	No
Mississippi	√	√	Yes	√	√	Yes
Missouri	—	√	No	—	√	No
Montana	√	√	No	√	√	No
Nebraska	—	—	No	—	—	No
Nevada	—	√	No	√	√	Yes
New Hampshire	—	√	No	—	√	No
New Jersey	√	√	Yes	√	√	Yes
New Mexico	√	√	Yes	√	√	Yes
New York	√	√	No	√	√	No
North Carolina	√	√	Yes	√	√	Yes
North Dakota	√	√	Yes	√	√	Yes
Ohio	√	√	Yes	√	√	Yes
Oklahoma	√	√	No	√	√	No
Oregon	—	√	No	√	√	No
Pennsylvania	—	√	No	√	√	Yes
Rhode Island	—	√	Yes	—	√	Yes
South Carolina	√	√	Yes	√	√	Yes
South Dakota	—	√	Yes	—	√	Yes
Tennessee	√	√	Yes	√	√	Yes
Texas	√	√	Yes	√	√	Yes
Utah	—	—	Yes	—	—	No
Vermont	—	√	Yes	—	√	Yes
Virginia	—	√	No	√	√	No
Washington	√	√	Yes	—	√	No
West Virginia	√	√	No	√	√	No
Wisconsin	√	√	Yes	√	√	Yes
Wyoming	√	√	No	√	√	No

√ State assessment data available.

— State assessment data not available.

SOURCE: U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts SY 2006-07*, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) 2007 Survey of State Assessment Program Characteristics.

Table 8. States with both 2005 and 2007 data suitable to implement the mapping of grades 4 and 8 state reading standards, by whether the reported results are directly comparable

2005 and 2007 state assessment reported grade 4 results directly comparable	2005 and 2007 state assessment reported grade 8 results directly comparable
Alabama	Alabama
Alaska	Alaska
Arkansas	Arizona
California	Arkansas
Colorado	California
Florida	Colorado
Indiana	Florida
Iowa	Illinois
Louisiana	Indiana
Maryland	Iowa
Massachusetts	Louisiana
Mississippi	Maryland
New Jersey	Mississippi
New Mexico	Nevada
North Carolina	New Jersey
North Dakota	New Mexico
Ohio	North Carolina
South Carolina	North Dakota
Tennessee	Ohio
Texas	Pennsylvania
Washington	South Carolina
Wisconsin	Tennessee
	Texas
	Wisconsin
2005 and 2007 state assessment reported grade 4 results not comparable	2005 and 2007 state assessment reported grade 8 results not comparable
Connecticut	Connecticut
Georgia	Delaware
Hawaii	Georgia
Idaho	Hawaii
Kentucky	Idaho
Maine	Kansas
Michigan	Maine
Montana	Montana
New York	New York
Oklahoma	Oklahoma
West Virginia	Oregon
Wyoming	Virginia
	West Virginia
	Wyoming

SOURCE: U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts SY 2006-07*, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) 2007 Survey of State Assessment Program Characteristics.

Table 9. Number of NAEP schools, percentage of NAEP schools available for comparing state assessment results with NAEP results in grade 4 reading, and percentage of the student population represented in these comparison schools, by state: 2005 and 2007

State/jurisdiction	2005			2007		
	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented
Alabama	130	98.5	97.6	110	99.1	99.1
Alaska ²	160	61.8	83.7	180	99.4	99.9
Arkansas	150	84.8	91.5	120	96.6	97.6
California	450	94.6	96.3	320	97.8	99.0
Colorado	150	91.8	97.1	120	95.8	99.0
Connecticut	130	100.0	100.0	110	100.0	100.0
Florida	170	94.1	96.3	160	97.6	97.2
Georgia	180	92.6	91.7	160	98.7	96.4
Hawaii	130	100.0	100.0	120	99.1	99.1
Idaho	160	95.5	94.9	130	95.5	91.2
Indiana	140	100.0	100.0	110	100.0	100.0
Iowa	130	96.2	97.0	140	97.8	96.7
Kentucky	150	99.3	99.1	120	97.4	98.1
Louisiana	140	99.3	98.5	110	97.2	98.4
Maine ²	190	74.1	81.3	150	93.4	95.4
Maryland	130	98.4	99.2	110	98.2	98.4
Massachusetts	200	98.5	99.7	170	100.0	100.0
Michigan	140	92.3	95.3	120	99.2	98.7
Mississippi	130	99.2	99.8	120	97.4	97.1
Montana	240	80.5	94.3	190	98.9	99.1
New Jersey	140	99.3	98.9	110	98.2	95.1
New Mexico ²	160	83.9	83.9	130	95.3	97.9
New York	190	97.9	98.8	150	99.3	99.8
North Carolina	180	96.0	97.4	170	97.6	96.5
North Dakota	260	74.3	93.0	210	80.5	93.3
Ohio	200	98.5	99.3	160	98.1	99.3
Oklahoma	180	99.4	99.8	140	98.5	98.8
South Carolina	120	99.2	99.3	110	97.2	98.7
Tennessee	140	98.6	97.8	120	100.0	100.0
Texas	380	98.2	97.6	300	98.6	97.9
Washington	140	97.8	99.0	130	99.2	100.0
West Virginia ²	200	97.4	97.9	150	92.5	89.7
Wisconsin ²	170	58.6	65.3	130	65.4	71.0
Wyoming	170	85.9	96.6	170	96.5	97.2

¹ Rounded to the nearest 10 for confidentiality.

² The percentage of the student population represented by the NAEP schools used in the estimations was less than 90 percent in at least one of the years.

NOTE: In the comparison schools, the population represented by NAEP is less than 100 percent of the total population where state assessment scores are missing for some schools. Scores may be missing either because of the failure to match schools in the two surveys or the suppression of scores where there are too few students.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Reading Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts* SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Table 10. Number of NAEP schools, percentage of NAEP schools available for comparing state assessment results with NAEP results in grade 8 reading, and percentage of the student population represented in these comparison schools, by state: 2005 and 2007

State/jurisdiction	2005			2007		
	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented
Alabama	110	98.2	98.1	120	100.0	100.0
Alaska ²	100	52.9	89.1	110	98.2	99.3
Arizona	130	96.2	99.1	130	97.7	99.2
Arkansas ²	130	84.0	89.0	120	91.1	94.5
California	370	95.2	97.2	310	97.1	99.0
Colorado	120	90.0	98.2	120	93.1	98.5
Connecticut	110	96.2	97.0	100	100.0	100.0
Delaware	40	86.0	92.9	50	97.8	100.0
Florida	160	96.3	95.2	160	98.7	98.6
Georgia	120	92.7	91.9	120	97.5	95.6
Hawaii	70	98.5	99.9	70	100.0	100.0
Idaho	100	94.1	97.1	110	97.2	99.0
Illinois	190	98.4	98.2	200	98.0	99.3
Indiana	110	98.1	97.9	110	100.0	100.0
Iowa	110	98.2	97.0	130	97.0	96.8
Kansas	120	97.4	99.1	150	97.3	98.0
Louisiana	110	98.2	98.5	110	96.4	97.7
Maine ²	130	67.7	80.2	130	94.7	97.4
Maryland	110	98.1	99.2	110	99.1	97.3
Mississippi	120	96.5	97.0	110	97.4	97.9
Montana	160	81.8	96.3	170	98.2	99.4
Nevada	80	87.2	92.9	70	93.2	93.3
New Jersey	110	99.1	96.9	110	100.0	100.0
New Mexico ²	110	81.1	84.7	110	97.3	99.4
New York	180	95.1	95.3	160	98.1	98.5
North Carolina	140	95.0	97.5	150	99.3	99.8
North Dakota	180	73.6	92.9	190	70.3	90.0
Ohio	140	95.1	96.9	190	98.4	99.1
Oklahoma	150	96.6	97.1	150	96.6	96.8
Oregon	120	99.2	99.8	110	96.5	99.0
Pennsylvania	110	94.5	96.0	110	98.2	97.6
South Carolina	110	96.3	95.6	110	97.2	98.5
Tennessee	110	99.1	99.5	120	99.2	99.1
Texas	280	97.1	98.1	220	96.4	97.4
Virginia	110	100.0	100.0	110	99.1	98.9
West Virginia	110	97.3	98.8	120	91.5	91.1
Wisconsin ²	120	79.7	86.1	130	74.6	82.1
Wyoming	80	98.7	96.8	80	95.1	96.1

¹ Rounded to the nearest 10 for confidentiality.

² The percentage of the student population represented by the NAEP schools used in the estimations was less than 90 percent in at least one of the years.

NOTE: In the comparison schools, the population represented by NAEP is less than 100 percent of the total population where state assessment scores are missing for some schools. Scores may be missing either because of the failure to match schools in the two surveys or the suppression of scores where there are too few students.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Reading Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, ED Facts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Table 11. Difference between the estimated NAEP scale equivalents of state grade 4 reading proficient standards and their standard error, by state: 2005 and 2007

State/jurisdiction	2005		2007		Difference 2007-2005	Standard error
	NAEP scale equivalent	Standard error	NAEP scale equivalent	Standard error		
2005 and 2007 state assessment reported results are comparable						
Alabama	172	2.1	179	1.5	6.8 *	2.63
Alaska	182	2.8	183	0.9	1.1	2.93
Arkansas	217	1.4	213	1.4	-4.1 *	1.96
California	210	0.7	210	0.9	0.3	1.10
Colorado	186	1.5	187	1.5	0.5	2.08
Florida	202	0.9	209	0.8	6.8 *	1.22
Indiana	199	1.2	199	1.3	0.4	1.74
Iowa	197	1.4	199	1.7	1.8	2.21
Louisiana	198	1.4	193	2.2	-4.5	2.57
Maryland	187	1.5	186	1.5	-1.0	2.15
Massachusetts	234	0.9	232	1.2	-2.3	1.54
Mississippi	161	2.1	163	1.3	2.5	2.48
New Jersey	191	1.7	201	2.0	10.6 *	2.61
New Mexico	208	1.0	210	0.7	1.6	1.23
North Carolina	183	1.3	183	1.0	-0.8	1.64
North Dakota	204	0.7	201	1.0	-2.5 *	1.21
Ohio	199	1.8	198	2.2	-0.5	2.88
South Carolina	228	1.1	223	1.5	-5.9 *	1.86
Tennessee	170	1.5	175	1.7	4.9 *	2.31
Texas	190	1.0	188	1.6	-2.8	1.85
Washington	197	1.9	203	2.1	5.9 *	2.80
Wisconsin	189	1.7	193	2.0	4.1	2.60
2005 and 2007 state assessment reported results are not comparable						
Connecticut	212	1.1	213	1.6	0.8	1.95
Georgia	174	1.6	185	1.3	11.0 *	2.06
Hawaii	205	0.8	212	1.0	7.2 *	1.28
Idaho	185	3.2	197	1.4	11.9 *	3.43
Kentucky	206	1.6	205	1.6	-1.6	2.24
Maine	224	1.1	214	1.0	-10.1 *	1.55
Michigan	182	3.8	178	2.5	-4.1	4.57
Montana	197	1.5	203	1.2	5.6 *	1.93
New York	207	1.2	209	1.4	2.6	1.83
Oklahoma	182	2.3	172	3.7	-10.3 *	4.38
West Virginia	186	1.3	182	1.4	-4.1 *	1.92
Wyoming	228	0.6	204	1.2	-23.8 *	1.30

* Difference is statistically significant at $p < .05$.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Reading Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Table 12. Difference between the estimated NAEP scale equivalents of state grade 8 reading proficient standards and their standard error, by state: 2005 and 2007

State/jurisdiction	2005		2007		Difference 2007-2005	Standard error
	NAEP scale equivalent	Standard error	NAEP scale equivalent	Standard error		
2005 and 2007 state assessment reported results are comparable						
Alabama	236	1.1	234	1.5	-2.7	1.92
Alaska	230	1.3	233	1.9	2.7	2.25
Arizona	244	1.1	245	1.1	1.0	1.58
Arkansas	254	1.0	249	1.4	-5.2 *	1.67
California	262	0.7	261	0.6	-0.7	0.93
Colorado	229	1.9	230	1.4	1.9	2.33
Florida	265	1.2	262	0.8	-3.0 *	1.45
Illinois	245	1.1	236	1.5	-9.6 *	1.89
Indiana	249	1.9	251	0.7	1.3	2.04
Iowa	250	1.0	252	1.1	1.4	1.45
Louisiana	251	1.2	246	1.3	-4.7 *	1.81
Maryland	245	1.7	250	1.2	5.0 *	2.09
Mississippi	246	1.4	251	0.6	4.5 *	1.52
Nevada	253	0.9	247	1.0	-5.2 *	1.38
New Jersey	250	1.2	252	1.1	1.8	1.67
New Mexico	251	1.4	248	1.0	-2.1	1.74
North Carolina	217	1.4	217	1.2	0.4	1.82
North Dakota	255	0.8	251	1.4	-4.0 *	1.62
Ohio	241	1.6	240	1.9	-1.0	2.52
Pennsylvania	258	1.7	245	1.4	-12.3 *	2.25
South Carolina	276	1.2	281	1.0	4.8 *	1.55
Tennessee	221	1.8	211	2.5	-10.6 *	3.09
Texas	225	0.9	222	1.1	-2.6	1.41
Wisconsin	229	1.5	231	1.4	1.5	2.06
2005 and 2007 state assessment reported results are not comparable						
Connecticut	242	1.4	245	1.1	2.6	1.79
Delaware	242	1.1	240	1.0	-2.3	1.50
Georgia	224	1.3	215	1.7	-8.4 *	2.17
Hawaii	261	1.2	245	0.7	-16.7 *	1.37
Idaho	235	1.9	233	1.0	-2.5	2.18
Kansas	242	1.4	241	1.0	-1.3	1.68
Maine	275	1.3	261	0.9	-14.4 *	1.62
Montana	253	0.9	250	1.5	-2.7	1.79
New York	268	1.3	260	0.9	-7.9 *	1.58
Oklahoma	244	1.3	232	1.6	-11.7 *	2.08
Oregon	254	1.3	251	1.2	-3.1	1.76
Virginia	243	1.3	239	1.2	-4.3 *	1.83
West Virginia	228	1.8	229	1.3	0.2	2.22
Wyoming	278	1.4	247	1.1	-31.2 *	1.77

* Difference is statistically significant at $p < .05$.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Reading Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Mathematics

Table 13 displays the availability of state assessment data in 2005 and 2007 suitable for implementing the mapping of grades 4 and 8 mathematics standards. It also displays, for each grade, whether changes in the states' assessments between 2005 and 2007 were deemed to affect the direct comparability of the 2005 and 2007 reported results. States with both years of data are listed in table 14 by grade and by whether those data are comparable according to state assessment staff. In grade 4 mathematics, of the 35 states with valid test data in both years, 14 indicated that their 2005 scores were not comparable to their 2007 scores and 21 states indicated that no significant changes in their tests were made. For grade 8 mathematics, of the 39 states with valid test data in both years, 18 indicated that their scores were not comparable and 21 indicated comparability of results.

For states with both years of data, tables 15 and 16 display, for each year, the number of public schools selected for NAEP in each state, the percentage of these schools included in the analyses, and the percentage of the student population represented by the schools.

Tables 17 and 18 compare the NAEP scale equivalent between the two years for grades 4 and 8, respectively, according to whether states reported comparable assessment results. Table 17 shows that for the 14 states indicating substantive changes in their grade 4 assessments, 11 showed significant differences between the 2005 and 2007 NAEP equivalents of their state standards. Six of them had lower 2007 NAEP equivalent of state standards with decreases of up to 34 points (Wyoming), and five had higher 2007 NAEP equivalent standards, with increases of up to 28 points (North Carolina).

Table 17 also shows that among the 21 states indicating no substantive changes in grade 4 state tests, 15 did not have statistically significant differences between their NAEP scale equivalents in 2005 and 2007. Six states had statistically significant differences in the NAEP scale equivalent, with two showing increases of up to 4 points (Washington), and four showing decreases of up to 8 points (Maryland).

Table 18 shows that among those 18 states indicating substantive changes in their grade 8 mathematics assessments, 12 showed significant differences between the 2005 and 2007 estimates of the NAEP equivalents of their state standards: 9 states showed lower 2007 NAEP equivalent standards, by up to 25 points (Illinois), and 3 showed increases of up to 23 points (North Carolina). Table 18 also shows that, among the 21 states indicating no changes in their state tests, the NAEP scale equivalent of state standards of 14 states in 2007 were not statistically different from the standards in 2005. The remaining seven states had statistically significant differences in their NAEP equivalent standards; six showed decreases by up to 12 points (Georgia), and South Carolina increased its NAEP equivalent standard by 7 points.

Such discrepancies illustrate that the method used for mapping state standards onto the NAEP scales may produce an apparent change in the state's standard, causing it to appear somewhat easier or more stringent. For this reason, the results of studies like this one need to be re-estimated with each NAEP state assessment to ensure that the NAEP-equivalent mapping is up-to-date. This method relies on NAEP and state tests to track the same progress over time. Section 5 explores this issue in more detail.

Table 13. State assessment data availability and state reports of whether 2005 and 2007 assessment results are comparable in grades 4 and 8 mathematics, by state: 2005 and 2007

State/jurisdiction	Grade 4			Grade 8		
	2005 data	2007 data	Comparable results	2005 data	2007 data	Comparable results
Alabama	√	√	Yes	—	√	Yes
Alaska	√	√	Yes	√	√	Yes
Arizona	—	√	Yes	√	√	Yes
Arkansas	√	√	Yes	√	√	Yes
California	√	√	Yes	—	—	Yes
Colorado	√	√	Yes	√	√	Yes
Connecticut	√	√	No	√	√	No
Delaware	—	√	No	√	√	No
District of Columbia	—	—	No	—	—	No
Florida	√	√	Yes	√	√	Yes
Georgia	√	√	Yes	√	√	Yes
Hawaii	√	√	No	√	√	No
Idaho	√	√	No	√	√	No
Illinois	—	√	No	—	√	No
Indiana	√	√	Yes	√	√	Yes
Iowa	√	√	Yes	√	√	Yes
Kansas	√	√	No	—	√	No
Kentucky	—	√	No	√	√	No
Louisiana	√	√	Yes	√	√	Yes
Maine	√	√	No	√	√	No
Maryland	√	√	Yes	√	√	Yes
Massachusetts	√	√	Yes	√	√	No
Michigan	√	√	No	√	√	No
Minnesota	—	√	No	—	√	No
Mississippi	√	√	Yes	√	√	Yes
Missouri	√	√	No	√	√	No
Montana	√	√	No	√	√	No
Nebraska	—	—	No	—	—	No
Nevada	—	√	No	√	√	Yes
New Hampshire	—	√	No	—	√	No
New Jersey	√	√	Yes	√	√	Yes
New Mexico	√	√	Yes	√	√	Yes
New York	√	√	No	√	√	No
North Carolina	√	√	No	√	√	No
North Dakota	√	√	Yes	√	√	Yes
Ohio	√	√	No	√	√	Yes
Oklahoma	√	√	No	√	√	No
Oregon	—	√	No	√	√	No
Pennsylvania	—	√	No	√	√	Yes
Rhode Island	—	√	Yes	—	√	Yes
South Carolina	√	√	Yes	√	√	Yes
South Dakota	—	√	Yes	—	√	Yes
Tennessee	√	√	Yes	√	√	Yes
Texas	√	√	Yes	√	√	Yes
Utah	—	—	Yes	—	—	Yes
Vermont	—	√	Yes	—	√	Yes
Virginia	—	√	No	√	√	No
Washington	√	√	Yes	—	√	No
West Virginia	√	√	No	√	√	No
Wisconsin	√	√	Yes	√	√	Yes
Wyoming	√	√	No	√	√	No

√ State assessment data available.

— State assessment data not available.

SOURCE: U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts SY 2006-07*, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) 2007 Survey of State Assessment Program Characteristics.

Table 14. States with both 2005 and 2007 data suitable to implement the mapping of grades 4 and 8 mathematics standards, by whether the reported results are directly comparable

2005 and 2007 state assessment reported grade 4 results directly comparable	2005 and 2007 state assessment reported grade 8 results directly comparable
Alabama	Alaska
Alaska	Arizona
Arkansas	Arkansas
California	Colorado
Colorado	Florida
Florida	Georgia
Georgia	Indiana
Indiana	Iowa
Iowa	Louisiana
Louisiana	Maryland
Maryland	Mississippi
Massachusetts	Nevada
Mississippi	New Jersey
New Jersey	New Mexico
New Mexico	North Dakota
North Dakota	Ohio
South Carolina	Pennsylvania
Tennessee	South Carolina
Texas	Tennessee
Washington	Texas
Wisconsin	Wisconsin
2005 and 2007 state assessment reported grade 4 results not comparable	2005 and 2007 state assessment reported grade 8 results not comparable
Connecticut	Connecticut
Hawaii	Delaware
Idaho	Hawaii
Kansas	Idaho
Maine	Illinois
Michigan	Kentucky
Missouri	Maine
Montana	Massachusetts
New York	Michigan
North Carolina	Missouri
Ohio	Montana
Oklahoma	New York
West Virginia	North Carolina
Wyoming	Oklahoma
	Oregon
	Virginia
	West Virginia
	Wyoming

SOURCE: U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts* SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) 2007 Survey of State Assessment Program Characteristics.

Table 15. Number of NAEP schools, percentage of NAEP schools available for comparing state assessment results with NAEP results in grade 4 mathematics, and percentage of the student population in these comparison schools, by state: 2005 and 2007

State/jurisdiction	2005			2007		
	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented
Alabama	130	98.5	97.9	110	99.1	99.1
Alaska	150	70.6	91.2	180	100.0	100.0
Arkansas	150	84.8	91.9	120	96.6	97.5
California	450	94.4	96.4	330	97.5	98.9
Colorado	150	92.5	96.9	120	95.8	99.1
Connecticut	130	100.0	100.0	110	100.0	100.0
Florida	170	94.1	96.6	160	97.6	97.2
Georgia	180	92.6	92.1	160	98.7	96.4
Hawaii	130	100.0	100.0	120	99.1	99.0
Idaho	160	95.6	95.1	130	95.5	91.8
Indiana	140	100.0	100.0	110	100.0	100.0
Iowa	130	95.4	96.2	140	97.8	96.9
Kansas	140	96.4	98.0	140	98.6	99.0
Louisiana	140	99.3	98.3	110	97.2	98.4
Maine ²	190	74.2	82.2	150	93.4	95.6
Maryland	130	99.2	99.7	110	98.2	98.5
Massachusetts	200	99.0	99.8	170	100.0	100.0
Michigan	140	92.9	95.5	120	99.2	98.8
Mississippi	130	100.0	100.0	120	97.4	97.2
Missouri	160	97.5	98.7	130	98.4	99.6
Montana	250	77.9	93.3	190	98.9	99.3
New Jersey	140	99.3	98.6	110	98.2	95.0
New Mexico ²	160	83.3	84.7	130	93.8	97.5
New York	190	97.9	98.9	150	99.3	99.8
North Carolina	180	96.0	97.5	170	97.6	96.4
North Dakota	260	74.3	93.3	210	81.3	93.1
Ohio	200	99.0	99.4	160	98.1	99.4
Oklahoma	180	98.9	99.6	140	98.6	98.7
South Carolina	120	99.2	99.2	110	97.2	98.3
Tennessee	140	98.6	98.2	120	100.0	100.0
Texas	380	98.4	97.7	300	98.6	98.0
Washington	140	97.8	99.0	130	99.2	100.0
West Virginia	200	97.4	98.0	150	92.5	89.5
Wisconsin ²	170	58.6	65.5	130	65.4	70.7
Wyoming	160	89.0	97.2	170	97.6	97.2

¹ Rounded to the nearest 10 for confidentiality.

² The percentage of the student population represented by the NAEP schools used in the estimations was less than 90 percent in at least one of the years.

NOTE: In the comparison schools, the population represented by NAEP is less than 100 percent of the total population where state assessment scores are missing for some schools. Scores may be missing either because of the failure to match schools in the two surveys or the suppression of scores where there are too few students.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, *EDFacts SY 2006-07*, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Table 16. Number of NAEP schools, percentage of NAEP schools available for comparing state assessment results with NAEP results in grade 8 mathematics, and percentage of the student population in the comparison schools, by state: 2005 and 2007

State/jurisdiction	2005			2007		
	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented	NAEP schools ¹	Percent of NAEP schools matched	Percent of population represented
Alaska	100	58.4	90.7	110	98.2	99.3
Arizona	130	96.2	98.7	130	97.7	99.1
Arkansas ²	130	84.0	88.8	130	90.4	94.5
Colorado	120	89.3	97.7	120	93.1	98.6
Connecticut	110	96.2	96.7	100	100.0	100.0
Delaware	40	86.0	93.4	50	100.0	100.0
Florida	160	95.7	95.7	160	98.7	98.6
Georgia	120	92.7	92.0	120	97.5	95.4
Hawaii	70	98.5	99.8	70	95.7	99.8
Idaho	100	93.2	97.3	100	98.1	99.1
Illinois	190	98.4	98.6	200	98.0	99.4
Indiana	110	98.1	98.1	110	100.0	100.0
Iowa	110	98.2	96.6	140	96.3	96.9
Kentucky	120	99.1	99.2	110	98.2	98.7
Louisiana	110	98.2	98.5	110	96.4	97.7
Maine ²	130	67.2	80.5	130	94.7	97.6
Maryland	110	98.1	99.2	110	99.1	97.2
Massachusetts	130	97.7	99.4	130	99.3	99.2
Michigan	120	95.7	97.6	120	96.7	97.9
Mississippi	120	96.5	97.6	110	97.4	97.7
Missouri	130	96.2	97.7	130	94.7	96.2
Montana	160	79.9	96.0	170	98.2	99.4
Nevada	80	88.3	92.5	80	93.3	93.6
New Jersey	110	99.1	96.9	110	100.0	100.0
New Mexico ²	110	81.1	84.2	110	97.3	99.6
New York	180	95.1	95.7	160	98.1	98.5
North Carolina	140	95.0	97.7	150	99.3	99.7
North Dakota ²	180	73.4	92.5	180	70.3	89.6
Ohio	140	95.1	97.0	190	98.9	98.8
Oklahoma	150	95.9	97.2	150	96.6	96.8
Oregon	120	99.2	99.8	110	96.5	99.2
Pennsylvania	110	94.5	96.1	110	98.2	97.5
South Carolina	110	97.2	95.8	110	97.2	98.8
Tennessee	110	99.1	99.4	120	99.2	99.2
Texas	280	97.1	98.0	220	96.4	97.6
Virginia	110	100.0	100.0	110	100.0	100.0
West Virginia	110	97.3	99.0	120	91.5	91.0
Wisconsin ²	120	79.7	86.5	130	74.6	82.6
Wyoming	80	96.3	96.5	80	96.3	97.1

¹ Rounded to the nearest 10 for confidentiality.

² The percentage of the student population represented by the NAEP schools used in the estimations was less than 90 percent in at least one of the years.

NOTE: In the comparison schools, the population represented by NAEP is less than 100 percent of the total population where state assessment scores are missing for some schools. Scores may be missing either because of the failure to match schools in the two surveys or the suppression of scores where there are too few students.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, ED Facts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Table 17. Difference between the estimated NAEP scale equivalents of state grade 4 mathematics proficient standards and their standard error, by state: 2005 and 2007

State/jurisdiction	2005		2007		Difference 2007-2005	Standard error
	NAEP scale equivalent	Standard error	NAEP scale equivalent	Standard error		
2005 and 2007 state assessment reported results are comparable						
Alabama	207	0.9	205	1.5	-1.6	1.72
Alaska	222	1.1	216	1.3	-5.8 *	1.74
Arkansas	236	1.1	229	0.6	-6.7 *	1.26
California	231	0.6	226	0.7	-5.1 *	0.92
Colorado	201	1.2	201	1.6	-0.1	2.04
Florida	230	0.8	230	0.8	-0.7	1.19
Georgia	215	1.0	213	0.8	-1.4	1.28
Indiana	225	0.7	228	0.9	2.5 *	1.14
Iowa	219	0.8	220	1.1	0.4	1.38
Louisiana	223	0.9	223	1.3	0.2	1.61
Maryland	215	1.1	206	1.3	-8.3 *	1.65
Massachusetts	255	0.8	254	1.0	-0.9	1.24
Mississippi	206	1.1	204	0.8	-1.6	1.38
New Jersey	221	1.4	220	1.1	-0.9	1.77
New Mexico	232	1.3	233	0.8	0.4	1.50
North Dakota	224	0.8	226	1.0	1.8	1.29
South Carolina	246	1.0	245	0.9	-1.4	1.33
Tennessee	200	1.2	198	1.3	-1.4	1.75
Texas	219	1.0	217	0.9	-2.5	1.36
Washington	236	0.8	240	0.8	4.3 *	1.12
Wisconsin	224	1.4	222	2.3	-2.1	2.73
2005 and 2007 state assessment reported results are not comparable						
Connecticut	221	0.8	220	0.7	-0.8	1.12
Hawaii	247	1.0	238	0.5	-8.9 *	1.13
Idaho	207	2.2	217	0.9	10.2 *	2.34
Kansas	218	1.6	219	1.3	0.8	2.02
Maine	249	0.8	236	0.8	-12.8 *	1.13
Michigan	222	1.6	204	1.6	-18.3 *	2.23
Missouri	242	1.0	245	0.8	2.8 *	1.28
Montana	220	0.6	234	1.0	13.4 *	1.16
New York	207	1.4	219	0.8	12.0 *	1.60
North Carolina	203	0.9	231	0.6	28.4 *	1.12
Ohio	233	0.9	225	1.3	-8.1 *	1.57
Oklahoma	218	0.8	213	1.5	-5.1 *	1.68
West Virginia	215	1.1	217	1.3	2.2	1.66
Wyoming	251	0.8	216	0.6	-34.7 *	0.98

* Difference is statistically significant at $p < .05$.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, EDFacts SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.

Table 18. Difference between the estimated NAEP scale equivalents of state grade 8 mathematics proficient standards and their standard error, by state: 2005 and 2007

State/jurisdiction	2005		2007		Difference 2007-2005	Standard error
	NAEP scale equivalent	Standard error	NAEP scale equivalent	Standard error		
2005 and 2007 state assessment reported results are comparable						
Alaska	268	1.2	265	1.2	-3.0	1.70
Arizona	265	1.0	268	1.1	2.7	1.46
Arkansas	288	0.7	277	1.3	-11.0 *	1.54
Colorado	258	1.7	259	1.3	1.2	2.19
Florida	269	1.1	266	0.9	-3.0 *	1.37
Georgia	255	0.9	243	1.7	-11.7 *	1.89
Indiana	266	0.9	266	1.6	0.7	1.80
Iowa	262	1.3	264	1.5	2.0	2.00
Louisiana	264	0.8	267	1.2	2.7	1.50
Maryland	276	1.2	278	1.5	1.9	1.94
Mississippi	262	1.4	262	0.9	0.5	1.62
Nevada	271	1.5	267	1.2	-3.8 *	1.90
New Jersey	273	1.1	272	0.8	-0.9	1.37
New Mexico	287	1.6	285	0.9	-1.3	1.79
North Dakota	277	0.9	279	0.8	2.1	1.22
Ohio	274	1.2	265	1.2	-9.2 *	1.64
Pennsylvania	272	0.6	271	1.0	-0.7	1.20
South Carolina	305	0.9	312	1.4	6.8 *	1.63
Tennessee	230	1.3	234	2.2	4.3	2.51
Texas	272	0.6	268	1.0	-4.2 *	1.21
Wisconsin	263	1.1	262	1.7	-1.5	2.00
2005 and 2007 state assessment reported results are not comparable						
Connecticut	257	1.6	252	2.0	-4.6	2.56
Delaware	275	0.9	272	0.9	-3.2 *	1.30
Hawaii	296	1.2	294	0.8	-2.1	1.39
Idaho	266	1.8	265	1.6	-0.8	2.43
Illinois	276	0.9	251	0.8	-25.1 *	1.25
Kentucky	285	1.1	279	0.7	-6.2 *	1.34
Maine	300	1.2	286	0.9	-13.9 *	1.47
Massachusetts	301	1.1	302	1.1	1.6	1.52
Michigan	269	1.3	260	1.5	-8.4 *	1.98
Missouri	311	1.3	289	1.2	-22.2 *	1.77
Montana	271	1.1	281	1.7	10.4 *	2.02
New York	275	0.8	273	1.1	-2.5	1.40
North Carolina	247	1.5	270	1.3	22.7 *	1.92
Oklahoma	258	0.7	249	1.1	-8.9 *	1.33
Oregon	269	1.2	262	1.2	-6.9 *	1.64
Virginia	253	1.0	259	1.6	6.1 *	1.84
West Virginia	253	0.9	253	1.0	0.4	1.36
Wyoming	293	1.0	279	0.8	-13.4 *	1.30

* Difference is statistically significant at $p < .05$.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 and 2007 Mathematics Assessments. U.S. Department of Education, Office of Planning, Evaluation and Policy Development, ED*Facts* SY 2006-07, Washington, DC, 2008. The National Longitudinal School-Level State Assessment Score Database (NLSLSASD) 2008.