Closing the Achievement Gap for Economically Disadvantaged Students?

Analyzing Change Since No Child Left Behind Using State Assessments and the National Assessment of Educational Progress

Rolf K. Blank

April 2011

CCSSO
One Massachusetts Ave. NW
Washington, DC 20001
www.ccsso.org
rolfb@ccsso.org

Appreciation is extended to the state assessment directors for their assistance with the data for this paper. Lauren Stillman, CCSSO associate, provided excellent data analysis and editing support.

Closing the Achievement Gap for Economically Disadvantaged Students? Analyzing Change Since No Child Left Behind Using State Assessments and the National Assessment of Educational Progress

A critical state-level indicator of progress in public education is student achievement annual performance and change over time. The Council of Chief State School Officers (CCSSO) has been very active in tracking and reporting on student achievement results and using state assessment scores and other data to analyze achievement trends. A central goal of the No Child Left Behind (NCLB) Act was to close the gap in student achievement between students from different social and economic backgrounds. A principal objective of the federal funding mandated under NCLB, the design for program initiatives, and the accountability provisions of the federal law was to reduce the extent of disparity in performance of students from different demographic groups within schools as well as differences in the demonstrated performance of schools, districts, and states. The present report uses two different measures of student achievement—state student assessments and the National Assessment of Educational Progress (NAEP) —to determine the degree to which achievement gaps have been reduced in the period of implementation of NCLB in states. Three key questions are addressed by our analysis:

- Has student achievement on state-administered annual assessments in math and language arts improved significantly since NCLB implementation and particularly for students from economically disadvantaged families?
- Has the achievement gap for economically disadvantaged students closed since NCLB implementation?
- Are state trends in student achievement on state assessments confirmed by achievement trends on the NAEP math and reading assessments?

State education agencies have responsibility under state and federal laws for reporting on the educational progress of our schools, and the annual "school report card" is a common method by which states or school districts organize and report selected comparable school statistics on the status and progress of education. Currently, education indicators are centered around measures of education outcomes and particularly student achievement on standardized assessments. With increasing use of integrated data systems by states and districts, student achievement growth can be tracked for multiple years and many states are now using growth models for school accountability. The analyses of achievement trends presented in this paper use achievement scores aggregated at the state level to analyze grade cohort change over time for specific target student groups.

NCLB Goal to Close the Student Achievement Gap

With inception of the Elementary and Secondary Education Act, a core purpose of federal education policy has been to improve public education provided in schools serving students from economically disadvantaged families. With reauthorization under NCLB, the requirements of the Title I program have provided for greater focus on schools and districts with low performance on state assessments and other indicators. The state requirements for reporting each school's Adequate Yearly Progress (AYP) and

identifying schools in need of improvement that are not making progress for consecutive years have placed new emphasis on state assessment scores and tracking performance and improvements of low achieving schools and their students.

Under current federal regulations, starting in the 2002-03 school year, states must report state student achievement scores for each public school and district, and the results must be publicly reported by disaggregated target population groups at the school, district, and state levels (CCSSO, 2003). States are required to implement standards-based statewide tests in math and reading for grades 3-8 and one high school grade, and the tests must be aligned to state content standards. States are required to test and report on scores for 95 percent of enrolled students for all students and for each of the designated student population groups. Among the significant changes initiated by the NCLB requirements were requirements for testing all students including special education and English language learner students and reporting the level of achievement of key at-risk student groups such as economically-disadvantaged and minority students. The rationale for the heightened accountability focus on schools and student groups was to bring public and educator attention to students that are not meeting defined standards and to encourage state, district, and school focus on educational strategies and instruction to raise these students' learning and achievement (Birman, et al, 2008; Mintrop & Sunderland, 2009).

Research on Student Achievement Trends across States

Since the inception of annual reporting of state assessment results to meet the NCLB requirements in 2003, educators and researchers have had a high level of interest in knowing the extent of change in student performance. Three primary research methods have been used to analyze change in student performance following NCLB implementation:

a) Research on the rate at which schools make/do not make adequate yearly progress (AYP) in each state,

b) Analyzing state proficiency definitions and comparing state progress based on the definitions, using NAEP as a benchmark

c) Analyzing the change in student achievement by measuring the change in achievement gaps between student groups.

A brief review of these methods of analyzing and reporting state student assessment scores will provide the context for our 50-state analysis of the achievement gap trends.

Research on Accountability under NCLB

The NCLB focus on accountability requires states to determine whether each public school and district meets annual targets for the proportion of students that meet the state-defined proficiency level. For a school to be designated as having made AYP, the proficiency objective for a school year must be met for each of the demographic student groups within each school. Schools not making AYP for two or more years are identified by districts and states, and a series of steps toward improvement must be implemented. Because there are specific consequences for schools and districts related to the accountability reporting, a high degree of attention has been placed on the annual reporting of AYP by state (CCSSO, 2010) and reporting of results for all states (US Department of Education, 2010).

With the high level of attention on school accountability and related implications of not making AYP annual targets, research and analysis has focused on state policies concerning assessments, standards that define assessments, and state actions based on accountability results. A national study of the implementation and effects of NCLB analyzed the progress of the 50 states' implementation of NCLB accountability requirements, including how states set standards for achievement levels and the accountability plans for making annual AYP determinations (Birman, et al, 2008). Researchers have also analyzed state-level implications of NCLB accountability and effects of the new accountability down to the school and classroom levels (Hamilton, et al, 2007, 2009). Considering state accountability data reported under NCLB, several researchers have examined the effects of the new accountability requirements and reporting on creating incentives or disincentives for educators to improve teaching and learning and the effects of accountability on improving school outcomes (Mintrop & Sunderman, 2009; Ladd & Lauen, 2009; Helig & Darling-Hammond, 2008).

Analysis of student proficiency using NAEP and state assessments

Research and analysis of student achievement across states and improvement in student performance over time has also incorporated data from the National Assessment of Educational Progress (NAEP). All states are required under NCLB to participate in the NAEP studies of student achievement of math and reading for students in grades 4 and 8. NAEP scores, based on a representative sample of schools and students in each state, have provided education leaders, researchers, and the public with a standard measure of student performance in several academic subjects and reliable trend measures over time (NCES, *Nation's Report Card*, http://nces.ed.gov/nationsreportcard/).

Beginning in 1990, chief state school officers and state assessment directors have played key roles in the development and implementation of the application of NAEP for state-level reporting trends using the student scores by state. States have used the NAEP scores as a second indicator of student performance which may be compared with other states and the nation. CCSSO has reported NAEP state-level results and trends as a key state educational indicator for state and national leaders since the NAEP program began (see, e.g., CCSSO, 2003; Blank & Langesen, 2005).

With the NCLB requirement for all states to participate in NAEP reading and math assessments, it has become possible to track the progress of all states student achievement at grades 4 and 8. With biennial assessments in these subjects, levels of student achievement can be tracked over time for each state. For example, the percent of students in each state at or above the Basic NAEP achievement level or the percent of students at or above the proficient NAEP level can be compared from 2005 to 2007 to 2009. Trends analysis of NAEP at the state level can be carried out by taking into consideration the statistical error in the sample-based estimates (e.g., for 2009, state estimates for the percentage of students at the proficient level or above had an error of 1.1 to 1.8 percentage points; NAEP Data Explorer http://nces.ed.gov/nationsreportcard/). The NAEP scores for each state can be analyzed for all students in a grade, compared by student population group, or tracked by state and group every two years.

Progress of student achievement by state is now often reported and analyzed using both state assessment data and NAEP biennial data in math and reading. The State Profiles reported by U.S. Department of Education for each state annually, based on data collection and reporting by states through the ED*Facts* system, includes student achievement results from state assessments and from NAEP (U.S. Department of Education, 2010, http://www2.ed.gov/about/contacts/state/index.html). The current annual State Profiles reported by US ED include, among many state-level statistics, the "percent proficient and above" statistic from each state's assessment program and also the "percent proficient and above" from NAEP.

The Center on Education Policy (CEP) has produced several reports which compare the student achievement results and trends for each state using state assessments and NAEP toward the goal of measuring change in education outcomes. The CEP reports compare the extent of improvement across states in average student achievement at grades 4 and 8 from 2005 and 2007 to 2009, using both state assessment scores and NAEP scores (Chudowsky & Chudowsky, 2010; Kober, Chudowsky, & Chudowsky, 2010). To analyze and report on change over time, the CEP reports use the percentage of students at or above the NAEP basic achievement level and the percent proficient or higher for state assessments. The CEP notes that the NAEP basic level is closer to the state definition of "proficient" established by most states and the basic scores include a greater proportion of students participating in NAEP (Chudowsky & Chudowsky, 2010). Other organizations reporting state assessment scores and NAEP scores, and change in scores over time, are CCSSO (annual state profiles 1997 to 2005) and the Council of Great City Schools (2010).

Another approach to analyzing state and NAEP assessment results has been to compare the scores of students defined as proficient on state assessments with the performance of these students on NAEP. The objective of several studies has been to show how states "proficient" levels compare to the NAEP proficient level (Bandera, et al, 2007; Peterson, 2010; Phillips, 2010). These mapping or linking studies of state student assessment results in comparison to student results on other assessments (including NAEP and TIMSS) have highlighted the fact that 50 states' policies and assessments differ from each other.

Critics of the NAEP mapping or linking analyses note several problems with these comparisons. As noted in the CEP reports, the definition and reporting of "proficient" performance is established differently by state procedures as compared to the procedures used with NAEP, and the assessments while at the same grade are likely assessing different content domains. Each state sets its own definitions of what student content knowledge and skills need to be demonstrated to be "proficient." Analyses of the NAEP-state mapping procedures and data were addressed in a commissioned paper by Ho and Haertel (2007), and these researchers reported two main problems with interpretation of the data. First, only a portion of a state's student achievement and change in student achievement over time is analyzed with the proficient comparisons between NAEP and states; and second, if student performance on the state assessment increases from one testing period to the next without NAEP scores going up at the same rate, the reported gap between the "state proficient" and "NAEP proficient" widens. Thus, Ho and Haertel

found a pattern of "drift" in the ranking of states using the NAEP vs. state proficient comparisons with drift due to trend discrepancies between state and NAEP assessments.

Analysis of State Trends by Student Group

Prior research on closing the achievement gap using NAEP and state assessment results has included focus on specific student groups, including Hispanic students (Helig & Darling-Hammond, 2008), black versus white students (Vanneman, et al, 2009) and trends for Hispanic and black students (CRESST, 2007). Barton and Coley analyzed long-term trends in achievement of minority students and economically disadvantaged students and found achievement gains were greater in the 1980s than in the recent NCLB period (2008). In 2006, in response to queries from state leaders, CCSSO staff prepared two papers reporting analysis of change in NAEP state-level scores for students from economically disadvantaged families and minority students in math, reading, and science (Blank & Toye, 2006, 2007). A majority of states had significant advances in average performance of students on NAEP math and reading assessments from 1996 to 2005, and 22 states made significant improvement in closing the achievement gap for economically disadvantaged students during this period, using the NAEP basic-level trends for reading and math scores.

CCSSO Analysis of Trends under NCLB

The goal of our recent research was to answer the leading policy question regarding improvement in student achievement for economically disadvantaged students since enactment of the NCLB law. The analysis of state achievement trends after implementation of NCLB compares the average change in student achievement scores for economically disadvantaged students in each state with the average change in student achievement scores for all students in the state. Then we compare the trends in change of scores over time between state assessment results and NAEP results.

To address the question of extent of gains in student achievement since implementation of NCLB, data on state student assessment scores were collected from the U.S. Department of Education ED*Facts* annual data reports from state departments of education. Data were collected and entered into a database for each year from 2006 through 2009. Entered for analysis were the state percent proficient or higher for all students and the state percent proficient for students who are from economically disadvantaged families, for grades 4 and 8 language arts or reading and math assessments.[1]

Previously, CCSSO had collected state assessment data for each state for the school years 2002-03 through 2008-09. Many states made changes in their grade-level tests beginning in 2005-2006 year to meet the NCLB requirements, and following input from the CCSSO EIMAC state assessment directors committee, analysis of trends focuses on the period, 2005-2006 to 2008-09.

The NAEP state-level data for reading and math assessments at grades 4 and 8 were accessed from the NAEP Data Explorer website for the years 2005, 2007, and 2009.

[1] Each state defines students in the economically disadvantaged group in their state accountability plan submitted to US ED; most states use a definition of students eligible for free or reduced lunch, as reported by the U.S. Dept. of Agriculture. This statistic is also used in NAEP reports.)

We entered data for all students and economically disadvantaged students using both the percent achieving at the proficient level or higher and the percent at basic level or higher. We decided to measure and report gains for both NAEP achievement levels since prior research and analyses have used one or the other measure.

The analysis of gains by state for the separate assessment measures are reported in tables and figures below. We report the percentage points improvement for the economically disadvantaged student population in each state from 2005-06 through 208-09. Then, the change in the achievement gap for this student group (or "closing the gap") is computed by subtracting the gains in percentage points for all students from the gain in percentage points of the economically disadvantaged student group. The two separate indicators—a) gains in percent proficient, and b) change in achievement gap—can be compared for all states, and we can analyze each of these measures using data from state assessments and data from NAEP.

Findings of Achievement Gap Analysis

The trends analysis was conducted for grades 4 and 8 language arts and mathematics for all 50 states. In Tables 1 and 2 below, we show the results of analysis of grade 4 language arts achievement gains for economically disadvantage students and the extent to which the achievement gap closed for this group, and for grade 8 math achievement we report achievement gains for this group and the extent of closing the gap. In the tables, a positive sign for gains indicates overall improvement in achievement for economically disadvantaged students and a positive sign for closing the gap indicates the gap has diminished. A negative sign under the heading "Gains Econ Disadv." indicates that achievement scores decreased over the period. A negative sign under "Closing Gap" indicates the gap has not closed and it has widened, either due to lack of gains for the economically disadvantaged group, or because the improvement for All students was greater than the improvement for the economically disadvantaged student group.

In Figures 1 and 2 we display the pattern of findings across the states using a scatter plot program, which helps the reader to collectively view the degree of student improvement for economically disadvantaged students across states. The state assessment trends analyses were completed for only those states with data reported for the four-year period. During the period, several states changed their assessment instruments or changed the performance standards for reporting student scores.

The analysis of NAEP results for the four year period 2005 to 2009 are reported in Tables 3 and 4 for grade 4 reading and grade 8 math. These data are also displayed across states with scatter plots in Figures 3 and 4.

A) Improvement in Achievement on State Assessments

Table 1 shows there were significant gains for economically disadvantaged students on the State grade 4 reading assessments in over two-thirds of the reporting states, and eight of these states had significant effects in closing the achievement gap. From school year 2005-06 to 2008-09, 20 states made gains of more than 5 percentage points in the percentage of economically disadvantaged students achieving at the state's

proficient level or higher. For example, Arizona, Arkansas, California, Maine, Nebraska, Nevada, and South Carolina had gains of over 10 percentage points for economically disadvantaged students. Trends were analyzed for 40 states that had complete and consistent data for the four-year period. In eight of 40 states, there was no positive achievement gain on the state reading assessments for this target group.

The Closing the Gap indicator results show that while most states had gains in achievement for economically disadvantaged students, a smaller number of states closed the achievement gap for this group of students. A total of eight states closed the gap by three percentage points or more during the 2005-06 to 2008-09 period--that is, the percentage proficient for economically disadvantaged students increased more than the percent proficient for all students. From these trends, one explanation is that targeted efforts to raise the performance of economically disadvantaged students were effective and statewide average performance for this target group went up.

Figure 1 provides a two-variable plot graphic of the distribution of states progress in closing the gap in grade 4 reading in relation to the percent of economically disadvantaged students meeting the state proficient level in 2008-09. The line shows there is pattern of relationship between a state having more economically disadvantaged students at/above proficient level and larger positive effects in closing the gap. The states on the 0 line did not have trends reported due to change in assessments or achievement levels.

Table 2 shows there were significant gains in achievement for economically-disadvantaged students on state grade 8 math assessments in over three-fourths of the reporting states, and one-third of the states closed the achievement gap for the target population. From school year 2005-06 to 2008-09, 33 states made gains of more than 5 percentage points in the percentage of grade 8 students meeting proficient level in mathematics--that is, of the 44 states for which trends could be analyzed. For example, Arkansas, District of Columbia, Michigan, New Mexico, New York, North Carolina, and Virginia made gains of over 15 points in the percent proficient for economically disadvantaged students over the year period.

Table 2 data trends show that about one-third of states had positive results in closing the gap in grade 8 math achievement for economically disadvantaged students. As compared to the gap closing indicator for language arts, more states closed the achievement gap in math grade 8 than for language arts grade 4. The gap was reduced by more than three points in math achievement in 15 states. We can also observe that in eight states the gap widened over the period, which is typically due to greater increases in achievement for all students than for the economically disadvantaged group.

The two-variable plot graphic in Figure 2 shows a strong positive pattern of relationship between more economically disadvantaged students performing at/above the state proficient level on the grade 8 math assessments and larger effects in closing the achievement gap. This display shows also that more states had greater effects in closing the gap in grade 8 math than in grade 4 reading over the three-year period we analyzed.

Table 1: Achievement Gains State Assessments Reading, Grade 4, 2006 to 2009

State	Percent Proficient or higher* All students 2009	Econ Disad 2009	Gains Econ Disad 2006 to 09	Closing Gap 3 years
Alabama	87	80	2.8	0.7
Alaska	78	66	-2.5	-0.9
Arizona	72	61	10.1	3.4
Arkansas	70	62	10.4	3.4
California	60	47	12.0	1.0
Colorado	87	77	-3.2	-1.2
Connecticut	70	45	-0.4	1.4
Delaware	82	72	5.0	-0.1
Dist. of Col.	46	39	9.2	0.9
Florida	74	65	11.0	3.0
Georgia	87	82	9.9	3.7
Hawaii	62	50	7.3	2.9
Idaho	86	80	nr	nr
Illinois	74	59	1.0	-0.1
Indiana	74	62	2.0	1.0
Iowa	80	69	5.8	2.4
Kansas	89	80	11.5	2.0
Kentucky	74	66	nr	nr
Louisiana	72	66	9.0	1.0
Maine	71	60	13.3	3.3
Maryland	87	78	9.2	4.0
Massachusetts	54	30	3.0	-1.0
Michigan	77	65	-7.8	-1.6
Minnesota	75	57	nr	nr
Mississippi	52	41	nr	nr
Missouri	47	33	nr	nr
Montana	81	71	2.0	0.3
Nebraska	95	92	12.0	5.3
Nevada	62	50	10.4	2.0
New Hampshire	74	57	8.0	3.0
New Jersey	63	41	NR	nr
New Mexico	52	45	-0.2	1.7
New York	77	67	7.9	-0.5
North Carolina	69	56	nr	nr
North Dakota	80	72	4.3	1.5
Ohio	82	71	8.4	3.2
Oklahoma	63	53	nr	nr
Oregon	84	77	-3.2	-0.5
Pennsylvania	72	56	7.8	3.9
Rhode Island	68	52	12.5	4.6
South Carolina	54	40	13.5	1.2
South Dakota	77	65	nr	nr
Tennessee	90	85	3.6	1.5
Texas	84	78	3.0	1.0
Utah	78	67	-1.4	0.3
Vermont	70	55	5.3	1.7
Virginia	89	81	5.8	1.9
Washington	73	60	-10.9	-2.7
West Virginia	64	55	NR	NR
Wisconsin	82	69	0.7	1.3
Wyoming	71	41	NR	NR

Notes: * State-defined "Proficient;" nr = state trends could not be reported; Closing gap= Gains Ecn Disadv minus Gains All
Sources: State assessment data from ED Facts, U.S. Department Education, and state websites.
Council of Chief State School Officers, 2010

Figure 1

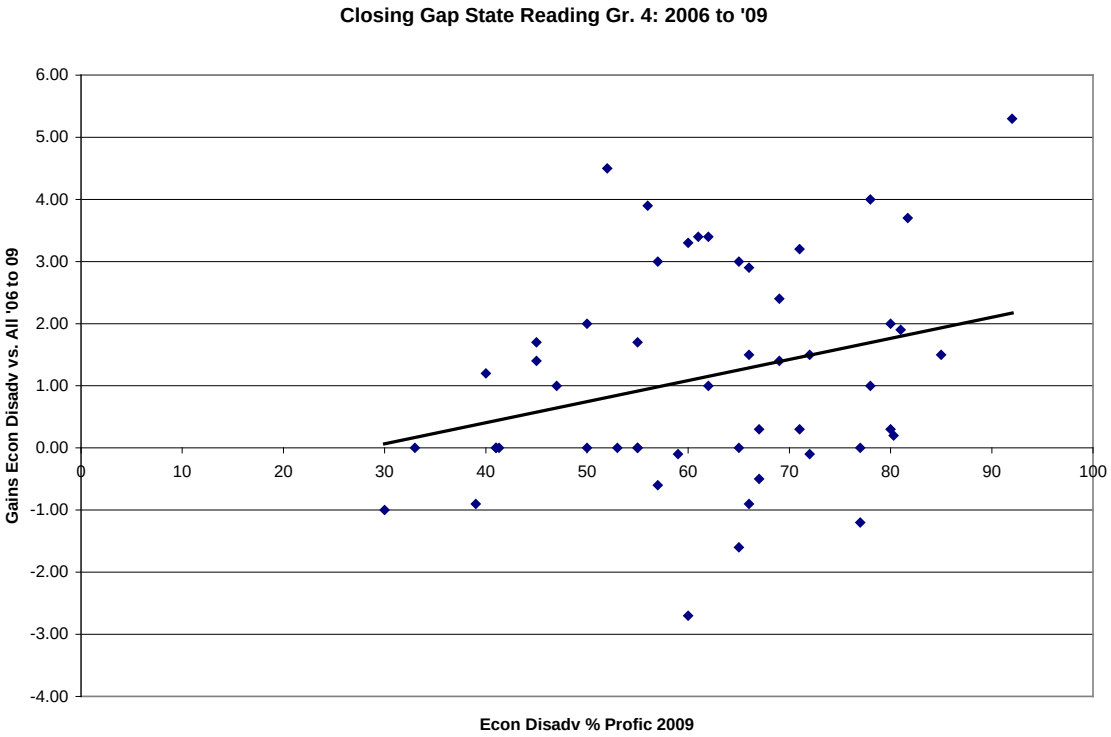

Closing Gap State Reading Gr. 4: 2006 to '09
Gains Econ Disadv vs. All '06 to 09
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
0
10
20
30
40
50
60
70
80
90
100
Econ Disadv % Profic 2009

Table 2: Achievement Gains State Assessments Math, Grade 8, 2006 to 2009

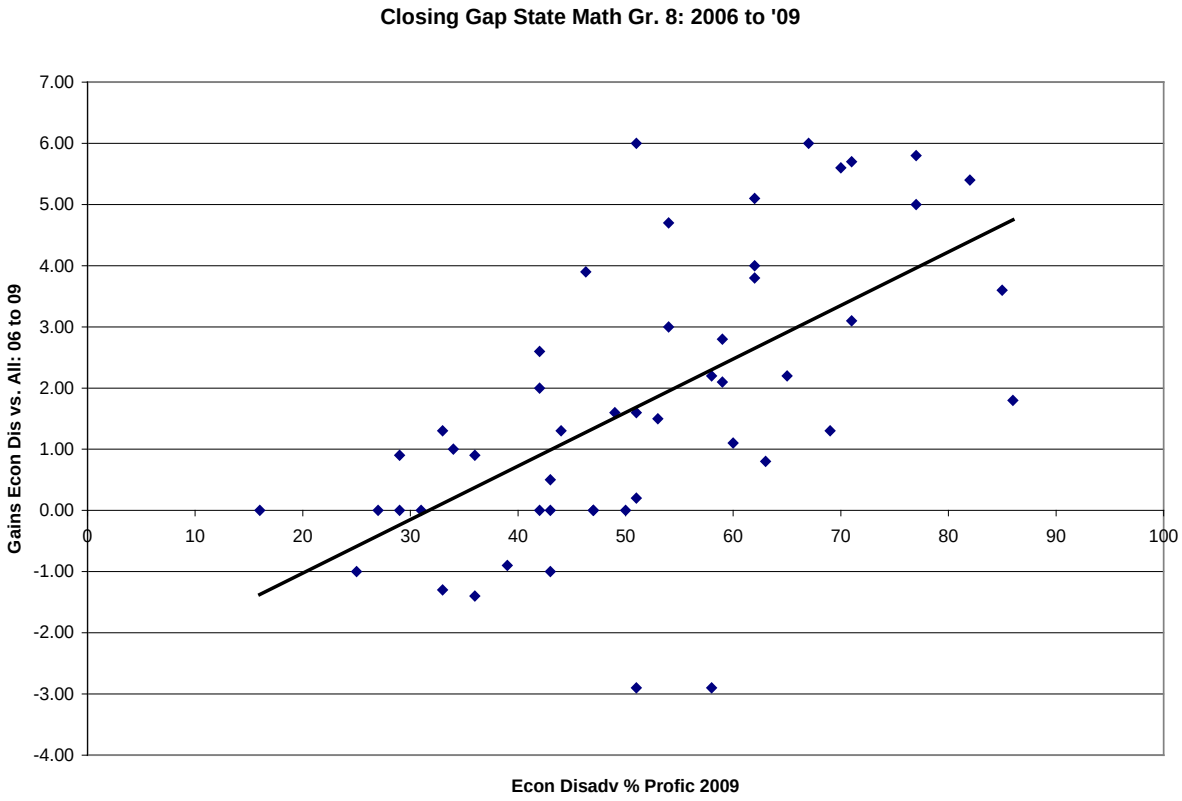
State	Percent Proficient or higher* All students 2009	Econ Disad 2009	Gains Econ Disad 2006 to 09	Closing Gap 3 years
Alabama	74	63	7.2	1.1
Alaska	66	51	1.5	0.2
Arizona	63	51	5.5	-2.9
Arkansas	61	49	17.7	1.6
California	41	29	7.3	0.9
Colorado	81	66	12.0	5.0
Connecticut	81	59	4.2	2.1
Delaware	66	51	6.8	1.6
Dist of Col.	44	39	15.1	-0.9
Florida	66	54	9.0	3.0
Georgia	81	72	14.9	5.4
Hawaii	39	29	12.6	-0.8
Idaho	79	69	nr	nr
Illinois	82	71	6.9	3.1
Indiana	75	62	7.0	4.0
Iowa	76	60	3.3	1.1
Kansas	78	65	13.6	2.2
Kentucky	55	43	nr	nr
Louisiana	59	49	6.0	0.0
Maine	52	36	5.6	-1.4
Maryland	65	46	14.3	3.9
Massachusetts	49	25	8.0	-1.0
Michigan	75	62	16.9	5.1
Minnesota	58	36	2.3	0.9
Mississippi	54	43	nr	nr
Missouri	47	31	nr	nr
Montana	60	44	4.7	1.3
Nebraska	92	86	9.9	1.8
Nevada	55	42	7.1	2.6
New Hampshire	64	42	10.0	2.0
New Jersey	71	51	12.5	6.0
New Mexico	43	33	15.4	-1.3
New York	80	71	31.7	5.7
North Carolina	80	70	26.2	5.6
North Dakota	71	59	8.5	2.8
Ohio	71	53	3.9	1.5
Oklahoma	61	51	nr	nr
Oregon	71	58	8.1	3.0
Pennsylvania	70	54	12.5	4.7
Rhode Island	53	33	6.8	1.7
South Carolina	29	16	5.3	-1.7
South Dakota	74	58	5.0	-2.9
Tennessee	90	85	8.5	3.6
Texas	79	71	15.0	3.0
Utah	63	47	nr	nr
Vermont	63	43	4.4	-1.0
Virginia	85	77	20.4	5.8
Washington	51	34	3.1	1.0
West Virginia	53	42	nr	nr
Wisconsin	79	62	6.3	2.3
Wyoming	62	27	nr	nr

* State-defined "Proficient;" nr = state trends could not be reported; Closing gap= Gains Ecn Disadv minus Gains All

Sources: State assessment data from ED Facts, U.S. Department Education, and state websites.

Council of Chief State School Officers, 2010

Figure 2


Closing Gap State Math Gr. 8: 2006 to '09
Gains Econ Dis vs. All: 06 to 09
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
0
10
20
30
40
50
60
70
80
90
100
Econ Disadv % Profic 2009

B) Improvement in Achievement on NAEP Reading and Math, 2005 to 2009

Our analysis of student achievement trends using NAEP data by state used NAEP Basic achievement level. Tables 3 and 4 show trends for student performance at the NAEP Basic level. (Tables showing trends for NAEP Proficient level in reading and math are included in the Appendix, and readers can compare the trends by state at the Proficient level.)

Table 3 shows that in comparing the 2005 NAEP Assessments in Reading to the 2009 assessment results, over half the states made significant gains in performance of economically disadvantaged students in grade 4 reading,, and ten states had positive effects in closing the achievement gap.

The trend data using the percentage of students scoring at the Basic level on NAEP Reading or higher show 27 states made gains in achievement of more than five percentage points for the economically disadvantaged group students. Several states made larger gains--Connecticut, Delaware, Hawaii, Rhode Island, Missouri, and Maryland improved on NAEP Reading at/above the Basic level by more than 10 points. Even though gains were made over four years, Table 3 also reveals that as of 2009 from one-third to one-half of economically disadvantaged students in each state scored Below Basic on NAEP grade 4 Reading.

On the indicator of Closing the Gap in grade 4 NAEP Reading, the trends analysis shows that 10 states closed the gap for economically disadvantaged students by more than three percentage points from 2005 to 2009. At the same time, the closing gap statistic for 12 states was negative indicating that the All students percentage increased more than the rate for economically disadvantaged students.

Note on use of standard error in NAEP trends analysis: Each state NAEP percentage reported is an estimate based on the responses from a representative sample of students and the reported percentage for a state has a standard error of from 1 to 1.9 points (varies by state). Thus, in comparing two years of data, a significant change in closing the gap requires more than two to four point gains in percent of students scoring at/above a specific NAEP achievement for economically disadvantaged students as compared to all students.

Figure 3 displays a two-variable plot for the analysis of closing the gap with NAEP Reading at grade 4. The line indicates there is small positive pattern of relationship between more economically disadvantaged students performing at/above the NAEP Basic level and larger effects in closing the achievement gap. We can see that most states are clustered in the 50 to 65 percent range for economically disadvantaged students meeting the Basic level, and from -2.0 to 3.0 percentage points change in closing the achievement gap.

In Table 4, the trends analysis for NAEP Mathematics grade 8 shows that 20 states made significant gains in performance of economically disadvantaged students, and ten states had positive effects in closing the achievement gap.

Using the Basic level on NAEP grade 8 Math results, the 2005 to 2009 trends show that 20 states made gains for economically disadvantaged student group of five percentage points or more. Several states made larger gains—Florida, Maryland, Nevada, New Jersey and Rhode Island improved on NAEP Math at/above the Basic level by more than 10 points. Even though gains were made over four years, Table 3 also reveals that as of 2009 from 35 to 55 percent of economically disadvantaged students of in each state scored Below Basic on NAEP grade 8 Mathematics.

On the indicator of Closing the Gap for NAEP grade 8 Math, the trends analysis shows that 10 states closed the gap for economically disadvantaged students by more than three percentage points from 2005 to 2009. At the same time, the closing gap statistic for 18 states was negative which usually means that the All students gains increased more than the rate for economically disadvantaged students.

The two-variable plot in Figure 4 indicates there is small negative pattern of relationship between the percent of economically disadvantaged students performing at/above the NAEP Basic level and effects in closing the achievement gap. This display shows that states with higher levels of students meeting the Basic level did not have greater effects in closing the gap in grade 8 math. Most state results are clustered in the 50 to 70 percent range for economically disadvantaged students meeting the Basic level, and from -1.0 to 4.0 percentage points change in closing the achievement gap.

Table 3: Achievement Gains by State on NAEP Reading, Gr. 4, 2005 to 2009

	Percent Basic or higher			
	All Students	Ecn Disad	Gains Ecn Disad	Closing Gap*
State	2009	2009	2005 to 09	4 years
Alabama	62	49	8.9	-0.5
Alaska	59	41	1.2	0.3
Arizona	56	42	5.5	1.3
Arkansas	63	53	2.5	2.0
California	54	38	2.8	-1.2
Colorado	72	52	-0.4	-2.9
Connecticut	76	53	7.7	2.7
Delaware	73	60	-1.2	-0.6
Dist. of Col.	44	35	9.9	-0.9
Florida	73	64	11.4	3.0
Georgia	63	50	7.2	2.7
Hawaii	57	43	4.4	0.4
Idaho	69	57	1.3	1.7
Illinois	65	47	5.6	3.1
Indiana	70	57	4.7	-1.1
Iowa	69	54	0.3	-0.9
Kansas	72	60	6.6	0.8
Kentucky	72	61	4.9	-2.3
Louisiana	51	43	0.9	2.6
Maine	70	57	-0.7	0.0
Maryland	70	52	13.3	7.7
Massachusetts	80	61	6.0	3.9
Michigan	64	48	5.2	3.9
Minnesota	70	48	-5.7	-4.3
Mississippi	55	46	7.6	0.9
Missouri	70	56	3.1	0.2
Montana	73	60	2.4	1.0
Nebraska	70	56	8.1	5.7
Nevada	57	44	10.0	4.6
New Hampshire	77	60	2.0	-0.5
New Jersey	76	56	10.5	2.7
New Mexico	52	43	0.6	-0.2
New York	71	59	5.0	3.4
North Carolina	65	50	5.6	1.9
North Dakota	76	64	3.6	-0.2
Ohio	71	52	2.5	0.2
Oklahoma	65	53	3.2	-1.8
Oregon	65	50	1.9	-1.1
Pennsylvania	70	51	2.6	1.6
Rhode Island	69	51	10.0	2.8
South Carolina	62	49	6.5	2.0
South Dakota	70	53	-2.6	-2.4
Tennessee	63	50	6.6	3.0
Texas	65	54	2.1	1.4
Utah	67	50	-2.9	-1.8
Vermont	75	62	7.7	5.0
Virginia	74	56	3.9	2.1
Washington	68	53	-4.7	-2.6
West Virginia	62	52	1.3	0.1
Wisconsin	67	46	-1.6	-1.6
Wyoming	72	60	-1.2	-2.1

Closing gap= Gains Economically Disadvantaged students minus Gains All students

Source: NAEP Data Explorer, U.S. Department of Education

Council of Chief State School Officers, 2010

Figure 3

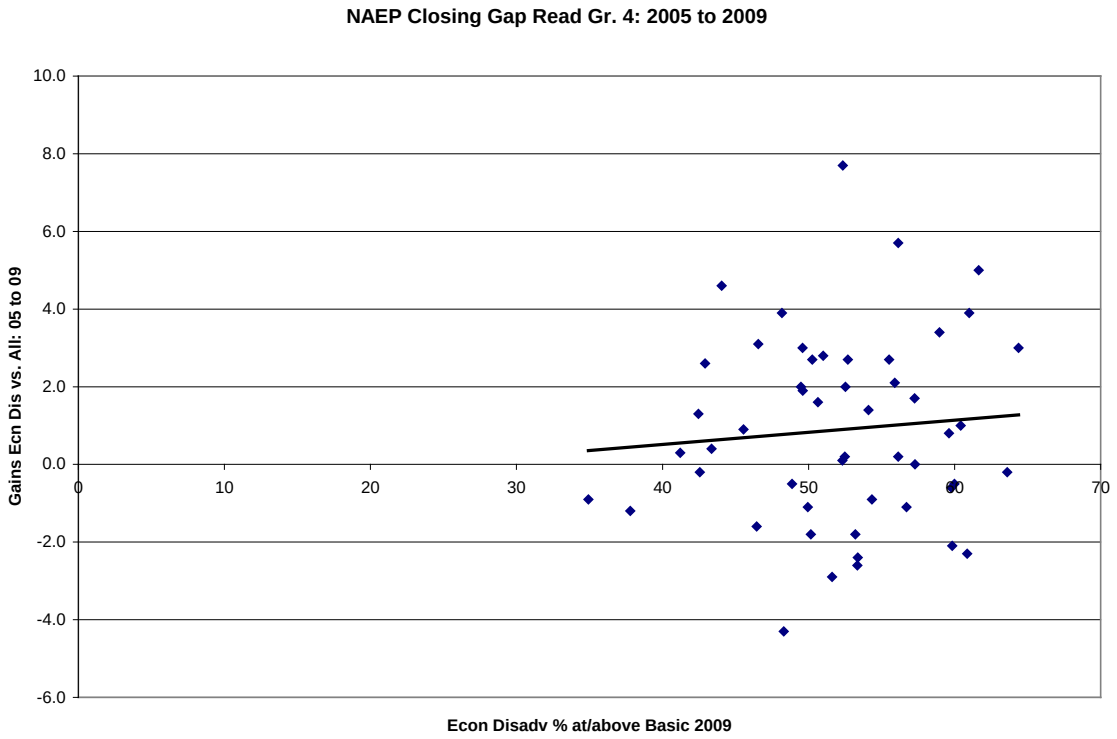

NAEP Closing Gap Read Gr. 4: 2005 to 2009
Gains Ecn Dis vs. All: 05 to 09
10.0
8.0
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
0
10
20
30
40
50
60
70
Econ Disadv % at/above Basic 2009

Table 4: Achievement Gains by State on NAEP Mathematics, Gr. 8, 2005 to 2009

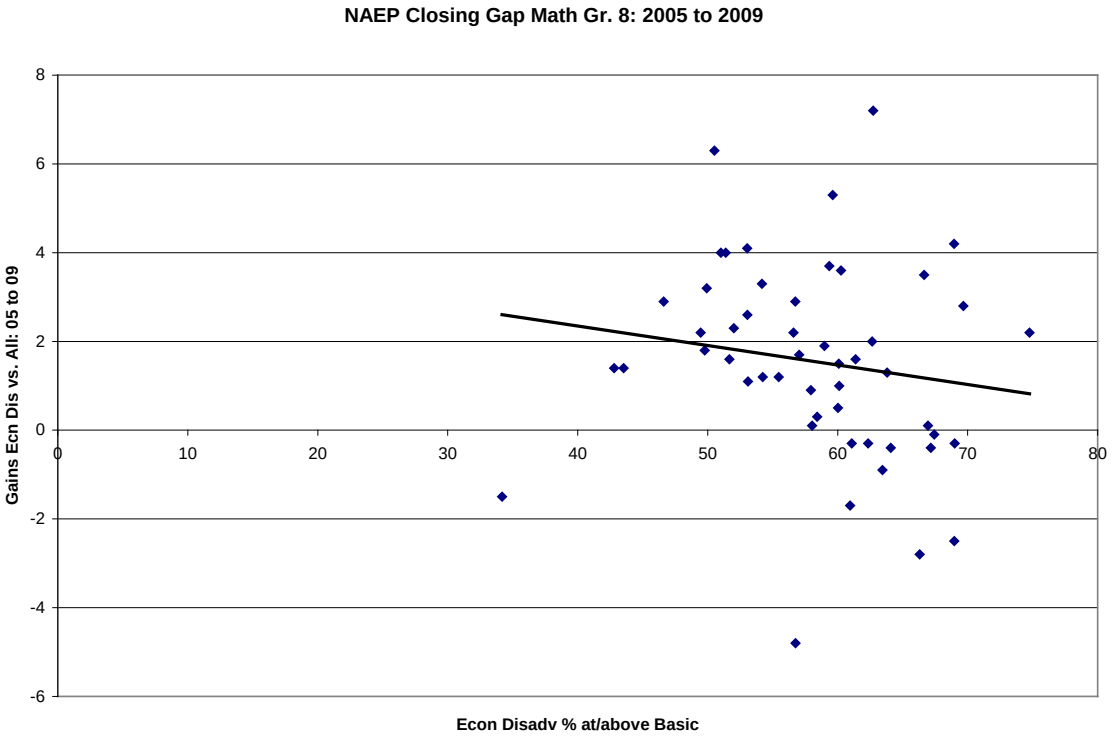
	Percent Basic or higher			
State	NAEP All 2009	Ecn Disad 2009	Gains Ecn Disad 05 to 09	Closing Gap* 4 yrs
Alabama	58	44	6.7	1.4
Alaska	75	60	6.2	0.5
Arizona	67	53	4.6	1.1
Arkansas	67	54	3.7	1.2
California	59	47	4.9	2.9
Colorado	76	57	7.9	2.9
Connecticut	78	54	11.6	3.3
Delaware	75	63	10.4	7.2
Dist of Col.	40	34	8.3	-1.5
Florida	70	59	8.9	3.7
Georgia	67	53	9.0	4.1
Hawaii	65	52	11.6	2.3
Idaho	78	67	4.4	-0.4
Illinois	73	53	6.9	2.6
Indiana	78	64	5.1	1.3
Iowa	76	61	0.4	-0.3
Kansas	79	67	5.8	3.5
Kentucky	70	58	6.2	0.3
Louisiana	62	52	4.8	1.6
Maine	78	64	3.3	-0.4
Maryland	75	55	10.3	1.2
Massachusetts	85	69	4.8	-0.3
Michigan	68	50	3.3	3.2
Minnesota	83	63	2.6	-0.9
Mississippi	54	43	4.0	1.4
Missouri	77	63	10.8	2
Montana	82	70	5.8	2.8
Nebraska	75	58	0.8	0.9
Nevada	63	51	6.8	4
New Hampshire	82	66	1.5	-2.8
New Jersey	80	61	7.7	1.6
New Mexico	59	50	8.5	1.8
New York	73	60	4.4	1.5
North Carolina	74	58	1.4	0.1
North Dakota	86	75	7.7	2.2
Ohio	76	59	3.6	1.9
Oklahoma	68	57	6.4	2.2
Oregon	75	61	1.0	-1.7
Pennsylvania	78	60	7.0	1
Rhode Island	68	51	11.3	6.3
South Carolina	69	57	-0.3	1.7
South Dakota	83	69	-0.1	-2.5
Tennessee	65	49	5.9	2.2
Texas	78	69	9.7	4.2
Utah	75	57	-1.1	-4.8
Vermont	81	67	3.5	-0.1
Virginia	76	60	7.2	5.3
Washington	78	62	2.5	-0.3
West Virginia	61	51	4.9	4
Wisconsin	79	60	6.6	3.6
Wyoming	78	67	1.9	0.1

* Closing gap= Gains Economically Disadvantaged students minus Gains All students

Source: NAEP Data Explorer, U.S. Department of Education

Council of Chief State School Officers, October 2010

Figure 4


NAEP Closing Gap Math Gr. 8: 2005 to 2009
Gains Econ Dis vs. All: 05 to 09
8
6
4
2
0
-2
-4
-6
0
10
20
30
40
50
60
70
80
Econ Disadv % at/above Basic

Trends comparisons for state assessments and NAEP

One approach for comparing trends between the two indicators of achievement gains is to check consistency for the states with largest improvements. There is a high degree of consistency for state-level trends on the two indicators.

- Of the seven states with the largest gains in percent proficient for economically disadvantaged students on state reading assessments (Arizona, Arkansas, California, Maine, Nebraska, Nevada, and South Carolina), five of the states also had significant gains on the percent of students scoring at/above basic level on NAEP Reading assessment.

- Of the seven states with the largest gains in percent proficient for economically disadvantaged students on state grade 8 math assessments (Arkansas, District of Columbia, Michigan, New Mexico, New York, North Carolina, Virginia), six of the states also had significant gains on the NAEP grade 8 math assessment percent basic or higher.

Alternatively, of the eight states with no gains for economically disadvantaged students on grade 4 reading state assessments, five of the states also did not make significant improvements on NAEP while three states had significant gains. Of the five states with low or no gains for economically disadvantaged students on grade 8 state math assessments, none of the five made significant gains on NAEP grade math for this group.

Conclusions

The CCSSO analysis of student achievement trends at the state-aggregate level show that during the period of time when grade-level testing has been fully implemented in reading and math, as required under NCLB, most states made significant gains in the student achievement performance of economically disadvantaged students. This is the pattern using both indicators—state assessments and NAEP. However, it is also the case that in most states achievement scores of all students increased for these subjects.

On the further question of whether student achievement was improved for economically disadvantaged students at a greater rate than for the average students, which was the intent of the federal legislation, the results are mixed. On state assessments in grade 8 math, one-third of states made significant progress in closing the achievement gap. In grade 4 reading, one-fifth of the states made significant progress in closing the gap for economically disadvantaged students.
Yes, achievement gaps continue to persist in all states for economically disadvantaged students and a few states do not show significant improvement in economically disadvantaged achievement. However, these data show overall positive results for improvement in student achievement for one of the target populations of students for the NCLB law.

The study demonstrated a method of comparing student achievement on the basis of achievement levels while using both state assessments and NAEP assessments for math and reading. The method used for this analysis did not attempt to equate or link the definition of "proficiency" used in different states and by NAEP. The trends comparisons were by state but did not attempt to compare achievement levels between those set determined by NAEP definitions and procedures and those determined by each state. The analysis based the trends analysis for NAEP on the percent of students meeting the NAEP "basic" level which allowed for use of data from a higher proportion of students in each state.

Appendix

Appendix T1: All Data for computing trends in State Reading Percent Proficient, Grade 4

State	Percent Proficient or higher*		Gains	Closing		
	All students 2009	Econ Disad 2009	Econ Disad 2006 to 09	Gap 3 years	All Students 2006	Econ Disad 2006
Alabama	87	80	2.8	0.7	84.4	77.5
Alaska	78	66	-2.5	-0.9	79.6	68.5
Arizona	72	61	10.1	3.4	65.3	50.9
Arkansas	70	62	10.4	3.4	63.0	51.6
California	60	47	12.0	1.0	49.0	35.0
Colorado	87	77	-3.2	-1.2	89.0	80.2
Connecticut	70	45	-0.4	1.4	71.8	45.4
Delaware	82	72	5.0	-0.1	76.9	67.0
Dist. of Col.	46	39	9.2	0.9	35.9	30
Florida	74	65	11.0	3.0	66.0	54.0
Georgia	87	82	9.9	3.7	81.0	71.8
Hawaii	62	50	7.3	2.9	57.0	42.7
Idaho	86	80	nr	nr	nr	nr
Illinois	74	59	1.0	-0.1	72.9	58.0
Indiana	74	62	2.0	1.0	73.0	60.0
Iowa	80	69	5.8	2.4	76.6	63.2
Kansas	89	80	11.5	2.0	79.5	68.5
Kentucky	74	66	nr	nr	nr	nr
Louisiana	72	66	9.0	1.0	64.0	57.0
Maine	71	60	13.3	3.3	61.0	46.7
Maryland	87	78	9.2	4.0	81.8	68.8
Massachusetts	54	30	3.0	-1.0	50.0	27.0
Michigan	77	65	-7.8	-1.6	83.2	72.8
Minnesota	75	57	nr	nr	nr	nr
Mississippi	52	41	nr	nr	nr	nr
Missouri	47	33	nr	nr	nr	nr
Montana	81	71	2.0	0.3	79.3	69
Nebraska	95	92	12.0	5.3	88.3	80
Nevada	62	50	10.4	2.0	53.6	39.6
New Hampshire	74	57	8.0	3.0	69.0	49.0
New Jersey	63	41	NR	nr	nr	nr
New Mexico	52	45	-0.2	1.7	53.9	45.2
New York	77	67	7.9	-0.5	68.6	59.1
North Carolina	69	56	nr	nr	nr	nr
North Dakota	80	72	4.3	1.5	77.2	67.7
Ohio	82	71	8.4	3.2	76.8	62.6
Oklahoma	63	53	nr	nr	nr	nr
Oregon	84	77	-3.2	-0.5	86.8	79.8
Pennsylvania	72	56	7.8	3.9	68.1	48.2
Rhode Island	68	52	12.5	4.6	60.3	39.8
South Carolina	54	40	13.5	1.2	41.7	26.5
South Dakota	77	65	nr	nr	nr	nr
Tennessee	90	85	3.6	1.5	87.9	81.4
Texas	84	78	3.0	1.0	82.0	75.0
Utah	78	67	-1.4	0.3	79.7	68.4
Vermont	70	55	5.3	1.7	66.4	50
Virginia	89	81	5.8	1.9	85.1	75.2
Washington	73	60	-10.9	-2.7	81.2	70.9
West Virginia	64	55	NR	NR	nr	nr
Wisconsin	82	69	0.7	1.3	82.6	68
Wyoming	71	41	NR	NR	64.5	52

Notes: * State-defined "Proficient;" nr = state trends could not be reported; Closing gap= Gains Ecn Disadv minus Gains All
Sources: State assessment data from ED Facts, U.S. Department Education, and state websites.
Council of Chief State School Officers, 2010

Appendix T2: All Data for computing trends in State Math Percent Proficient, Gr. 8

State	Percent Proficient or higher* All students 2009	Econ Disad 2009	Gains Econ Disad 2006 to 09	Closing Gap 3 years	All Students 2006	Ecn Disad 2006
Alabama	74	63	7.2	1.1	67.6	55.8
Alaska	66	51	1.5	0.2	64.7	49.5
Arizona	63	51	5.5	-2.9	60.1	45.5
Arkansas	61	49	17.7	1.6	44.9	31.3
California	41	29	7.3	0.9	34.6	21.7
Colorado	81	66	12.0	5.0	74.0	54.0
Connecticut	81	59	4.2	2.1	78.9	54.8
Delaware	66	51	6.8	1.6	60.8	44.2
Dist of Col.	44	39	15.1	-0.9	28	23.9
Florida	66	54	9.0	3.0	60.0	45.0
Georgia	81	72	14.9	5.4	77.6	67.5
Hawaii	39	29	12.6	-0.8	25.6	17.4
Idaho	79	69	nr	nr	na	na
Illinois	82	71	6.9	3.1	78.2	64.1
Indiana	75	62	7.0	4.0	72.0	55.0
Iowa	76	60	3.3	1.1	73.8	56.7
Kansas	78	65	13.6	2.2	66.6	51.4
Kentucky	55	43	nr	nr	34.3	21.8
Louisiana	59	49	6.0	0.0	53.0	43.0
Maine	52	36	5.6	-1.4	45.0	30.4
Maryland	65	46	14.3	3.9	55.0	31.7
Massachusetts	49	25	8.0	-1.0	40.0	17.0
Michigan	75	62	16.9	5.1	63.2	45.1
Minnesota	58	36	2.3	0.9	56.6	33.7
Mississippi	54	43	nr	nr	n.a.	n.a.
Missouri	47	31	nr	nr	40.7	n.a.
Montana	60	44	4.7	1.3	56.6	39.3
Nebraska	92	86	9.9	1.8	83.9	76.1
Nevada	55	42	7.1	2.6	50.5	34.9
New Hampshire	64	42	10.0	2.0	56.0	32.0
New Jersey	71	51	12.5	6.0	64.5	38.5
New Mexico	43	33	15.4	-1.3	26.3	17.6
New York	80	71	31.7	5.7	54.0	39.3
North Carolina	80	70	26.2	5.6	60.7	44.1
North Dakota	71	59	8.5	2.8	67.4	53.4
Ohio	71	53	3.9	1.5	68.6	49.1
Oklahoma	61	51	nr	nr	72.0	62.0
Oregon	71	58	8.1	3.0	65.5	50.3
Pennsylvania	70	54	12.5	4.7	62.2	41.5
Rhode Island	53	33	6.8	1.7	47.1	25.8
South Carolina	29	16	5.3	-1.7	22.0	10.7
South Dakota	74	58	5.0	-2.9	70	53
Tennessee	90	85	8.5	3.6	85.1	76.5
Texas	79	71	15.0	3.0	67.0	56.0
Utah	63	47	nr	nr	n.a.	n.a.
Vermont	63	43	4.4	-1.0	58	39
Virginia	85	77	20.4	5.8	70.4	56.6
Washington	51	34	3.1	1.0	48.9	30.9
West Virginia	53	42	nr	nr	72.5	63.0
Wisconsin	79	62	6.3	2.3	75.0	55.7
Wyoming	62	27	nr	nr	54.0	40

* State-defined "Proficient;" nr = state trends could not be reported; Closing gap= Gains Ecn Disadv minus Gains All

Sources: State assessment data from ED Facts, U.S. Department Education, and state websites

Council of Chief State School Officers, 2010

App. T3: NAEP Reading Gr. 4 Percent Proficient

Percent Proficient or higher

State	2009 All Students	2009 Ecn Disad	Gains Ecn Disad 05 to 09*	Closing Gap 4 years
Alabama	28	16	4.5	-1.4
Alaska	27	14	1.0	1.5
Arizona	25	13	2.0	0.9
Arkansas	29	20	-0.6	-1.2
California	24	10	0.6	-2.0
Colorado	40	19	-0.4	-3.9
Connecticut	42	18	0.8	0.9
Delaware	35	21	3.0	0.7
Dist. of Col.	17	9	3.0	-3.1
Florida	36	25	3.0	2.2
Georgia	29	18	4.5	1.7
Hawaii	26	15	2.0	-2.6
Idaho	32	21	1.3	-0.8
Illinois	32	15	1.0	-0.4
Indiana	34	20	1.8	0.7
Iowa	34	21	2.9	3.4
Kansas	35	22	4.0	1.4
Kentucky	36	24	3.0	-2.9
Louisiana	18	13	1.0	2.7
Maine	35	21	-2.0	-2.5
Maryland	37	18	5.0	0.1
Massachusetts	47	23	4.0	-3.3
Michigan	30	15	-0.5	1.7
Minnesota	37	17	-3.0	-2.9
Mississippi	22	14	4.0	0.4
Missouri	36	21	1.0	-0.1
Montana	35	21	1.6	2.0
Nebraska	35	22	2.0	-0.3
Nevada	24	13	4.0	-0.1
New Hampshire	41	23	5.0	3.3
New Jersey	40	17	1.5	-0.3
New Mexico	20	12	-1.0	-2.0
New York	36	24	6.0	3.7
North Carolina	32	17	1.0	1.3
North Dakota	35	22	3.5	0.4
Ohio	36	17	-1.0	-3.1
Oklahoma	28	18	1.0	-0.4
Oregon	31	17	-1.0	-1.6
Pennsylvania	37	19	5.0	0.9
Rhode Island	36	17	3.0	-3.4
South Carolina	28	15	2.0	-0.1
South Dakota	33	20	-1.0	-0.6
Tennessee	28	17	2.0	0.3
Texas	28	17	0.6	-0.5
Utah	31	19	-0.5	0.2
Vermont	41	26	4.0	-0.8
Virginia	38	18	2.0	-1.2
Washington	33	18	-2.0	-2.1
West Virginia	26	17	3.0	-0.4
Wisconsin	33	15	-3.0	-2.9
Wyoming	33	21	-2.0	-1.1

* The standard error for NAEP State percent Proficient or Basic varies by state from 1.0 to 1.9 points.
Thus, statistically significant change for a state between 2005 and 2009 requires difference of 3 points or more.

Source: NAEP Data Explorer, U.S. Department of Education

Council of Chief State School Officers, 2010

Appendix T4: NAEP Mathematics Percent Proficient, Grade 8

State	NAEP All 2009	Percent Proficient/higher Ecn Dis 2009	Gains Ecn Dis 05 to 09	Closing Gap 4 Years
Alabama	20	10	4.5	-0.8
Alaska	33	19	5.5	0.8
Arizona	29	14	1.5	-1.7
Arkansas	27	15	2.2	-2.8
California	23	12	2.3	0.6
Colorado	40	19	5.3	-2.4
Connecticut	40	13	3.0	-2.2
Delaware	32	17	6.5	1.5
Dist of Col.	11	7	2.8	-1.6
Florida	29	18	4.9	1.5
Georgia	27	13	3.4	-0.2
Hawaii	25	15	7.7	0.6
Idaho	38	25	5.8	-2.6
Illinois	33	14	4.5	0.0
Indiana	36	21	4.5	-1.3
Iowa	34	17	0.1	-0.2
Kansas	39	24	5.1	-0.2
Kentucky	27	15	1.4	-3.3
Louisiana	20	11	3.6	-0.5
Maine	35	19	1.0	-4.4
Maryland	40	17	7.7	-2.7
Massachusetts	52	29	6.4	-2.0
Michigan	31	13	-0.1	-1.3
Minnesota	47	21	-0.6	-4.8
Mississippi	15	8	1.3	-0.3
Missouri	35	19	6.6	-2.9
Montana	44	27	6.6	-1.0
Nebraska	35	17	-0.5	-0.3
Nevada	25	14	4.4	1.0
New Hampshire	43	24	7.6	-1.1
New Jersey	44	20	6.3	-2.2
New Mexico	20	11	4.1	-2.1
New York	34	22	2.3	-0.6
North Carolina	36	18	3.2	-0.4
North Dakota	43	27	7.2	-1.3
Ohio	36	18	2.9	0.3
Oklahoma	24	14	3.4	0.1
Oregon	37	21	0.5	-2.5
Pennsylvania	40	18	5.8	-3.1
Rhode Island	28	12	5.0	0.7
South Carolina	30	16	1.2	1.0
South Dakota	42	24	0.9	-4.2
Tennessee	25	13	3.5	-1.1
Texas	36	23	6.1	0.7
Utah	35	20	0.2	-5.4
Vermont	43	24	3.0	-2.7
Virginia	36	15	4.1	1.8
Washington	39	20	0.1	-3.3
West Virginia	19	11	1.3	-0.2
Wisconsin	39	20	5.0	1.5
Wyoming	35	20	2.6	-3.0

Closing gap= Gains Economically Disadvantaged students minus Gains All students
Source: NAEP Data Explorer, U.S. Department of Education
Council of Chief State School Officers, 2010

References

Bandeira de Mello, V,., Blankenship, C., &; McLaughlin, D. (2009). *Mapping state proficiency standards onto NAEP scales: 2005-2007*. Washington, DC: U.S. Department of Education, Institutes of Education Sciences. Available at http://nces.ed.gov/nationsreportcard/pubs/studies/2009455.asp

Barton, P. E., & Coley, R. J. (April 2008).*Windows on achievement and inequality: Analysis of NAEP trends by state*. Princeton, NJ: Education Testing Service. Available at http://www.ets.org/Media/Research/pdf/PICWINDOWS.pdf

Birman, B., Le Floch, K., Ludwig, M., &Yoon, K. (2008). *State and local implementation of the No Child Left Behind. Volume III – Accountability under NCLB: Final report*. Washington, DC: American Institutes for Research.

Blank, R. K. & Langesen, D. (2005). S*tate indicators of science and mathematics education***.** Washington, DC: Council of Chief State School Officers**.**

Council of Chief State School Officers. (2003). *Making valid and reliable decisions in determining adequate yearly progress.* Joint report of the CAS and ASR state collaboratives. Washington, DC: Author. Available at http://www.ccsso.org/Resources/Programs/Accountability_Systems_and_Reporting_(ASR).html

Council of Chief State School Officers. (2003). *State education indicators with a focus on Title I.* Annual report under contract to the U.S. Department of Education. Washington, DC: Council of Chief State School Officers. Available at http://www.ccsso.org/Resources/Publications/State_Education_Indicators_with_a_Focus_on_Title_I_2001-2002.html

Council of Great City Schools. (March 2010). *Beating the odds: An analysis of student performance on state assessments and NAEP.* Washington, DC: Author. Available at http://www.cgcs.org/publications/achievement.aspx

Chudowsky, N., & Chudowsky, V. (2010). *State test score trends through 2008-09, Part 1: Rising scores on state tests and NAEP*. Washington, DC: Center for Education Policy.

Hamilton, L., & Stecher, B. M., M. Stecher, Vernez, G., & Zimmer, R. (December 2007). Passing or failing? A midterm report card for No Child Left Behind, *RAND Review.* Rand. Available at http://www.rand.org/publications/randreview/issues/fall2007/passing1.html

Heilig, J. & Darling-Hammond, L. (June 2008). Accountability Texas-style: The progress and learning of urban minority students in a high-stakes testing context. *Educational Evaluation and Policy Analysis*, 30, 2.

Hamilton, L. S., Stecher, B., & Yuan, K. (2008). Standards-based reform in the United States: History, research, and future directions. Santa Monica, CA: RAND. Available at http://www.rand.org/pubs/reprints/RP1384/

Kober, N., Chudowsky, N., & V. Chudowsky. (2010). State test score trends through 2008-09: Slow and uneven progress in narrowing gaps. Washington, DC: Center for Education Policy.

Ladd, H. & Lauen, D. (2009). Status vs. bgrowth: The distributional effects of school accountability policies. Washington, DC: National Center for Analysis of Longitudinal Data in Education Research, Urban Institute. Available at http://www.caldercenter.org/PDF/1001260_status_vs_growth.pdf

Mintrop, H., & Sunderman, G. L. (2009). Predictable failure of federal sanctions-driven accountability for school improvement and why we may retain it anyway. *Educational Researcher 38*(5),353-364.

National Center for Education Statistics. (n.d.). *National Assessment of Educational Progress, the nation's report card.* [website]. Available at http://nces.ed.gov/nationsreportcard/.

National Center for Research on Evaluation, Standards, and Student Testing (CRESST). (2007). *Closing the gap? A comparison of Changes over time in white-black and white-Hispanic achievement gaps on state assessments versus state NAEP*. Los Angeles: Author. Available at http://www.cse.ucla.edu/products/reports/R721.pdf

Peterson, P. E., & Lastra-Anadón, C. (Fall 2010). State standards rise in reading, fall in math. *Education Next 10*(4). 12-16. Available at http://educationnext.org/state-standards-rising-in-reading-but-not-in-math/

Phillips, G.(October 2010). *International benchmarking: State education performance standards.* Washington, DC: American Institutes for Research. Available at http://www.air.org/files/AIR_Int_Benchmarking_State_Ed__Perf_Standards.pdf

U.S. Department of Education. (2010). *State education profiles.* [website].Washington, DC: Author. Available at http://www2.ed.gov/about/contacts/state/index.html

Vanneman, A., Hamilton, L., Baldwin Anderson, J., & Rahman, T. (2009). *National assessment of achievement gaps: How black and white students in public schools perform in mathematics and reading on the National Assessment of Educational Progress*. Washington, DC: U.S. Department of Education, Institutes of Education Sciences. Available at http://nces.ed.gov/nationsreportcard/pubs/studies/2009455.asp