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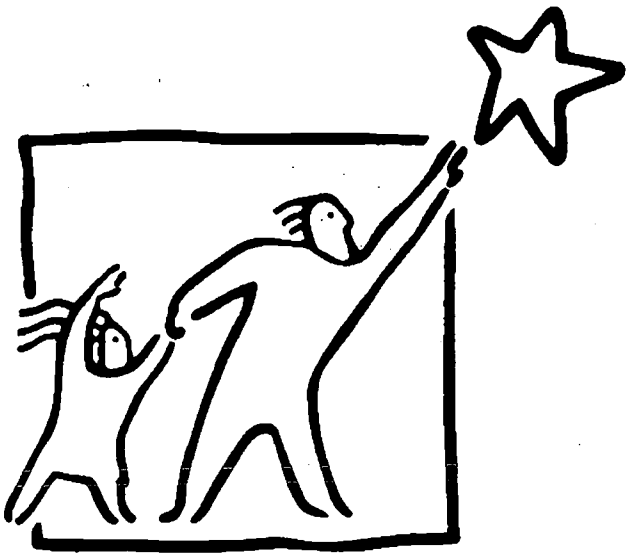
ABSTRACT

This report presents a new analysis of student achievement scores and educational progress for states on the National Assessment of Educational Progress. Results based on score quartiles show that states are generally making more progress in mathematics achievement than in reading, good readers are getting better at the same time weak readers are losing ground, fourth-grade students made more improvement in mathematics achievement than in reading in most states during the 1990s, and states have not generally reduced the achievement gap between top and bottom quartiles or between white and minority students. Data are presented in charts and tables for changes in achievement scores in fourth- and eighth-grade mathematics, and in achievement scores in fourth-grade reading. Data are also given showing the change in gap between white and minority student scores in fourth-grade and eighth-grade mathematics and in fourth-grade reading. The report concludes that analysis of student scores by quartiles may bring to light significant progress made by a state even though the percentage of students scoring at the proficient level or higher did not improve. Appendix tables contain summary statistics of scores used in the analysis. (RT)

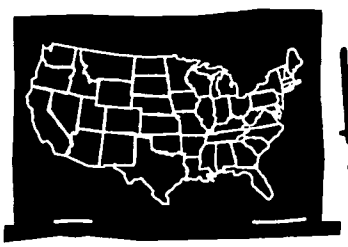
RAISING ACHIEVEMENT AND REDUCING GAPS:
Reporting Progress Toward Goals for Academic Achievement



By Paul E. Barton

March 2001

A REPORT TO THE **NATIONAL EDUCATION GOALS PANEL**



Lessons from the States

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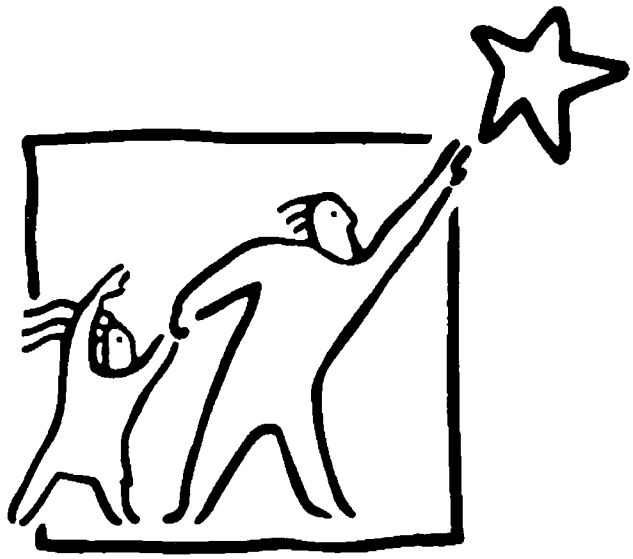

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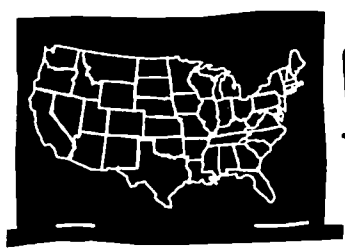

Lessons from the States

from THE NATIONAL EDUCATION GOALS

GOAL 3: STUDENT ACHIEVEMENT

"...all students will leave grades 4, 8 and 12, having demonstrated competency in challenging subject matter..."

Objective 1: "The academic performance of all students at the elementary and secondary levels will increase significantly in every quartile, and the distribution of minority students in each quartile will more closely reflect the student population as a whole."

About the Author

Paul E. Barton prepared this report for the National Education Goals Panel. Mr. Barton is a former Director of the Policy Information Center at Educational Testing Service. At ETS he also has served as Associate Director of the National Assessment of Educational Progress. Barton has been President of the National Institute for Work and Learning, a member of the Secretary of Labor's Policy Planning Staff, and a staff member of the Office of Management and Budget in the Executive Office of the President.

Executive Summary

Raising Achievement and Reducing Gaps:
Reporting Progress Toward Goals for Achievement
by Paul E. Barton

Paul Barton provides a new analysis of student achievement scores for states on the National Assessment of Educational Progress, NAEP. Only in mathematics (grades 4 and 8) and reading (grade 4 only) are state trend data currently available, although new state data in science and mathematics are scheduled to be released later in 2001. Barton has analyzed state NAEP data to identify state trends in performance of students in the top and bottom quartiles of performance, as well as changes in the student achievement gap between whites and minority (black and Hispanic) and top and bottom quartiles.

The results show that:

- **States are generally making more progress in mathematics achievement than in reading.** Between 1990 and 1996, the average student achievement scores improved significantly in 28 (out of 32) states in 8th grade mathematics, and none declined. In 4th grade reading from 1992 to 1998, only 7 (out of 36) states improved and 3 states declined.

- **Good readers are getting better at the same time weak readers are losing ground.** In half the states (18 out of 36), the performance of students in the bottom quartile in 4th grade reading declined, and performance improved in only 3 states. In contrast, the performance of students in the top quartile improved in 12 states and declined in none.

- **During the 1990's fourth grade students made more improvement in mathematics achievement than in reading in most states.** In mathematics, 15 states raised their average 4th grade NAEP score significantly; 20 states improved scores of students in the bottom quartile; and 16 states improved scores of students in the top quartile. Four or fewer states lost ground in 4th grade mathematics across these three dimensions. In reading, 7 states improved 4th graders average score; 3 improved performance of the bottom quartile; and 12 improved performance of the top quartile; while average scores declined in 3 states, 18 states lost ground with students in the bottom quartile, and none lost ground among the top quartile.

- **States have not generally reduced the achievement gap between top and bottom quartiles or between white and minority students.** In 4th grade reading only 1 state reduced the achievement gap between the top and bottom quartiles or between white and minority students. In mathematics, 8 states reduced the gap between the top and bottom quartiles at 4th grade and 5 did so at 8th grade. Only 2 states reduced the gap between white and minority students in 4th grade mathematics, and none did so in 8th grade mathematics.

Acknowledgements

This report is based entirely on the data collected by the National Assessment of Educational Progress (NAEP). The data used in the report were provided for the National Education Goals Panel through an arrangement between the National Center for Educational Statistics and the Education Testing Service (ETS). ETS made all tabulations. I thank David Freund and Laura Jerry for them.

The manuscript was reviewed by Richard Coley and John Mazzeo at ETS. The writing of the report, commissioned by the National Education Goals Panel, was entirely my responsibility.

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Goals Panel Policy Highlights and Overview

Since President Bush and the nation's Governors set Education Goals for the nation in 1990, education reform efforts have focused on raising expectations for school and student performance. States have developed academic standards that publicly define what they want students to know and be able to do. States are increasingly aligning their tests to their standards in order to determine the extent to which standards are being met. More and more states are developing accountability systems that link consequences for students and schools to their success in meeting the standards.

While the clear purpose is to improve student learning, the policy focus is often upon the results of student assessments linked to state standards. Nearly every state has or is developing tests linked to their standards and accountability systems. States administer tests in core subject areas to students in selected grades. The results of these assessments are used to gauge performance and improvements of the educational system. In many cases, test results are linked to rewards and sanctions defined in accountability systems. Test results are generally reported to the public.

Efforts to meet standards create demands for information about results. Policymakers and administrators need information on the performance of systems and specific subgroups, particularly those who historically have not fared well in school. Administrators and teachers need information on the performance of individual students in order to identify needs and target responses. Both policymakers and educators need information on the "how" and "why" of success — which policies and practices are contributing to desired improvements. All of these groups look to well-designed assessments to provide important data both about educational performance within their states and about how one state's performance compares to that of others.

National Assessment of Educational Progress

The National Assessment of Educational Progress (NAEP) was established in 1969 to provide national data on educational performance in core academic subjects. In 1990 Congress authorized the administration of NAEP at the state level on a voluntary basis. For the first time, NAEP could provide states information on how they performed compared both to the nation and to other states. State NAEP now tests mathematics and science, alternating with reading and writing at grades 4 and 8, on a four-year alternating cycle. It is the only national source of comparable state-by-state data on student academic achievement. On average, 40 to 44 states participate in any state NAEP testing cycle. It is currently the best source of data for states seeking to compare the performance of their students to those in other states on a technically sound basis.

Recently there have been calls to increase the frequency of state NAEP. President Bush has proposed an education initiative to "Leave No Child Behind," by calling on states to show improvement over time in student achievement on state tests. The Administration is exploring ways that NAEP can be used to confirm trends shown by state tests of student achievement. The President has proposed that annual state NAEP

assessments be administered in mathematics and reading, disaggregated by race and wealth.

In the spring of 2000, the National Education Goals Panel convened and charged its own advisors to recommend what new data were needed for the Panel and the nation to measure the progress of education reform efforts. The task force recommended that NAEP collect and report new state data annually, on a schedule that would provide state data in reading, mathematics, science, and writing.

Digging Deeper into the Data

The overriding concern of the Goals Panel is to encourage and monitor improvements in student learning. Recognizing that test scores are our best current proxy for that learning, what can state policymakers learn from NAEP, particularly if it is available on a more frequent basis?

The National Education Goals call for "all students [to] demonstrate competency in challenging subject matter...." and for American students to become "first in the world in mathematics and science achievement." Upon the recommendations of technical experts, the Panel has agreed that "competency" sufficient to meet the Education Goals is best reflected in attaining at least the proficient level on NAEP. Therefore, the Panel focuses attention upon the percentage of students in a state at or above the NAEP proficient level and whether there has been a statistically significant change in that performance over time.

But NAEP data can provide additional insights when policymakers dig deeper into the data. Recognizing this, the Goals Panel commissioned Paul Barton to take a new look at state performance on NAEP. The Panel asked him to examine whether student achievement scores improved across the board in every quartile as well as at the proficient level. This paper is the result of his inquiry.

Methods and Findings

The premise of this paper is that Americans want two results from education reform: improvement in student achievement *and* a narrowing of the gap between high and low-performers. If student achievement improved, scores on NAEP would improve for each state, including the states' average student score, scores for both the top and bottom quartile, and the percentage of students scoring at the proficient level. If the achievement gap narrowed, the gap between the top and bottom quartiles and the gap between students who are white and minority (black and Hispanic combined) would narrow. Paul Barton undertook this special study to determine those six dimensions of student performance for every state that had participated in NAEP two times, allowing identification of changes in the state's performance over time.

This paper presents the results of his study. The only subjects tested twice at the state level since 1990 were mathematics (grades 4 and 8) and reading (grade 4 only).

Usually, the results were mixed. While Connecticut, Hawaii, Iowa, and West Virginia improved on five of six dimensions in 8th grade math, most states did not.

Overall, states improved noticeably more in mathematics than in reading. In 8th grade mathematics, both the nation and 28 (out of 32) states improved significantly. Between 1990 and 1996, no state declined in average 8th grade mathematics performance. Neither did the performance of the top or bottom quartile or the percentage of students scoring proficient. Twenty-four (24) states improved the performance of the bottom quartile of their students significantly; 30 did so for the top quartile; 26 improved the percentage scoring proficient; none declined. At the 4th grade level, similar but less dramatic improvements occurred.

Unfortunately, the achievement gaps between whites and minorities and the top and bottom quartile generally did not decline. While the gap in performance between white and minority students increased for two states for 8th grade mathematics in any state, it narrowed in none.

In contrast, Barton's quartile analysis of 4th grade reading shows that good readers were improving while weak readers were getting worse. In half of all states (18 out of 36), the performance of students in the bottom quartile in 4th grade reading declined from 1992 to 1998. The scores of good readers went up in 12 states and went down in none. Although in many states there was no significant change in reading scores, in Arizona, Florida, Louisiana, and Minnesota, the performance of students in the bottom quartile declined during the same period that the performance of those in the top quartile improved. Likewise, the gap in performance between the top and bottom quartiles increased in 16 states.

State policymakers need these data to inform state education policy. Why are achievement gaps widening between white and minority 4th graders in reading but not mathematics? What can be done about it? The National Education Goals Panel feels that a quartile analysis can help each state determine trends in their average state score that might not have been evident otherwise. States should know not only the percentage of students scoring proficient, but the performance of their top and bottom quartiles and changes in the gaps between groups. Why are students in the bottom quartile of performance improving in 8th grade mathematics in 24 of 32 states (and declining in none), whereas students in the bottom quartile of performance in 4th grade reading declined in 18 (of 36) states and improved in only 3? What can be learned from Delaware and North Carolina, where NAEP shows a narrowing of achievement gaps in reading that have eluded others? Policymakers need this kind of information and the questions they suggest.

The next six pages summarize data on student performance and changes in the student achievement gap for every state that participated in NAEP.

CHANGE IN 4TH GRADE MATH NAEP SCORES BETWEEN 1992 AND 1996

State	Avg. Scores	Q1 (Bottom Quartile)	Q4 (Top Quartile)	Percent of Students Scoring Proficient	Quartile Gap Closing	White/ Minority Gap Closing
Alabama	→	↑	→	→	→	→
Arizona	→	→	↑	→	→	→
Arkansas	↑	↑	↑	→	→	→
California	→	↑	→	→	↑	→
Colorado	↑	↑	↑	↑	→	→
Connecticut	↑	↑	↑	↑	→	→
Delaware	↓	↓	→	→	↓	→
Florida	→	→	→	→	→	→
Georgia	→	→	↓	→	↑	↑
Hawaii	→	→	→	→	→	→
Indiana	↑	↑	↑	↑	→	→
Iowa	→	→	↓	→	↑	→
Kentucky	↑	→	↑	→	→	→
Louisiana	↑	↑	→	→	↑	→
Maine	→	→	→	→	→	→
Maryland	→	→	↑	→	→	→
Massachusetts	→	↑	→	→	↑	↑
Michigan	↑	↑	↑	→	→	→
Minnesota	↑	↑	↑	→	→	→
Mississippi	↑	↑	↑	→	↑	→
Missouri	→	↑	→	→	→	→

CHANGE IN 4TH GRADE MATH NAEP SCORES BETWEEN 1992 AND 1996

State	Avg. Scores	Q1 (Bottom Quartile)	Q4 (Top Quartile)	Percent of Students Scoring Proficient	Quartile Gap Closing	White/ Minority Gap Closing
Nebraska	→	→	→	→	→	→
New Jersey	→	→	→	→	→	→
New Mexico	→	→	→	→	→	→
New York	↑	→	→	→	→	→
North Carolina	↑	↑	↑	↑	→	→
North Dakota	→	→	→	→	→	→
Pennsylvania	→	↑	→	→	↑	→
Rhode Island	↑	↑	↑	→	→	→
South Carolina	→	→	→	→	→	→
Tennessee	↑	↑	↑	↑	→	→
Texas	↑	↑	↑	↑	→	→
Utah	→	→	↑	→	→	→
Virginia	→	↑	→	→	↑	→
West Virginia	↑	↑	↑	↑	→	→
Wisconsin	→	↑	→	→	→	→
Wyoming	→	→	→	→	→	→
District of Columbia	↓	↓	↓	→	↓	→
Guam	↓	→	↓	→	→	→
States* Improving	**15**	**20**	**16**	**7**	**8**	**2**
States* Unchanged	**21**	**17**	**19**	**32**	**29**	**37**
States* Declining	**3**	**2**	**4**	**0**	**2**	**0**

* Thirty-seven states plus the District of Columbia and Guam took 4th grade NAEP in math in both 1992 and 1996. The term "state" includes District of Columbia, Virgin Islands and Guam.

This information reflects data from Paul Barton's paper, *Raising Achievement and Reducing Gaps: Reporting Progress Toward Goals for Academic Achievement.*

KEY
↑ Better
→ Unchanged
↓ Worse

CHANGE IN 8TH GRADE MATH NAEP SCORES BETWEEN 1990 AND 1996

State	Avg. Scores	Q1 (Bottom Quartile)	Q4 (Top Quartile)	Percent of Students Scoring Proficient	Quartile Gap Closing	White/ Minority Gap Closing
Alabama	→	→	↑	→	→	↓
Arizona	↑	↑	↑	↑	→	→
Arkansas	↑	→	↑	↑	→	→
California	↑	↑	↑	↑	→	→
Colorado	↑	↑	↑	↑	→	→
Connecticut	↑	↑	↑	↑	↑	→
Delaware	↑	↑	↑	↑	→	→
Florida	↑	↑	↑	↑	→	→
Georgia	→	↑	→	→	→	→
Hawaii	↑	↑	↑	↑	↑	→
Indiana	↑	↑	↑	↑	→	→
Iowa	↑	↑	↑	↑	↑	→
Kentucky	↑	↑	↑	↑	→	→
Louisiana	↑	↑	↑	→	→	→
Maryland	↑	↑	↑	↑	→	↓
Michigan	↑	↑	↑	↑	→	→
Minnesota	↑	↑	↑	↑	→	→
Montana	→	→	↑	↑	↓	→
Nebraska	↑	↑	↑	↑	→	→
New Mexico	↑	→	↑	↑	→	→
New York	↑	↑	↑	↑	→	→

CHANGE IN 8TH GRADE MATH NAEP SCORES BETWEEN 1990 AND 1996

State	Avg. Scores	Q1 (Bottom Quartile)	Q4 (Top Quartile)	Percent of Students Scoring Proficient	Quartile Gap Closing	White/ Minority Gap Closing
North Carolina	↑	↑	↑	↑	→	→
North Dakota	↑	→	↑	↑	→	→
Oregon	↑	↑	↑	↑	→	→
Rhode Island	↑	↑	↑	↑	→	→
Texas	↑	↑	↑	↑	→	→
Virginia	↑	↑	→	→	↑	→
West Virginia	↑	↑	↑	↑	↑	→
Wisconsin	↑	↑	↑	↑	→	→
Wyoming	↑	→	↑	↑	→	→
District of Columbia	→	→	↑	→	↓	—
Guam	↑	→	↑	→	→	—
States* Improving	**28**	**24**	**30**	**26**	**5**	**0**
States* Unchanged	**4**	**8**	**2**	**6**	**25**	**30**
States* Declining	**0**	**0**	**0**	**0**	**2**	**2**
Not Applicable						**2**

* Thirty states plus the District of Columbia and Guam took 8th grade NAEP in math in both 1990 and 1996. The term "state" includes District of Columbia, Virgin Islands and Guam.

This information reflects data from Paul Barton's paper, *Raising Achievement and Reducing Gaps: Reporting Progress Toward Goals for Academic Achievement.*

KEY
↑ Better
→ Unchanged
↓ Worse

CHANGE IN 4TH GRADE READING NAEP SCORES BETWEEN 1992 AND 1998

State	Avg. Scores	Q1 (Bottom Quartile)	Q4 (Top Quartile)	Percent of Students Scoring Proficient	Quartile Gap Closing	White/ Minority Gap Closing
Alabama	→	→	↑	→	→	→
Arizona	→	↓	↑	→	↓	↓
Arkansas	→	↓	→	→	↓	→
California	→	→	→	→	→	→
Colorado	↑	→	↑	↑	↓	↓
Connecticut	↑	↑	↑	↑	→	→
Delaware	→	→	→	→	→	↑
Florida	→	↓	↑	→	↓	→
Georgia	→	↓	→	→	↓	→
Hawaii	→	↓	→	→	↓	→
Iowa	→	↓	→	→	→	→
Kentucky	↑	→	↑	↑	→	→
Louisiana	→	↓	↑	↑	↓	↓
Maine	→	↓	→	→	↓	→
Maryland	↑	→	↑	↑	→	→
Massachusetts	→	↓	→	→	↓	→
Michigan	→	→	→	→	→	→
Minnesota	→	↓	↑	↑	↓	→
Mississippi	↑	↑	↑	↑	→	→
Missouri	→	↓	→	→	↓	→
New Hampshire	→	↓	→	→	↓	↓

CHANGE IN 4TH GRADE READING NAEP SCORES BETWEEN 1992 AND 1998

State	Avg. Scores	Q1 (Bottom Quartile)	Q4 (Top Quartile)	Percent of Students Scoring Proficient	Quartile Gap Closing	White/ Minority Gap Closing
New Mexico	→	↓	→	→	↓	→
New York	→	→	→	→	→	→
North Carolina	↑	↑	→	→	↑	→
Oklahoma	→	→	→	→	↓	→
Rhode Island	→	→	→	→	→	→
South Carolina	→	→	→	→	→	→
Tennessee	→	↓	→	→	↓	→
Texas	→	→	↑	→	→	→
Utah	↓	↓	→	→	↓	↓
Virginia	→	↓	→	→	→	→
West Virginia	→	→	→	→	→	→
Wisconsin	→	→	→	→	→	↓
Wyoming	↓	↓	→	→	→	→
District of Columbia	↓	↓	→	→	→	→
Virgin Islands	↑	→	↑	↑	→	—
States* Improving	**7**	**3**	**12**	**8**	**1**	**1**
States* Unchanged	**26**	**15**	**24**	**28**	**19**	**28**
States* Declining	**3**	**18**	**0**	**0**	**16**	**6**
Not Applicable						**1**

* Thirty-four states plus the District of Columbia and the Virgin Islands took 4th grade NAEP in reading in both 1992 and 1998. The term "state" includes District of Columbia, Virgin Islands and Guam.

This information reflects data from Paul Barton's paper, *Raising Achievement and Reducing Gaps: Reporting Progress Toward Goals for Academic Achievement.*

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AUTHOR'S DATA HIGHLIGHTS

This report examines student achievement for the states. It looks at the National Assessment of Educational Progress (NAEP) assessment nearest 1990, and the last one conducted.

The view of achievement is from the perspective of the National Goals, set by President Bush and the nation's governors following their Education Summit in 1989 in Charlottesville, Virginia. The objective for student achievement was that "The academic performance of all students at the elementary and secondary level will increase significantly in each quartile, and the distribution of minority students in each quartile will more closely reflect the student population as a whole." This report was commissioned by the National Education Goals Panel. Arrangements were made by the National Center for Education Statistics to have special tabulations made of data from the National Assessment of Educational Progress. These were conducted by Educational Testing Service for the Goals Panel. The use of these data is entirely the responsibility of the author.

STATE TRENDS

Achievement (average for all students, and in the top and bottom quartiles)

- In 4th grade mathematics, from 1992 to 1996, there were 7 states where the percent at or above the proficient level increased (the proficient level as defined by NAEP was set as the standard for the yearly reports of the National Education Goals Panel).

  The average score increased in 15 states.

  The average score for the bottom quartile increased in 20 states and declined in 2.

  Scores in 16 states rose in the top quartile and declined in 4.

  In 5 states, scores increased for all students and in the top and bottom quartiles, but did not improve in terms of the percent reaching the proficient standard.

- In 8th grade mathematics, from 1990 to 1996, there was widespread improvement, with the percent reaching the proficient level increasing in 26 states, improvement in average scores in 28 states, in the bottom quartile in 24, and in the top quartile for 30.

Louisiana improved in the average, and in the top and bottom quartiles, but not at the proficient level.

- In 4th grade reading, from 1992 to 1998, 8 states improved in the percent reaching the proficient level.

  The average score increased in 7 states and declined in 3.

  In the bottom quartile, 18 states had declining scores and 3 improved.

  Twelve states improved in the top quartile.

  Two states with increases in the percent reaching the proficient level had declines in the bottom quartile.

The Gap Between White and Minority Scores

- In 4th grade mathematics, the gap decreased in 2 states from 1992 to 1996. The gap ranged from 56 points in Washington, DC in 1998, and 35 points in New Jersey, down to 11 points in North Dakota.

- In 8th grade mathematics, the gap declined in no state, but rose in Alabama and Maryland. It ranged from 42 points in Maryland in 1996 to a low of 21 in West Virginia and Wyoming.

- In 4th grade reading, from 1992 to 1998, the gap rose in 6 states and decreased in 1. In 1998, it ranged from 53 points in Washington, DC, and 38 points in Rhode Island, to 16 points in Maine and Wyoming.

The Gap Between the Top and Bottom Quartiles

- In 4th grade mathematics, from 1992 to 1996, the gap declined in 8 states and rose in 2.

- In 8th grade mathematics, from 1990 to 1996, the gap declined in 5 states and increased in 2.

- In 4th grade reading, from 1992 to 1998, the gap increased in 16 states and decreased in 1.

IMPLICATIONS

- A single point on NAEP scale, such as the Proficient Level, can be used to track progress toward a standard of achievement that has been adopted, but it is not sufficient for tracking change in student achievement.

- Even when averages between two periods are compared, scores may change differentially among the quartiles, and sometimes increases may simply cancel out decreases.

- It is important to know whether lower-scoring students are progressing, even if they are not reaching the objectives we have set for them. It is also important to know if higher-scoring students are improving, even if they are already above the standard.

- When the gap between white and minority students grows or declines, it is important to know how it happened, in terms of changes in quartile scores. Did it decline because higher-scoring minority students raised their scores? Because higher-scoring white students lowered theirs? Because lower-scoring, bottom-quartile, minority students increased their achievement? Where the change is occurring helps tell us where the effort is most needed, and where we are getting results.

- A final point about the NAEP sample. If NAEP is used in the future for regular tracking of progress as is done in this paper, then the sample sizes (particularly for minority students) should be increased.

INTRODUCTION

This paper is concerned with the measurement of student achievement and educational progress. The data used in it are from the National Assessment of Educational Progress, the only source for information on the country as a whole and for the individual states on a basis that permits measuring change over time and that permits comparisons among states.

More specifically, the paper concerns ways of looking at and using NAEP data in reporting progress in terms used by the National Education Goals set by President Bush and the Governors following the Education Summit in Charlottesville, Virginia, in September of 1989, and with the annual reports of the National Education Goals Panel that report progress toward these goals. Goal 3 sets a goal of having students demonstrate competency over "challenging subject matter" with the objective that "The academic performance of all students at the elementary and secondary level will increase significantly in every quartile, and the distribution of minority students in each quartile will more closely reflect the student population as a whole." Panel reports have reported progress in terms of the change in the percent of students who have reached the "proficient" level, as defined by the National Assessment Governing Board.

I have argued that this single measure does not capture the extent of change in achievement from one period to the next. While it may be useful to know change in the percent reaching a particular cut-point on the achievement scale to track progress toward a specific standard, we need to go beyond this to track achievement of the student body as a whole. While it is sometimes the case that most student scores are changing in the same direction, and that when more students surpass the cut-point it reflects a generally upward trend, this is by no means always the case. This approach measures only movement around the cut-point, and it is quite possible, for example, that this percent could rise at the same time that the average scores of all students did not, or vice versa.

This paper attempts to answer how progress during the decade of the 1990s would look if measured by changes in achievement in every quartile, and the extent to which minority student scores approached those of the majority. Minority students are defined here as the total of black and Hispanic students combined. (This produces a significantly larger sample size. When the separate groups are divided into four equal groups, the sample size becomes problematically small.)

The data used in this paper were produced through special tabulations of data that have not been previously published. These tabulations were performed by Educational Testing Service for the National Education Goals Panel under arrangements made by the National Center for Education Statistics, the agency responsible for NAEP. Neither NCES or ETS bear responsibility for the way I have reported or used the data in this paper.

The body of this paper compares states' performance in 4th grade reading and 4th and 8th grade mathematics. In what follows, each page on the right presents the assessment results for one age level in one subject area. The page on the left hand summarizes the changes in the two time periods. (All data are provided in the Appendix.) The concluding section points out what difference may occur between a presentation based on quartile and one using a single number. The appendix tables provide the raw data prepared by Educational Testing Service for the National Education Goals Panel.

In many cases, minority student scores show a change occurring between two periods that was not statistically significant. This is because the sample size is smaller for minority students than for all or for white students. In the text summarizing the changes, only changes that are statistically significant are noted.

STATE TRENDS IN THE LEVEL OF STUDENT ACHIEVEMENT

The pages that follow provide an analysis of changes in achievement scores on state assessments conducted by the National Assessment of Educational Progress. The tables on the right provide the changes in score for each state, and the pages on the left summarize the pattern of change. These tables show:

- Changes in average achievement scores for all students for each state.
- Changes in average scores for students in the top and bottom quartiles.
- Changes in the percent of students reaching the proficient level.
- Changes in the gap in average scores between the top and bottom quartiles.
- Changes in the gap in average scores between white and minority students.

Changes in 4th Grade Mathematics Achievement Scores

There were seven (7) states (out of 39) in which the percentage of students scoring at or above the proficient level in 4th grade mathematics increased between 1992 and 1996. They were Colorado, Connecticut, Indiana, North Carolina, Tennessee, Texas, and West Virginia. In each of these 7 states, student achievement gains were significant for the average student score across the state and for the average score within both the top and bottom quartile, as well as for the percentage of students scoring at or above the proficient level. The gains were across the board.

There were additional significant improvements in other states as well. The average student achievement score improved in fifteen (15) states, the 7 above plus the states of Arkansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, New York, and Rhode Island. In three (3) states average performance declined: Delaware, the District of Columbia and Guam.

There were twenty (20) states where the scores went up in the bottom quartile: Alabama, Arkansas, California, Colorado, Connecticut, Indiana, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, North Carolina, Pennsylvania, Rhode Island, Tennessee, Texas, Virginia, West Virginia, and Wisconsin. Only in Delaware and the District of Columbia did performance of students in the lowest performing quartile decline.

In five (5) states – Arkansas, Michigan, Minnesota, Mississippi, and Rhode Island– there was significant improvement in the average student score for all students and for students in both the top and bottom quartile, but no change in the percentage of students scoring proficient or better.

4th Grade Math	Average score	Bottom Quartile	Top Quartile	% scoring Proficient
States Improving	**15**	**20**	**16**	**7**
States Unchanged	**21**	**17**	**19**	**32**
States Declining	**3**	**2**	**4**	**0**

4th Grade Mathematics, 1992 - 1996 (Public Schools)
Changes in NAEP Scores

State	Change in Average Score	Change in Q1, Bottom Quartile	Change in Q4, Top Quartile	Percentage at or Above Proficient
Alabama	3	**4**	2	
Arizona	2	1	**3**	
Arkansas	**6**	**6**	**5**	
California	1	**6**	-3	
Colorado	**5**	**6**	**4**	↑
Connecticut	**5**	**5**	**3**	↑
Delaware	**-3**	**-7**	-2	
Florida	2	**-1**	2	
Georgia	0	2	**-2**	
Hawaii	1	0	2	
Indiana	**8**	**8**	**7**	↑
Iowa	-1	2	**-5**	
Kentucky	**5**	2	**4**	
Louisiana	**5**	**9**	1	
Maine	1	1	1	
Maryland	3	3	**3**	
Massachusetts	2	**6**	0	
Michigan	**6**	**8**	**5**	
Minnesota	**4**	**4**	**3**	
Mississippi	**7**	**10**	**4**	
Missouri	3	**4**	1	
Nebraska	2	1	2	
New Jersey	0	-1	1	
New Mexico	1	-2	2	
New York	**4**	4	2	
North Carolina	**11**	**13**	**10**	↑
North Dakota	2	3	2	
Pennsylvania	2	**6**	-2	
Rhode Island	**5**	**6**	**4**	
South Carolina	1	2	-1	
Tennessee	**8**	**7**	**9**	↑
Texas	**11**	**12**	**10**	↑
Utah	2	1	**3**	
Virginia	2	**3**	-1	
West Virginia	**8**	**8**	**7**	↑
Wisconsin	3	**3**	2	
Wyoming	-2	-5	0	
District of Columbia	**-5**	**-8**	**-3**	
Guam	**-4**	-2	**-6**	

Seventeen (17) states did not participate in the 1996 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Kansas, Montana, Nevada, New Hampshire, Ohio, Oklahoma, Oregon, South Dakota, Vermont, Washington, American Samoa, Northern Marianas, Puerto Rico, and the Virgin Islands.

Numbers shown in bold and against a shaded box are statistically significant. See Appendix for additional data.

Changes in 8th Grade Mathematics Achievement Scores

There was widespread improvement in 8th grade mathematics performance from 1990 to 1996. Twenty six (26) states (out of 32) enjoyed a statistically significant improvement in the percentage of students scoring at or above proficient in 8th grade mathematics. They were: Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Montana, Nebraska, New Mexico, New York, North Carolina, North Dakota, Oregon, Rhode Island, Texas, West Virginia, Wisconsin, and Wyoming. All of those states except Montana also increased their average student score. In all, twenty-eight (28) states improved their average score, 25 of the 26 that increased the percentage of students achieving at the proficient or high level, plus the states of Louisiana, Virginia, and Guam.

Thirty (30) states, every state except Georgia and Virginia, improved the performance of students in their top quartile of performance. Twenty four (24) states all but Alabama, Arkansas, Montana, New Mexico, North Dakota, Wyoming, the District of Columbia, and Guam improved performance of students in their bottom quartile of achievement.

No state experienced a decline in any aspect of 8th grade mathematics performance – either for average score, scores of the top or bottom quartile, or in the percentage of students scoring at or above the proficient level.

The state of Louisiana enjoyed improvements in its average state score and in the scores of the top and bottom quartile, but showed no improvement at the proficient or higher level.

8th Grade Math	Average score	Bottom Quartile	Top Quartile	% scoring Proficient
States Improving	**28**	**24**	**30**	**26**
States Unchanged	**4**	**8**	**2**	**6**
States Declining	**0**	**0**	**0**	**0**

8th Grade Mathematics, 1990 - 1996 (Public Schools)
Changes in NAEP Scores

State	Change in Average Score	Change in Q1, Bottom Quartile	Change in Q4, Top Quartile	Percentage at or Above Proficient
Alabama	4	1	**5**	
Arizona	**8**	**11**	**6**	⬆
Arkansas	**5**	3	**7**	⬆
California	**6**	**7**	**6**	⬆
Colorado	**8**	**9**	**8**	⬆
Connecticut	**10**	**11**	**7**	⬆
Delaware	**6**	**7**	**6**	⬆
Florida	**8**	**8**	**6**	⬆
Georgia	4	**4**	2	
Hawaii	**11**	**14**	**6**	⬆
Indiana	**8**	**8**	**6**	⬆
Iowa	**6**	**8**	**3**	⬆
Kentucky	**9**	**10**	**7**	⬆
Louisiana	**6**	**7**	**4**	
Maryland	**9**	**7**	**11**	⬆
Michigan	**12**	**10**	**12**	⬆
Minnesota	**9**	**8**	**9**	⬆
Montana	3	-2	**5**	⬆
Nebraska	**7**	**10**	**6**	⬆
New Mexico	**6**	3	**6**	⬆
New York	**9**	**11**	**6**	⬆
North Carolina	**17**	**17**	**18**	⬆
North Dakota	**3**	2	**4**	⬆
Oregon	**5**	**4**	**5**	⬆
Rhode Island	**9**	**9**	**7**	⬆
Texas	**12**	**13**	**10**	⬆
Virginia	**5**	**7**	2	
West Virginia	**9**	**11**	**7**	⬆
Wisconsin	**8**	**10**	**7**	⬆
Wyoming	**3**	1	**3**	⬆
District of Columbia	1	-3	**7**	
Guam	**7**	5	**6**	

Twenty-five (24) states did not participate in the 1996 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Kansas, Maine, Massachusetts, Mississippi, Missouri, Nevada, New Hampshire, New Jersey, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, Washington, American Samoa, Northern Marianas, Puerto Rico, and the Virgin Islands.

Numbers shown in bold and against a shaded line are statistically significant. See Appendix for additional data.

Changes in 4th Grade Reading Achievement Scores

There were eight (8) states (out of 36) that showed an increase in the percentage of students reaching or exceeding the proficient level of performance in 4th grade reading between 1992 and 1998. They were Colorado, Connecticut, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, and the Virgin Islands.

The overall pattern of improvement, however, was mixed. Most states (26) did not change their overall average student score. Seven (7) states improved their average score while three (3) states actually declined. States improving their average score were Colorado, Connecticut, Kentucky, Maryland, Mississippi, North Carolina, and the Virgin Islands. All of these states except North Carolina increased the percentage of students scoring at the proficient level or better. Louisiana and Minnesota both improved the percentage of students scoring proficient or above, but did not improve average student performance in their states. North Carolina improved average student performance but not the percentage of students achieving proficient or better. Average performance declined in Utah, Wyoming, and the District of Columbia.

In twelve (12) states, students in the top quartile of performance improved while students in the bottom quartile in eighteen (18) states declined. In no state did students in the top quartile decline. Improving states were: Alabama, Arizona, Colorado, Connecticut, Florida, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Texas, and the Virgin Islands.

Most disturbingly, a significant number of states showed that students in the bottom quartile of performance lost ground. In eighteen (18) states, half of all states that participated, scores of students in the bottom quartile of performance declined. Students in the bottom quartile improved their scores in only in Connecticut, Mississippi and North Carolina. Reading scores for the weakest readers who need help most declined in Arizona, Arkansas, Florida, Georgia, Hawaii, Iowa, Louisiana, Maine, Massachusetts, Minnesota, Missouri, New Hampshire, New Mexico, Tennessee, Utah, Virginia, Wyoming, and the District of Columbia.

Louisiana and Minnesota both lost ground in the scores of their weakest readers during the same period they increased the percentage of students scoring proficient or above. In these states, as in Arizona and Florida, the scores of top readers went up at the same time the scores of low readers went down.

4th Grade Reading	Average score	Bottom Quartile	Top Quartile	% scoring Proficient
States Improving	**7**	**3**	**12**	**8**
States Unchanged	**26**	**15**	**24**	**28**
States Declining	**3**	**18**	**0**	**0**

4th Grade Reading, 1992 - 1998 (Public Schools)
Changes in NAEP Scores

State	Change in Average Score	Change in Q1, Bottom Quartile	Change in Q4, Top Quartile	Percentage at or Above Proficient
Alabama	4	-2	**4**	
Arizona	-2	**-12**	**3**	
Arkansas	-2	**-7**	0	
California	0	-4	1	
Colorado	**5**	1	**7**	⬆
Connecticut	**10**	**12**	**8**	⬆
Delaware	-1	-2	-2	
Florida	-1	**-10**	**3**	
Georgia	-2	**-6**	-1	
Hawaii	-3	**-10**	0	
Iowa	-2	**-5**	-1	
Kentucky	**5**	**4**	**7**	⬆
Louisiana	0	**-7**	**5**	⬆
Maine	-2	**-5**	1	
Maryland	**4**	1	**6**	⬆
Massachusetts	-1	**-5**	2	
Michigan	1	-2	2	
Minnesota	1	**-6**	**5**	⬆
Mississippi	**5**	**4**	**5**	⬆
Missouri	-4	**-10**	-1	
New Hampshire	-2	**-7**	-1	
New Mexico	-5	**-13**	-1	
New York	1	0	2	
North Carolina	**5**	**9**	2	
Oklahoma	0	-4	1	
Rhode Island	1	-3	3	
South Carolina	0	-1	0	
Tennessee	0	**-5**	3	
Texas	4	2	**4**	
Utah	**-5**	**-12**	-1	
Virginia	-3	**-5**	-1	
West Virginia	0	-2	1	
Wisconsin	0	0	1	
Wyoming	**-4**	**-6**	-1	
District of Columbia	**-6**	**-11**	-1	
Virgin Islands	**7**	3	**9**	⬆

Twenty-one (20) states did not participate in the 1998 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Indiana, Kansas, Montana, Nebraska, Nevada, New Jersey, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Vermont, Washington, American Samoa, Guam, Northern Marianas, and Puerto Rico.

Numbers shown in bold and against a shaded line are statistically significant. See Appendix for additional data.

State Trends in Closing Achievement Gaps

The National Education Goals aim both to improve student academic achievement and to reduce the achievement gap between high and low performers. This section provides the score differences between the average score of students in the top and bottom quartiles of each states, and between white and minority (black and Hispanic combined) students in each state. The size of the gap and the size of the changes in the gap is provided on the next 6 tables. Opposite each table is a narrative statement of what the changes were and which states experienced the highest and lowest of the state gaps in scores.

GAP CLOSING	4th Grade Mathematics (of 39 states)	8th Grade Mathematics (of 32 states)	4th Grade Reading (of 36 states)
States Improving by narrowing the: * Quartile Gap	8	5	1
* White/Minority Gap	2	0	1
States Unchanged: * Quartile Gap	28	25	19
* White/Minority Gap	37	29	28
States Declining by increasing the: * Quartile Gap	2	2	16
* White/Minority Gap	0	2	6

Change in the Gap between the Top and Bottom Quartiles in 4th Grade Mathematics

From 1992 to 1996, eight (8) states reduced the gap in performance between students in the top and bottom quartiles of achievement. The 8 states that improved were California, Georgia, Iowa, Louisiana, Massachusetts, Mississippi, Pennsylvania and Virginia. Only Delaware and the District of Columbia experienced an increase in the difference of performance between the top and bottom quartile.

In 1996, states ranged from a high of 85 points in Maryland, where the difference in performance between the top and bottom was greatest, to a low of 62 points in Iowa and North Dakota, where the gap between high and low performers was the smallest.

4th Grade Mathematics, 1992 - 1996 (Public Schools)
Changes in the Gap Between Top and Bottom Quartile Scores

State	Gap Between Average Score of Top and Bottom Quartiles in 1996	Change in the Gap between 1992 and 1996	Statistically Significant Change
		[Decreases represent improvements indicated by ⬆	
Alabama	74	-2	
Arizona	76	2	
Arkansas	73	-1	
California	80	**-8**	⬆
Colorado	72	-2	
Connecticut	73	-2	
Delaware	82	**5**	⬇
Florida	78	1	
Georgia	74	**-4**	⬆
Hawaii	83	2	
Indiana	66	-1	
Iowa	62	**-7**	⬆
Kentucky	72	2	
Louisiana	69	**-8**	⬆
Maine	66	0	
Maryland	85	0	
Massachusetts	67	**-7**	⬆
Michigan	74	-4	
Minnesota	71	-2	
Mississippi	69	**-6**	⬆
Missouri	68	-3	
Nebraska	73	0	
New Jersey	76	2	
New Mexico	75	4	
New York	76	-2	
North Carolina	75	-3	
North Dakota	62	-1	
Pennsylvania	67	**-7**	⬆
Rhode Island	73	-2	
South Carolina	73	-3	
Tennessee	75	2	
Texas	72	-2	
Utah	70	2	
Virginia	73	**-4**	⬆
West Virginia	70	-1	
Wisconsin	68	-1	
Wyoming	68	5	
District of Columbia	81	**5**	⬇
Guam	77	-4	

Seventeen (17) states did not participate in the 1996 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Kansas, Montana, Nevada, New Hampshire, Ohio, Oklahoma, Oregon, South Dakota, Vermont, Washington, American Samoa, Northern Marianas, Puerto Rico, and the Virgin Islands.

Numbers shown in bold and against a shaded box are statistically significant. See Appendix for additional data.

Change in the Gap between the Top and Bottom Quartiles in 8th Grade Mathematics

From 1990 to 1996, five (5) states reduced the gap in performance between students in the top and bottom quartiles of achievement. The 5 states that improved were Connecticut, Hawaii, Iowa, Virginia, and West Virginia. Only Montana and the District of Columbia experienced an increase in the gap between their top and bottom performers.

The largest gap between performance of the top and bottom quartiles students was 100 points in Maryland in 1996. The lowest gap was 71 points in Iowa.

8th Grade Mathematics, 1990 -1996 (Public Schools)
Changes in the Gap Between Top and Bottom Quartile Scores

State	Gap Between Average Score of Top and Bottom Quartiles in 1996	Change in the Gap between 1990 and 1996 [Decreases represent improvements indicated by ⬆]	Statistically Significant Change
Alabama	89	4	
Arizona	81	-4	
Arkansas	84	4	
California	92	-1	
Colorado	81	-1	
Connecticut	85	**-4**	⬆
Delaware	86	-2	
Florida	89	-1	
Georgia	89	-2	
Hawaii	90	**-8**	⬆
Indiana	79	-2	
Iowa	71	**-5**	⬆
Kentucky	77	-4	
Louisiana	79	-3	
Maryland	100	4	
Michigan	87	2	
Minnesota	82	2	
Montana	79	**8**	⬇
Nebraska	77	-4	
New Mexico	84	3	
New York	90	-4	
North Carolina	88	0	
North Dakota	74	2	
Oregon	84	1	
Rhode Island	87	-3	
Texas	85	-3	
Virginia	86	**-5**	⬆
West Virginia	76	**-4**	⬆
Wisconsin	79	-3	
Wyoming	74	1	
District of Columbia	89	**9**	⬇
Guam	95	1	

Twenty-five (25) states did not participate in the 1996 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Kansas, Maine, Massachusetts, Mississippi, Missouri, Nevada, New Hampshire, New Jersey, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, Washington, American Samoa, Northern Marianas, Puerto Rico, and the Virgin Islands.

Numbers shown in bold and against a shaded box are statistically significant. See Appendix for additional data.

Change in the Gap between the Top and Bottom Quartiles in 4th Grade Reading

From 1992 to 1998, almost half of all states that participated in the NAEP 4th grade reading assessments (16 out of 36) experienced a discouraging increase in the gap of performance between students in the top and bottom quartile of achievement. The 16 states that suffered this increase in their gap were Arizona, Arkansas, Colorado, Florida, Georgia, Hawaii, Louisiana, Maine, Massachusetts, Minnesota, Missouri, New Hampshire, New Mexico, Oklahoma, Tennessee, and Utah. The only state to reduce the gap in performance between top and bottom quartiles was North Carolina.

The gap in performance between the top and bottom quartiles ranged in 1998 from a high of 102 scale points in California to a low of 71 points in Maine and Wisconsin.

4th Grade Reading, 1992 -1998 (Public Schools)
Changes in the Gap Between Top and Bottom Quartile Scores

State	Gap Between Average Score of Top and Bottom Quartiles in 1998	Change in the Gap between 1992 and 1998	Statistically Significant Change
		[*Decreases represent improvements indicated by* ⬆	
Alabama	86	2	
Arizona	96	**15**	⬇
Arkansas	90	**7**	⬇
California	102	5	
Colorado	80	**6**	⬇
Connecticut	75	-4	
Delaware	83	0	
Florida	96	**13**	⬇
Georgia	91	**5**	⬇
Hawaii	96	**10**	⬇
Iowa	76	4	
Kentucky	81	3	
Louisiana	88	**12**	⬇
Maine	71	**7**	⬇
Maryland	91	4	
Massachusetts	75	**6**	⬇
Michigan	81	4	
Minnesota	86	**11**	⬇
Mississippi	84	1	
Missouri	85	**10**	⬇
New Hampshire	75	**6**	⬇
New Mexico	94	**12**	⬇
New York	86	2	
North Carolina	81	**-7**	⬆
Oklahoma	75	**5**	⬇
Rhode Island	86	6	
South Carolina	83	1	
Tennessee	87	**8**	⬇
Texas	83	3	
Utah	83	**11**	⬇
Virginia	82	4	
West Virginia	82	3	
Wisconsin	71	1	
Wyoming	76	5	
District of Columbia	98	10	
Virgin Islands	90	5	

Twenty (20) states did not participate in the 1998 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Indiana, Kansas, Montana, Nebraska, Nevada, New Jersey, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Vermont, Washington, American Samoa, Guam, Northern Marianas, and Puerto Rico.

Numbers shown in bold and against a shaded box are statistically significant. See Appendix for additional data.

Change in the Gap between White and Minority Student Scores in 4th Grade Mathematics

When policymakers and educators express concern about the "achievement gap," they are often referring to the gap between white and minority (black and Hispanic) student achievement. For this reason, the first objective under Goal 3 of the National Education Goals, provides that "...the distribution of *minority* students in each quartile will more closely reflect the student population as a whole." Often white and Asian students score at higher levels than black and Hispanic students do. The following tables indicate the extent to which states are reducing this gap.

From 1992 to 1996, there were only two (2) states, Georgia and Massachusetts, that succeeded in reducing the achievement gap between white and minority students. Both reduced the gap by 8 NAEP scale points. Fortunately, the gap did not increase in any state.

The gap in performance between white and minority students ranged in 1996 from a high of 56 in the District of Columbia and 35 points in New Jersey, to a low of 11 in North Dakota.

4th Grade Mathematics, 1992 -1996 (Public Schools)
Changes in the Gap Between White and Minority Scores

State	Gap Between White and Minority Scores in 1996	Change in the Gap between 1992 and 1996 [Decreases represent improvements indicated by ⬆]	Statistically Significant Change
Alabama	29	-1	
Arizona	25	2	
Arkansas	28	1	
California	27	-3	
Colorado	25	3	
Connecticut	34	0	
Delaware	31	2	
Florida	26	0	
Georgia	24	**-8**	⬆
Hawaii	23	3	
Indiana	23	-1	
Iowa	21	1	
Kentucky	20	3	
Louisiana	27	-3	
Maine	16	0	
Maryland	34	2	
Massachusetts	23	**-8**	⬆
Michigan	32	-2	
Minnesota	28	1	
Mississippi	25	-4	
Missouri	25	-3	
Nebraska	28	0	
New Jersey	35	1	
New Mexico	22	1	
New York	29	0	
North Carolina	29	0	
North Dakota	11	-6	
Pennsylvania	29	-4	
Rhode Island	27	-5	
South Carolina	26	-3	
Tennessee	27	1	
Texas	27	3	
Utah	22	5	
Virginia	24	-4	
West Virginia	17	5	
Wisconsin	30	2	
Wyoming	17	4	
District of Columbia	56	4	
Guam	22	-3	

Seventeen (17) states did not participate in the 1996 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Kansas, Montana, Nevada, New Hampshire, Oklahoma, Ohio, Oregon, South Dakota, Vermont, Washington, American Samoa, Northern Marianas, Puerto Rico, and the Virgin Islands.

Numbers shown in bold and against a shaded box are statistically significant. See Appendix for additional data.

Change in the Gap between White and Minority Student Scores in 8th Grade Mathematics

From 1990 to 1996, no state reduced the achievement gap between white and minority (black and Hispanic) students. Two states, Maryland and Alabama, increased the gap significantly.

In 1996, this gap ranged from a high of 42 NAEP scale points in Maryland to a low of 21 scale points in West Virginia and Wyoming.

8th Grade Mathematics, 1990 and 1996 (Public Schools)
Changes in the Gap Between White and Minority Scores

State	Gap Between White and Minority Scores in 1996	Change in the Gap between 1990 and 1996 [*Increases represent a larger gap indicated by* ⬇]	Statistically Significant Change
Alabama	38	**8**	⬇
Arizona	30	-2	
Arkansas	34	0	
California	34	-2	
Colorado	26	-3	
Connecticut	39	1	
Delaware	31	5	
Florida	34	6	
Georgia	35	2	
Hawaii	28	-3	
Indiana	31	3	
Iowa	24	0	
Kentucky	22	-2	
Louisiana	31	1	
Maryland	42	**7**	⬇
Michigan	38	2	
Minnesota	31	-8	
Montana	29	9	
Nebraska	33	-3	
New Mexico	28	2	
New York	38	1	
North Carolina	30	-1	
North Dakota	23	-14	
Oregon	22	1	
Rhode Island	35	-2	
Texas	31	0	
Virginia	33	4	
West Virginia	21	-3	
Wisconsin	40	2	
Wyoming	21	1	

Twenty-six states (26) states did not participate in the 1996 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Kansas, Maine, Massachusetts, Mississippi, Missouri, Nevada, New Hampshire, New Jersey, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, Washington, District of Columbia, American Samoa, Guam, Northern Marianas, Puerto Rico, and the Virgin Islands.

Numbers shown in bold and against a shaded box are statistically significant. See Appendix for additional data.

Change in the Gap between White and Minority Student Scores in 4th Grade Reading

From 1992 to 1998, Delaware was the only state to reduce the achievement gap between white and minority (black and Hispanic) students. Unfortunately, the gap increased in six (6) states: Arizona, Colorado, Louisiana, New Hampshire, Utah, and Wisconsin.

The gap between white and minority achievement scores ranged from a high of 53 NAEP scale points in the District of Columbia and 38 points in Rhode Island to a low of 16 points in Maine and Wyoming.

4th Grade Reading, 1992 -1998 (Public Schools)
Changes in the Gap Between White and Minority Scores

State	Gap Between White and Minority Scores in 1998	Change in the Gap between 1992 and 1998	Statistically Significant Change
		[Increases *represent a larger gap indicated by* ⬇	
Alabama	29	0	
Arizona	34	**11**	⬇
Arkansas	32	2	
California	34	-1	
Colorado	27	**8**	⬇
Connecticut	35	-1	
Delaware	23	**-6**	⬆
Florida	25	-1	
Georgia	32	4	
Hawaii	25	3	
Iowa	23	6	
Kentucky	25	6	
Louisiana	37	**11**	⬇
Maine	16	-2	
Maryland	32	5	
Massachusetts	31	3	
Michigan	33	2	
Minnesota	30	4	
Mississippi	26	-5	
Missouri	32	4	
New Hampshire	24	**12**	⬇
New Mexico	25	2	
New York	34	1	
North Carolina	28	1	
Oklahoma	24	5	
Rhode Island	38	4	
South Carolina	27	0	
Tennessee	27	2	
Texas	30	6	
Utah	34	**16**	⬇
Virginia	25	-1	
West Virginia	24	6	
Wisconsin	29	**8**	⬇
Wyoming	16	-1	
District of Columbia	53	-1	

Twenty-one (21) states did not participate in the 1998 NAEP or their sample size was insufficient: Alaska, Idaho, Illinois, Indiana, Kansas, Montana, Nebraska, Nevada, New Jersey, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Vermont, Washington, American Samoa, Guam, Northern Marianas, Puerto Rico, and the Virgin Islands.

Numbers shown in bold and against a shaded box are statistically significant. See Appendix for additional data.

In Conclusion

The prior charts, tables, and summaries of the statistically significant changes by quartile present NAEP data in the terms originally specified in the National Education Goals. As a participant in meetings chaired by Michael Cohen at the National Governors' Association the summer of 1989 before the Education Summit, I remember lengthy discussions about the complexity of tracking education progress well. There was an unwillingness to oversimplify the reporting problems. This analysis was intended to meet the spirit of those discussions and show every participating state whether "the academic performance of all students... increase[d] significantly in every quartile, and [whether] the distribution of minority students in each quartile... [reflected] the student population as a whole."

Analyzing student scores by quartiles illustrates that a state may experience significant progress even though the percentage of students scoring at the proficient level or higher did not improve. Mississippi is an example. Between 1992 and 1996, 4th grade students in Mississippi in mathematics improved their average student scale score, the performance of students in *both* its top and bottom quartiles, and reduced the achievement gap between students in the top and bottom quartiles. Even though there was no significant change in the percentage of students scoring proficient or above or in reducing the achievement gap between white and minority students, this kind of analysis of NAEP results shows evidence of improvement that should be recognized.

MISSISSIPPI 4th Grade Mathematics	
	Change between 1992 and 1996
Average Score Change -	
For All Students	Improved
For Top Quartile	Improved
For Bottom Quartile	Improved
Gap between Top and Bottom Quartile	Improved
Gap between White and Minority Students	No Change
Percentage Scoring at or above Proficient	No Change

I have tried to demonstrate that to understand important changes in student achievement, policymakers and educators need more than a single NAEP score. America can track its progress towards the Goals using a set point (such as proficient or above on NAEP) in the distribution of all student scores. But we should also recognize the wide distribution of student scores, and track whether performance in every quartile is changing and whether gaps between the top and bottom and between white and minority students are narrowing. We should, as Albert Einstein said, make things as simple as possible, but no simpler.

APPENDIX TABLES

These tables were prepared by Educational Testing Service for the National Education Goals Panel under arrangements made by the National Center for Education Statistics.

NAEP Grade 4 National and State Math Assessment: Change in Average Scale Score Gap for the First Performance Quartile from 1992 to 1996

	1996 Q1			1992 Q1			1996-1992		
	Mean	SE	DF	Mean	SE	DF	Difference	Sig FDR?	Sig T-test?
Nation	182.57	1.02	13.71	178.60	0.68	50.24	3.97	n/a	>
Alabama	174.64	0.99	39.16	170.41	0.67	43.84	4.23	>	>
Arizona	178.34	1.17	30.33	177.44	1.04	17.96	0.91		
Arkansas	178.65	1.20	9.43	172.65	0.79	32.69	6.00	>	>
California	168.74	1.45	13.18	162.83	1.30	22.56	5.91	>	>
Colorado	188.93	0.98	32.19	183.19	0.83	49.60	5.74	>	>
Connecticut	193.12	1.14	19.97	187.90	1.18	17.56	5.22	>	>
Delaware	172.41	1.38	27.32	179.68	1.08	22.91	-7.26	<	<
Florida	175.04	1.13	28.36	174.12	1.38	14.25	0.92		
Georgia	178.29	1.03	11.86	176.11	0.95	24.97	2.17		
Hawaii	172.82	2.18	12.77	172.50	1.20	24.64	0.32		
Indiana	195.81	1.13	42.38	187.92	0.86	33.64	7.89	>	>
Iowa	196.36	1.36	13.38	194.02	0.94	40.59	2.34		
Kentucky	183.02	0.87	24.99	180.71	1.06	53.19	2.30		
Louisiana	174.63	0.97	24.51	165.55	2.05	6.72	9.08	>	>
Maine	198.40	1.33	26.17	197.82	0.94	26.37	0.58		
Maryland	177.53	1.04	26.54	174.36	1.27	15.83	3.17		
Massachusetts	194.57	0.97	23.50	188.38	1.10	35.58	6.19	>	>
Michigan	187.58	1.10	25.88	179.12	1.64	19.85	8.46	>	>
Minnesota	194.56	1.29	37.60	190.23	1.07	26.14	4.33	>	>
Mississippi	174.89	0.75	49.42	164.63	0.93	16.77	10.27	>	>
Missouri	189.63	1.16	10.93	186.03	1.27	19.27	3.60		>
Nebraska	189.27	1.52	27.18	187.78	0.95	58.27	1.49		
New Jersey	188.03	1.67	13.96	188.71	1.48	25.60	-0.67		
New Mexico	176.16	1.72	17.07	177.94	0.83	27.43	-1.79		
New York	182.30	1.67	8.40	178.35	1.42	10.09	3.95		
North Carolina	185.99	1.13	18.07	173.01	0.84	34.04	12.99	>	>
North Dakota	199.39	1.88	5.33	196.74	0.97	60.17	2.65		
Pennsylvania	191.62	0.81	26.22	186.02	1.07	19.51	5.60	>	>
Rhode Island	182.67	1.79	17.13	176.68	1.33	22.79	5.99	>	>
South Carolina	177.22	1.22	27.30	175.64	0.89	23.90	1.58		
Tennessee	180.97	1.43	22.47	174.07	1.21	40.01	6.90	>	>
Texas	192.28	1.13	16.55	180.71	1.35	19.52	11.58	>	>
Utah	189.77	1.55	21.29	188.83	1.06	34.79	0.95		
Virginia	185.50	0.94	30.18	182.13	1.17	45.86	3.37		>
West Virginia	187.93	1.03	46.41	180.07	0.86	41.87	7.85	>	>
Wisconsin	196.09	1.05	12.81	192.68	1.19	16.00	3.41		>
Wyoming	188.25	2.37	36.66	193.07	0.84	44.86	-4.83		
Dist. of Columbia	149.47	1.45	33.09	157.24	0.87	47.03	-7.77	<	<
Guam	150.44	2.24	46.58	152.72	1.05	40.48	-2.28		

1996 - 1992 Differences in Q1 (Bottom Quartile)

NAEP Grade 4 National and State Math Assessment: Change in Average Scale Score Gap for the Fourth Performance Quartile from 1992 to 1996

	1996 Q4			1992 Q4			1996-1992		
	Mean	SE	DF	Mean	SE	DF	Difference	Sig FDR?	Sig T-test?
Nation	259.67	0.64	18.71	256.75	0.65	33.76	2.92	n/a	>
Alabama	248.78	0.95	13.82	246.90	0.97	19.11	1.87		
Arizona	254.38	0.90	23.00	251.31	0.72	50.37	3.08	>	>
Arkansas	251.29	0.95	30.06	246.11	0.83	16.96	5.18	>	>
California	248.57	1.14	5.44	251.12	1.11	12.24	-2.55		
Colorado	260.68	0.63	37.84	256.83	0.66	37.39	3.85	>	>
Connecticut	266.52	1.01	47.15	263.55	0.84	30.43	2.97		>
Delaware	254.69	1.10	40.55	256.65	0.85	18.32	-1.96		
Florida	253.32	0.70	33.34	251.68	1.04	18.03	1.63		
Georgia	252.09	0.75	40.89	254.34	0.79	20.45	-2.26		<
Hawaii	255.61	0.90	40.10	253.66	0.79	47.06	1.95		
Indiana	261.63	0.97	20.13	254.53	0.64	44.92	7.10	>	>
Iowa	258.77	0.67	34.69	263.38	0.81	39.74	-4.61	<	<
Kentucky	254.71	0.68	37.87	250.81	0.99	13.42	3.90	>	>
Louisiana	243.63	0.89	14.26	242.49	0.75	15.79	1.14		
Maine	264.44	1.01	38.83	263.43	0.81	19.17	1.01		
Maryland	262.29	1.27	6.38	258.85	0.76	52.60	3.44		>
Massachusetts	261.75	0.81	19.79	262.09	0.83	22.88	-0.34		
Michigan	261.55	0.90	15.05	256.87	0.91	14.15	4.68	>	>
Minnesota	266.01	0.83	23.56	263.20	0.57	30.38	2.80	>	>
Mississippi	243.99	0.78	12.91	239.75	0.75	27.52	4.24	>	>
Missouri	257.88	0.59	45.29	257.37	0.68	51.76	0.51		
Nebraska	261.98	0.67	60.28	260.33	0.92	26.08	1.64		
New Jersey	263.60	0.87	17.28	262.67	1.11	19.43	0.93		
New Mexico	250.81	1.12	20.99	248.95	0.80	22.05	1.85		
New York	258.50	0.73	42.30	256.42	1.01	33.19	2.09		
North Carolina	261.15	0.84	43.72	251.63	0.80	39.49	9.52	>	>
North Dakota	261.29	0.82	46.87	259.22	0.70	53.82	2.07		
Pennsylvania	258.64	0.80	23.82	260.09	0.78	23.56	-1.45		
Rhode Island	255.68	0.91	35.77	252.16	0.82	17.17	3.51	>	>
South Carolina	250.12	1.07	27.74	251.11	0.94	27.21	-0.99		
Tennessee	255.56	0.94	25.60	246.87	0.77	40.68	8.69	>	>
Texas	264.07	0.75	32.53	254.24	0.83	26.14	9.83	>	>
Utah	260.24	0.53	44.40	257.53	0.57	31.28	2.71	>	>
Virginia	258.64	1.04	28.21	259.56	1.09	9.31	-0.92		
West Virginia	257.65	0.60	23.86	250.94	0.72	32.23	6.70	>	>
Wisconsin	264.09	0.97	30.40	262.078	0.791	19.014	2.01		
Wyoming	256.36	0.56	50.27	256.261	0.564	45.417	0.10		
Dist. of Columbia	230.08	1.10	10.58	233.155	0.927	29.029	-3.08		<
Guam	227.60	1.75	61.35	233.949	1.151	27.723	-6.35	<	<

1996-1992 Differences in Q4 (Top Quartile)

NAEP Grade 8 National and State Math Assessment: Change in the Average Scale Score for the First Performance Quartile from 1990 to 1996

	1996 Q1			1990 Q1			1996-1990		
	Mean	SE	DF	Mean	SE	DF	Difference	Sig FDR?	Sig T-test?
Nation	223.98	0.89	27.00	215.60	1.41	33.76	8.37	n/a	>
Alabama	211.05	1.75	6.79	210.36	0.75	37.29	0.68		
Arizona	227.21	1.92	9.16	216.64	1.16	45.52	10.57	>	>
Arkansas	218.85	2.29	16.45	215.90	1.04	32.73	2.95		
California	216.70	1.14	27.63	209.45	0.93	30.21	7.25	>	>
Colorado	234.35	1.34	22.92	225.75	0.66	33.68	8.60	>	>
Connecticut	235.57	1.03	33.65	224.10	0.98	26.73	11.46	>	>
Delaware	223.94	1.27	35.30	216.86	1.24	11.23	7.08	>	>
Florida	217.61	1.81	5.84	210.08	1.21	36.37	7.53	>	>
Georgia	217.30	1.31	33.16	212.96	0.97	22.21	4.34	>	>
Hawaii	216.48	1.60	8.03	202.31	1.02	34.99	14.17	>	>
Indiana	235.26	1.27	27.37	226.79	0.94	21.66	8.47	>	>
Iowa	247.72	1.62	10.35	239.53	0.95	19.68	8.20	>	>
Kentucky	227.72	1.00	41.39	217.24	1.11	57.23	10.47	>	>
Louisiana	212.65	1.38	11.68	206.13	1.09	29.74	6.52	>	>
Maryland	219.32	1.35	18.18	212.62	0.82	40.25	6.70	>	>
Michigan	231.68	1.45	29.35	221.61	0.99	24.63	10.07	>	>
Minnesota	241.84	1.04	42.09	234.34	1.11	28.07	7.50	>	>
Montana	241.66	1.24	32.66	244.07	1.09	27.93	-2.41		
Nebraska	243.65	1.17	51.37	233.68	1.65	6.82	9.97	>	>
New Mexico	219.51	1.58	8.41	216.41	1.01	51.86	3.10		
New York	223.37	1.65	10.74	212.78	1.41	24.79	10.59	>	>
North Carolina	223.99	1.45	34.36	206.50	0.82	23.46	17.49	>	>
North Dakota	245.62	1.11	46.37	243.65	1.19	22.77	1.97		
Oregon	233.66	1.03	36.78	229.46	0.91	23.49	4.20	>	>
Rhode Island	224.02	1.61	25.89	214.55	0.97	51.18	9.47	>	>
Texas	227.47	1.34	19.99	214.78	1.30	22.12	12.68	>	>
Virginia	226.78	1.39	16.74	219.67	0.79	31.30	7.12	>	>
West Virginia	227.19	1.00	28.57	216.66	0.93	33.71	10.53	>	>
Wisconsin	242.32	1.49	14.05	232.73	1.18	14.42	9.59	>	>
Wyoming	236.93	1.86	45.46	235.56	0.82	11.89	1.37		
Dist. of Columbia	190.82	2.62	40.85	193.44	0.94	52.74	-2.62		
Guam	191.09	2.74	38.78	186.12	0.95	30.42	4.97		

NAEP Grade 8 National and State Math Assessment: Change in the Average Scale Score for the Fourth Performance Quartile from 1990 to 1996

	1996 Q4			1990 Q4			1996-1990		
	Mean	SE	DF	Mean	SE	DF	Difference	Sig FDR?	Sig T-test?
Nation	314.18	0.88	18.14	305.91	0.93	16.78	8.27	n/a	>
Alabama	300.38	1.37	16.55	295.64	0.90	52.55	4.74	>	>
Arizona	308.16	1.12	13.36	301.95	0.97	25.61	6.21	>	>
Arkansas	302.52	1.04	37.61	295.95	0.84	62.00	6.57	>	>
California	308.75	1.00	24.82	302.40	1.04	20.76	6.35	>	>
Colorado	314.87	0.93	52.01	307.36	0.67	45.02	7.51	>	>
Connecticut	320.96	1.03	29.78	313.67	0.79	35.77	7.29	>	>
Delaware	310.42	1.12	35.34	304.91	1.09	15.86	5.51	>	>
Florida	307.07	1.05	17.37	300.78	0.94	48.06	6.28	>	>
Georgia	306.76	1.22	19.96	304.89	1.24	4.99	1.87		
Hawaii	306.68	0.92	39.83	300.45	0.88	26.53	6.23	>	>
Indiana	314.04	0.93	39.63	307.95	1.03	33.07	6.09	>	>
Iowa	318.27	0.82	47.03	315.39	0.90	27.91	2.88	>	>
Kentucky	305.18	0.85	20.73	298.47	0.92	28.31	6.71	>	>
Louisiana	291.48	1.19	25.16	287.51	0.91	23.61	3.96	>	>
Maryland	319.43	1.38	18.87	308.24	1.11	19.44	11.19	>	>
Michigan	318.81	1.03	14.51	306.44	0.83	31.68	12.37	>	>
Minnesota	323.52	0.74	24.30	314.16	0.68	42.23	9.37	>	>
Montana	321.15	1.01	45.04	315.76	1.05	15.30	5.39	>	>
Nebraska	320.47	0.74	49.01	314.72	0.79	35.03	5.76	>	>
New Mexico	303.69	0.96	34.59	297.31	0.89	25.35	6.38	>	>
New York	313.39	0.87	24.24	307.04	0.85	48.46	6.34	>	>
North Carolina	312.06	1.11	32.39	294.25	0.68	28.58	17.81	>	>
North Dakota	320.03	1.31	39.88	316.27	1.12	27.26	3.75	>	>
Oregon	317.42	1.34	42.18	312.11	0.95	32.88	5.31	>	>
Rhode Island	311.17	1.17	43.50	304.61	0.66	30.13	6.56	>	>
Texas	312.00	0.77	41.58	302.14	0.80	19.49	9.87	>	>
Virginia	312.68	0.66	14.81	310.86	1.61	15.41	1.81		
West Virginia	302.89	0.88	33.17	296.23	1.01	30.68	6.65	>	>
Wisconsin	320.97	0.86	40.53	313.90	0.81	38.97	7.07	>	>
Wyoming	310.75	0.67	45.73	307.97	0.80	50.28	2.78	>	>
Dist. of Columbia	280.22	2.06	8.90	273.57	1.57	9.10	6.65	>	>
Guam	285.85	1.54	62.00	279.51	0.78	10.80	6.34	>	>

NAEP Grade 4 National and State Reading Assessment: Change in the Average Scale Score for the First Performance Quartile from 1992 to 1998

	1998 Q1			1992 Q1			1998-1992		
	Mean	SE	DF	Mean	SE	DF	Difference	Sig FDR?	Sig T-test?
Nation	168.58	0.98	30.20	170.87	1.18	51.85	-2.29		
Alabama	166.12	1.91	30.46	163.90	1.23	9.78	2.23		
Arizona	155.65	3.44	5.04	167.45	1.19	31.32	-11.79	<	<
Arkansas	160.67	1.88	49.69	167.75	1.14	43.54	-7.08	<	<
California	147.51	3.17	6.62	151.24	1.59	41.94	-3.73		
Colorado	178.74	1.32	37.57	177.59	1.34	35.36	1.15		
Connecticut	191.36	1.48	13.87	179.41	1.62	13.17	11.95	>	>
Delaware	168.83	2.49	11.87	170.54	1.51	26.66	-1.71		
Florida	155.53	1.77	20.05	165.10	1.59	14.20	-9.57	<	<
Georgia	161.90	1.45	15.00	168.25	1.25	40.42	-6.35	<	<
Hawaii	148.47	2.96	23.44	158.50	1.60	20.94	-10.04	<	<
Iowa	182.55	1.35	31.71	187.84	1.27	24.64	-5.29	<	<
Kentucky	175.15	1.85	30.36	171.50	0.93	53.20	3.65		
Louisiana	158.54	1.56	25.05	165.21	1.45	21.41	-6.67	<	<
Maine	188.20	2.00	22.04	193.44	1.62	45.53	-5.24		<
Maryland	166.52	1.75	23.29	165.14	2.41	14.85	1.38		
Massachusetts	185.21	1.86	16.55	190.01	0.92	38.77	-4.80		<
Michigan	173.21	1.98	11.31	175.56	1.14	8.97	-2.35		
Minnesota	174.99	1.82	12.55	181.36	1.10	22.57	-6.37	<	<
Mississippi	161.17	1.32	46.41	157.26	1.14	23.43	3.92		<
Missouri	170.67	2.79	6.27	181.06	1.47	29.61	-10.39	<	<
New Hampshire	184.63	2.13	19.84	191.56	1.08	44.34	-6.93	<	<
New Mexico	156.08	3.05	7.02	168.87	2.01	9.01	-12.80	<	<
New York	169.34	1.45	22.11	169.26	2.63	7.95	0.08		
North Carolina	174.79	1.51	11.99	166.13	1.21	30.33	8.66	>	>
Oklahoma	180.36	1.46	7.24	183.89	1.20	30.46	-3.53		
Rhode Island	171.29	2.83	8.83	174.34	1.83	6.08	-3.04		
South Carolina	167.56	1.44	36.72	168.28	1.11	24.28	-0.72		
Tennessee	166.25	1.70	30.22	171.58	1.28	15.48	-5.33	<	<
Texas	173.18	2.35	4.32	171.52	1.31	19.20	1.65		
Utah	170.77	1.63	17.38	182.65	1.42	13.42	-11.89	<	<
Virginia	175.34	1.28	20.87	180.18	1.47	32.12	-4.84	<	<
West Virginia	173.26	1.51	20.45	175.21	1.76	23.07	-1.95		
Wisconsin	187.03	1.62	17.54	187.06	1.43	30.20	-0.03		
Wyoming	179.31	1.90	49.85	185.25	1.32	29.30	-5.94	<	<
Dist. of Columbia	133.68	3.35	61.87	144.38	1.38	48.37	-10.70	<	<
Virgin Islands	132.80	5.20	38.76	129.33	3.02	29.08	3.47		

1998-1992 Differences in Q1 (Bottom Quartile)

NAEP Grade 4 National and State Reading Assessment: Change in the Average Scale Score for the Fourth Performance Quartile from 1992 to 1998

	1998 Q4			1992 Q4			1998-1992		
	Mean	SE	DF	Mean	SE	DF	Difference	Sig FDR?	Sig T-test?
Nation	257.71	0.71	27.10	255.30	0.94	31.36	2.41	n/a	>
Alabama	252.35	1.07	23.23	248.19	0.97	24.89	4.16	>	>
Arizona	251.26	1.05	30.06	248.34	1.01	31.80	2.91		>
Arkansas	251.05	1.06	42.18	250.87	0.96	24.26	0.18		
California	249.85	1.38	22.14	248.72	1.29	21.91	1.13		
Colorado	258.31	1.24	41.93	251.53	0.91	16.47	6.78	>	>
Connecticut	266.18	1.47	27.86	258.10	1.33	59.84	8.08	>	>
Delaware	251.58	1.20	37.78	253.29	0.70	22.87	-1.71		
Florida	251.88	1.16	27.40	248.68	0.87	39.58	3.20		>
Georgia	252.76	1.15	23.71	254.04	1.12	29.25	-1.28		
Hawaii	244.89	1.06	59.37	244.48	1.08	31.83	0.41		
Iowa	258.39	1.14	38.75	259.19	0.92	30.02	-0.80		
Kentucky	256.55	1.12	49.56	249.93	0.94	29.90	6.62	>	>
Louisiana	247.01	1.10	21.06	242.02	0.98	42.63	4.99	>	>
Maine	259.41	1.00	22.92	258.15	0.96	29.94	1.26		
Maryland	257.67	1.29	19.45	251.94	0.92	38.56	5.73	>	>
Massachusetts	260.43	1.41	38.99	258.88	0.77	39.99	1.55		
Michigan	254.40	0.72	40.22	252.30	0.90	16.96	2.09		
Minnesota	261.13	1.02	43.92	256.30	0.86	24.06	4.83	>	>
Mississippi	245.29	1.04	41.09	240.39	0.89	46.55	4.90	>	>
Missouri	255.18	1.16	31.07	255.91	1.06	26.67	-0.74		
New Hampshire	259.83	0.88	29.44	260.98	1.28	16.75	-1.16		
New Mexico	249.94	1.77	40.00	250.59	1.16	9.51	-0.65		
New York	255.55	0.92	15.54	253.89	1.08	47.20	1.65		
North Carolina	255.67	1.01	48.05	253.79	0.94	49.22	1.88		
Oklahoma	254.95	0.82	30.70	253.80	0.68	48.09	1.15		
Rhode Island	257.59	1.17	15.35	254.62	0.91	17.11	2.98		
South Carolina	250.58	1.22	21.14	250.10	0.99	33.18	0.48		
Tennessee	253.26	1.07	14.11	250.59	1.03	31.66	2.67		
Texas	256.16	1.05	24.48	251.81	1.16	21.31	4.34	>	>
Utah	253.91	1.04	50.52	254.61	0.81	36.86	-0.69		
Virginia	257.14	1.03	37.84	258.12	0.97	24.28	-0.97		
West Virginia	254.84	1.44	29.24	253.44	1.00	37.74	1.40		
Wisconsin	258.10	0.76	41.04	257.24	0.90	20.11	0.86		
Wyoming	255.09	1.70	51.84	256.33	1.07	35.76	-1.24		
Dist. of Columbia	232.16	3.15	8.17	233.29	0.96	41.31	-1.13		
Virgin Islands	222.54	1.97	44.21	214.08	2.01	50.76	8.46	>	>

1998-1992 Differences in Q4 (Top Quartile)

NAEP Grade 4 National and State Math Assessment: Change in Average Scale Score Gap between the Upper and Lower Performance Quartiles from 1992 to 1996

	1996			1992			1996-1992 Change in Gap		
	Gap	Pooled SE	Pooled DF	Gap	Pooled SE	Pooled DF	Difference	Sig FDR?	Sig T-test?
Nation	77.10	1.20	23.91	78.15	0.94	82.04	-1.05		
Alabama	74.14	1.37	42.40	76.50	1.18	38.18	-2.36		
Arizona	76.04	1.47	52.64	73.87	1.26	36.10	2.17		
Arkansas	72.64	1.53	22.24	73.46	1.14	43.20	-0.82		
California	79.84	1.85	17.91	88.29	1.71	34.10	-8.45	<	<
Colorado	71.75	1.16	55.96	73.64	1.06	86.30	-1.89		
Connecticut	73.40	1.52	50.75	75.65	1.45	34.75	-2.25		
Delaware	82.28	1.77	57.32	76.97	1.37	40.58	5.30		>
Florida	78.28	1.33	48.35	77.57	1.73	27.96	0.71		
Georgia	73.80	1.27	25.41	78.23	1.23	45.13	-4.43		<
Hawaii	82.79	2.35	17.33	81.16	1.44	46.37	1.63		
Indiana	65.82	1.48	59.72	66.61	1.07	65.58	-0.79		
Iowa	62.41	1.52	20.23	69.36	1.24	78.78	-6.95	<	<
Kentucky	71.69	1.10	52.21	70.09	1.45	46.70	1.60		
Louisiana	69.00	1.31	37.55	76.95	2.18	8.60	-7.94	<	<
Maine	66.04	1.67	53.33	65.61	1.24	45.54	0.43		
Maryland	84.77	1.64	16.11	84.49	1.48	28.20	0.27		
Massachusetts	67.18	1.26	42.96	73.71	1.38	58.25	-6.52	<	<
Michigan	73.98	1.42	40.76	77.76	1.87	30.07	-3.78		
Minnesota	71.45	1.53	59.06	72.97	1.21	40.38	-1.52		
Mississippi	69.10	1.08	39.54	75.13	1.20	36.24	-6.03	<	<
Missouri	68.25	1.30	17.06	71.34	1.44	30.81	-3.09		
Nebraska	72.71	1.66	38.04	72.55	1.32	73.91	0.15		
New Jersey	75.56	1.89	21.28	73.96	1.85	44.09	1.61		
New Mexico	74.65	2.05	30.17	71.01	1.15	49.18	3.64		
New York	76.20	1.82	11.84	78.06	1.74	21.06	-1.86		
North Carolina	75.16	1.41	38.38	78.62	1.16	72.45	-3.46		
North Dakota	61.91	2.05	7.49	62.48	1.20	106.98	-0.58		
Pennsylvania	67.02	1.13	49.99	74.07	1.33	36.94	-7.06	<	<
Rhode Island	73.01	2.01	26.35	75.48	1.56	36.47	-2.47		
South Carolina	72.90	1.62	53.98	75.47	1.29	51.10	-2.57		
Tennessee	74.59	1.71	39.62	72.80	1.44	67.89	1.80		
Texas	71.78	1.35	31.42	73.54	1.58	33.45	-1.75		
Utah	70.47	1.64	26.29	68.70	1.20	53.27	1.76		
Virginia	73.15	1.40	57.29	77.43	1.60	33.78	-4.28		<
West Virginia	69.72	1.19	68.15	70.87	1.12	73.97	-1.15		
Wisconsin	68.00	1.43	33.68	69.40	1.43	28.61	-1.40		
Wyoming	68.11	2.43	40.80	63.19	1.02	78.44	4.93		
Dist. of Columbia	80.60	1.82	40.47	75.92	1.27	69.63	4.69		>
Guam	77.16	2.84	94.18	81.23	1.56	63.15	-4.07		

1996-1992 Gap Differences

NAEP Grade 8 National and State Math Assessment: Change in Average Scale Score Gap between the Upper and Lower Performance Quartiles from 1990 to 1996

	1996			1990			1996-1990 Change in Gap		
	Gap	Pooled SE	Pooled DF	Gap	Pooled SE	Pooled DF	Difference	Sig FDR?	Sig T-test?
Nation	90.20	1.26	43.55	90.31	1.69	50.34	-0.11		
Alabama	89.33	2.22	15.29	85.27	1.17	89.84	4.06		
Arizona	80.95	2.22	15.25	85.30	1.51	70.34	-4.36		
Arkansas	83.67	2.51	23.56	80.05	1.34	72.90	3.62		
California	92.05	1.52	52.12	92.96	1.40	46.74	-0.90		
Colorado	80.52	1.63	45.69	81.61	0.94	77.37	-1.09		
Connecticut	85.40	1.46	63.19	89.57	1.26	55.13	-4.17		<
Delaware	86.47	1.69	69.50	88.04	1.65	24.73	-1.57		
Florida	89.46	2.09	10.03	90.70	1.53	73.50	-1.24		
Georgia	89.46	1.79	51.30	91.93	1.57	11.92	-2.47		
Hawaii	90.19	1.85	13.83	98.14	1.34	61.51	-7.95	<	<
Indiana	78.78	1.58	53.82	81.17	1.39	53.97	-2.39		
Iowa	70.55	1.82	16.12	75.86	1.31	45.27	-5.31		<
Kentucky	77.47	1.31	59.91	81.23	1.44	83.37	-3.76		
Louisiana	78.82	1.83	28.34	81.38	1.42	53.17	-2.56		
Maryland	100.11	1.93	37.05	95.62	1.38	40.91	4.49		
Michigan	87.13	1.78	43.85	84.83	1.29	51.42	2.30		
Minnesota	81.69	1.27	66.19	79.82	1.30	48.47	1.87		
Montana	79.49	1.60	68.66	71.68	1.51	40.36	7.81	>	>
Nebraska	76.82	1.39	85.98	81.04	1.83	10.16	-4.21		
New Mexico	84.18	1.85	15.29	80.90	1.35	73.22	3.28		
New York	90.02	1.86	16.96	94.26	1.65	43.25	-4.24		
North Carolina	88.07	1.82	63.25	87.75	1.06	48.23	0.32		
North Dakota	74.40	1.72	81.64	72.62	1.64	49.00	1.78		
Oregon	83.76	1.69	76.14	82.65	1.32	55.52	1.11		
Rhode Island	87.15	1.99	51.60	90.06	1.18	80.34	-2.91		
Texas	84.54	1.54	33.60	87.35	1.52	36.28	-2.82		
Virginia	85.89	1.54	23.84	91.19	1.80	23.15	-5.30		<
West Virginia	75.69	1.33	59.38	79.57	1.37	63.17	-3.88		<
Wisconsin	78.65	1.71	24.00	81.17	1.43	28.77	-2.52		
Wyoming	73.82	1.97	56.97	72.42	1.15	37.24	1.40		
Dist. of Columbia	89.40	3.33	38.74	80.13	1.83	16.43	9.26		>
Guam	94.76	3.14	63.29	93.39	1.23	37.29	1.37		

1996-1990 Differences

NAEP Grade 4 National and State Reading Assessment:
Change in the Average Scale Score Gap between the Upper and Lower Performance Quartiles from 1992 to 1998

	1998			1992			1998-1992 Change in Gap		
	Gap	Pooled SE	Pooled DF	Gap	Pooled SE	Pooled DF	Difference	Sig FDR?	Sig T-test?
Nation	89.13	1.21	53.81	84.43	1.51	83.15	4.70	n/a	>
Alabama	86.22	2.19	46.60	84.29	1.57	22.52	1.93		
Arizona	95.60	3.59	6.01	80.90	1.56	61.25	14.71	>	>
Arkansas	90.37	2.16	77.28	83.12	1.49	66.93	7.25	>	>
California	102.34	3.45	9.26	97.48	2.05	63.04	4.86		
Colorado	79.57	1.81	78.49	73.94	1.62	51.83	5.63		>
Connecticut	74.82	2.09	36.87	78.69	2.10	33.42	-3.87		
Delaware	82.75	2.76	17.71	82.75	1.66	37.50	0.00		
Florida	96.35	2.12	35.98	83.58	1.82	23.29	12.77	>	>
Georgia	90.86	1.85	31.91	85.79	1.68	69.45	5.07		>
Hawaii	96.43	3.14	29.71	85.98	1.93	39.10	10.45	>	>
Iowa	75.85	1.76	65.73	71.35	1.57	46.81	4.49		
Kentucky	81.40	2.16	52.64	78.43	1.32	76.05	2.97		
Louisiana	88.48	1.91	43.36	76.81	1.76	41.15	11.67	>	>
Maine	71.20	2.23	32.54	64.71	1.89	70.07	6.50		>
Maryland	91.15	2.18	41.01	86.80	2.58	19.29	4.35		
Massachusetts	75.22	2.34	35.93	68.87	1.20	76.02	6.35		>
Michigan	81.18	2.11	14.41	76.75	1.45	19.63	4.44		
Minnesota	86.14	2.08	21.06	74.94	1.39	43.25	11.20	>	>
Mississippi	84.12	1.69	84.93	83.14	1.45	51.37	0.98		
Missouri	84.51	3.02	8.56	74.85	1.81	52.60	9.65	>	>
New Hampshire	75.19	2.30	26.71	69.42	1.67	41.21	5.77		>
New Mexico	93.86	3.52	12.34	81.72	2.32	14.51	12.14	>	>
New York	86.20	1.72	35.23	84.63	2.84	10.81	1.58		
North Carolina	80.88	1.82	24.00	87.66	1.53	63.37	-6.78	<	<
Oklahoma	74.58	1.67	12.27	69.91	1.38	49.70	4.68		>
Rhode Island	86.30	3.07	11.93	80.28	2.04	9.26	6.02		
South Carolina	83.01	1.89	57.21	81.81	1.49	53.53	1.20		
Tennessee	87.01	2.01	44.08	79.01	1.64	34.69	8.00	>	>
Texas	82.98	2.57	6.19	80.29	1.76	39.32	2.69		
Utah	83.15	1.94	32.37	71.95	1.64	22.64	11.19	>	>
Virginia	81.80	1.65	46.13	77.94	1.76	52.94	3.87		
West Virginia	81.58	2.08	47.31	78.22	2.02	37.94	3.36		
Wisconsin	71.07	1.79	25.47	70.18	1.69	47.56	0.88		
Wyoming	75.78	2.55	100.02	71.08	1.70	59.47	4.70		
Dist. of Columbia	98.47	4.60	31.69	88.91	1.69	83.71	9.56		
Virgin Islands	89.74	5.56	49.78	84.75	3.63	54.44	4.99		

1998-1992 Gap Differences

NAEP Grade 4 National and State Math Assessment:
Change in White-Black/Hispanic Gap from 1992 to 1996 in Public Schools

	1996 W-BH Gap			1992 W-BH Gap			1996-1992 Change in Gap		
	Mean	Pooled SE	Pooled DF	Mean	Pooled SE	Pooled DF	Mean	Sig FDR?	Sig T-test?
Nation	28.74	2.25	19.74	31.73	1.47	74.45	-2.98		
Northeast	35.59	6.84	4.07	35.95	3.49	21.70	-0.36		
Southeast	25.53	3.42	13.15	27.26	2.89	15.45	-1.74		
Central	26.66	3.37	17.14	33.08	3.86	5.80	-6.41		
West	24.80	3.79	19.13	29.26	2.51	36.79	-4.46		
Alabama	28.59	1.85	69.54	29.92	1.90	70.28	-1.33		
Arizona	25.27	2.52	58.13	23.01	1.56	67.39	2.27		
Arkansas	28.33	2.43	33.21	27.62	1.72	44.74	0.71		
California	27.48	2.69	32.24	30.51	2.35	68.26	-3.03		
Colorado	24.98	1.82	90.94	22.31	1.66	92.22	2.66		
Connecticut	34.18	2.12	52.60	34.02	2.41	33.35	0.15		
Delaware	31.46	1.97	49.76	29.35	1.69	27.90	2.12		
Florida	25.95	1.93	55.14	26.36	2.39	49.99	-0.41		
Georgia	24.05	2.28	42.78	31.56	1.70	72.16	-7.52		<
Hawaii	22.80	2.48	92.56	20.00	2.68	94.43	2.80		
Indiana	23.19	2.08	72.46	24.11	2.03	38.00	-0.92		
Iowa	20.79	2.90	21.14	19.86	2.75	53.51	0.92		
Kentucky	20.04	2.26	28.89	16.58	2.17	47.31	3.46		
Louisiana	26.81	1.80	47.17	29.71	2.23	56.05	-2.90		
Maine	15.85	2.54	43.83	15.46	3.77	34.24	0.40		
Maryland	34.08	2.10	72.42	32.19	2.08	28.46	1.90		
Massachusetts	23.09	2.47	32.62	31.30	2.50	59.51	-8.21		<
Michigan	31.87	2.39	31.50	33.51	3.47	23.41	-1.64		
Minnesota	28.04	3.47	10.08	27.36	2.49	18.56	0.68		
Mississippi	25.02	1.72	47.15	28.71	1.70	64.01	-3.69		
Missouri	25.19	2.30	20.27	28.25	2.15	25.70	-3.05		
Nebraska	27.71	2.80	31.17	28.02	2.51	65.16	-0.31		
New Jersey	34.73	2.35	46.50	33.95	2.51	35.12	0.77		
New Mexico	22.46	2.23	13.52	21.48	2.03	37.12	0.98		
New York	29.31	2.21	42.95	29.29	2.33	30.30	0.02		
North Carolina	28.84	1.80	63.04	28.86	1.80	61.19	-0.01		
North Dakota	10.84	4.41	27.00	16.94	3.37	22.72	-6.11		
Pennsylvania	29.31	2.13	65.03	32.83	2.33	34.56	-3.52		
Rhode Island	27.22	2.99	28.09	32.02	2.83	24.67	-4.80		
South Carolina	26.20	1.92	87.85	29.56	1.56	97.35	-3.36		
Tennessee	26.57	2.55	31.54	25.36	2.19	29.60	1.21		
Texas	26.53	2.05	69.80	23.22	2.15	54.24	3.30		
Utah	22.47	2.88	32.07	17.74	2.30	27.39	4.73		
Virginia	24.28	1.96	77.19	28.21	2.16	85.94	-3.93		
West Virginia	17.23	2.85	47.41	12.40	2.90	33.58	4.83		
Wisconsin	30.04	2.06	47.23	28.51	2.57	23.19	1.53		
Wyoming	17.31	3.58	28.57	13.35	2.02	37.88	3.96		
Dist. of Columbia	56.17	4.06	14.08	52.32	4.23	10.41	3.85		
Guam	22.13	6.05	64.57	24.86	2.79	90.94	-2.73		

NAEP Grade 8 National and State Math Assessment:
Change in White-Black/Hispanic Gap from 1990 to 1996 in Public Schools

	1996 W-BH Gap			1990 W-BH Gap			1996-1990 Change in Gap		
	Mean	Pooled SE	Pooled DF	Mean	Pooled SE	Pooled DF	Mean	Sig FDR?	Sig T-test?
Nation	35.49	2.00	46.58	30.54	2.55	49.67	4.95		
Northeast	29.95	5.08	6.75	28.14	7.11	15.33	1.81		
Southeast	39.35	3.56	27.85	30.21	5.21	14.52	9.14		
Central	42.25	6.41	10.43	37.36	5.66	6.31	4.89		
West	32.47	3.17	18.54	24.87	4.12	21.96	7.59		
Alabama	38.07	3.10	23.42	30.08	1.81	54.03	7.99		>
Arizona	26.92	2.45	25.15	28.91	2.04	42.25	-1.99		
Arkansas	33.57	3.02	12.82	33.65	1.52	79.06	-0.09		
California	33.86	2.41	71.54	35.60	2.14	77.47	-1.74		
Colorado	26.04	2.03	45.92	29.28	1.67	40.15	-3.24		
Connecticut	39.05	1.96	56.48	38.52	2.18	25.77	0.52		
Delaware	31.39	2.46	52.68	26.45	2.09	33.37	4.94		
Florida	34.21	2.89	20.41	27.74	2.06	90.17	6.47		
Georgia	35.04	2.41	49.64	32.67	1.99	40.48	2.37		
Hawaii	28.09	3.40	35.53	31.22	3.07	74.11	-3.14		
Indiana	30.75	2.68	39.61	27.55	2.72	20.27	3.20		
Iowa	23.76	3.81	26.49	23.87	2.88	28.30	-0.11		
Kentucky	22.15	3.34	15.85	23.89	2.37	46.44	-1.73		
Louisiana	30.98	2.17	61.00	29.61	1.93	32.43	1.37		
Maryland	41.47	2.51	47.03	34.83	2.18	60.50	6.64		>
Michigan	38.49	3.52	31.84	36.71	1.86	78.21	1.79		
Minnesota	31.30	4.74	26.87	39.26	3.75	38.72	-7.96		
Montana	28.85	5.52	38.02	19.70	3.68	17.73	9.15		
Nebraska	32.51	2.92	44.01	35.42	4.08	12.36	-2.91		
New Mexico	27.83	1.76	45.66	25.35	1.59	38.66	2.48		
New York	38.14	2.61	45.64	37.52	2.85	29.17	0.62		
North Carolina	30.25	1.99	104.31	30.89	1.78	71.92	-0.64		
North Dakota	23.47	5.24	10.95	37.65	5.17	6.06	-14.18		
Oregon	22.08	4.02	32.20	21.57	2.60	28.25	0.50		
Rhode Island	34.60	3.28	27.91	36.92	1.73	47.87	-2.33		
Texas	30.78	2.07	73.53	30.68	2.01	50.92	0.10		
Virginia	33.09	2.72	19.31	29.27	2.22	65.05	3.81		
West Virginia	21.20	3.67	23.43	24.54	3.29	51.87	-3.34		
Wisconsin	39.68	3.18	26.95	37.50	3.72	9.73	2.18		
Wyoming	20.55	3.33	23.00	19.74	2.21	23.92	0.81		

NAEP Grade 4 National and State Reading Assessment:
Change in White-Black/Hispanic Gap from 1992 to 1998 in Public Schools

	1998 W-BH Gap			1992 W-BH Gap			1998-1992 Change in Gap		
	Mean	Pooled SE	Pooled DF	Mean	Pooled SE	Pooled DF	Mean	Sig FDR?	Sig T-test?
Nation	31.76	1.65	65.07	28.55	1.88	64.21	3.20		
Northeast	31.44	2.41	13.49	30.75	5.30	26.35	0.69		
Southeast	30.09	3.35	20.88	26.04	3.98	7.05	4.05		
Central	33.79	3.62	18.34	28.55	3.42	24.91	5.25		
West	29.24	3.25	34.67	28.53	3.38	22.58	0.71		
Alabama	29.29	2.77	66.69	29.63	2.57	35.00	-0.34		
Arizona	33.78	3.56	7.22	22.40	2.24	19.06	11.38		>
Arkansas	31.64	2.71	55.62	29.85	1.94	41.47	1.79		
California	33.97	5.28	15.56	34.87	3.16	75.25	-0.91		
Colorado	27.45	2.26	78.13	19.42	2.01	57.54	8.03		>
Connecticut	35.05	2.97	36.20	35.79	2.73	15.32	-0.74		
Delaware	22.66	2.40	68.65	28.87	1.54	35.42	-6.21		<
Florida	24.87	2.62	58.10	25.75	2.49	34.71	-0.88		
Georgia	32.36	2.72	48.33	28.41	2.53	57.92	3.95		
Hawaii	24.50	3.63	100.83	22.00	3.57	84.54	2.50		
Iowa	22.89	2.82	43.29	16.48	2.62	24.65	6.41		
Kentucky	25.12	3.19	31.43	18.72	3.05	26.50	6.41		
Louisiana	36.75	2.37	62.51	25.40	1.89	71.12	11.35	>	>
Maine	16.12	6.19	33.27	17.71	3.54	48.78	-1.59		
Maryland	32.23	2.66	43.37	27.52	2.71	27.01	4.71		
Massachusetts	30.67	2.74	42.03	27.65	2.16	56.57	3.02		
Michigan	32.81	3.62	26.04	31.04	2.73	17.30	1.76		
Minnesota	29.52	3.47	43.04	25.28	3.89	24.56	4.23		
Mississippi	25.91	2.42	49.92	30.92	2.12	51.35	-5.00		
Missouri	31.83	3.78	12.14	27.73	2.67	29.59	4.09		
New Hampshire	24.43	5.09	39.35	11.95	2.98	36.71	12.48		>
New Mexico	24.59	2.48	94.59	22.63	2.39	44.61	1.96		
New York	33.97	2.59	46.45	33.33	2.99	12.85	0.64		
North Carolina	28.18	2.15	73.52	27.08	2.21	49.82	1.10		
Oklahoma	24.39	3.25	8.63	19.62	1.76	70.43	4.76		
Rhode Island	38.04	3.75	17.19	34.28	3.61	9.57	3.76		
South Carolina	26.77	2.28	66.52	26.53	2.07	76.95	0.24		
Tennessee	26.71	2.82	68.73	25.19	2.27	64.11	1.52		
Texas	29.74	3.12	13.91	23.26	2.53	33.94	6.48		
Utah	34.27	2.99	31.72	18.17	2.40	58.41	16.09	>	>
Virginia	24.85	2.43	67.26	25.84	2.50	58.91	-0.99		
West Virginia	24.29	3.77	25.60	17.97	5.49	16.17	6.32		
Wisconsin	29.25	2.10	64.64	21.10	2.22	34.23	8.15		>
Wyoming	16.14	3.39	53.45	16.71	2.68	43.70	-0.56		
Dist. of Columbia	53.05	6.10	10.85	54.27	3.24	35.44	-1.22		

Executive Summary

Raising Achievement and Reducing Gaps:
Reporting Progress Toward Goals for Achievement
by Paul E. Barton

Paul Barton provides a new analysis of student achievement scores for states on the National Assessment of Educational Progress, NAEP. Only in mathematics (grades 4 and 8) and reading (grade 4 only) are state trend data currently available, although new state data in science and mathematics are scheduled to be released later in 2001. Barton has analyzed state NAEP data to identify state trends in performance of students in the top and bottom quartiles of performance, as well as changes in the student achievement gap between whites and minority (black and Hispanic) and top and bottom quartiles.

The results show that:

- **States are generally making more progress in mathematics achievement than in reading.** Between 1990 and 1996, the average student achievement scores improved significantly in 28 (out of 32) states in 8th grade mathematics, and none declined. In 4th grade reading from 1992 to 1998, only 7 (out of 36) states improved and 3 states declined.

- **Good readers are getting better at the same time weak readers are losing ground.** In half the states (18 out of 36), the performance of students in the bottom quartile in 4th grade reading declined, and performance improved in only 3 states. In contrast, the performance of students in the top quartile improved in 12 states and declined in none.

- **During the 1990's fourth grade students made more improvement in mathematics achievement than in reading in most states.** In mathematics, 15 states raised their average 4th grade NAEP score significantly; 20 states improved scores of students in the bottom quartile; and 16 states improved scores of students in the top quartile. Four or fewer states lost ground in 4th grade mathematics across these three dimensions. In reading, 7 states improved 4th graders average score; 3 improved performance of the bottom quartile; and 12 improved performance of the top quartile; while average scores declined in 3 states, 18 states lost ground with students in the bottom quartile, and none lost ground among the top quartile.

- **States have not generally reduced the achievement gap between top and bottom quartiles or between white and minority students.** In 4th grade reading only 1 state reduced the achievement gap between the top and bottom quartiles or between white and minority students. In mathematics, 8 states reduced the gap between the top and bottom quartiles at 4th grade and 5 did so at 8th grade. Only 2 states reduced the gap between white and minority students in 4th grade mathematics, and none did so in 8th grade mathematics.

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