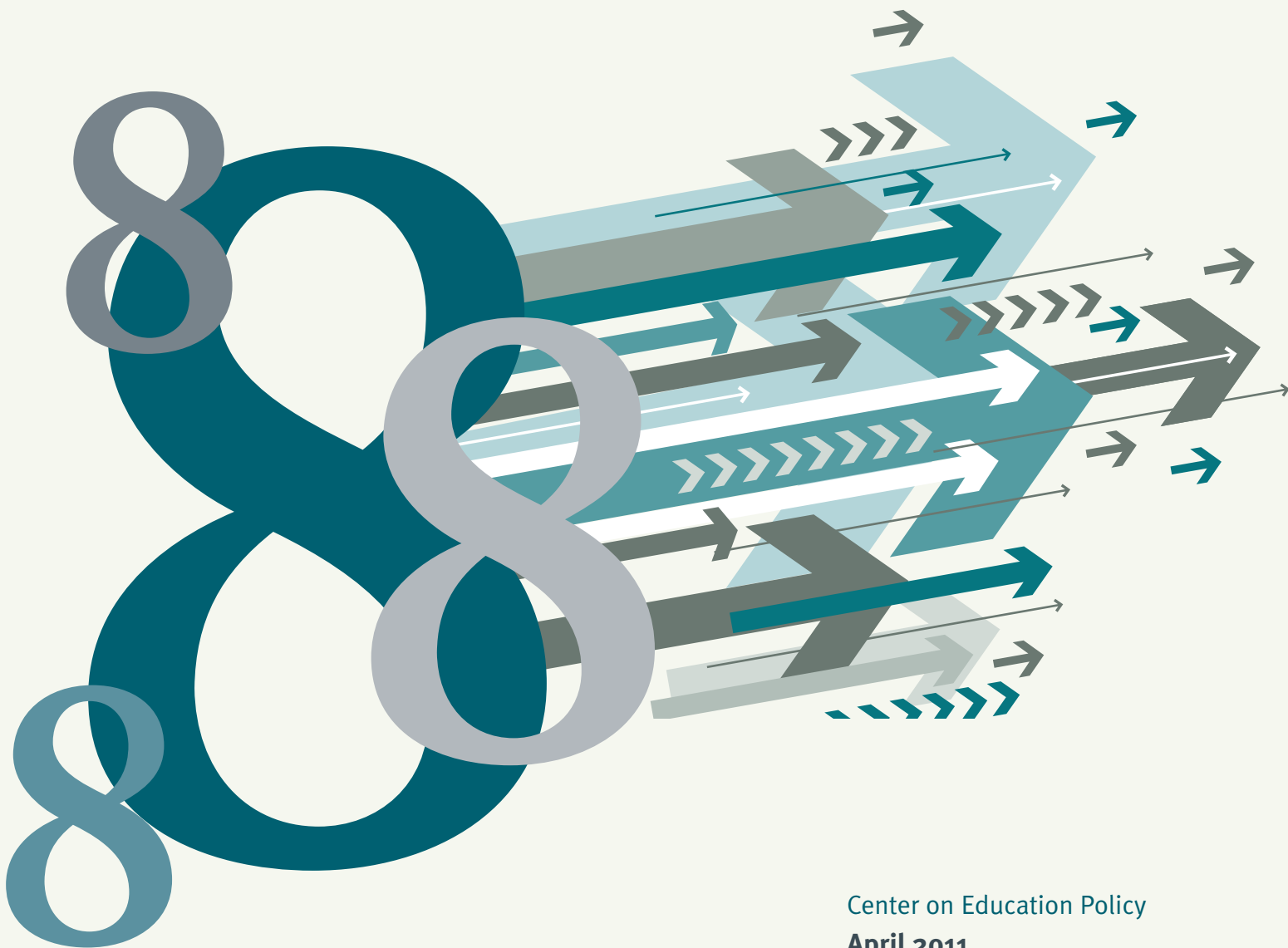


State Test Score Trends Through 2008-09, Part 3

Student Achievement at 8th Grade



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Key Findings

Over the past few decades, concerns have escalated about the quality of education in the U.S. for students in the middle grades. Children entering adolescence have unique educational, social, and emotional needs. How effectively the nation is educating these students has long been a topic of research and debate.

This study by the Center on Education Policy (CEP), an independent nonprofit organization, examines trends in the achievement of grade 8 students on the state reading and mathematics tests used for accountability under the No Child Left Behind Act (NCLB). We chose to analyze grade 8 data because states tend to have longer test trend lines for grade 8 than for grades 6 and 7, and grade 8 is the middle grade tested for other national and international assessments. We looked at trends from 2002 (or a more recent year in some states) through 2009 for students overall and for the major subgroups tracked for NCLB accountability purposes.

If students in the middle grades are doing poorly, as some analysts have charged, one might expect to see stagnant test scores and less progress relative to elementary or high schools. Our study found, however, that grade 8 students seem to be doing fairly well as gauged by solid progress on state tests, particularly in math, and by comparisons with grade 4 and the high school grade tested in each state for NCLB. But at the advanced level of achievement, we found a problem of widening achievement gaps.

Key findings from our study include the following:

- **Grade 8 gains.** Contrary to popular perception, student reading and math performance at grade 8 is not stagnating. Achievement at grade 8 has gone up on most state tests. Other assessments show a similar trend.
- **Comparisons with grades 4 and high school.** According to test results, grade 8 is not a weak point in the education system. More states showed gains at grade 8 than showed gains at grades 4 and high school. The percentages of 8th grade students reaching the basic, proficient, and advanced levels of achievement are on par with the other grades analyzed.
- **Widening gaps in advanced achievement.** A problem does exist at grade 8 for subgroups of students at the advanced achievement level. At this achievement level, gaps have widened in a majority of states between African American and white students, Latino and white students, and Native American and white students, as well as between low-income and non-low-income students. In reading, gaps have also widened at the advanced level between male and female students, with female students performing at higher levels. In most cases, these racial, ethnic, and gender gaps have widened even though achievement has increased for both groups, but it has increased more slowly for the lower-performing group.

- **Asian American performance at the advanced level.** At the advanced level at grade 8, the Asian American subgroup outperformed white students by a notable margin and other racial/ethnic groups by a wide margin. Asian American students have also improved at a faster rate than other groups at the advanced level, so gaps at this level have widened.

Background

PREVIOUS RESEARCH ON PERFORMANCE AT THE MIDDLE GRADES

In recent years, a number of research and advocacy organizations have noted persistent shortcomings and a lack of educational progress at the middle grades (Juvonen et al., 2004; National Middle School Association, 2006; Southern Regional Education Board, n.d.; National Forum to Accelerate Middle-Grades Reform, n.d.; National Institutes of Health, 2009; Williams et al., 2011). The major concerns can be summarized as follows:

- Academic achievement for middle school students, particularly as measured by the National Assessment of Educational Progress (NAEP), is not what it should be, and U.S. students at this age do not achieve at high levels compared to their counterparts in other nations.
- Middle school students are not being adequately prepared for high school, thus exacerbating problems such as low achievement and low graduation rates in high school.
- U.S. middle school students report high levels of physical and emotional problems, unfriendly school climates, social isolation, and bullying.
- Teachers are lacking in content knowledge and instructional methods specifically aimed at the middle school age group.

These concerns have filtered into the public consciousness and have earned the middle grades a reputation, in the words of a *New York Times* editorial, as the “Bermuda Triangle” of American education (NYT, 2002). Many of these issues are not new; there has long been an awareness of the unique educational needs of students at this age, and the history of efforts to improve schooling at the middle grades is one of “continual tinkering and persistent dissatisfaction” (Weiss & Kipnes, 2006, p. 239).

Efforts to reform schooling for the early adolescent age group have often centered on changing grade configurations. The dominant model for American public schools through the 19th century was eight years of elementary school and four years of high school. Later, with the emergence of the idea of adolescence as a distinct phase of life, educators tried to create educational environments to meet the particular academic, social, and emotional needs of students caught in what is often a difficult phase between childhood and adulthood. Since 1970, public school systems have been shifting away from junior high schools, which consist of grades 7–8 or 7–9, and toward middle schools, most of which consist of grades 6–8. Between 1970 and 2008, the number of middle schools climbed from 2,080 to 12,940 (U.S. Department of Education, 2010a).

Recently, some educators and reformers have circled back to the idea of K-8 schools, believing that they better meet adolescents’ developmental needs. Districts across the U.S., including some large districts such as Baltimore, Cleveland, New York City, and Philadelphia, have again created K-8 schools. Various theories underlie these shifts in middle school configura-

tion, and research is divided on the matter. It is not our purpose to address that debate, but simply to point out that the well-being of students in the middle grades has generated tremendous interest from committed educators, innovative reformers, and private foundations.

PURPOSE OF THIS REPORT

This report, the third in a series of CEP reports on test score trends through school year 2008-09, takes a detailed look at the performance of grade 8 students on state reading and mathematics tests. For this report, we examined not only the percentage of students scoring at or above the proficient level of achievement, the main indicator of progress under NCLB, but also the percentages scoring at or above the basic and advanced levels. Trends at grade 8 were compared with trends at grade 4 and the high school grade tested in each state for No Child Left Behind (usually grade 10 or 11).

In addition, grade 8 trends were analyzed by subgroup, including major racial/ethnic groups, low-income students, and males and females. We did not analyze trends for the subgroups of students with disabilities and English language learners. That is because recent CEP reports concluded that it was difficult to obtain a clear picture of achievement for these two groups due to the rules governing which students are to be tested, which tests they take, how their scores are counted, and other issues (CEP, 2009; 2010a).

CEP has been conducting research on student achievement since 2007. Data for this report come from an extensive database assembled by CEP with technical support from the Human Resources Research Organization (HumRRO). The database includes test results for all 50 states and the District of Columbia, broken down by student race, ethnicity, income, and gender, although not every state had sufficient data for every analysis conducted for this report. States were included in an analysis only if they had three or more years of comparable test data through school year 2008-09. Test data were not considered comparable if, during the period of analysis, a state had introduced new tests, changed its cut scores for proficient performance, or adopted other major changes in its testing program that would make year-to-year comparisons of test results invalid. For this reason, the starting year in a given state for the trends analyzed could range from 2002 to 2007, although the ending year was always 2009. In addition, states were excluded from a particular subgroup analysis if the number of test-takers in that subgroup at grade 8 was too small (fewer than 500) to yield reliable results. More detailed information about methodology is available in the Study Methods chapter of part 2 in this series of reports, *Slow and Uneven Progress in Narrowing Gaps* (CEP, 2010a).

Trends for 8th Grade Students Overall

GAINS AND DECLINES AT THREE ACHIEVEMENT LEVELS

For each state, we analyzed trends on state tests between 2002 (or a later year in some states) and 2009 at three achievement levels—basic and above, proficient and above, and advanced.¹ In particular, we examined how many trend lines showed gains, declines, or stagnant performance for students overall and then compared the share of gains at grade 8 with those at grade 4 and high school. **Table 1** shows the results.

¹ Each state sets its own cut scores that define basic, proficient, and advanced performance on its own tests. In addition, some states use different labels for these three achievement levels, and some states have established more than three levels.

Several findings emerged from this analysis:

- At all three achievement levels, a large majority of states made gains in reading and math performance at grade 8.
- In both reading and math, a larger proportion of states showed gains at grade 8 than at grade 4 or high school. This was true at all three achievement levels.
- In grade 8 math, every state with sufficient data made gains in the percentage of students reaching the advanced level, and all but one of these states showed gains at the proficient level as well.

Table 1. Number (and percentage) of states showing gains, declines, or no change in achievement at three achievement levels and three grades, 2002–2009*

Achievement Level & Trend	READING			MATH		
	Grade 4	Grade 8	High school	Grade 4	Grade 8	High school
Basic & above						
Gain	27 (77%)	28 (80%)	23 (77%)	32 (89%)	32 (89%)	26 (84%)
Decline	6 (17%)	2 (6%)	4 (13%)	2 (6%)	2 (6%)	4 (13%)
No change	2 (6%)	5 (14%)	3 (10%)	2 (6%)	2 (6%)	1 (3%)
<i># of states with data</i>	35	35	30	36	36	31
Proficient & above						
Gain	36 (84%)	40 (93%)	32 (84%)	41 (95%)	42 (98%)	31 (78%)
Decline	3 (7%)	3 (7%)	4 (11%)	1 (2%)	1 (2%)	8 (20%)
No change	4 (9%)	0 (0%)	2 (5%)	1 (2%)	0 (0%)	1 (3%)
<i># of states with data</i>	43	43	38	43	43	40
Advanced						
Gain	35 (83%)	35 (83%)	21 (57%)	40 (95%)	42 (100%)	24 (63%)
Decline	6 (14%)	5 (12%)	14 (38%)	1 (2%)	0 (0%)	12 (32%)
No change	1 (2%)	2 (5%)	2 (5%)	1 (2%)	0 (0%)	2 (5%)
<i># of states with data</i>	42	42	37	42	42	38

Table reads: Twenty-seven states, or 77% of the 35 states with sufficient data, made gains in the percentage of grade 4 students reaching or exceeding the basic achievement level in reading. Six (17%) of these 35 states showed declines, and 2 states (6%) showed no net change.

*The years covered by these trends vary among states. Trends in some states begin later than 2002, although every state included in the table has at least three years of comparable test data ending in 2009.

Together, these findings offer no evidence that grade 8 achievement has stagnated. In fact, a greater share of states had upward trends at grade 8 than at the other two grade levels analyzed.

To obtain a snapshot of the relative performance of students in grades 4, 8, and high school in 2009, we calculated the median percentages of students reaching the basic-and-above, proficient-and-above, and advanced achievement levels across all of the states with sufficient data. (The median is the midpoint; by definition, half of the states with sufficient data have percentages above the median, and half have percentages below it.) These medians offer no more than a rough indicator of achievement because they are based on results from states with different testing programs and from tests that are not necessarily of equal difficulty across states, or even across grade levels within the same state. We did find that the 2009 median percentages for grade 8 students on state tests were not notably different from those for grade 4 or high school. For example, the median percentage advanced in reading across all states with data was 22% for grade 8, compared with 27% for grade 4 and 18% for high school.

WIDE DIFFERENCES AMONG STATES AT THE ADVANCED LEVEL

What the above analyses do not show are the large differences among states in their reported percentages scoring advanced, as well as in their reported percentages scoring proficient. These disparities are not necessarily due to differences in the quality of states' educational systems, but may reflect differences in demographics, tests, or cut scores defining the advanced or proficient achievement levels.

In grade 8 reading, for example, New York reported that 5% of its students reached the advanced level on its state test in 2009, and Mississippi reported that 4% did so. In Kansas and Utah, however, 61% of 8th graders were reading at the advanced level according to those states' tests. Altogether, five states reported that more than half of their students had scored at the advanced level on their grade 8 reading tests, also including Pennsylvania (55%), Idaho (54%), and Tennessee (53%). In math, the range between the highest and lowest percentage advanced in any state was also wide, although not quite as extreme as in reading. New Mexico reported that 7% of its 8th grade students had reached the advanced level in math in 2009, while Kansas reported 52%, and Virginia 51%. In math, these latter two states were the only ones with percentages advanced above 50%.

Very large differences among states could also be seen in the reported percentages of students scoring proficient. In math, Hawaii reported that 39% of its 8th grade students had reached the proficient level in 2009, while the percentage proficient for Nebraska was 92%. In reading, the lowest percentage proficient was 45% in the District of Columbia, while the highest was 95% in Nebraska.

Because the basic level of achievement is a low benchmark, most students reach it, so there was less divergence among states in percentages scoring basic-and-above. All of the states studied reported percentages of students reaching the basic level in the 80s and 90s in reading. In math, the percentages basic were a little lower and dipped into the 70s in some states.

SIZE OF 8TH GRADE ACHIEVEMENT GAINS

In addition to determining how many states had gains or declines, we also calculated the sizes of the gains being made. We calculated average annual gains in the percentages of students scoring at the basic, proficient, and advanced levels for each state by subtracting the starting year percentage (2002 or a later year) from the 2009 percentage and dividing that amount by the number of intervening years. The results, in **tables 2** and **3**, indicate the

number of states with various sizes of annual increases in the percentage of students scoring at the proficient and at the advanced levels. For example, in grade 8 reading (table 2), 16 states had average annual increases in the percentage advanced that ranged from 0.0 to 0.9 percentage points per year during the years with sufficient data between 2002 and 2009. The following conclusions can be drawn from these tables:

- At the proficient level, average annual gains were larger at grade 8 than at grade 4 or high school.
- At the advanced level, improvements were substantial at both grades 4 and 8.
- The number of states with declines in the percentages of students reaching the proficient and advanced levels tended to be smallest at grade 8.

Table 2. Number of states with various sizes of average annual gains in the percentages of students scoring proficient and advanced in reading at three grades, 2002–2009*

Average annual PP gain in reading	Proficient			Advanced		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
0.0–0.9 points	14	6	15	14	16	12
1.0–1.9	7	13	8	10	8	5
2.0–2.9	15	9	4	6	6	3
3.0 or greater	4	12	7	6	7	3
Decline	3	3	4	6	5	14
<i># of states with data</i>	43	43	38	42	42	37

Table reads: Of the 43 states with sufficient data, 14 states had an average annual gain of 0.0 to 0.9 points in the percentage of students reaching the proficient level in grade 4 reading.

*The years covered by these trends vary among states. Trends in some states begin later than 2002, although every state included in the table has at least three years of comparable test data ending in 2009.

PP = Percentage point

Table 3. Number of states with various sizes of average annual gains in the percentage of students scoring proficient and advanced in math at three grades, 2002–2009*

Average annual PP gain in math	Proficient			Advanced		
	Grade 4	Grade 8	Grade 10	Grade 4	Grade 8	Grade 10
0.0–0.9 points	11	5	9	9	14	13
1.0–1.9	12	13	13	11	15	8
2.0–2.9	8	10	4	12	5	2
3.0 or greater	11	14	6	9	8	3
Decline	1	1	8	1	0	12
<i># of states with data</i>	43	43	40	42	42	38

Table reads: Of the 43 states with sufficient data, 11 states had an average annual gain of 0.0 to 0.9 points in the percentage of students reaching the proficient level in grade 4 math.

*The years covered by these trends vary among states. Trends in some states begin later than 2002, although every state included in the table has at least three years of comparable test data ending in 2009.

PP = Percentage point

Some states had quite noteworthy annual gains at the advanced level in grade 8 reading, such as Virginia and Pennsylvania (an average of 5 percentage points per year) and Idaho (8 points). All three states also showed large annual increases at the advanced level in math.

We tested the proposition that gains in percentages proficient were larger in grade 8 because performance was initially lower than at the other two grade levels. In actuality, grade 8 percentages proficient in 2002 tended to be lower than at the other two grades in math but not in reading. Moreover, existing research suggests that state tests and cut scores are *not* generally easier at grade 8 than at the elementary or high school levels. Rather, one major study found that “typically 8th-grade cut scores are much higher than 3rd grade, setting kids up to fail after achieving proficiency in the 3rd grade” (Cronin et al., 2007).

Subgroup Trends at Grade 8

SNAPSHOT OF SUBGROUP PERFORMANCE IN 2009

In order to compare how the various student subgroups performed in 2009, we calculated the median percentages across all states with sufficient data of 8th grade students in each subgroup reaching the three achievement levels. The subgroups analyzed included African American, Asian American, Latino, Native American, and white students, as well as low-income, female, and male students. **Table 4** shows the results.

Table 4. Median percentages of grade 8 students in various subgroups reaching three achievement levels in 2009

Subject & achievement level	African American	Asian American	Latino	Native American	White	Low-income	Female	Male
Reading								
Basic & above	83%	94%	85%	83%	94%	86%	94%	89%
Proficient & above	54%	80%	59%	55%	79%	58%	76%	65%
Advanced	7%	32%	10%	12%	24%	9%	23%	16%
Math								
Basic & above	73%	93%	80%	81%	90%	76%	85%	83%
Proficient & above	45%	83%	56%	45%	76%	51%	65%	64%
Advanced	7%	41%	11%	8%	24%	9%	21%	21%

Table reads: In 2009, the median percentage of African American students reaching the basic level in grade 8 reading was 83% across all states with sufficient data.

Several findings are apparent from table 4:

- The Asian American subgroup outperformed all other subgroups in grade 8 reading and math at the proficient and advanced achievement levels. A very high percentage of Asian American students reached the advanced level in math—a median of 41% across all states, far higher than for any other subgroup. A closer analysis of the data revealed that in 10 of the 28 states with sufficient data for both the Asian American and white subgroups, the percentage of Asian American students scoring advanced in math was more than *20 points higher* than the percentage of white students.

- The African American subgroup had the lowest median percentages at each achievement level at grade 8. In a few grade/subject areas, the medians for the Native American subgroup were equally low.
- In grade 8 reading, the gap in percentages proficient between boys and girls exceeded 10 percentage points in many states (with girls ahead). Gaps existed at the basic and advanced levels as well.

WIDENING GAPS BETWEEN SUBGROUPS AT THE ADVANCED LEVEL

A previous CEP report (2010a) found a mixed picture of progress on narrowing gaps in achievement between subgroups. As that report noted, gaps at the proficient level for all subgroups narrowed at grade 8 in the majority of the states studied, but still widened in a sizeable number of states, particularly for the Native American and low-income subgroups. The analyses for *this* report focuses on a topic not covered in our previous report—trends in gaps at the *advanced* level for 8th grade students between 2002 (or a later year in some states) and 2009 (see **table 5**).

Table 5. Number (and percentage) of states in which achievement gaps at the advanced level narrowed, widened, or showed no net change at grade 8, 2002–2009*

Change in gap	African American/ White	Latino/ White	Native American/ White	Low-income/ Not low-income	Male/ Female [†]
Reading					
Narrowed	12 (38%)	13 (38%)	4 (24%)	7 (20%)	10 (24%)
Widened	18 (56%)	19 (56%)	10 (59%)	27 (77%)	26 (63%)
No change	2 (6%)	2 (6%)	3 (18%)	1 (3%)	5 (12%)
# states with data	32	34	17	35	41
Math					
Narrowed	1 (3%)	5 (15%)	3 (17%)	1 (3%)	†
Widened	27 (87%)	27 (82%)	13 (72%)	34 (97%)	†
No change	3 (10%)	1 (3%)	2 (11%)	0 (0%)	†
# states with data	31	33	18	35	†

Table reads: At the advanced level of performance in grade 8 reading, achievement gaps between African American and white students narrowed in 12 (38%) of the 32 states with sufficient data, widened in 18 states (56% of these states), and showed no net change in 2 states (6%).

*The years covered by these trends vary among states. Trends in some states begin later than 2002, although every state included in the table has at least three years of comparable test data ending in 2009.

[†]In reading, in every state with sufficient data, the female subgroup had higher percentages at the advanced level than the male subgroup. In math, the percentages of males and females at the advanced levels were similar, with females slightly outperforming males in some states and males slightly outperforming females in others. This complicates reporting on gaps in math.

The news about gaps at the advanced level is not positive:

- Achievement gaps at the advanced level widened for all subgroups at grade 8 in the majority of states with sufficient data.
- In grade 8 math, the gap between low-income students and students who are not low-income widened in all but one of these states.
- Although not shown in table 5, the 8th grade math gap between the white subgroup and the higher-scoring Asian American subgroup has also widened in the majority of states analyzed.

In order to see which subgroups were making the most rapid gains at the advanced level in grade 8, we calculated the average annual gain in the percentages of students scoring at the advanced level for each state. We did this by subtracting the starting year percentage from the 2009 percentage and dividing this amount by the number of intervening years. **Tables 6 and 7** present the number of states with gains of various sizes. In seven states, for example, the average annual gain in the percentage of African American students reaching the advanced level in grade 8 reading ranged from 1.0 to 1.9 percentage points.

Table 6. Number of states with various sizes of average annual gains for subgroups in the percentage scoring advanced in grade 8 reading, 2002–2009*

Average annual PP gain in reading	African American	Asian American	Latino	Native American	White	Low-income	Female	Male
Reading								
0.0–0.9 points	14	8	11	10	10	19	14	17
1.0–1.9	7	5	6	2	11	5	8	5
2.0–2.9	3	4	4	2	3	5	6	6
3.0 or greater	6	10	6	2	10	6	9	8
Decline	3	2	7	1	6	5	4	5
<i># of states with data</i>	33	29	34	17	40	40	41	41

Table reads: Of the 33 states with sufficient data, 14 states had an average annual gain of 0.0 to 0.9 points in the percentage of African American students reaching the advanced level in grade 8 reading.

*The years covered by these trends vary among states. Trends in some states begin later than 2002, although every state included in the table has at least three years of comparable test data ending in 2009.

PP = Percentage point

Several findings can be drawn from these data:

- The Asian American subgroup tended to have the largest annual gains at grade 8 in both reading and math. In reading, one-third of the states with data for the Asian American subgroup showed gains of more than 3.0 points per year in the percentage of Asian American student reaching the advanced level, and an even larger proportion of states showed gains of this size in math.
- In contrast to the Asian American and white subgroups, the African American, Latino, Native American, and low-income subgroups tended to have average annual gains in the 0.0

to 0.9 point range. This means that in many states these groups are falling farther behind white and Asian American students at the advanced level.

- In grade 8 math, no subgroup in any state posted declines in the percentage of students reaching the advanced level, with the exception of the female subgroup, which had a decline in this percentage in one state.

Table 7. Number of states with various sizes of average annual gains for subgroups in the percentage scoring advanced in grade 8 math, 2002–2009*

Average annual PP gain in math	African American	Asian American	Latino	Native American	White	Low-income	Female	Male
Reading								
0.0–0.9 points	17	1	13	8	9	17	12	13
1.0–1.9	11	10	10	6	14	13	12	16
2.0–2.9	2	5	5	2	7	5	7	5
3.0 or greater	2	12	5	2	10	6	9	7
Decline	0	0	0	0	0	0	1	0
<i># of states with data</i>	32	28	33	18	40	41	41	41

Table reads: Of the 32 states with sufficient data, 17 states had an average annual gain of 0.0 to 0.9 points in the percentage of African American students reaching the advanced level in grade 8 math.

*The years covered by these trends vary among states. Trends in some states begin later than 2002, although every state included in the table has at least three years of comparable test data ending in 2009.

WHY HAVE GAPS WIDENED AT THE ADVANCED LEVEL?

Where achievement gaps have widened, it is not because the performance of African American, Latino, Native American, and low-income students has declined. A previous CEP report (2010a) found that the vast majority of states showed gains for all subgroups in the percentage of 8th graders reaching the proficient level, especially in math. Where achievement gaps have widened, this is largely because the target subgroup (such as African American or low-income students) posted gains, but these gains were not as great as those made by the comparison group (white or non-low-income students). So, some gaps widened in the context of overall gains for all students.

This is also happening at the advanced achievement level. We analyzed the number of states with sufficient data that posted gains, declines, or no net change in percentages of students reaching the advanced level on state tests for major subgroups. For all subgroups, the large majority of states analyzed showed gains in these percentages. The results were more positive in math than in reading. In grade 8 math at the advanced level, virtually all states showed progress for all subgroups. Gaps have widened because the comparison group (white or non-low-income students) made *larger* gains at the advanced level than the target subgroup (such as African American or low-income students).

So, why have gaps narrowed at the proficient level but widened at the advanced level? Consider the case of Rhode Island, a state in which achievement gaps in reading between African American and white students narrowed over the four years of testing from 2006 to 2009. African American students as a group made greater gains in mean (average) test scores in reading at grade 8, so their performance improved overall relative to their white peers. (Mean scores are a good way to measure achievement gaps because they capture changes at all points of the performance spectrum, rather than just changes in percentages of students attaining the cut score for a particular achievement level, such as proficient.) Similarly, the African American subgroup made greater gains in grade 8 reading than the white subgroup in terms of average annual increases in the percentage of students reaching the basic and proficient levels on state tests. However, the average annual increase in the percentage of students reaching the advanced level in reading was greater for white students than for African American students. One explanation is that there were more white students than African American students whose scores were clustered around the cut score for advanced achievement. As a result, when mean scores went up, a larger percentage of white students than African American students crossed the threshold from proficient to advanced.

Grade 8 Achievement According to Other Assessments

The data presented above indicate that in the majority of states, 8th graders made solid progress on state tests during the years analyzed between 2002 and 2009, particularly in math. However, gaps also widened between subgroups at the advanced level. Our findings, overall, portray 8th grade achievement in a more positive light than some previous studies of achievement at this grade level, particularly the 2004 RAND study (Juvonen et al., 2004). It should be noted that the findings of the RAND study regarding 8th grade achievement were based on assessment data from the 1990s on the National Assessment of Educational Progress (NAEP) and the Trends in International Math and Science Study (TIMSS). On the TIMSS assessments for 1995 and 1999, U.S. 8th graders ranked below the average for all participating nations, and 4th graders ranked at the national average.

U.S. performance on TIMSS has improved since the 1990s (U.S. Department of Education, 2008). In 2007, the U.S. scored above the international average at both grades 4 and 8. U.S. 8th graders ranked ninth out of 50 countries, and their scale score was above the international average. Their scores surpassed those of 8th graders in several other developed nations, such as Australia, Sweden, the Czech Republic, Italy, and Israel.

Interestingly, U.S. 8th graders do relatively better in international math rankings than U.S. 4th graders do. On the 2007 TIMSS assessment, U.S. 8th graders ranked ninth, and 4th graders ranked eleventh. If U.S. achievement has indeed dropped off between grades 4 and 8, then one would expect the international ranking of 8th graders to be lower than that of 4th graders, but this is not the case. Similarly, U.S. 8th graders have shown a healthy increase in average TIMSS math scores between 1995 and 2007, larger than the increase shown at 4th grade.

The results of our study are also not out of line with results on NAEP. In reading, 8th grade NAEP scores remained flat between 2002 and 2009, and in math, NAEP trends showed a steady and slow increase at grade 8 between 2002 and 2009 (U.S. Department of Education, 2010b). Our study, focusing solely on state test scores, also shows more progress in math than in reading at 8th grade. However, NAEP does not show the progress in reading indicated by state test scores. This is partly attributable to the fact that NAEP and state tests differ in content, format, administration, and definitions of proficiency. Students are also likely

to be more motivated to do well on state tests, which have high stakes, than on NAEP. A previous CEP study found some overlap between state tests and NAEP in math, but less so in reading (CEP, 2010b). In any case, the fact that both NAEP and state tests show similar trends in math strongly suggests that real progress is being made in that subject area.

Conclusions

GRADE 8 PERFORMANCE IS ON PAR WITH THAT IN GRADE 4 AND HIGH SCHOOL

As the data in this report illustrate, the number of states with achievement gains for 8th graders on state tests are generally higher than the number with gains for 4th graders and high school students. Evidence suggests this is not because 8th graders started out farther behind. To the contrary, the percentages of 8th graders reaching the basic, proficient, and advanced achievement levels on are on par with those for grades 4 and high school.

PROBLEMS EXIST WITH STUDENT ACHIEVEMENT AT THE ADVANCED LEVEL

As noted above, there is a huge range among states in the percentage of students reaching the advanced level on state tests. In several states, more than half of the tested population scores at the advanced level. When states set cut scores so that eye-popping percentages of students are considered advanced, this undercuts the credibility of state testing programs and muddies the meaning of “advanced” achievement. These disparities between states strengthen the argument for having common state standards, assessments, and cut scores.

The wide variation in where states set their proficient and advanced cut scores also complicates reporting of achievement gaps. As will be demonstrated in a forthcoming CEP paper, when states set their cut scores at a relatively easy level, so that many students pass, achievement gaps appear to be smaller than when they set their cut scores at a more difficult level. State-by-state differences in the rigor of their achievement levels may explain much of the disparity between states in achievement gaps trends.

LARGE ACHIEVEMENT GAPS ARE EVIDENT AT THE ADVANCED LEVEL

Much work remains to be done to move more African American, Latino, Native American, and low-income students up to the advanced level. These subgroups have shown gains at that level, but their achievement must accelerate if they are to close gaps with the white, Asian American, or non-low-income subgroups. In particular, attention should be paid to raising the percentage of African American students reaching the advanced level. Our analyses also revealed an unexpectedly large achievement gap between the white and Asian American subgroups in math at the advanced level. This gap has largely escaped attention by researchers, policymakers, and the public, perhaps because of a notion that the white subgroup is the largest and therefore represents the standard by which to measure and discuss achievement gaps.

A pressing question is whether gaps have widened between the highest-achieving African American, Latino, and low-income students and their white and non-low-income peers. Are the brightest minority students falling behind their white and Asian American peers? Our results by themselves do not fully answer this question because our data do not isolate the very top-performing students in the various subgroups. The “percentage advanced” measure is not perfect for measuring gaps because the scores of a larger percentage of students in the

white and Asian American subgroups are clustered just below the cut scores for the advanced level. So, although more white and Asian American students are crossing the threshold into the advanced achievement level, this does not tell us, by itself, whether gaps are widening between the very top-performing white and African American students, for example.

Other recent studies that use different methodologies and sources of data do provide evidence that although gaps have shrunk at the lower achievement levels, they have widened or stagnated among the highest-performing students in various subgroups (Plucker et al., 2010; Hanushek & Rivkin, 2006; Reardon, 2008; Clotfelter et al., 2009). These studies give various explanations for these trends, including the effects of current accountability systems that focus on getting students over the proficient level, school quality, racial isolation, peer factors, differences in the levels of teacher experience in schools serving various subgroups, demographics, and a lack of support for gifted and talented education at the federal and state levels.

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