Subgroup Achievement and Gap Trends — Pennsylvania

K-12 enrollment — 1,801,760

The raw data used to develop these state profiles, including data for additional grade levels and years before 2002, can be found on the CEP Web site at www.cep-dc.org. Click on the link on the left for State Testing Data. Below the name of the report, click on the link for View State Profiles and Worksheets. Scroll down the page, and click on the Worksheet links for any state.

Subgroup Achievement Trends and Gap Trends — Key Findings

Summary

This year the Center on Education Policy analyzed data on the achievement of different groups of students in two distinct ways. First, we looked at grade 4 test results to determine whether the performance of various groups improved at three achievement levels—basic and above, proficient and above, and advanced. Second, we looked at gaps between these groups at the proficient level across three grades (grade 4, grade 8 in most cases, and a high school grade). These two types of analyses show whether elementary school achievement has generally gone up for different groups of students and whether achievement gaps at different grade levels have narrowed, widened, or stayed the same.

Pennsylvania showed upward trends on test scores. Progress on achievement gaps was either positive or mixed, depending on the measure used.

Subgroup trends by achievement level at grade 4

- Main trend: All subgroups made gains in reading and math at three achievement levels—basic-and-above, proficient-and-above, and advanced. Specifically, 15 of the 15 trend lines analyzed across the three achievement levels in math and reading showed gains. For nearly all subgroups, gains were largest at the advanced level in math and were more mixed across achievement levels in reading.

Gap trends at three grade levels

- Main trend: In all instances, gaps in the percentages of students scoring at the proficient level narrowed between African American or Latino students and white students, and between low-income and all tested students, at grades 4 and 8 and at the high school grade tested. Specifically, 9 of the 9 trend lines analyzed in reading showed evidence of gaps narrowing, as did all 9 trend lines in math.

- Contradicting trends using two different measures: According to percentages of students scoring proficient on the state test, achievement gaps narrowed in all cases between African American or Latino students and white students, and between low-income and all tested students, at all three grades analyzed. But according to mean scale scores, gaps widened more often than they narrowed in reading and were mixed in math. Specifically, using percentages proficient, 9 of the 9 trend lines analyzed in reading showed evidence of gaps

narrowing, as did all 9 trend lines in math. By mean scale scores, only 1 of 9 trend lines in reading and 3 of 9 trend lines in math showed average test score gaps narrowing.

Data notes

- Limited data: Trends are limited to 2006–2008 for grade 4 but are comparable from 2002-2008 for grade 8 and for high school.
- Subgroups analyzed: Trends were analyzed for white, African American, Latino, Asian American, and low-income students. The Native American subgroup is too small in Pennsylvania to yield reliable trend data. Trends for students with disabilities, English language learners, and male and female students have not been summarized because they will be discussed in separate reports.
- Grades analyzed: Analyses of subgroup trends by three achievement levels are limited to one elementary grade because of the massive amounts of data involved and because this is the pilot year of a process that CEP hopes to extend to the middle and high school levels in future years. Analyses of achievement gap trends cover three grade levels: grade 4, grade 8, and the high school grade tested for NCLB.

Data Limitations

Years of comparable percentage proficient data	2005 through 2008 for grade 3 2001 through 2008 for grades 5, 8, and 11 2006 through 2008 for grades 4, 6, and 7 State could not provide any percentages proficient before 2001
Years of comparable mean scale score data	Available overall for 1999 through 2008 (equating and linking make it possible to compare scores during this period despite changes in the assessment system) for grades 8 and 11 and from 2006 through 2008 for grade 4
Disaggregated data for all subgroups and comparison groups	Mean scale score data available disaggregated by subgroups for 2002 through 2008 for grades 8 and 11 and from 2006 through 2008 for grade 4 Percentage proficient data are not available for 2007 or 2008 for comparison groups of students who are *not* low-income, disabled, or English language learners (ELLs), so the subgroups of low-income students, students with disabilities, and ELLs are compared with all tested students in the state

Test Characteristics

The characteristics highlighted below are for the state reading and mathematics tests used for accountability under the No Child Left Behind Act (NCLB).

Test(s) used for NCLB accountability	Pennsylvania System of School Assessment (PSSA) Pennsylvania Alternate System of Assessment (PASA)
Grades tested for NCLB accountability	3–8 and 11 For AYP purposes, Pennsylvania uses two-year averaging for student test scores and three-year averaging for test participation data; a grade is not included in AYP determinations until it has two years of test data to average.
State labels for achievement levels	PA uses four achievement levels: Below Basic, Basic, Proficient, and Advanced. For our analyses we treated Basic as Basic, Proficient as Proficient, and Advanced as Advanced.
High school NCLB test also used as an exit exam?	No
First year test used	1996. Scoring scales have been equated since 1996 to enable scores to be compared from year to year despite changes in the assessment system. Grades 4, 6, and 7 added in 2005-06.
Time of test administration	Spring (retest opportunity in fall for grade 11 test only)
Major changes in testing system (2002–present)	2003–04: Reset standards but not scoring scale 2004–05: Administered first PSSA based on Assessment Anchor Content Standards instead of previous standards. 2005–06: Conducted validity study of reading and mathematics cut scores in grades 3, 5, 8, 11 2006: Expanded AYP calculations to include grade 3 2006–07: Revised assessment anchors based on Achieve, Inc., alignment study; formed the blueprint/test specifications for the 2007 PSSA 2007: Expanded AYP calculations to include grades 4, 6, and 7 2008: Brought in new test contractor; conducted validation study of cut scores for grade 3

Achievement by Subgroup — Trends at the Elementary Level

Note: The tables in this profile of subgroup achievement and gap trends begin with table 7. Tables 1 through 6 can be found in the companion state profile of general achievement trends.

Table PA-7. Percentages of Grade 4 Students by Racial or Ethnic Subgroup Scoring at the Advanced, Proficient and Above, and Basic and Above Levels in Reading

Subgroup	Reporting Year							Average Yearly Percentage Point Gain[1]
	2002	2003	2004	2005	2006	2007	2008	
All tested students								
Advanced					31%	32%	34%	1.7
Proficient and Above					68%	70%	70%	1.0
Basic and Above					85%	85%	86%	0.8
White								
Advanced					37%	37%	40%	1.9
Proficient and Above					76%	77%	77%	0.6
Basic and Above					90%	90%	91%	0.4
African American								
Advanced					10%	13%	13%	1.1
Proficient and Above					40%	46%	45%	2.2
Basic and Above					66%	69%	71%	2.5
Latino								
Advanced					12%	14%	16%	2.0
Proficient and Above					42%	46%	49%	3.8
Basic and Above					66%	68%	73%	3.3
Asian								
Advanced					42%	47%	51%	4.2
Proficient and Above					76%	81%	83%	3.9
Basic and Above					90%	92%	94%	1.9
Native American[2]								
Advanced					27%	21%	24%	-1.1
Proficient and Above					61%	62%	63%	0.8
Basic and Above					81%	81%	80%	-0.4

Table reads: The percentage of white 4th graders who scored at the advanced level on the state reading test increased from 37% in 2006 to 40% in 2008. During this period, the average yearly gain in the percentage advanced in reading for white 4th graders was 1.9 percentage points per year.

[1]Averages are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

Table PA-8. Percentage of Grade 4 Students by Demographic Subgroup Scoring at the Advanced, Proficient and Above, and Basic and Above Levels in Reading

Subgroup	Reporting Year 2002	2003	2004	2005	2006	2007	2008	Average Yearly Percentage Point Gain[1]
All tested students								
Advanced					31%	32%	34%	1.7
Proficient and Above					68%	70%	70%	1.0
Basic and Above					85%	85%	86%	0.8
Low-income students								
Advanced					14%	16%	17%	1.4
Proficient and Above					48%	52%	52%	2.0
Basic and Above					72%	73%	76%	2.0
Students with disabilities[3]								
Advanced					10%	11%	12%	1.0
Proficient and Above					34%	35%	36%	0.9
Basic and Above					56%	55%	58%	1.1
English language learners[3]								
Advanced					6%	5%	5%	-0.4
Proficient and Above					26%	29%	28%	1.1
Basic and Above					54%	52%	55%	0.7
Female								
Advanced					34%	36%	37%	2.0
Proficient and Above					71%	74%	73%	1.4
Basic and Above					87%	88%	89%	1.0
Male								
Advanced					29%	28%	31%	1.3
Proficient and Above					66%	66%	67%	0.5
Basic and Above					83%	82%	84%	0.6

Table reads: The percentage of low-income 4th graders who scored at the advanced level on the state reading test increased from 14% in 2006 to 17% in 2008. During this period, the average yearly gain in the percentage advanced in reading for low-income 4th graders was 1.4 percentage points per year.

[1]Averages are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

[3]Gap trends for students with disabilities and English language learners should be interpreted with caution because state and federal policy changes may have affected the year-to-year comparability of test results for these subgroups. Average yearly percentage point gains are based on 2006-2008 results.

Table PA-9. Percentages of Grade 4 Students by Racial or Ethnic Subgroup Scoring at the Advanced, Proficient and Above, and Basic and Above Levels in Mathematics

Subgroup	Reporting Year 2002	2003	2004	2005	2006	2007	2008	Average Yearly Percentage Point Gain[1]
All tested students								
Advanced					44%	47%	50%	3.3
Proficient and Above					77%	78%	80%	1.2
Basic and Above					87%	87%	88%	0.2
White								
Advanced					50%	54%	57%	3.3
Proficient and Above					84%	85%	86%	0.9
Basic and Above					92%	92%	92%	0.1
African American								
Advanced					18%	21%	24%	3.1
Proficient and Above					53%	54%	56%	1.9
Basic and Above					70%	71%	71%	0.4
Latino								
Advanced					21%	25%	30%	4.4
Proficient and Above					56%	59%	64%	3.6
Basic and Above					73%	73%	76%	1.3
Asian								
Advanced					62%	66%	71%	4.8
Proficient and Above					89%	89%	92%	1.6
Basic and Above					94%	94%	95%	0.7
Native American[2]								
Advanced					37%	39%	37%	-0.1
Proficient and Above					66%	73%	74%	3.7
Basic and Above					78%	84%	82%	1.6

Table reads: The percentage of white 4th graders who scored at the advanced level on the state math test increased from 50% in 2006 to 57% in 2008. During this period, the average yearly gain in the percentage advanced in math for white 4th graders was 3.3 percentage points per year.

[1]Averages are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

Table PA-10. Percentage of Grade 4 Students by Demographic Subgroup Scoring at the Advanced, Proficient and Above, and Basic and Above Levels in Mathematics

Subgroup	Reporting Year 2002	2003	2004	2005	2006	2007	2008	Average Yearly Percentage Point Gain[1]
All tested students								
Advanced					44%	47%	50%	3.3
Proficient and Above					77%	78%	80%	1.2
Basic and Above					87%	87%	88%	0.2
Low-income students								
Advanced					25%	28%	32%	3.6
Proficient and Above					62%	63%	66%	2.1
Basic and Above					77%	77%	78%	0.6
Students with disabilities[3]								
Advanced					19%	21%	23%	2.2
Proficient and Above					49%	50%	52%	1.2
Basic and Above					65%	64%	65%	0.3
English language learners[3]								
Advanced					17%	16%	19%	1.2
Proficient and Above					48%	47%	50%	0.9
Basic and Above					66%	64%	65%	-0.5
Female								
Advanced					41%	45%	48%	3.3
Proficient and Above					76%	77%	79%	1.4
Basic and Above					87%	87%	88%	0.4
Male								
Advanced					46%	49%	52%	3.1
Proficient and Above					78%	79%	80%	0.8
Basic and Above					88%	88%	88%	-0.1

Table reads: The percentage of low-income 4th graders who scored at the advanced level on the state math test increased from 25% in 2006 to 32% in 2008. During this period, the average yearly gain in the percentage advanced in math for low-income 4th graders was 3.6 percentage points per year.

[1]Averages are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

[3]Gap trends for students with disabilities and English language learners should be interpreted with caution because state and federal policy changes may have affected the year-to-year comparability of test results for these subgroups. Average yearly percentage point gains are based on 2006-2008 results.

Achievement by Subgroup — Gap Trends (Percentages Proficient)

Table PA-11. Subgroup Achievement Trends in Reading by Percentages Proficient

NOTE: L = Larger gain than comparison group. S = Smaller gain than comparison group. E = Equal gain to comparison group.
If the average annual gain for the subgroup of interest, such as African American students, is larger than the average annual gain for the comparison group, such as white students, this indicates that the achievement gap has narrowed. If the average gain for the subgroup of interest is smaller, this means the gap has widened.

	Grade 4					Grade 8					Grade 11				
Subgroup	Year Span	Starting PP	Ending PP	Average Annual Gain[1]	Gain Larger or Smaller Than Comparison Group	Year Span	Starting PP	Ending PP	Average Annual Gain[1]	Gain Larger or Smaller Than Comparison Group	Year Span	Starting PP	Ending PP	Average Annual Gain[1]	Gain Larger or Smaller Than Comparison Group
All tested students	06-08	68%	70%	1.0		02-08	59%	78%	3.3		02-08	59%	65%	1.0	
White	06-08	76%	77%	0.6		02-08	67%	84%	3.0		02-08	64%	71%	1.2	
African American	06-08	40%	45%	2.2	L	02-08	24%	57%	5.5	L	02-08	26%	36%	1.7	L
Latino	06-08	42%	49%	3.8	L	02-08	30%	58%	4.6	L	02-08	29%	38%	1.5	L
Asian	06-08	76%	83%	3.9	L	02-08	63%	88%	4.1	L	02-08	61%	71%	1.7	L
Native American	06-08	61%	63%	0.8[2]	L	02-08	33%	74%	6.9[2]	L	02-08	42%	57%	2.6[2]	L
All tested students	06-08	68%	70%	1.0		02-08	59%	78%	3.3		02-08	59%	65%	1.0	
Low-income	06-08	48%	52%	2.0	L	02-08	31%	62%	5.1	L	02-08	29%	43%	2.2	L
All tested students	06-08	68%	70%	1.0		06-08	71%	78%	3.9		06-08	65%	65%	-0.2	
Students with disabilities[3]	06-08	34%	36%	0.9	S	06-08	27%	37%	4.6	L	06-08	19%	19%	0.2	L
All tested students	06-08	68%	70%	1.0		06-08	71%	78%	3.9		06-08	65%	65%	-0.2	
English language learners[3]	06-08	26%	28%	1.1	L	06-08	24%	30%	3.0	S	06-08	16%	11%	-2.3	S
Female	06-08	71%	73%	1.4		02-08	62%	82%	3.3		02-08	62%	69%	1.1	
Male	06-08	66%	67%	0.5	S	02-08	56%	75%	3.1	S	02-08	56%	61%	0.7	S

Table reads: In 2006, 76% of white 4th graders and 40% of African American 4th graders scored at the proficient level on the state reading test. In 2008, 77% of

white 4th graders and 45% of African American 4th graders scored at the proficient level in reading. Between 2006 and 2008, the percentage proficient improved at an average rate of 0.6 percentage point per year for white students and 2.2 percentage points per year for African American students, indicating a larger rate of gain and a narrowing of the achievement gap for African American 4th graders.

[1]Numbers in these columns are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

[3]Trends for students with disabilities and English language learners should be interpreted with caution because state and federal policy changes may have affected the year-to-year comparability of test results for these subgroups.

Table PA-12. Subgroup Achievement Trends in Mathematics by Percentages Proficient

NOTE: L = Larger gain than comparison group. S = Smaller gain than comparison group. E = Equal gain to comparison group.
If the average annual gain for the subgroup of interest, such as African American students, is larger than the average annual gain for the comparison group, such as white students, this indicates that the achievement gap has narrowed. If the average gain for the subgroup of interest is smaller, this means the gap has widened.

	Grade 4					Grade 8					Grade 11				
Subgroup	Year Span	Starting PP	Ending PP	Average Annual Gain[1]	Gain Larger or Smaller Than Comparison Group	Year Span	Starting PP	Ending PP	Average Annual Gain[1]	Gain Larger or Smaller Than Comparison Group	Year Span	Starting PP	Ending PP	Average Annual Gain[1]	Gain Larger or Smaller Than Comparison Group
All tested students	06-08	77%	80%	1.2		02-08	52%	70%	3.1		02-08	50%	56%	1.1	
White	06-08	84%	86%	0.9		02-08	60%	77%	2.9		02-08	54%	62%	1.3	
African American	06-08	53%	56%	1.9	L	02-08	16%	46%	5.1	L	02-08	17%	27%	1.7	L
Latino	06-08	56%	64%	3.6	L	02-08	24%	51%	4.5	L	02-08	21%	31%	1.6	L
Asian	06-08	89%	92%	1.6	L	02-08	69%	88%	3.2	L	02-08	67%	78%	1.9	L
Native American	06-08	66%	74%	3.7[2]	L	02-08	26%	63%	6.1[2]	L	02-08	35%	47%	2.0[2]	L
All tested students	06-08	77%	80%	1.2		02-08	52%	70%	3.1		02-08	50%	56%	1.1	
Low-income	06-08	62%	66%	2.1	L	02-08	25%	53%	4.7	L	02-08	22%	35%	2.2	L
All tested students	06-08	77%	80%	1.2		06-08	62%	70%	4.1		06-08	52%	56%	2.0	
Students with disabilities[3]	06-08	49%	52%	1.2	E	06-08	20%	28%	3.8	S	06-08	11%	14%	1.7	S
All tested students	06-08	77%	80%	1.2		06-08	62%	70%	4.1		06-08	52%	56%	2.0	
English language learners[3]	06-08	48%	50%	0.9	S	06-08	29%	33%	1.9	S	06-08	26%	23%	-1.6	S
Female	06-08	76%	79%	1.4		02-08	52%	71%	3.3		02-08	48%	55%	1.2	
Male	06-08	78%	80%	0.8	S	02-08	53%	70%	2.8	S	02-08	51%	57%	0.9	S

Table reads: In 2006, 84% of white 4th graders and 53% of African American 4th graders scored at the proficient level on the state math test. In 2008, 86% of white 4th graders and 56% of African American 4th graders scored at the proficient level in math. Between 2006 and 2008, the percentage proficient improved at an average rate of 0.9 percentage point per year for white students and 1.9 percentage points per year for African American students, indicating a larger rate of gain

and a narrowing of the achievement gap for African American 4th graders.

[1]Numbers in these columns are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

[3]Trends for students with disabilities and English language learners should be interpreted with caution because state and federal policy changes may have affected the year-to-year comparability of test results for these subgroups.

Achievement by Subgroup — Gap Trends (Mean Scale Scores)

Table PA-13. Achievement Gap Trends in Reading by Mean Scale Scores

NOTE: L = Larger gain than comparison group. S = Smaller gain than comparison group. E = Equal gain to comparison group.
If the average gain for the subgroup of interest, such as African American students, is larger than the average gain for the comparison group, such as white students, this indicates that the achievement gap has narrowed. If the average gain for the subgroup of interest is smaller, this means the gap has widened.

		Grade 4					Grade 8					Grade 11				
Subgroup	Statistic	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group
All tested students	Mean SS	06-08	1340	1370	15.0		02-08	1310	1480	28.3		02-08	1320	1360	6.7	
	SD	06-08	217.9	225.1			02-08	217.5	272.7			02-08	213.1	276.2		
White	Mean SS	06-08	1380	1410	15.0		02-08	1350	1530	30.0		02-08	1340	1400	10.0	
	SD	06-08	204.5	214.2			02-08	203.5	258.9			02-08	202.0	264.7		
African American	Mean SS	06-08	1200	1230	15.0	E	02-08	1150	1310	26.7	S	02-08	1150	1180	5.0	S
	SD	06-08	200.0	202.6			02-08	192.3	243.8			02-08	199.2	243.4		
Latino	Mean SS	06-08	1200	1250	25.0	L	02-08	1160	1320	26.7	S	02-08	1170	1190	3.3	S
	SD	06-08	207.0	213.2			02-08	210.4	254.7			02-08	210.7	254.5		
Asian	Mean SS	06-08	1400	1460	30.0	L	02-08	1350	1590	40.0	L	02-08	1340	1440	16.7	L
	SD	06-08	220.1	222.1			02-08	221.1	280.6			02-08	229.4	296.0		
Native American	Mean SS	06-08	1300	1310	5.0[2]	S	02-08	1170	1430	43.3[2]	L	02-08	1220	1280	10.0[2]	E
	SD	06-08	229.8	222.3			02-08	225.0	257.7			02-08	245.2	271.1		
Not Low-income	Mean SS	06-08	1400	1430	15.0		02-08	1360	1550	31.7		02-08	1340	1410	11.7	
	SD	06-08	200.8	209.7			02-08	201.5	255.6			02-08	203.7	266.5		
Low-income	Mean SS	06-08	1230	1260	15.0	E	02-08	1170	1340	28.3	S	02-08	1170	1220	8.3	S
	SD	06-08	205.7	210.0			02-08	205.8	252.0			02-08	208.3	252.6		
Not disabled	Mean SS	06-08	1370	1400	15.0		06-08	1480	1530	25.0		06-08	1410	1410	0.0	
	SD	06-08	201.7	206.4			06-08	259.7	246.0			06-08	256.8	253.7		
Students with disabilities[3]	Mean SS	06-08	1160	1180	10.0	S	06-08	1140	1200	30.0	L	06-08	1060	1060	0.0	E
	SD	06-08	217.1	227.3			06-08	246.8	240.3			06-08	231.4	228.2		
Not ELLs	Mean SS	06-08	1350	1370	10.0		06-08	1430	1490	30.0		06-08	1370	1370	0.0	
	SD	06-08	216.2	223.6			06-08	282.8	270.9			06-08	277.3	274.7		
English language learners[3]	Mean SS	06-08	1140	1150	5.0	S	06-08	1110.0	1170	30.0	E	06-08	1050	1020	-15.0	S
	SD	06-08	188.4	190.2			06-08	229.0	204.8			06-08	206.8	192.2		
Female	Mean SS	06-08	1360	1390	15.0		02-08	1330	1510	30.0		02-08	1340	1390	8.3	
	SD	06-08	215.8	220.9			02-08	207.2	264.2			02-08	199.3	270.2		

		Grade 4					Grade 8					Grade 11				
Subgroup	Statistic	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group
Male	Mean SS	06-08	1320	1350	15.0	E	02-08	1290	1450	26.7	S	02-08	1300	1330	5.0	S
	SD	06-08	218.6	226.9			02-08	223.5	277.6			02-08	222.7	278.0		

Table reads: In 2006, the mean scale score on the state 4th grade reading test was 1380 for white students and 1200 for African American students. In 2008, the mean scale score in 4th grade reading was 1410 for white students and 1230 for African American students. Between 2006 and 2008, the mean scale score improved at an average yearly rate of 15 points for both white students and African American students, indicating the achievement gap for African Americans remained the same.

Note: The PSSA (grades 4-8 and 11) is scored on a scale with 700 as a minimum and no maximum score.

[1]Numbers in these columns are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

[3]Gap trends for students with disabilities and English language learners should be interpreted with caution because state and federal policy changes may have affected the year-to-year comparability of test results for these subgroups.

Table PA-14. Subgroup Achievement Trends in Mathematics by Mean Scale Scores

NOTE: L = Larger gain than comparison group. S = Smaller gain than comparison group. E = Equal gain to comparison group.
If the average gain for the subgroup of interest, such as African American students, is larger than the average gain for the comparison group, such as white students, this indicates that the achievement gap has narrowed. If the average gain for the subgroup of interest is smaller, this means the gap has widened.

		Grade 4					Grade 8					Grade 11				
Subgroup	Statistic	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score)[1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score)[1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score)[1]	Gain Larger or Smaller than Comparison Group
All tested students	Mean SS	06-08	1400	1450	25.0		02-08	1320	1410	15.0		02-08	1320	1340	3.3	
	SD	06-08	220.6	243.0			02-08	198.9	221.0			02-08	227.7	267.3		
White	Mean SS	06-08	1440	1490	25.0		02-08	1350	1440	15.0		02-08	1340	1380	6.7	
	SD	06-08	210.0	230.8			02-08	190.7	212.6			02-08	220.5	257.0		
African American	Mean SS	06-08	1260	1290	15.0	S	02-08	1160	1270	18.3	L	02-08	1150	1160	1.7	S
	SD	06-08	193.2	218.9			02-08	145.1	194.9			02-08	177.2	228.6		
Latino	Mean SS	06-08	1280	1330	25.0	E	02-08	1190	1300	18.3	L	02-08	1170	1190	3.3	S
	SD	06-08	198.5	228.9			02-08	167.1	202.4			02-08	191.3	232.9		
Asian	Mean SS	06-08	1510	1580	35.0	L	02-08	1420	1550	21.7	L	02-08	1440	1530	15.0	L
	SD	06-08	235.6	249.8			02-08	220.6	223.2			02-08	267.8	291.3		
Native American	Mean SS	06-08	1350	1390	20.0[2]	S	02-08	1200	1370	28.3[2]	L	02-08	1220	1270	8.3[2]	L
	SD	06-08	229.8	241.1			02-08	174.7	229.8			02-08	220.3	258.0		
Not Low-income	Mean SS	06-08	1460	1510	25.0		02-08	1360	1460	16.7		02-08	1340	1390	8.3	
	SD	06-08	210.3	230.7			02-08	192.5	212.9			02-08	224.0	260.9		
Low-income	Mean SS	06-08	1300	1340	20.0	S	02-08	1190	1310	20.0	L	02-08	1170	1210	6.7	S
	SD	06-08	202.1	227.1			02-08	165.1	202.2			02-08	189.4	240.8		
Not disabled	Mean SS	06-08	1430	1480	25.0		06-08	1410	1450	20.0		06-08	1390	1390	0.0	
	SD	06-08	209.5	230.4			06-08	208.7	203.3			06-08	277.5	248.9		
Students with disabilities[3]	Mean SS	06-08	1250	1280	15.0	S	06-08	1160	1190	15.0	S	06-08	1040	1070	15.0	L
	SD	06-08	216.4	236.6			06-08	175.9	183.7			06-08	205.7	208.3		
Not ELLs	Mean SS	06-08	1410	1450	20.0		06-08	1370	1410	20.0		06-08	1350	1350	0.0	
	SD	06-08	219.6	241.8			06-08	222.0	220.3			06-08	292.1	266.5		
English language learners[3]	Mean SS	06-08	1240	1260	10.0	S	06-08	1210	1220	5.0	S	06-08	1170	1140	-15.0	S
	SD	06-08	202.2	217.2			06-08	196.9	186.0			06-08	273.1	247.3		
Female	Mean SS	06-08	1390	1440	25.0		02-08	1320	1410	15.0		02-08	1310	1340	5.0	

		Grade 4					Grade 8					Grade 11				
Subgroup	Statistic	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group	Year Span	Starting Year	Ending Year	Average Gain (Mean Scale Score) [1]	Gain Larger or Smaller than Comparison Group
	SD	06-08	215.0	236.4			02-08	191.8	215.5			02-08	216.6	258.4		
Male	Mean SS	06-08	1410	1460	25.0	E	02-08	1320	1400	13.3	S	02-08	1330	1350	3.3	S
	SD	06-08	225.3	248.6			02-08	204.8	226.1			02-08	237.1	275.6		

Table reads: In 2006, the mean scale score on the state 4th grade math test was 1440 for white students and 1260 for African American students. In 2008, the mean scale score in 4th grade math was 1490 for white students and 1290 for African American students. Between 2006 and 2008, the mean scale score improved at an average yearly rate of 25.0 points for white students and 15.0 points for African American students, indicating a widening of the achievement gap for African Americans.

Note: The PSSA (grades 4-8 and 11) is scored on a scale with 700 as a minimum and no maximum score.

[1]Numbers in these columns are subject to rounding error.

[2]The number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data, so changes for this subgroup should be interpreted with caution.

[3]Gap trends for students with disabilities and English language learners should be interpreted with caution because state and federal policy changes may have affected the year-to-year comparability of test results for these subgroups.

Table PA-15. Numbers of Test-Takers

Subgroup	Subject	Grade 4					Grade 8					Grade 11				
		Year Span	# of Test-Takers Start Year	# of Test-Takers End Year	Change in # of Test-Takers Over Time	% of Test-Takers in Subgroup in End Year	Year Span	# of Test-Takers Start Year	# of Test-Takers End Year	Change in # of Test-Takers Over Time	% of Test-Takers in Subgroup in End Year	Year Span	# of Test-Takers Start Year	# of Test-Takers End Year	Change in # of Test-Takers Over Time	% of Test-Takers in Subgroup in End Year
All tested students	Reading	06-08	127,680	126,266	-1.1%	100.0%	02-08	137,310	138,339	0.7%	100.0%	02-08	119,890	134,984	12.6%	100.0%
	Math	06-08	127,959	126,403	-1.2%	100.0%	02-08	137,374	138,545	0.9%	100.0%	02-08	120,102	135,120	12.5%	100.0%
White	Reading	06-08	95,151	92,237	-3.1%	73.0%	02-08	102,335	103,132	0.8%	74.6%	02-08	95,403	106,868	12.0%	79.2%
	Math	06-08	95,272	92,296	-3.1%	73.0%	02-08	102,383	103,212	0.8%	74.5%	02-08	95,550	106,941	11.9%	79.1%
African American	Reading	06-08	19,676	19,780	0.5%	15.7%	02-08	15,015	21,551	43.5%	15.6%	02-08	9,977	17,193	72.3%	12.7%
	Math	06-08	19,758	19,807	0.2%	15.7%	02-08	15,018	21,639	44.1%	15.6%	02-08	10,032	17,216	71.6%	12.7%
Latino	Reading	06-08	8,194	9,387	14.6%	7.4%	02-08	5,390	9,032	67.6%	6.5%	02-08	3,329	6,677	100.6%	4.9%
	Math	06-08	8,251	9,424	14.2%	7.5%	02-08	5,389	9,063	68.2%	6.5%	02-08	3,324	6,695	101.4%	5.0%
Asian	Reading	06-08	3,312	3,668	10.7%	2.9%	02-08	2,726	3,526	29.3%	2.5%	02-08	2,604	3,307	27.0%	2.4%
	Math	06-08	3,322	3,675	10.6%	2.9%	02-08	2,732	3,527	29.1%	2.5%	02-08	2,607	3,316	27.2%	2.5%
Native American	Reading	06-08	166	**188**	13.3%	0.1%	02-08	803	**223**	-72.2%	0.2%	02-08	417	**215**	-48.4%	0.2%
	Math	06-08	167	**189**	13.2%	0.1%	02-08	802	**225**	-71.9%	0.2%	02-08	418	**214**	-48.8%	0.2%
Low-income	Reading	06-08	46,374	48,291	4.1%	38.2%	02-08	33,246	47,366	42.5%	34.2%	02-08	16,791	34,176	103.5%	25.3%
	Math	06-08	46,526	48,374	4.0%	38.3%	02-08	33,246	47,499	42.9%	34.3%	02-08	16,841	34,231	103.3%	25.3%
Students w/ disabilities	Reading	06-08	19,664	20,284	3.2%	16.1%	06-08	21,370	21,410	0.2%	15.5%	06-08	16,549	18,110	9.4%	13.4%
	Math	06-08	19,757	20,327	2.9%	16.1%	06-08	21,463	21,479	0.1%	15.5%	06-08	16,642	18,135	9.0%	13.4%
English language learners	Reading	06-08	3,171	2,981	-6.0%	2.4%	06-08	2,190	2,034	-7.1%	1.5%	06-08	1,302	1,370	5.2%	1.0%
	Math	06-08	3,212	3,005	-6.4%	2.4%	06-08	2,225	2,045	-8.1%	1.5%	06-08	1,312	1,378	5.0%	1.0%
Female	Reading	06-08	61,929	61,496	-0.7%	48.7%	02-08	66,401	67,186	1.2%	48.6%	02-08	58,257	66,861	14.8%	49.5%
	Math	06-08	62,047	61,561	-0.8%	48.7%	02-08	66,416	67,298	1.3%	48.6%	02-08	58,379	66,904	14.6%	49.5%
Male	Reading	06-08	65,494	64,714	-1.2%	51.3%	02-08	68,953	71,031	3.0%	51.3%	02-08	58,798	67,975	15.6%	50.4%
	Math	06-08	65,648	64,783	-1.3%	51.3%	02-08	69,003	71,126	3.1%	51.3%	02-08	58,880	68,053	15.6%	50.4%

Table reads: In 2006, 95,151 students in the white subgroup took the state 4th grade reading test. By 2008, the number of white test-takers had fallen to 92,237 students, a decrease of 3.1%. In 2008, the white subgroup made up 73.0% of the 126,266 4th graders taking the reading test that year.

Note: **Bold** type indicates that the number of students tested in this subgroup at this grade level was fewer than 500 in 2008 or the most recent year with available data.

Key Terms

Percentage proficient (and above) — The percentage of students in a group who score at and above the cut score for "proficient" performance on the state test used to determine progress under NCLB. The Act requires states to report student test performance in terms of at least three achievement levels: basic, proficient, and advanced. Adequate yearly progress determinations are based on the percentage of students scoring at the proficient level and above.

Percentage basic (and above) — The percentage of students in a group who score at and above the cut score for "basic" performance on the state test used to determine progress under NCLB.

Percentage advanced — The percentage of students in a group who reach or exceed the cut score for "advanced" performance on the state test used to determine progress under NCLB.

Moderate-to-large gain — For the percentage basic, proficient, or advanced, an average gain of 1 or more percentage points per year. For effect size, an average gain of 0.02 or greater per year.

Slight gain — For the percentage basic, proficient, or advanced, an average gain of less than 1 percentage point per year. For effect size, an average gain of less than 0.02 per year.

Moderate-to-large decline — For the percentage basic, proficient, or advanced, an average decline of 1 or more percentage points per year. For effect size, an average decline of 0.02 or greater per year.

Slight decline — For the percentage basic, proficient, or advanced, an average decline of less than 1 percentage points per year. For effect size, an average decline of less than 0.02 per year.

Effect size — A statistical tool that conveys the amount of difference between test results using a common unit of measurement which does not depend on the scoring scale for a particular test.

Accumulated annual effect size — The cumulative gain in effect size over a range of years.

Mean scale score — The arithmetical average of a group of test scores, expressed on a common scale for a particular state's test. The mean is calculated by adding the scores and dividing the sum by the number of scores.

Standard deviation — A measure of how much test scores tend to deviate from the mean—in other words, how spread out or bunched together test scores are. If students' scores are bunched together, with many scores close to the mean, then the standard deviation will be small. If scores are spread out, with many students scoring at the high or low ends of the scale, then the standard deviation will be large.

Cautions and Explanations

Different labels for achievement levels — For consistency, all of the state profiles developed for this report use a common set of labels (basic, proficient, and advanced) for the main achievement levels required by NCLB. In practice, however, some states may use different labels, such as "meets standard" instead of proficient, and some states have established additional achievement levels beyond those required by NCLB.

Different names for subgroups — For the sake of consistency and ease of data tabulation, all of the state profiles developed for this report use a common set of names for the major student subgroups. In practice, however, states use various names for subgroups that may differ from those used here (such as using "Hispanic" instead of "Latino," or "special education students" instead of "students with disabilities"). Moreover, a few states separately track the performance of subgroups not included in the analyses for this report.

Special caution for students with disabilities and English language learners — Trends for students with disabilities and English language learners should be interpreted with caution because changes in federal guidance and state accountability plans may have altered which students in these subgroups are tested for accountability purposes, how they are tested, and when their test scores are counted as proficient under NCLB. These factors could affect the year-to-year comparability of test results.

Inclusion of former English language learners — In many states, the subgroup of English language learners (also known as limited English proficient students) includes students who were formerly English language learners but who have achieved English language proficiency or fluency in the last two years. Federal NCLB regulations permit states to include these formerly ELL students (sometimes referred to as "redesignated fluent English proficient" students) in the ELL subgroup for up to two years for purposes of NCLB accountability.

Limitations of percentage proficient measure — The percentage proficient, the main gauge of student performance under NCLB, can be easily understood and gives a snapshot of how many students have met their state's performance expectations. But it also has several limitations as a measure of student achievement. Users of percentage proficient data should keep in mind these limitations, particularly the following:

* "Proficient" means different things across different states. States vary widely in curriculum, learning expectations, and tests, and state tests differ considerably in their difficulty and cut scores for proficient performance.
* Although this study has taken steps to avoid comparing test data where there have been "breaks" in comparability resulting from new tests, changes in content standards, revised cut scores, or other major changes in testing programs, the year-to-year comparability of test results in the same state may still be affected by less obvious policy and demographic changes.
* Changes in student performance may occur that are not reflected in percentage proficient data, such as an increase in the number of students reaching performance levels below and above proficient (such as the basic or advanced levels).
* The size of the achievement gaps between various subgroups depends in part on where a state sets its cut score for proficiency. For example, if a proficiency cut score is set so high that almost nobody reaches it or so low that almost everyone reaches it, there will be little apparent achievement gap. By contrast, if the cut score is closer to the mean test score, the gaps between subgroups will be more apparent.

Difficulty of attributing causes — Although the tables above show trends in test scores since the enactment of NCLB, one cannot assume that these trends have occurred *because* of NCLB. It is always difficult to determine a cause-and-effect relationship between test score trends and any specific education policy or program due to the many federal, state, and local reforms undertaken in recent years and due to the lack of an appropriate "control" group of students not affected by NCLB.