Detailed findings on the economic impact of the achievement gap in America's schools

April 2009

McKinsey&Company

Outline of achievement gap factbase

- **The educational performance gap in an international context**
  - **Overall**
  - **International performance over time**
  - **International top gap**
  - **Correlation with economic status**
- Racial achievement gap
- Income achievement gap
- System-based gap
- Demographic trends
- Achievement gap trends and progress over time
- Economic cost of the achievement gap to society
- Cost of the achievement gap to the individual
- Appendix
- Selected Bibliography

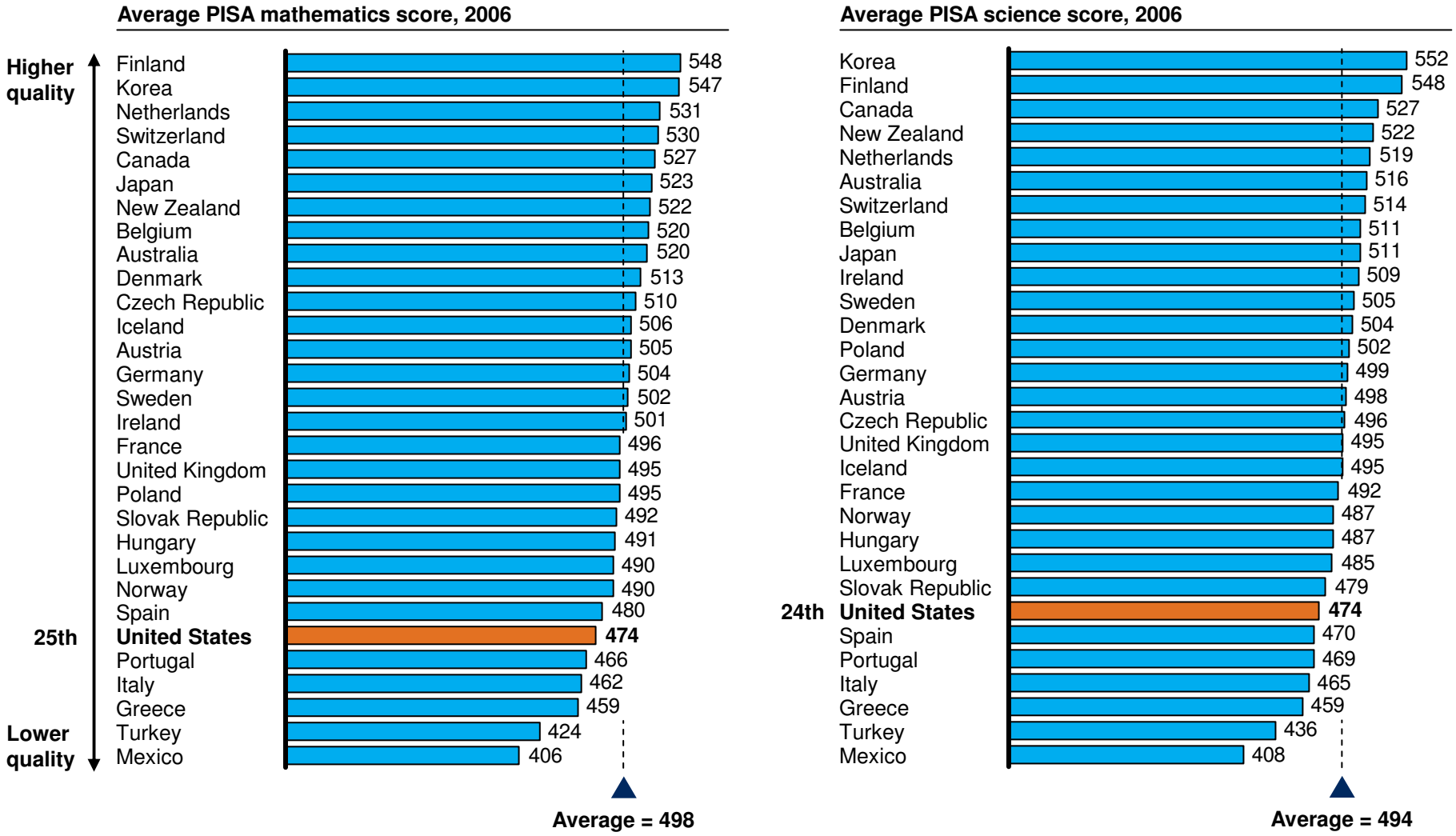
An educational performance gap exists between the United States and other countries (1/2)

- **An educational performance gap exists between the United States and other countries**
  - On average, American students perform poorly compared to relevant peers—developed countries and education leaders—across subjects and across student age groups (e.g., American 15-year-olds score 25th out of 30 OECD countries on the PISA math test)
  - The United States performs increasingly poorly on educational attainment measures like high school completion
- **A top gap also exists among "top performers" in the United States**
  - Few students from the United States perform at the highest international levels, and top performers in the United States perform worse than top performers in other countries
- **Socioeconomic achievement gaps are larger in the United States than other countries**
  - Inequality is higher in the United States than in other OECD countries, which translates into more socioeconomic inequality in education
  - Income inequality and socio-economic equality are both reasonably high in the United States
  - School performance and socioeconomic background are highly correlated in the United States, but much less so in a Finland, and in general, top performing educational systems have smaller socioeconomic gaps in performance

An educational performance gap exists between the United States and other countries (2/2)

- **This educational performance gap between the United States and other countries has grown over time**
  - Attainment levels as measured by percent of the population graduating from high school and percent of the population completing postsecondary schooling are declining on an absolute level, while improving in other countries at the same time
  - Over time, the United States has fallen behind international competitors in terms of test-score rankings
- **The United States' poor performance is striking considering the United States' high income per capita and high levels of educational spending**
  - The US's poor performance is striking considering the US's high income per capita, which is generally correlated with level of educational achievement
  - The United States spends more than any other country per point on the PISA mathematics test

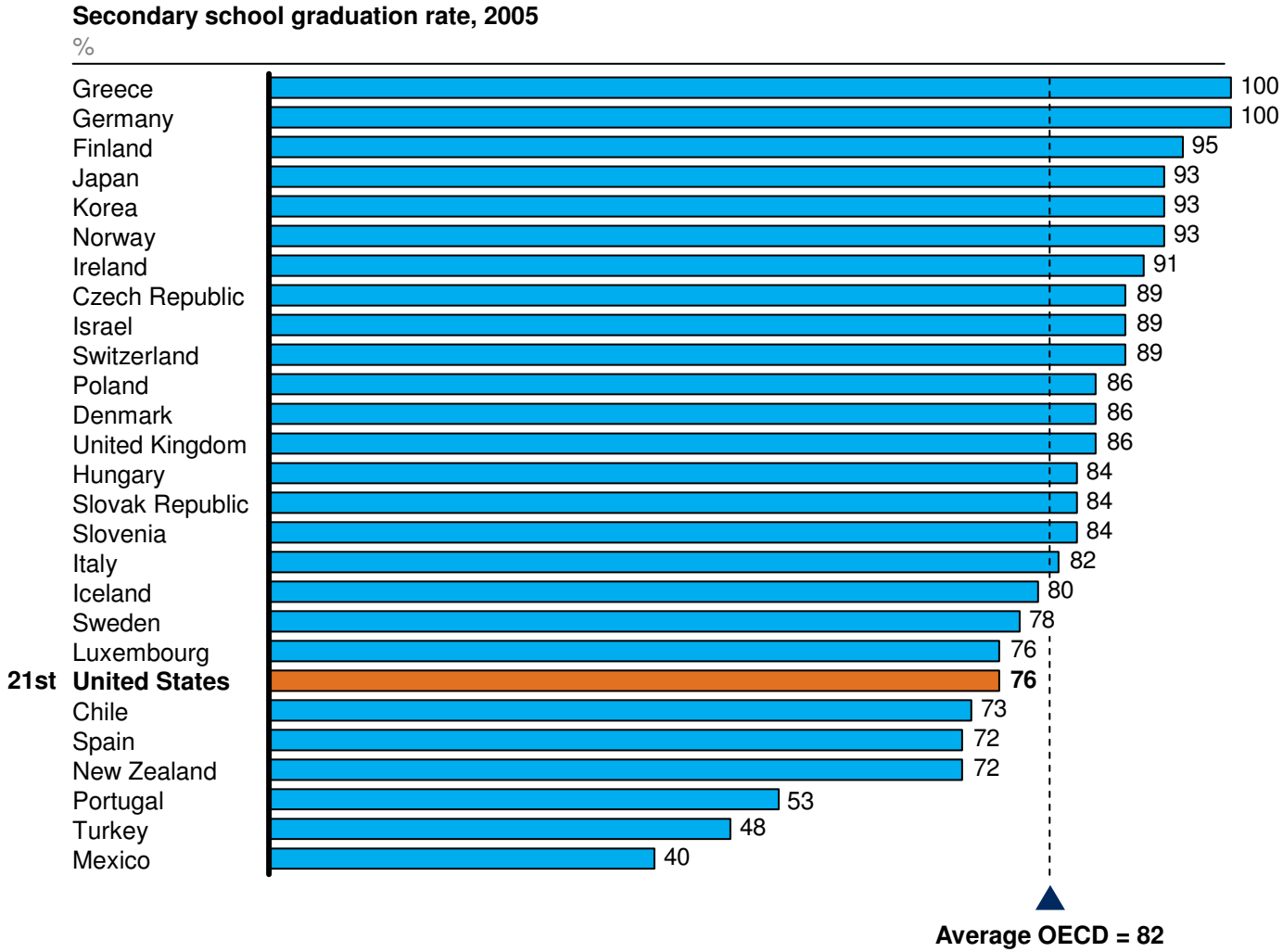
PISA score rankings show United States trailing other OECD countries



Note: Results for OECD countries; OECD partner countries not included; differences may not be statistically significant.
Note: The United States scores relatively better on international tests in the early years (TIMSS) for fourth and eighth graders

SOURCE: OECD

The United States also has a lower overall attainment rate than many of its international peers



Note: Graduation rate covers "typical population of upper secondary school age that follows and successfully completes upper secondary programs"; not all OECD countries included in samples; differences may not be statistically significant.

SOURCE: OECD, Education at a Glance, 2007

Across subject areas, students in the United States trail peers and the gap widens over time

Top 10
Middle tier (11-20)
Below 20

US ranking by assessment

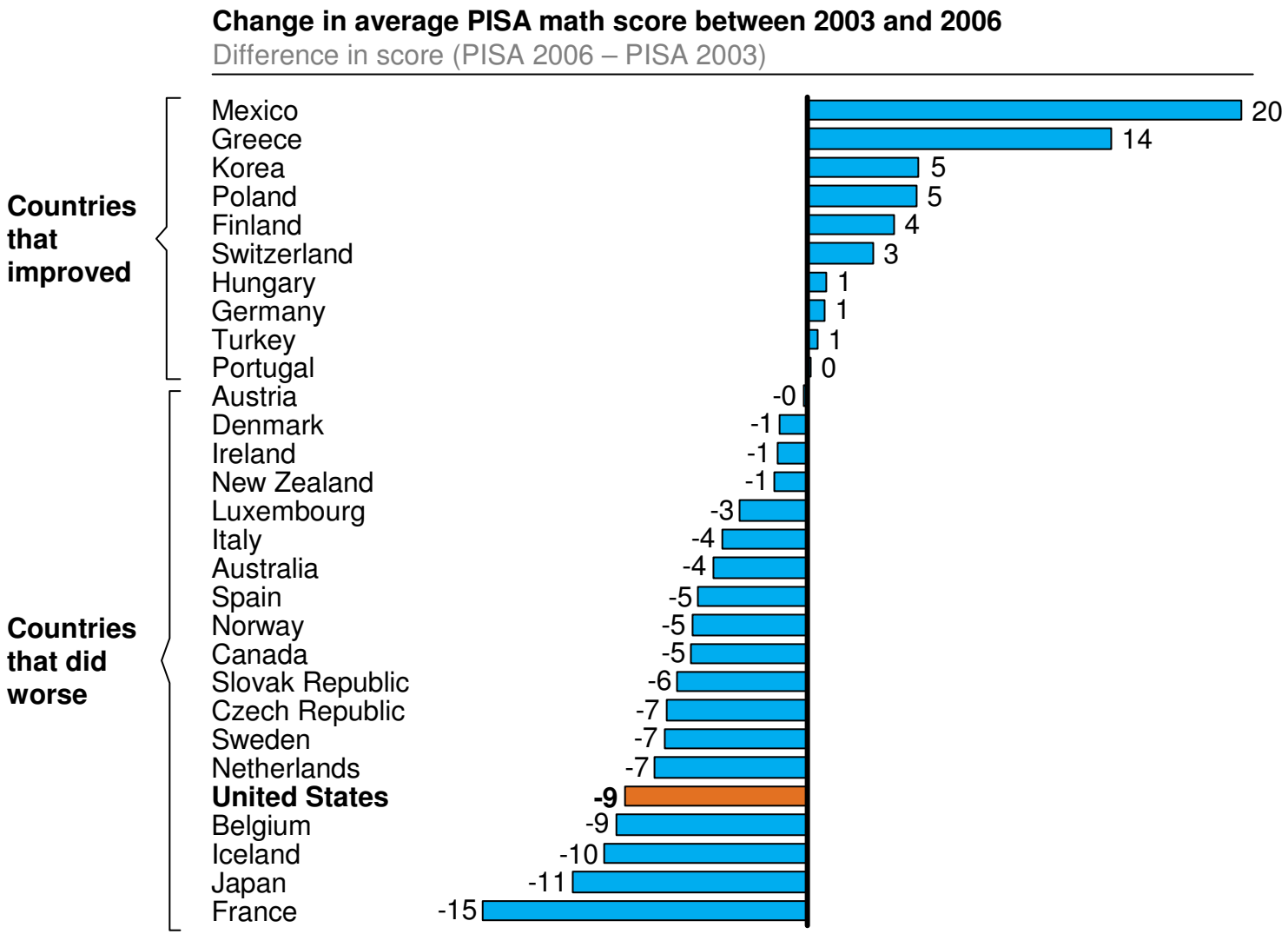
US place out of the number of participating countries

	Grade 4	Grade 8	Age 15
Reading	**PIRLS (2006):** 18 of 45	N/A	**PISA (2003):** 18 of 40
Math	**TIMSS (2003):** 12 of 25	**TIMSS (2003):** 15 of 45	**PISA (2006):** 35 of 57
Science	**TIMSS (2003):** 6 of 25	**TIMSS (2003):** 10 of 45	**PISA (2006):** 29 of 57
"Problem solving"	N/A	N/A	**PISA (2003):** 29 of 40

Note: Includes both OECD and OECD partner countries.

SOURCE: National Center for Education Statistics, OECD

Recently, relative performance of US students has been declining



Note: No data for the United Kingdom in 2003; differences may not be statistically significant.

SOURCE: OECD; E. Hanushek, "Education and Economic Growth," Education Next, 2008

In the United States, attainment levels are declining at an absolute level, while at the same time improving in other countries

In the past the United States led the world…

- In 1995, the United States was tied for first in college and university graduation rates…
- Forty years ago, the United States had one of the best levels of high school attainment…
- In 1970, the United States had 30% of the world's college graduates…

… however, its standing has declined

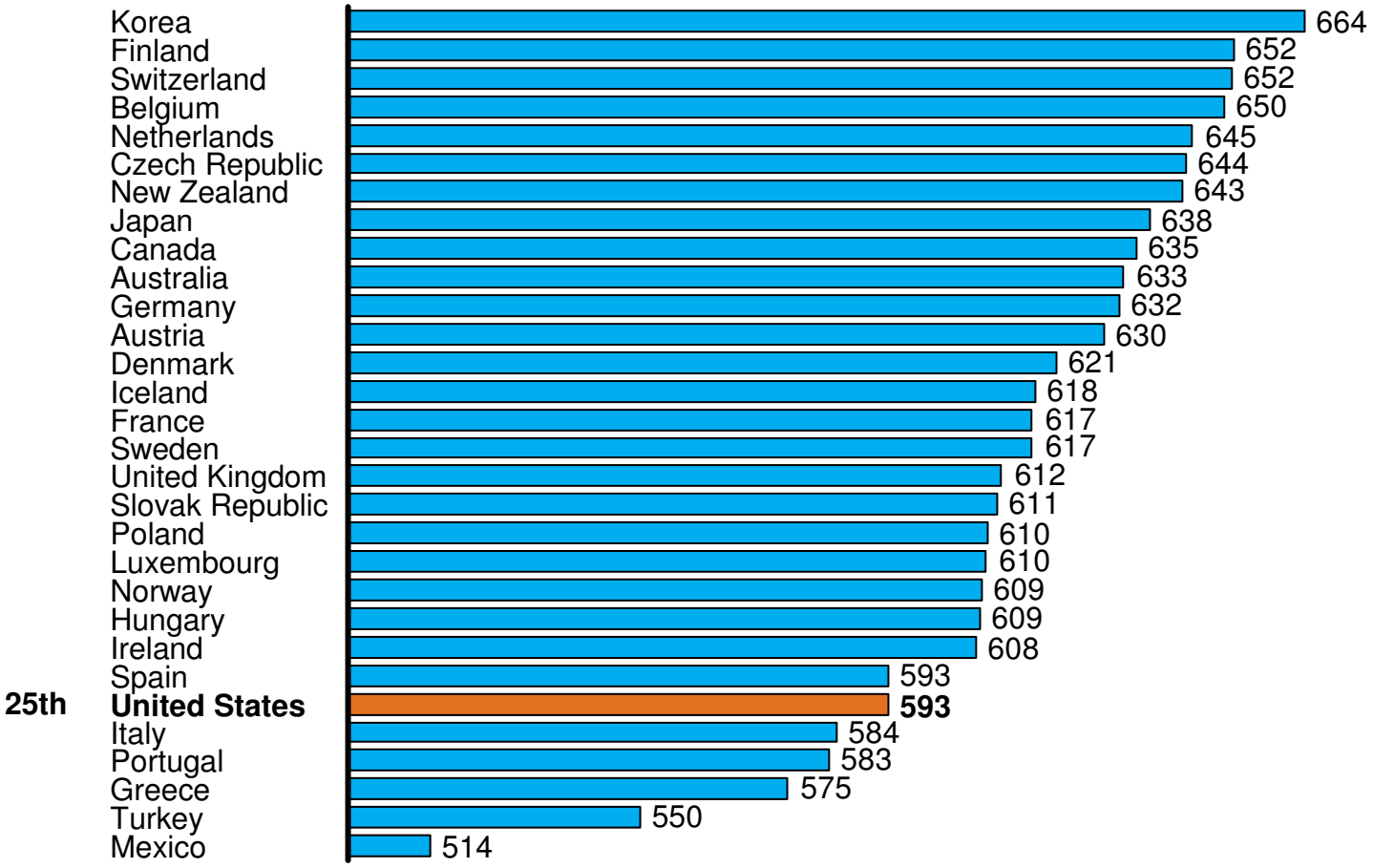
- …but by 2006 the country had dropped to 14th.
- …but in 2006 it ranked 18th out of 24 industrialized nations in high school graduation.
- …but today, it has less than 15% of the world's college graduates.

SOURCE: Benchmarking for Success: Ensuring US Students Receive a World-Class Education, National Governors Association, 2008, pg 11.

Even top performers in the United States perform worse than top performers in other countries

Average PISA math score of top students (15-year-olds) in 2006

Score of the top 10th percentile



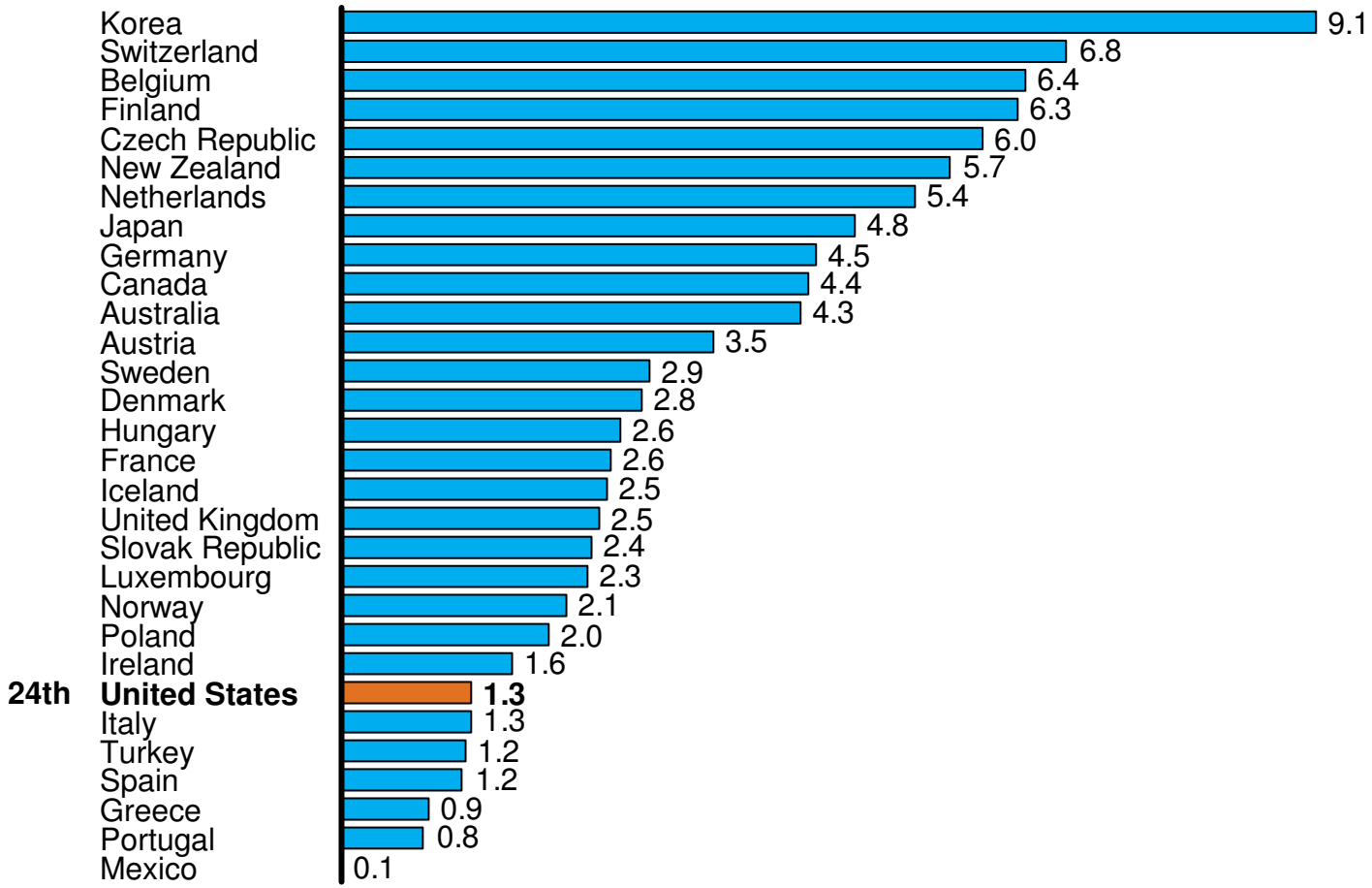
Note: The United States scores relatively better on international tests in the early years (TIMSS) for fourth and eighth graders, which bolsters the argument of an achievement gap that gets more severe over the lifetime of a child; differences may not be statistically significant.

SOURCE: OECD

The United States has among the smallest proportion of 15-year-olds at the highest proficiency level

Students scoring in the highest proficiency level (top sixth) in PISA math, 2006

% of 15-year-olds



Note: The United States scores relatively better on international tests in the early years (TIMSS) for fourth and eighth graders, which bolsters the argument of an achievement gap that gets more severe over the lifetime of a child; differences may not be statistically significant.

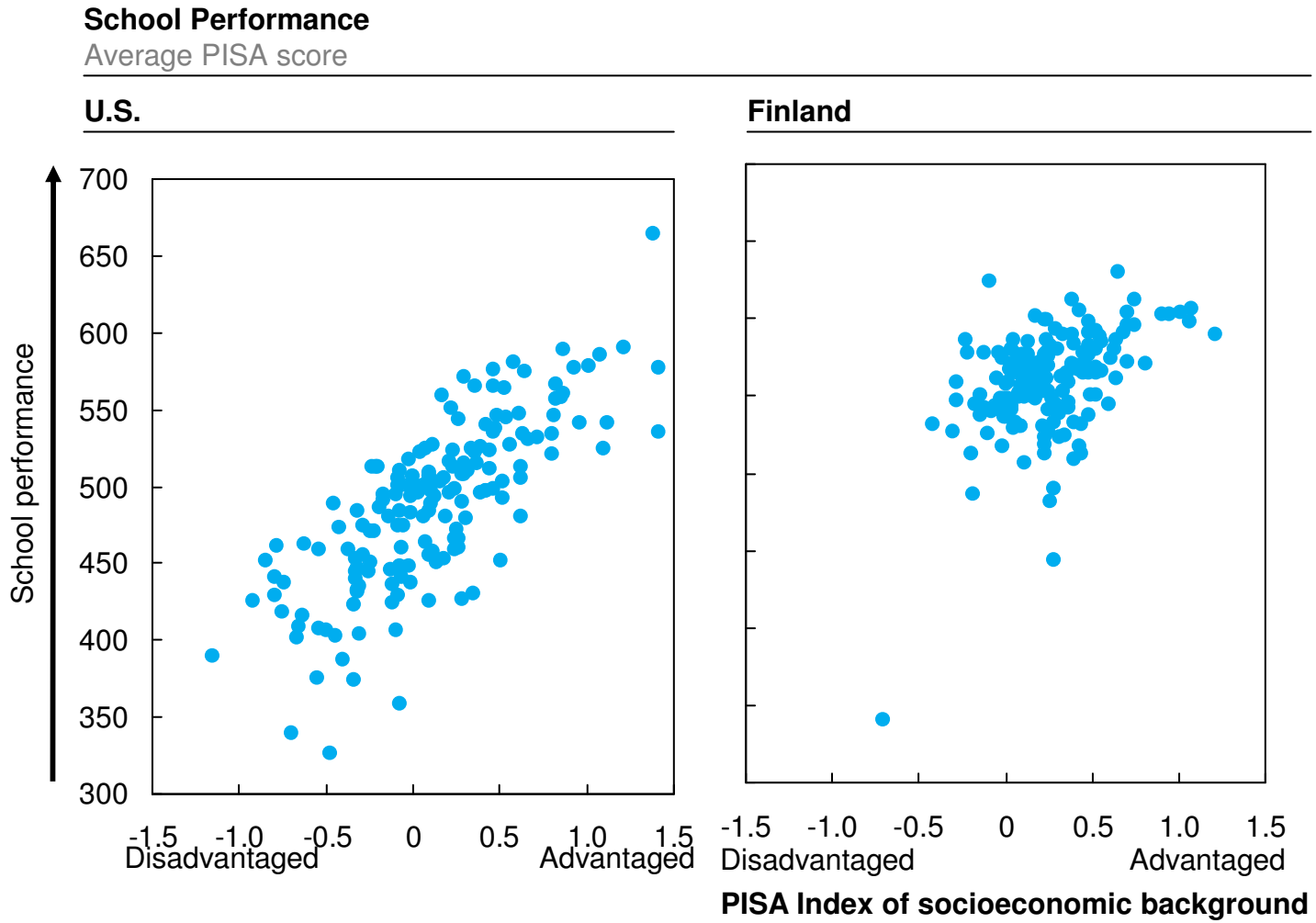
SOURCE: OECD

Income inequality and socioeconomic inequality in education are both relatively high in the United States

1 Socioeconomic status as measured by PISA's index of economic, social, and cultural status.

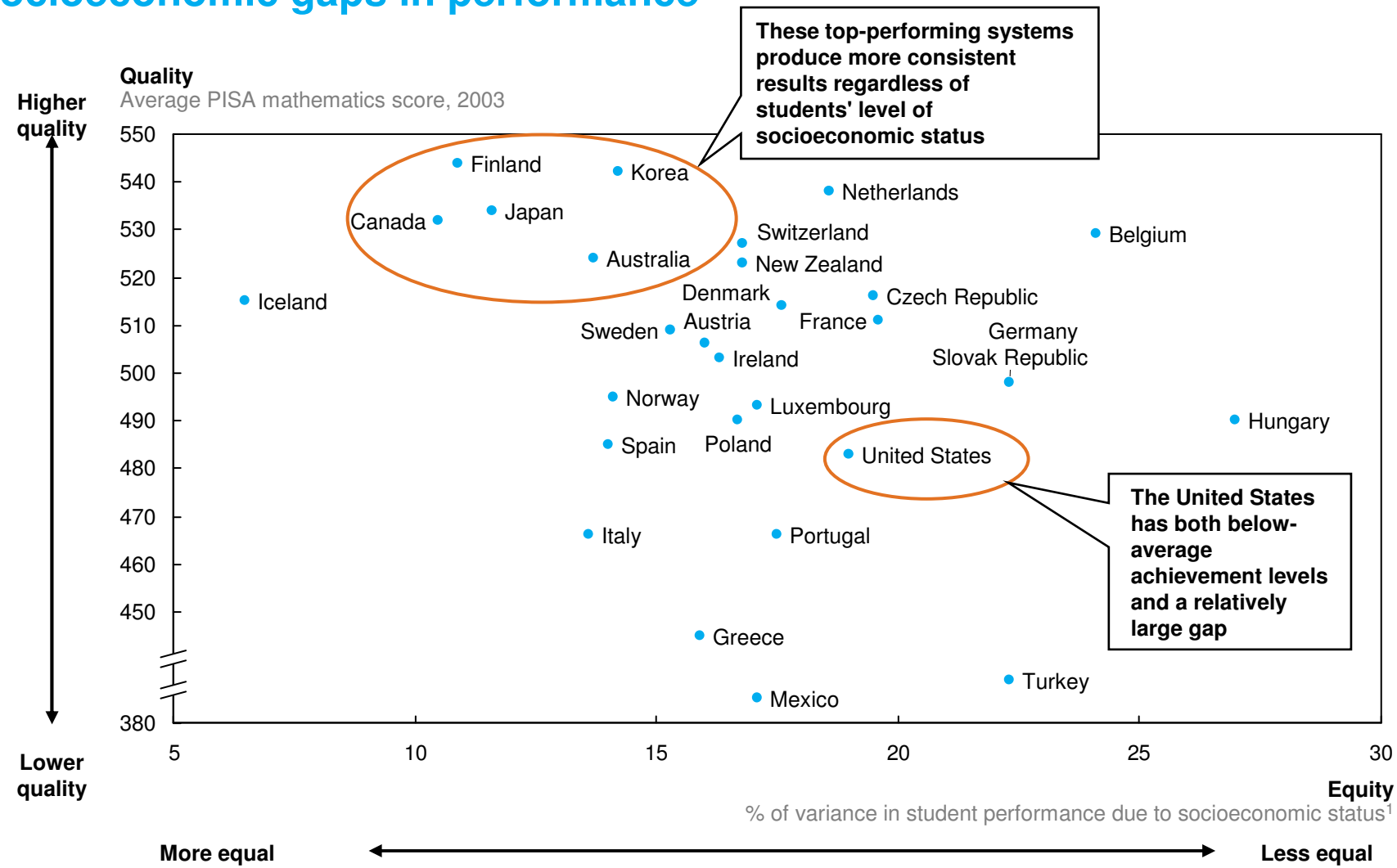
SOURCE: OECD; Learning for Tomorrow's World – First Results from PISA 2003; McKinsey analysis

School performance and socioeconomic background are highly correlated in the United States, but much less so in Finland's



SOURCE: OECD, PISA presentation to the Governor's Education Symposium, 2008 (Andreas Schleicher)

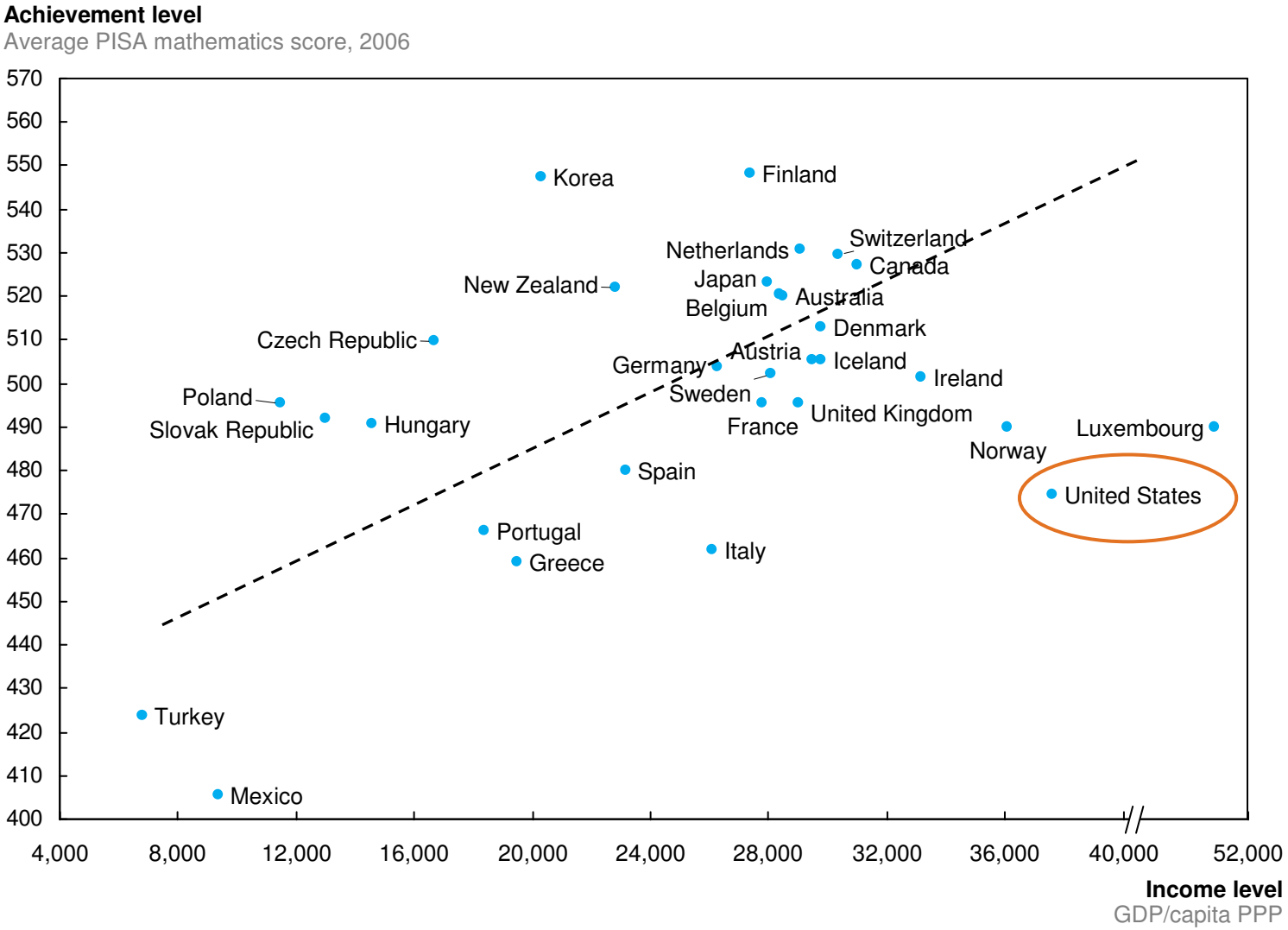
In general, top-performing educational systems have smaller socioeconomic gaps in performance



1 Socioeconomic status as measured by PISA's index of economic, social, and cultural status.

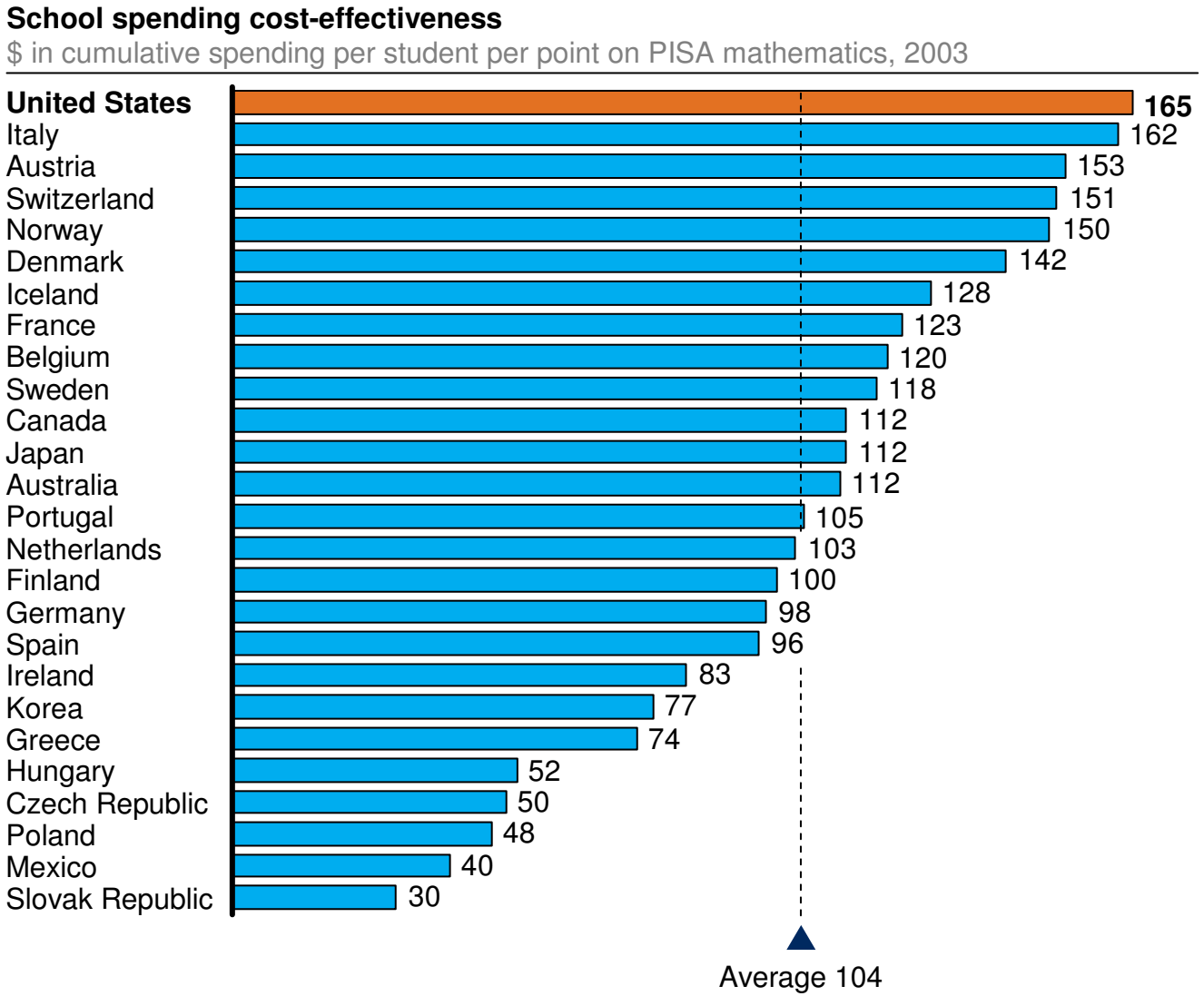
SOURCE: Learning for Tomorrow's World – First Results from PISA 2003; McKinsey analysis

The US's poor performance is striking considering its high income per capita, which is generally correlated with level of educational achievement



SOURCE: OECD

The United States spends more than any other country per point on PISA mathematics test

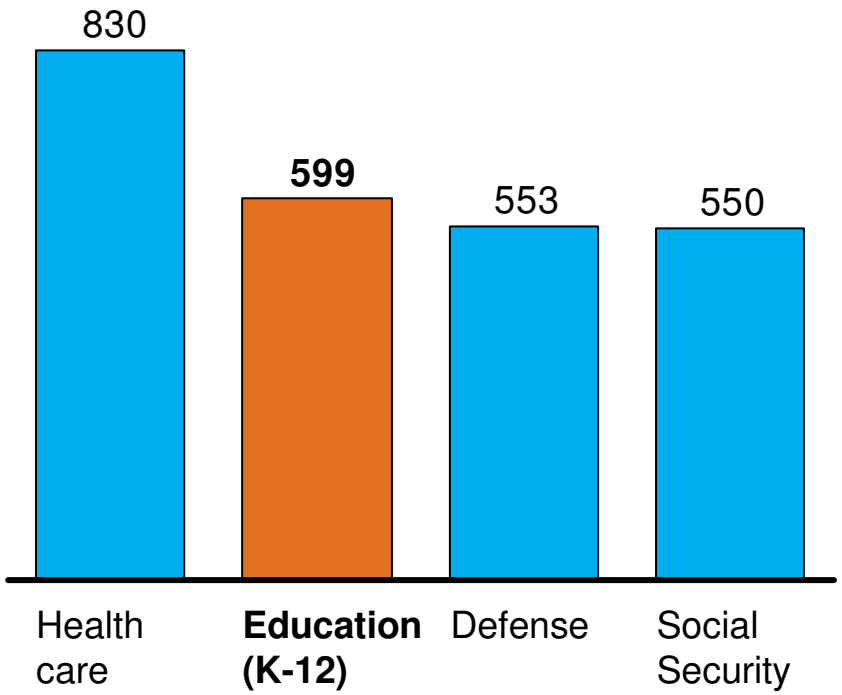


The US spends $165 to get a point on PISA math, about 60% more than the OECD average

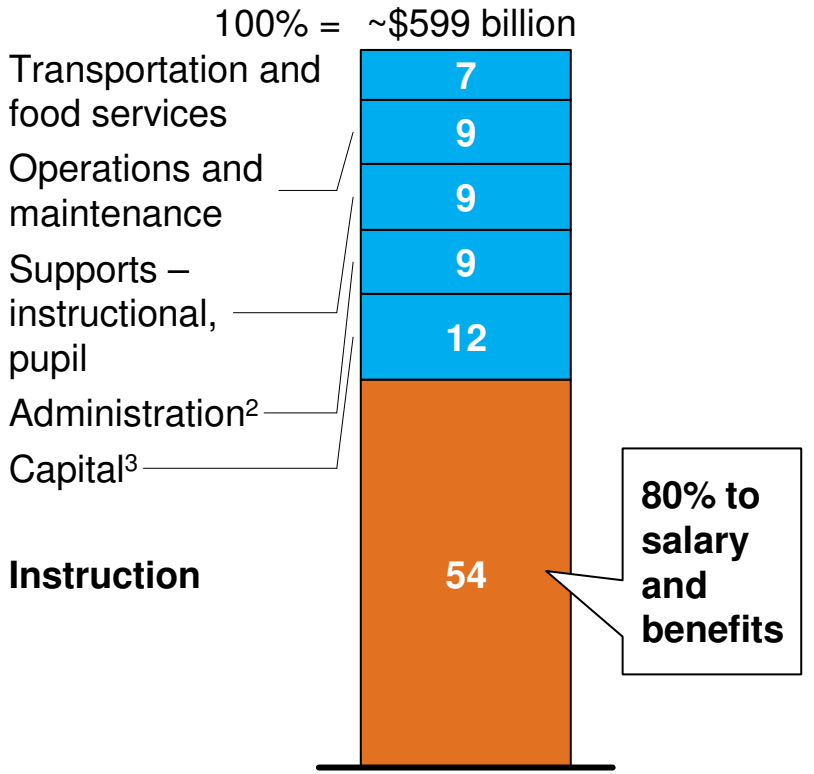
SOURCE: OECD 2006; McKinsey analysis

Apart from health care, the United States spends more public funds on K-12 education than any other service

Public spending by area in the US (2006)[1]
$ billions



Distribution of expenditures by function
%



1 Health care and education are from all sources (local, state, federal); defense and Social Security are primarily federal.
2 School administration and centralized support services.
3 Construction and land acquisition (84%), capital equipment (16%).

SOURCE: National Center for Education Statistics; US Census Bureau; OECD; GovernmentSpending.com

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  - **Overall**
  - **Interaction between the income and racial achievement gaps**
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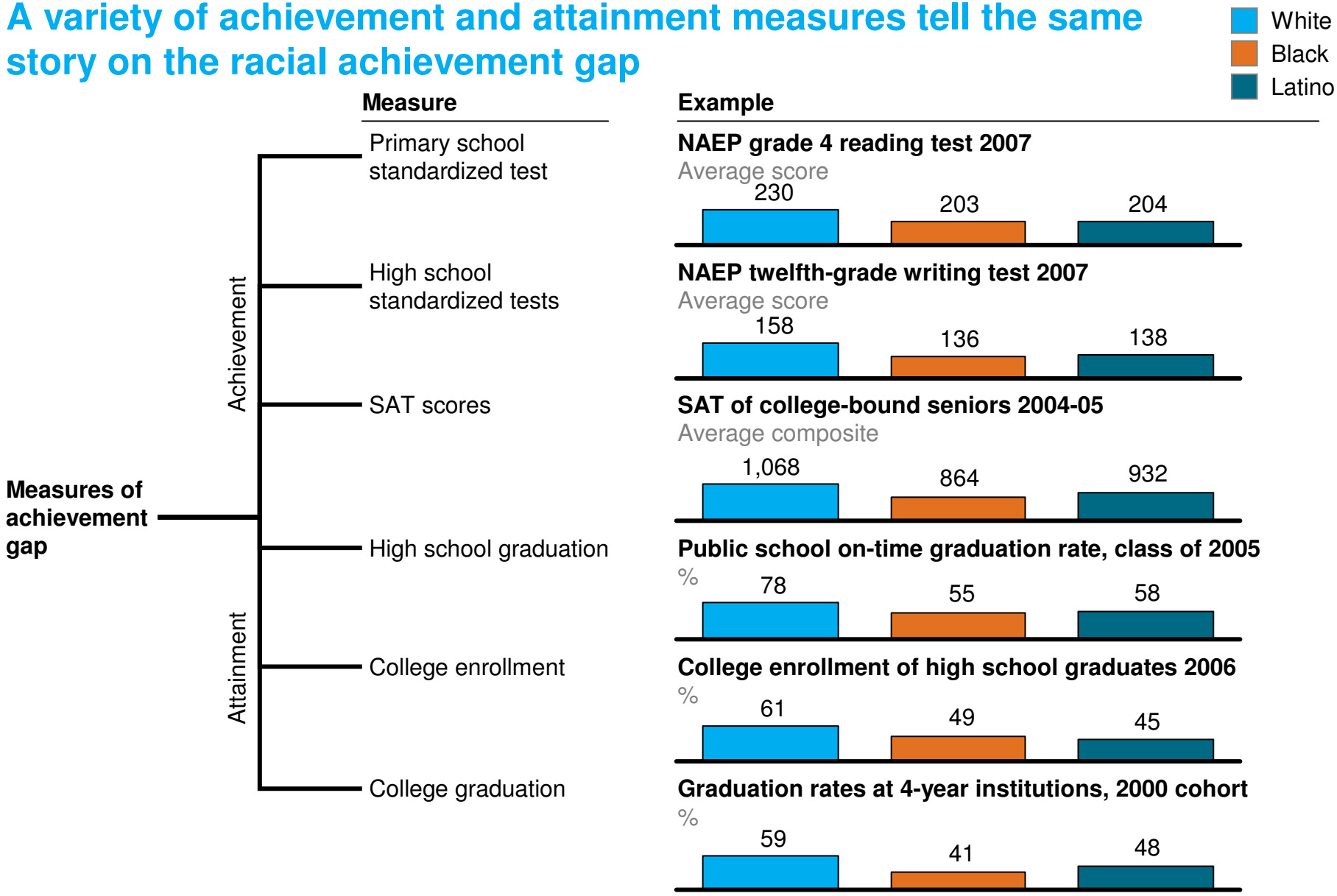
A racial achievement gap exists between Black and Latino students and white students

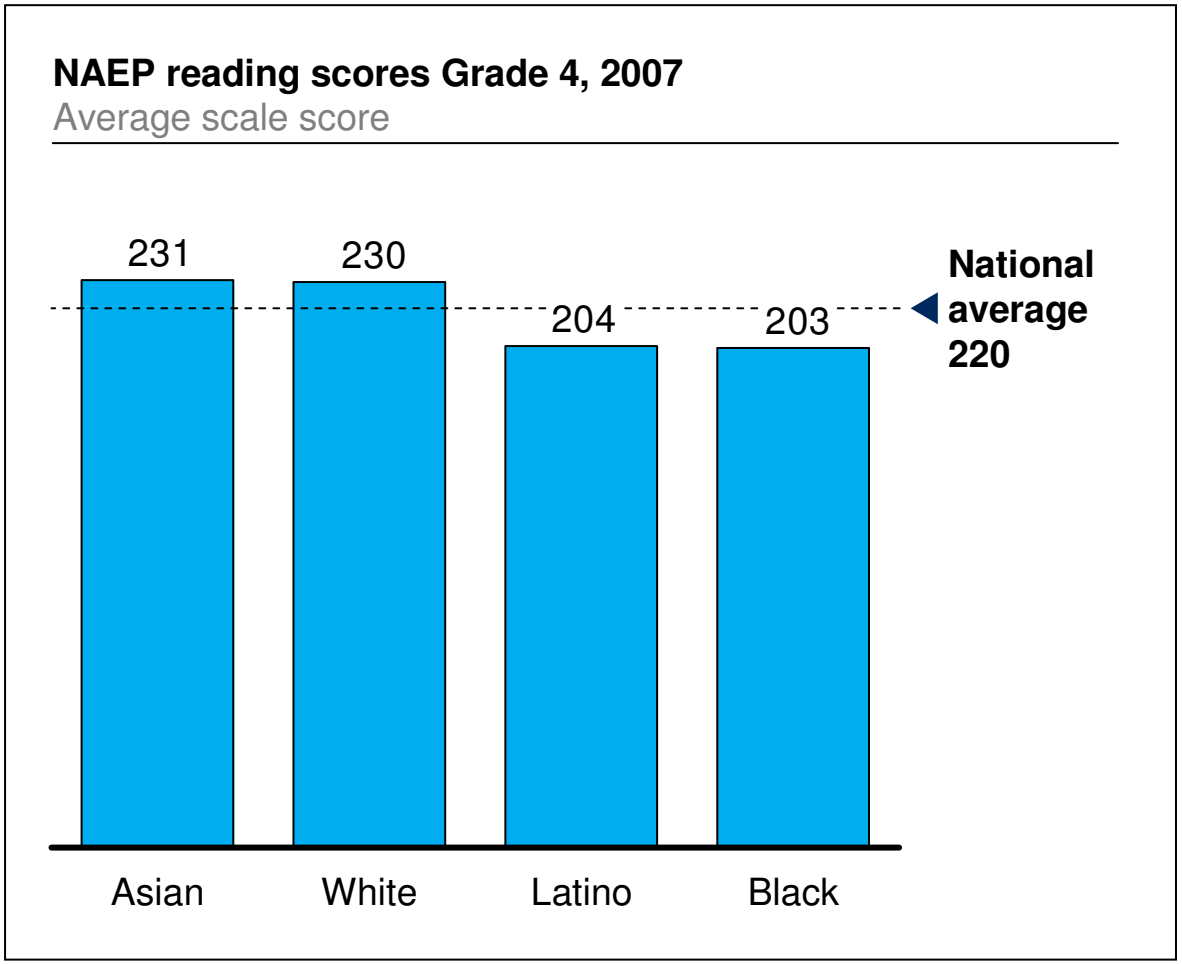
- **A racial achievement gap exists where the average black or Latino student is roughly 2-3 years of learning behind the average white student**
  - A racial gap exists today regardless of how it is measured, including both achievement (e.g., test score) and attainment (e.g., graduation rate) measures
  - Averaging math and reading across fourth and eighth grade, 48% of blacks and 43% of Latino students are "below basic," while only 17% of whites are; this gap exists in every state
  - An even larger racial achievement gap exists in urban school districts, with only 3 of 11 districts having a black-white gap smaller than the national average
- **Relative to other countries, black and Latino eighth-graders in the United States perform at the level of transitioning countries in math and science; this trend is amplified as students get older**
  - In eighth-grade math, Latino students performed at the level of Malaysia and blacks perform at the level of Bosnia and Herzegovina
  - For 15-year-olds in science, US Latino students are at the level of Chile and Serbia and US black students score on par with Mexico and Indonesia
- **This racial achievement gap grows in magnitude as a child nears entry to the workforce from grade 4 to grade 12**
  - Between fourth and twelfth grade, the gap grows 41% for Latino students and 22% for black students
- **The racial achievement gap is not correlated with overall state performance (i.e., better states do not have smaller gaps)**
  - Even in states with the highest overall test scores, the racial achievement gap is very large (e.g., Massachusetts has among the highest overall NAEP scores, but black and Latino students are 8x more likely to be “below“ basic in fourth-grade math than whites)
  - And these regional and state variations in the achievement gap cannot be explained by the proportion of black and Latino students in the educational system

A variety of achievement and attainment measures tell the same story on the racial achievement gap



SOURCE: NAEP (standardized test scores); NCES, http://nces.ed.gov/programs/digest/d05/tables/dt05_126.asp (SAT scores); EdWeek, EPE Research Center, 2008 (high school graduation); US Census, http://www.census.gov/prod/2008pubs/p20-559.pdf (college enrollment); NCES, IPEDS, 2008, http://web1.ncaa.org//app_data/instAggr2008/1_0.pdf http://nces.ed.gov/pubs2008/2008173.pdf (college graduation)

NAEP test results tell the most consistent and widely cited story of the racial achievement gap



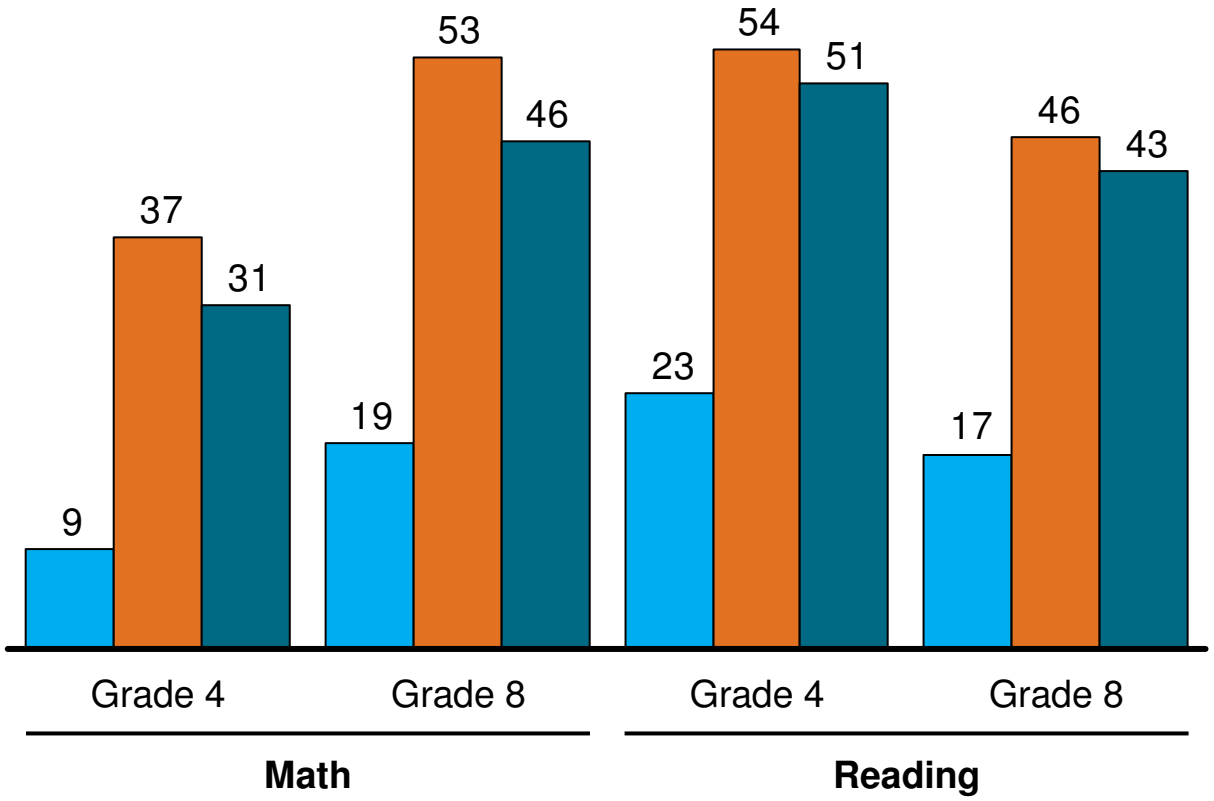
Every 10 points is roughly equivalent to 1 year of learning[1]

1 Based on NAEP's criteria for achievement levels by grade, the difference between "basic" and "proficient" as a fourth and eighth grader is 48 and 50, respectively, in math, and 35 and 43, respectively, in reading—this means to remain at the same achievement level over four years, each year you would gain slightly over 10 points.

SOURCE: US DOE, NCES, NAEP Summary Data Tables, Achievement Levels by Grade

This racial achievement gap exists across grade levels in fundamental subjects like reading and math

"Below basic"[1] achievement on NAEP by subject, grade, and race, 2007
% of total

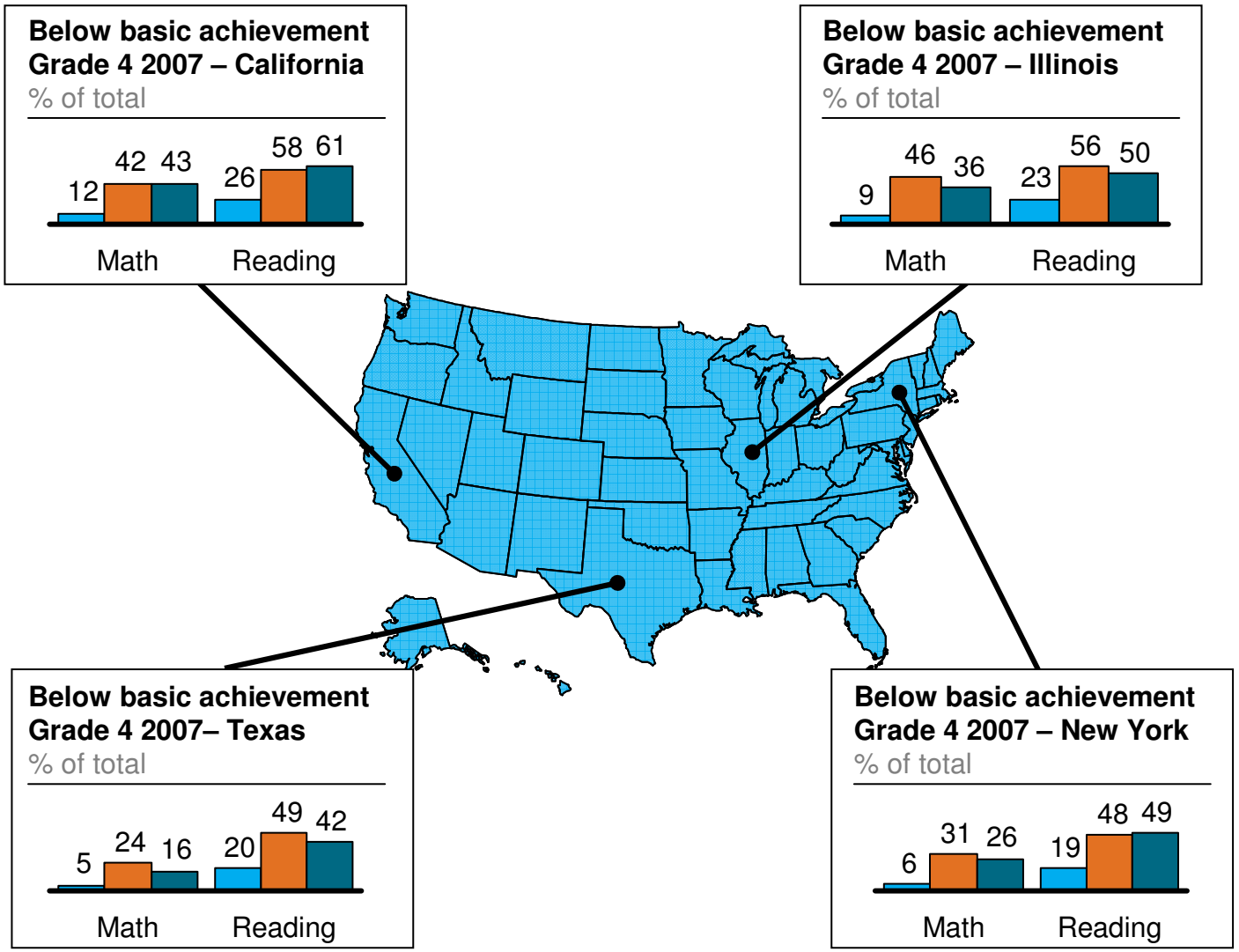


- Black and Latino students are 2-3x more likely to have "below basic" skills in reading and math when compared to whites
- Overall, average black or Latino students are nearly 3 years of learning behind their white counterparts[2]

1 NAEP has four classification for each test: advanced, proficient, basic and below basic.
2 Based on average scores for groups, where 10 points is roughly equivalent to one year of learning (e.g., in fourth-grade reading, whites and Asians score 230 and 231, respectively, while black and Latino students score 203 and 204, respectively—a difference of nearly 30 points).

SOURCE: NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables, data for public schools

This gap exists across the country, with black and Latino students performing worse than white students in nearly every state



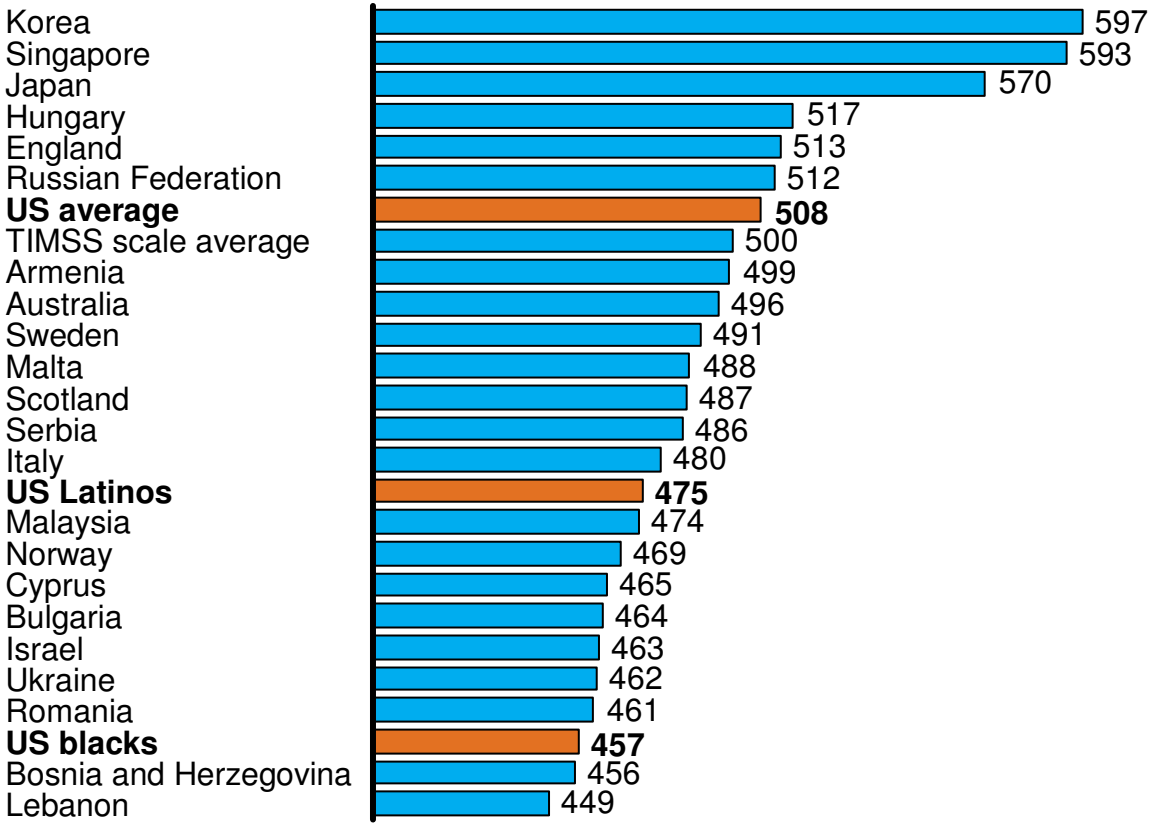
Note: Relationship holds for eighth-grade NAEP results.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables, subset of states, data for public schools; McKinsey analysis

Relative to other countries, black and Latino students in the United States perform below the international average, and on par with the average student in many transitioning economies

TIMSS grade 8 mathematics score

Average score



- **Latino students in the US score on par with the average in Italy and Malaysia:**
  - **As a country, Latino students would rank 20th rather than the US ranking of 9th out of the 48 participating countries**
- **Blacks in the US score on par with Bosnia and Herzegovina and Lebanon**
  - **As a country, blacks would rank 28th rather than the US ranking of 9th out of the 48 participating countries**

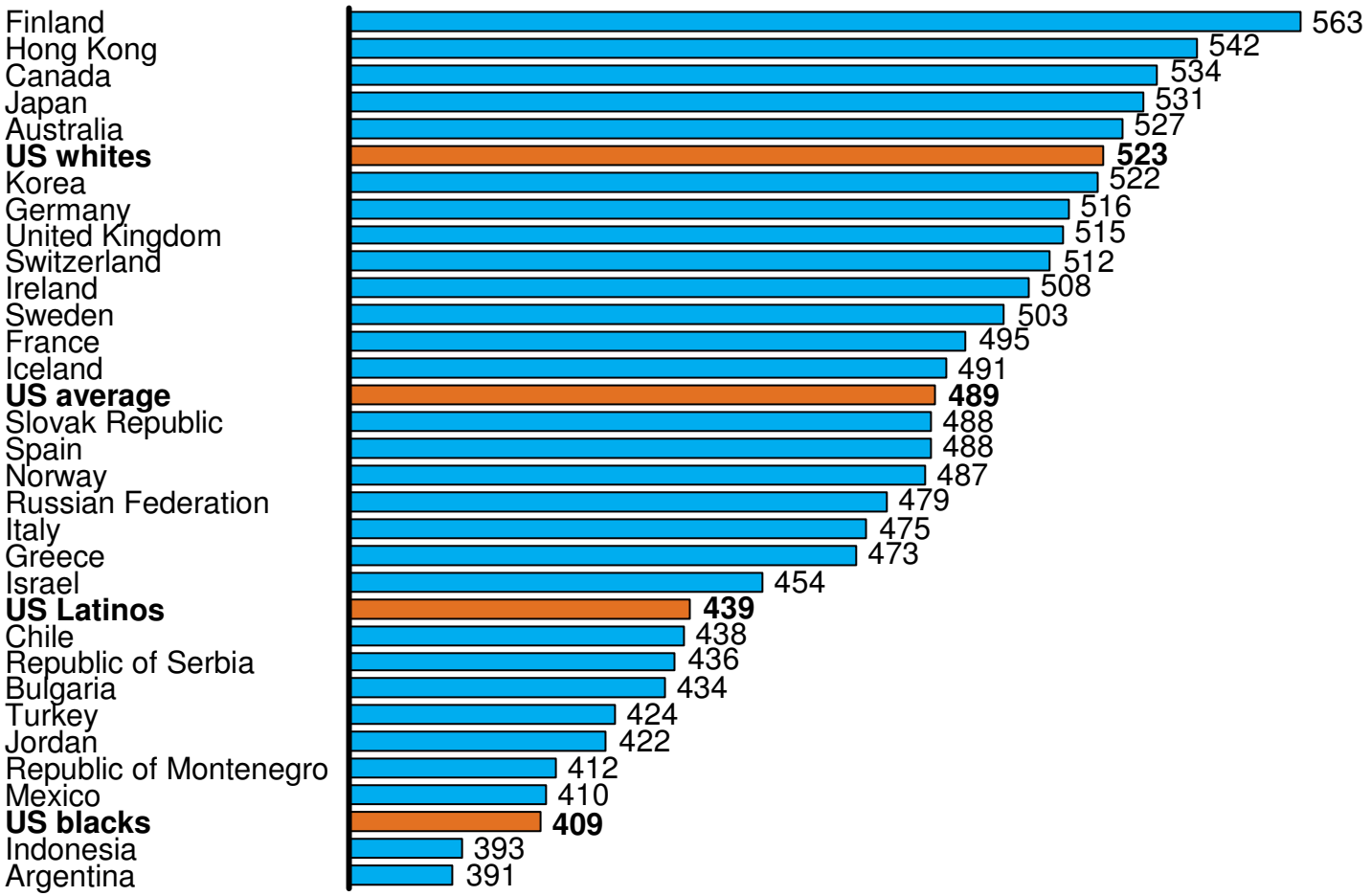
Note: Differences may not be statistically significant; the TIMSS scale average is 500, which is the mean score of the original TIMSS 1995 countries, with a standard deviation of 100; international benchmarks for standards are separated by 75 points, with 625 for advanced, 550 for high, 475 for intermediate, and 400 for low.

SOURCE: TIMSS 2007 Tables and Figures, subset of countries; Commissioner's remarks: http://nces.ed.gov/whatsnew/commissioner/remarks2008/12_9_2008.asp

This trend is amplified in the later student years, with blacks in the United States at the level of Mexico and Indonesia

PISA Science Literacy Scale for 15-year-old students, 2006

Score



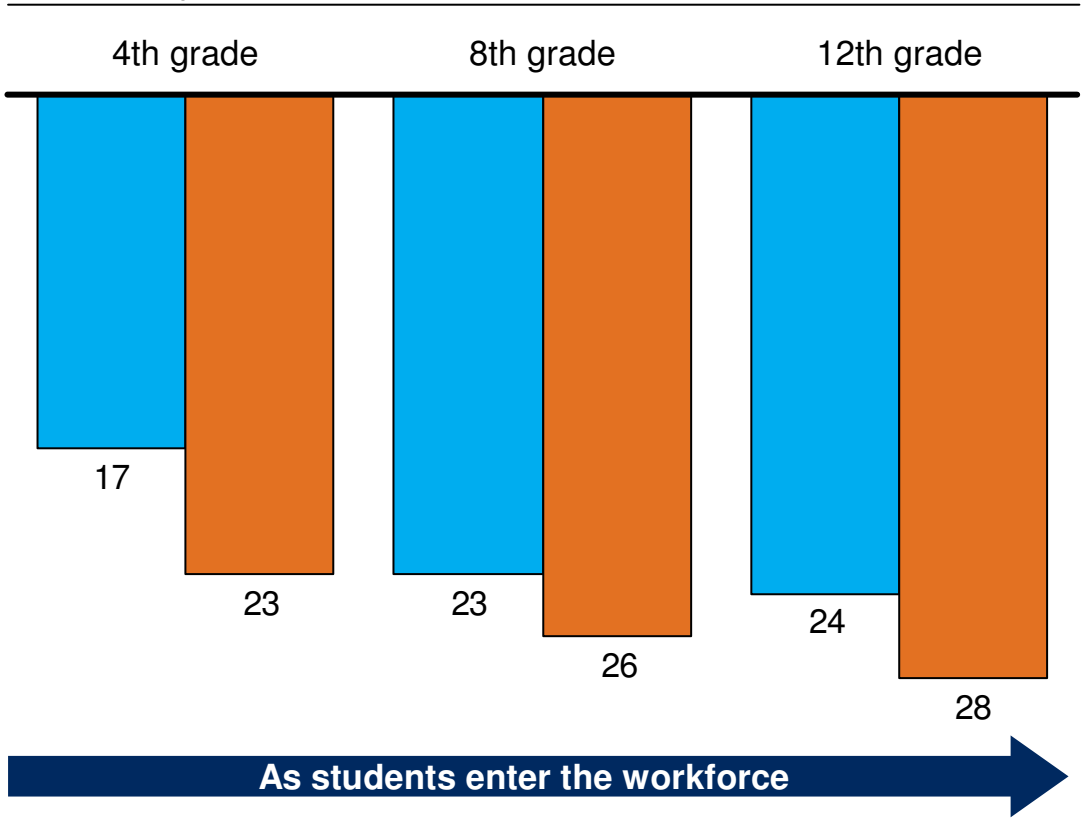
Note: Differences may not be statistically significant; the PISA scale average is 500; subset of countries.

SOURCE: PISA, Highlights from PISA 2006: Performance of US 15-Year-Old Students in Science and Mathematics Literacy in an International Context, 2007

This racial achievement gap appears to grow more severe as a child goes from grade 4 to grade 12 and nears entry to the workforce

Difference in NAEP Math scores, 2004

Number of points



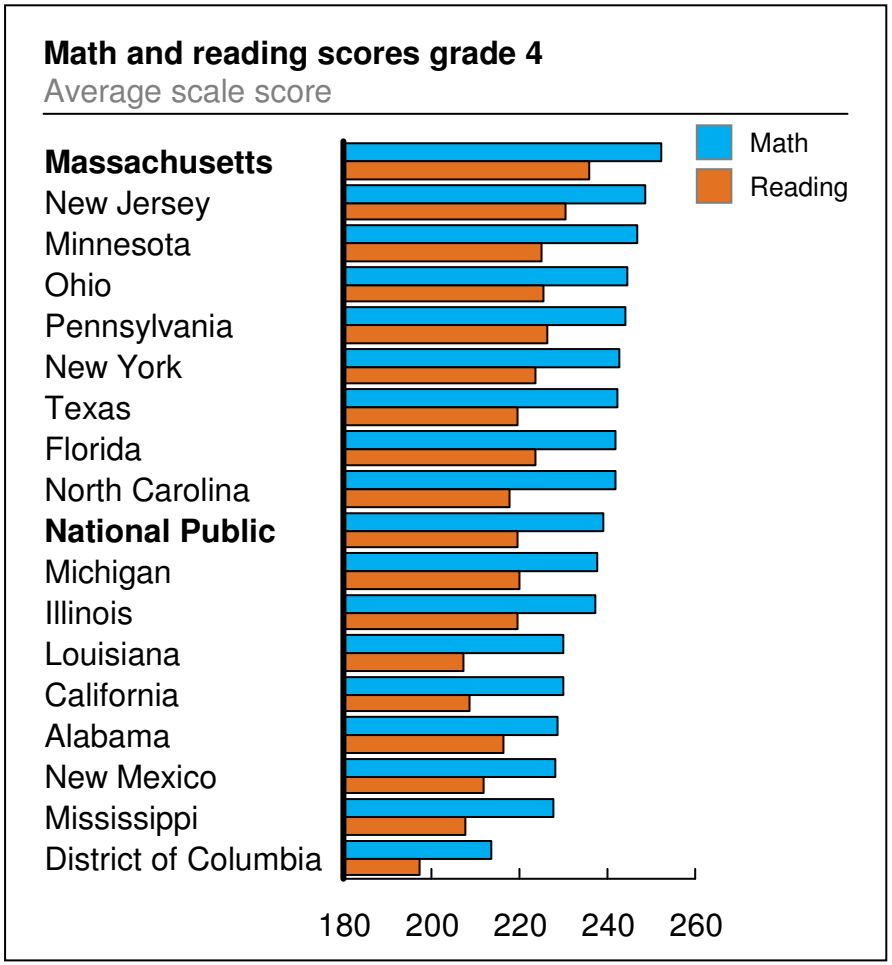
- **A significant increase in the math test-score gap occurs between fourth and eighth grade, with additional growth in the gap occurring in high school**
  - **Between grades 4 and 12, the gap grows 41% for Latino students and 22% for black students**
- **The gap would be even greater by grade 12 if NAEP included the disproportionate number of black and Latino high school dropouts**

Note: Relationship holds for NAEP reading scores, except for a minor narrowing of the black-white gap in eighth grade.

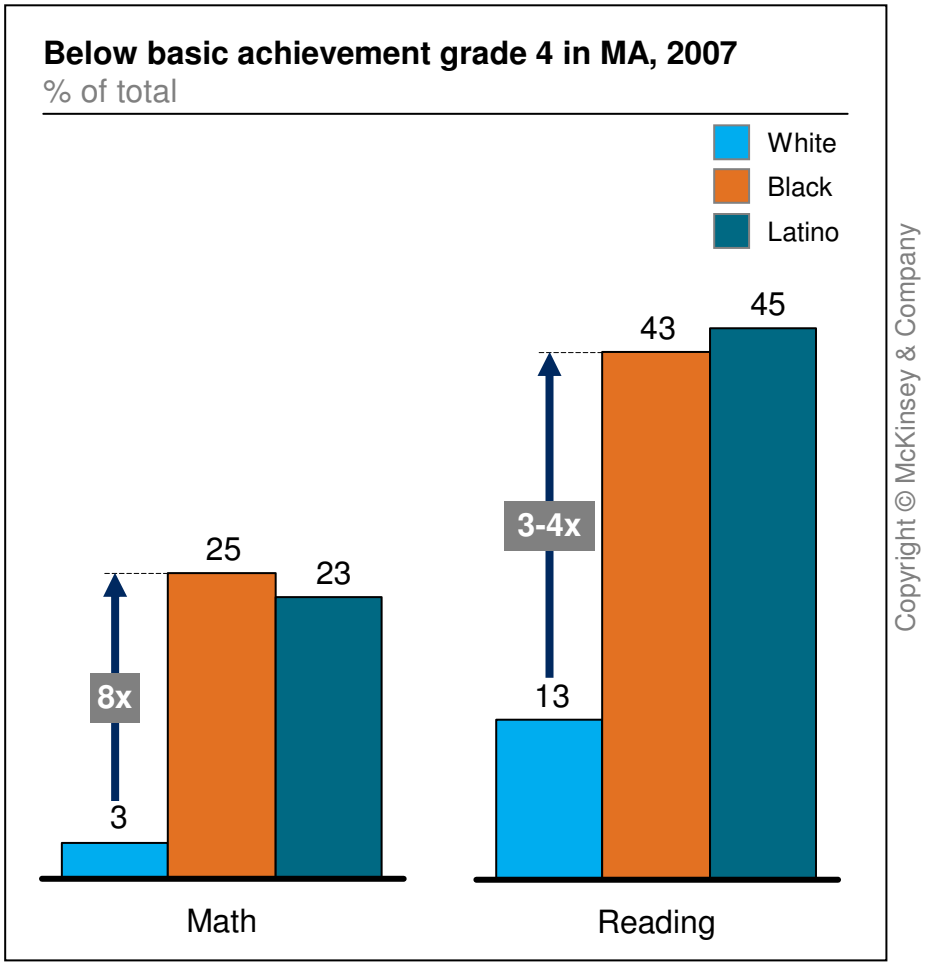
SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables, data for public schools

Even in the state with the highest overall scores, the achievement gap is large

Massachusetts has the highest scores in math and reading…



…but the relative achievement gap in Massachusetts is also among the highest

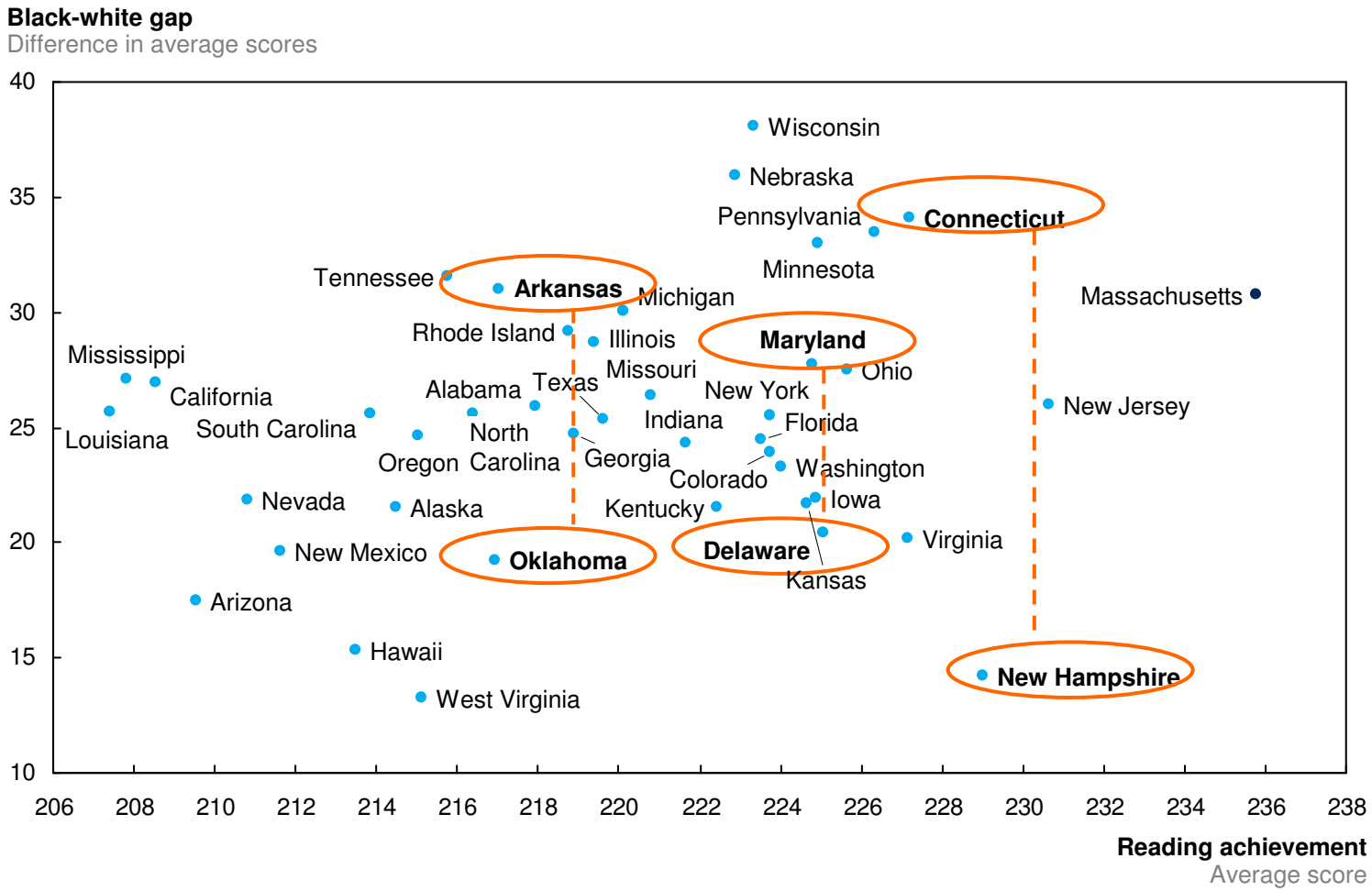


Note: Relationship holds for grade 8 NAEP scores as well.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables, subset of states, data for public schools; McKinsey analysis

Neighboring states with similar overall scores can have large achievement gap differences

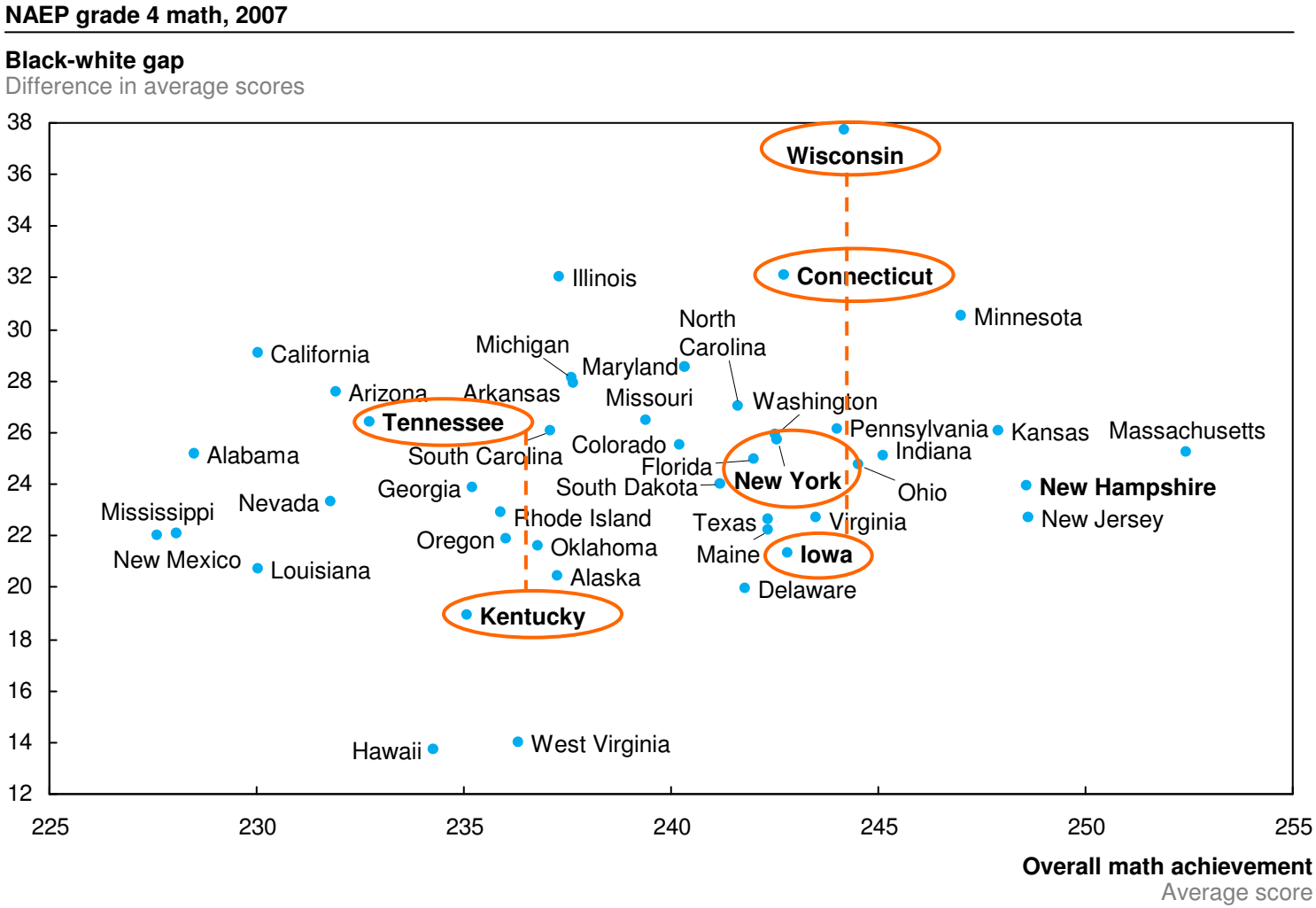
NAEP grade 4 reading, 2007



Note: Only states with statistically significant black populations included.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

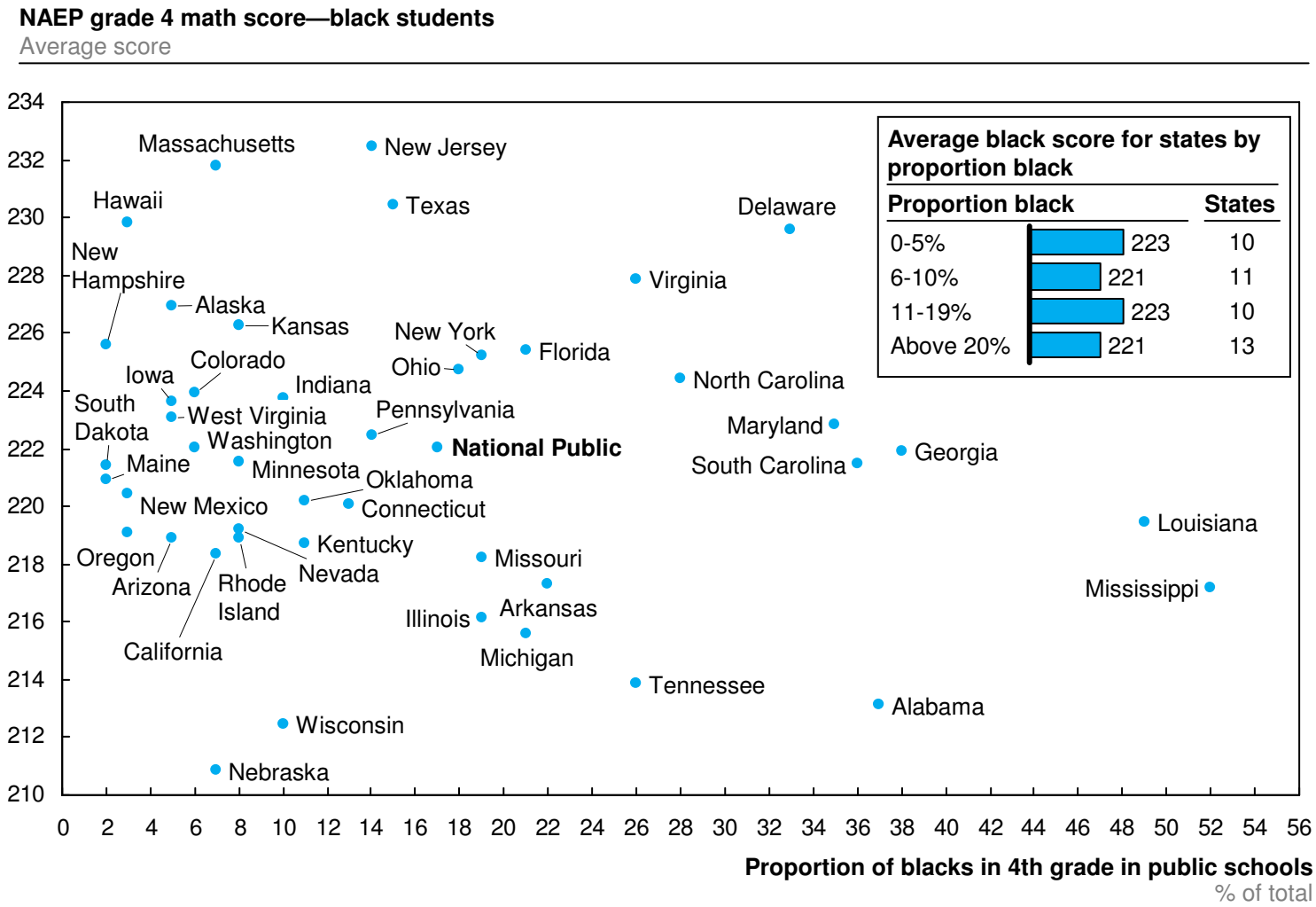
Likewise in math, states with higher overall test scores do not appear to have smaller racial achievement gaps



Note: Only states with statistically significant black populations included.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

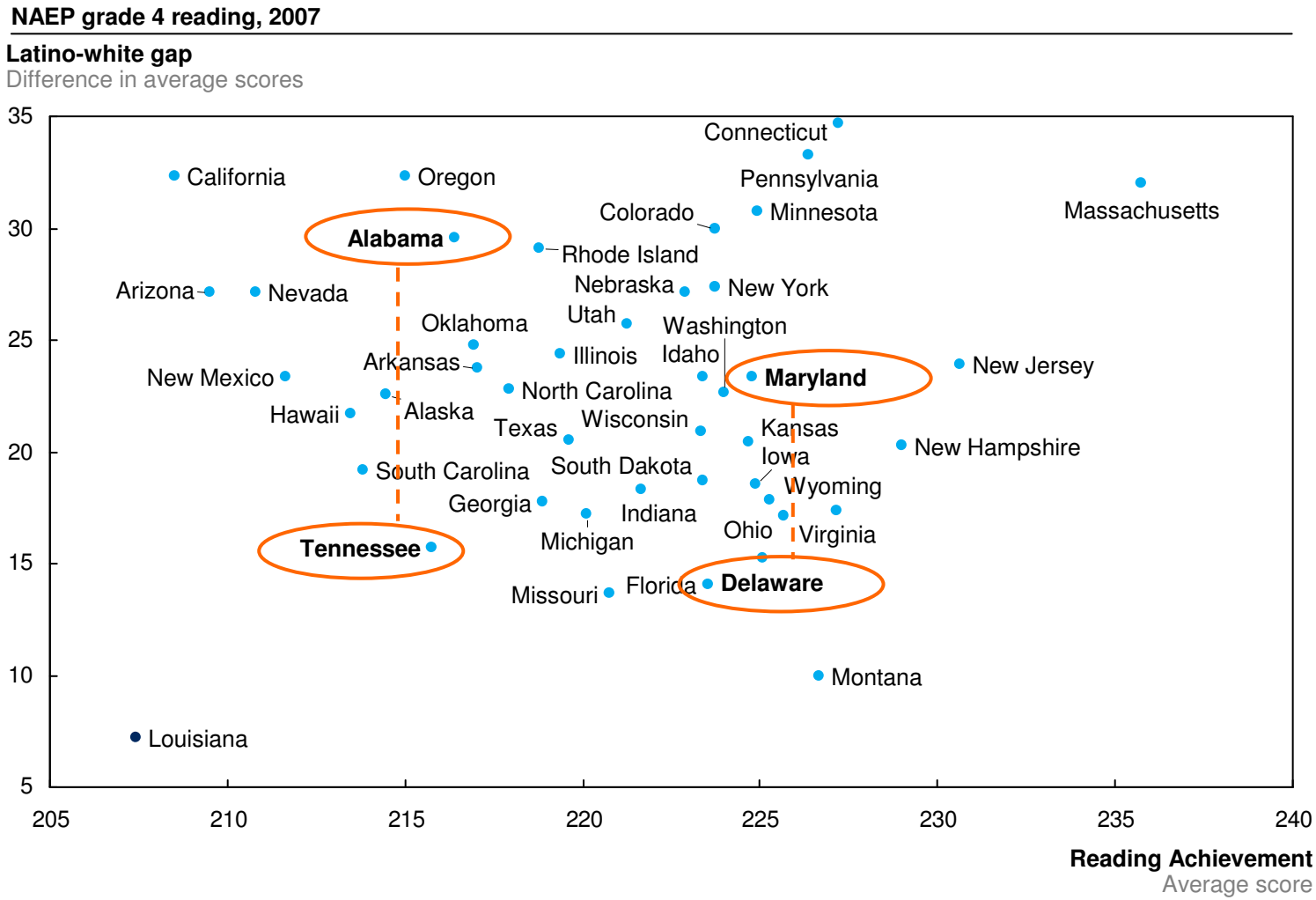
Regional and state variations cannot be explained by the proportion of blacks in the educational system



Note: Some states excluded because not enough black students in population (e.g., Idaho); this is a state-level view, recognizing that some scholars say concentrations do matter at a school level.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables; McKinsey analysis on subset of states

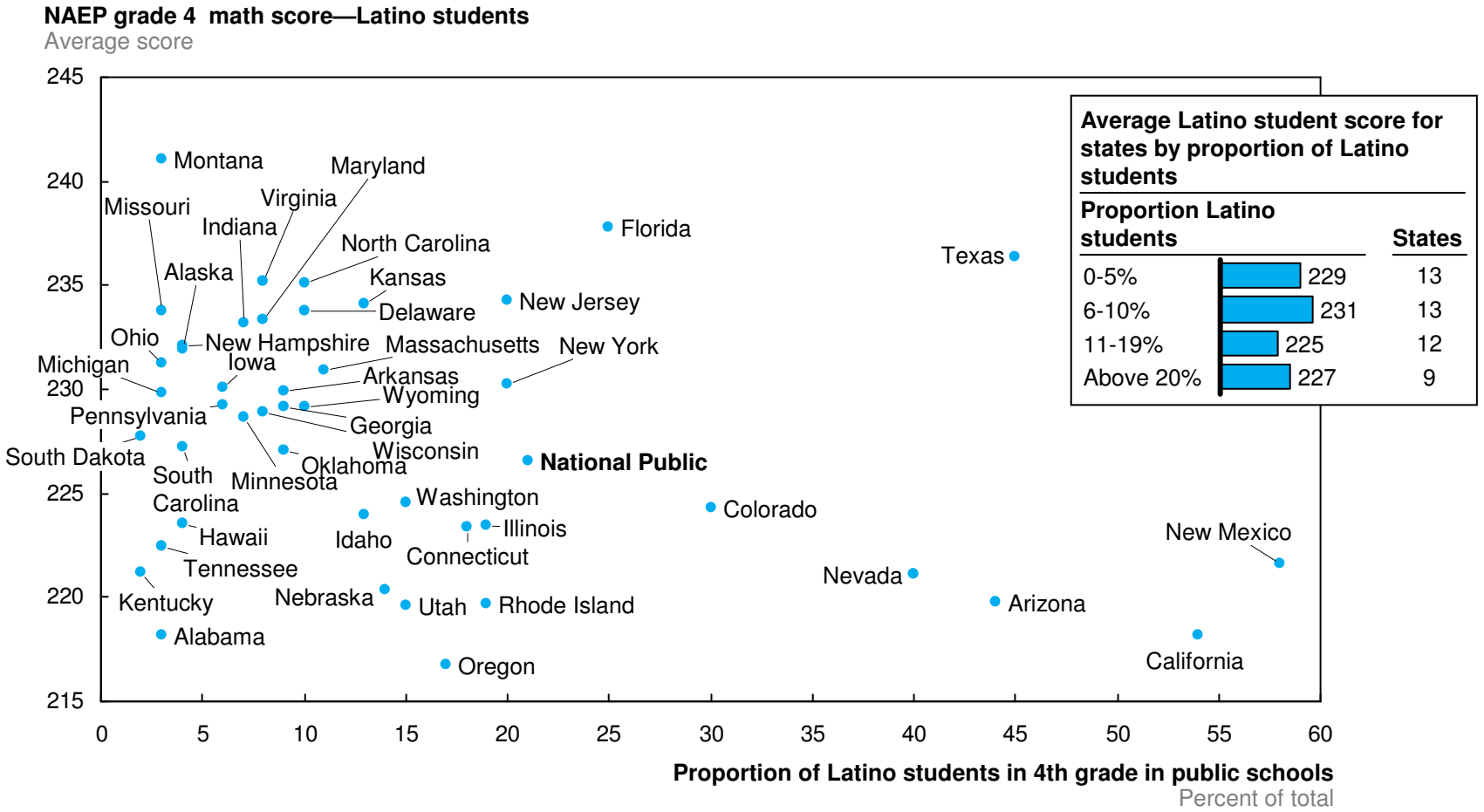
A state's Latino-white gap does not appear to be strongly correlated with the state's overall achievement levels



Note: Only states with statistically significant Latino populations included.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

Likewise, these regional and state variations among Latino students cannot be explained by the proportion of Latino students in the educational system



Note: Only states with statistically significant black populations included; This is a state-level view, recognizing that some scholars say concentrations do matter at a school level.

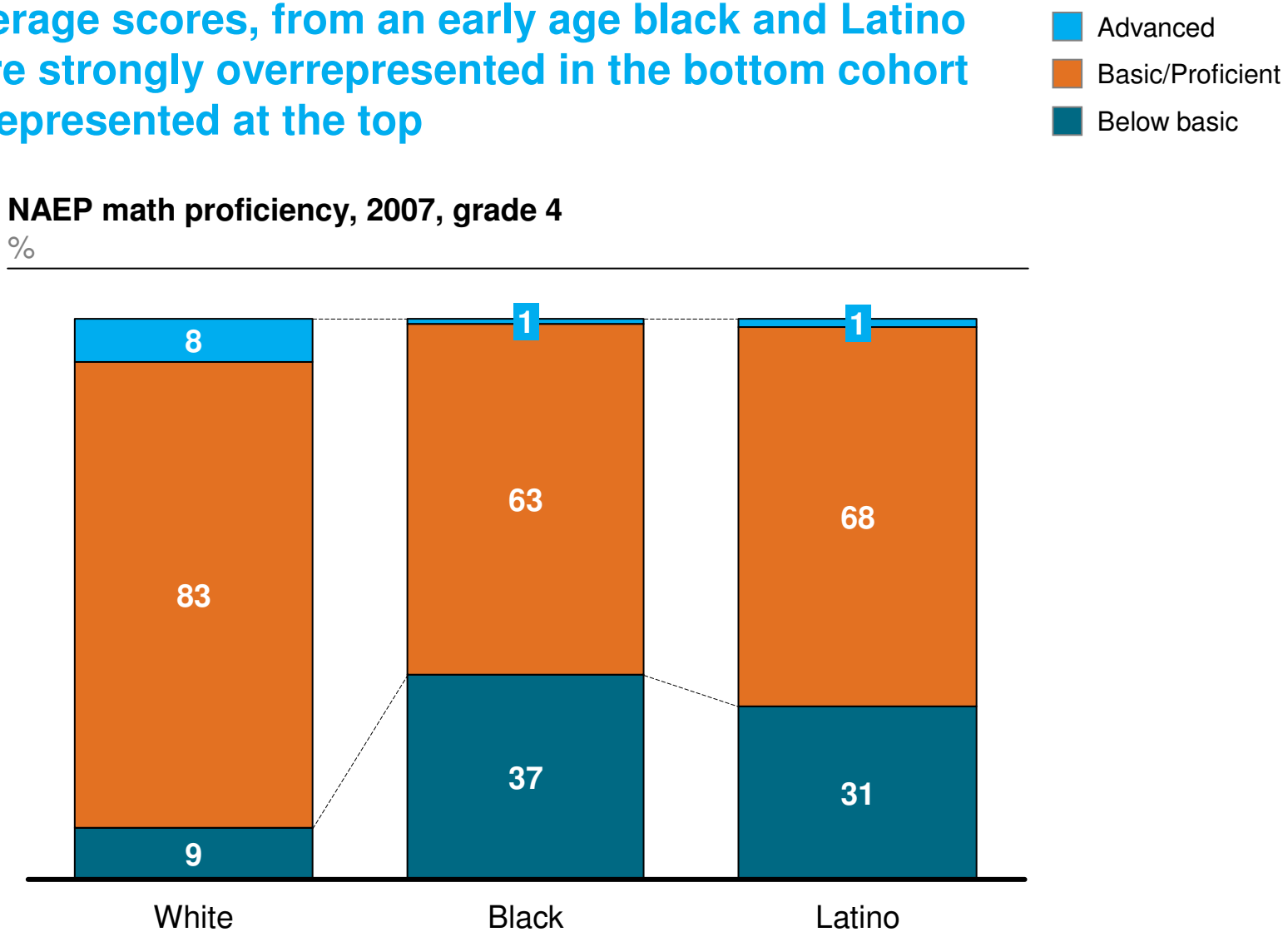
SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

A racial "top gap" is seen where black and Latino students are disproportionately underrepresented in the highest-performing groups

- **Looking beyond average scores, black and Latino students are strongly overrepresented in the bottom cohort and underrepresented at the top**
  - Across reading and math, less than 3% of black and Latino children are at the advanced level, and by 12th grade it is less than 1% (average for math and reading)
  - Very few blacks participate in top-tier programs like Advanced Placement, with less than 4% of black students scoring a 3 or higher on an AP test

- **Historically, the racial top gap has held true over time, and the number of black and Latino students in the top tier has not increased in line with overall educational improvements**
  - Although the proportion of eighth-graders at the Advanced level increased from 2% to 7% overall since 1992; (black and Latino students together represented less than 10% of this growth in the advanced students)

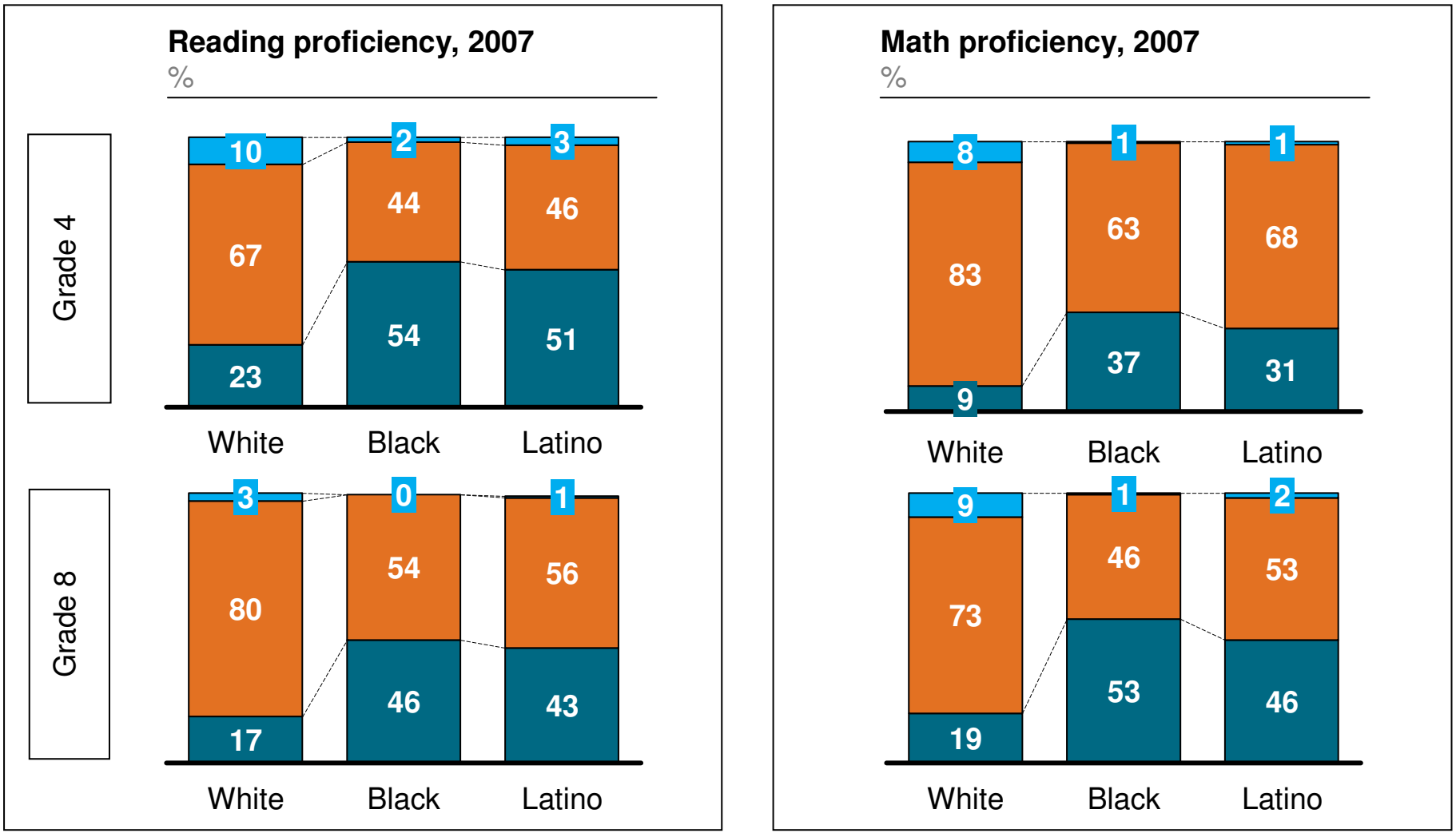
Beyond average scores, from an early age black and Latino students are strongly overrepresented in the bottom cohort and underrepresented at the top



Note: Relationship holds for grade 4 reading and eighth-grade NAEP results.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables, data for public schools; McKinsey analysis

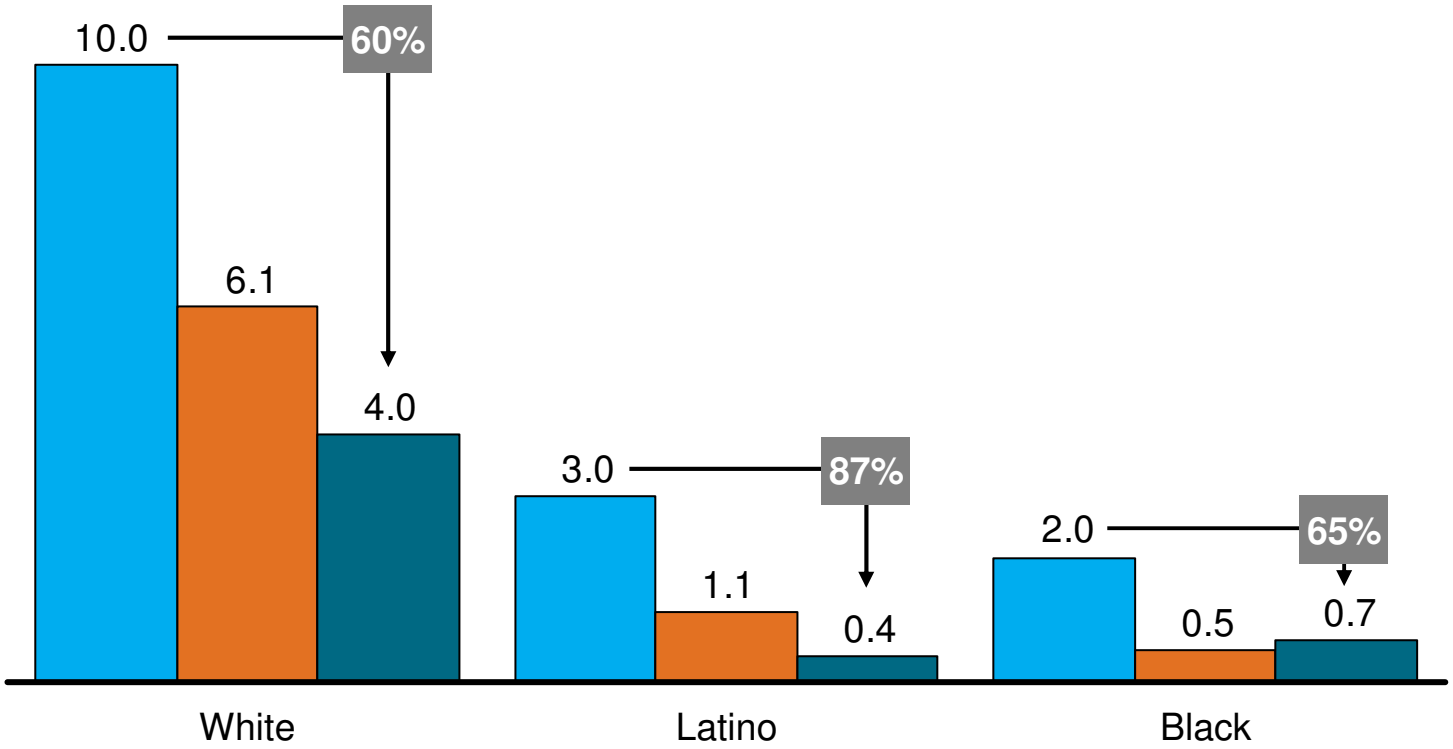
This top gap holds across grades and subjects



SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables; McKinsey analysis

Among top performers in the United States, only a small number are black or Latino students, a trend that is amplified over the lifetime of a student

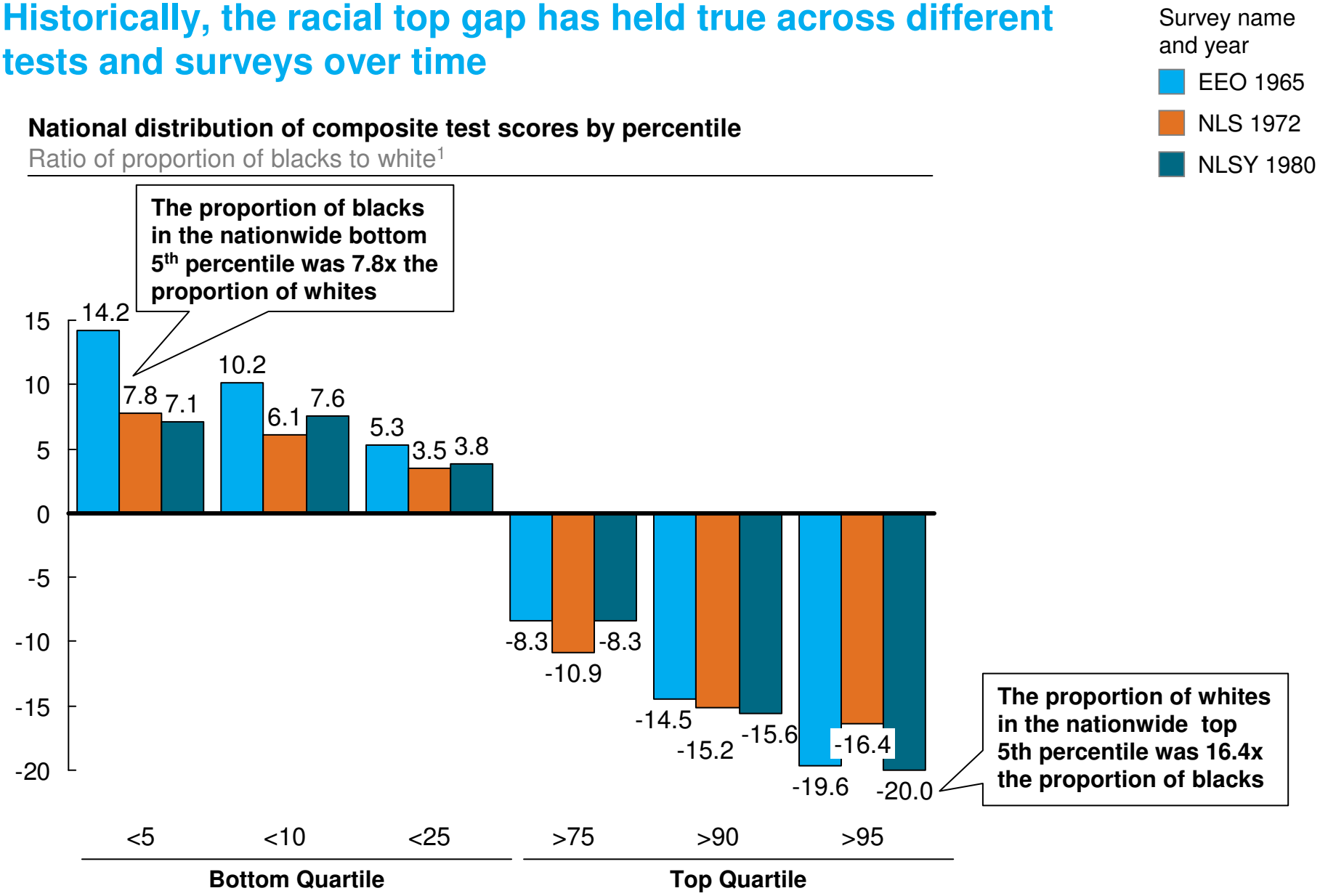
NAEP test scores, average for reading and math, 2007
% of students at the "advanced" level



Note: In some cases the number of black and Latino students at the Advanced level was statistically insignificant.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

Historically, the racial top gap has held true across different tests and surveys over time



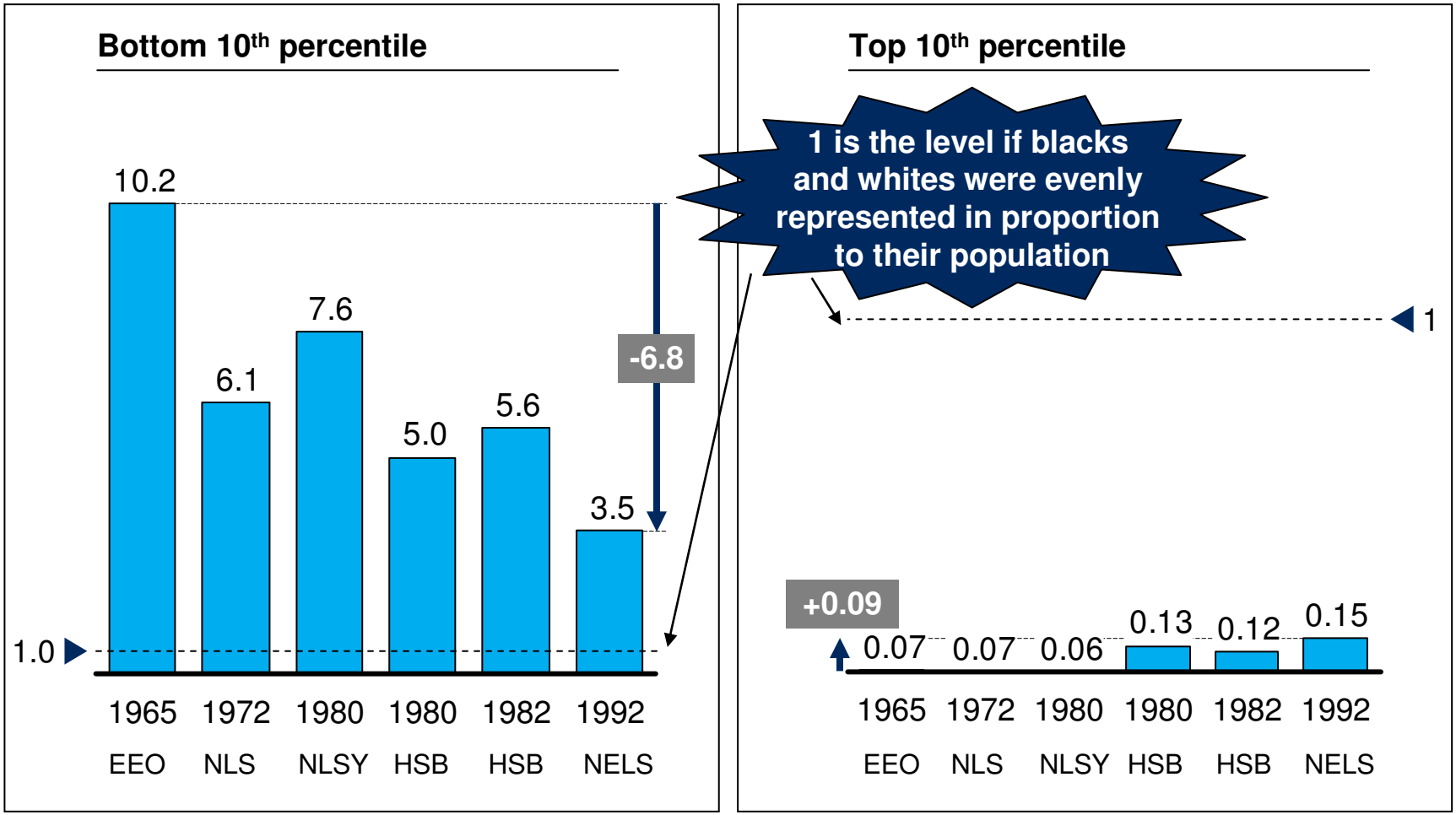
1 Negative scores are the ratio of whites to black.

SOURCE: Hedges and Nowell, "Black-White Test Score Convergence since 1965," from Jencks and Phillips, 1998

While the ratio of black students has improved in the bottom 10 percent over time, there was no improvement in the top 10 percent

Black-white composite test score by test over time

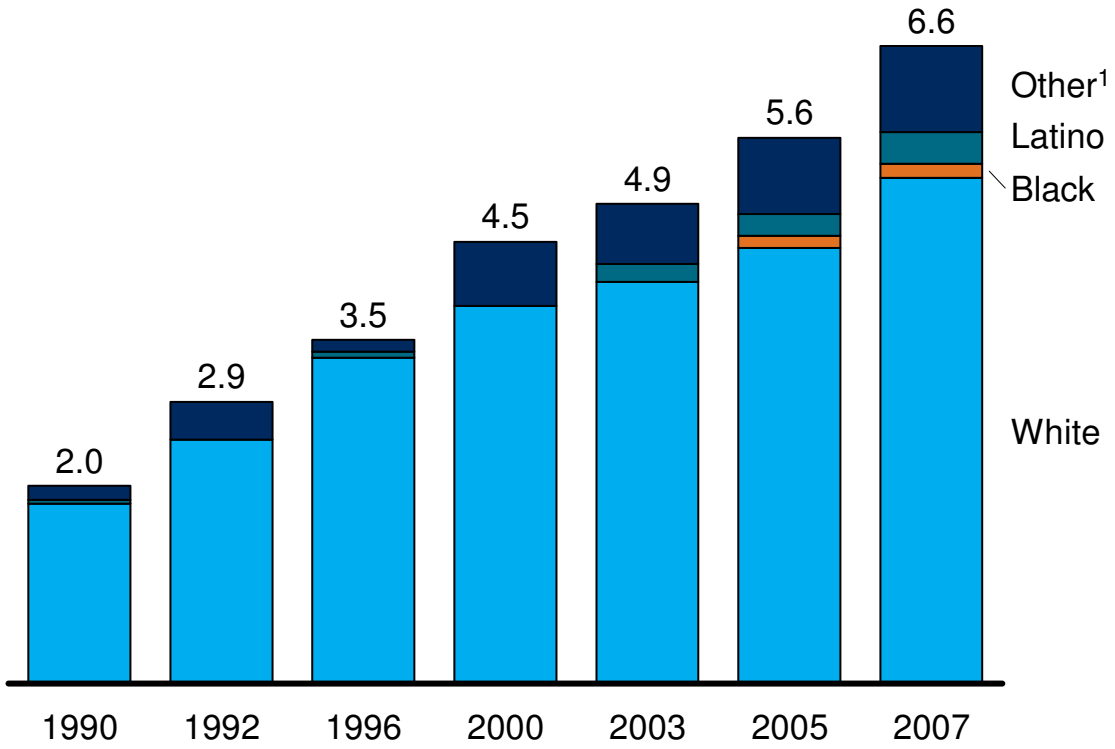
Ratio of proportion of blacks to white



SOURCE: Hedges and Nowell, "Black-White Test Score Convergence since 1965," from Jencks and Phillips, 1998

Recent increases in the number of advanced students were almost exclusively driven by whites and Asians despite black and Latino students becoming a larger proportion of the population

NAEP eighth-grade math
% at the Advanced level



The proportion of eighth-graders at the Advanced level increased from 2% to 7% overall since 1992, however, the proportion of minority students remained very low

- **About 7% of white students perform at the advanced level and less than 2% of Latino and black students**

1 Other includes mostly Asian students.
Note: In grade 4 math, the proportion of students at Advanced increased from 1.1% to 5.5% between 1990 and 2007.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

Outline of achievement gap factbase

- The educational performance gap in an international context
- Racial achievement gap
- **Income achievement gap**
  - **Overall**
  - **Interaction between the income and racial achievement gaps**
- System-based gap
- Demographic trends
- Achievement gap trends and progress over time
- Economic cost of the achievement gap to society
- Cost of the achievement gap to the individual
- Appendix
- Selected Bibliography

There is a strong income achievement gap in the United States

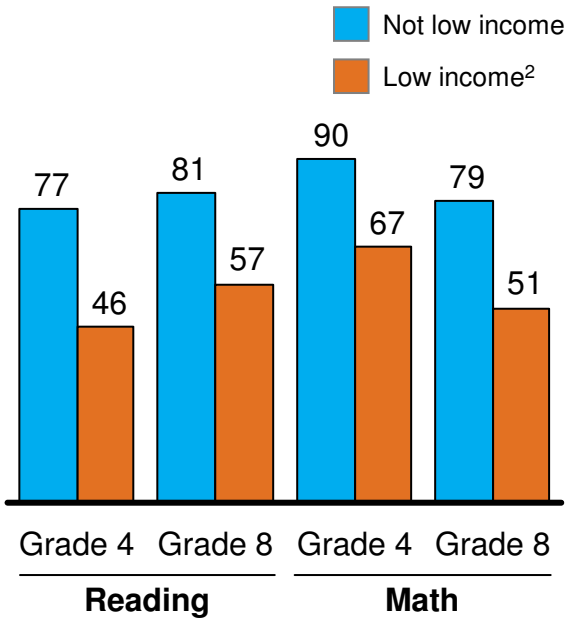
- **A strong income achievement gap exists**
  - The average student eligible for federally subsidized lunch is approximately two years of learning behind the average ineligible student
  - The gap persists over the lifetime of a student (only 9% of freshmen in the top colleges are from the bottom half of the socioeconomic distribution)
- **At the school-wide level, schools with majority low-income students perform much worse than schools with fewer low-income students**
- **Overall, states with higher overall test scores do not appear to have smaller income achievement gaps**
  - Even in states with the highest overall test scores, the income achievement gap remains very large (e.g., Massachusetts has among the highest overall NAEP scores, but students eligible for free lunch are six times more likely to be "below basic" in grade 4 math than ineligible students)

An income achievement gap exists across the lifetime of a student in which low-income students achieve and attain less than high-income students

From primary school . . .

At or above basic on NAEP, 2005[1]

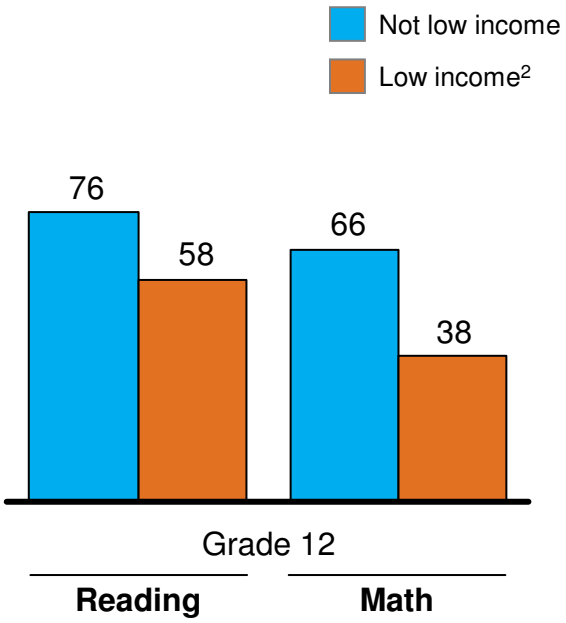
%



. . . to high school . . .

At or above basic on NAEP, 2005

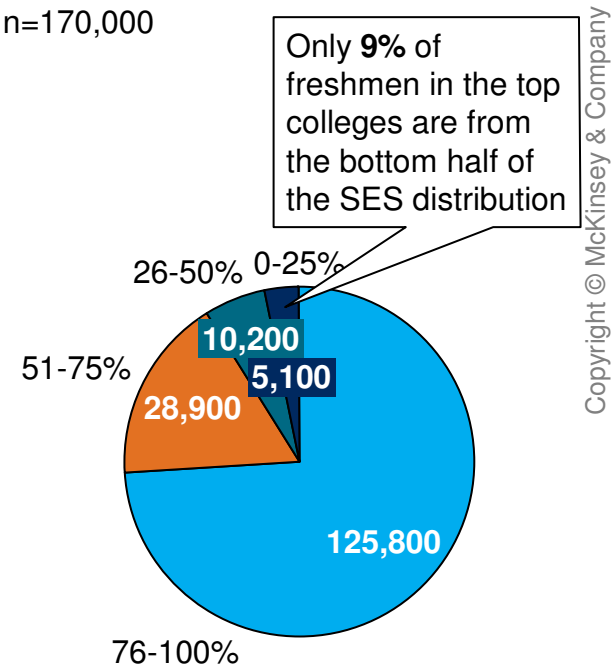
%



. . . to college

Socioeconomic status (SES) of freshmen in Tier 1 colleges

Number by SES quartile



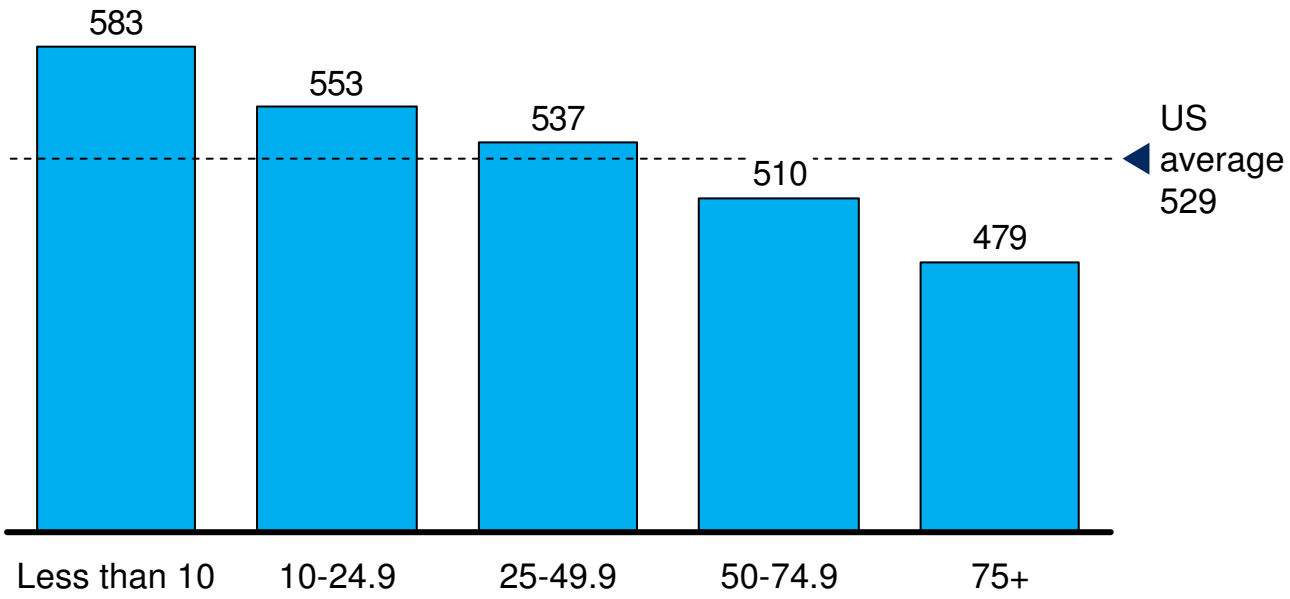
1 Based on average scores for groups, where 10 points is roughly equivalent to one year of learning, students eligible for free lunch are around two years behind ineligible students (e.g., in grade 4 math in 2007, students eligible for free lunch scored 226, while ineligible students scored 249, a difference of 23).

2 Low income is defined as eligible for free or reduced lunch.

SOURCE: National Center for Education Statistics; Center for Education Policy, NAEP data for public schools, College Board

The income achievement gap persists at the school-wide level, where schools with majority low-income students perform worst

TIMSS math scores of US fourth-graders, 2007
Score by school income level[1]



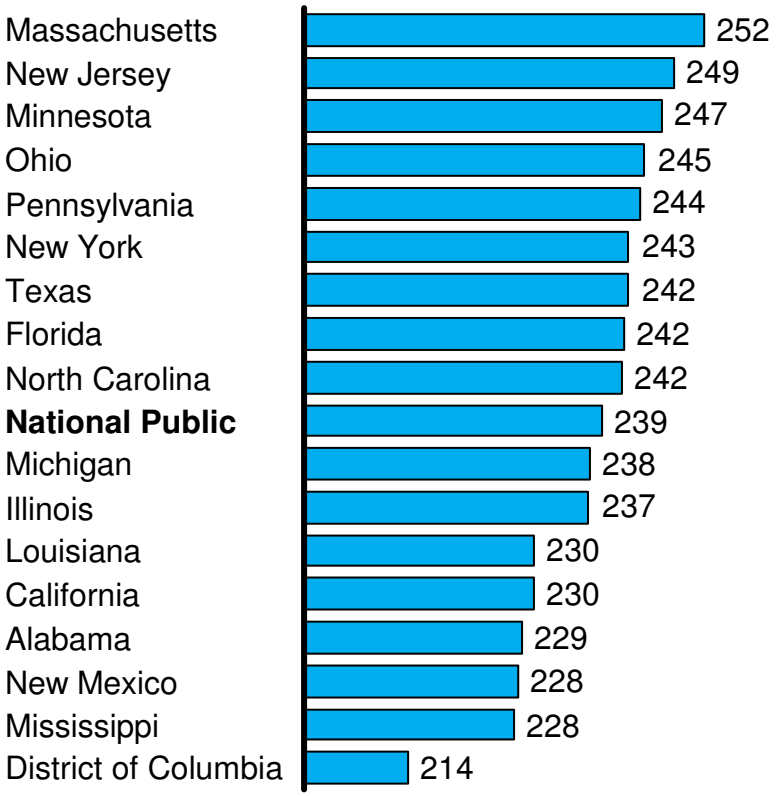
1 School income level denoted by percentage of students in public school eligible for free or reduced-price lunch.
2 The TIMSS scale average is 500, which is the mean score of the original TIMSS 1995 countries, with a standard deviation of 100; international benchmarks for standards are separated by 75 points, with 625 for advanced, 550 for high, 475 for intermediate, and 400 for low.

SOURCE: TIMSS 2007 Tables and Figures; Commissioner's remarks:
http://nces.ed.gov/whatsnew/commissioner/remarks2008/12_9_2008.asp

Even in the state with the highest overall test scores, the income achievement gap remains very large

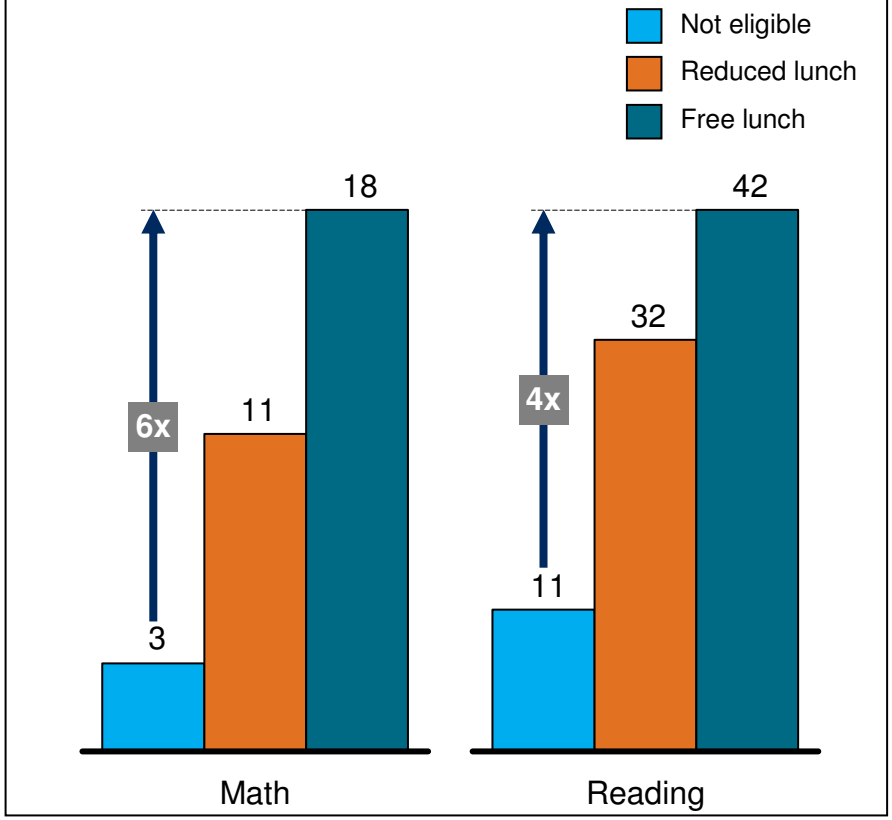
Massachusetts has the highest scores in math and reading . . .

NAEP math scores grade 4, 2007
Average scale score



. . . but the proportion of students "below basic" is 4-6x higher among students receiving free lunch than those ineligible

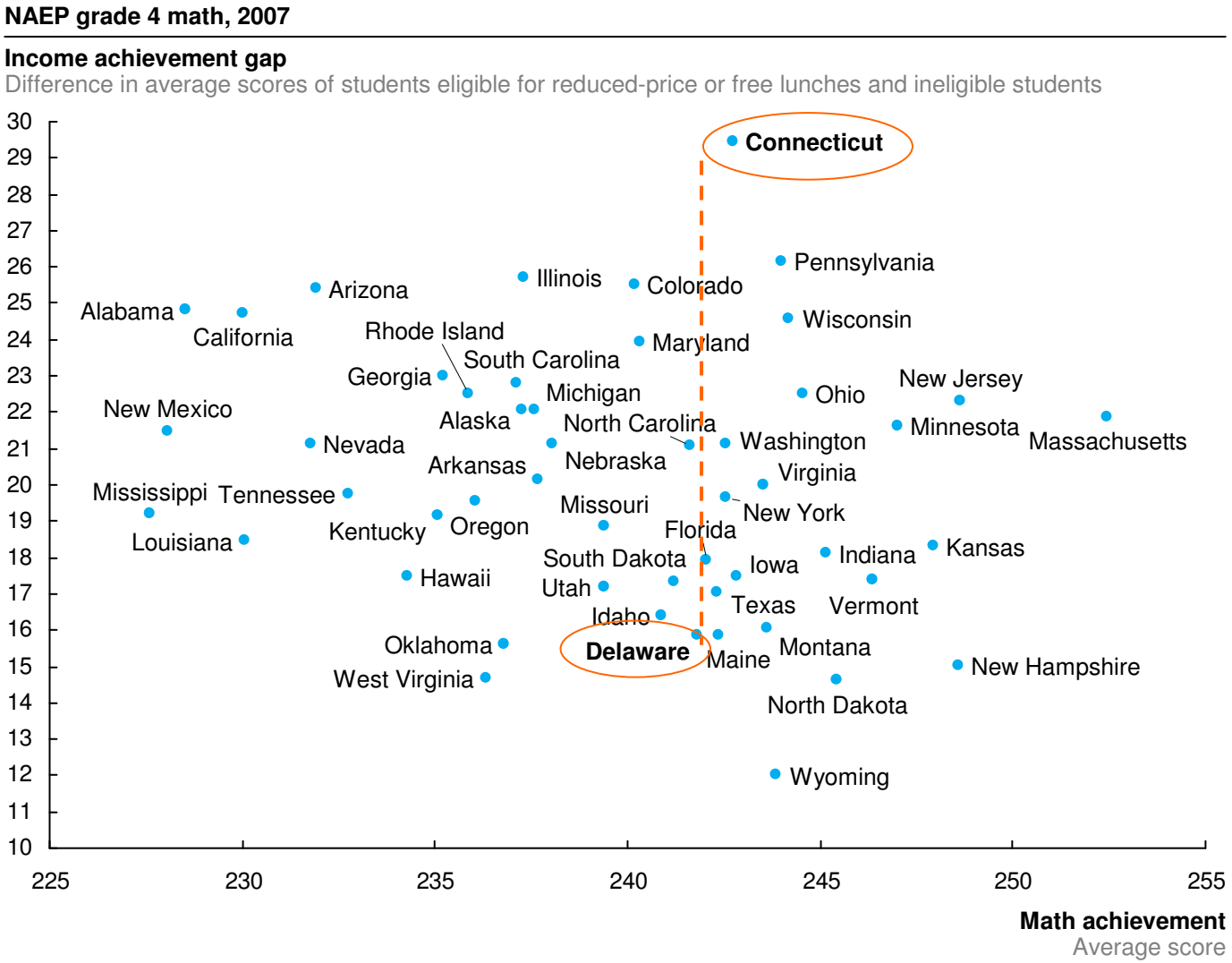
Below basic achievement grade 4 in MA, 2007
% of total



Note: Relationship holds for eighth grade NAEP tests for the proportion below basic achievement by income level (grade 8 math: free lunch 38%, not eligible 8%; grade 8 reading: free lunch 34%, not eligible 11%).

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables, subset of states, data for public schools

Overall, states with higher overall test scores do not appear to have smaller income achievement gaps

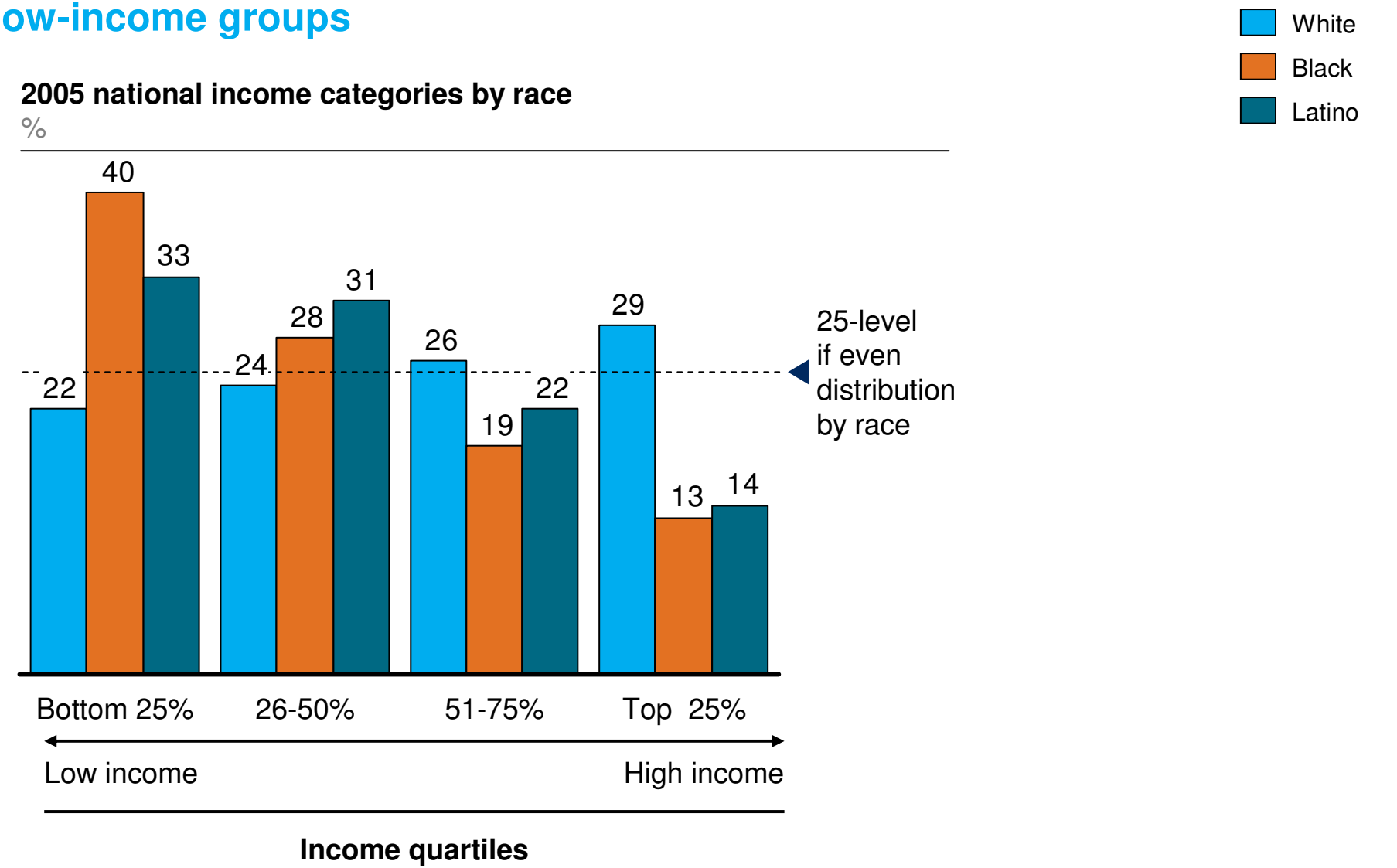


SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

The income achievement gap interacts with the racial achievement gap, making poor black and Latino students among the most disadvantaged

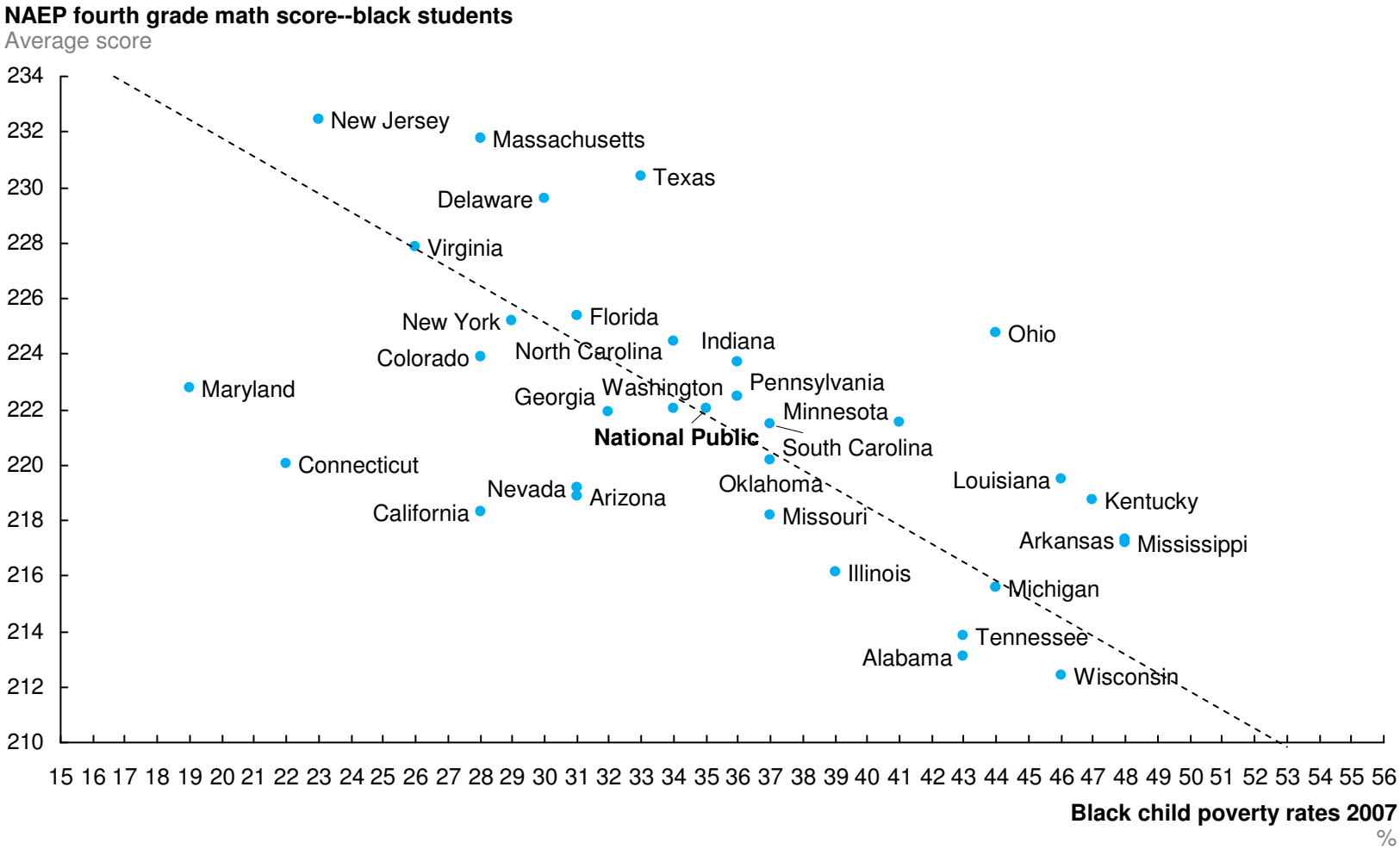
- **Income and race are correlated, with black and Latino students being disproportionately represented in lower income groups (e.g., 40% of black students and 33% of Latino students are in the bottom quartile of national income, while only 22% of whites are)**
- **There is a strong correlation between black child poverty rates and black achievement levels, indicating that there is an income achievement gap among black students**
- **While independent racial and income achievement gaps exist, whites significantly outperform black and Latino students at each income level**
  - Using regression analysis, both income and race independently influence a student's achievement score, as well as factors not explained by demographics
- **In particular, low-income black students experience the largest achievement gap of any cohort**
  - Using NAEP data, the average non-poor white student is roughly 3.5 years worth of learning ahead of the average poor black student, and this gap increases to roughly 5 years when comparing top-performing New Jersey with low-performing Washington, DC

In the United States, income and race are highly correlated, with black and Latino students being disproportionately represented in low-income groups



SOURCE: Current Population Survey (CPS); McKinsey analysis

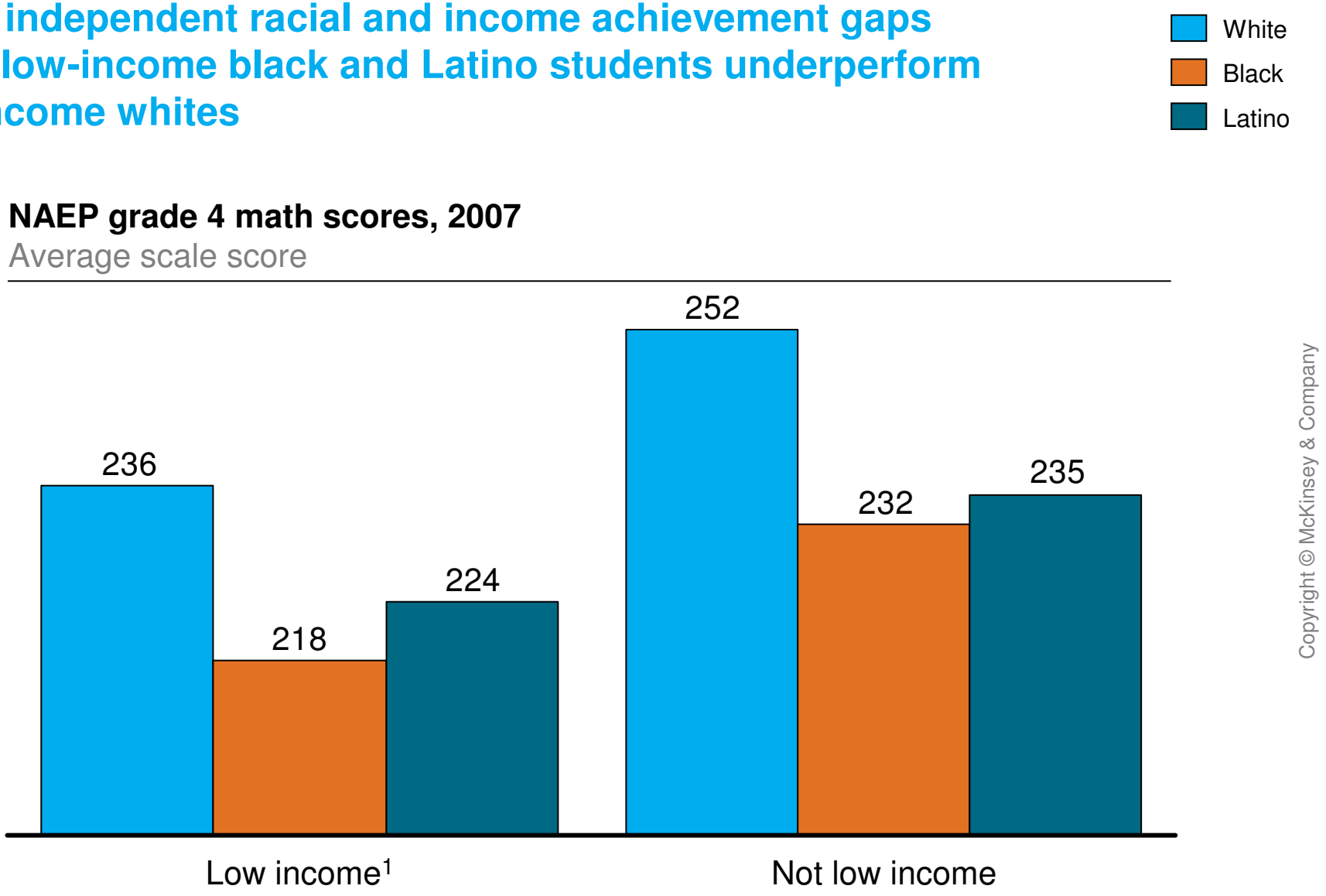
Test scores for black students strongly correlate to black poverty rates, indicating that there is an income achievement gap among black students as well



Note: Some states excluded because not enough black students in population (e.g., Idaho).

SOURCE: US DOE, NCES, NAEP Summary Data Tables; Annie Casey Foundation 2008;
McKinsey analysis on subset of states

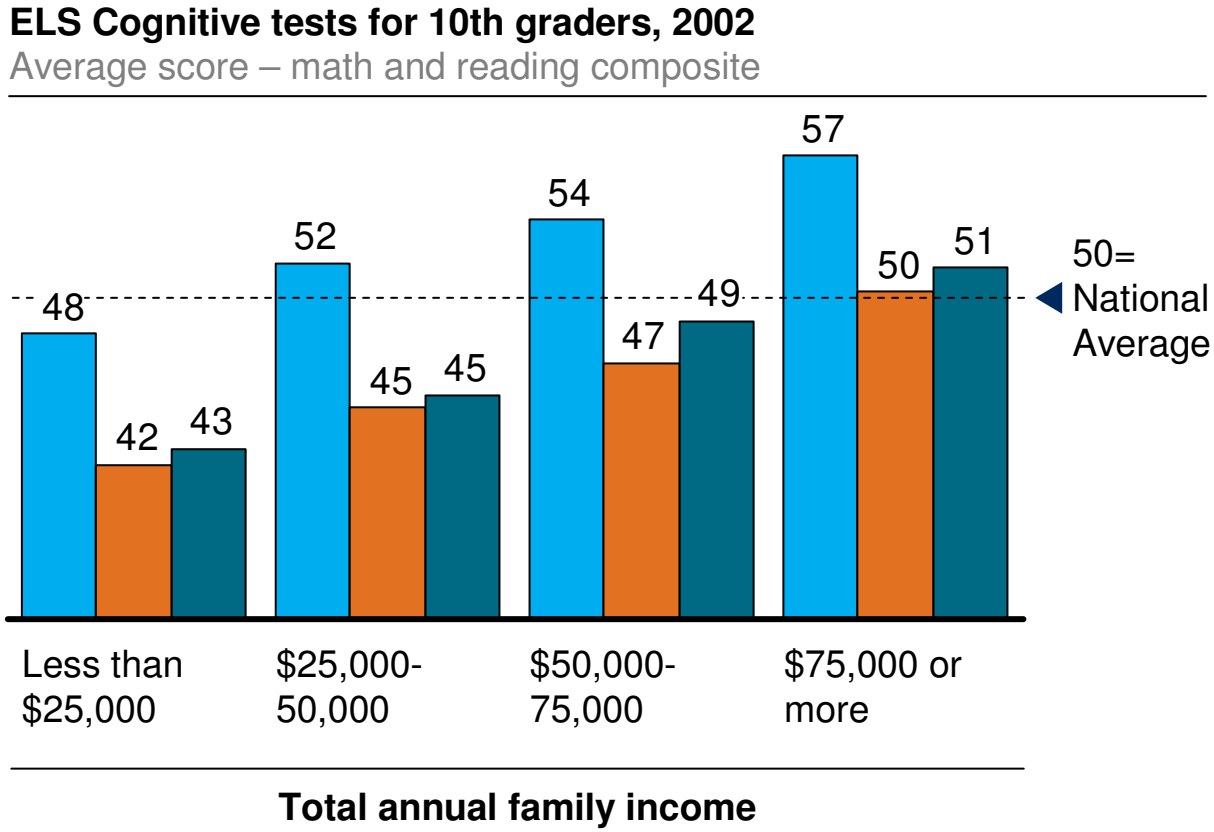
While independent racial and income achievement gaps exist, low-income black and Latino students underperform low-income whites



1 Low income is defined as eligible for free or reduced lunch.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

While independent racial and income achievement gaps exist, black and Latino students underperform whites at each family income level



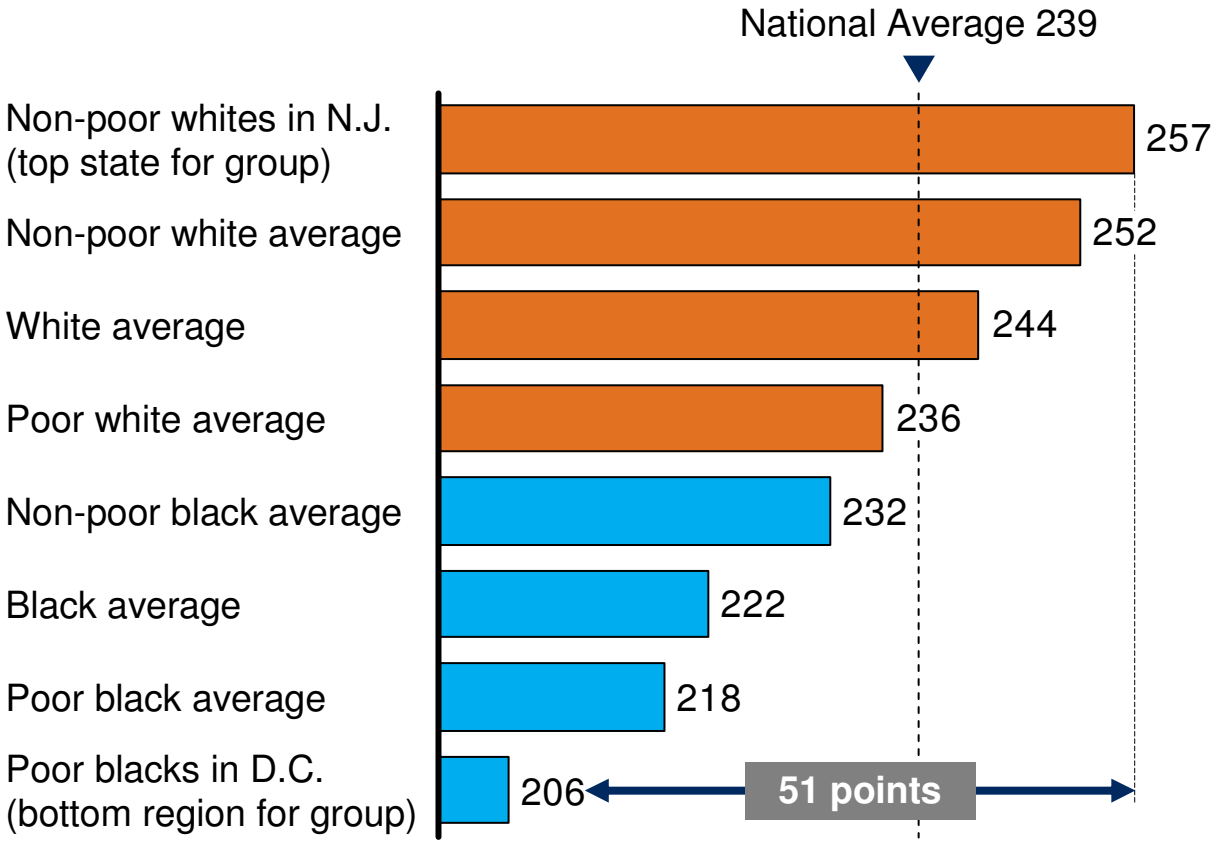
Note: The ELS test is standardized with a national mean of 50 and standard deviation of 10.

SOURCE: ELS: 2002, National Center for Education Statistics, sample includes both public and private schools

Using NAEP, low-income blacks in Washington, DC, perform the worst, showcasing the interaction between race, income, and geography

White students
Black students

NAEP Grade 4 math scores in public schools, 2007
Average score for group by income[1]

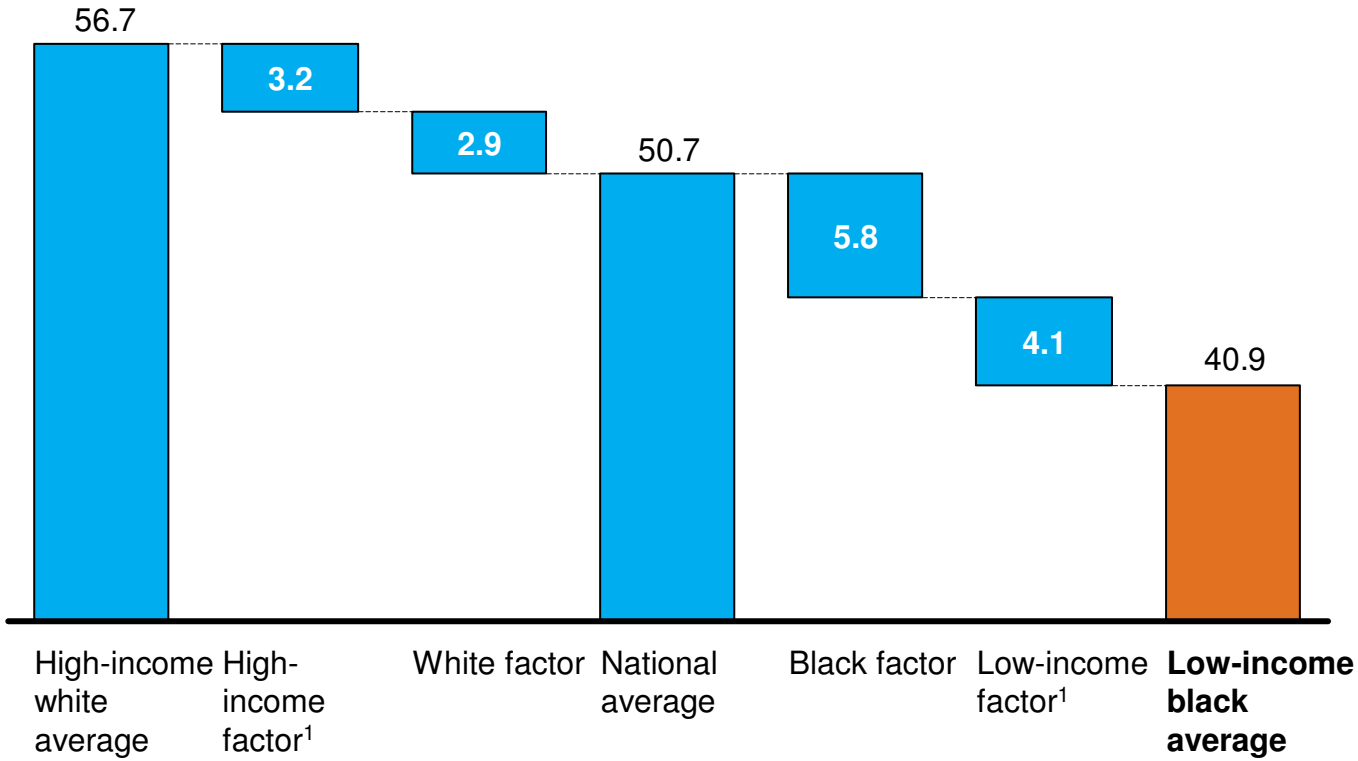


- Within the national public school system, the average non-poor white student is roughly 3.5 years' worth of learning ahead of the average poor black student
  - The gap is 5 years between top performing NJ and low performing DC
- Regardless of income, average white students outperform average black students

1 Poor is defined as eligible for free or reduced price lunch.
Note: Based on average scores for groups, where 10 points is roughly equivalent to one year of learning, students eligible for free lunch are around two years behind ineligible students (e.g., in grade 4 math in 2007, students eligible for free lunch scored 226, while ineligible students scored 249, a difference of 23)
SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

Other data sources also show that low-income black students experience the largest achievement gap of any cohort

ELS cognitive tests for 10th graders, 2002
Average score – math and reading composite



- Low-income black students are most susceptible to the achievement gap and perform among the worst of any subgroup
- Low-income blacks are over 1.5 standard deviations below the high-income white average (this equates to 4-5 years of learning on the NAEP scale)

1 High income is defined as total annual family income from all sources above $75,000 and low income below $15,000.
Note: The ELS test is standardized with a national mean of 50 and standard deviation of 10.

SOURCE: ELS: 2002, National Center for Education Statistics, sample includes both public and private schools

Outline of achievement gap factbase

- The educational performance gap in an international context
- Racial achievement gap
- Income achievement gap
- **System-based gap**
  - **State level**
  - **District level**
  - **School level**
  - **Classroom level**
- Demographic trends
- Achievement gap trends and progress over time
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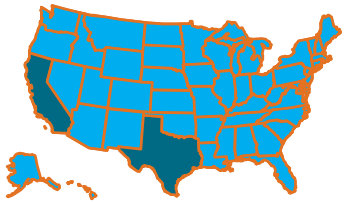
Large variations exist in educational performance by region, state, and district, constituting a system-based gap

- **System differences exist from the state to the classroom level even after accounting for income and race, showing that policies and school systems can influence student achievement Districts also vary in their performance relative to the state average, implying that individual districts can lead the way in improving minority achievement**
  - New York, San Diego, and Charlotte are examples of urban school districts where black students outperform blacks in the rest of their state
- **There is also a system-based attainment gap, where black graduation rates vary by state, as well as by the magnitude of the black-white graduation gap**

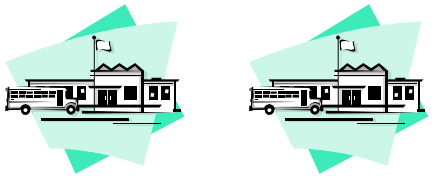
System differences mean that policies and school systems can influence student achievement from the state to the classroom level

State-level

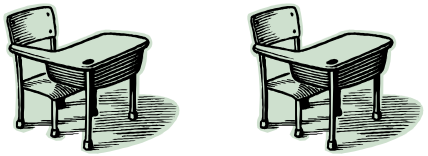


District-level

School-level



Classroom-level



States matter: California and Texas are two large states with similar demographics but different achievement outcomes – showing that state-level policy can make a difference in student achievement

Districts matter: Within a state, districts with similar demographics can have very different levels of achievement – showing that district-level policy makes a difference

Schools matter: Even within the same district, schools with identical demographics can have very different levels of achievement – showing school leadership matters

Classrooms matter: In the United States greater variation is found within schools than between schools

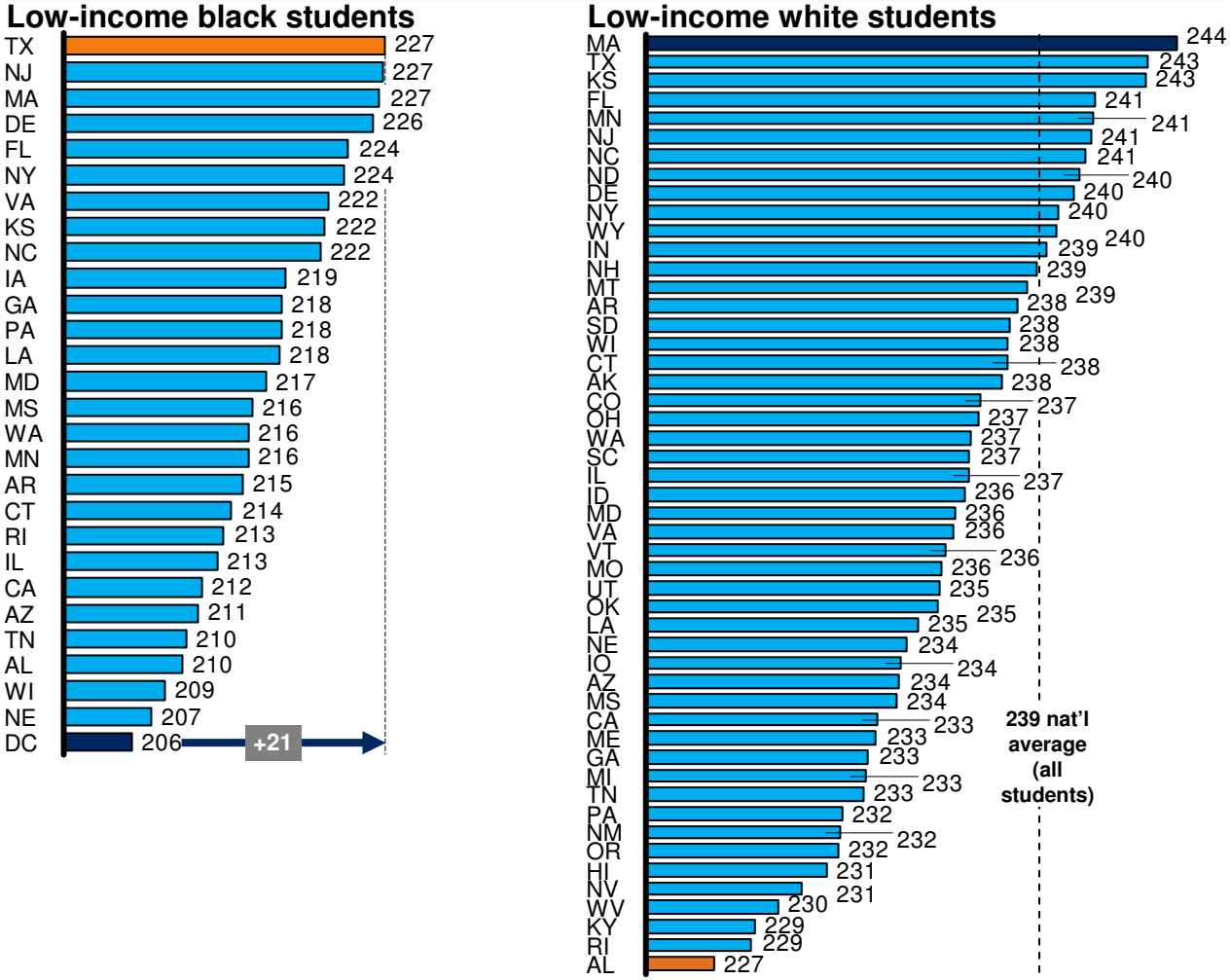
Example

- California students are one to two years of learning behind Texas students
- Across Texas districts, test passing can **vary by 25 percentage points**
- Within Texas districts, school achievement levels can **vary by 20-30 percentile**
- Within the classroom, factors such as teacher quality influence student achievement

Among similar student populations, differences in achievement between states can be as high as two years of learning

NAEP grade 4 math by state, 2007

Average score



A system-based gap emerges when controlling for demographics

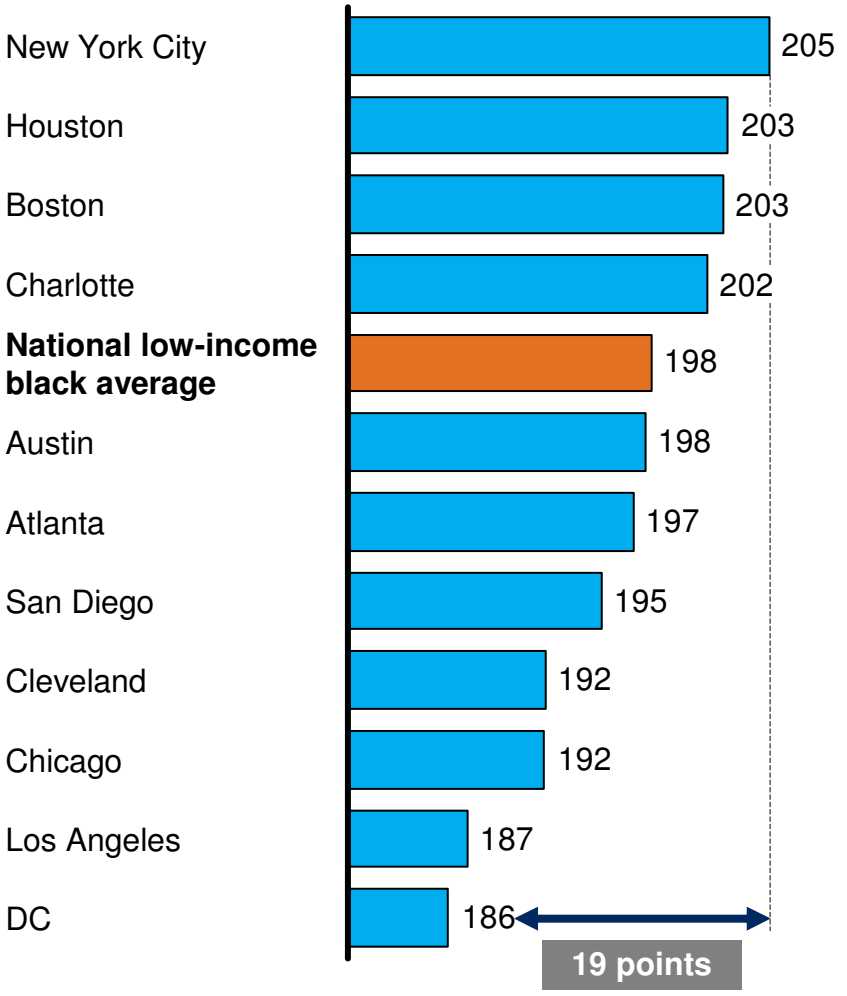
- Low-income black students educated in DC are roughly 4 years behind poor white students in Massachusetts
- A low-income white student in Alabama (the worst-performing state) still perform at the same level as a low-income black student in Texas (the highest-performing state)

1 Low income is defined as eligible for federally subsidized lunch; States with small black student populations (taking the NAEP) that are not statically significant were omitted, Washington, DC, does not have a statistically significant population of low-income white students.

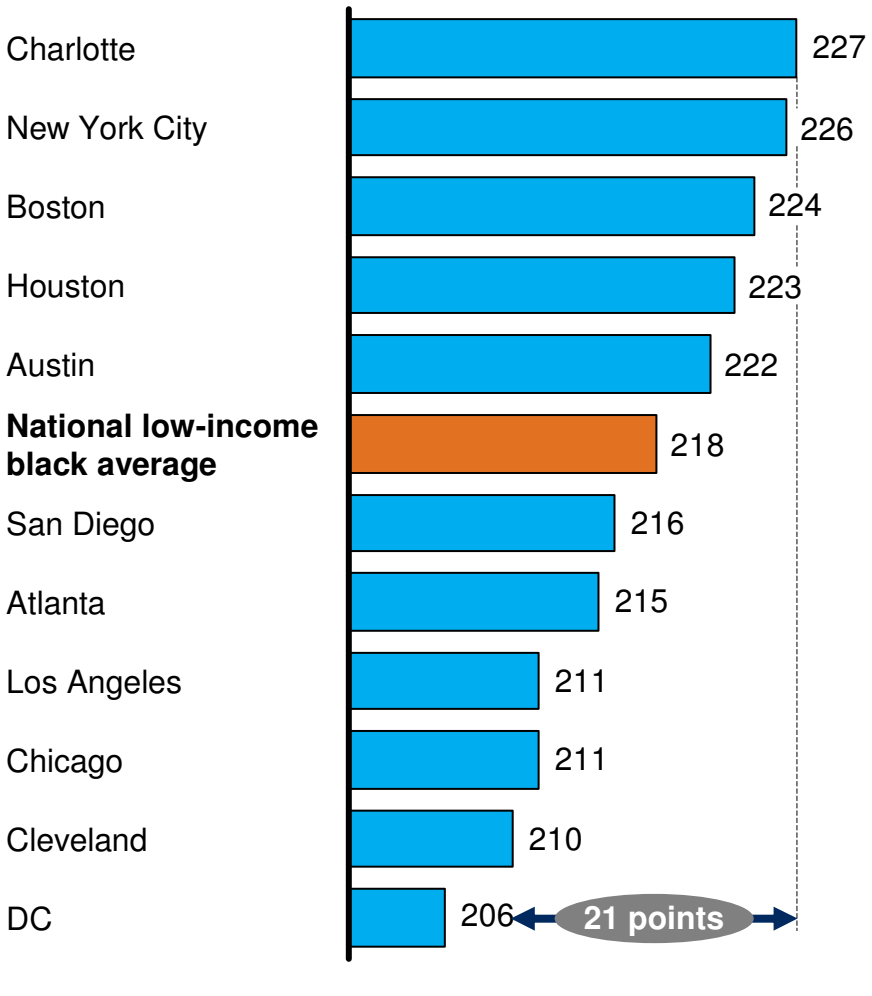
SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables; subset of states

There are significant differences in achievement among low-income black students across cities at the fourth-grade level

NAEP grade 4 reading by city, 2007
Average score for black students eligible for federally subsidized lunch



NAEP grade 4 math by city, 2007
Average score for black students eligible for federally subsidized lunch



SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

California and Texas are two large states with similar demographics but different achievement outcomes

Demographics & Resources

	California	Texas
Population	▪ 36.8 million	▪ 23.5 million
Racial/ethnic composition	▪ White: 44% ▪ Black: 6% ▪ Asian: 12% ▪ Latino 34% ▪ Other 3%	▪ White: 48% ▪ Black: 11% ▪ Asian: 3% ▪ Latino 37% ▪ Other 2%
Poor students*	▪ 50%	▪ 47%
GDP per capita	▪ $42,102	▪ $37,073
Per pupil spending	▪ $8,486	▪ $7,561

Outcomes

NAEP 4th grade math	California	Texas
All	***230***	***242***
White	247	253
Black	218	230
Latino	218	236

NAEP 8th grade math	California	Texas
All	***270***	***286***
White	287	300
Black	253	271
Latino	256	277

Texas outperforms California in terms of achievement by on average of **1-2 years** despite:

- similar demographics
- lower GDP/capita
- lower per pupil spending

Note: Data for California and Texas exclusions for NAEP sampling purposes do not differ significantly and are not believed to be a meaningful explanatory factor in the test-score differences between California and Texas students.

* Defined as students receiving free or reduced school lunches in the 2006/2007 school year

SOURCE: US Census; US Bureau of Economic Analysis; US DOE, NCES, National Assessment of Educational Progress NAEP Summary Data Tables; Annie E. Casey Foundation 2008; EdWeek 2008

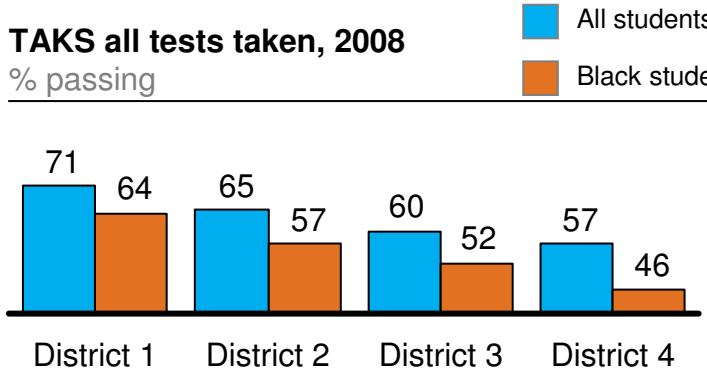
Within a state, districts with similar demographics can have different levels of achievement

Four urban districts in Texas with similar poverty levels and ethnic/racial concentrations . . .

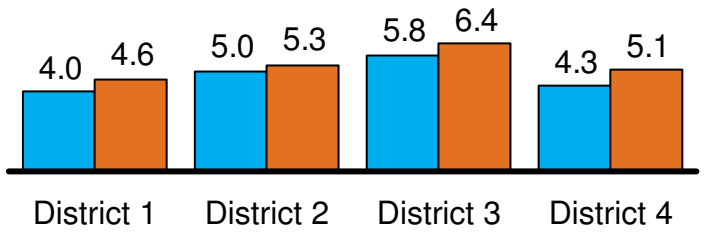
Demographic category[1]	District 1	District 2	District 3	District 4
▪ Total size	59,000	203,000	159,000	79,457
▪ Black	31%	29%	29%	26%
▪ Latino	64%	60%	65%	58%
▪ Economically disadvantaged	80%	80%	85%	69%

. . . but District 1 has a consistently higher achievement and lower dropout rate than others

TAKS all tests taken, 2008
% passing



Annual dropout rate, grades 7-12, 2008
% of total



1 All demographic data for 2008 except total size, which is from 2006-07.

Source: Texas Education Agency; National Center for Education Statistics

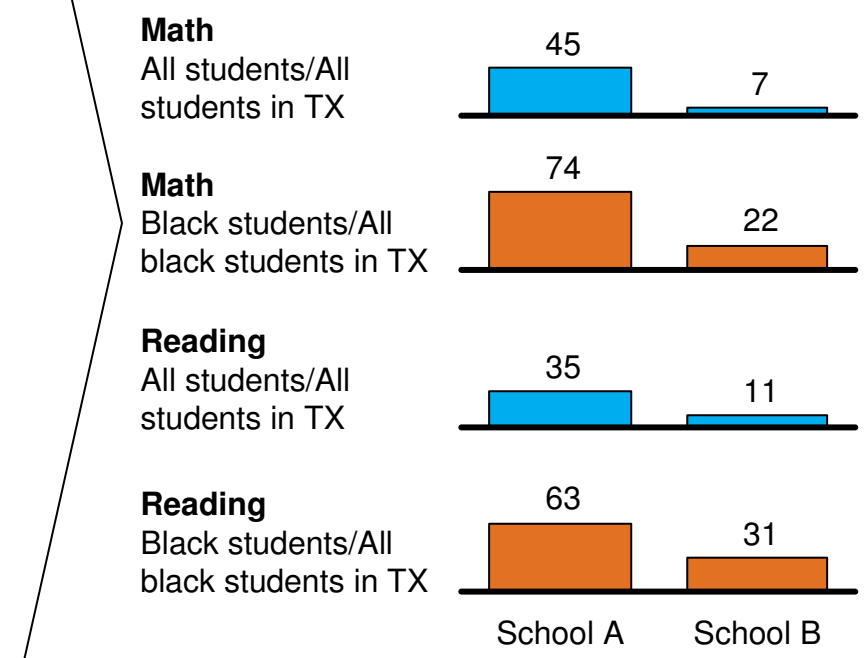
Within the same district, schools with similar demographics can have very different achievement outcomes

Two high-poverty, majority-black public schools . . .

	School A	School B
School type		
Grade span	6-8 grade	6-8 grade
Locale	Large city	Large city
Receive Title I	Yes	Yes
Magnet program	No	No
Charter School	No	No
Demographics		
Total size	812 students	778 students
Black	92%	88%
Latino	6%	10%
Total free/reduced price lunch	88%	80%

. . . but one outperforms the other in both reading and math despite having higher poverty rates

Grade 8 achievement levels, 2003
School percentile in Texas



Note: All data from 2003.

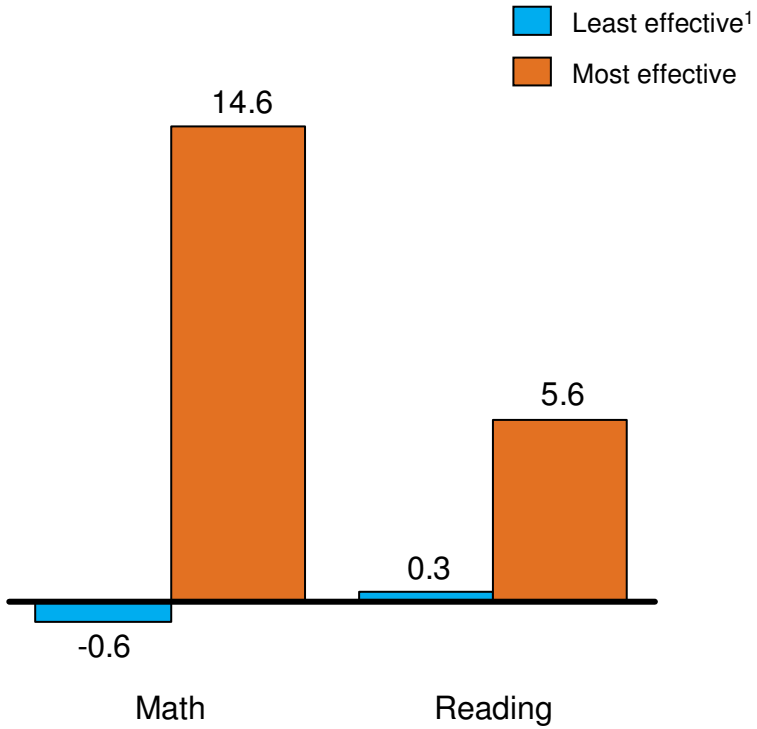
Source: EdTrust; Texas Education Agency, 2003

Even within the same school, student achievement varies by classroom

Good teachers increase student gains within one year . . .

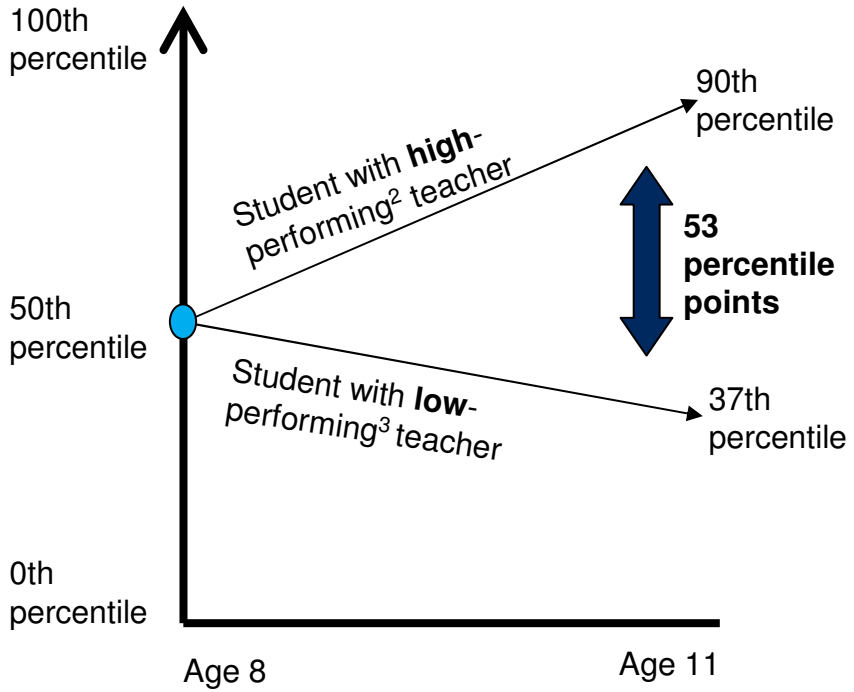
Average student gains over one year in Boston Public Schools based on teacher quality

%



. . . and effect which is amplified over time

Student performance over time



1 "Most effective" defined as top third of teachers producing student learning gains and "least effective" defined as bottom third.
2 Among the top 20% of teachers.
3 Among the bottom 20% of teachers.

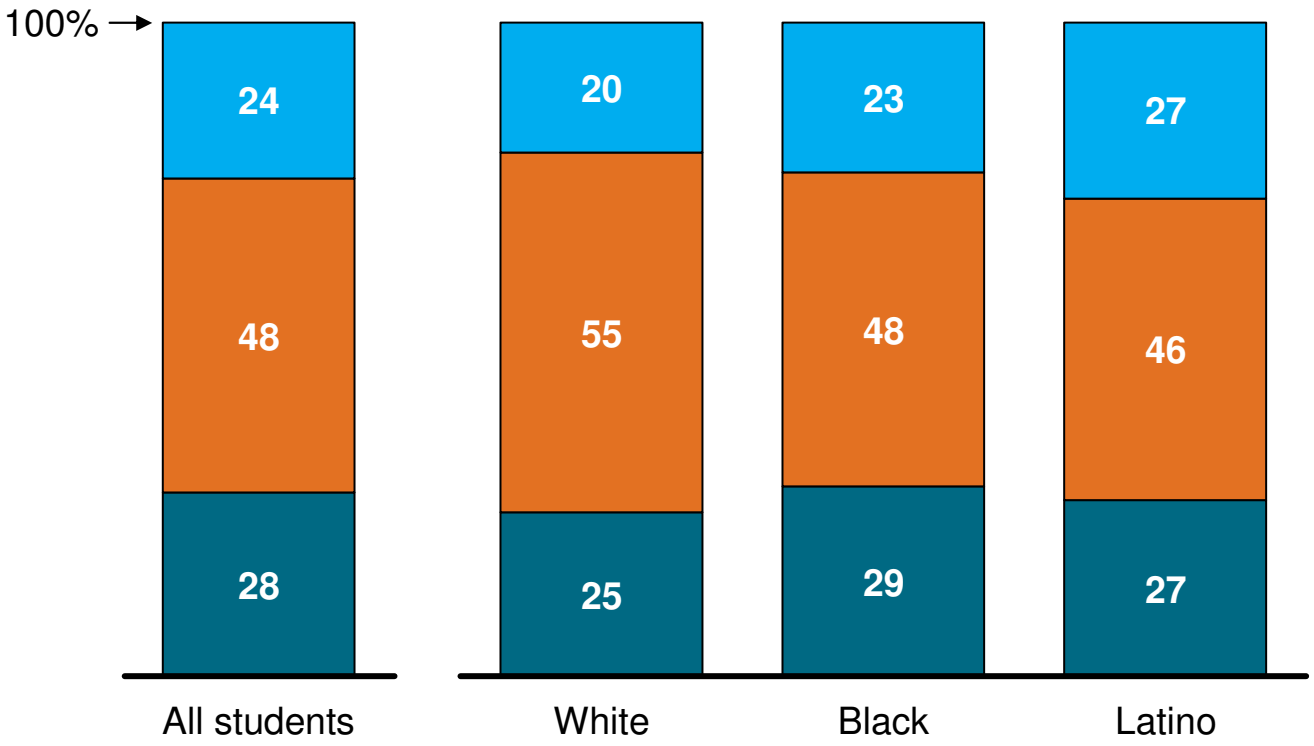
SOURCE: Sanders and Rivers, "Cumulative and Residual Effects on Future Student Academic Achievement"; Boston Public Schools (1998); McKinsey analysis

Over half of students move achievement quartiles between fourth and eighth grade, suggesting that the school system impacts a student's achievement

Score improved
Stayed same
Score declined

Likelihood of students moving math achievement quartiles from fourth to eighth grade

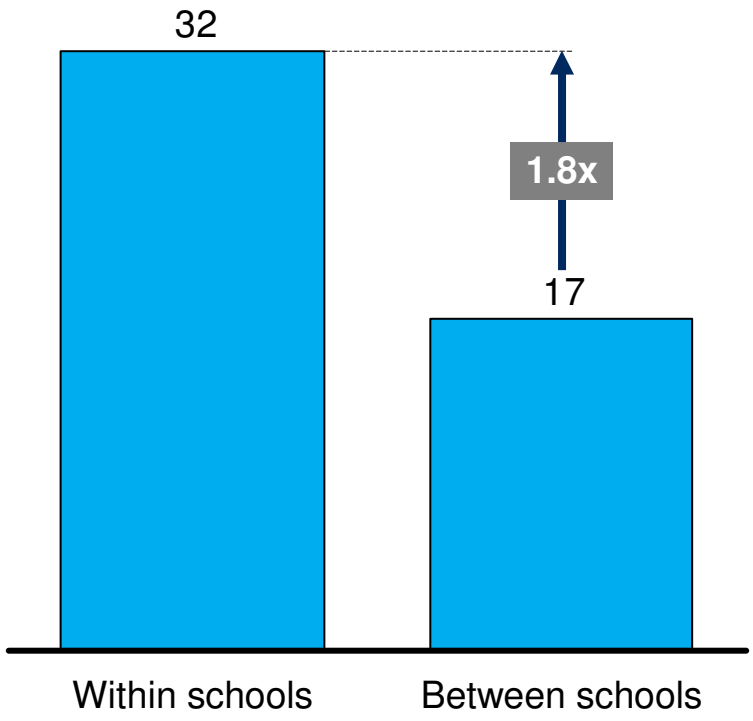
%



SOURCE: NYC DOE, fourth-graders in 03/04, eighth-graders in 07/08, regular promotion only

Differences in student performance are greater within schools than between schools, showcasing the importance of classroom factors in explaining achievement

Variations in black achievement in math in NYC public schools, 2007-08[1]
Standard deviation

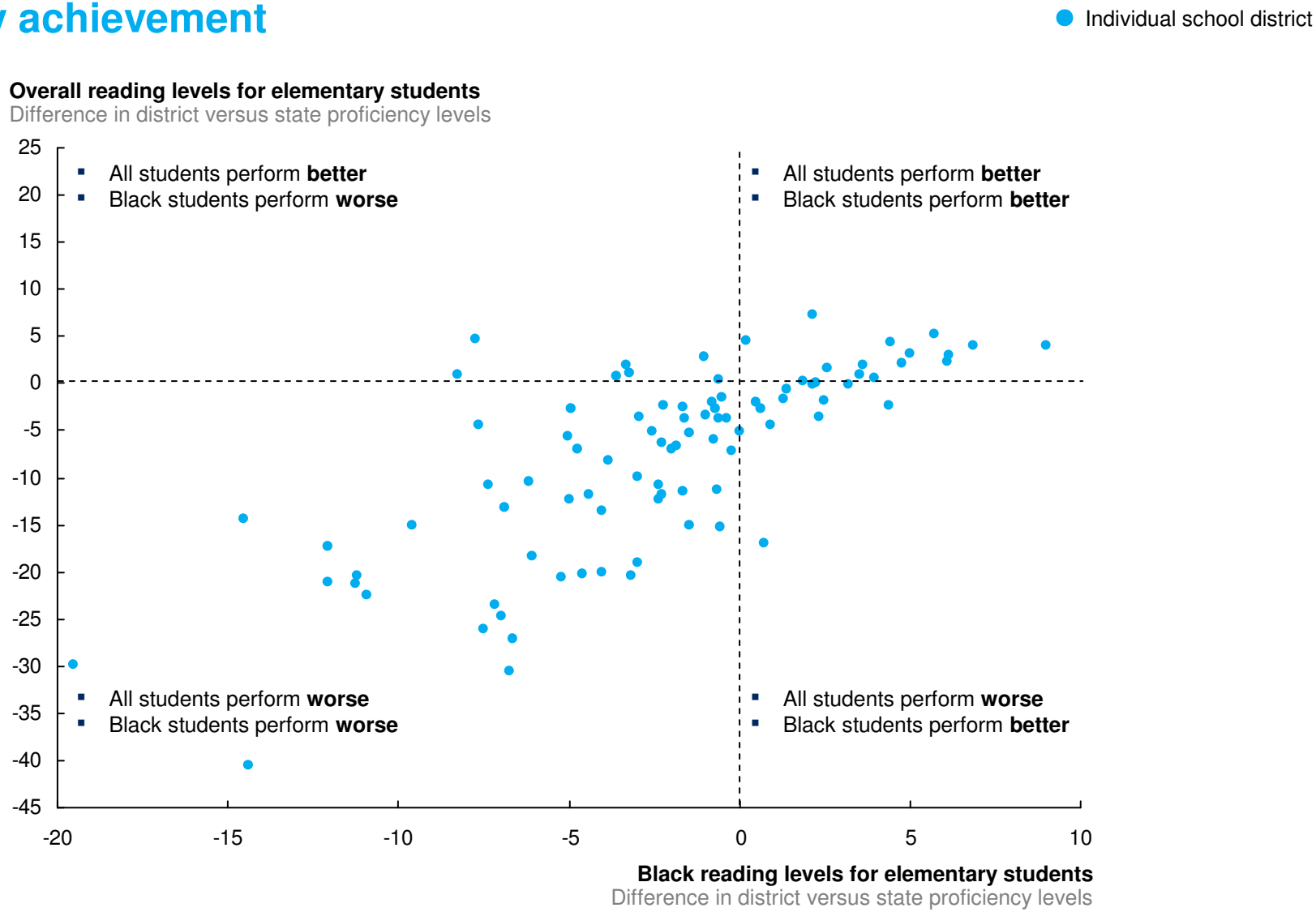


The variation in American student performance within schools was 2.6x the variation between schools in 2006 PISA math

1 Based on all schools in the NYC public school district with data for at least 40 black students.

SOURCE: OECD, 2006; NYC Department of Education; McKinsey analysis

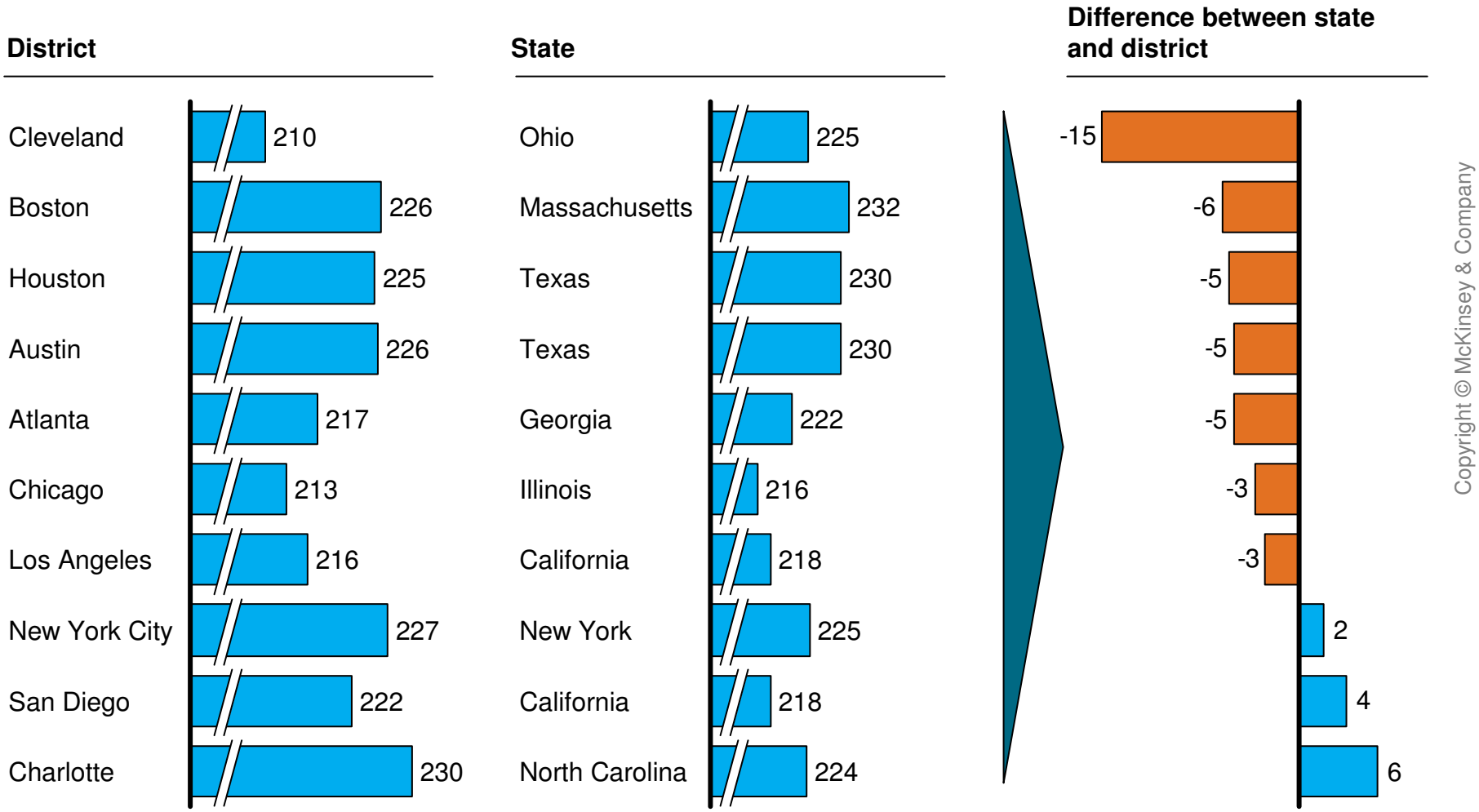
Districts also vary in their performance relative to the state average, implying that individual districts can lead the way in improving minority achievement



SOURCE: Broad Foundation data for 91 school districts with available information

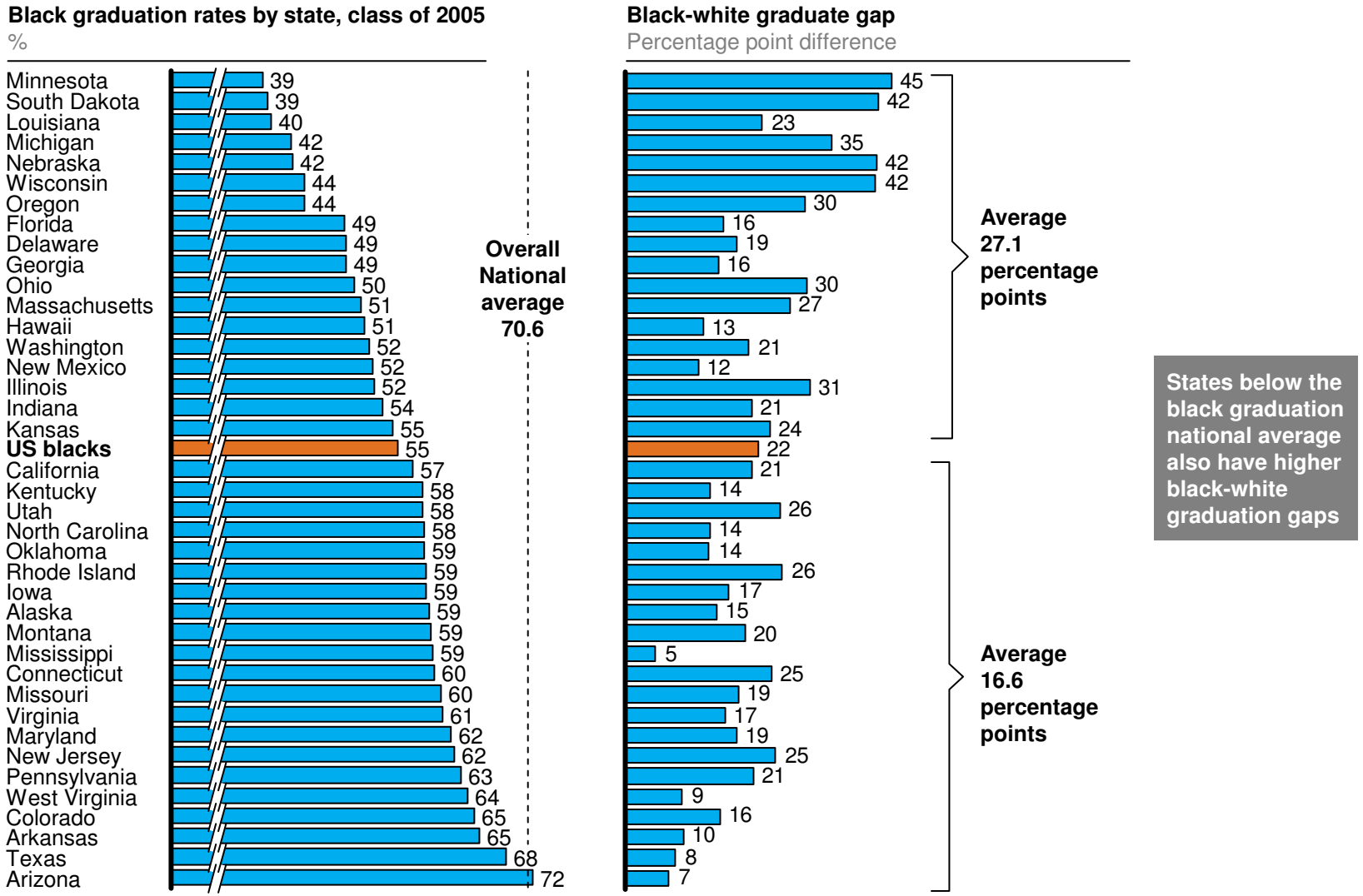
New York, San Diego, and Charlotte are examples of urban school districts where black students outperform the blacks in the rest of their state

NAEP grade 4 math scores, 2007
Average score of black students



SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

Black graduation rates vary by state, as does the magnitude of the black-white gap, implying a system-based attainment gap



Note: Only states with graduation data for black students included.

SOURCE: EPE Research Center, 2008

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Demographic shifts mean that black and Latino students will constitute a larger proportion of the school-age population

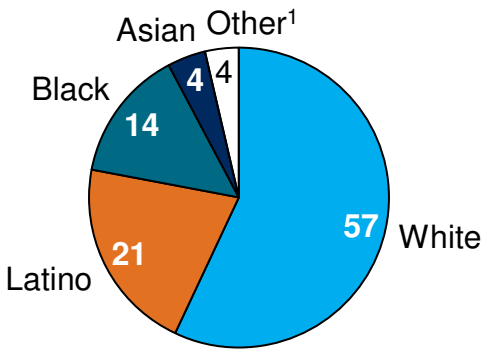
- **The demographic shift enhances the relevance of the achievement gap as the school-age population of the United States becomes minority-majority**
  - Already, the two most populous states (California and Texas) are minority majority in school age population
  - Overall the United States school age population is estimated to be minority majority by 2030 the latest
- **Compared to the overall school system, large urban districts tend to serve a higher proportion of black and Latino students, low-income and limited English-proficient students** (the largest 100 school districts have 53% of all black and Latino students in school)
  - This demographic shift is concentrated in many of the nation's largest school districts, suggesting that targeted interventions could have a significant impact on the overall achievement gap

Demographic trends will result in the United States being minority-majority by 2030, particularly in states like California or Texas

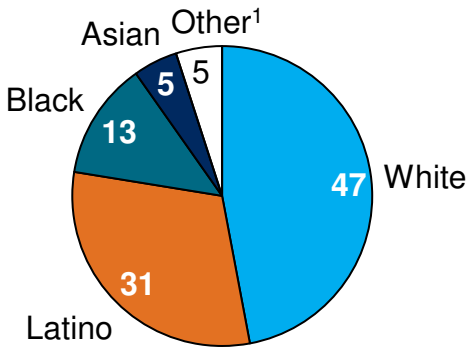
Today

2030

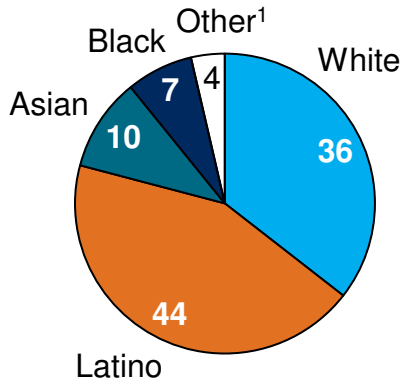
US population of 9-year-olds, 2007
%



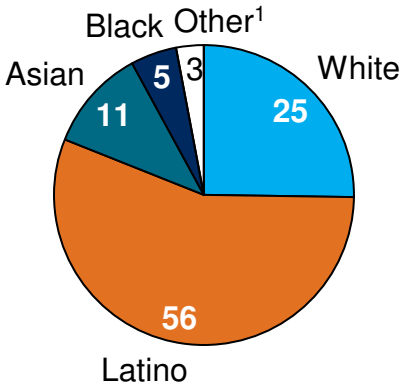
US population of 9-year-olds, 2030
%



California population 19 and under, 2000
%



California population 19 and under, 2030
%

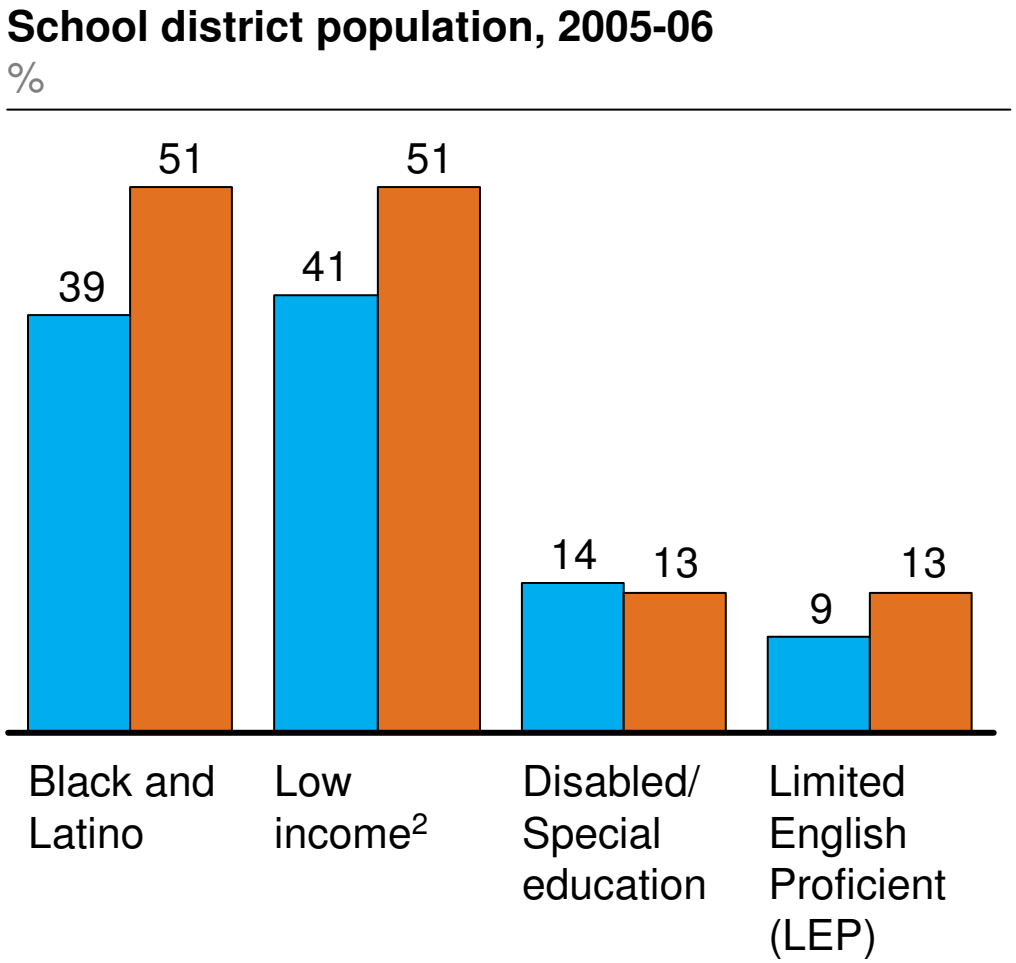


- Other minority-majority states include Texas, Hawaii, New Mexico, District of Columbia
- Maryland, Mississippi, Georgia, New York, and Arizona are next in line with minority populations of about 40 percent

1 Other includes American Indian, multiple races, and unclassified.

SOURCE: US Census Bureau, 2008 National Population Projections; State of California, Department of Finance, Population Projections for California and Its Counties 2000-2050, by Age, Gender, and Race/Ethnicity, Sacramento, California, July 2007; McKinsey analysis

The largest 100 school districts tend to serve a higher proportion of black and Latino, low-income, and limited-English students



The achievement gap is concentrated in the country's 100 largest school districts

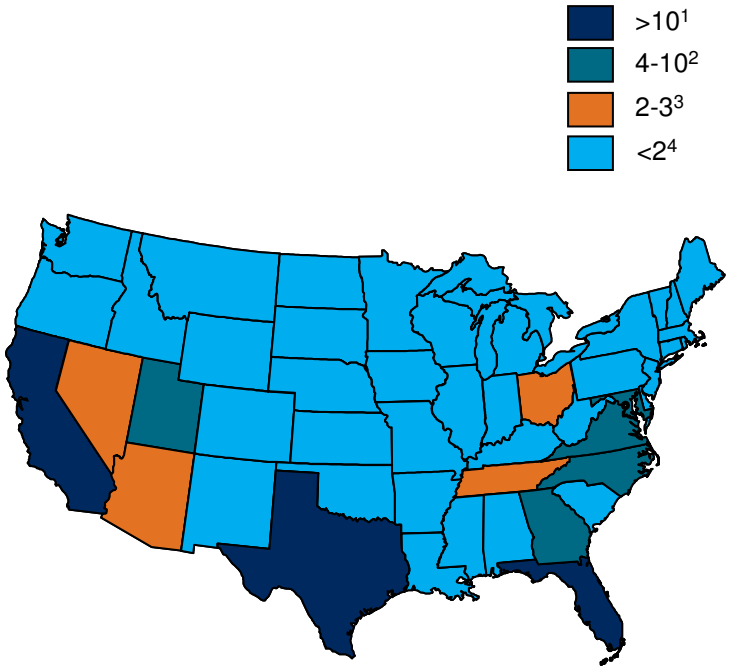
- 53% of all black and Latino students in school are in one of these districts
- 30 districts have minority populations greater than 80% and low-income populations greater than 60%

1 These 100 districts are a subset of "All Districts."
2 Low income means eligible for free or reduced-price lunch.

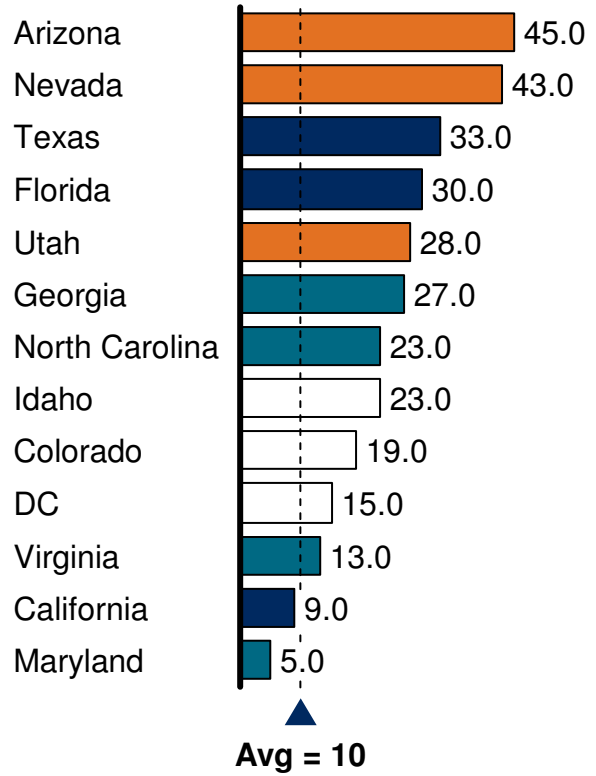
SOURCE: NCES Common Core Data; US DOE, NCES, "Characteristics of the 100 Largest Public Elementary and Secondary School Districts in the United States: 2005–06," 2008

These largest 100 districts are concentrated in 13 states—most of which are among the fastest growing

Distribution of largest 100 districts by state (2005-06)



Expected enrollment growth
Overall percentage change, 2005-17



This concentration of large districts with high minority black and Latino populations in a few states suggests that school systems can make a significant difference in closing the achievement gap

1 TX (18), FL (14), and CA (13).
2 GA (6), MD (6), VA (5), NC (4), and UT (4).
3 TN (3), AZ (2), NV (2), OH (2).
4 1 each: AL, AK, DC, HI, IL, KS, KY, LA, MA, MI, NM, NY, PA, SC, WI, Puerto Rico.

SOURCE: NCES, "Characteristics of the Top 100 School Districts, 2005-06" (released June 2008); NCES Projection of Education Statistics to 2017 (9/2008)

Outline of achievement gap factbase

- The educational performance gap in an international context
- Racial achievement gap
- Income achievement gap
- System-based gap
- Demographic trends
- **Achievement gap trends and progress over time**
- Economic cost of the achievement gap to society
- Cost of the achievement gap to the individual
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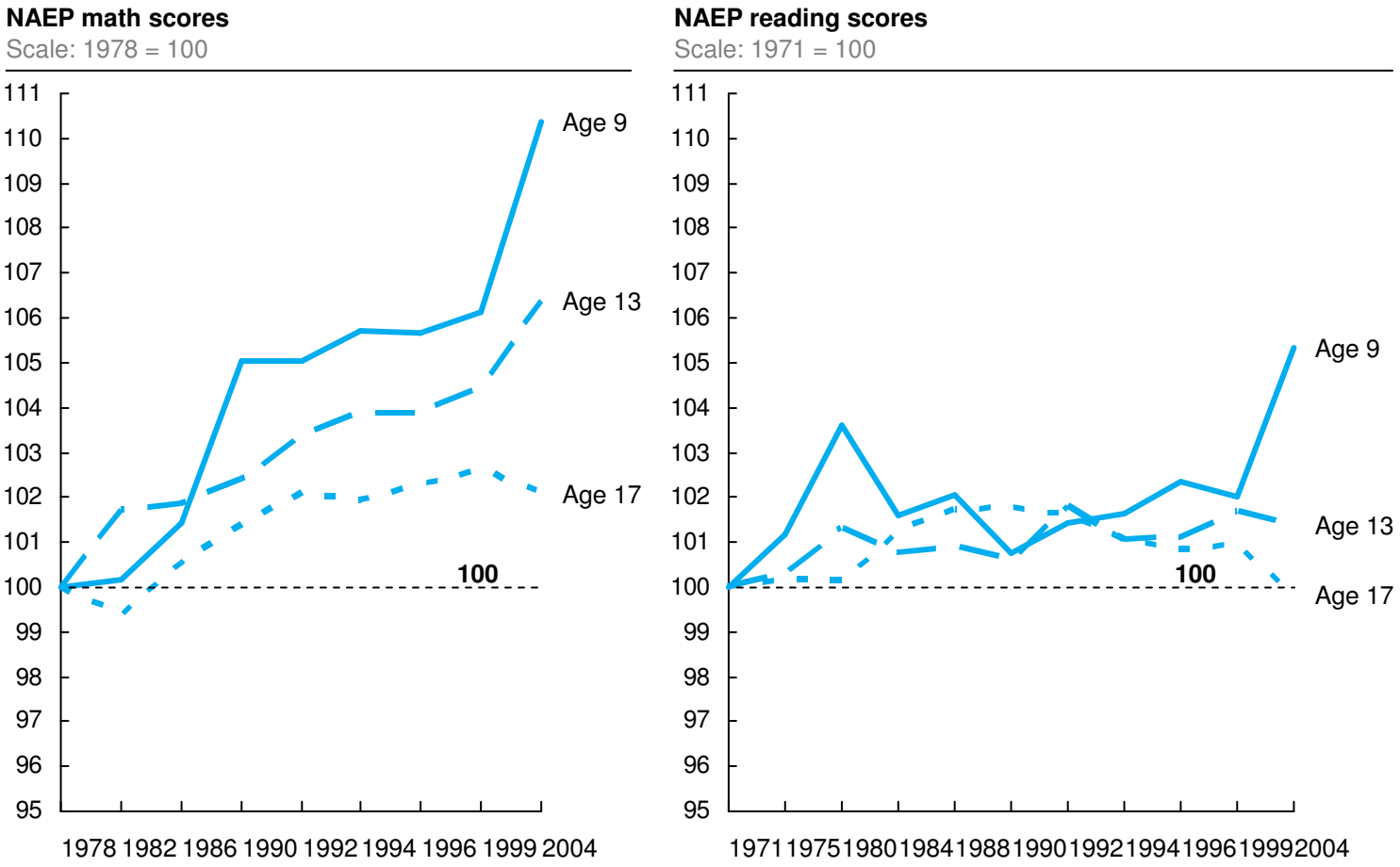
Achievement gap trends demonstrate that student performance can be improved over time and through interventions

- **Over the past 30-40 years, national aggregate achievement has increased, demonstrating that student performance can be improved**
- **While a large racial achievement gap remains, it has narrowed by about one-third over the past 30-40 years**
  - The gap closed the most from the early 1970s through the 1980s
  - The gap then plateaued in the late 1980s into the late 1990s (and even increased), and then decreased again since 2000
- **Over the past 15 years, most states made progress in narrowing the achievement gap**
  - Of the 35 states with a large black population, the black-white gap decreased in 31 states (New Jersey closed the gap by half of a standard deviation)
- **Since 2003 New York City, the country's largest district, has shown that the traditionally lowest achieving group, low-income black students, can improve**
- **There are cases where the achievement gap has been overcome (e.g., Latino students in Ohio score the same as their white peers in 8 states and better than their white peers in 13 states)**

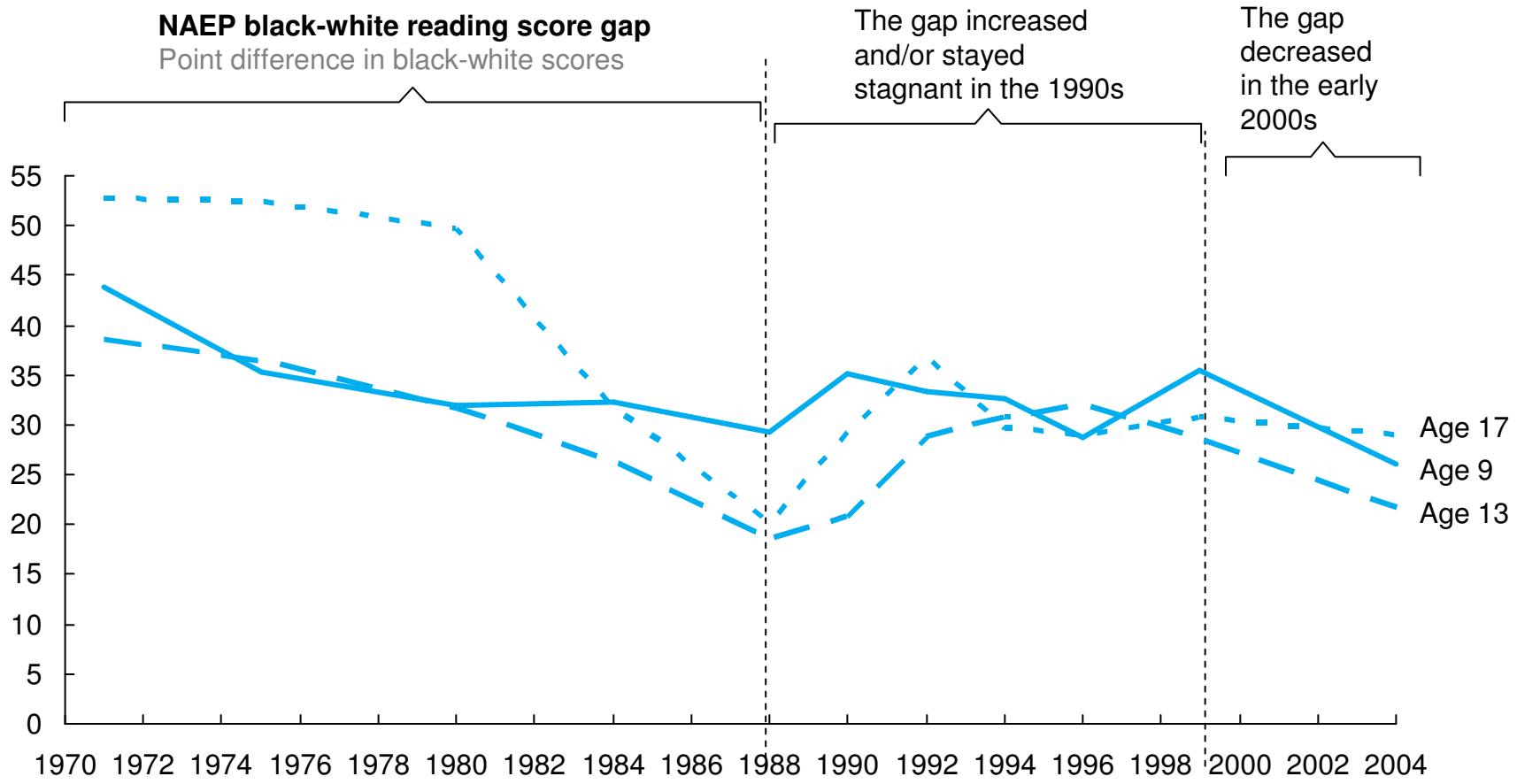
Over time aggregate test scores have improved in all groups but 17-year-olds in reading



Note: Each point over 100 is equivalent to a 1% increase in scores from the base year (i.e., 110 is 10% higher than the base year).

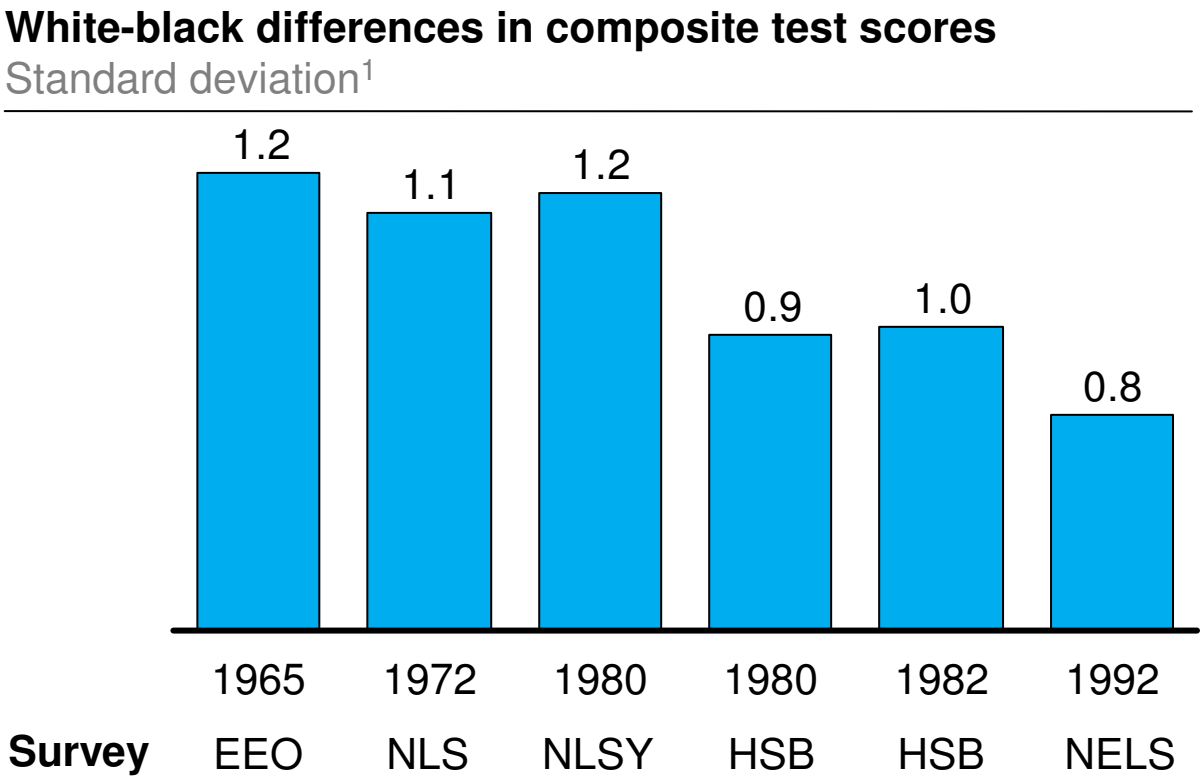
SOURCE: NAEP 2004 Long-Term Trend Summary Data Tables

The gap closed the most from the 1970s through the 1980s but stagnated until a recent decline



SOURCE: NAEP 2004 Long-Term Trend Summary Data Tables; Nation's Report Card, http://nces.ed.gov/nationsreportcard/ltt/results2004/sub-reading-race.asp

Six national longitudinal surveys between 1965 and 1992 also describe an achievement gap that has narrowed over time



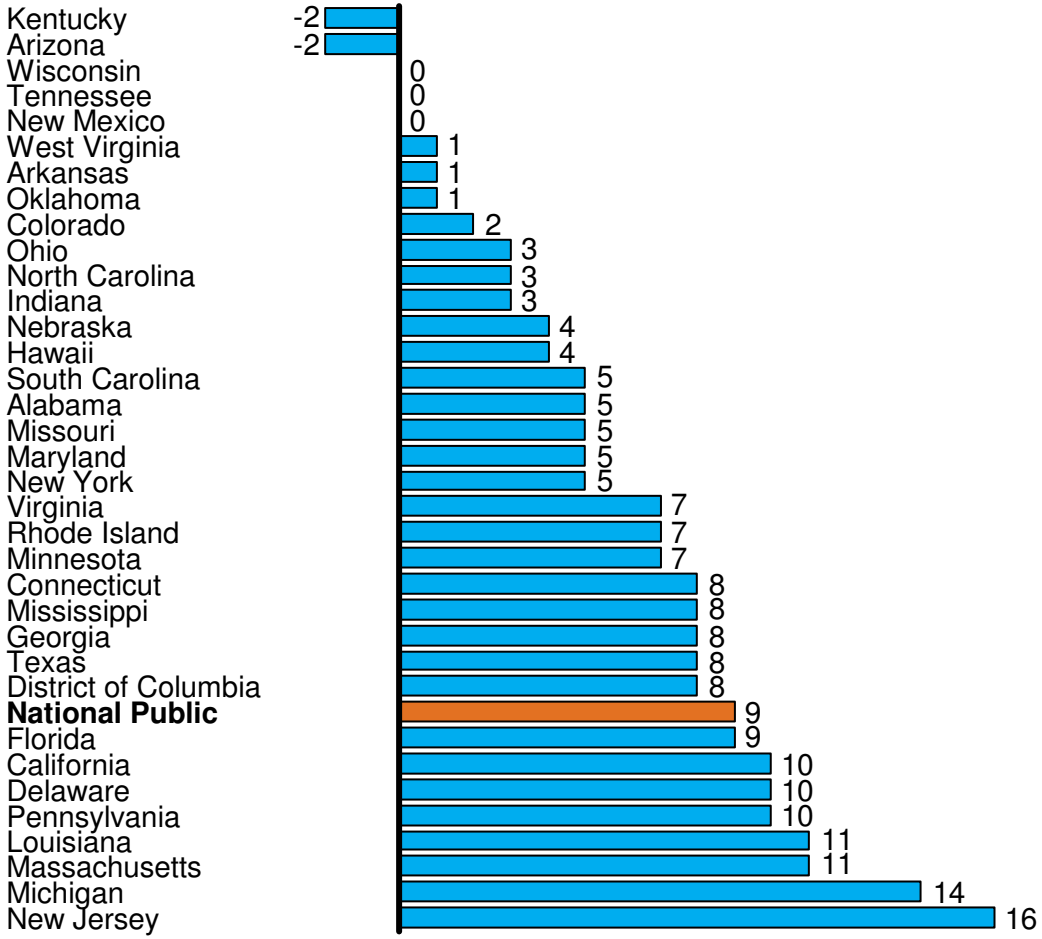
1 While tests are not directly comparable, the standard deviation composite performance can show trends in relative performance.

SOURCE: Hedges and Nowell, "Black-White Test Score Convergence since 1965," from Jencks and Phillips, 1998

Over the past 15 years, states have demonstrated that the black-white achievement gap can be narrowed, especially at the early student years

Improvement in the black-white test-score gap between 1992 and 2007

Average NAEP math grade 4 score[1]



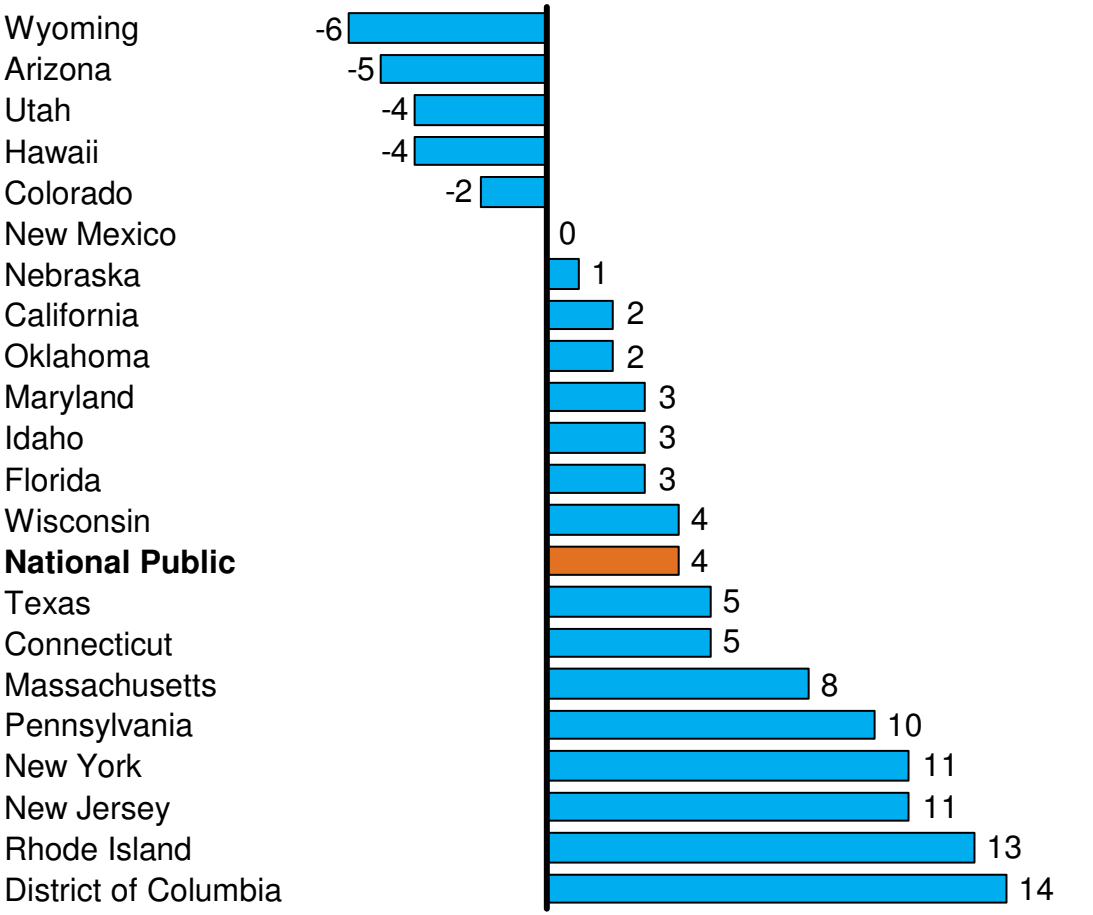
1 35 out of 50 states had data for both years and statistically significant populations of black students.

SOURCE: NAEP 2004 Long-Term Trend Summary Data Tables

Likewise, over the past 15 years, states have demonstrated that the Latino-white achievement gap can be narrowed, especially at the early student years

Improvement in the Latino-white test-score-gap between 1992 and 2007

Average NAEP math grade 4 score



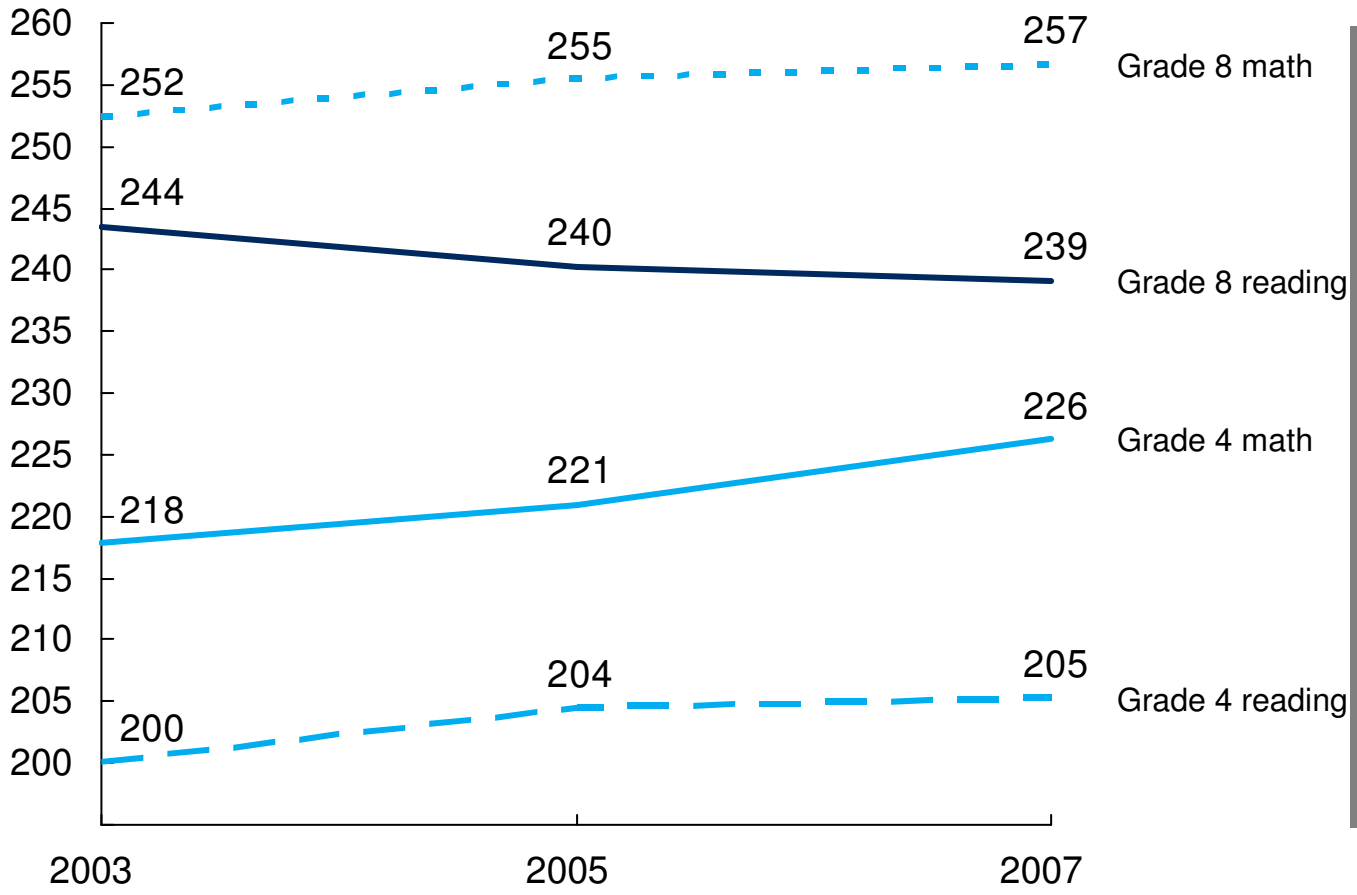
Note: 21 out of 50 states had data for both years and statistically significant populations of Latino students.

SOURCE: NAEP 2004 Long-Term Trend Summary Data Tables

NYC, the country's largest district, has shown that the traditionally lowest achieving group, low-income black students, can improve

NAEP scores in New York City, 2003-2007

Average score for black students eligible for federally subsidized lunch



NYC schools have seen improvements among low-income black students, especially in the earlier years

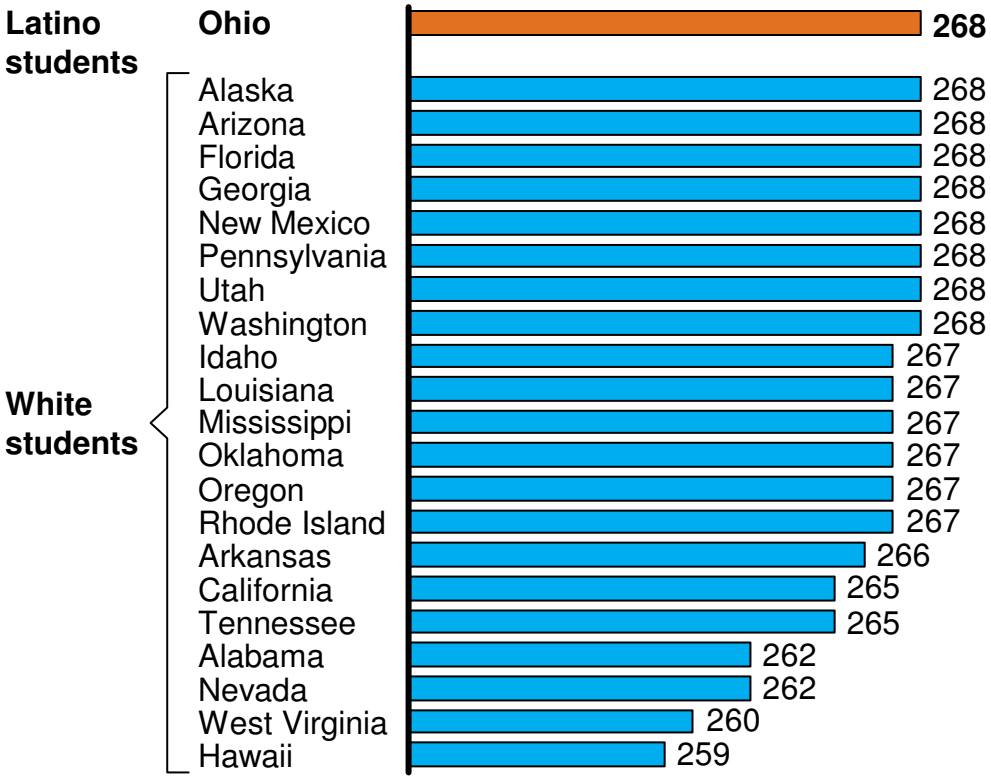
- In grade 4 math, average scores have improved by 8 points, or nearly a year's worth of learning
- But in eighth- grade reading, scores have declined by 4 points, placing low-income blacks in NYC at the national average for this category

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

Ohio is an example where Latino students outperform whites in other states – showcasing that the achievement gap can be overcome

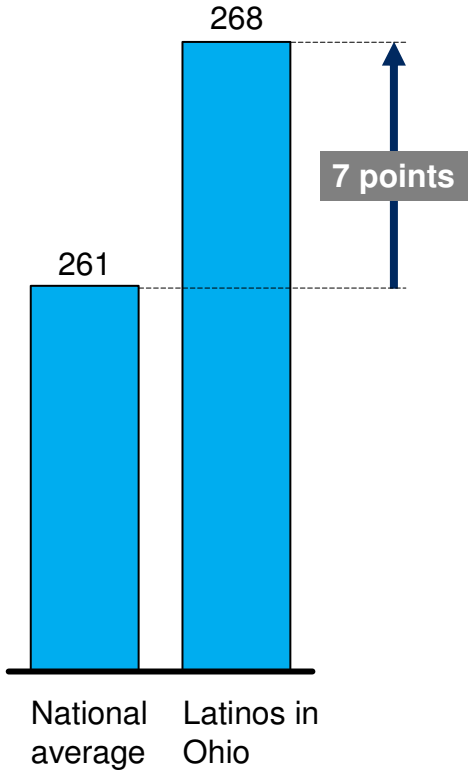
Latino students in Ohio score the same as their white peers in 8 states and better than their white peers in 13 states.

NAEP grade 8 reading 2003
Average scale score



They exceed the national average significantly

NAEP grade 8 reading 2003
Average scale score



SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables; McKinsey analysis; example from EdTrust Achievement Gap presentation

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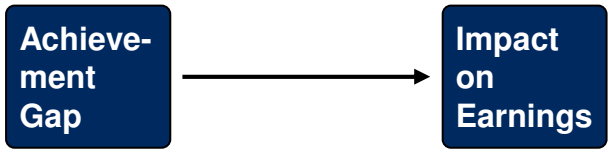
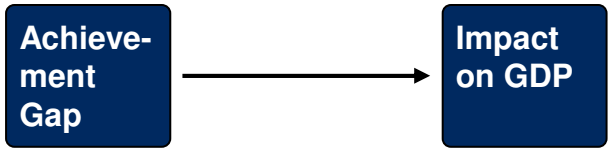
Societal economic cost of the achievement gap

- **These achievement gaps have negative implications that will grow over time for the US economy as diminished skills and performance in the labor force reduce national income and economic growth.**
- Multiple gaps have been measured for their economic impact:
  - If in the 15 years after *A Nation at Risk* sounded the alarm the United States had **closed the international gap**, with US students achieving world-leading performance by 1998, US **GDP in 2008** would have been **$1.3 trillion to $2.3 trillion higher**, a 9%-16% premium on current GDP
  - If the United States had closed the **racial achievement gap** with black and Latino students' performance reaching that of white students in 1998, **2008 US GDP** would be between **$310 billion and $525 billion higher**
  - If the United States had closed the **income achievement gap** between students from families with less than $25,000 in annual household income and those above by 1998, **2008 US GDP** would be between **$400 billion and $670 billion higher**
  - Finally, if all states that currently perform below average had improved their score to the average by 1998, **2008 US GDP** would be between **$425 billion and $710 billion higher**
  - Separately, measuring the impact of lower performance of black and Latino students and the impact on their educational attainment, we can estimate that **US earnings** alone would be **$120 billion to $160 billion higher** in 2008 if there was **no racial achievement gap**

The economic impact of the racial achievement gap can be computed by linking achievement to both earnings and GDP

	Description	Approach
Achievement to earnings	**Achievement to earnings** ▪ Uses academic research linking achievement level and future individual annual earnings ▪ Aggregates the earnings boost in 2007 if all achievement gap closed for all blacks and Latinos in labor force	
	Achievement to attainment to earnings ▪ Uses NELS longitudinal data and earnings data from the Current Population Survey (CPS) ▪ Links earnings data to probabilities for attainment based on eighth-grade achievement tests if all blacks and Latinos performed at white level	
Achievement to GDP impact	**Achievement to GDP** ▪ Uses cross-country analysis to find the increase in national per capita growth associated with an increase in achievement ▪ Computes the additional GDP in 2008 through increased national achievement levels if blacks and Latinos had fully caught up to white students by 1998	

Note: All analyses are in 2008 US dollars.

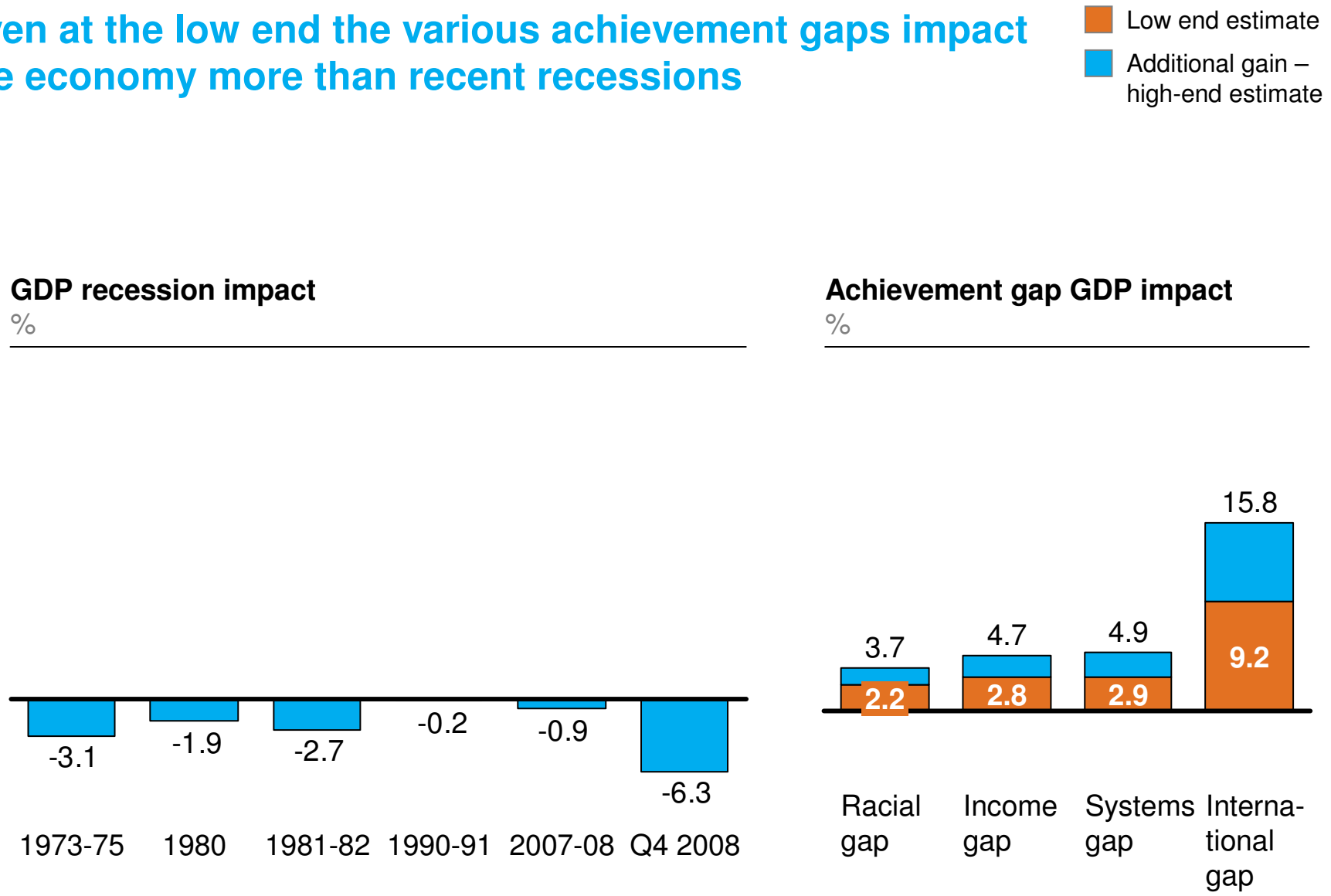
US GDP would be up to $2.3 trillion higher in 2008 had the United States succeeded in closing the achievement gap in the 15 years after *A Nation at Risk* was published in 1983

	2008 GDP gain	What do we need to believe?
A International gap	▪ $1.3 trillion - $2.3 trillion (9% -16% of 2008 GDP)	▪ The United States closed the performance gap with top performing countries (Korea, Finland)
B Racial gap	▪ $310 billion - $525 billion (2% - 4% of 2008 GDP)	▪ Black and Latino students closed the performance gap with white students
C Income gap	▪ $400 billion – $670 billion (3% - 5% of 2008 GDP)	▪ Poor students with family incomes of less than $25,000[1] perform at the same levels as students from families earning more than $25,000
D Systems gap	▪ $425 billion - $710 billion (3% - 5% of 2008 GDP)	▪ Students in all states performing below the current average are brought up to the average level
E Earnings potential	▪ 2008 earnings gain: $120 billion - $160 billion	▪ Black and Latino students closed the performance gap with white students

Note A-Dbased on cross-country growth GDP growth model; all models assume gap was closed by 1998. E based on McKinsey models and Census data; model assumes gap was closed by 1998.

1 Approximately 125% of the poverty line max, qualifier for many government assistance programs.

Even at the low end the various achievement gaps impact the economy more than recent recessions



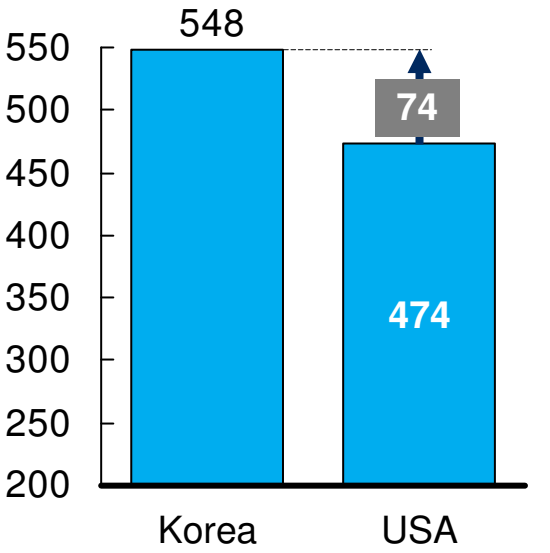
SOURCE: US Bureau of Economic analysis (BEA)

Closing the achievement gap involves either raising all US scores to the top international level or raising black and Latino student scores to white levels

A International gap

PISA scores, 2007

Average score

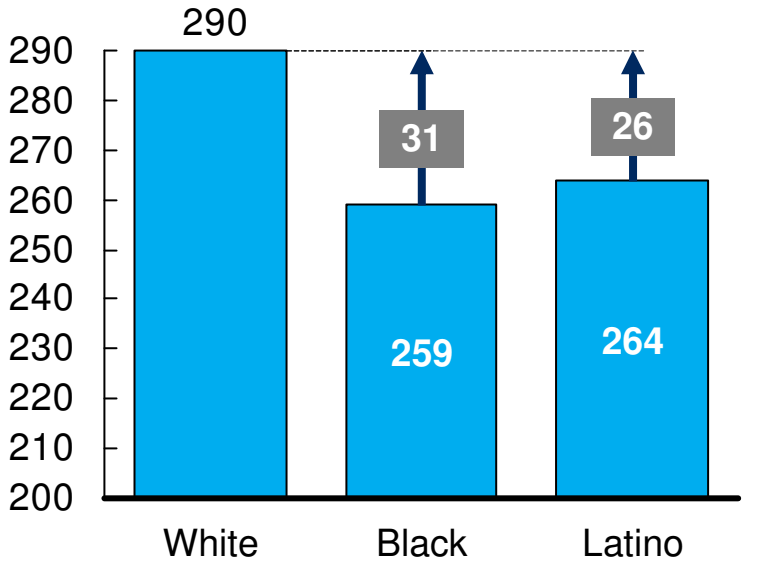


If the international achievement gap did not exist today, US students would score 74 points (or .75 standard deviations) higher on the PISA test

B Racial gap

NAEP eighth-grade math test, 2007

Average score



If the achievement gap did not exist today, black and Latino students would score 31 and 26 points higher, respectively, on the NAEP eighth-grade math test, which is about 2.5 to 3 years' worth of learning[1]

1 0 points in the NAEP score is roughly correlated with one year's worth of learning; in terms of standard deviations, the gap in eighth grade is identical to the gap in fourth grade (in eighth grade, .72 for Latino students, .86 for blacks; in fourth grade, .72 and .90, respectively).

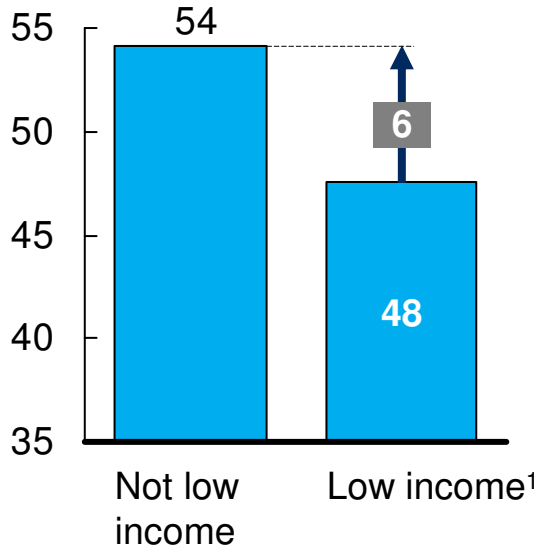
SOURCE: US DOE, NCES, NAEP Summary Data Tables; McKinsey analysis on subset of states

Closing the income gap involves raising the scores of low-income students, and closing the system gap means raising the score of below average states to average

C Income gap

NELS Composite score

Average score

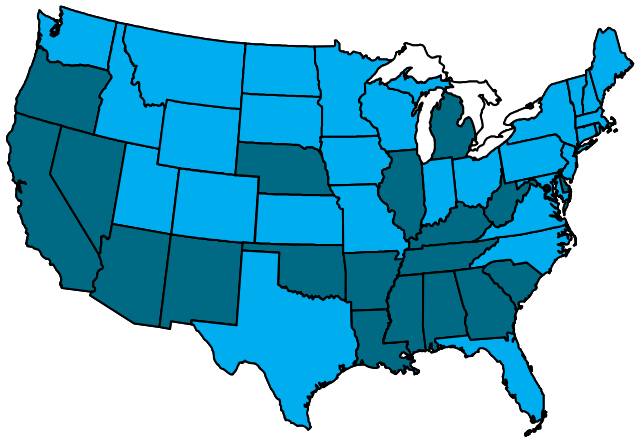


If the income achievement gap did not exist today, poor students would score 6.5 points (or .65 standard deviations) higher on the NELS composite test

D Systems gap

NAEP eighth-grade math test, 2007

Average score

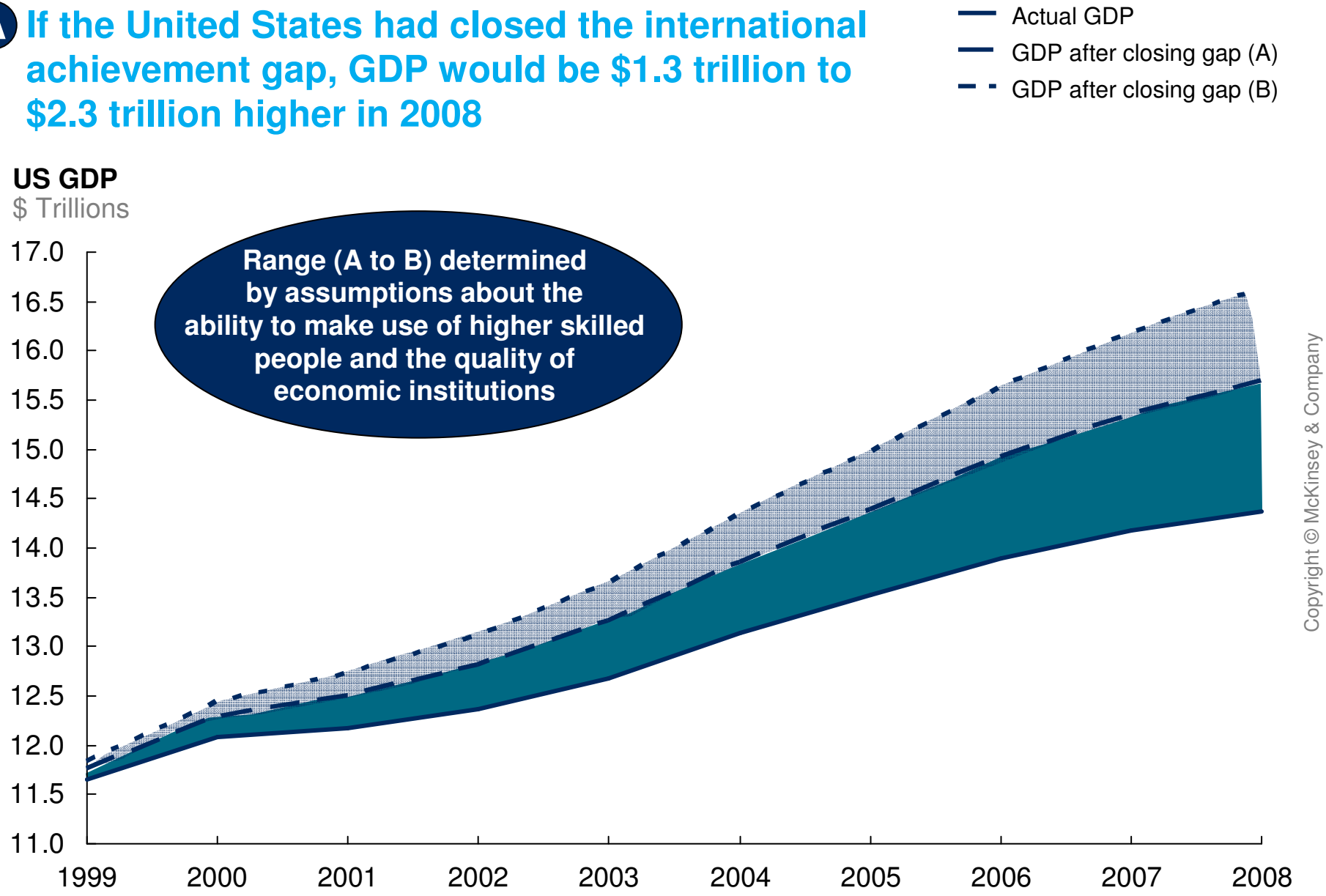


If all states currently performing at less than the average score were lifted up to the average score, 41% of the population would score 6.5 points (or .65 standard deviations) higher on NAEP

1 Low income is defined as family Income of less than $25,000 (or approximately 125% of the poverty rate, the standard for being eligible for numerous government assistance programs.

SOURCE: US DOE, NCES, NAEP Summary Data Tables; McKinsey analysis on subset of states

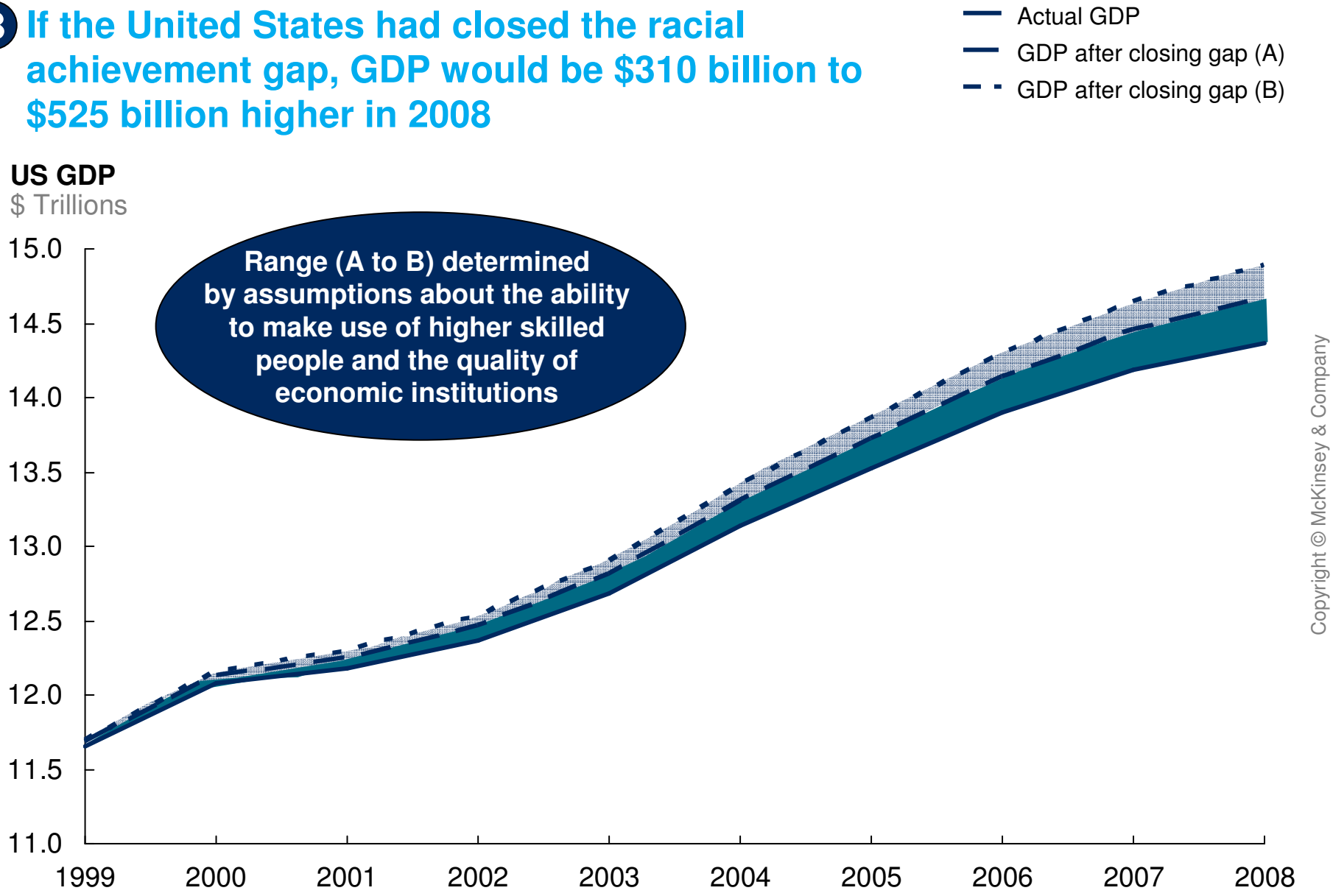
A If the United States had closed the international achievement gap, GDP would be $1.3 trillion to $2.3 trillion higher in 2008



Note: Constant 2008 US dollars.

SOURCE: Hanushek and Woessman 2008; McKinsey analysis

B If the United States had closed the racial achievement gap, GDP would be $310 billion to $525 billion higher in 2008



Note: Constant 2008 US dollars.

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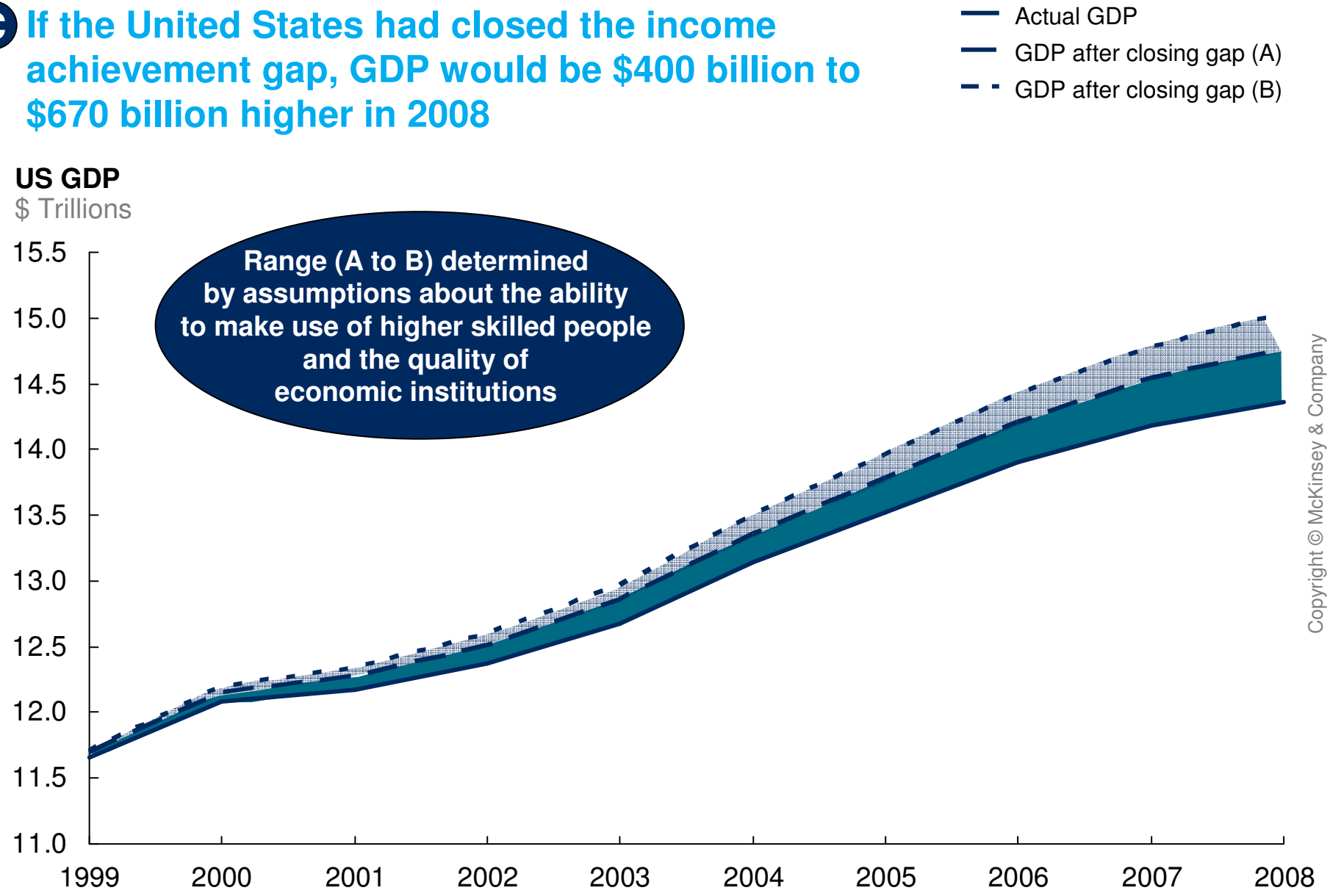
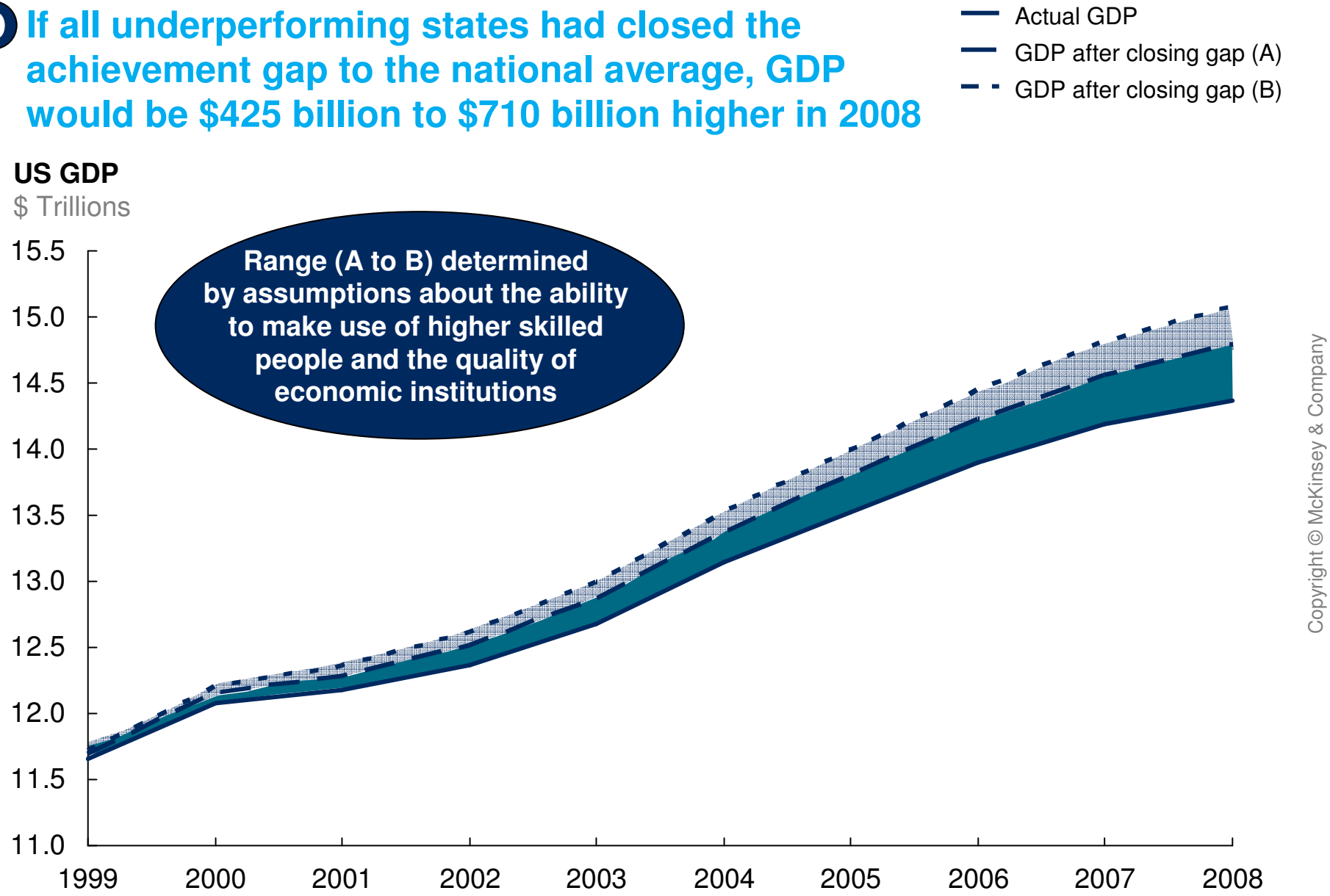
C If the United States had closed the income achievement gap, GDP would be $400 billion to $670 billion higher in 2008



Note: Constant 2008 US dollars; income gap defined as gap of students with less than $25,000 of household income compared to more than $25, 000.

SOURCE: Hanushek and Woessman 2008; McKinsey analysis

D If all underperforming states had closed the achievement gap to the national average, GDP would be $425 billion to $710 billion higher in 2008



Note: Constant 2008 US dollars.

SOURCE: Hanushek and Woessman 2008; McKinsey analysis

GDP impact methodology (racial achievement gap example)

	Growth premium for achievement	X	Proportion of the population affected by achievement gap	X	Size of achievement gap	X	Historical growth in GDP/capita	X	Compounded from base year to end year	=	GDP impact in end year
Data sources	▪ Hanushek and Woessman 2008		▪ BLS 2008/CPS 2005		▪ NAEP		▪ US Bureau of Economic Analysis; US census		▪ McKinsey analysis		▪ McKinsey analysis
Description	▪ Cross-country historical analysis to find the increase in GDP/capita associated with an increase in achievement		▪ Number of blacks and Latinos in the labor force as a proportion of total labor force		▪ Average achievement gap between white students and black and Latino students in terms of standard deviations computed through NAEP analysis for eighth-grade math		▪ Historical growth in GDP/capita in the United States		▪ Additional growth in annual GDP/capita from the achievement premium compounded from the base year (hypothetical year when the achievement gap was closed) to the end year		▪ GDP equivalent of the difference in projected GDP/capita in end year (scenario with no achievement gap) and the actual GDP/capita in end year in 2008 dollars
Value	▪ 1.2–2 percentage points per standard deviation increase		▪ 26% of the labor force black and Latino (2007)		▪ Average of .8 std dev (black students are .86 std dev behind white students, and Latino students are .72 behind white students)		▪ E.g., CAGR of 4% from 1998 to 2008		▪ Average annual growth boost of ~1.2–2 percentage points		▪ $310 – $525 bn in 2008 in forgone GDP if achievement gap was closed in 1998

The racial achievement gap leads to a loss of $120 billion to $160 billion in earnings alone

E	Description	Approach	Earnings impact
E1	**Linking achievement to earnings** ▪ Links eighth-grade standardized test scores to earnings ▪ Aggregates the earnings boost in 2008 if all achievement gap closed for all blacks and Latinos in the labor force, assuming an earnings boost of 11%–15%[1]	Achieve-ment Gap → Impact on Earnings	$120 - $160 bn
E2	**Linking achievement to attainment to earnings** ▪ Links eighth-grade standardized test scores to educational attainment and attainment to CPS earnings data ▪ Assumes all blacks and Latinos performed at the level of white students in 2008	Achieve-ment Gap → Attain-ment → Impact on Earnings	$155 bn

1 Reflects range from Murnane, Willett, Duhaldeborde, and Tyler (2000), Lazear (2003), Mulligan (1999).

Note: All analyses are in 2007 US dollars; C2 is based on eighth-grade math scores (no substantial difference would be found if using grade 4 scores).

SOURCE: NAEP 2007; NELS 1988; CPS 2005; BLS 2008

Linking achievement to earnings methodology (racial achievement gap example)

E1

	Population affected by achievement gap	X	Average income of affected groups	X	Earnings premium for achievement	X	Magnitude of achievement gap	=	Earnings impact of closing achievement gap
Data sources	▪ BLS 2008/CPS 2005		▪ CPS		▪ Murnane, Willett, Duhaldeborde, and Tyler (2000), Lazear (2003), Mulligan (1999)		▪ NAEP		▪ McKinsey analysis
Description	▪ All blacks and Latinos currently in the labor force		▪ Average annual income for blacks and Latinos in the workforce		▪ Longitudinal analysis to find the increase in individual annual earnings associated with increase in achievement		▪ Average achievement gap between white students and black and Latino students in terms of standard deviations		▪ Aggregate earnings boost for increased achievement for all affected groups
Important assumptions	▪ N/A		▪ N/A		▪ N/A		▪ Analysis assumes black students are 1 std dev behind white students, ignoring any potential variation		▪ N/A
Outcomes	▪ 18 MM blacks ▪21 MM Latinos		▪ $30,575 for blacks ▪$34,100 for Latinos		▪ 11%–15% increase in earnings for males per standard deviation increase in achievement		▪ .72–.86 standard deviation increase		▪ $120-160 BB

Linking achievement to attainment to earnings methodology (racial achievement gap example)

E2

	Achievement Gap	Educational Attainment	Impact on Earnings
Data sources	▪ NELS 1988	▪ NELS 1988	▪ CPS 2005, BLS 2008
Steps	▪ Achievement is measured by standardizing math test scores	▪ Probability of attainment is calculated for each achievement group	▪ Average earnings by degree are linked to each achievement group
Important assumptions	▪ Test scores are the best measure of achievement ▪ Achievement thresholds exist to access incremental education	▪ Education attainment is a primary driver of employer hiring ▪ Attainment has more robust existing analytic links to earnings	▪ Earnings is the primary driver of GDP ▪ Earnings levels are stable ▪ Labor market can use incremental people with higher skills/education
Key findings	▪ Black and Latino students disproportionately score lower on math and verbal tests	▪ Leads to lower attainment (highly significant statistical correlation)	▪ Leads to lower earnings (highly significant statistical correlation)
Outcomes	▪ Achievement translates into probability of attainment	▪ To match the performance of white students, approximately – 2 out of 3 black, and – every second Latino ▪ student will need to raise their scores	▪ Individual lower earnings – Black: $4,250 – Latino: $3,450 ▪ Workforce (2008) – Black: 18 MM – Latino: 21 MM ▪ Total Impact ~**$150 BB**

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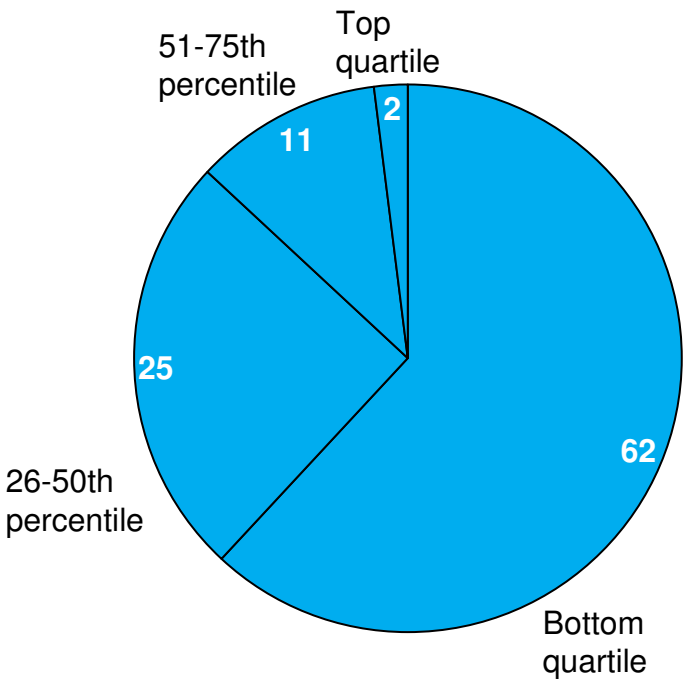
For an individual, higher achievement early on is associated with higher educational achievement and eventually higher lifetime earnings

- **Success in college can be predicted by achievements in elementary school**
  - Achievement levels in fourth grade are correlated with achievement in eighth grade
  - Achievement in eighth grade is in turn highly correlated with a student's probability to go to college and eventually graduate from college
- **Attainment levels are then highly correlated with lifetime earnings**
  - A bachelor's degree, for example, translates into a 73% lifetime premium over just graduating from high school
  - A professional degree holder earns more than three times what a high school graduate makes, despite the opportunity cost of six to eight years of additional education
- **The probability of incarceration decreases with education**;
  - College-educated black men are five times less likely to be in jail than black high school dropouts
- **Adverse health conditions are also linked to lower education**
  - Lower education is highly correlated with unhealthy lifestyles, including higher incidences of smoking and obesity
  - Less educated people are more likely to be uninsured, and as a result less educated people consume more public health resources
- **Lower education often results in low civic engagement**
  - High school graduates are twice as likely to vote than people with an eighth-grade education or less
  - College graduates are 50% more likely to vote than high school graduates

Achievement as early as fourth grade can be linked to life outcomes

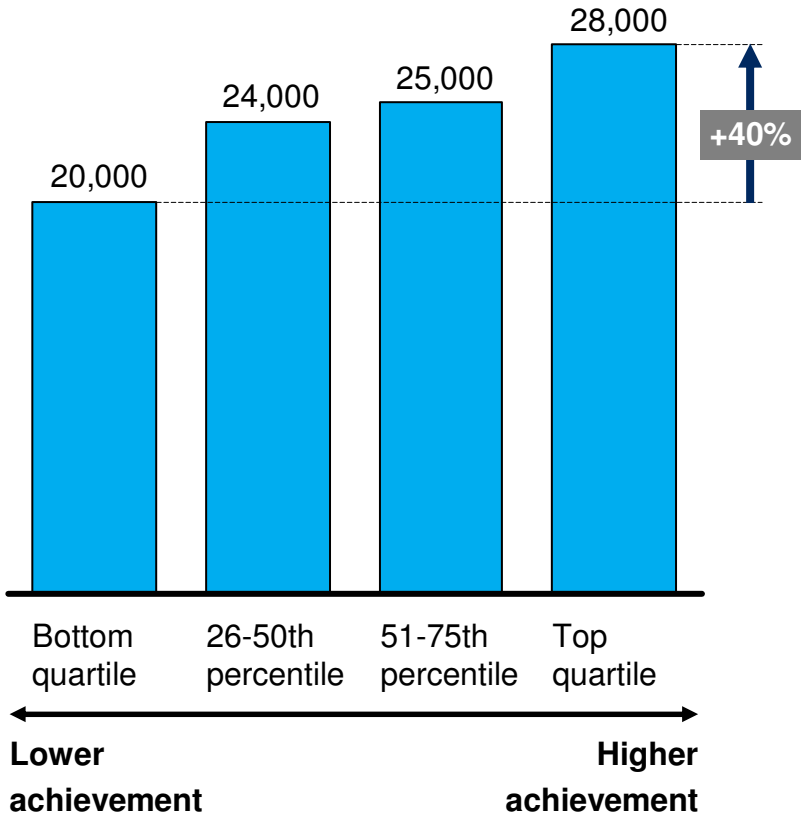
Fourth-grade achievement is linked to eighth-grade achievement…

Grade 8 achievement among students in bottom quartile in grade 4 math



… and eighth-grade achievement correlates to higher income

Median income by grade 8 math achievement quartile
USD (1999)



Note: NELS 1988 income data is limited to students already in the workforce at the time of the last wave of the survey in 2000 limiting the accuracy of the data for students pursuing a postsecondary degree.

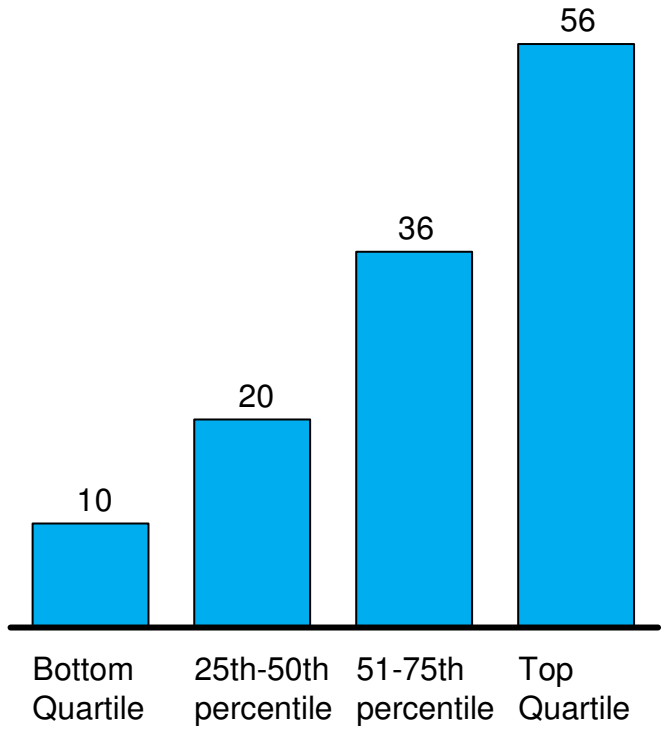
SOURCE: NELS 1988

Over a lifetime, achievement levels are correlated with lifetime earnings, which can be seen indirectly through attainment

Achievement is closely linked to attainment…

Education level by eighth-grade math achievement quartile

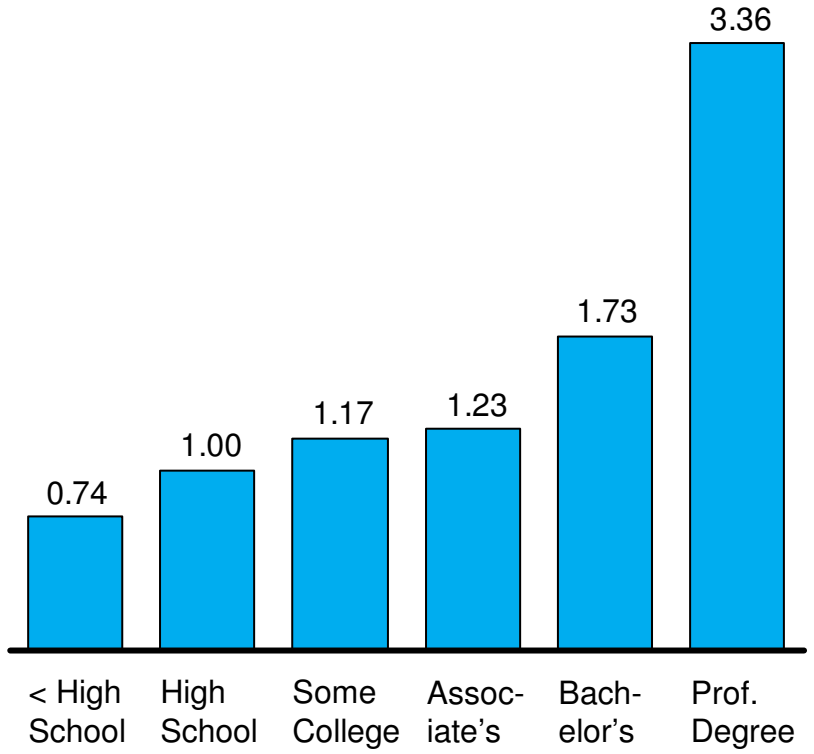
% with bachelors degree



…and attainment is closely linked to earnings

Lifetime earnings ratio compared to a high school graduate

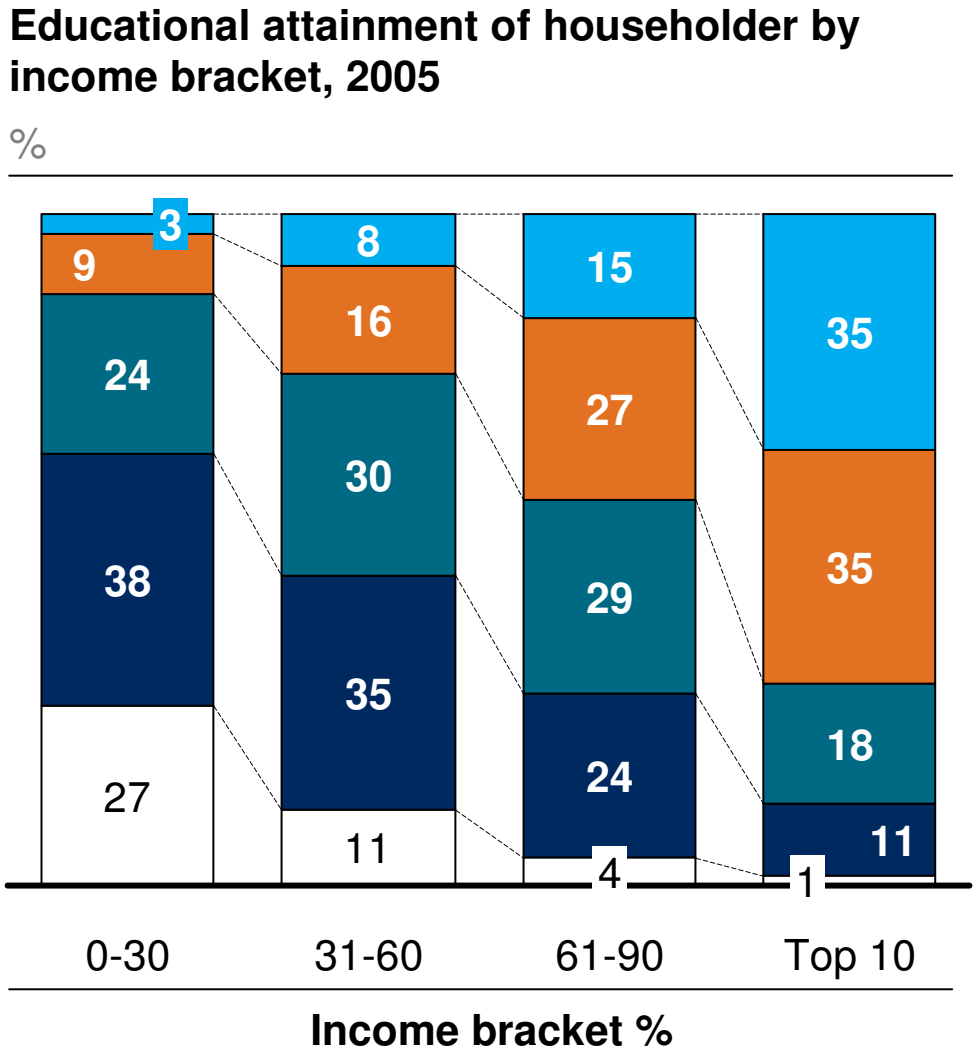
Multiples

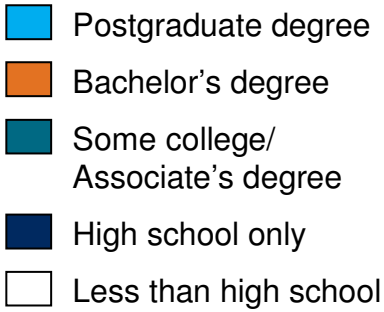


Note: NELS 1988 income data is limited to students already in the workforce at the time of the last wave of the survey, limiting the accuracy of the data for students pursuing a postsecondary degree.

SOURCE: NELS 1988; Baum and Payea, "Education Pays: The Benefits of Higher Education for Individuals and Society," (2004), The College Board

Far fewer people without at least a college education are represented in the highest income brackets

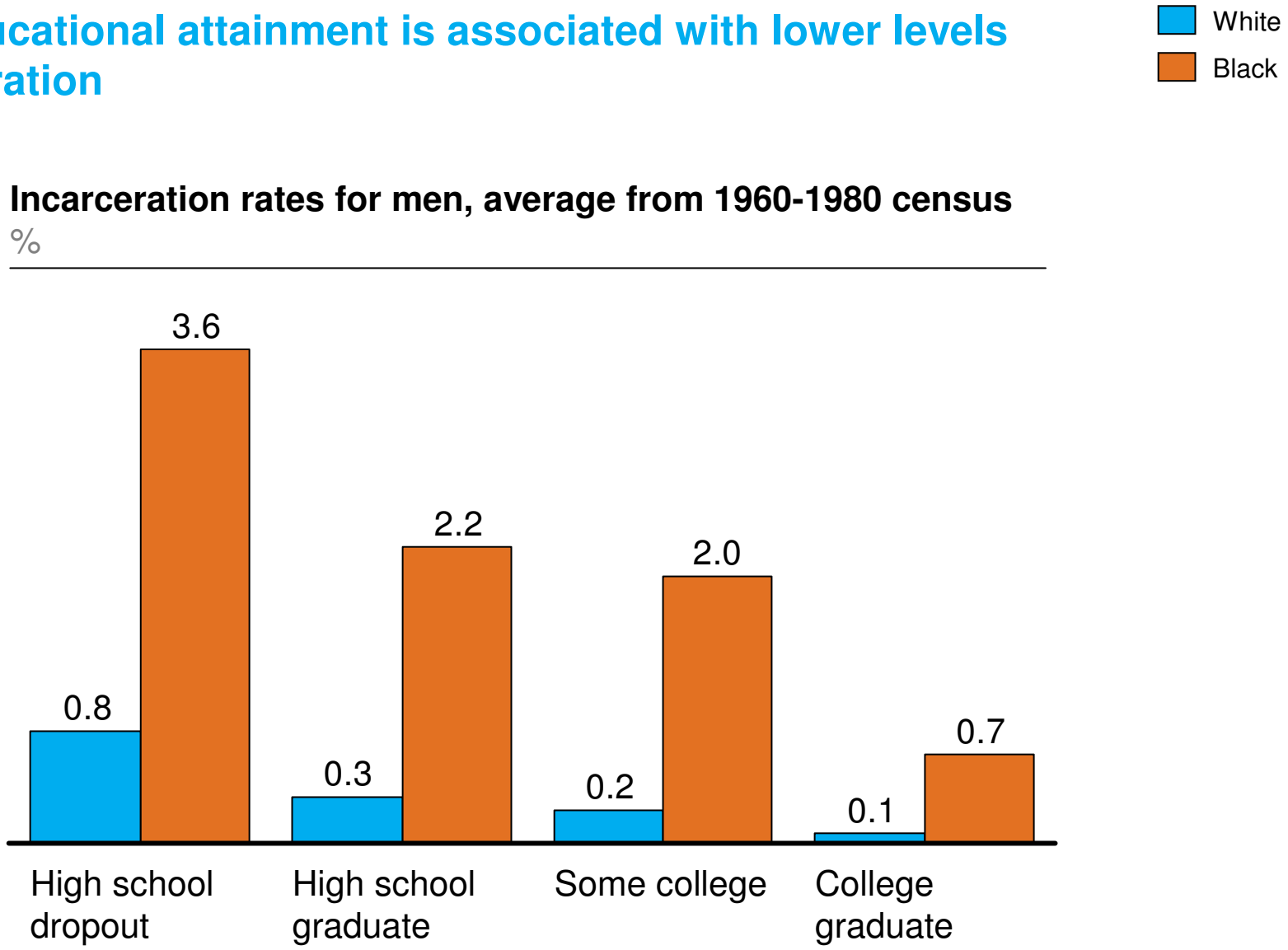




- 70% of top income earners have at least a bachelor's degree
- 12% graduated from college in the bottom third

SOURCE: McKinsey Global Institute; CPI

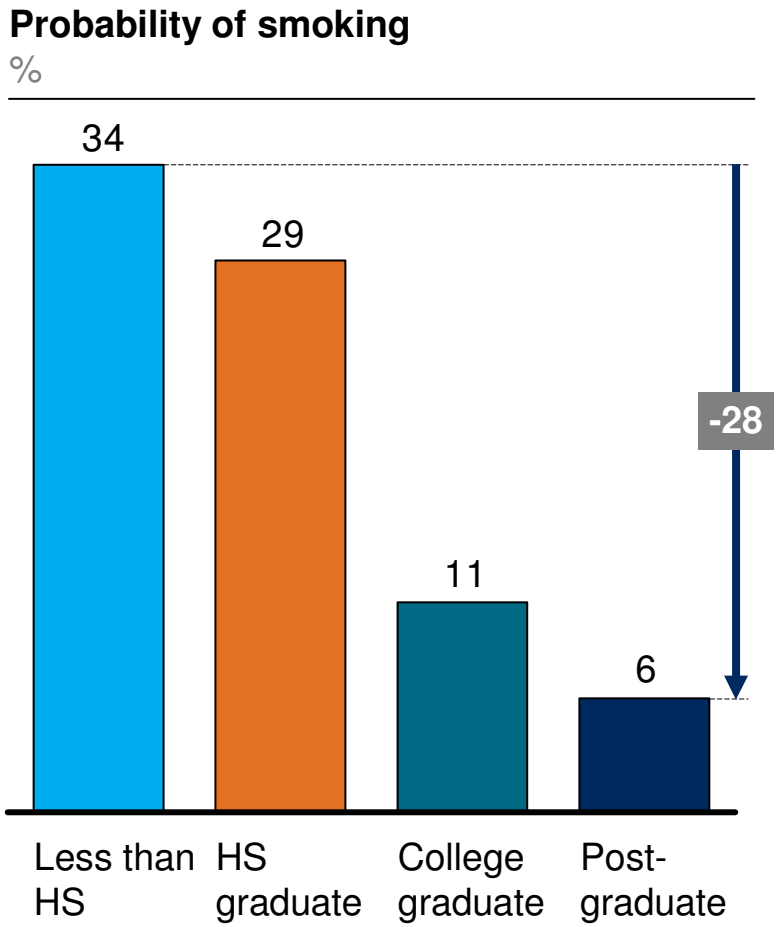
Higher educational attainment is associated with lower levels of incarceration

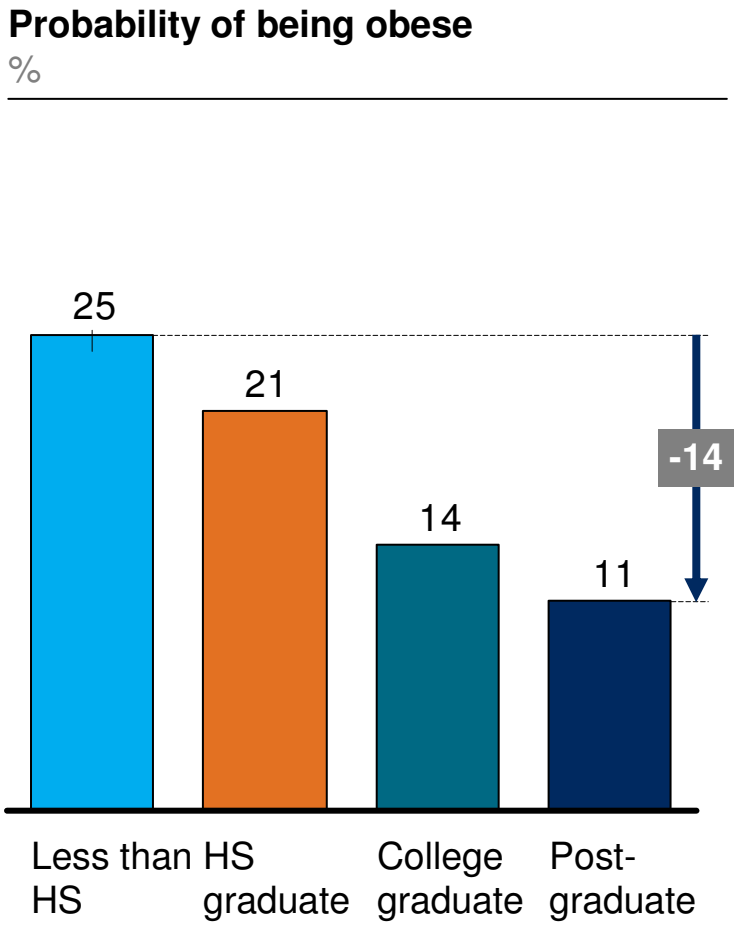


Note: In 2008, Pew calculated that 1 in 15 black men over age 18 are in prison and 1 in 106 white men over age 18 are in prison.

SOURCE: Enrico Moretti, "Crime and the Costs of Criminal Justice," The Price We Pay, 2007; Pew Center on the States, "One in 100: Behind Bars in America 2008"

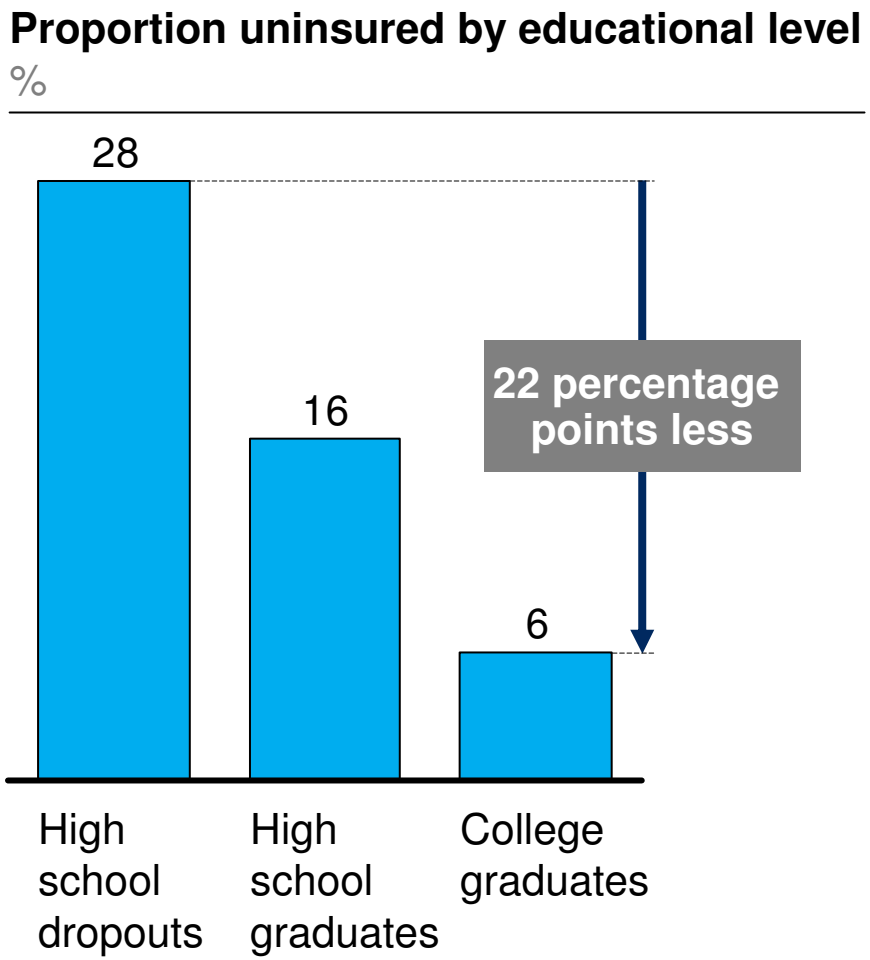
Lower education is highly correlated with unhealthy lifestyles, including higher incidences of smoking and obesity





SOURCE: CDC, A. Drewnowski, S. Specter, "Poverty and Obesity: The role of energy density and energy cost," The American Journal of Clinical Nutrition, 01/2004, p. 7.

Less educated people are more likely to be uninsured, and as a result they consume more public health resources



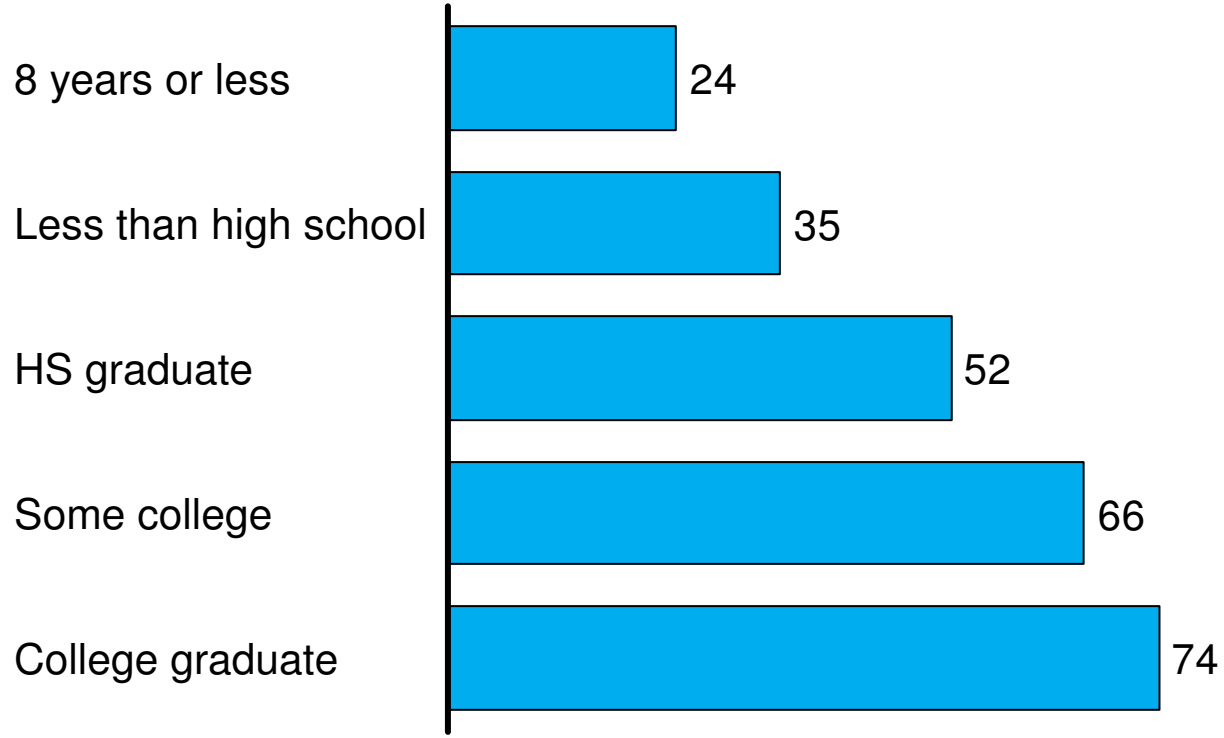
Muennig (2007) found that each new high school graduate saves the government $39,000 in public health care costs, largely because of higher private insurance coverage rates

SOURCE: Muennig, "Consequences in Health Status and Costs," Price We Pay, 2007

Education levels are also associated with civic engagement, meaning that less educated people participate less in politics

Voter participation in the presidential election, 2004

%



SOURCE: National Election Study (NES)

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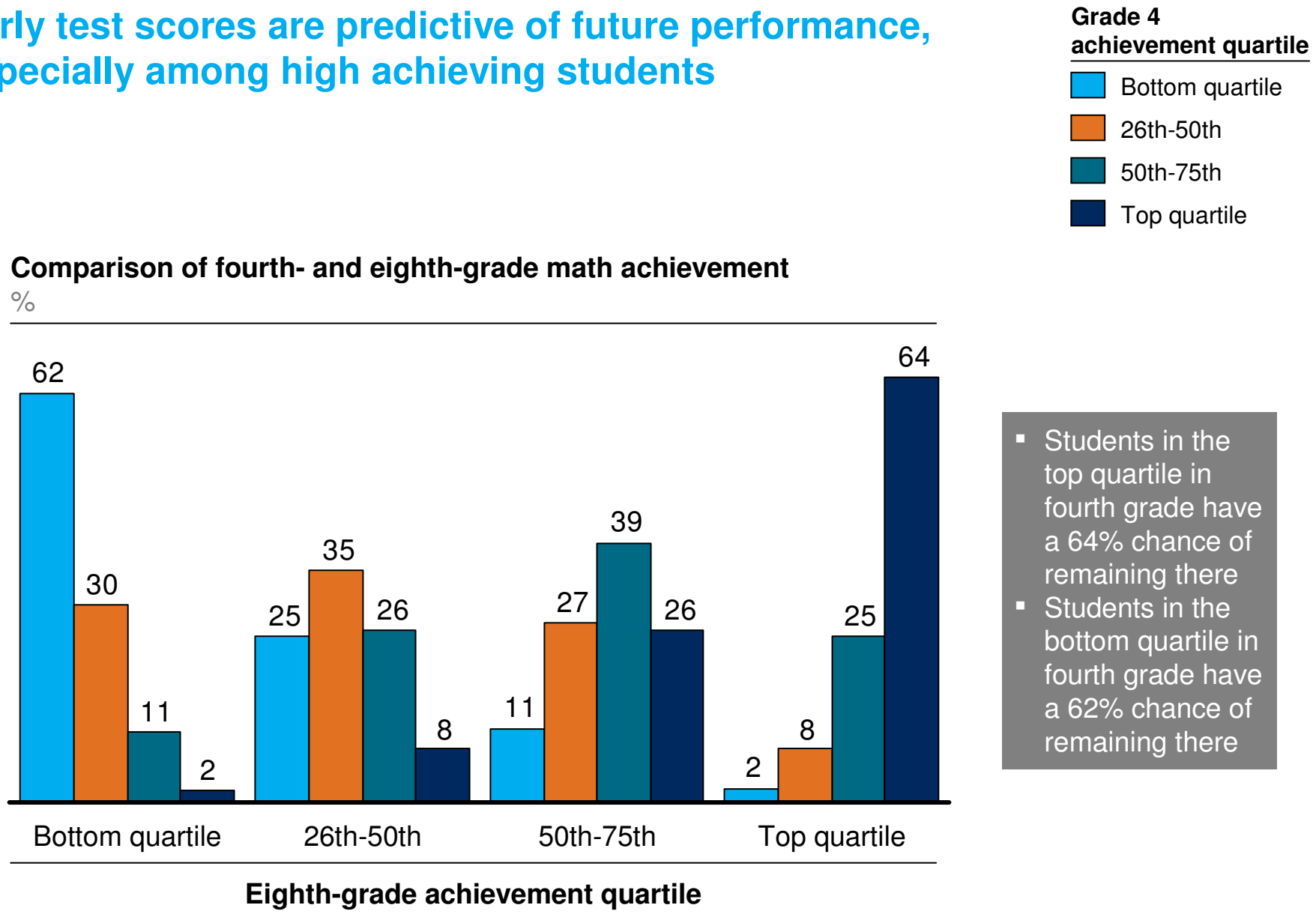
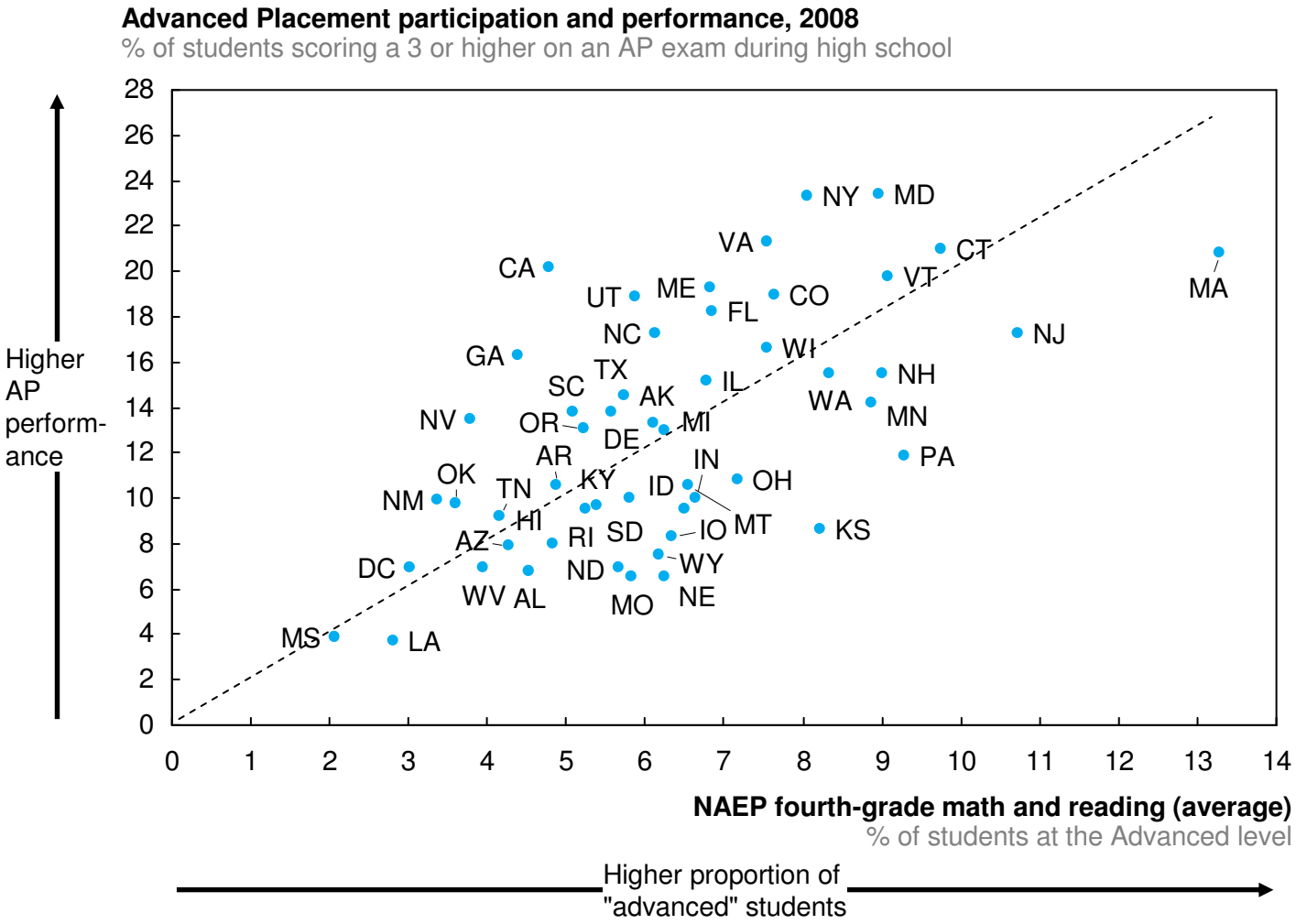
Early test scores are predictive of future performance, especially among high achieving students



- Students in the top quartile in fourth grade have a 64% chance of remaining there
- Students in the bottom quartile in fourth grade have a 62% chance of remaining there

SOURCE: NYC Department of Education

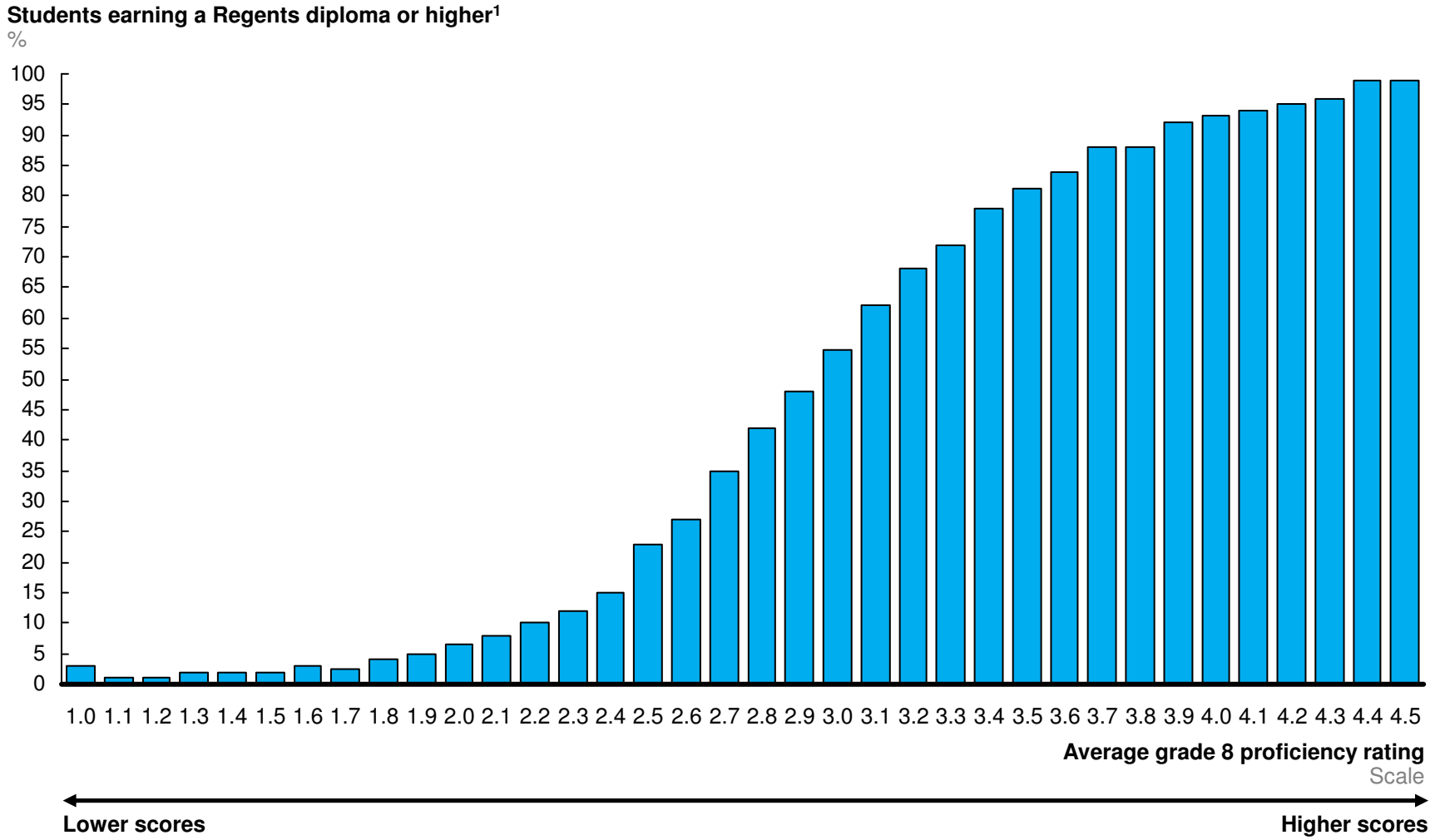
The number of advanced students in fourth grade is a good indicator of success on Advanced Placement tests



There is a **correlation between early achievement and preparation for higher education**, which suggests that interventions in the early grades can pay off later because performance on AP tests is a good predictor of college success

SOURCE: College Board, AP Report to the Nation, 2009; US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

In New York City, eighth-grade achievement levels are highly predictive of high school graduation four years later



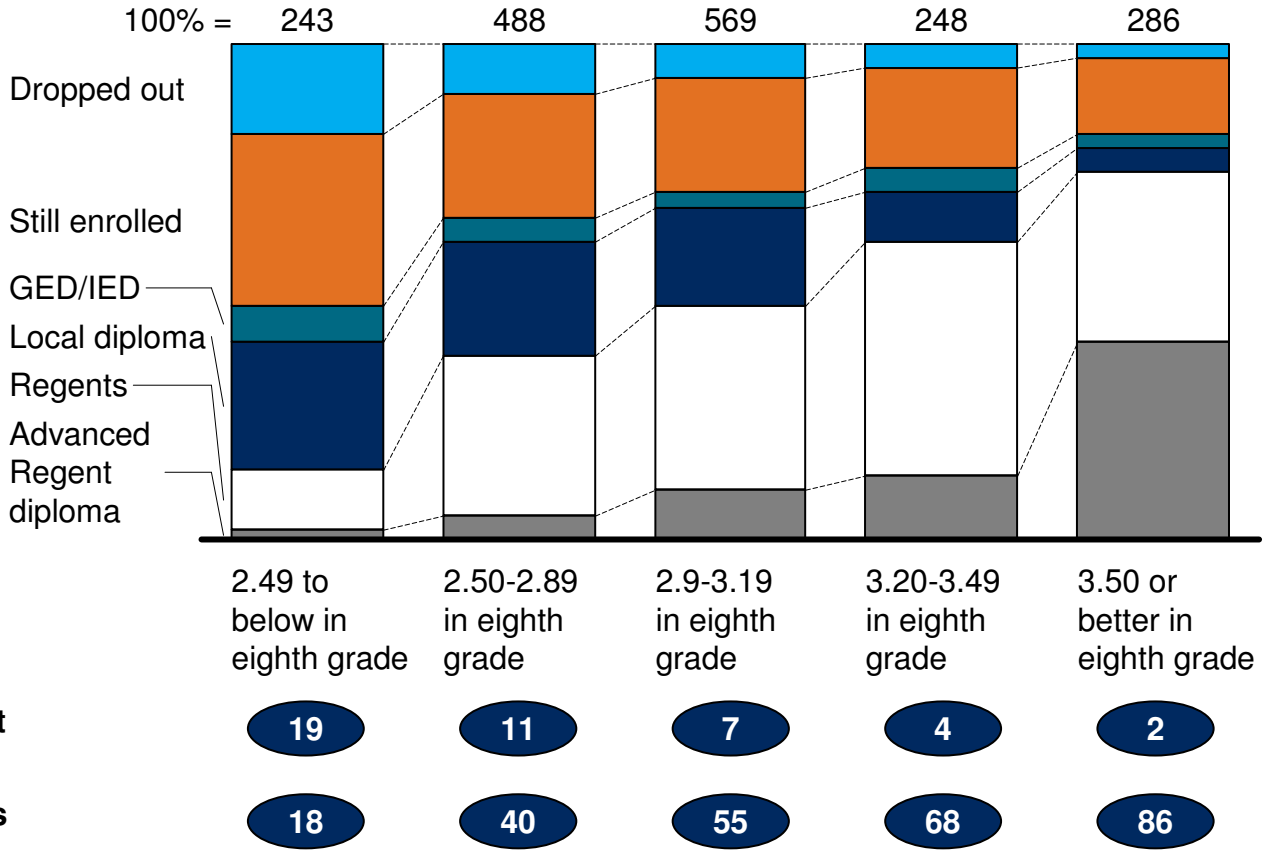
1 For students entering ninth grade after 2007, the Regents diploma is the standard high school diploma in the state of New York.

SOURCE: NYC Department of Education analysis

Among students with similar third-grade test scores, graduation outcomes varied greatly on progress by eighth grade

2008 graduation outcome of students who scored a 3.0 on the third-grade ELA test in 1999

Graduation outcome by 2004 eighth-grade ELA score



- Among students who scored similarly in third grade, graduation outcomes varied greatly based on how much they had progressed or regressed until eighth grade
- Eighth-grade achievement is highly correlated with graduation outcomes (e.g. among top performers, 86% of students received a Regents diploma, and only 2% dropped out)

Note: Includes only students who scored a 3.0 on the third-grade ELA test in 1999, had an eighth-grade test score in 2004, and were part of the 2004 graduation cohort (class of 2008).

SOURCE: NYC Department of Education analysis

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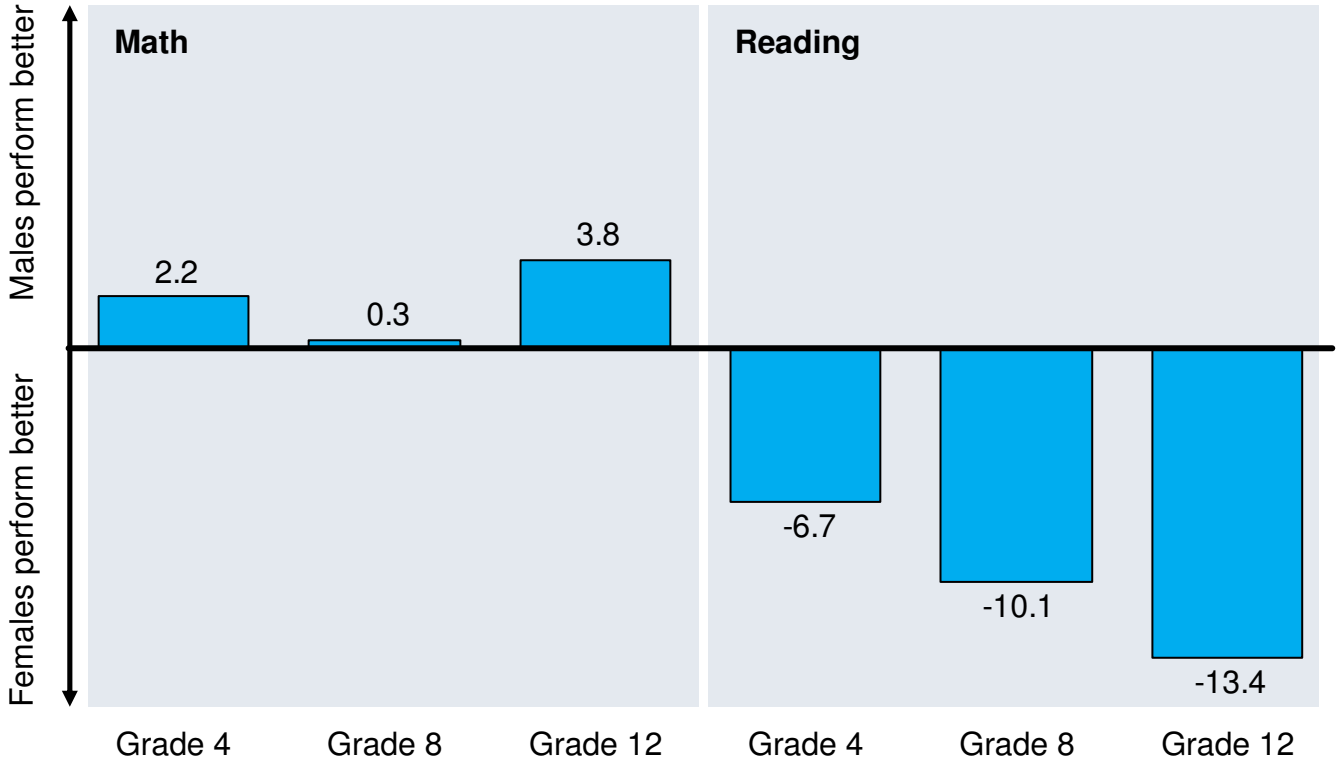
Males perform slightly stronger in math, while females perform significantly stronger in reading, especially in the latter years

NAEP test results by gender[1]

Average male score minus average female score



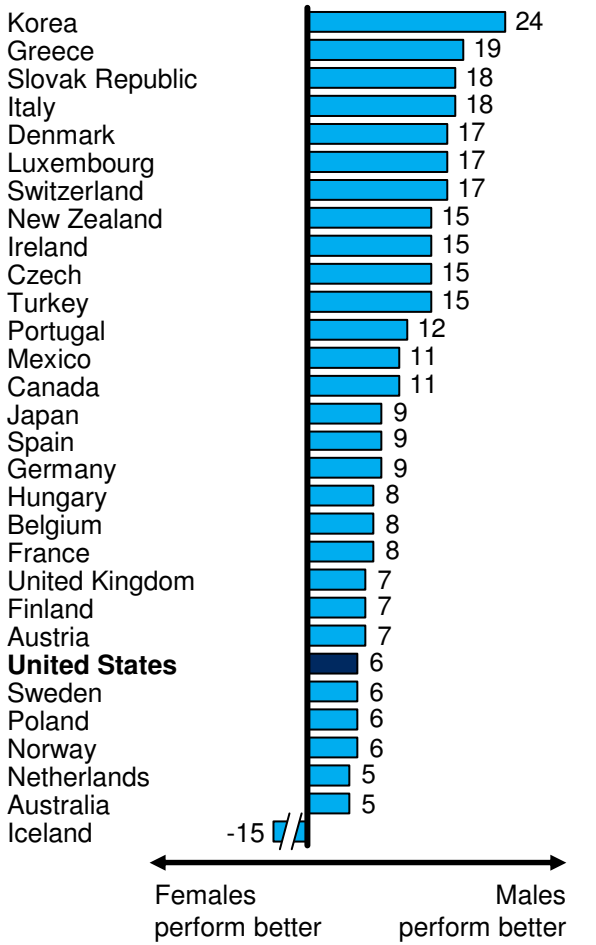
1 All data from 2007 except for 12th grade, which uses results from 2000 for math and 2005 for reading due to scaling issues.
2 Assuming 10 points on NAEP is approximately equivalent to one year's worth of schooling.

SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables, data for public schools

Internationally, the United States has among the smallest gender achievement gaps in math, while females strongly outperform males in reading in every OECD country

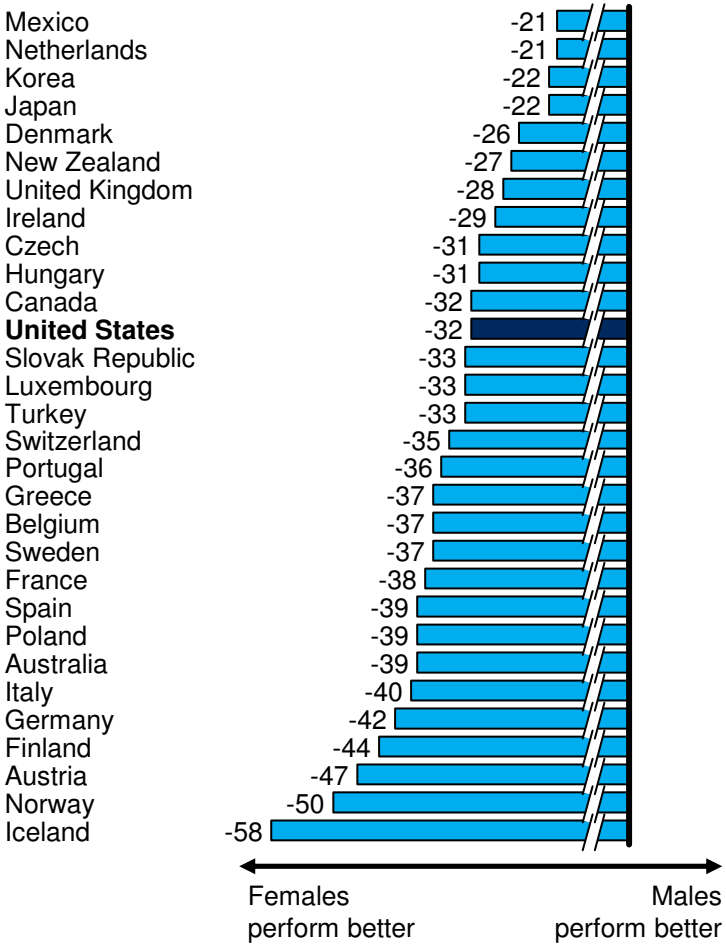
PISA mathematics score of 15-year-olds, 2003

Average male score minus average female score



PISA reading score of 15-year-olds, 2003

Average male score minus average female score



- **The gender achievement gap (in which males outperform females) is not a major issue in the United States**
  - **The US has the seventh lowest gap in math out of 30 countries**
- **Across the board, females perform better on the reading assessment in every OECD country by a greater margin than how much males outperform females in math**

Note: Data from 2003 were used because reading results were not available for the United States in 2006.

SOURCE: OECD PISA 2003 Data File

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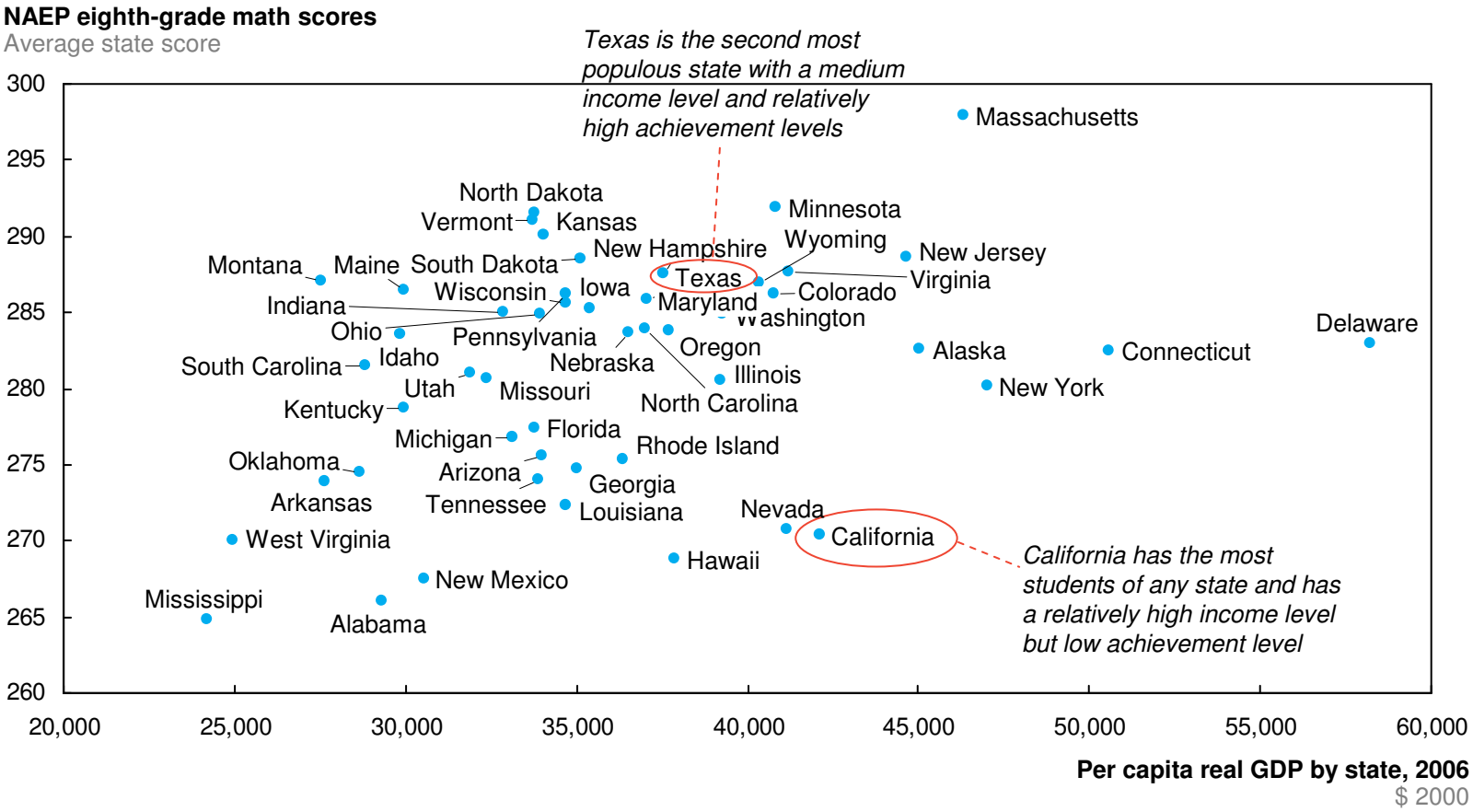
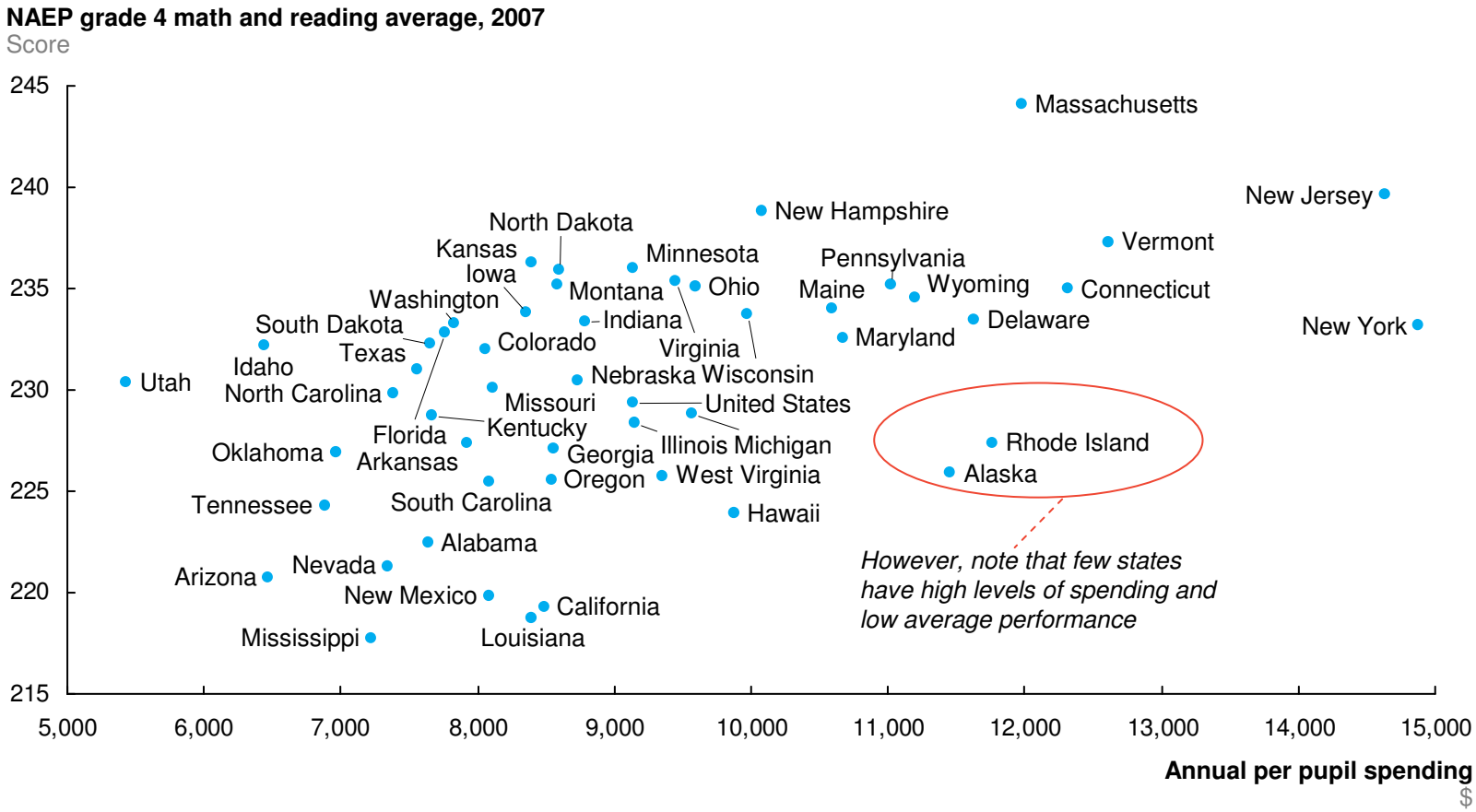
Achievement appears to be weakly correlated with overall state income levels; however, there are major exceptions that showcase system-based differences



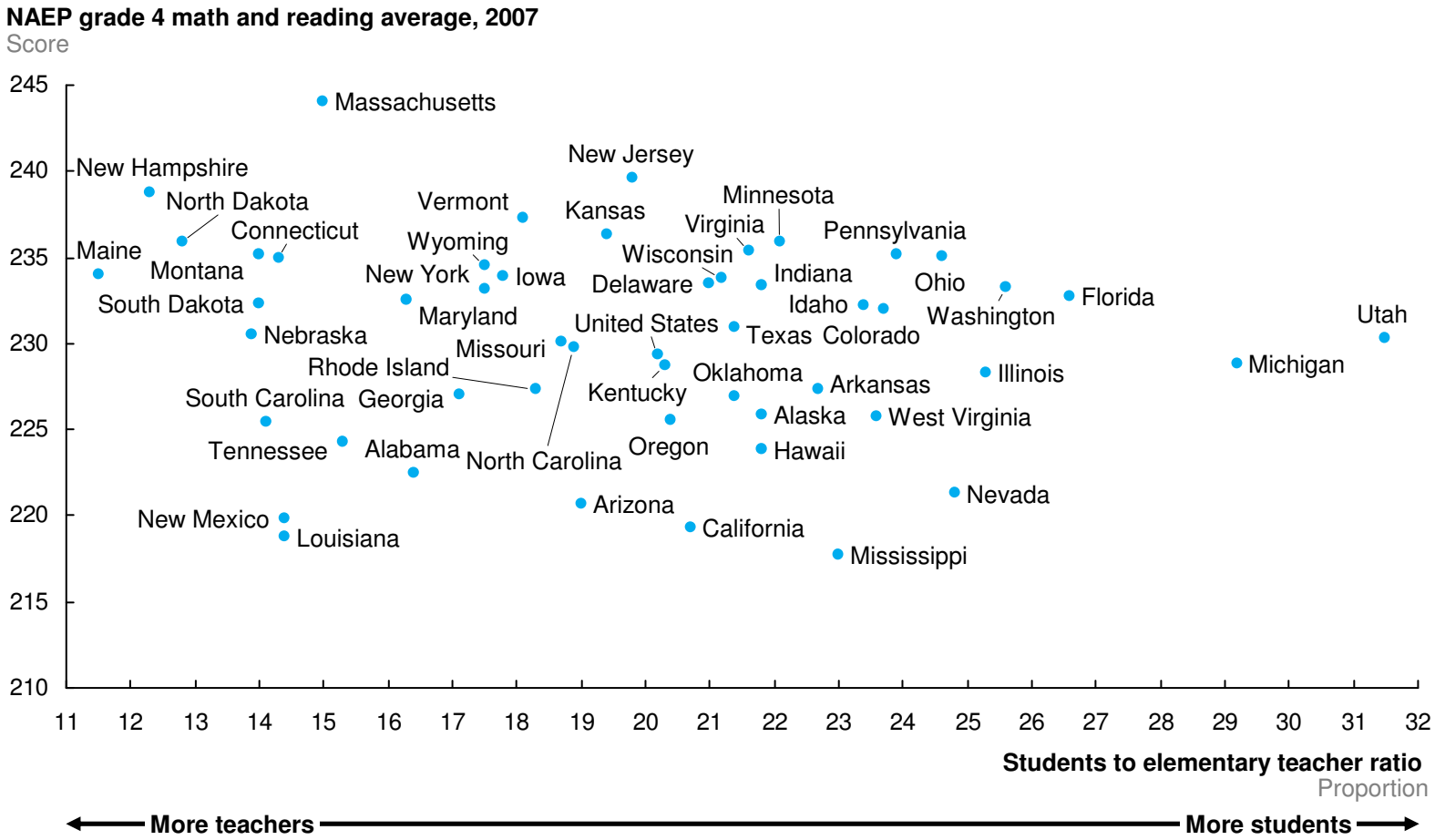
SOURCE: US Bureau of Economic Analysis; US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables

There is not a strong relationship between a state's overall achievement level and spending levels



SOURCE: US DOE, NCES, National Assessment of Educational Progress (NAEP) Summary Data Tables; US DOE, NCES, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2006–07

There is no relationship between a state's student-teacher ratio and achievement



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Selection of main sources only

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