



# IMPROVING ACHIEVEMENT AND CLOSING GAPS IN MATH:

*Lessons from schools  
on the Performance  
Frontier*



The Education Trust

Georgia Council of Teachers of  
Mathematics  
October, 2014



# America: Two Powerful Stories



# 1. Land of Opportunity:

Work hard, and you can become anything you want to be.



## 2. Generational Advancement:

Through hard work, each generation of parents can assure a better life — and better education — for their children.



These stories animated hopes and  
dreams of people here at home

And drew countless immigrants to  
our shores



Yes, America was often  
intolerant...

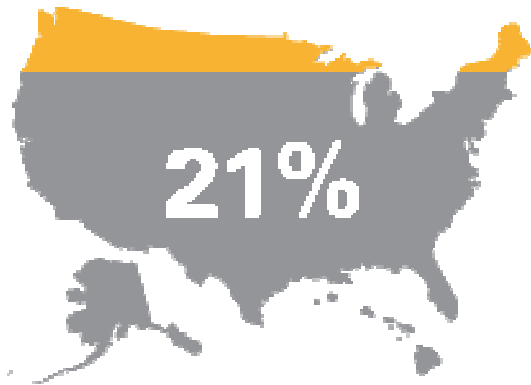
And they knew the “Dream” was a  
work in progress.

# We were:

- The first to provide universal high school;
- The first to build public universities;
- The first to build community colleges;
- The first to broaden access to college, through GI Bill, Pell Grants, ...

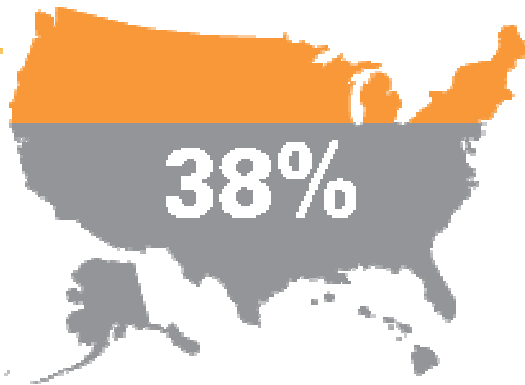
# Percent of U.S. adults with a high school diploma

1920



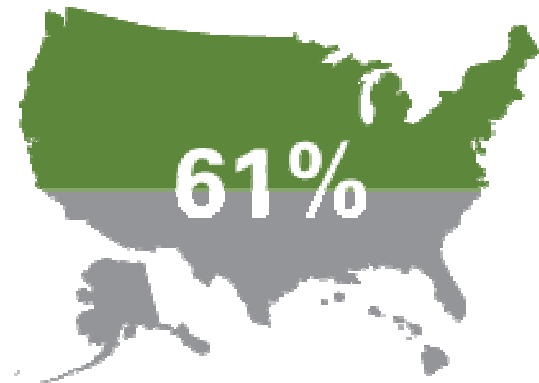
21%

1940



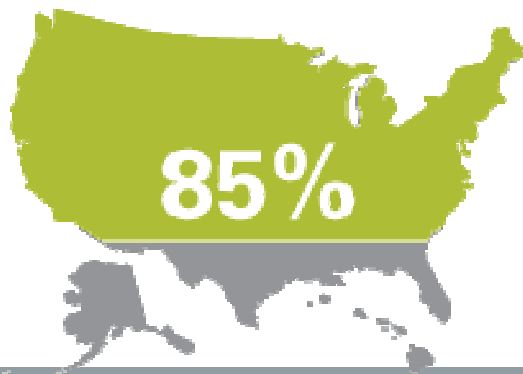
38%

1960



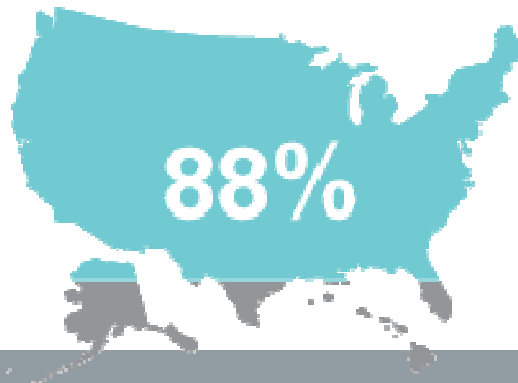
61%

1980



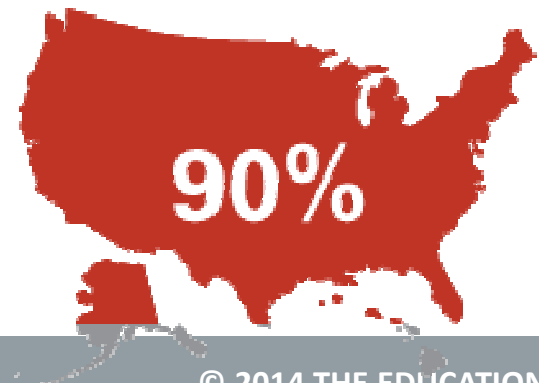
85%

2000



88%

2012

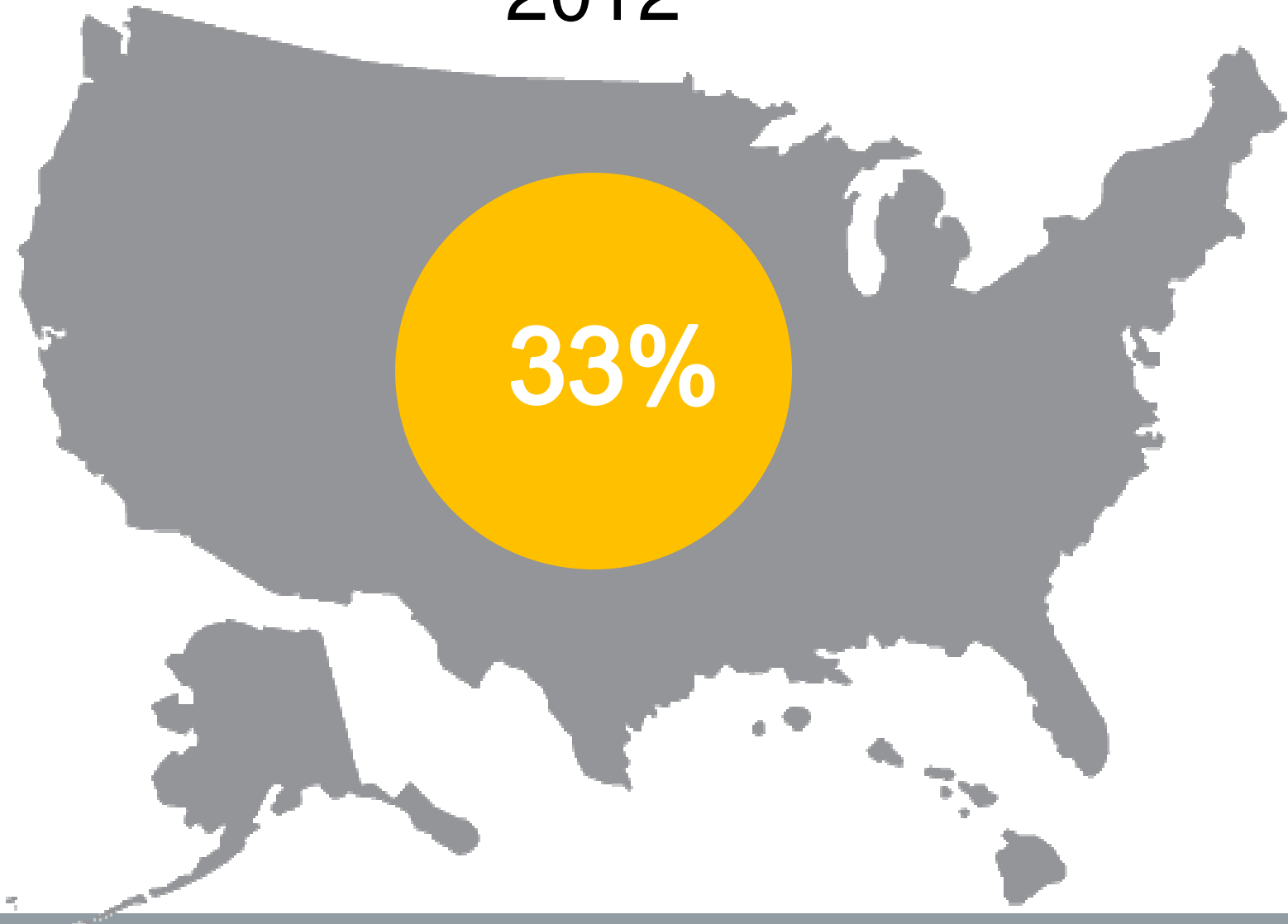



90%



# Percent of U.S. adults with a B.A. or more

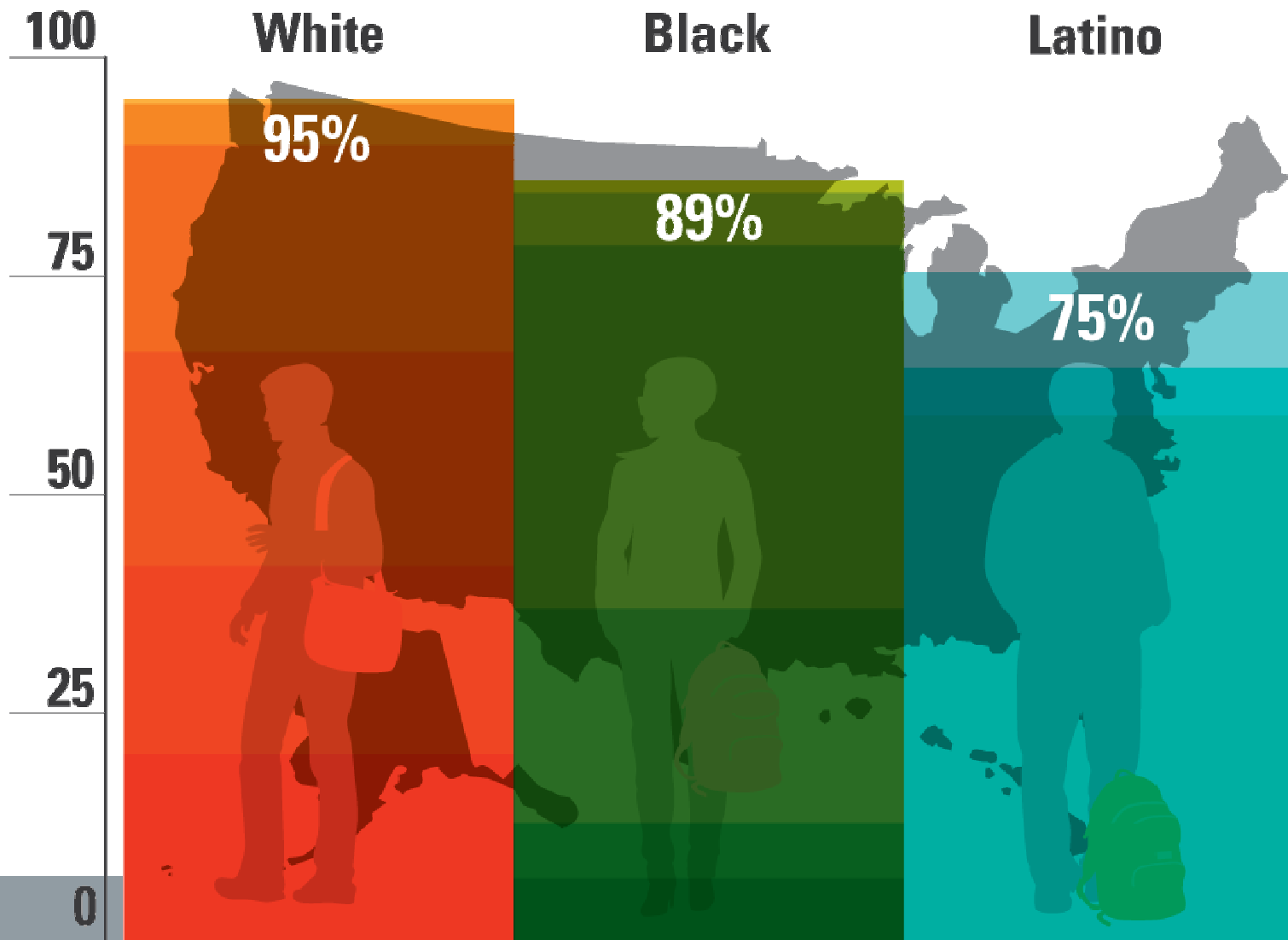
2012





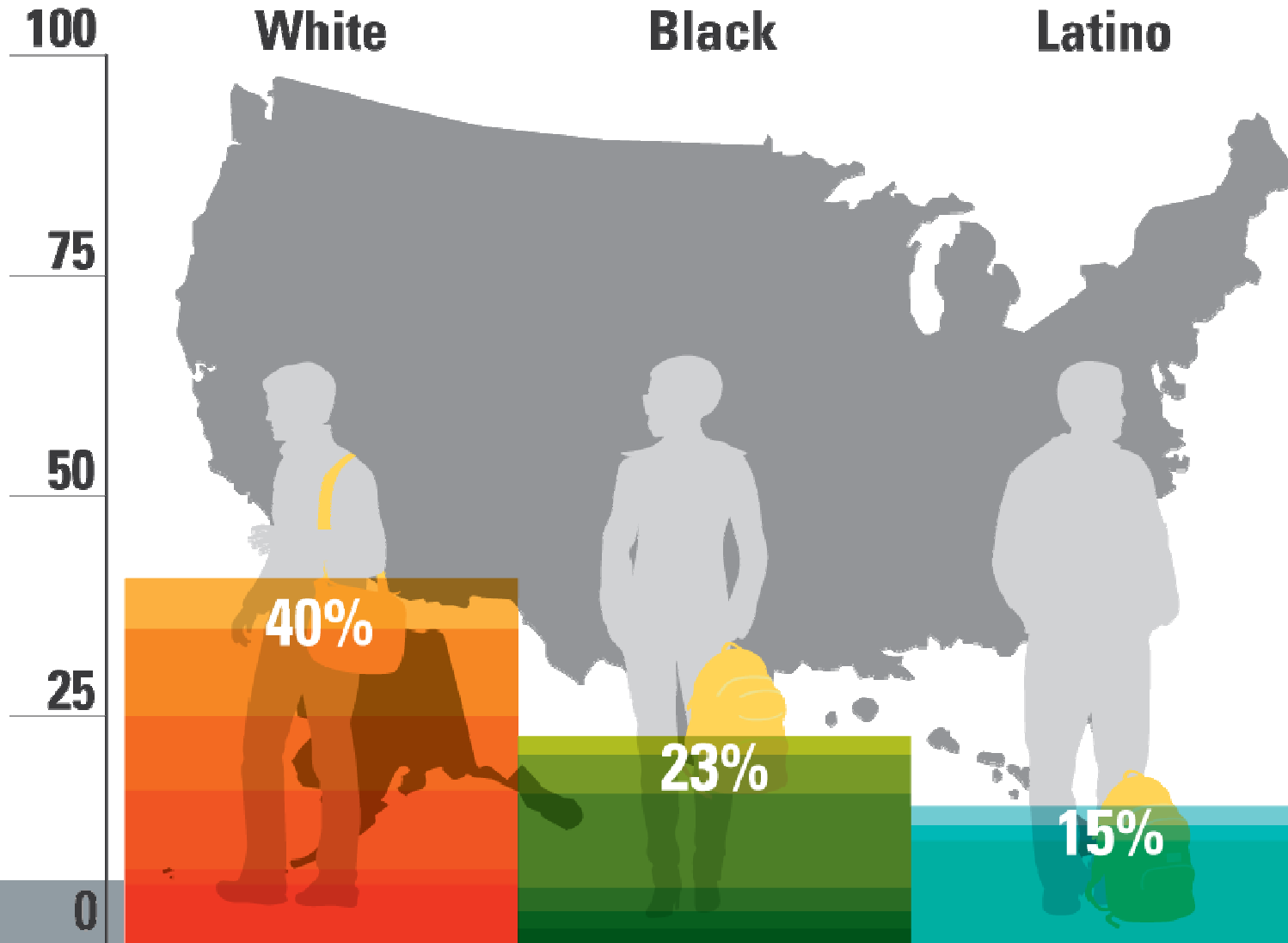
Progress was painfully slow,  
especially for people of color.  
But year by year, decade by  
decade...

# Percent of U.S. adults with a high school diploma, by race, 2012




# Percent of U.S. adults with a B.A. or more, by race

2012





**Then, beginning in the eighties,  
inequality started growing again.**



In the past four years alone, 95% of  
all income gains have gone to the  
top 1%.

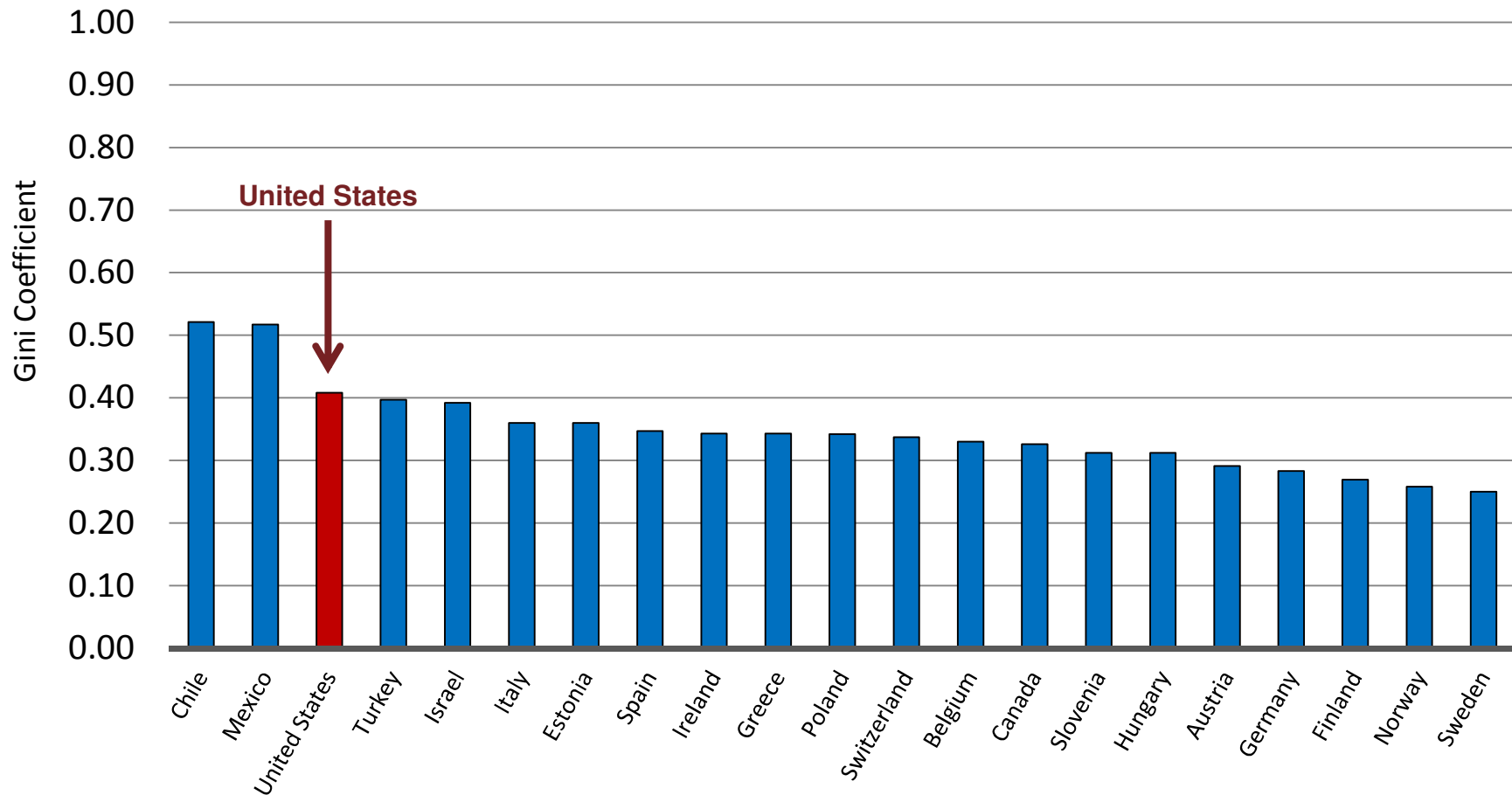
Source: Stiglitz, "Inequality is a Choice," *New York Times*, October 13, 2013.

## In 2012:

- In 2012, the top 5% of Americans took home 22% of the nation's income; the top .1% took home 11%.
- And the bottom 20% took home just 3%.

Source: DeNavas-Walt, Proctor, & Smith, "Income, Poverty, and Health Insurance Coverage in the United States: 2012," U.S. Census Bureau, September 2013; Stiglitz, "Inequality is a Choice," New York Times, October 13, 2013.

Instead of being the most equal, the U.S. has the third highest income inequality among OECD nations.



Note: Gini coefficient ranges from 0 to 1, where 0 indicates total income equality and 1 indicates total income inequality.

Source: United Nations, U.N. data, <http://data.un.org/DocumentData.aspx?q=gini&id=271>: 2011



# Median Wealth of White Families

**20 X** that of African Americans

**18 X** that of Latinos

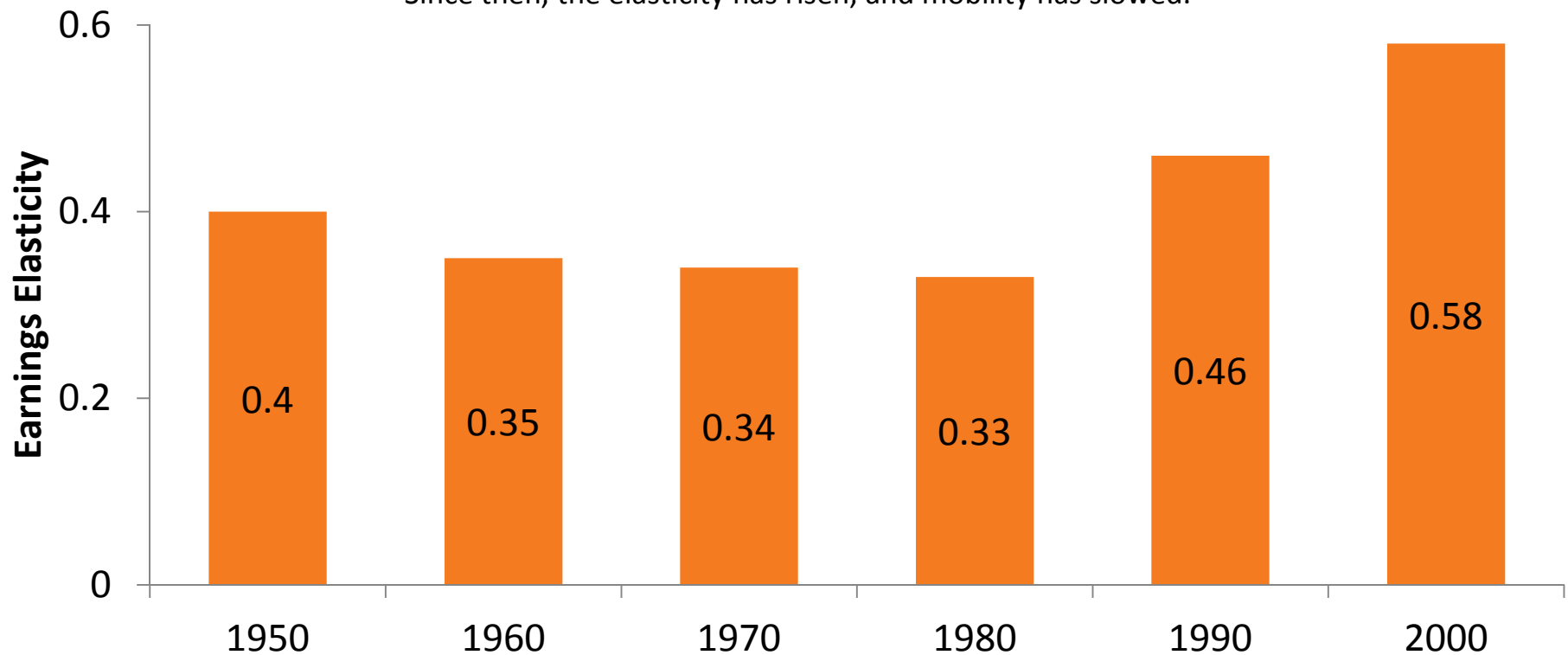
Source: Rakesh Kochhar, Richard Fry, and Paul Taylor, "Twenty-to-One: Wealth Gaps Rise to Record Highs Between Whites, Blacks, and Hispanics," Pew Social & Demographic Trends, 2011.



Not just wages and wealth, but  
social mobility as well.

# U.S. intergenerational mobility was increasing until 1980, but has sharply declined since.

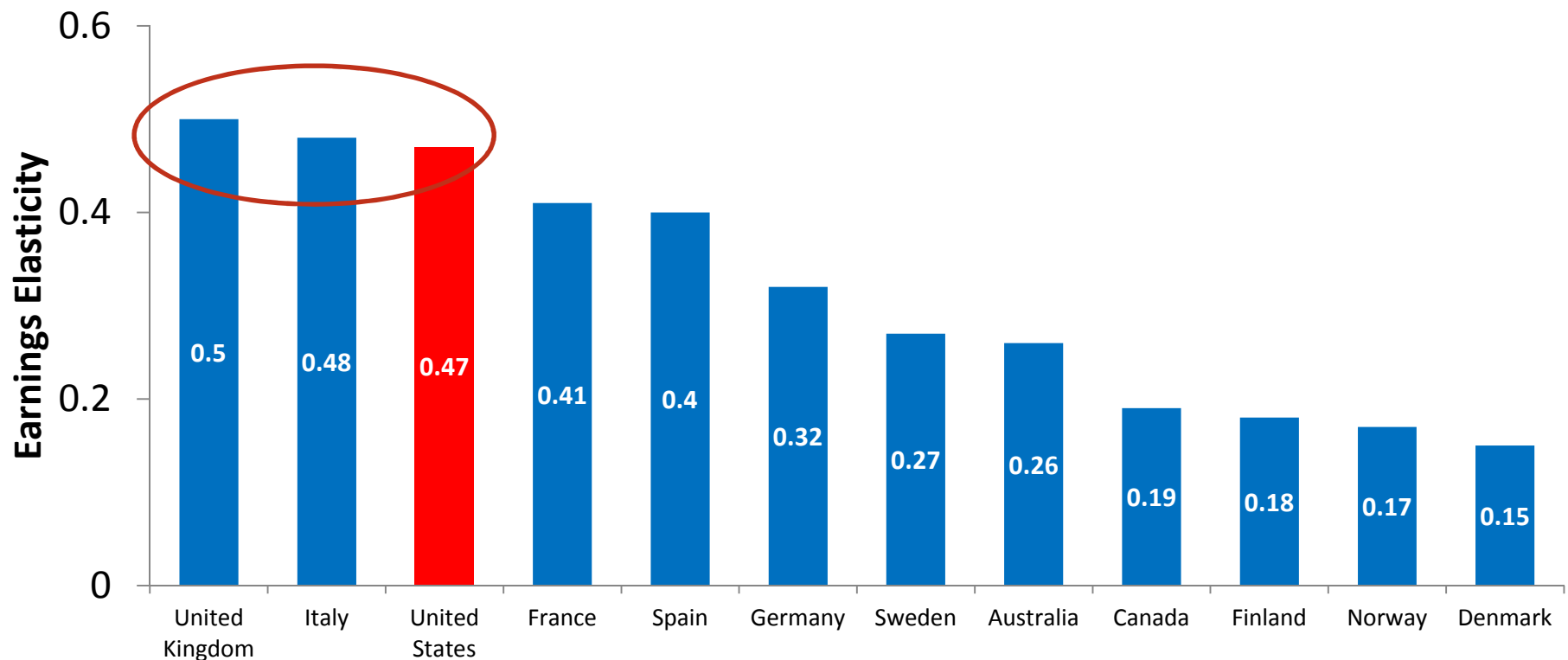
The falling elasticity meant increased economic mobility until 1980.  
Since then, the elasticity has risen, and mobility has slowed.




Source: Daniel Aaronson and Bhashkar Mazumder. *Intergenerational Economic Mobility in the U.S., 1940 to 2000*. Federal Reserve Bank of Chicago WP 2005-12: Dec. 2005.

# The US now has one of lowest rates of intergenerational mobility

Cross-country examples of the link between father and son wages




Source: Corak, Miles. *Chasing the Same Dream, Climbing Different Ladders*. Economic Mobility Project; Pew Charitable Trusts, 2010.



At macro level, better and more  
equal education is not the only  
answer.

But at the individual level, it really is.



What schools and colleges do, in other words, is hugely important to our **economy**, our **democracy**, and our **society**.

So, how are we doing?





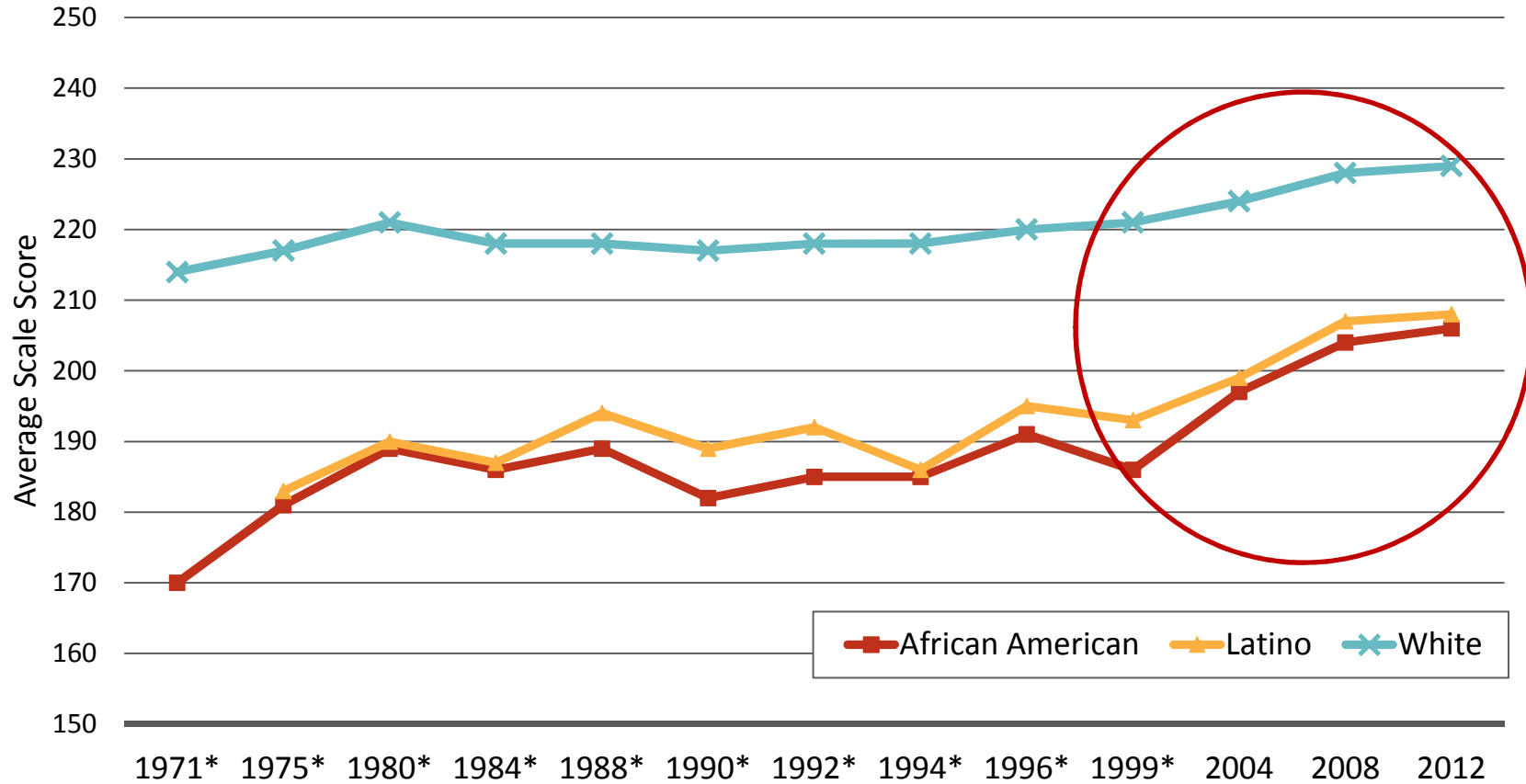
# First, some good news.

After more than a decade of fairly flat achievement and stagnant or growing gaps in K-12, we appear to be turning the corner with our elementary students.



# Since 1999, large gains for all groups of students, especially students of color

## 9 Year Olds – NAEP Reading

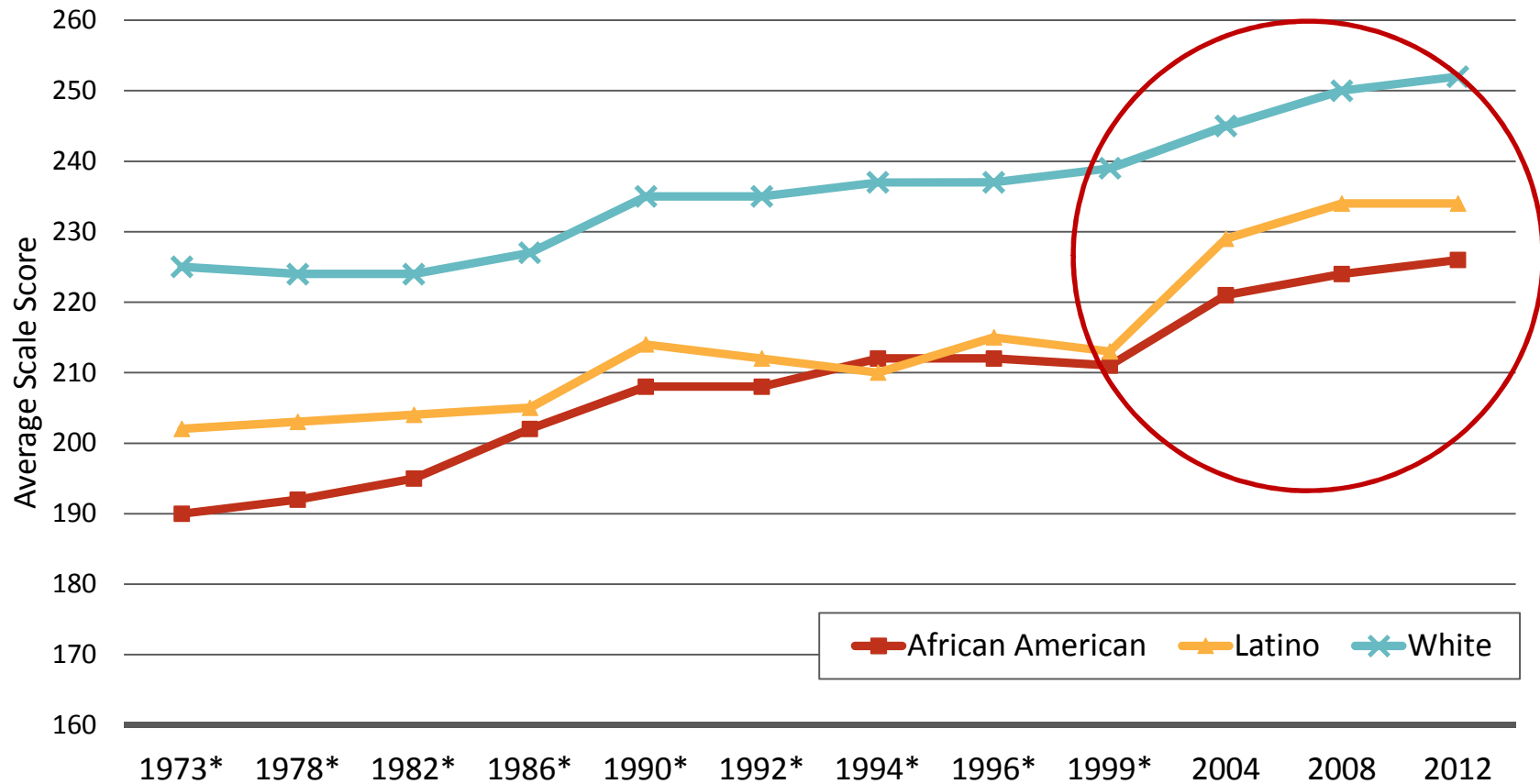


\*Denotes previous assessment format

Source: National Center for Education Statistics, "The Nation's Report Card: Trends in Academic Progress 2012"


# Since 1999, performance rising for all groups of students

## 9 Year Olds – NAEP Math



\*Denotes previous assessment format

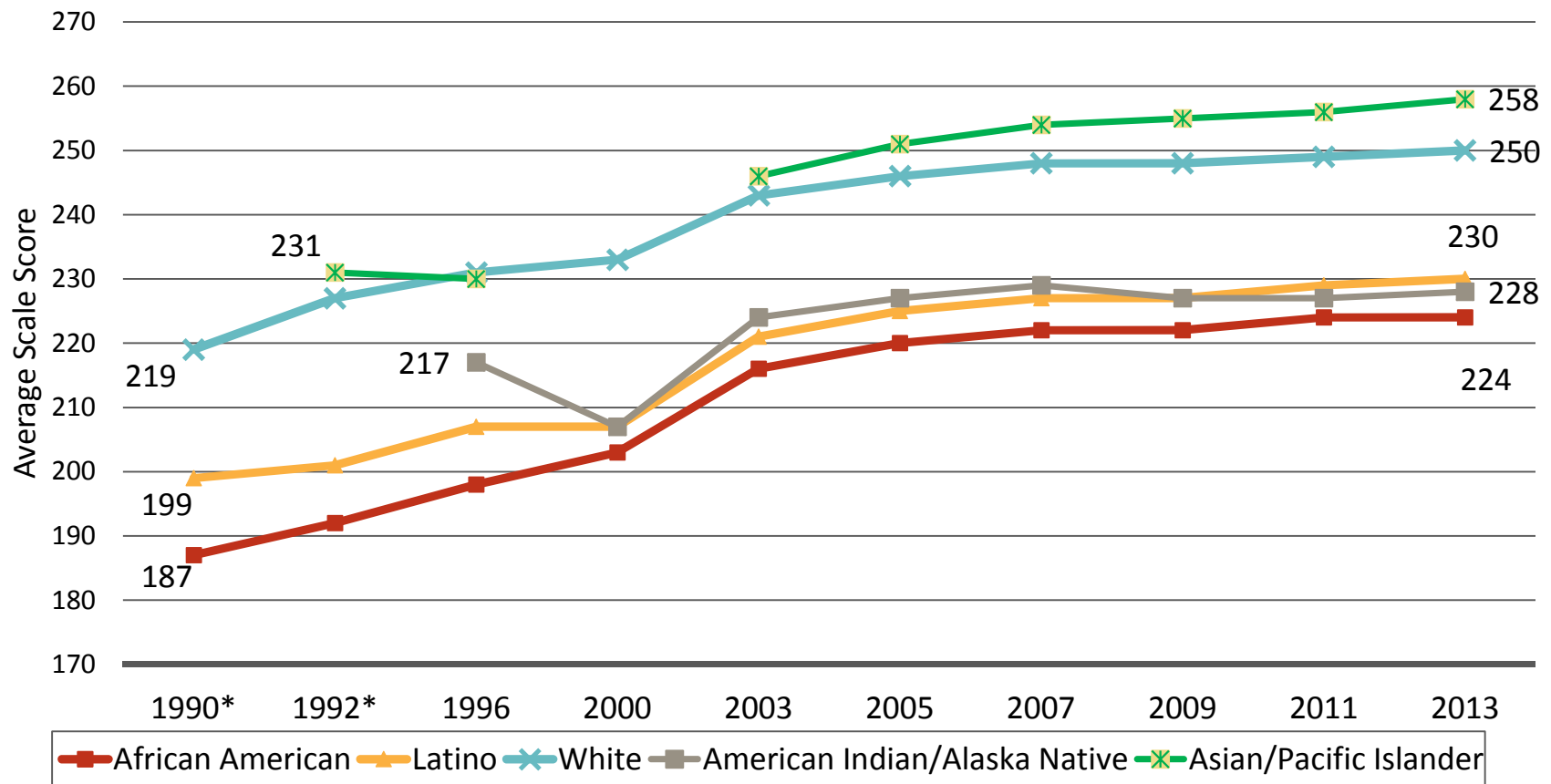
Source: National Center for Education Statistics, "The Nation's Report Card: Trends in Academic Progress 2012"



Looked at differently  
(and on the “other” NAEP  
exam)...

# All groups have improved since 1990, some gap narrowing

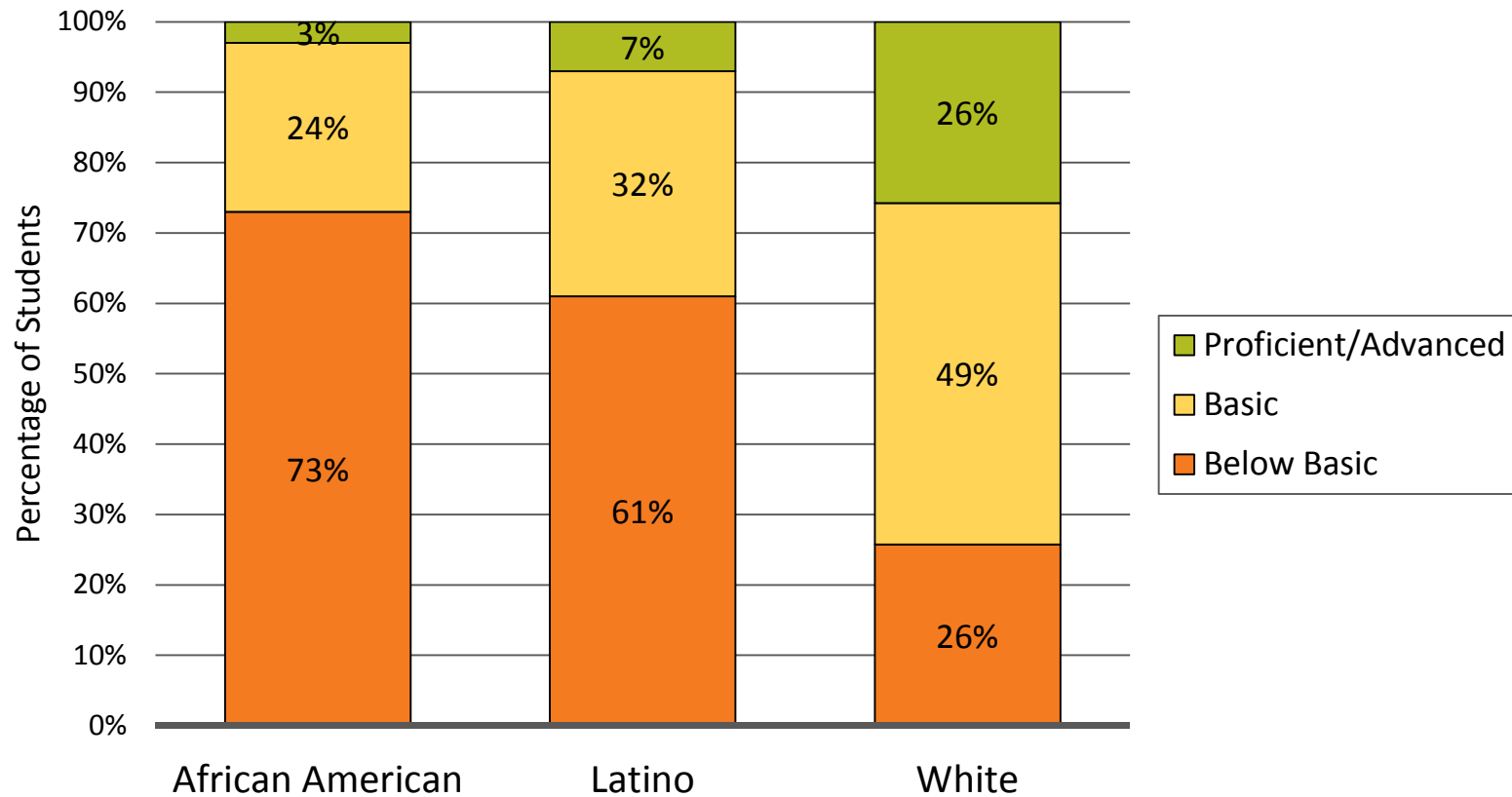
## National Public – Grade 4 NAEP Math



\*Accommodations not permitted  
 Source: NAEP Data Explorer, NCES (Proficient Scale Score = 249)

# 1996 NAEP Grade 4 Math

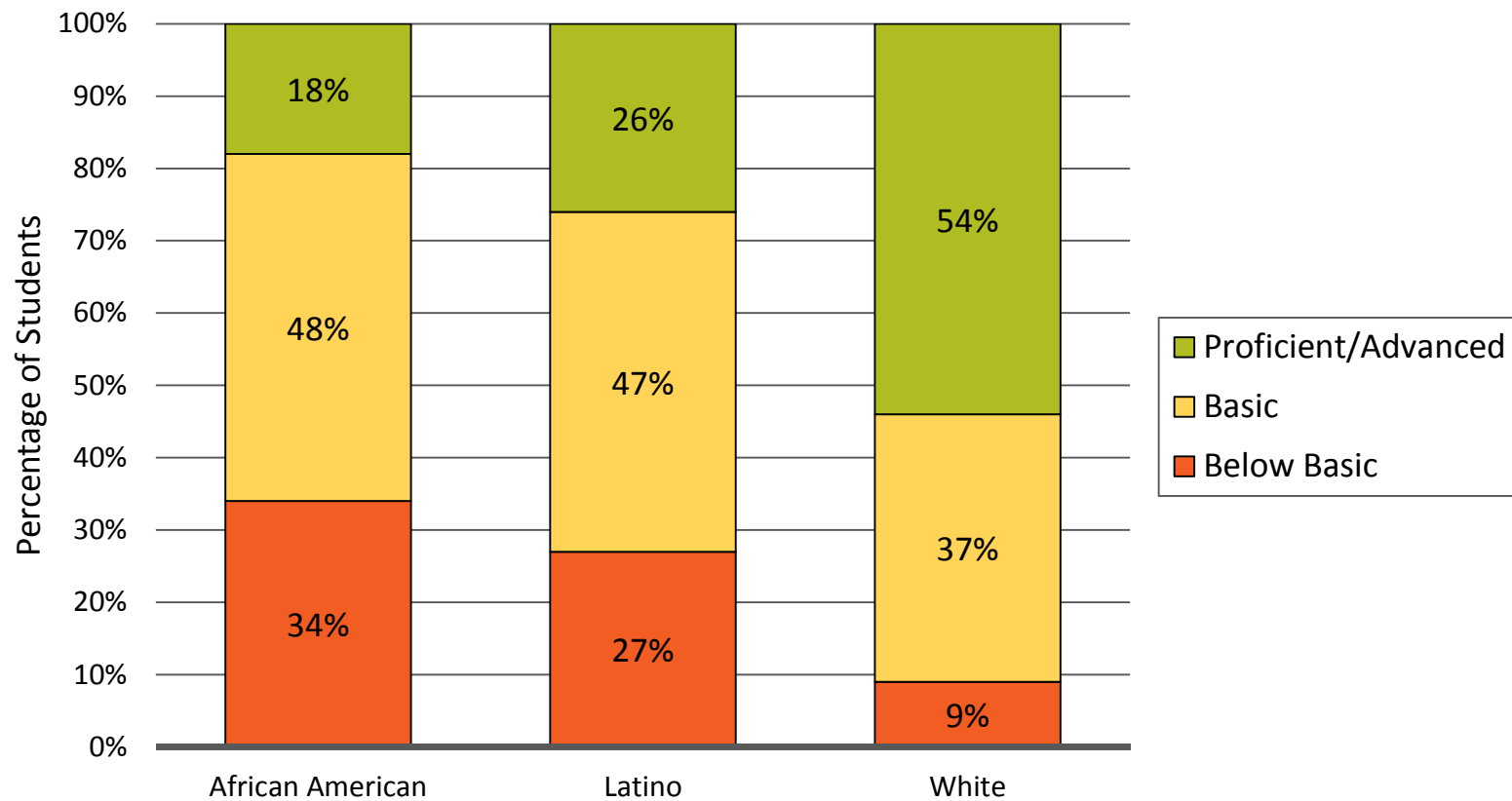
By Race/Ethnicity – National Public



Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>

# 2013 NAEP Grade 4 Math

## By Race/Ethnicity – National Public



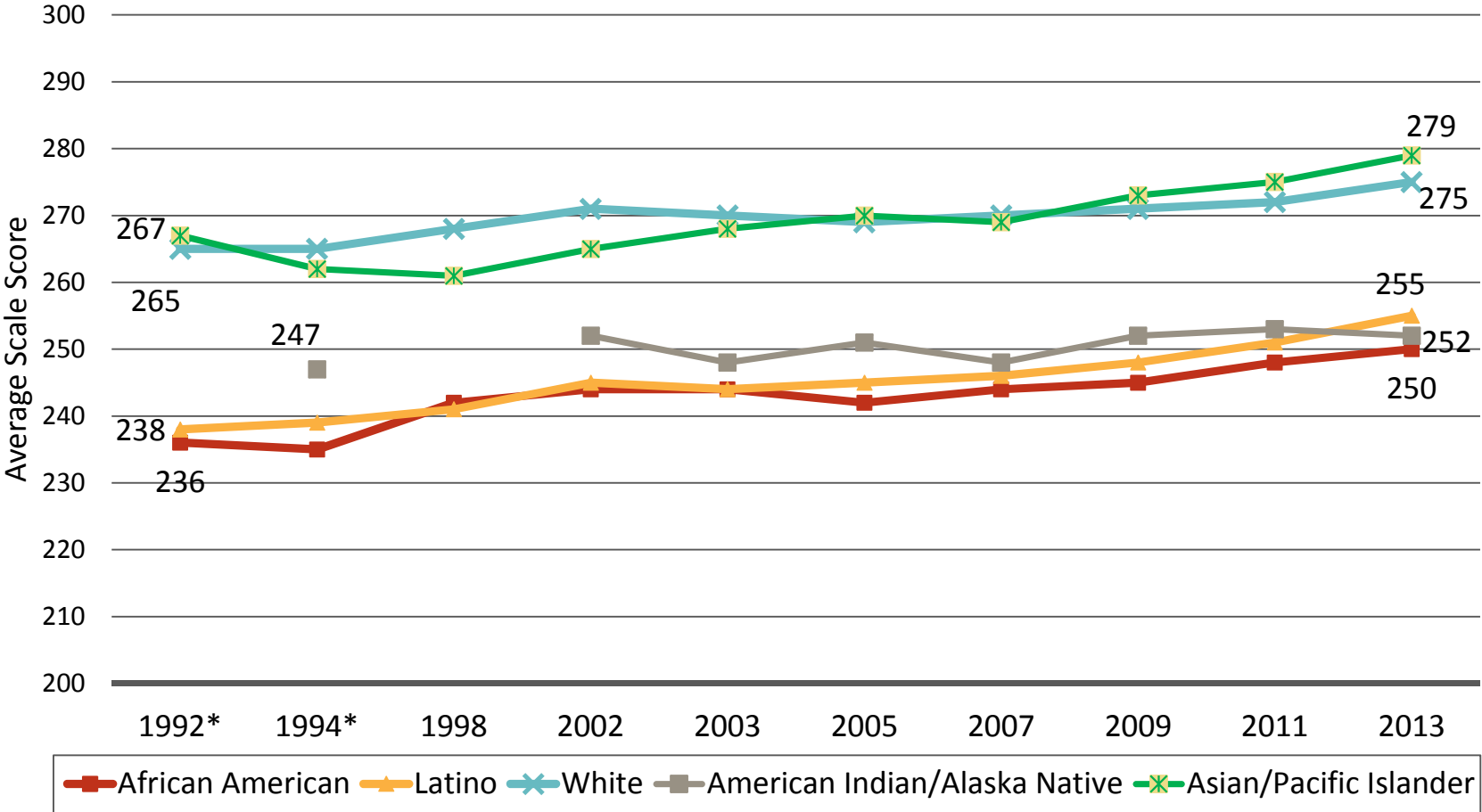
Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>



Middle grades are up, too.

# Reading: Modest improvement and some gap closing over the last decade

National Public – Grade 8 NAEP Reading

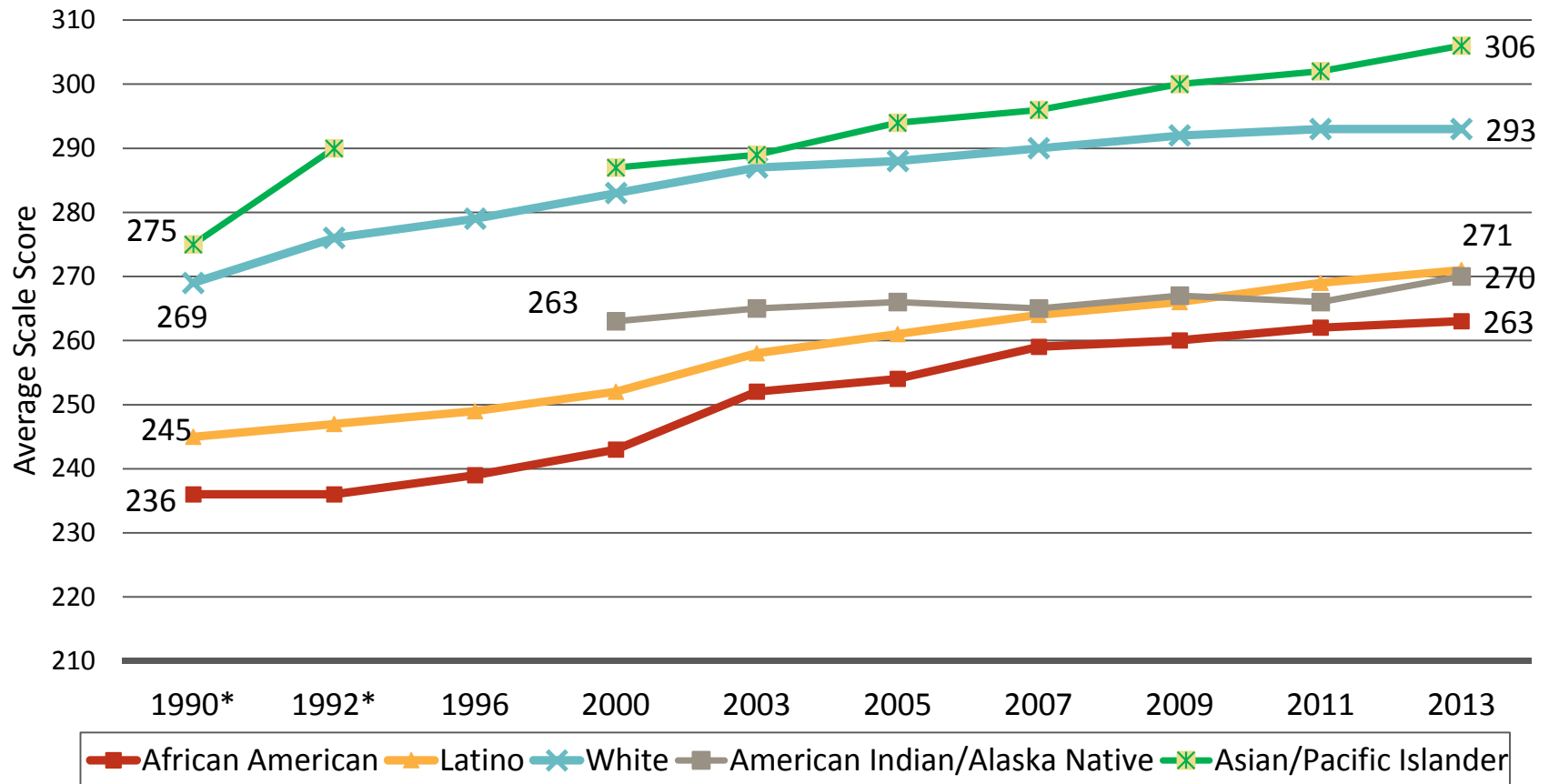


\*Accommodations not permitted  
 Source: NAEP Data Explorer, NCES (Proficient Scale Score = 281)



# Math: More improvement and gap narrowing.

## National Public – Grade 8 NAEP Math




\*Accommodations not permitted  
 Source: NAEP Data Explorer, NCES (Proficient Scale Score = 299)



## Bottom Line:

When we really focus on something, we make progress!

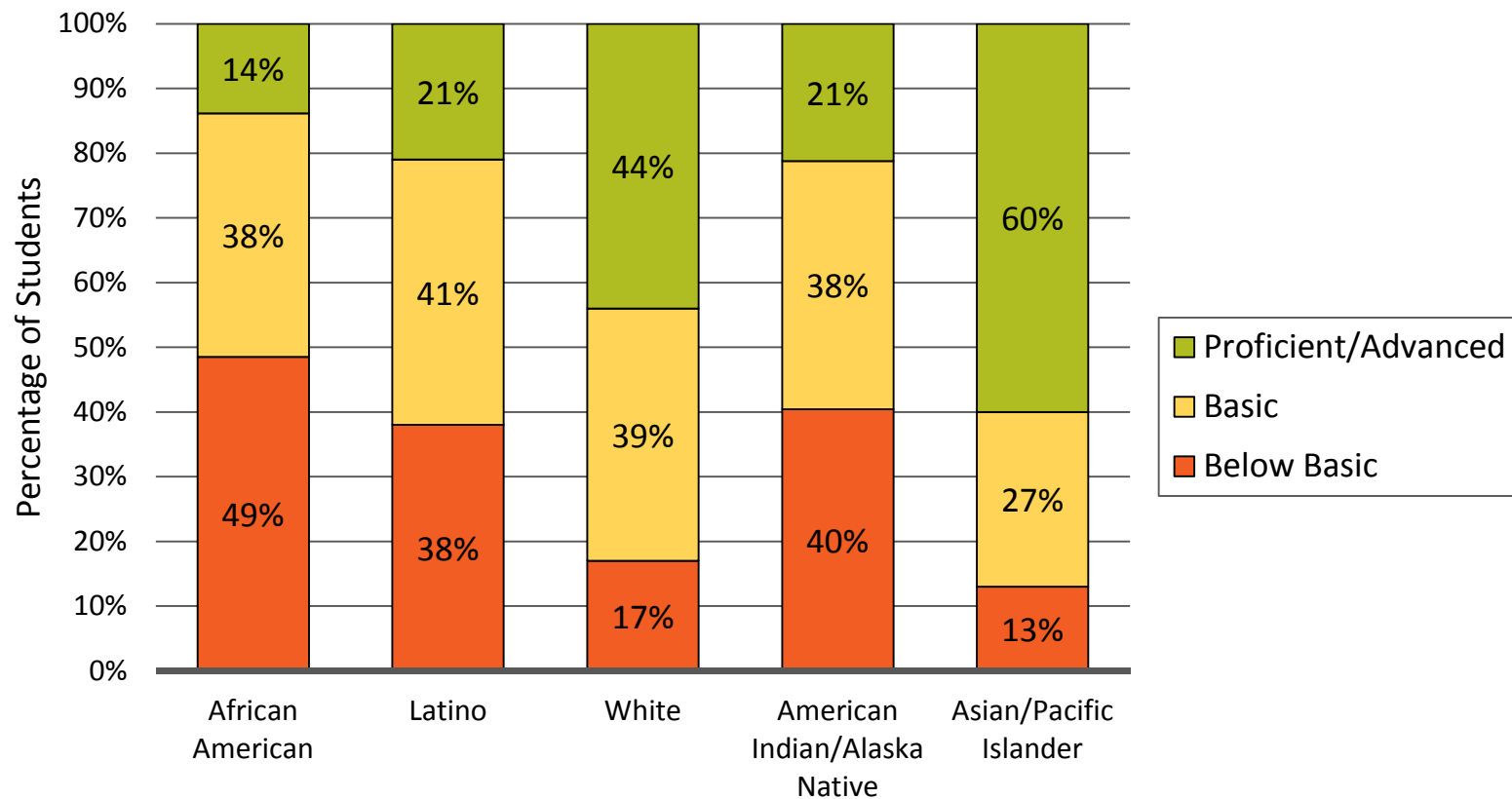


Clearly, much more remains to be done  
in elementary and middle school


Too many youngsters still enter high  
school way behind.

# 2013 NAEP Grade 8 Math

## By Race/Ethnicity – National Public



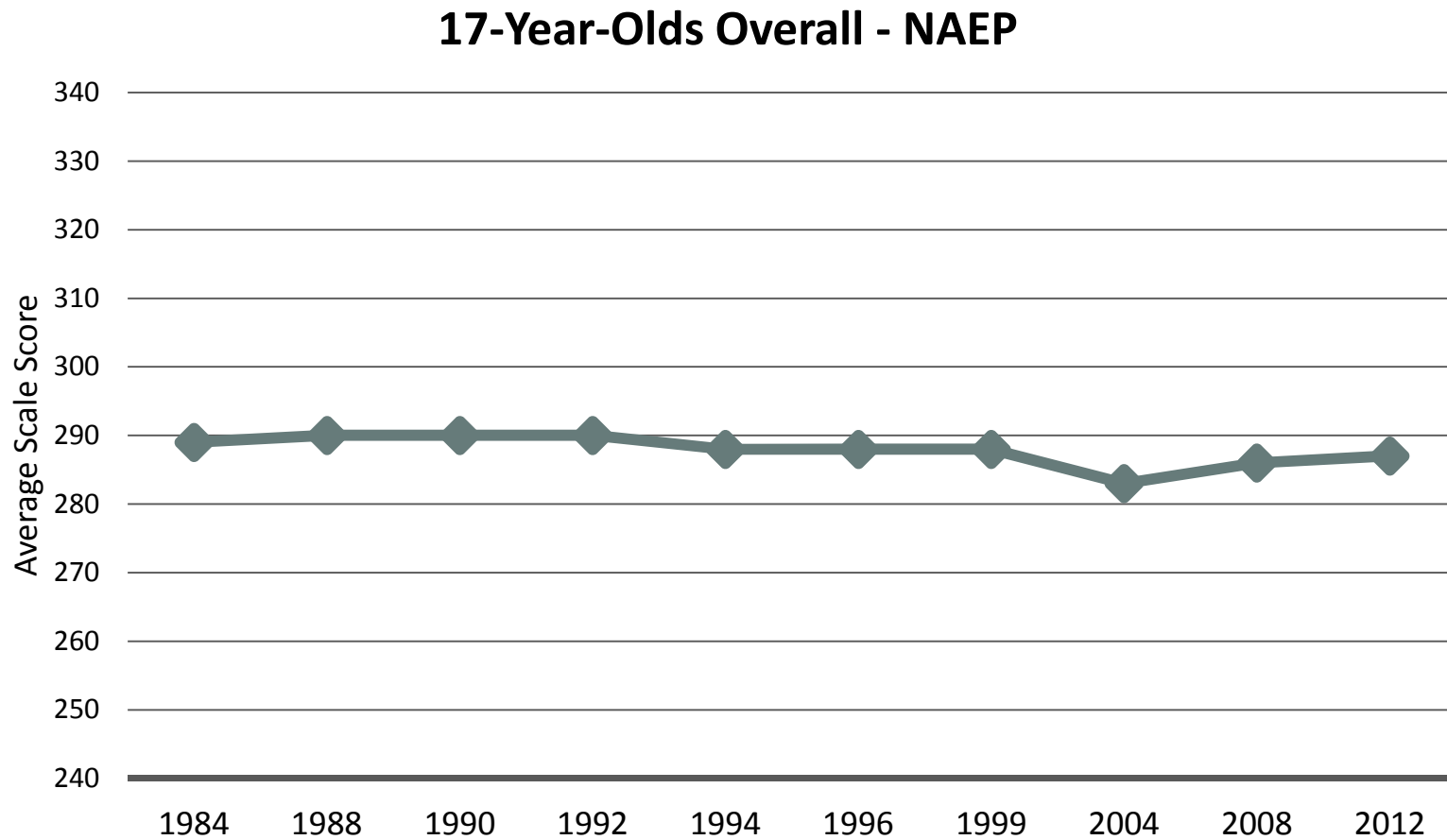
Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>



But at least we have some traction on elementary and middle school problems.

The same is NOT true  
of our high schools.

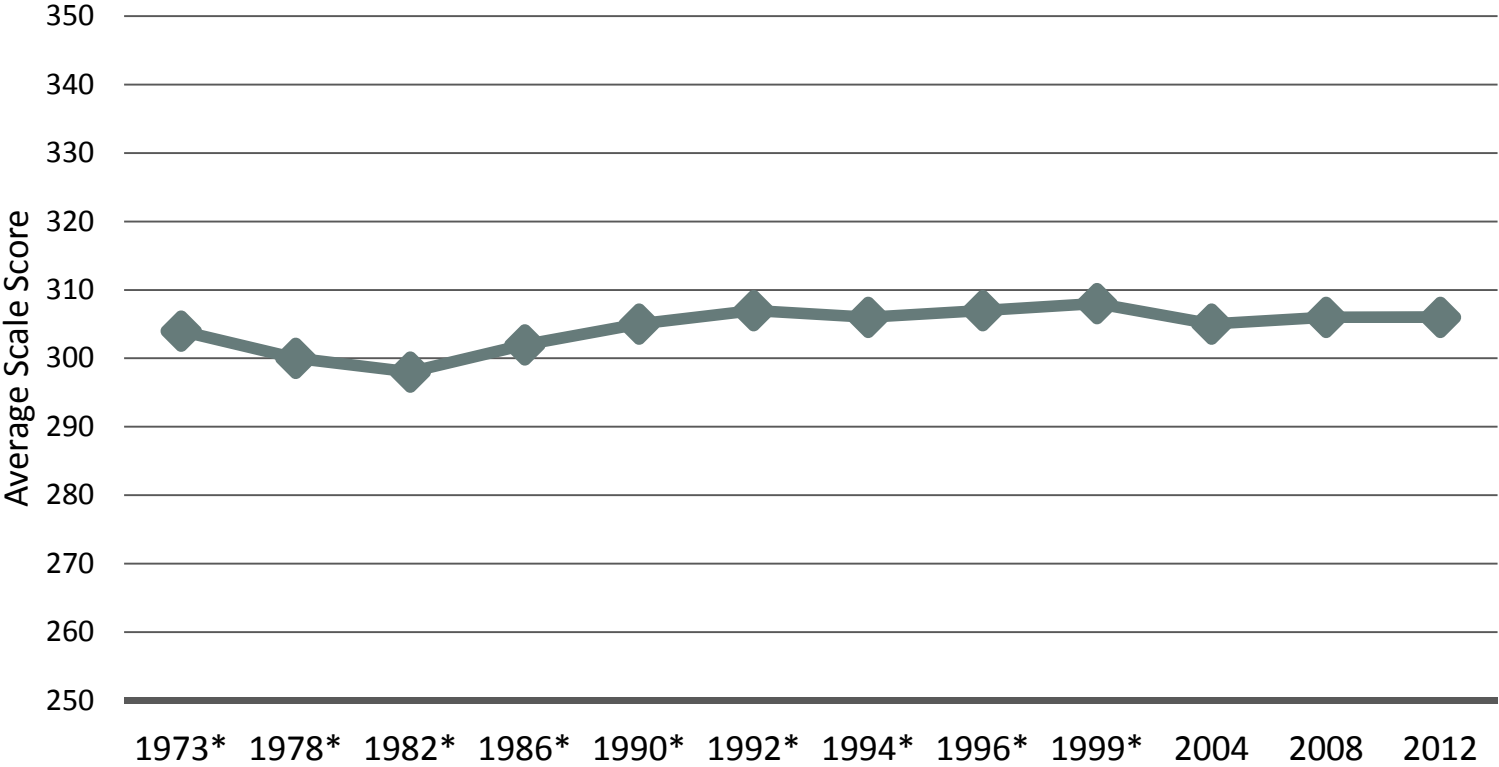
Achievement is flat in reading for students overall.



Source: NAEP Long-Term Trends, NCES (2004)


# Math achievement for students overall is flat over time.

## 17-Year-Olds Overall - NAEP



\* Denotes previous assessment format

Source: National Center for Education Statistics, NAEP 2008 Trends in Academic Progress

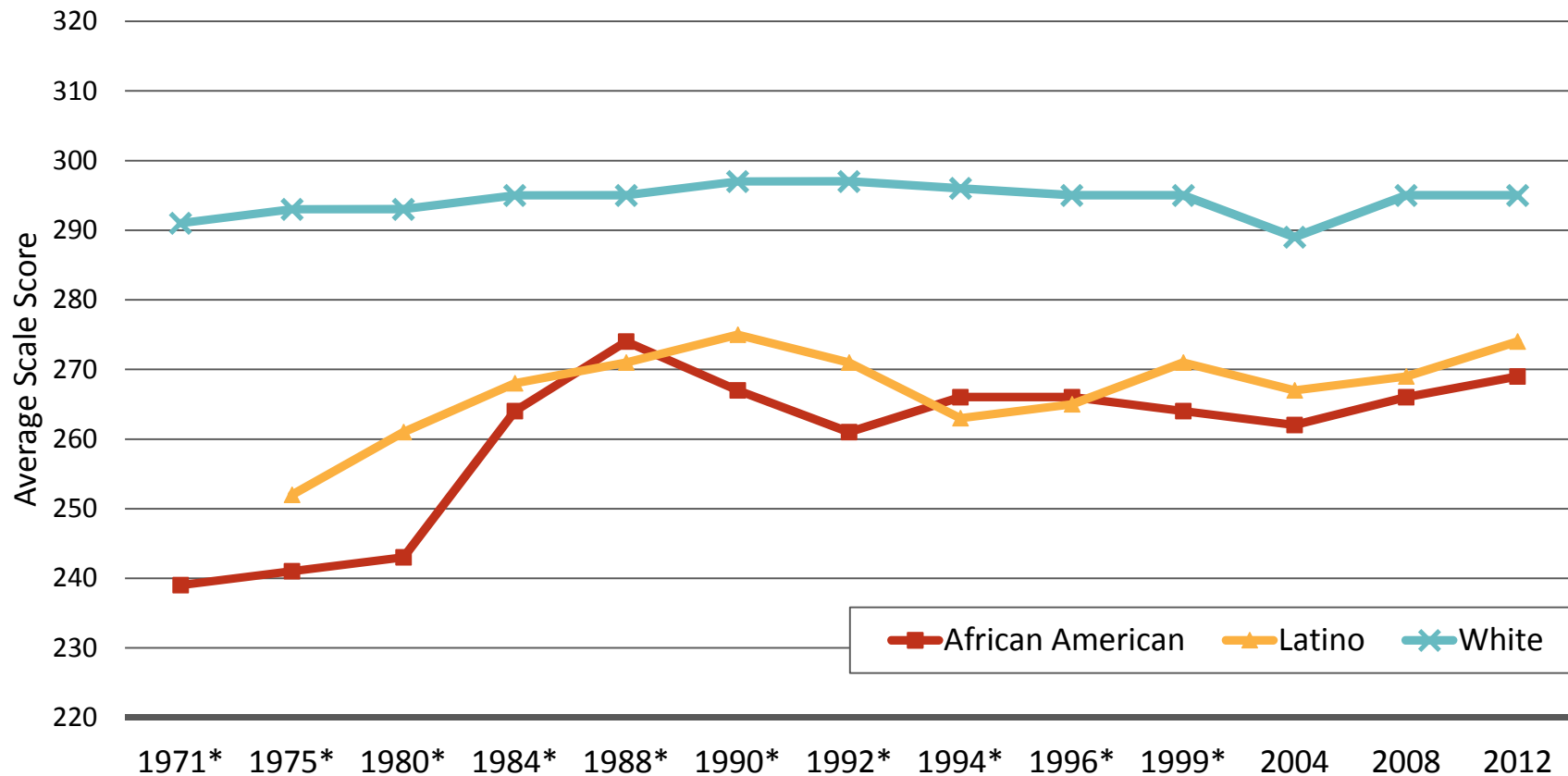


And despite earlier improvements,  
gaps between groups haven't  
narrowed much since the late 80s  
and early 90s.



# Reading: Not much gap narrowing since 1988.

## 17 Year Olds – NAEP Reading

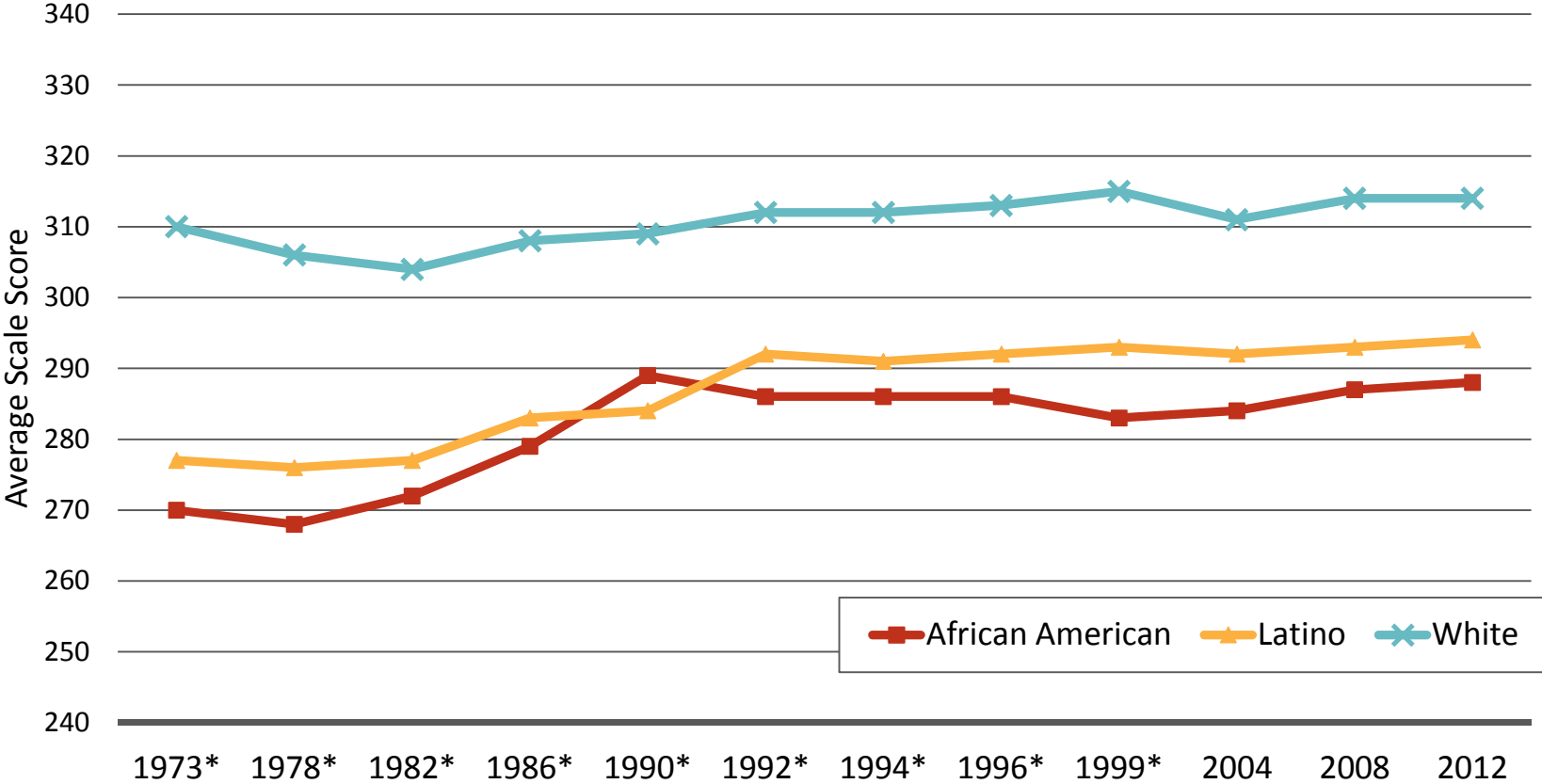


\*Denotes previous assessment format

Source: National Center for Education Statistics, "The Nation's Report Card: Trends in Academic Progress 2012"


# Math: Not much gap closing since 1990.

## 17 Year Olds – NAEP Math



\*Denotes previous assessment format

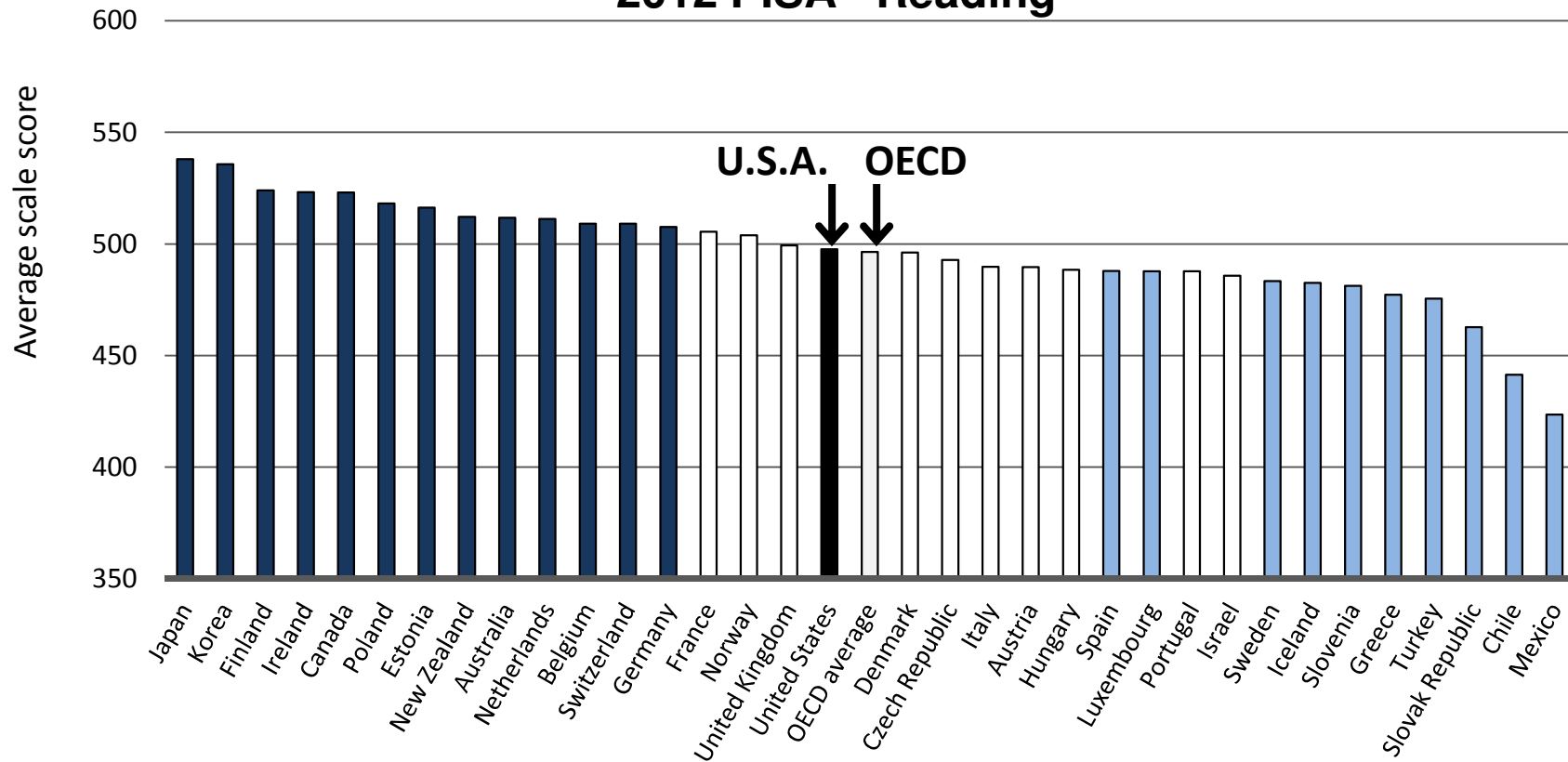
Source: National Center for Education Statistics, "The Nation's Report Card: Trends in Academic Progress 2012"



Moreover, no matter how you cut the data, our students aren't doing well compared with their peers in other countries.

# Of 34 OECD Countries, U.S.A. Ranks 17<sup>th</sup> in Reading

## 2012 PISA - Reading

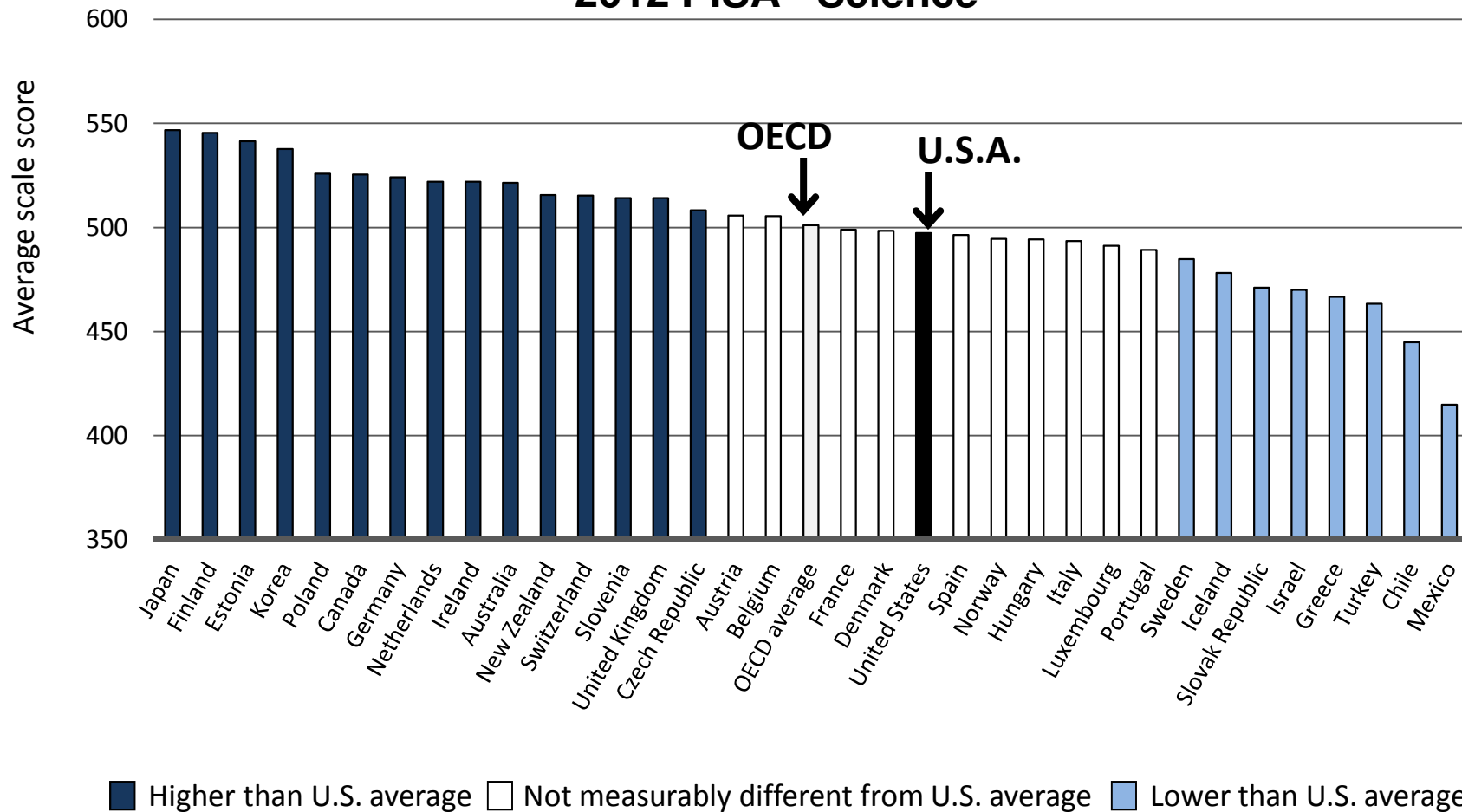


Higher than U.S. average
  Not measurably different from U.S. average
  Lower than U.S. average

Source: National Center for Education Statistics, 2013, [http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights\\_5a.asp](http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_5a.asp).

# Of 34 OECD Countries, U.S.A. Ranks 20<sup>th</sup> in Science

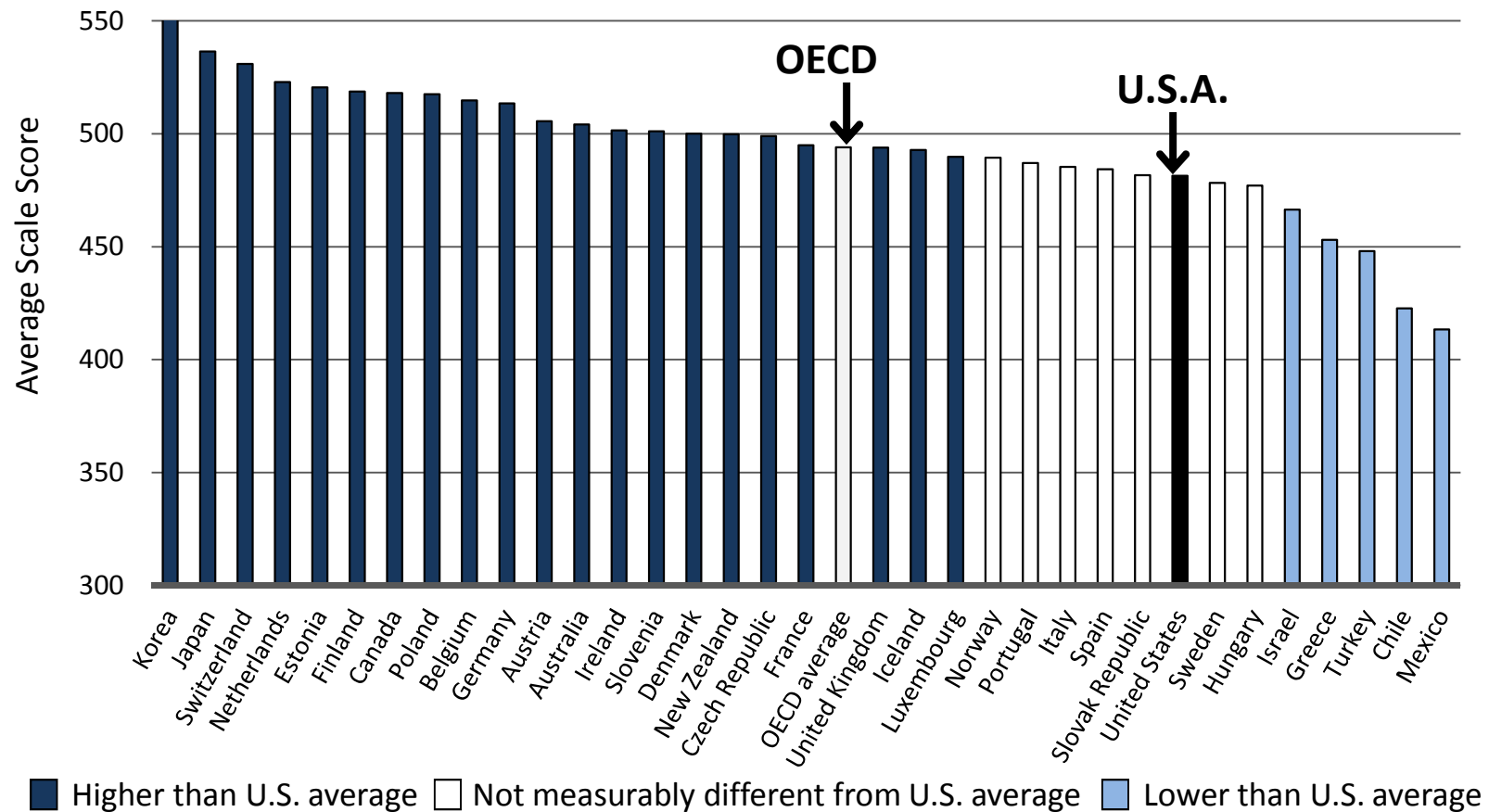
## 2012 PISA - Science



Source: National Center for Education Statistics, 2013, [http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights\\_4a.asp](http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_4a.asp).

# Of 34 OECD Countries, U.S.A. Ranks 27<sup>th</sup> in Math Literacy

2012 PISA - Math



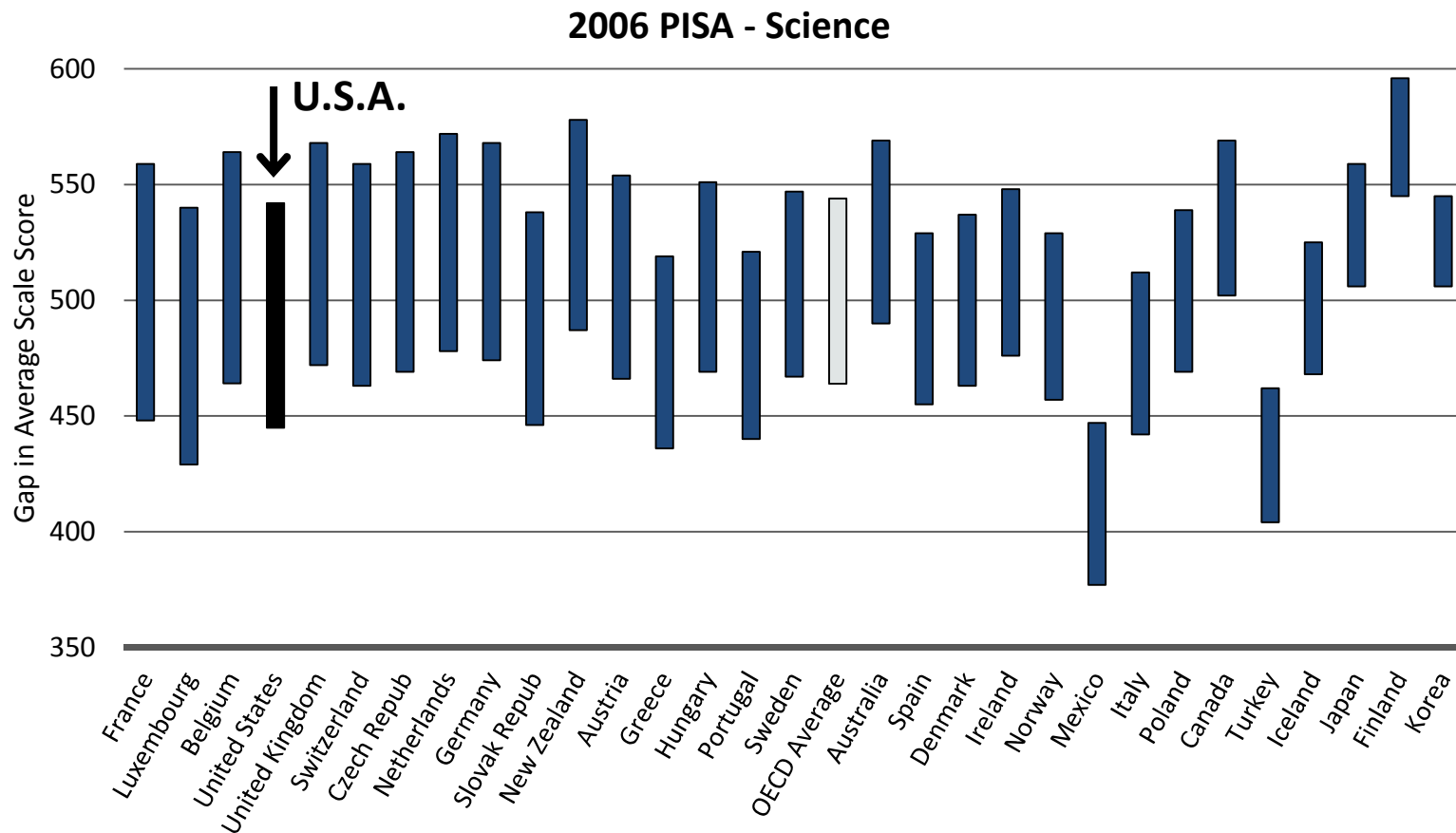
Source: National Center for Education Statistics, 2013, [http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights\\_3a.asp](http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_3a.asp).



Only place we rank high?

Inequality.

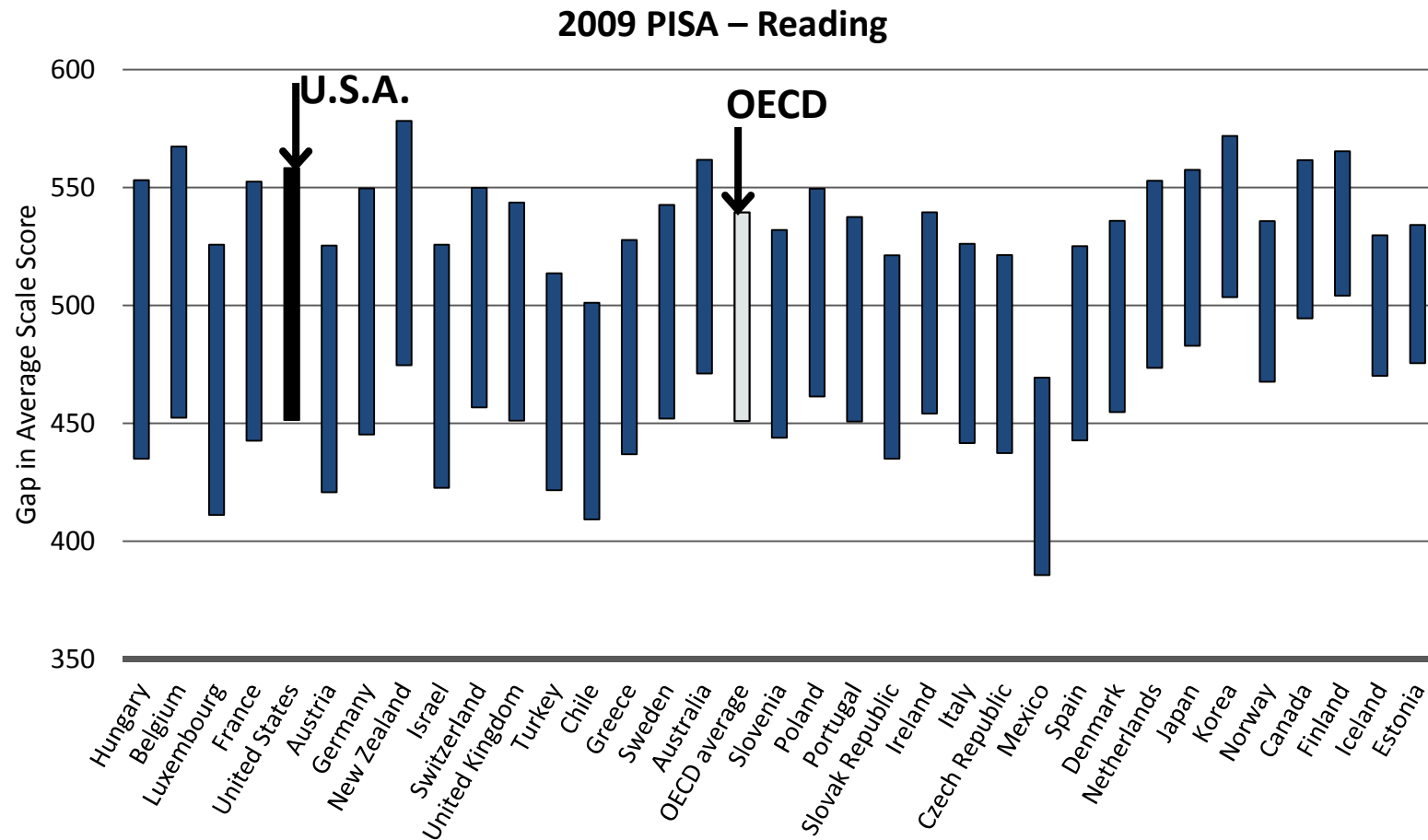
# Among OECD Countries, U.S.A. has the 4<sup>th</sup> Largest Gap Between High-SES and Low-SES Students



Source: PISA 2006 Results, OECD, table 4.8b

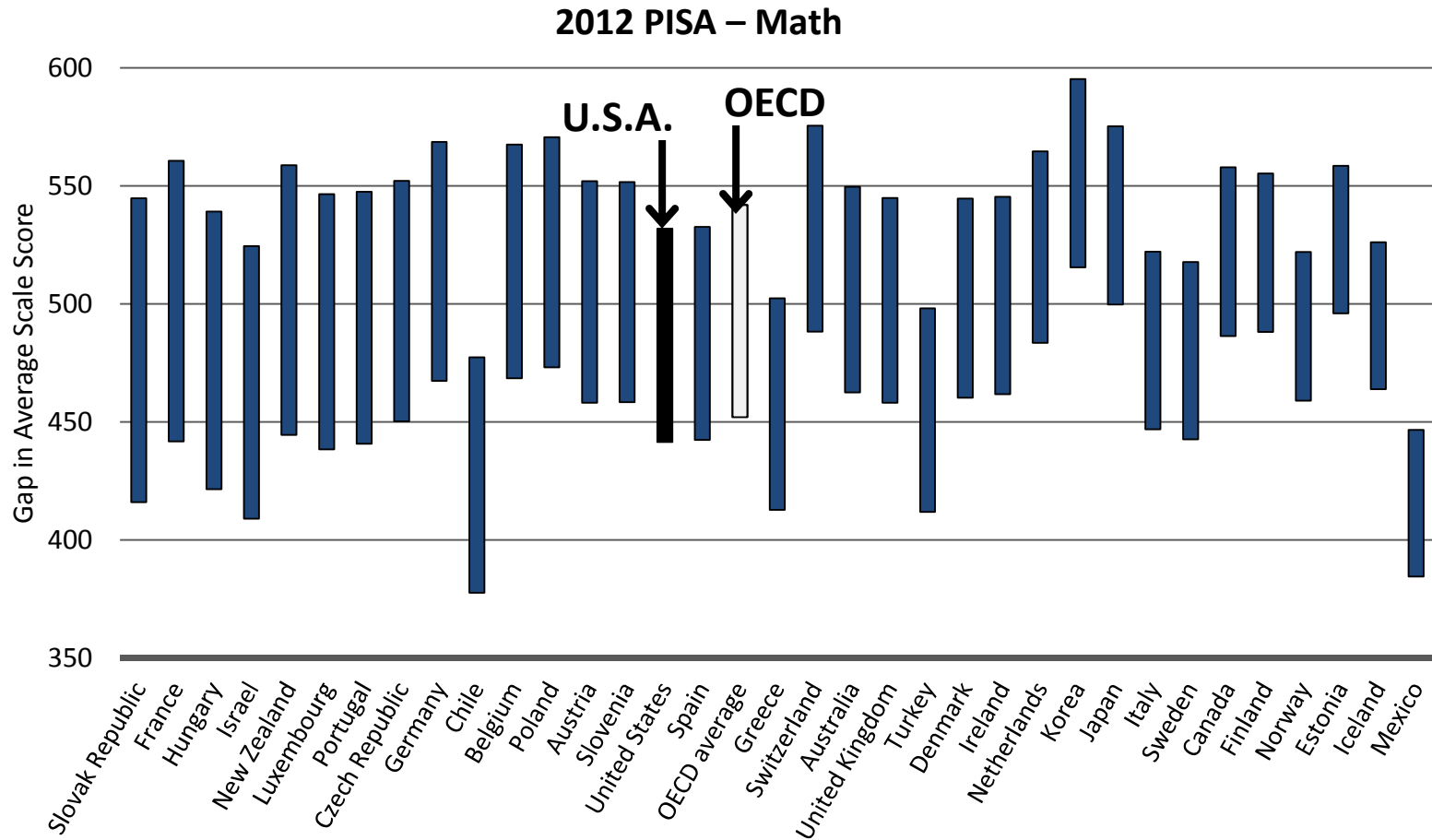


# Among OECD Countries, U.S.A. has the 5<sup>th</sup> Largest Gap Between High-SES and Low-SES Students



Source: PISA 2009 Results, OECD, Table II.3.1

# The U.S. Gap Between High-SES and Low-SES Students is Equivalent to Over Two Years of Schooling



Source: PISA 2012 Results, OECD, Annex B1, Chapter 2, Table II.2.4a




# Gaps in achievement begin before children arrive at the schoolhouse door.

But, rather than organizing our educational system to ameliorate this problem, we organize it to exacerbate the problem.



# How?

By giving students who arrive with  
less, less in school, too.



Some of these “lessees” are a result of choices that policymakers make.


## Funding Gaps *Between States*

	Gap
High-Poverty versus Low-Poverty States	<b>-\$2,278</b> per student
High-Minority versus Low-Minority States	<b>-\$2,330</b> per student

Funding Gaps ***Within States***: National inequities in state and local revenue per student

	<b>Gap</b>
High-Poverty versus Low-Poverty Districts	<b>-\$773</b> per student
High-Minority versus Low-Minority Districts	<b>-\$1,122</b> per student

Source: Education Trust analyses of U.S. Department of Education and U.S. Census Bureau data for the 2005-06 school year.



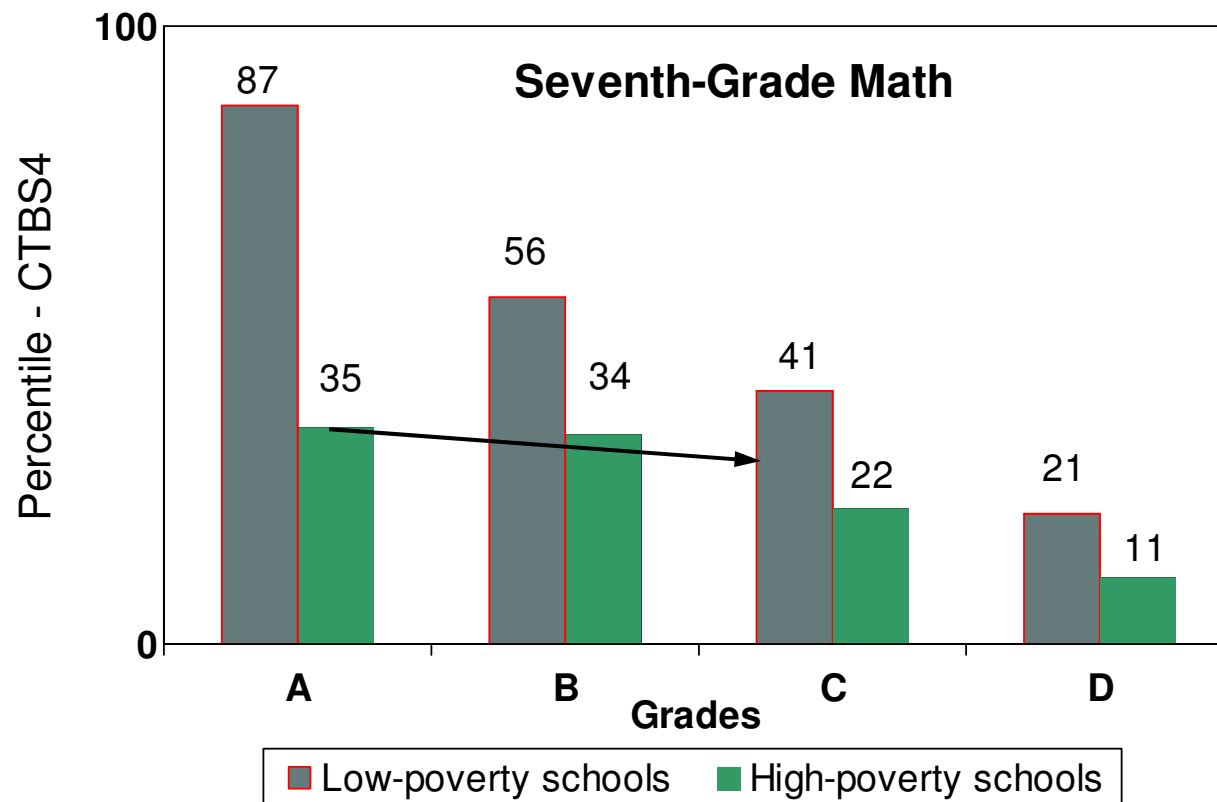
In truth, though, some of the most devastating “lesser” are a function of choices that educators make.




Choices we make about what to  
expect of whom.....



Students in poor schools receive As for work that would earn Cs in affluent schools.

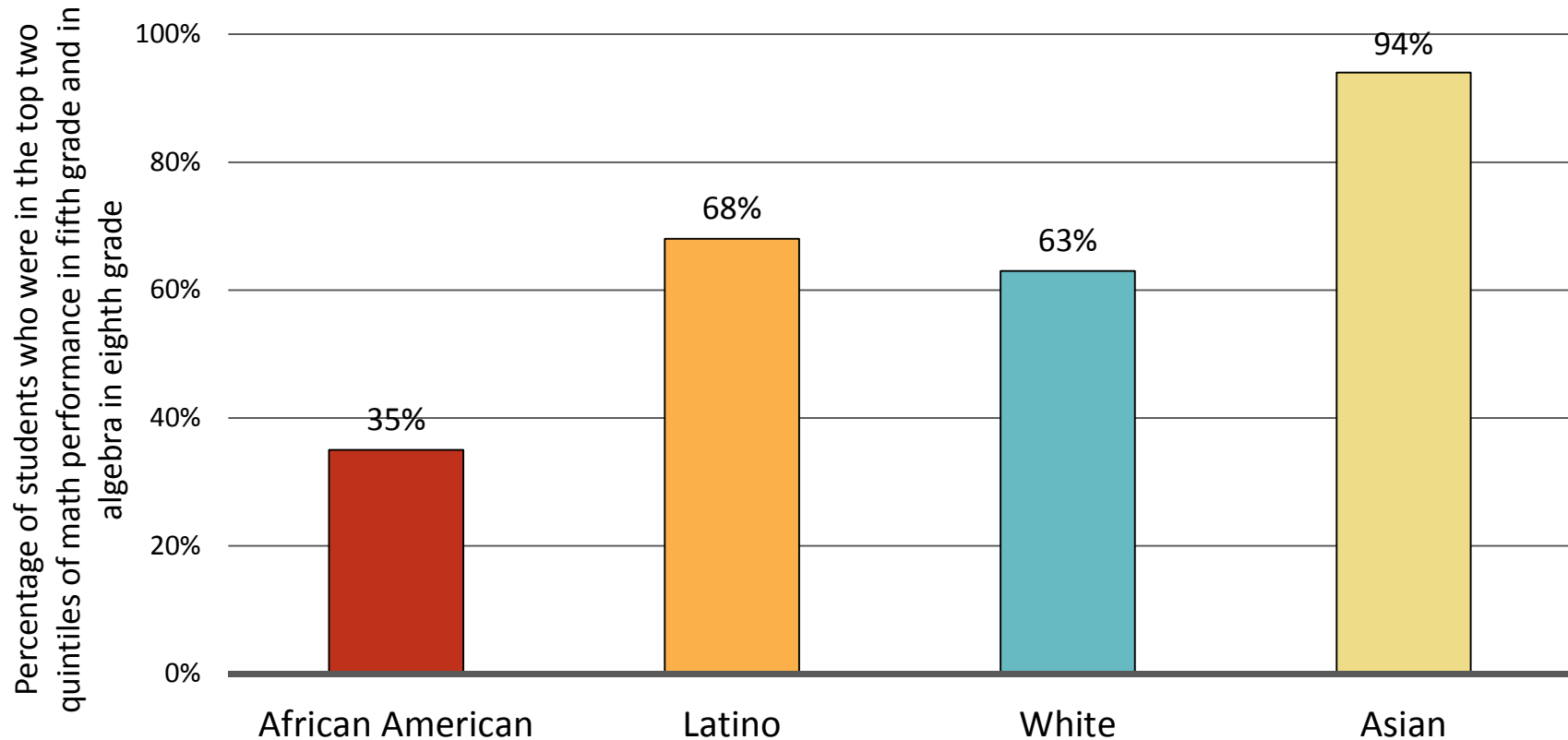


Source: Prospects (ABT Associates, 1993), in "Prospects: Final Report on Student Outcomes", PES, DOE, 1997.



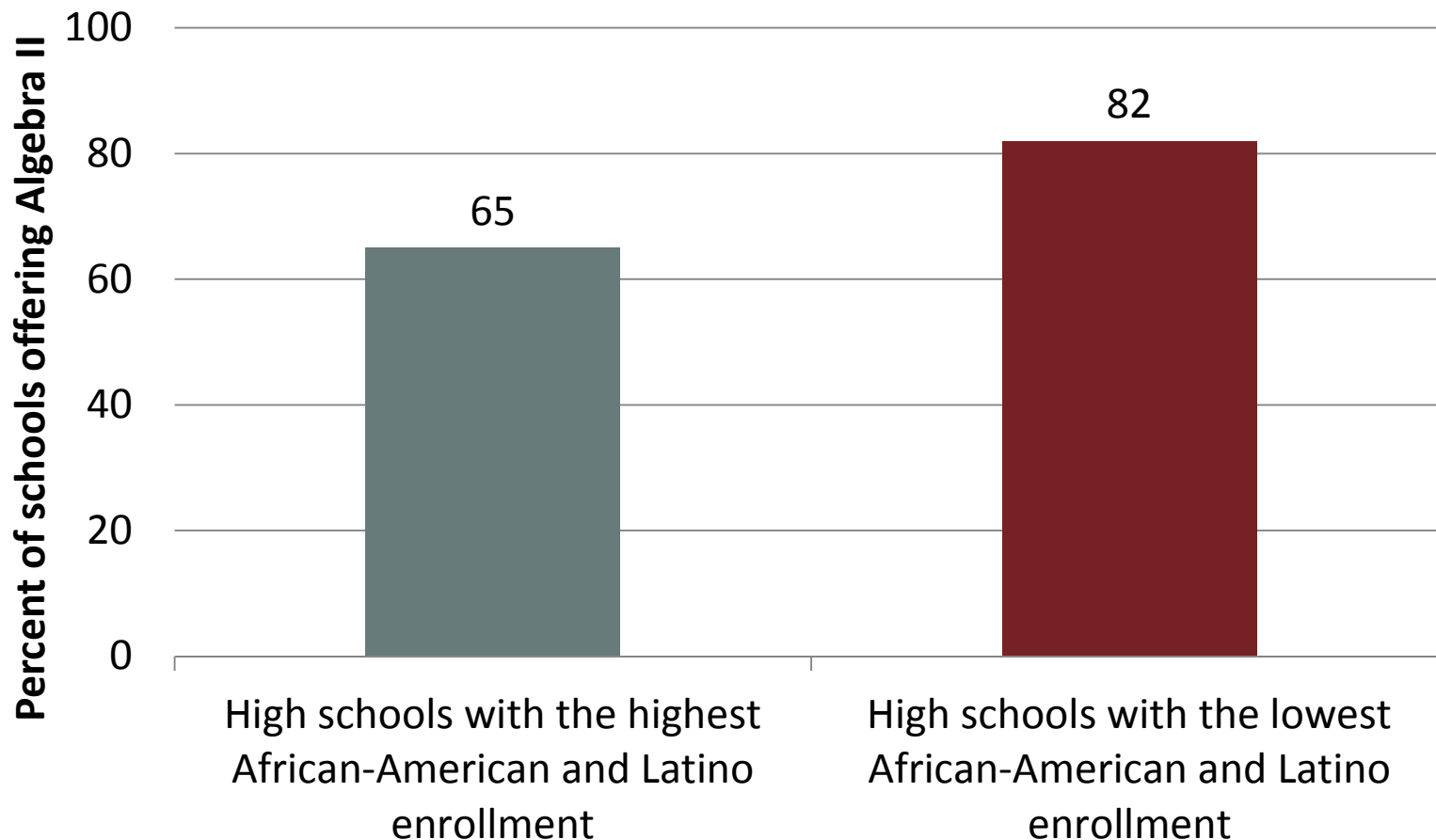
Choices we make about what to  
teach whom...

# Even African-American students with *high math performance* in fifth grade are unlikely to be placed in algebra in eighth grade



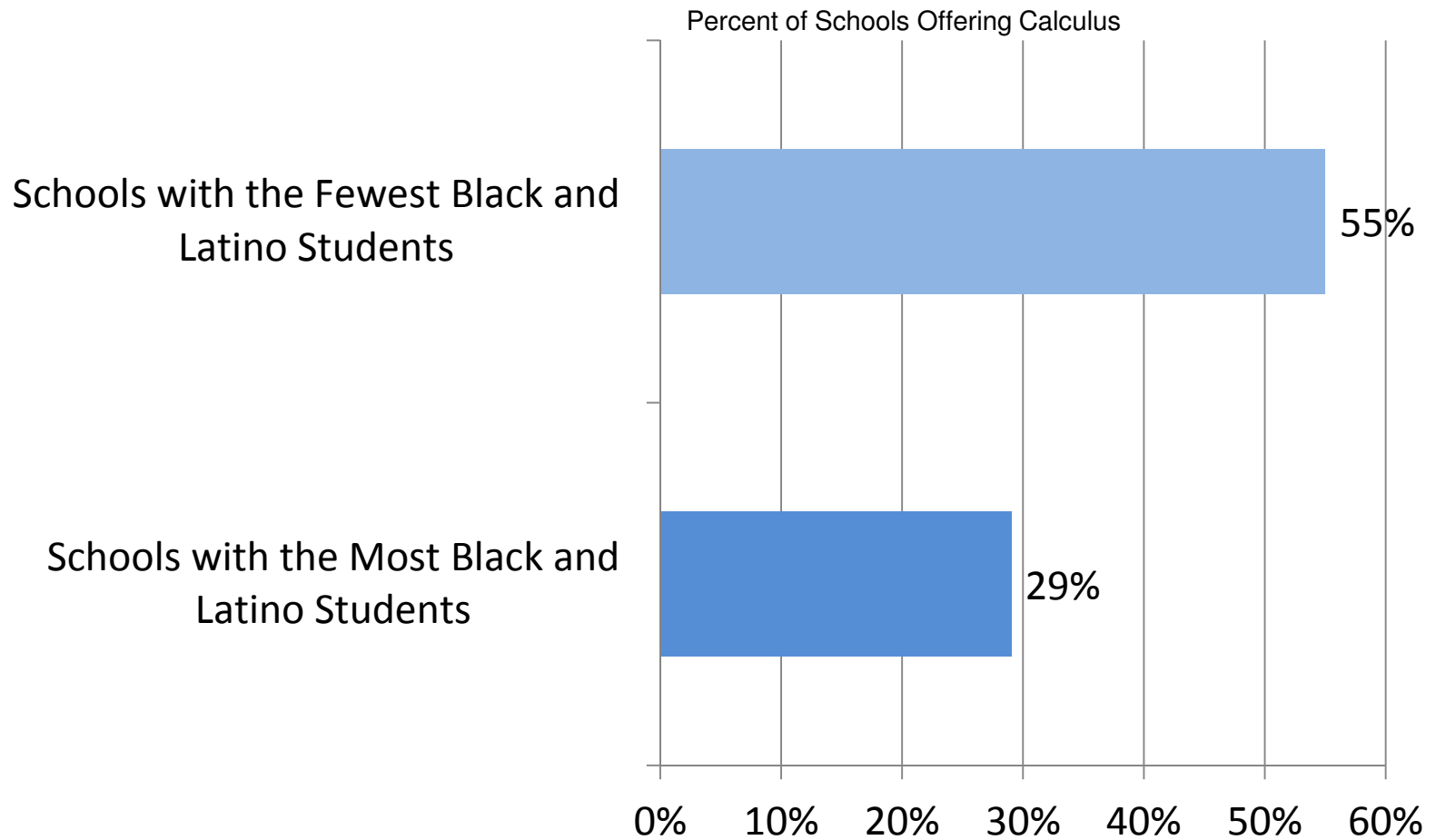
Source: NCES, "Eighth-Grade Algebra: Findings from the Eighth-Grade Round of the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K)" (2010).

## Students of color are less likely to attend high schools that offer Algebra II.




- Source: U.S Department of Education Office of Civil Rights, Civil Rights Data Collection, March 2012

# Students of color are less likely to attend high schools that offer calculus.

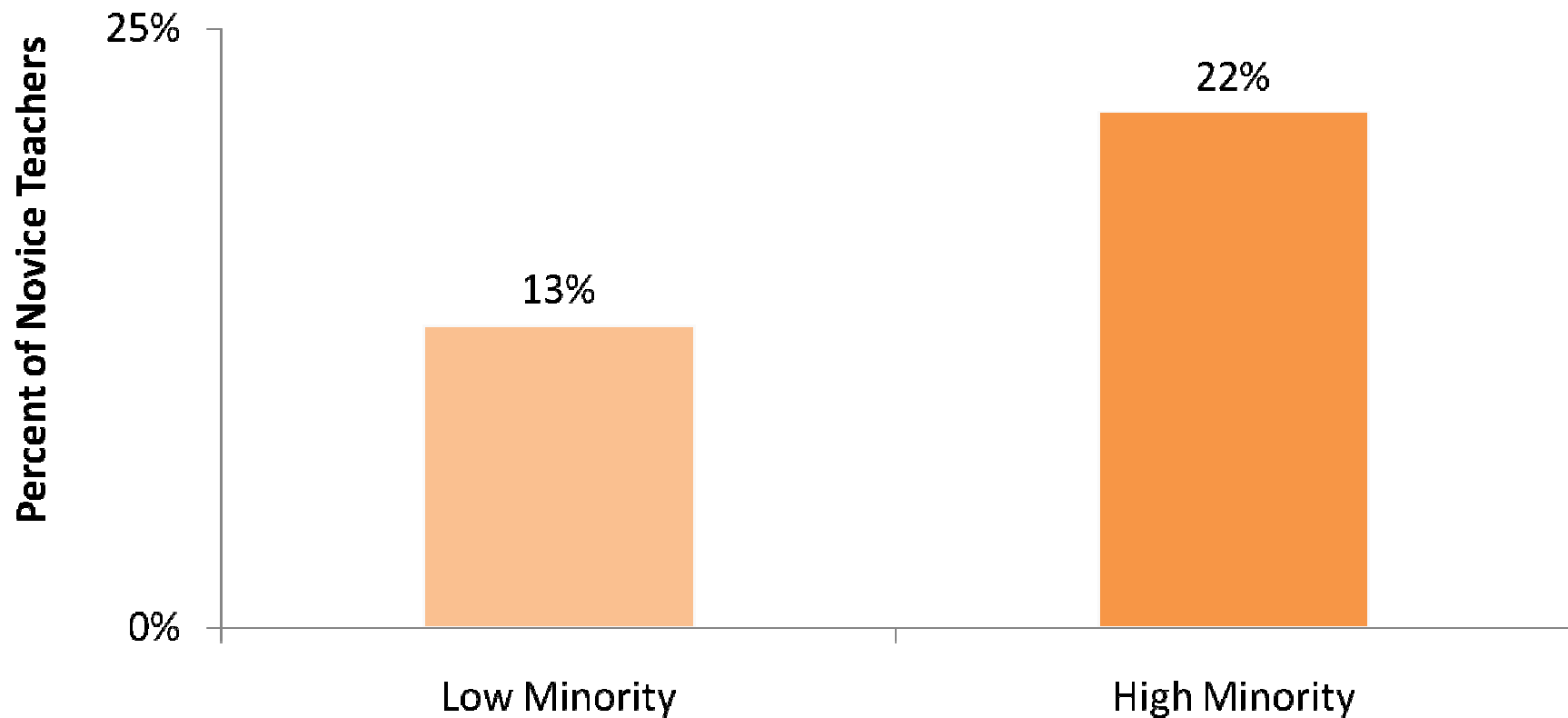


Source: U.S. Department of Education Office for Civil Rights, Civil Rights Data Collection



And choices we make about  
*who* teaches whom...

Students at high-minority schools more likely to be taught by novice\* teachers.

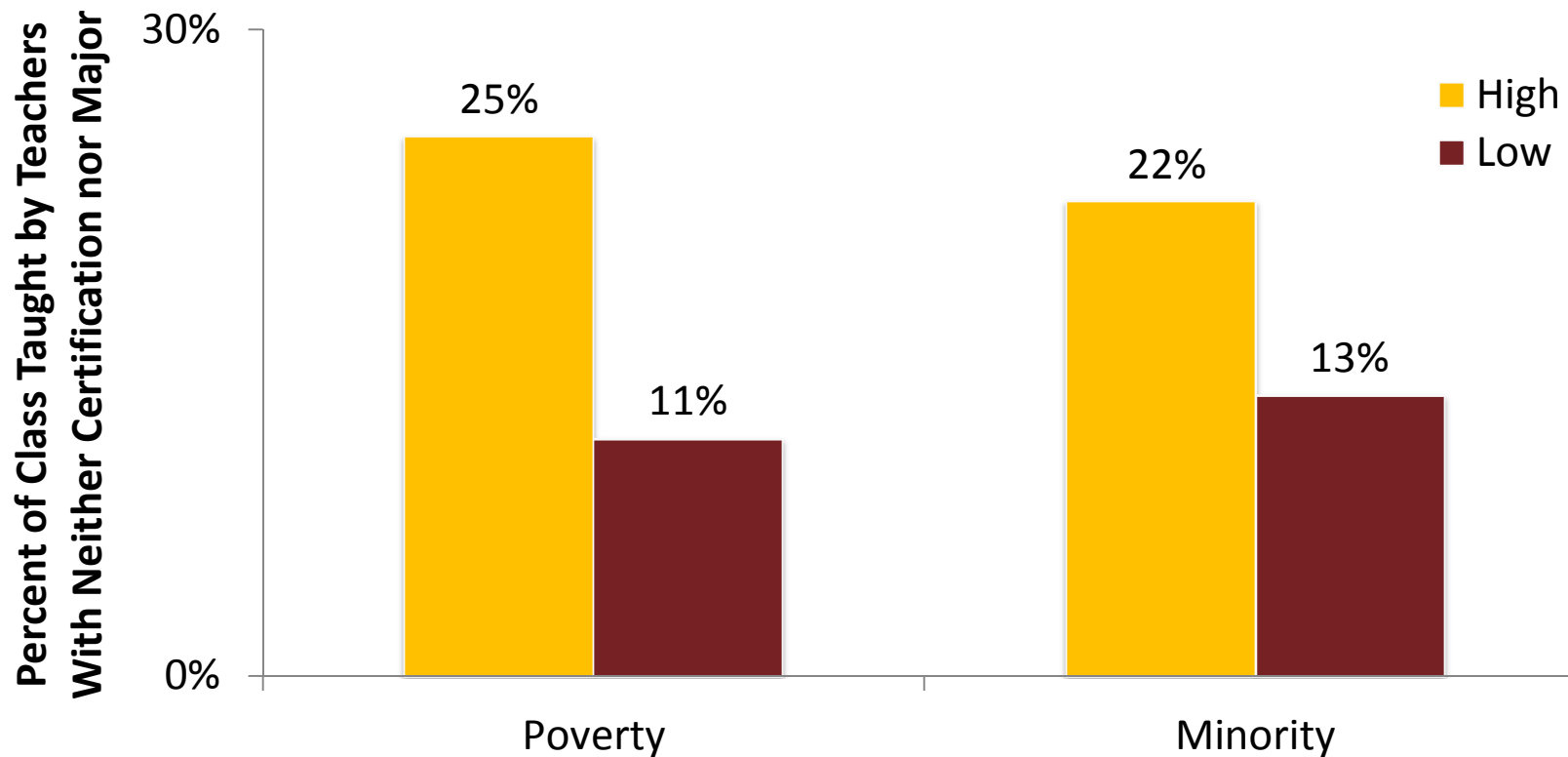


Note: High minority school: 75% or more of the students are Black, Hispanic, American Indian or Alaskan Native, Asian or Pacific Islander. Low-minority school: 10% or fewer of the students are non-White students. Novice teachers are those with three years or fewer experience.

Source: Analysis of 2003-2004 Schools and Staffing Survey data by Richard Ingersoll, University of Pennsylvania 2007.



## Math classes at high-poverty, high-minority secondary schools are more likely to be taught by out-of-field\* teachers.

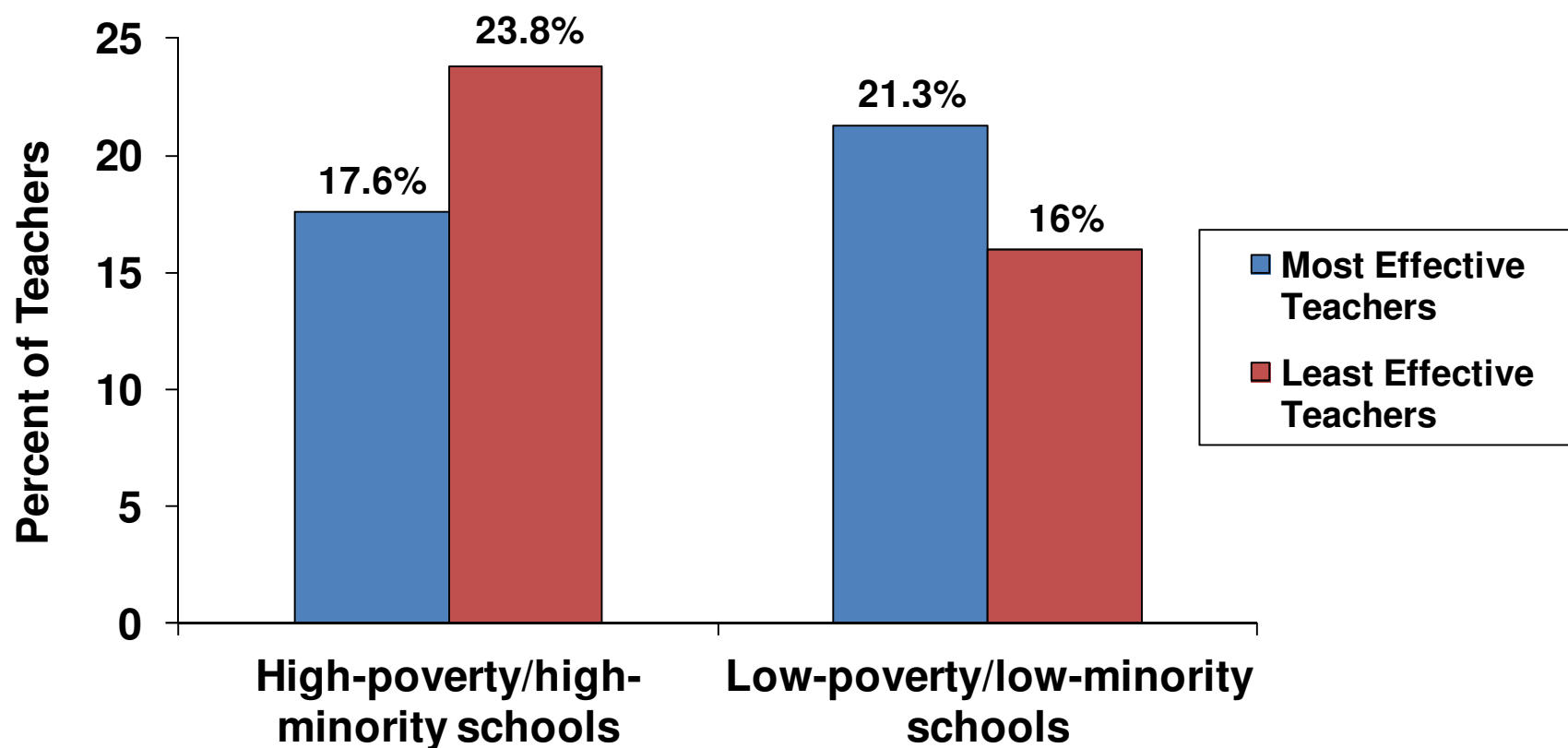


Note: High-poverty school: 55 percent or more of the students are eligible for free/reduced-price lunch. Low-poverty school :15 percent or fewer of the students are eligible for free/reduced-price lunch. High-minority school: 78 percent or more of the students are black, Hispanic, American Indian or Alaskan Native, Asian or Pacific Islander. Low-minority school : 12 percent or fewer of the students are non-white students.

\*Teachers with neither certification nor major. Data for secondary-level core academic classes (math, science, social studies, English) across the U.S.

Source: Education Trust Analysis of 2007-08 Schools and Staffing Survey data.

Tennessee: High-poverty/high-minority schools have fewer of the “most effective” teachers and more “least effective” teachers.



Note: High poverty/high minority means at least 75 percent of students qualify for FRPL and at least 75 percent are minority.

Source: Tennessee Department of Education 2007. “Tennessee’s Most Effective Teachers: Are they assigned to the schools that need them most?” [http://tennessee.gov/education/nclb/doc/TeacherEffectiveness2007\\_03.pdf](http://tennessee.gov/education/nclb/doc/TeacherEffectiveness2007_03.pdf).

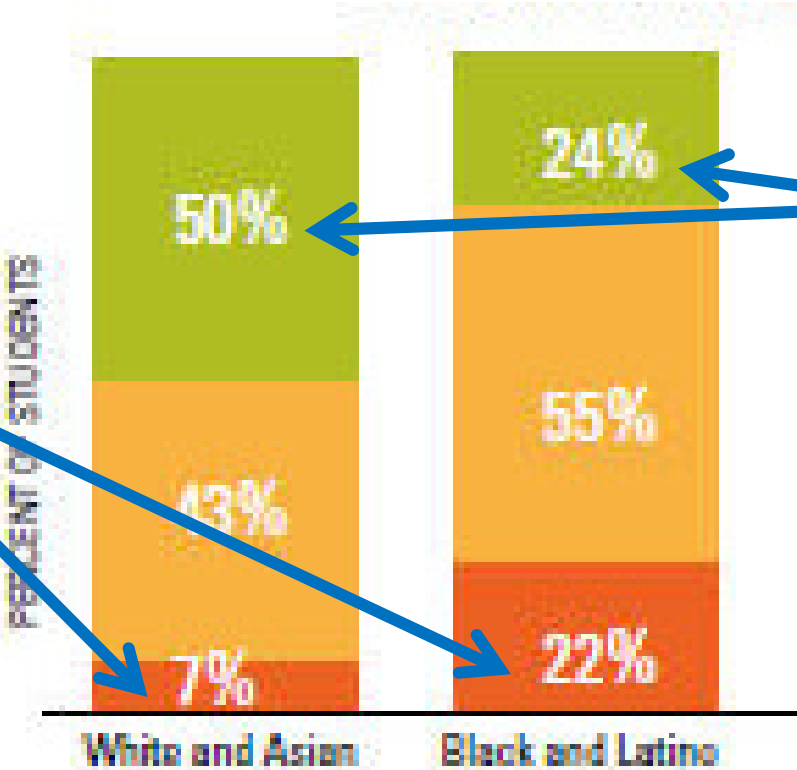
# Los Angeles: Black, Latino students have fewer highly effective teachers, more weak ones.

## READING/LANGUAGE ARTS

Latino and black students are:

**3X** as likely to get low-effectiveness teachers

**1/2** as likely to get highly effective teachers




Top Quartile Value-Added Teacher Average (Middle 50%) Value-Added Teacher Bottom Quartile Value-Added Teacher

Source: Education Trust—West, *Learning Denied*, 2012.



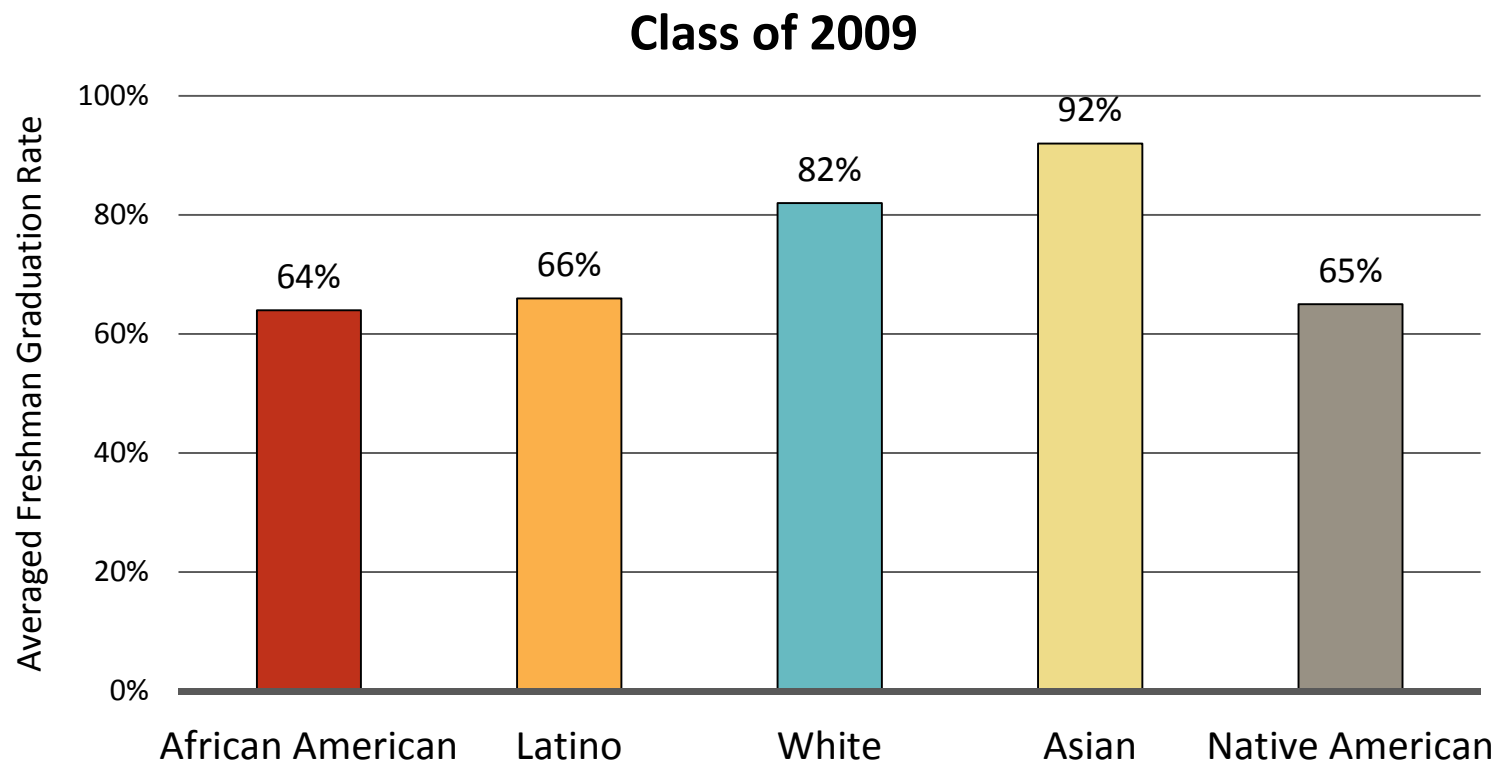
The results are devastating.

Kids who come in a little behind,  
leave a **lot** behind.



And these are the students who remain in school through 12<sup>th</sup> grade.

# Students of color are less likely to graduate from high school on time.

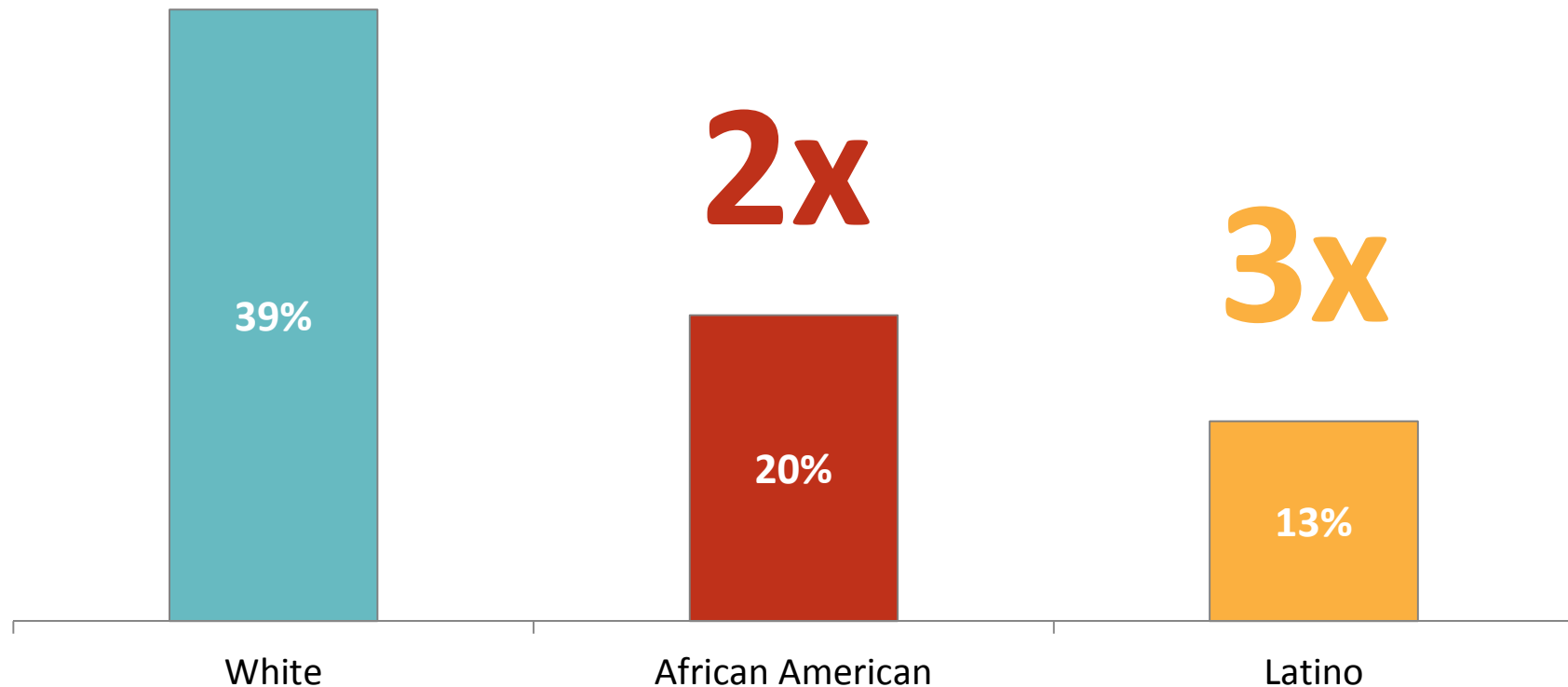


Source: National Center for Education Statistics, "Public School Graduates and Dropouts from the Common Core of Data: School Year 2008-09" (2011).

Add those numbers up and throw in college entry and graduation, and different groups of young Americans obtain degrees and very different rates...

Whites attain bachelor's degrees at twice the rate of blacks and three times the rate of Hispanics.

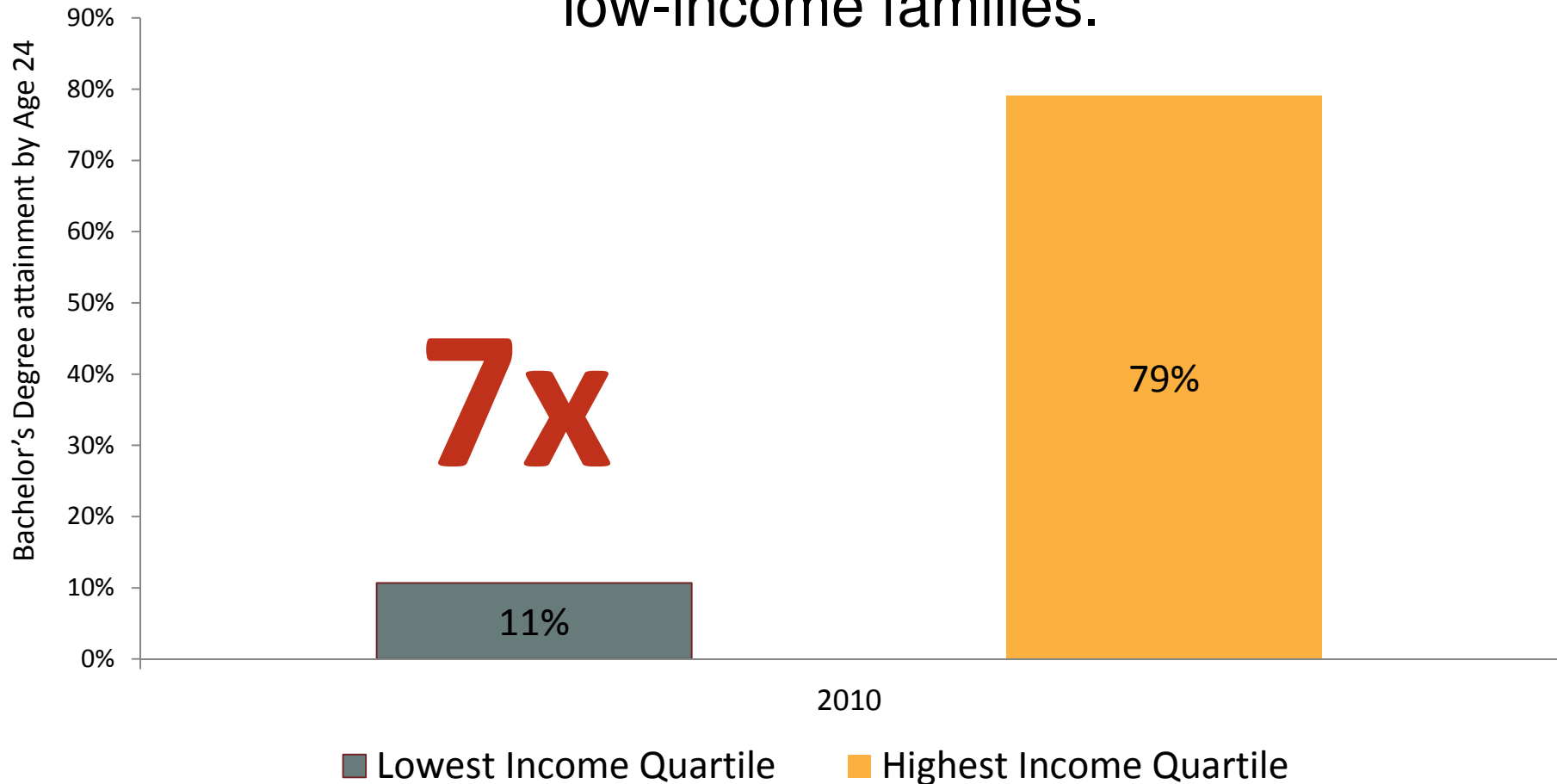
**Bachelor's Degree Attainment of Young Adults  
(25-29-year-olds), 2011**



Source: NCES, *Condition of Education* 2010 and U.S. Census Bureau, *Educational Attainment in the United States: 2011*.



Young people from high-income families earn bachelor's degrees at seven times the rate of those from low-income families.



Source: Postsecondary Education Opportunity, "Bachelor's Degree Attainment by Age 24 by Family Income Quartiles, 1970 to 2010."




# What Can We Do?

An awful lot of Americans have decided that we can't do much.

# What We Hear Many Educators Say:

- They're poor
- Their parents don't care
- They come to schools without breakfast
- Not enough books
- Not enough parents



But if they are right, why are low-income students and students of color performing so much higher in some schools...

# George Hall Elementary School

## Mobile, Alabama

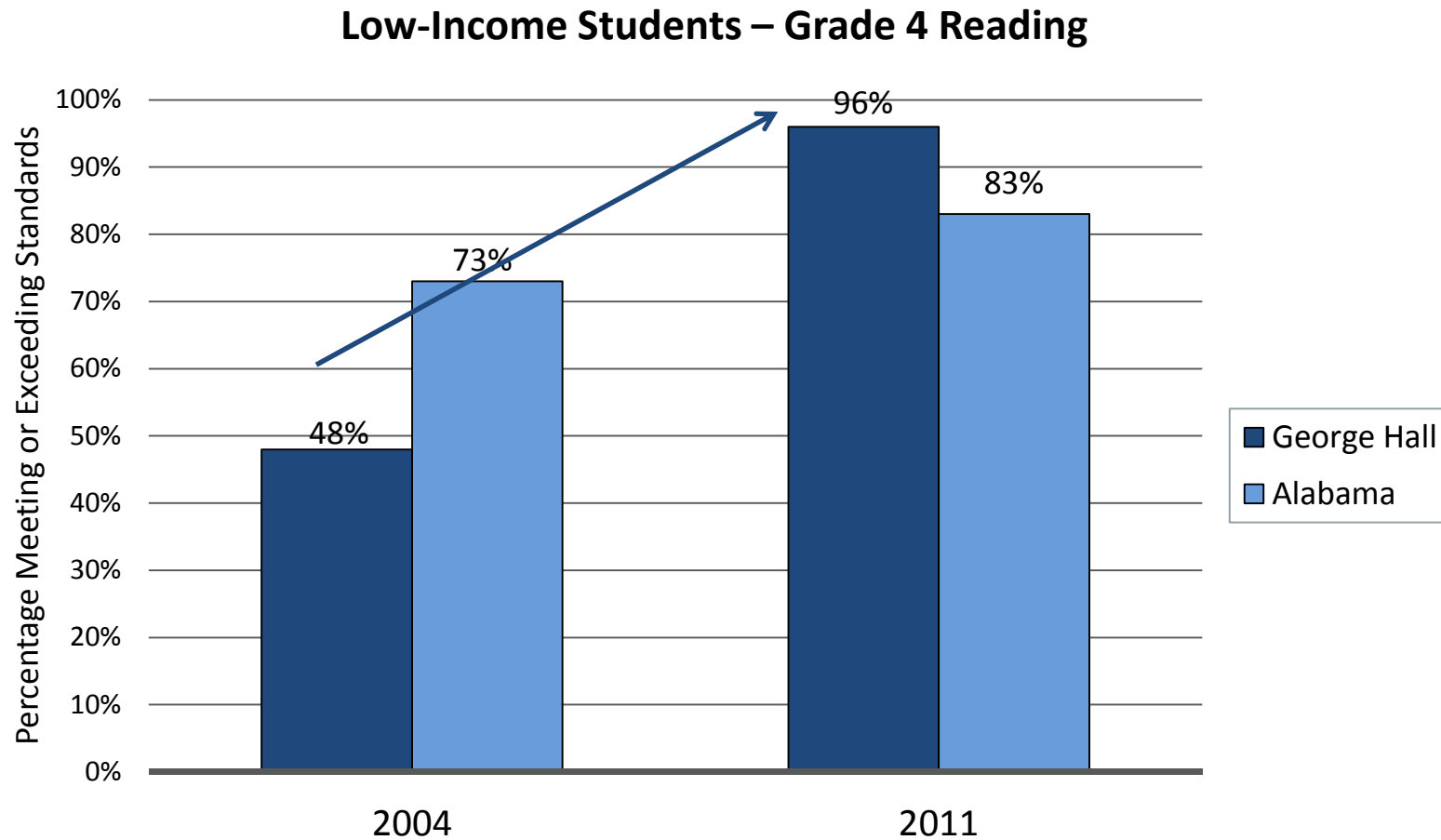
- 549 students in grades PK-5  
99% African American
- 99% Low Income



Note: Enrollment data are for 2009-10 school year

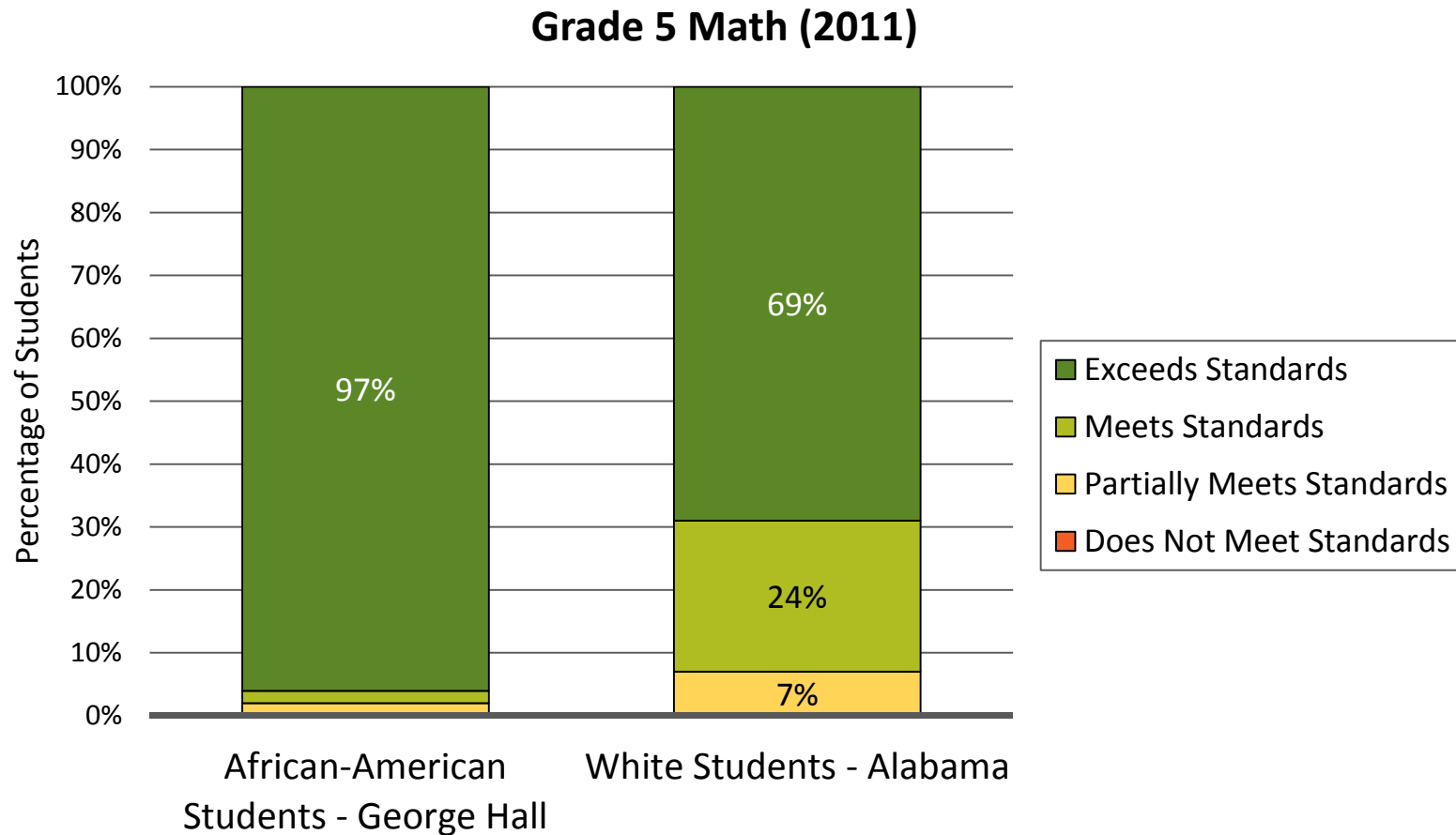
Source: Alabama Department of Education

# Big Improvement at George Hall Elementary



Source: Alabama Department of Education

# Exceeding Standards: George Hall students outperform white students in Alabama



Source: Alabama Department of Education

# Halle Hewetson Elementary School

## Las Vegas, NV

- 962 students in grades PK – 5
  - 85% Latino
  - 7% African American
- 100% Low Income
- 71% Limited English Proficient

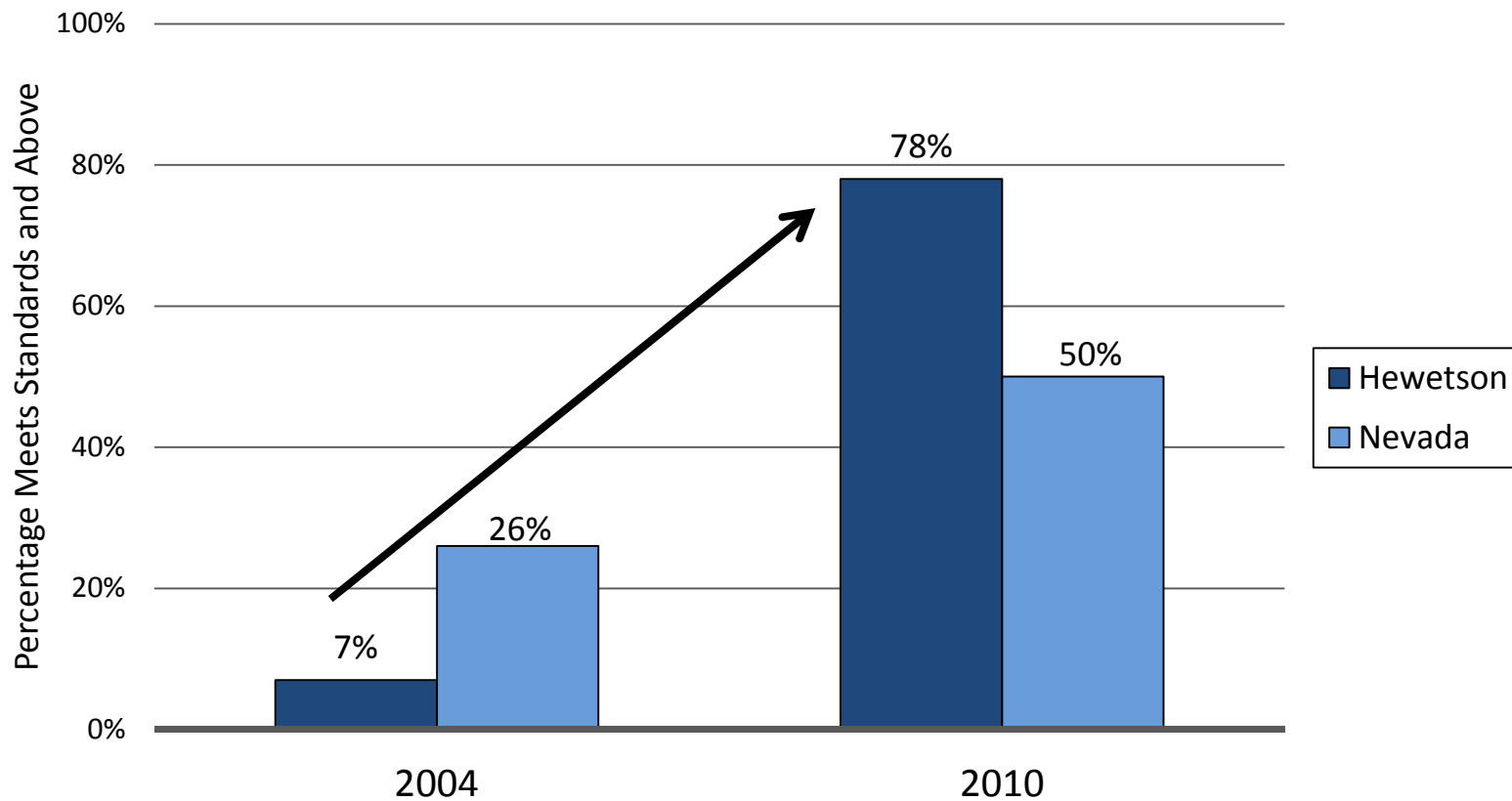


Note: Data are for 2010-2011 school year  
Source: Nevada Department of Education



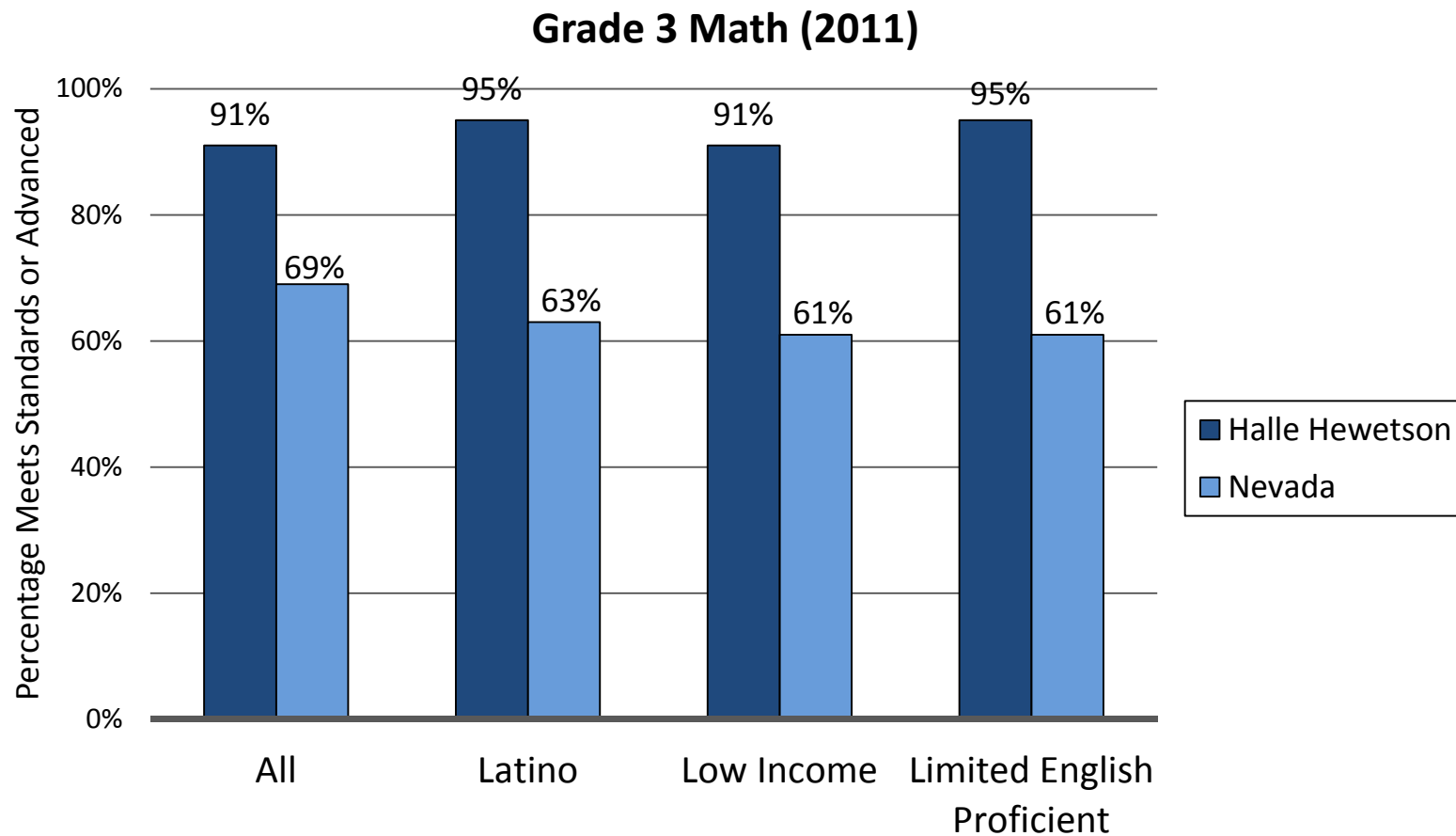
# Big Improvement at Halle Hewetson Elementary

## Latino Students – Grade 3 Reading



Source: Nevada Department of Education

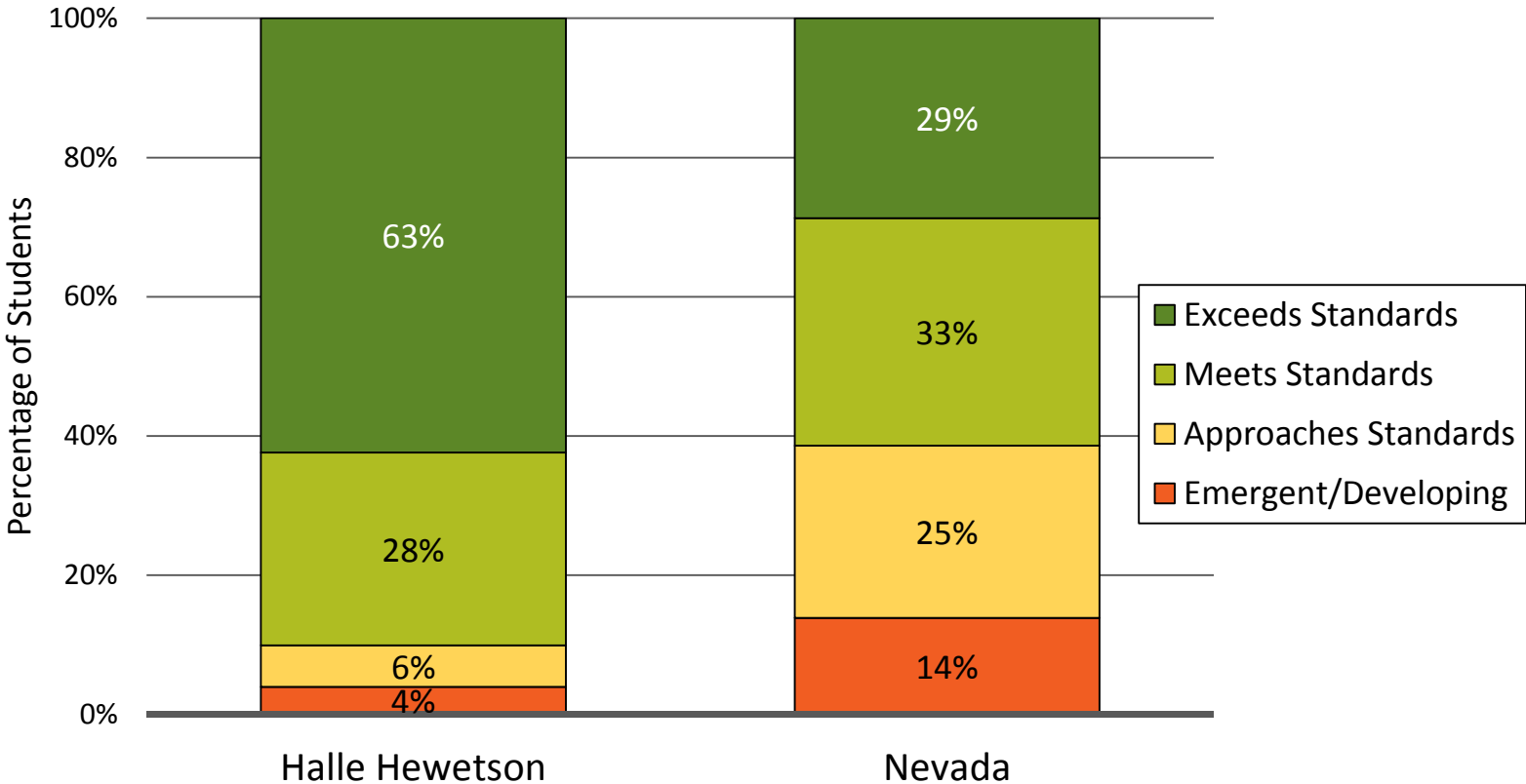
# High Performance Across Groups at Halle Hewetson Elementary



Source: Nevada Department of Education

# Exceeding Standards at Halle Hewetson Elementary

## Low-Income Students – Grade 3 Math (2011)



Source: Nevada Department of Education

# Elmont Memorial Junior-Senior High

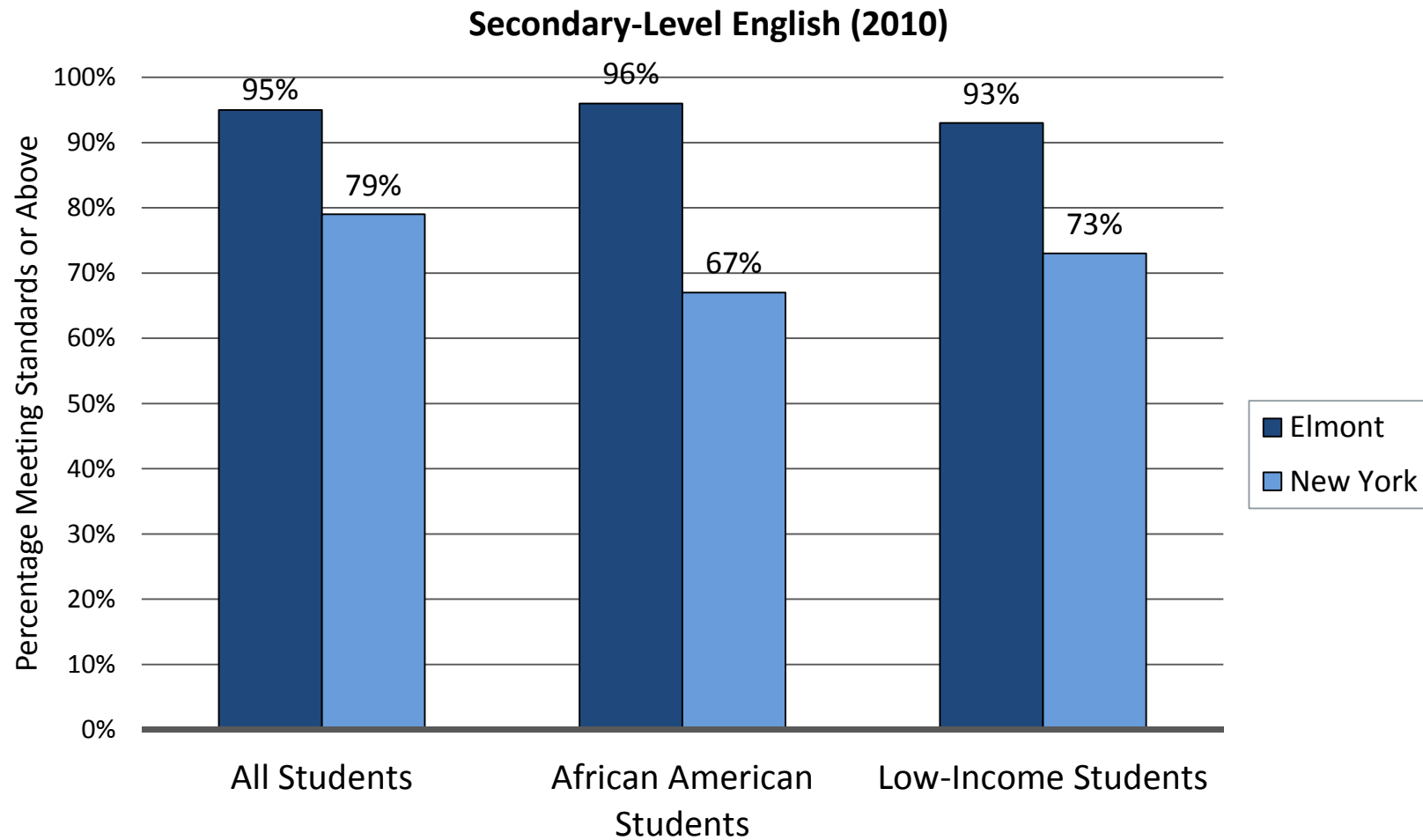
## Elmont, New York

- 1,895 students in grades 7-12
  - 77% African American
  - 13% Latino
- 25% Low-Income



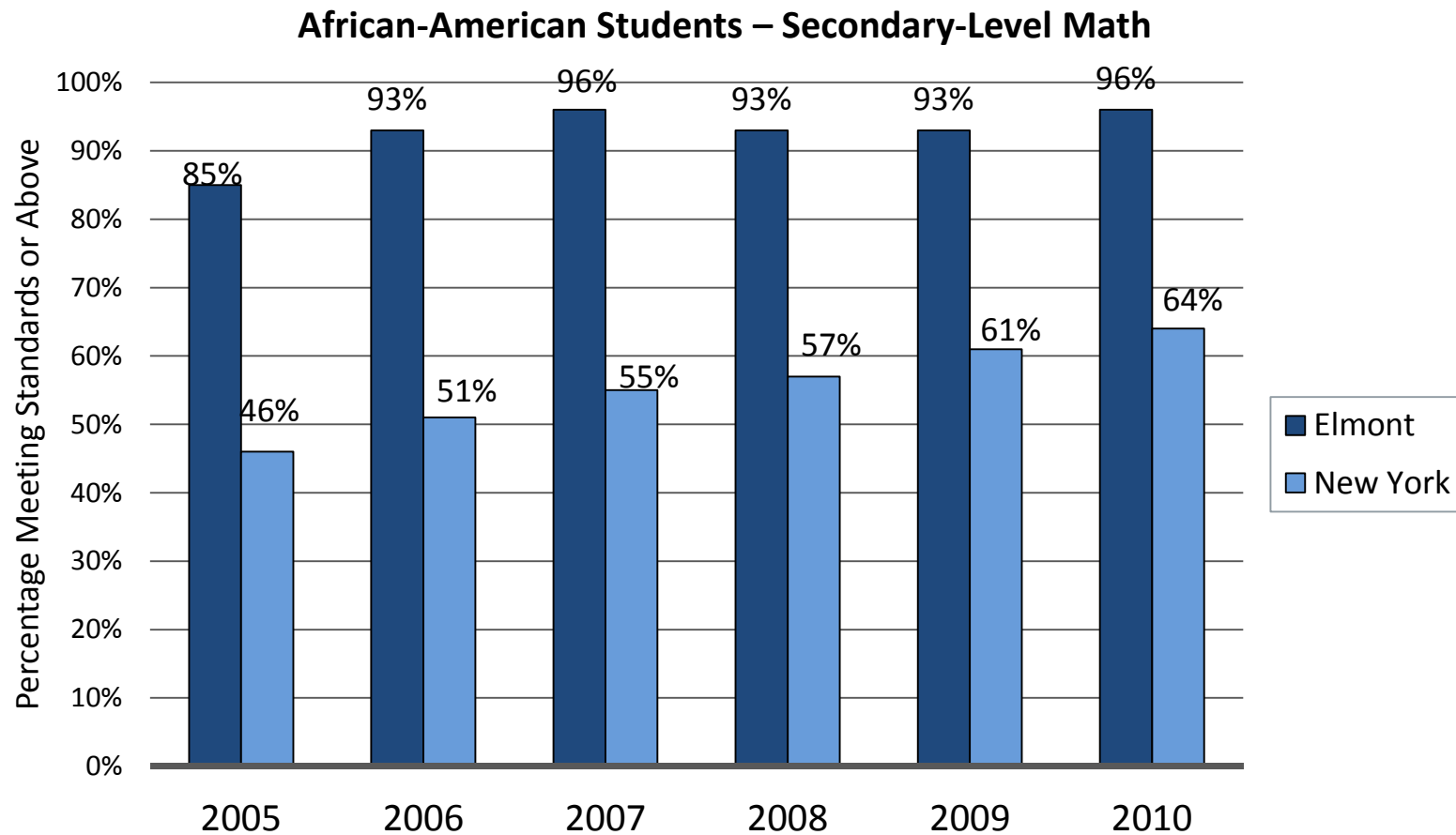
Source: New York Department of Education

# Outperforming the State at Elmont



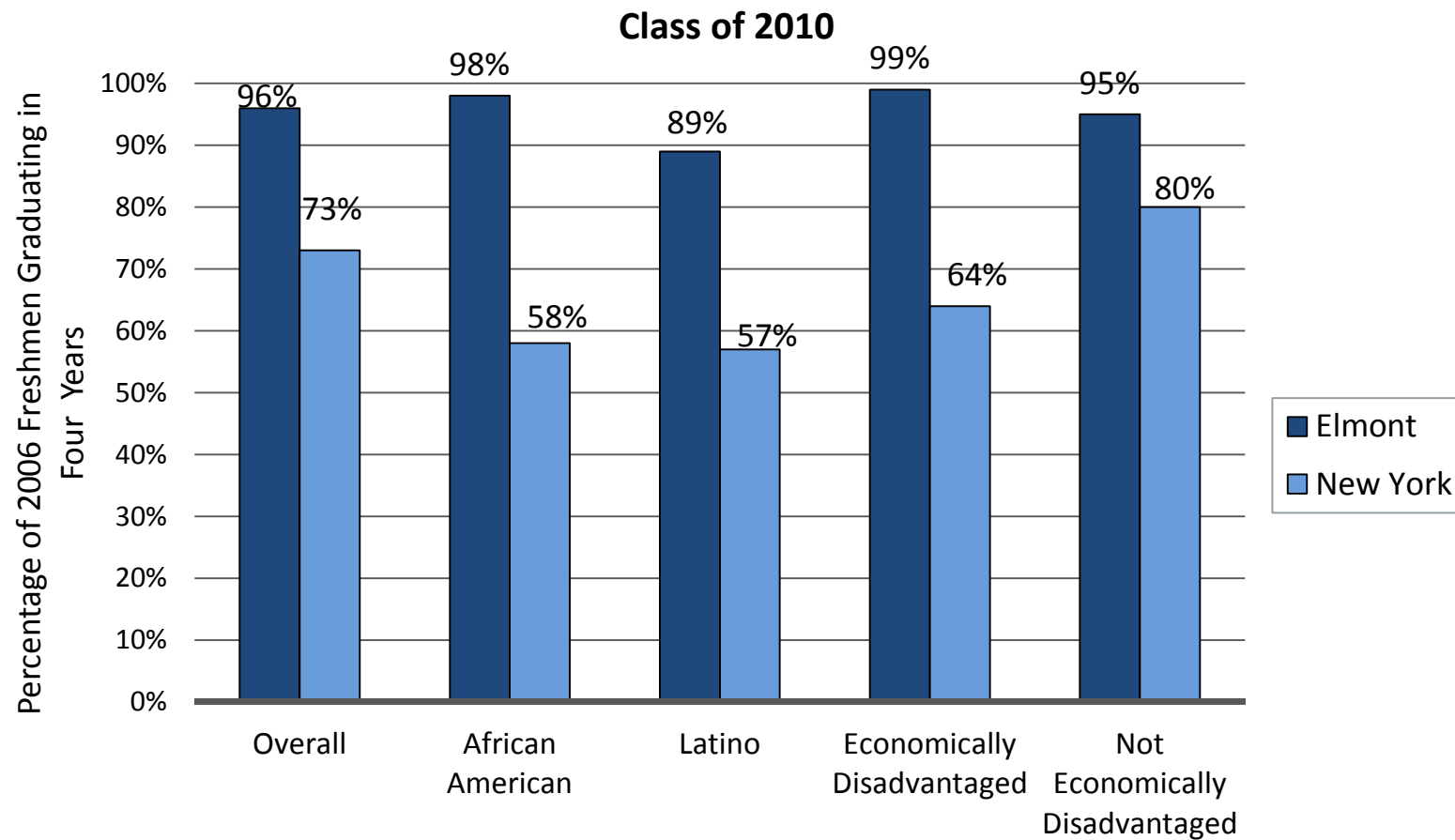
Source: New York State Department of Education

# Improvement and High Performance at Elmont Memorial Junior-Senior High

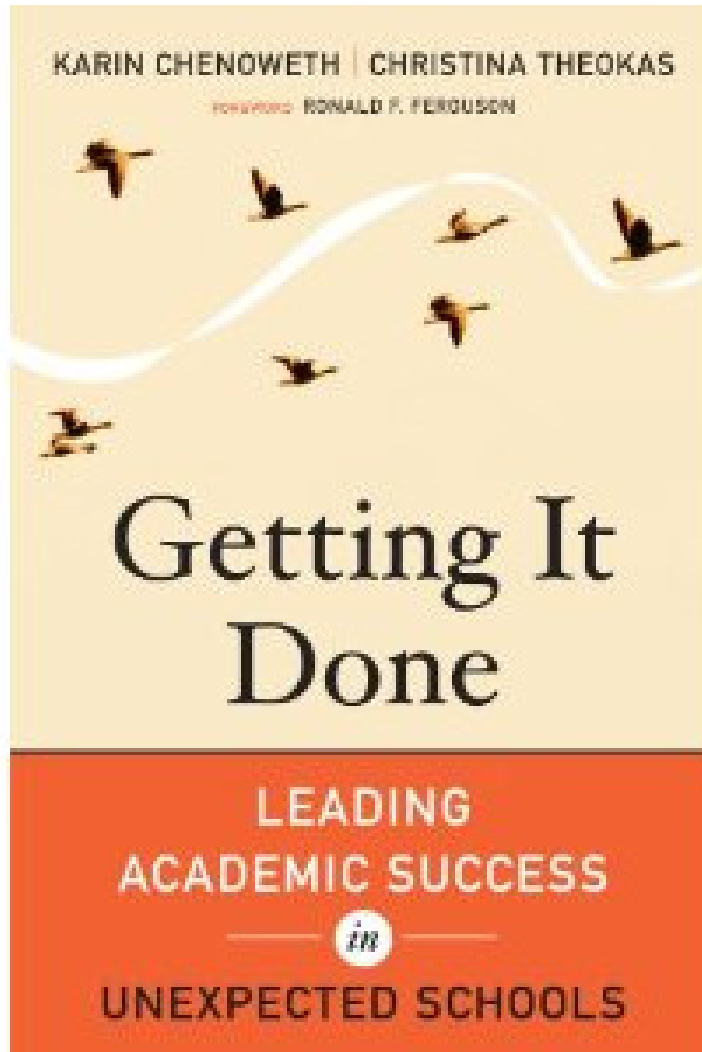


Source: New York State Department of Education

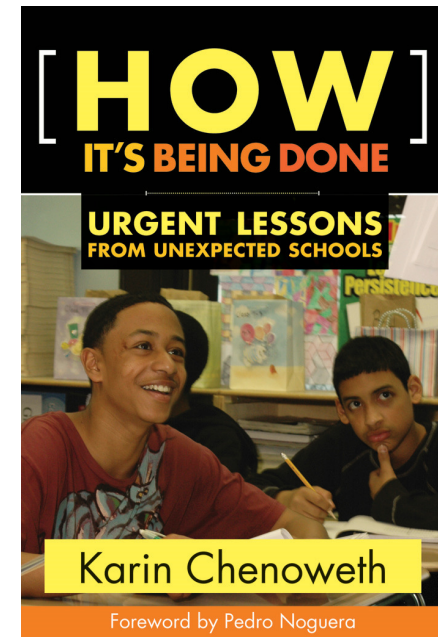
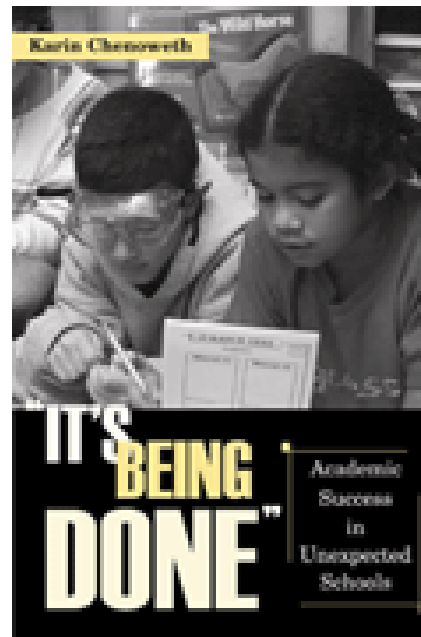
# High Graduation Rates at Elmont Memorial High School




Source: New York State Department of Education



Available from  
Harvard Education Press  
and amazon.com





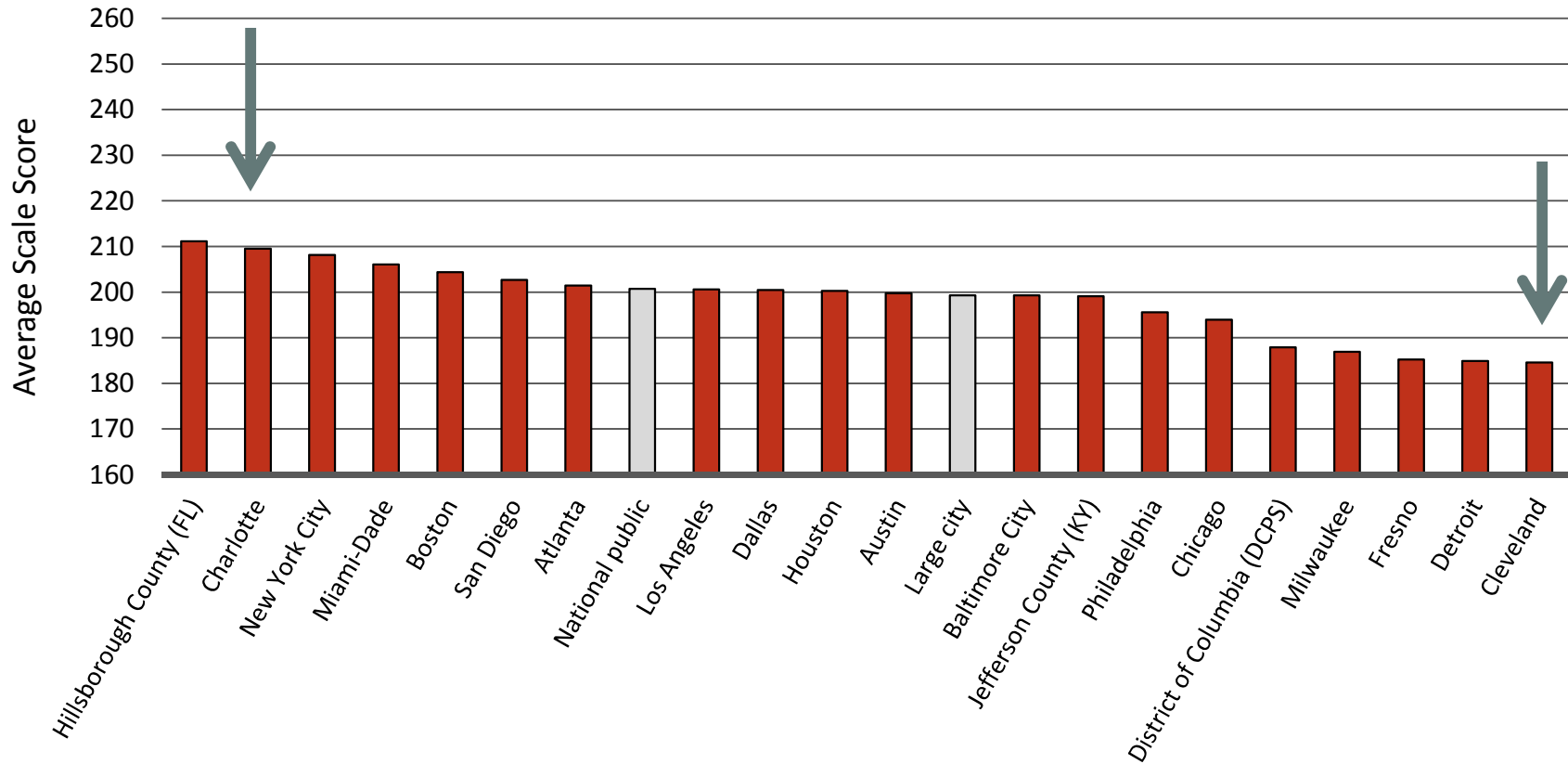


Very big differences at district level,  
too—even in the performance of the  
“same” group of students.

# Average Scale Scores, by District

## Low-Income African American Students

Grade 4 – NAEP Reading (2013)



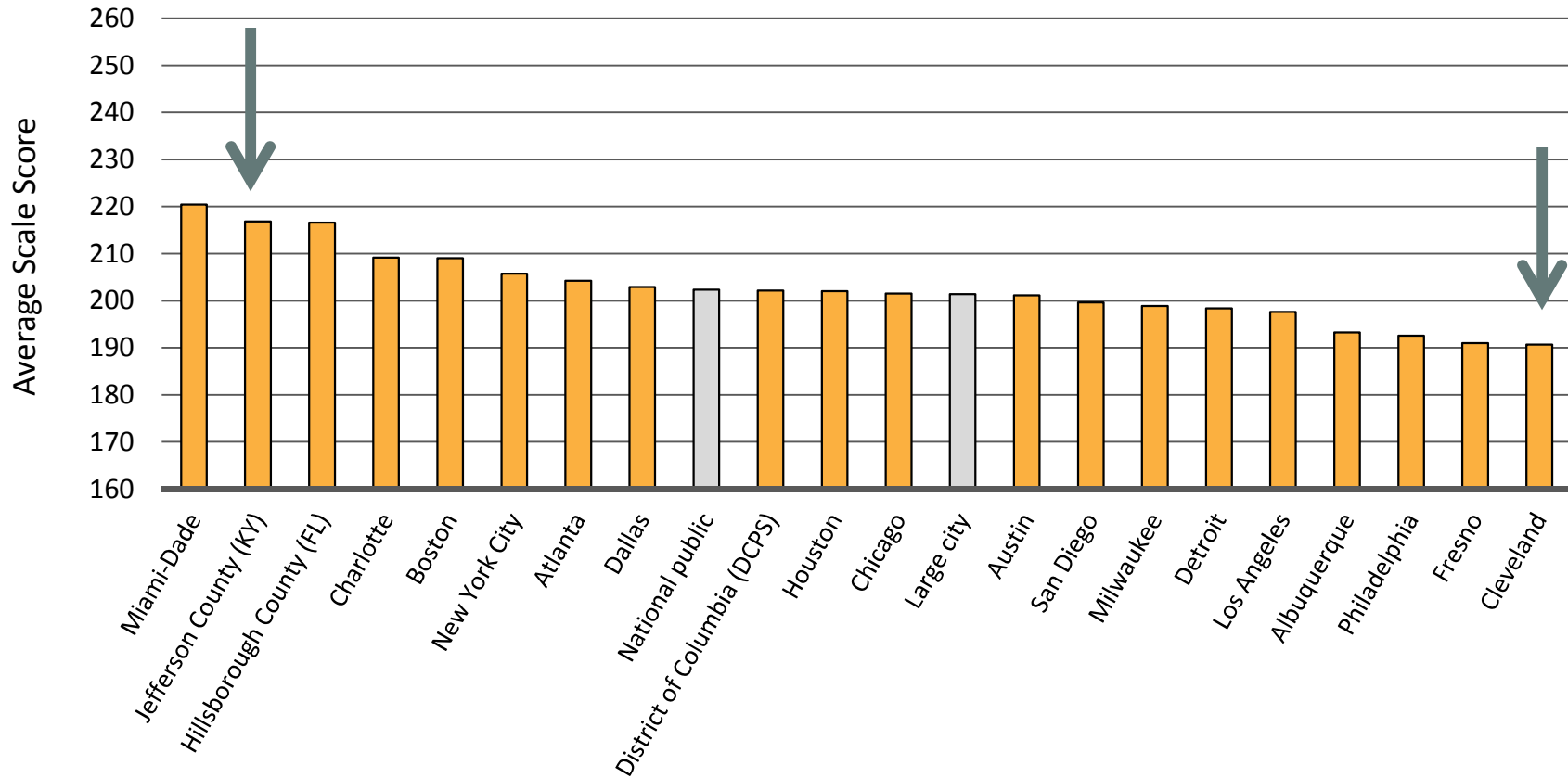
Note: Basic Scale Score = 208; Proficient Scale Score = 238

Source: NAEP Data Explorer, NCES

# Average Scale Scores, by District


## Low-Income Latino Students

Grade 4 – NAEP Reading (2013)



Note: Basic Scale Score = 208; Proficient Scale Score = 238

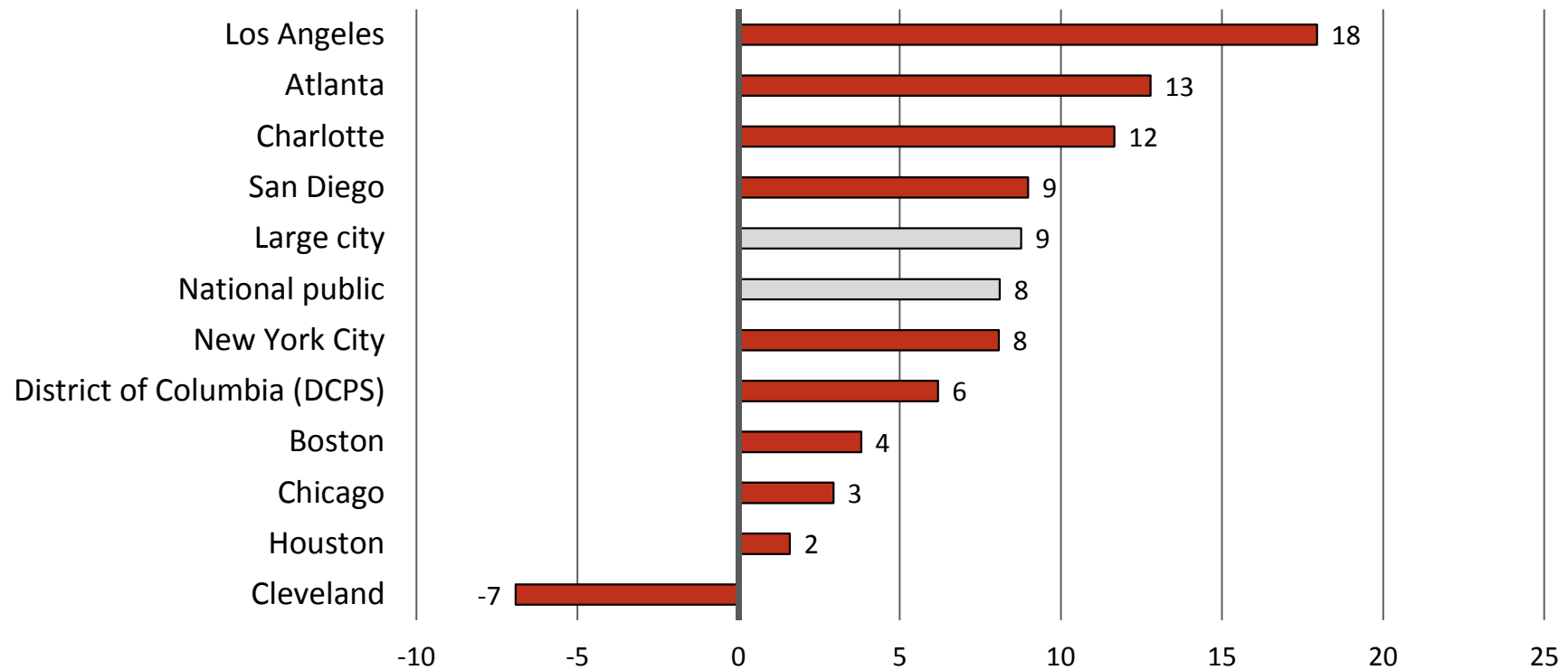
Source: NAEP Data Explorer, NCES



Big differences in change over  
time, too.

# Change in Average Scale Scores, by District Low-Income African American Students

Grade 4 – NAEP Reading (2003-2013)

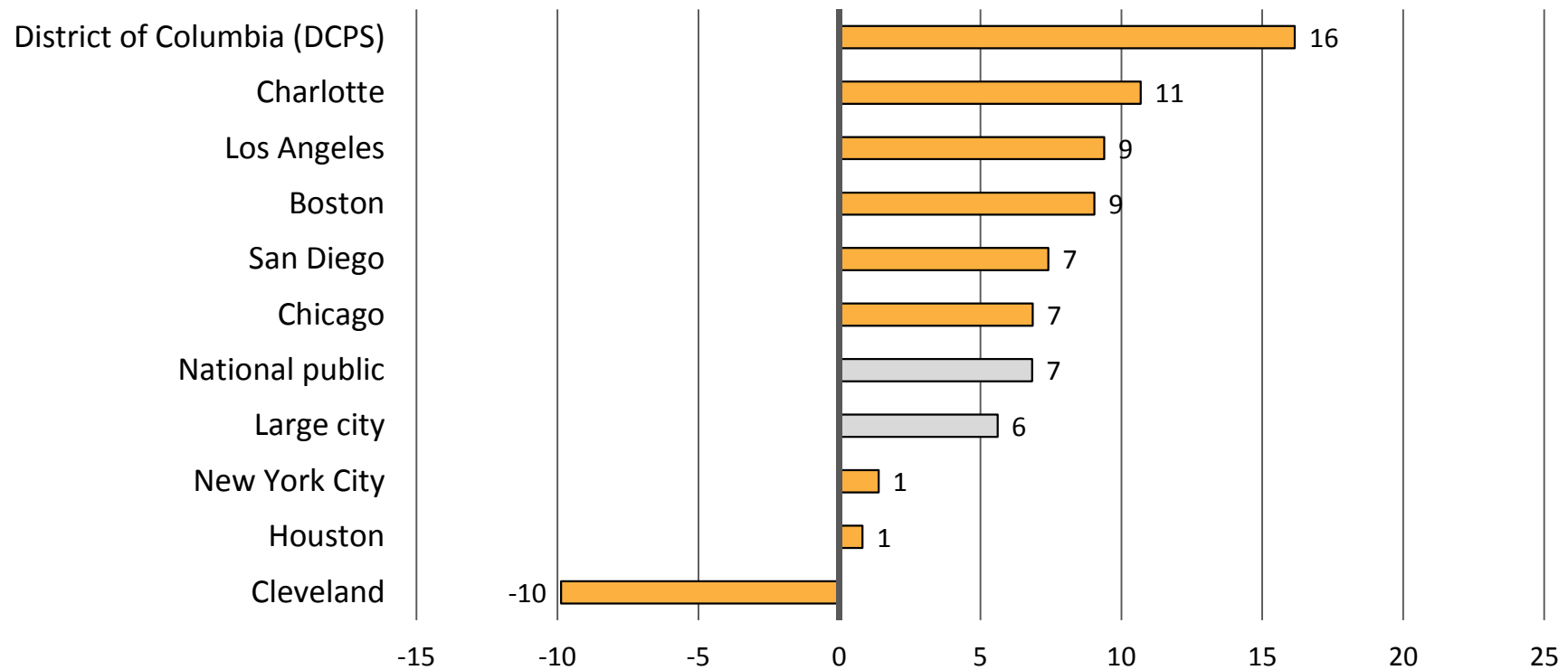


Change in Mean Scale Score, 2003-2013

Note: Chart includes only districts that participated, and had members of this specific subgroup, in both the 2003 and 2013 NAEP TUDA administrations .  
Source: NCES, NAEP Data Explorer

# Change in Average Scale Scores, by District Low-Income Latino Students

Grade 4 – NAEP Reading (2003-2013)



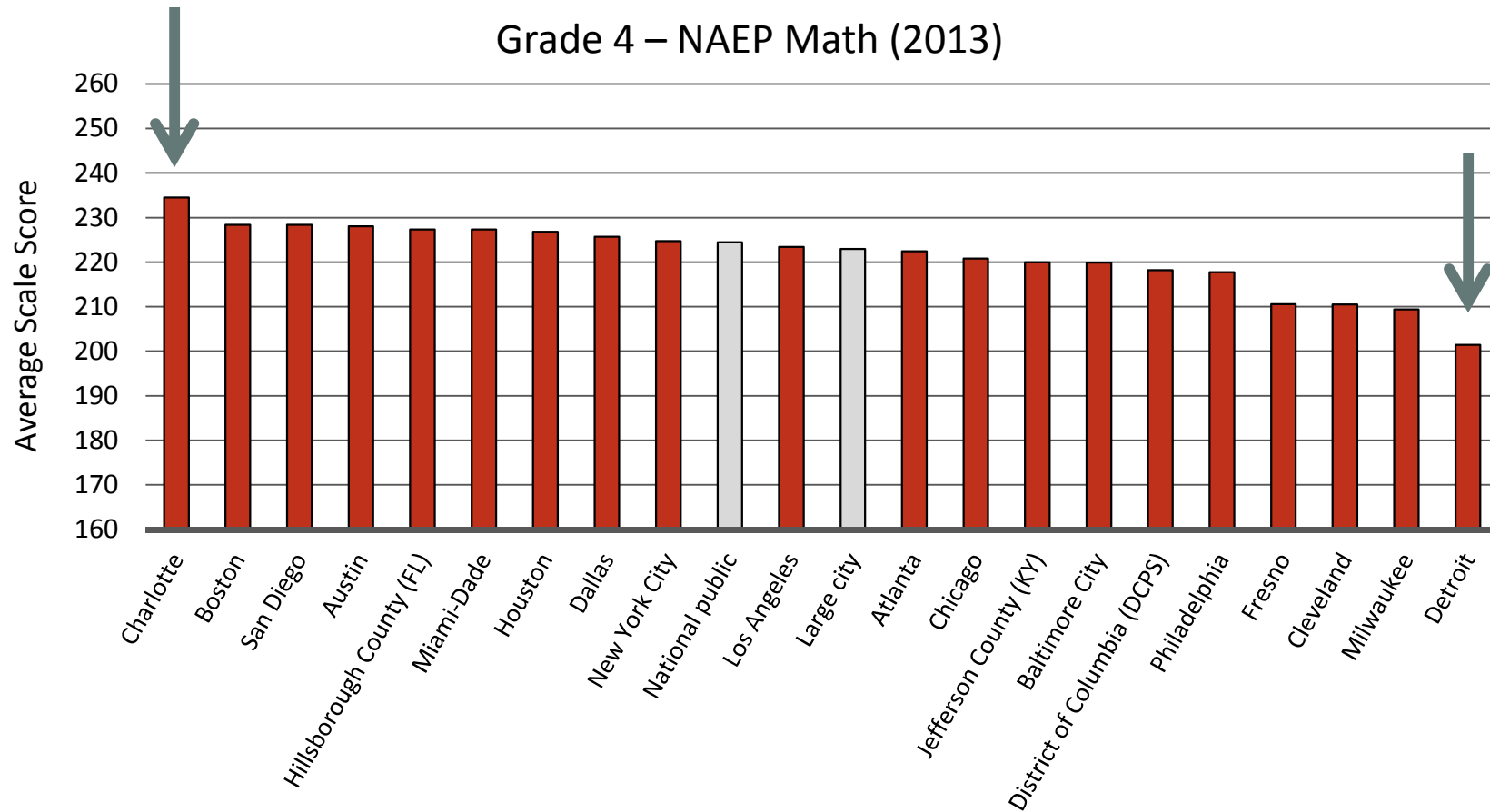
Change in Mean Scale Score, 2003-2013

Note: Chart includes only districts that participated, and had members of this specific subgroup, in both the 2003 and 2013 NAEP TUDA administrations .  
Source: NCES, NAEP Data Explorer



And not just in reading...

# Average Scale Scores, by District African American Students



Note: Basic Scale Score = 214; Proficient Scale Score = 249

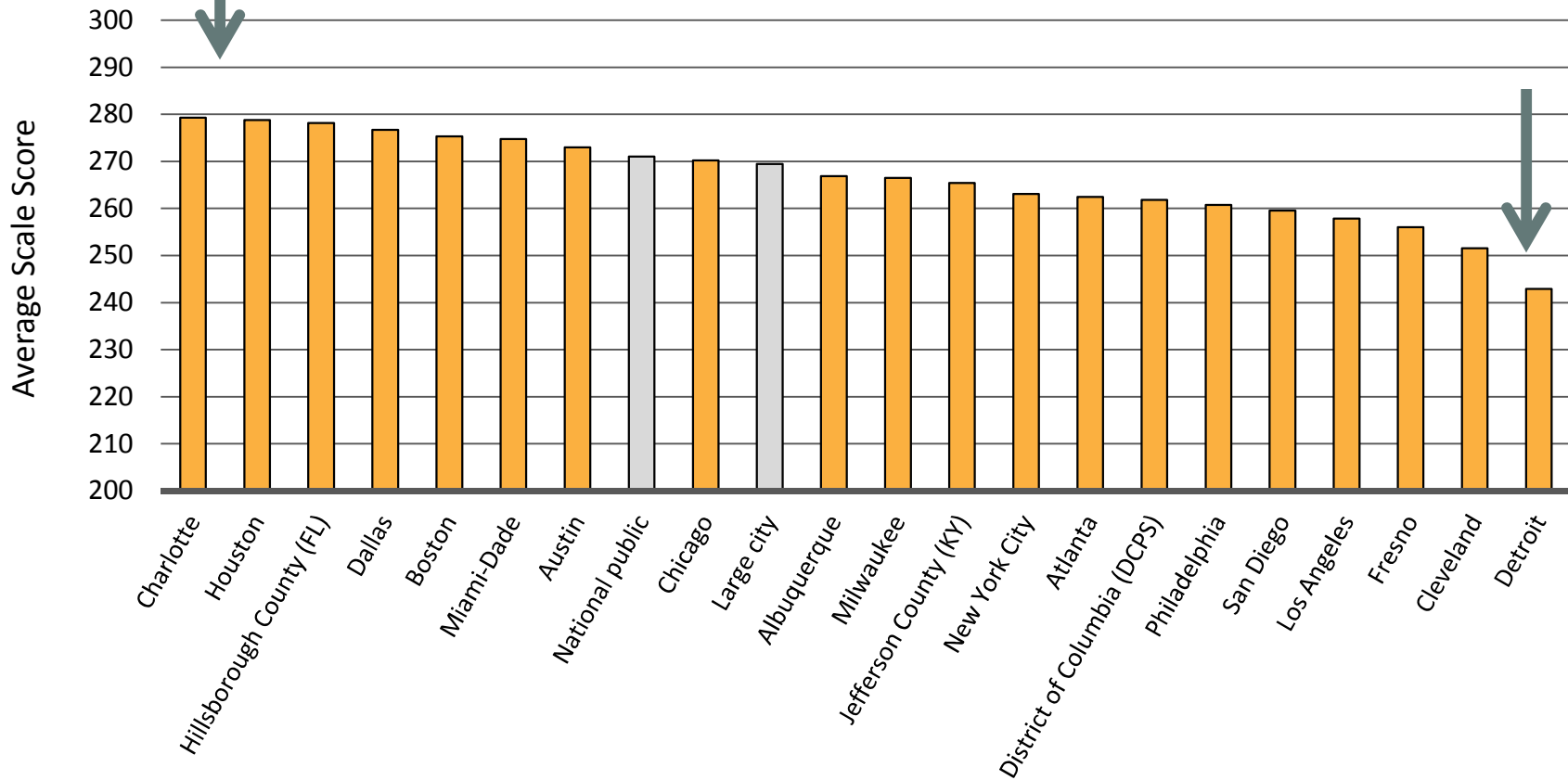
Source: NAEP Data Explorer, NCES



# Average Scale Scores, by District

## Latino Students

### Grade 8 – NAEP Math (2013)

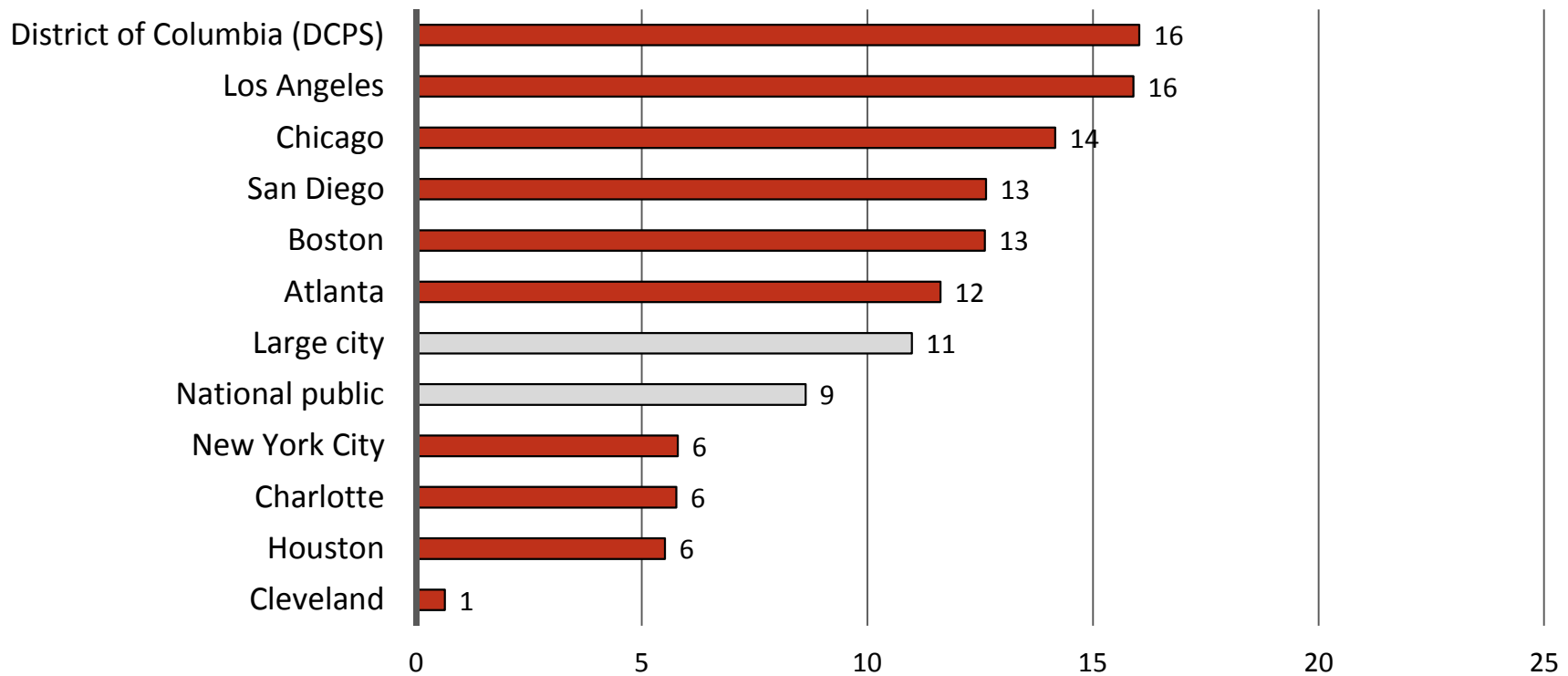


Note: Basic Scale Score = 262; Proficient Scale Score = 299

Source: NAEP Data Explorer, NCES

# Change in Average Scale Scores, by District African American Students

Grade 4 – NAEP Math (2003-2013)

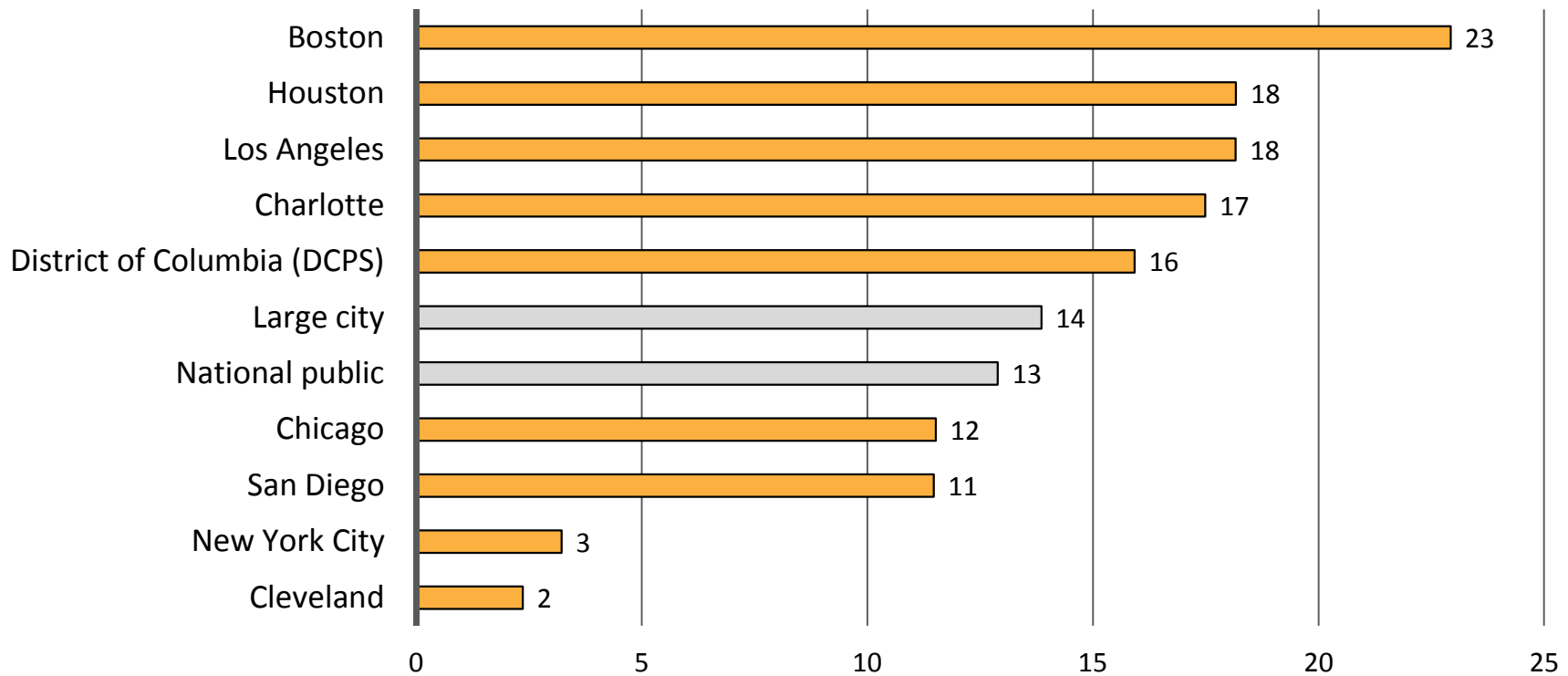


Change in Mean Scale Score, 2003-2013

Note: Chart includes only districts that participated, and had members of this specific subgroup, in both the 2003 and 2013 NAEP TUDA administrations .  
Source: NCES, NAEP Data Explorer


# Change in Average Scale Scores, by District Latino Students

Grade 8 – NAEP Math (2003-2013)



Change in Mean Scale Score, 2003-2013

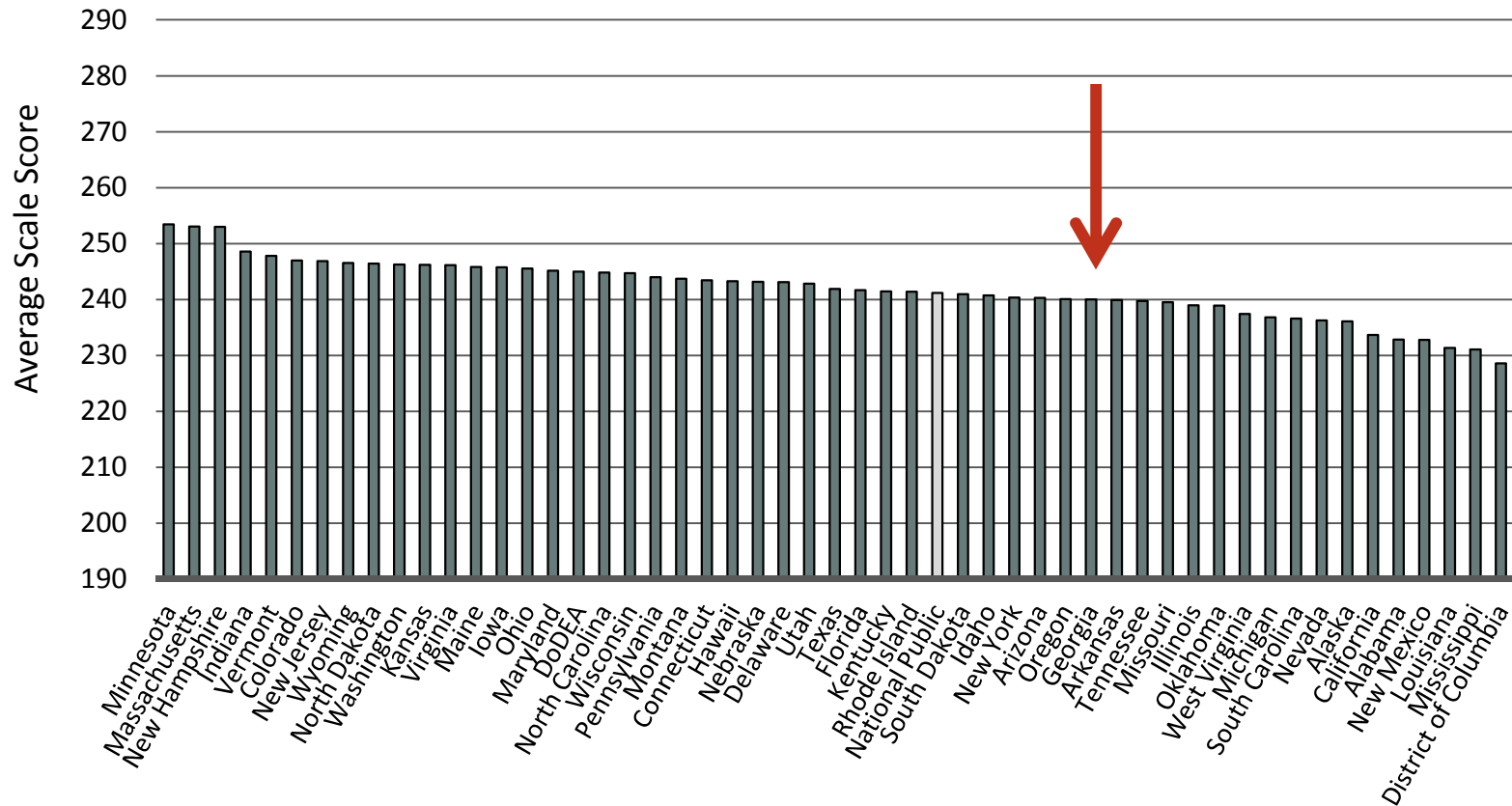
Note: Chart includes only districts that participated, and had members of this specific subgroup, in both the 2003 and 2013 NAEP TUDA administrations .  
Source: NCES, NAEP Data Explorer



Even big differences among whole  
states...

# Scale Scores by State – All Students

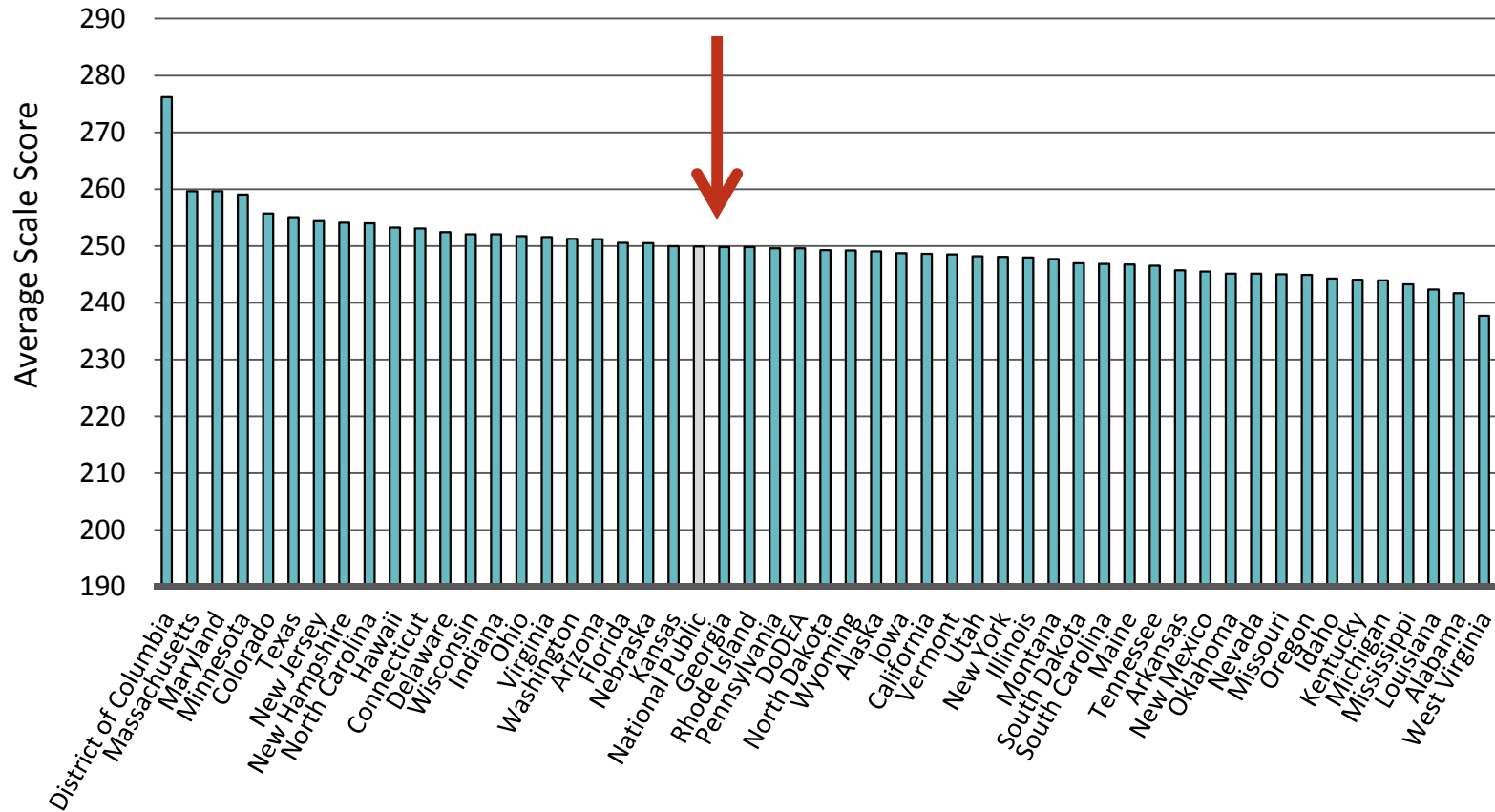
## Grade 4 – NAEP Math (2013)



Source: NAEP Data Explorer, NCES (Proficient Scale Score = 249; Basic Scale Score = 214)

# Scale Scores by State – White Students

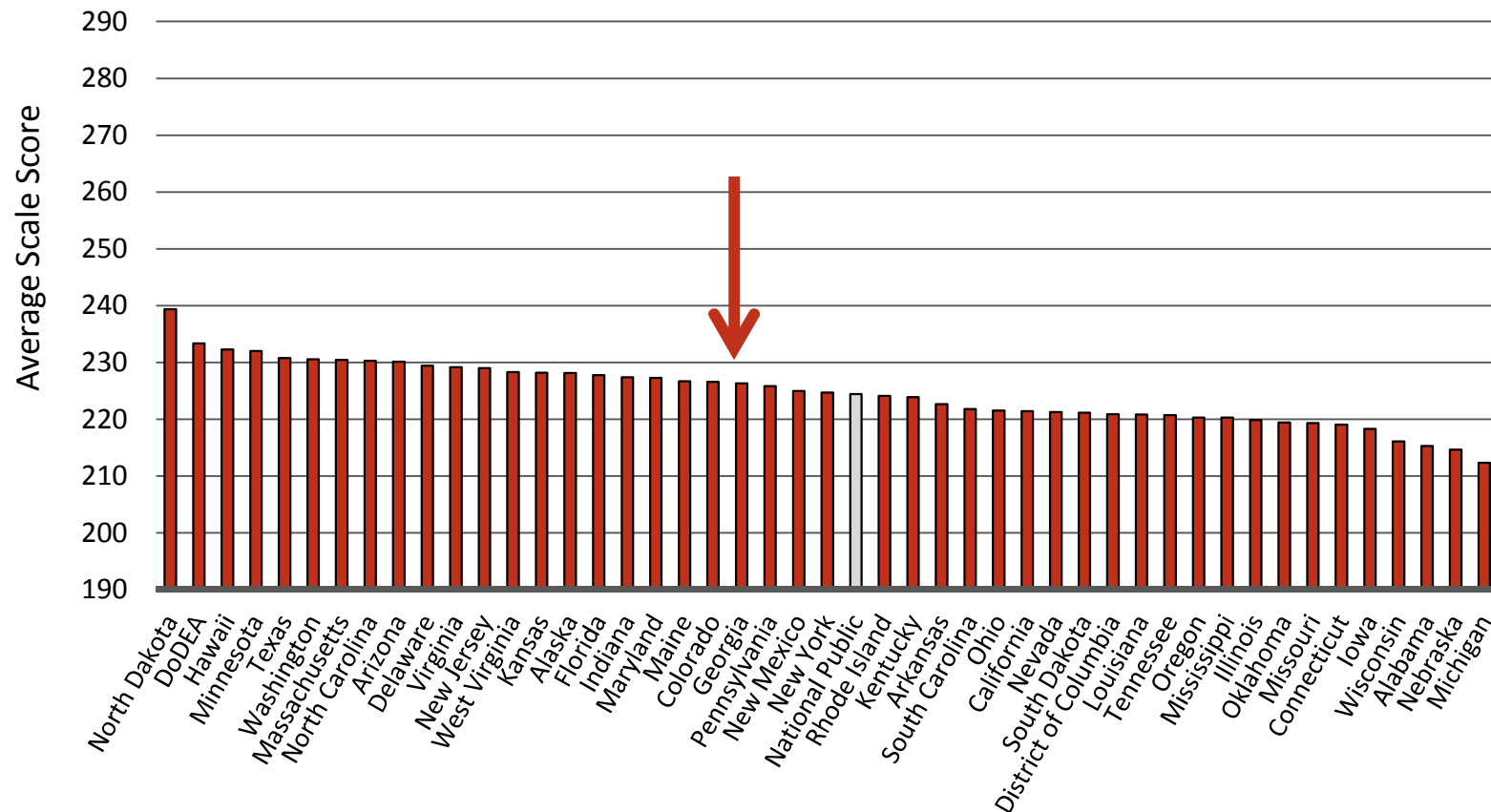
## Grade 4 – NAEP Math (2013)



Source: NAEP Data Explorer, NCES (Proficient Scale Score = 249; Basic Scale Score = 214)

# Scale Scores by State – African American Students

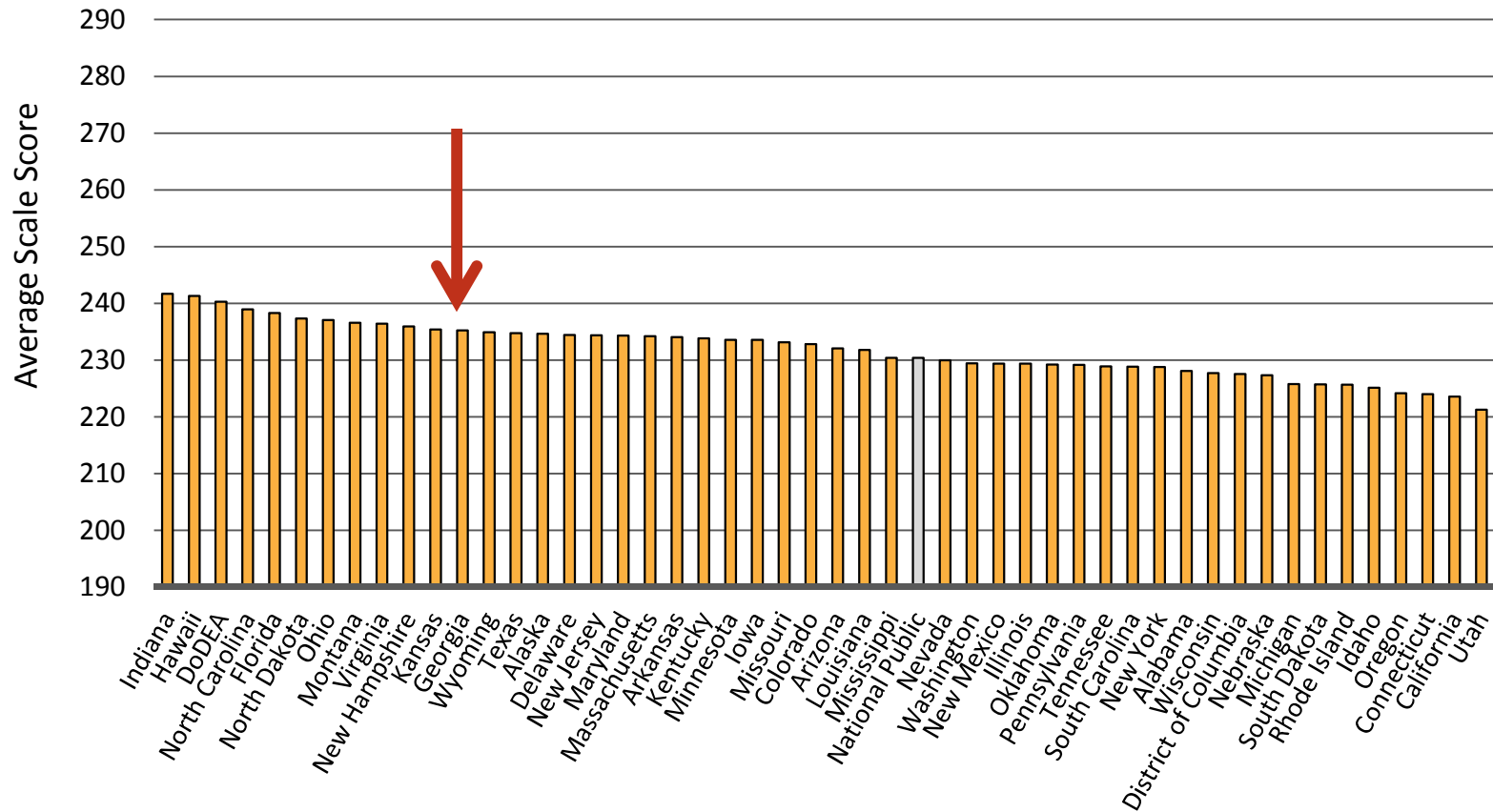
## Grade 4 – NAEP Math (2013)



Source: NAEP Data Explorer, NCES (Proficient Scale Score = 249; Basic Scale Score = 214)

# Scale Scores by State – Latino Students

## Grade 4 – NAEP Math (2013)

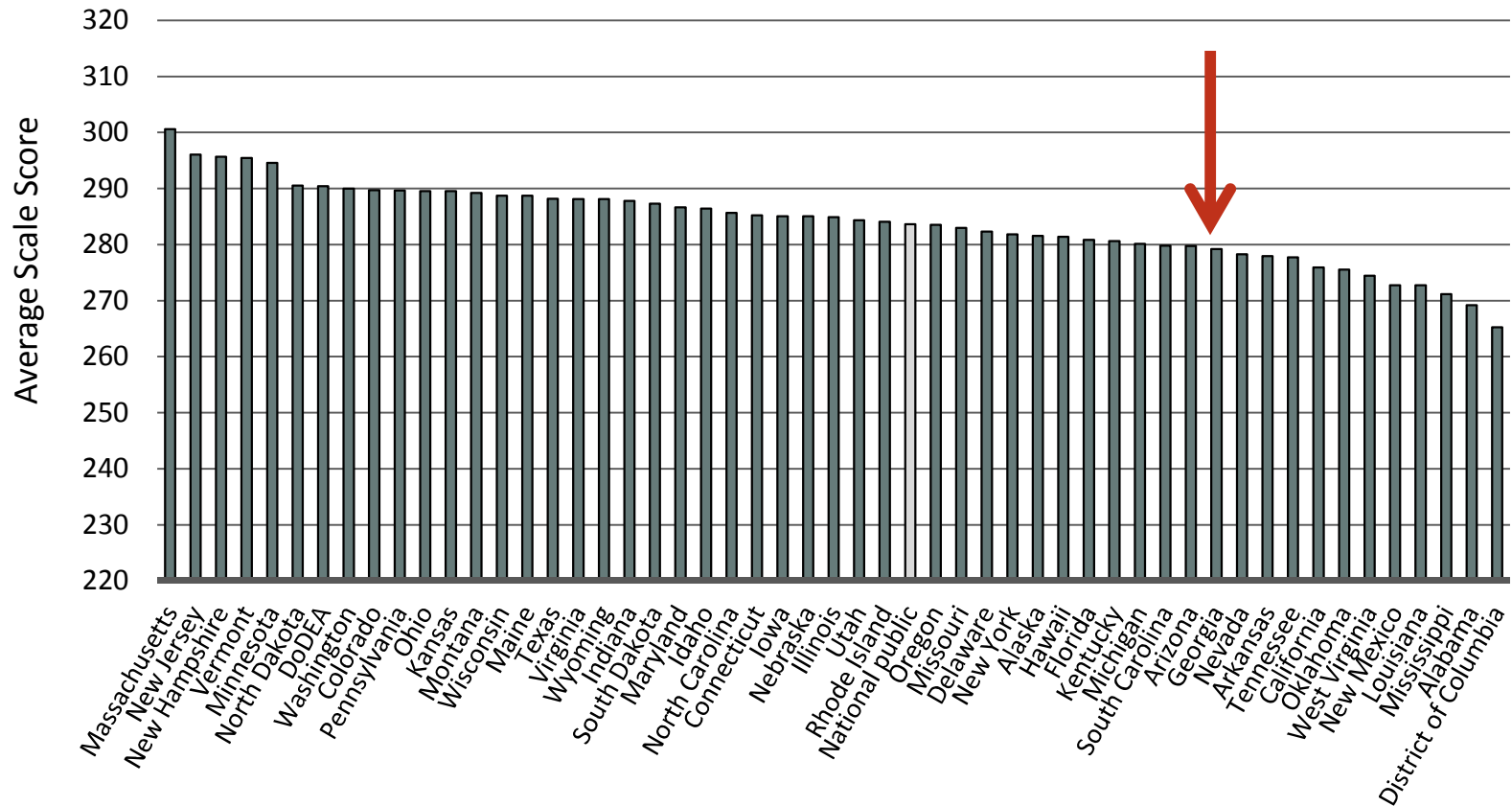


Source: NAEP Data Explorer, NCES (Proficient Scale Score = 249; Basic Scale Score = 214)



# Scale Scores by State – All Students

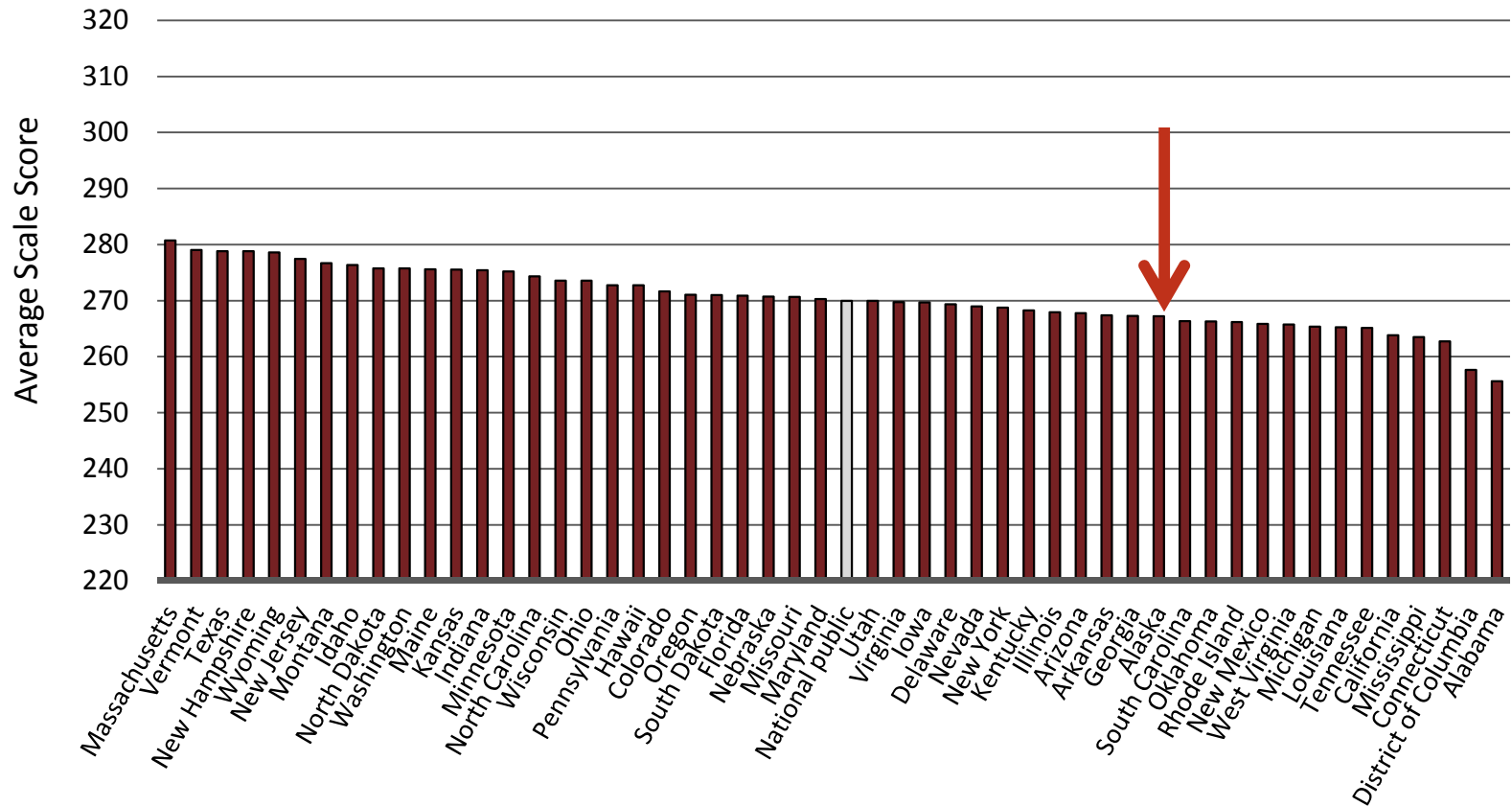
## Grade 8 – NAEP Math (2013)



Source: NAEP Data Explorer, NCES (Proficient Scale Score = 299; Basic Scale Score = 262)

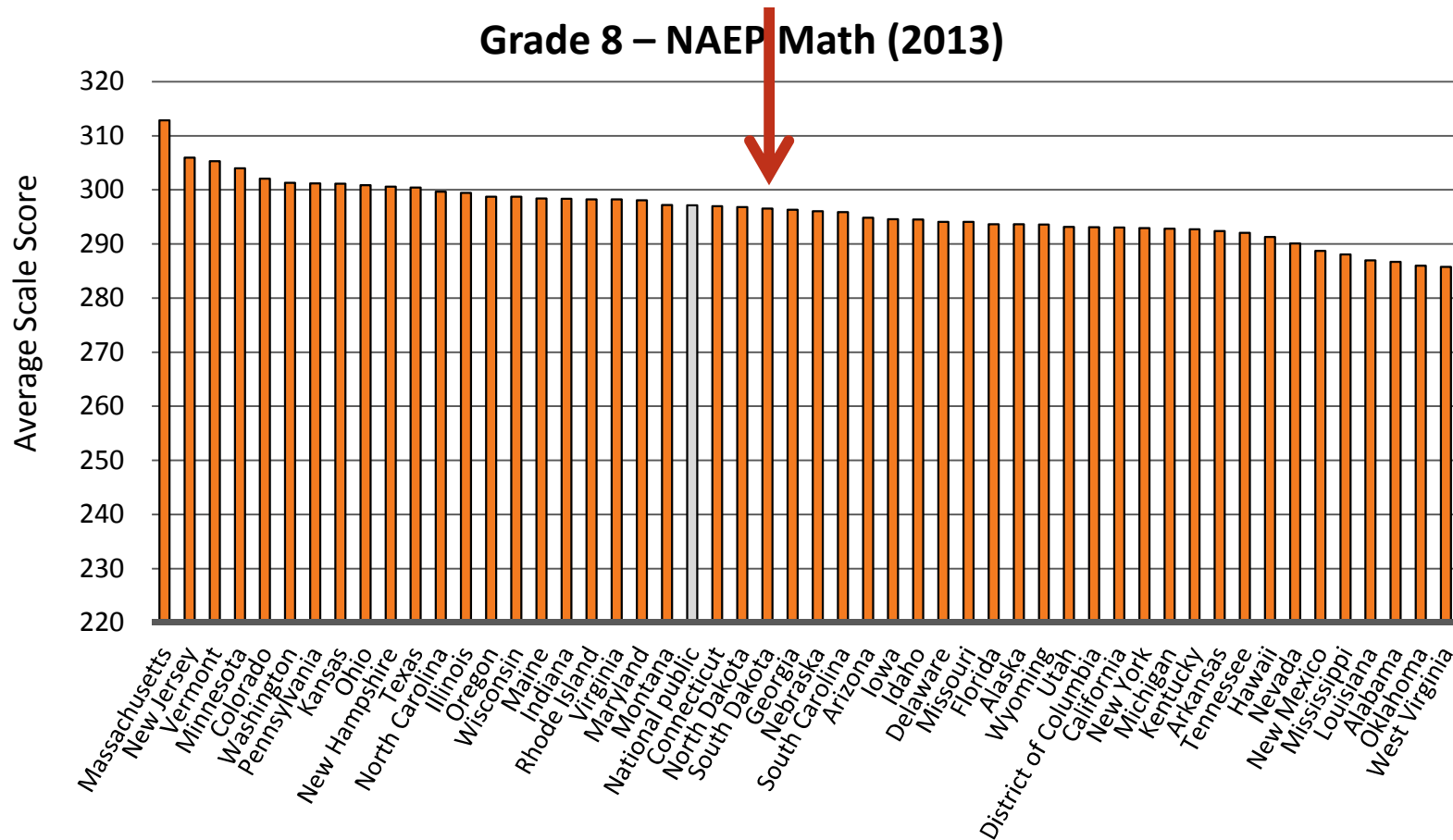
# Scale Scores by State – Low-Income Students

## Grade 8 – NAEP Math (2013)




Source: NAEP Data Explorer, NCES (Proficient Scale Score = 299; Basic Scale Score = 262)

# Scale Scores by State – Higher Income Students



Source: NAEP Data Explorer, NCES (Proficient Scale Score = 299; Basic Scale Score = 262)




**Bottom Line:  
At Every Level of Education,  
What We Do Matters!**



# **So, what can we do?**

What can the high performers teach  
us?

**#1. Good schools, districts don't leave anything about teaching and learning to chance.**



An awful lot of our teachers—even brand new ones—are left to figure out on their own what to teach and what constitutes “good enough” work.

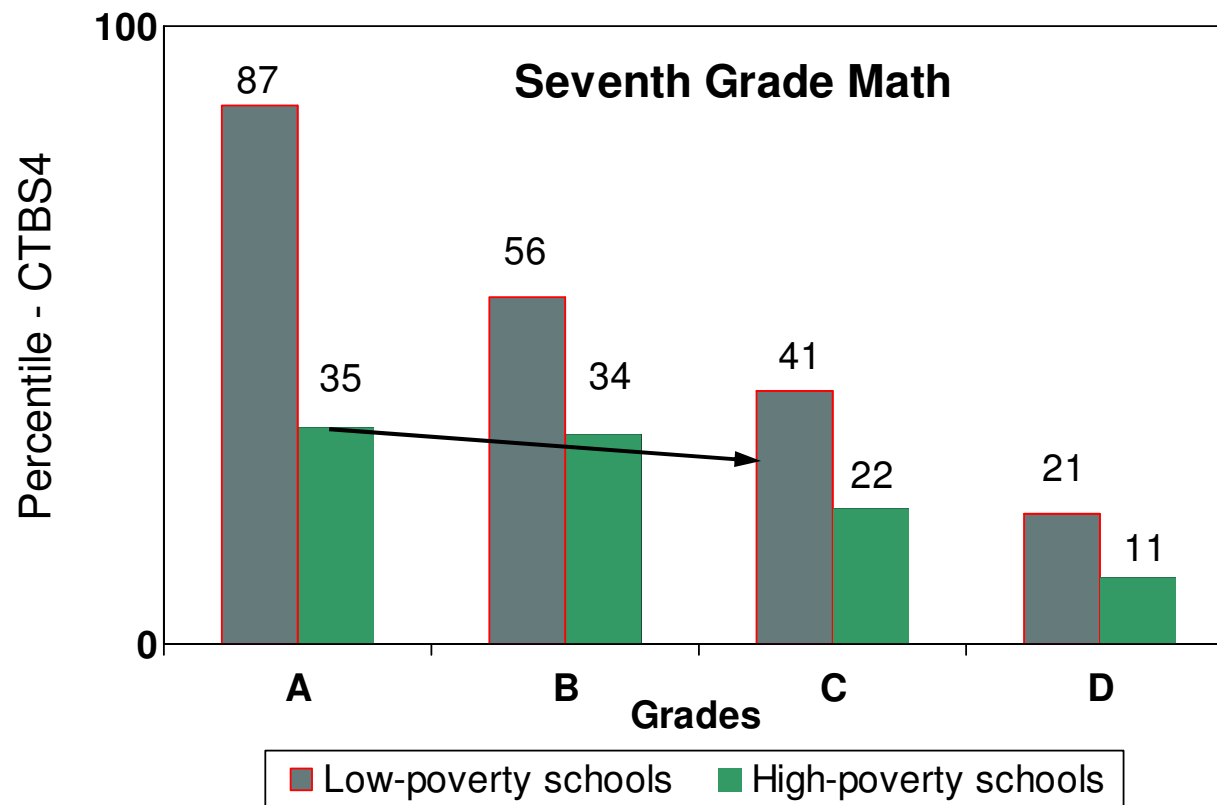


What does this do?


Leaves teachers entirely on their own to figure out what to teach, what order to teach it in, HOW to teach it...and to what level.



# 'A' Work in Poor Schools Would Earn 'Cs' in Affluent Schools



**Source:** Prospects (ABT Associates, 1993), in "Prospects: Final Report on Student Outcomes", PES, DOE, 1997.



Students can do  
no better than  
the assignments  
they are given...

# Grade 10 Writing Assignment

A frequent theme in literature is the conflict between the individual and society. From literature you have read, select a character who struggled with society. In a well-developed essay, identify the character and explain why this character's conflict with society is important.

## Grade 10 Writing Assignment

Write a composition of at least 4 paragraphs on Martin Luther King's most important contribution to this society. Illustrate your work with a neat cover page. Neatness counts.

# Grade 7 Writing Assignment

## Essay on Anne Frank

Your essay will consist of an opening paragraph which introduced the title, author and general background of the novel.

Your thesis will state specifically what Anne's overall personality is, and what general psychological and intellectual changes she exhibits over the course of the book

You might organize your essay by grouping psychological and intellectual changes OR you might choose 3 or 4 characteristics (like friendliness, patience, optimism, self doubt) and show how she changes in this area.

# Grade 7 Writing Assignment


**The "ME" Page**

My name:
Three words which describe me best:
Three words others would use to describe me:
My best feature:
A neat expression:
My best friend:
My favorite food:
A chore I hate:
Something I wish would happen at my home:
My hero:
My favorite sport:
A car I want:
The best thing about my school:
My biggest secret:
A television character I act like:
My worst fear:
A contest I want to win:
My favorite movie star:
My heartthrob:
A political office I would like to hold:
Something I want to buy:
My chosen career:
My favorite beverage:
A place I want to visit:
A school subject I adore:
My favorite book:
A nightmare I have:
Someone I would like to have as a relative:
A movie I would like to be the star in:
Something I would like to do for my family:
A teacher I respect:
What I would do if I were in Hollywood:
A friend I would like to have:
What I would do to change our school:
My dream for America:

- My Best Friend:
- A chore I hate:
- A car I want:
- My heartthrob:

# High Performing Schools and Districts

- Have clear and specific goals for what students should learn in every grade, including the order in which they should learn it;
- Provide teachers with common curriculum, assignments;
- Have regular vehicle to assure common marking standards;
- Assess students regularly to measure progress; and,
- Don't leave student supports to chance.




In other words, they strive for consistency in everything they do.



#2. Instead of fighting the math wars, they use the best of both

- They believe in striving for understanding and in using real world problems, but also know that basics are critical;
- Often in districts using curriculum like Everyday Math, but supplement a lot to assure automaticity in timetables, etc to free up working memory for conceptual;
- A lot of emphasis on fractions.



They are very clear that, by high school, all students should have very strong mastery of the basics.


# The goal is to avoid THIS:

College Student Trying to Get Through Remedial Math with Times Tables at Her Side



#3. The use of data is pervasive throughout the school.


- Teacher “data teams”;
- Dig into data to spot where students are doing well...and where they are not;
- Also looking for patterns among teachers, to spot who is doing especially well with specific concepts and skills, then ask them to share lessons and strategies;
- Engaging teachers in exploring the data as mathematicians.



Yes, this requires a lot of trust. But building trust is essential to the success of any improvement effort.


#4. Leading schools/districts put all kids—not just some—in a rigorous course sequence that prepares them for postsecondary education.






Single biggest predictor post-high school success is  
QUALITY AND INTENSITY OF HIGH SCHOOL  
CURRICULUM

Cliff Adelman, *Answers in the Tool Box*, U.S. Department of Education.

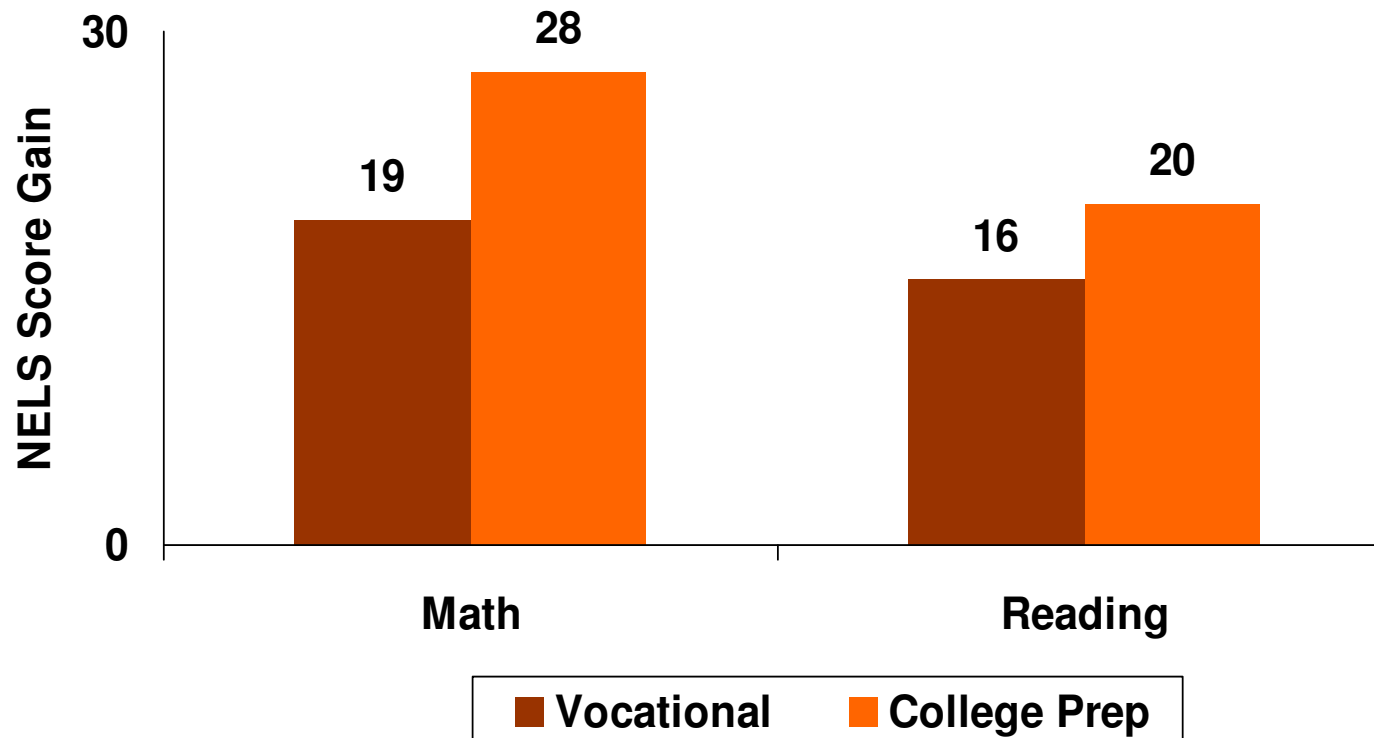


College prep curriculum has  
benefits far beyond college.



Students of all sorts will learn  
more...

# Low Quartile Students Gain More From College Prep Courses\*



**\*Grade 8-grade 12 test score gains based on 8th grade achievement.**

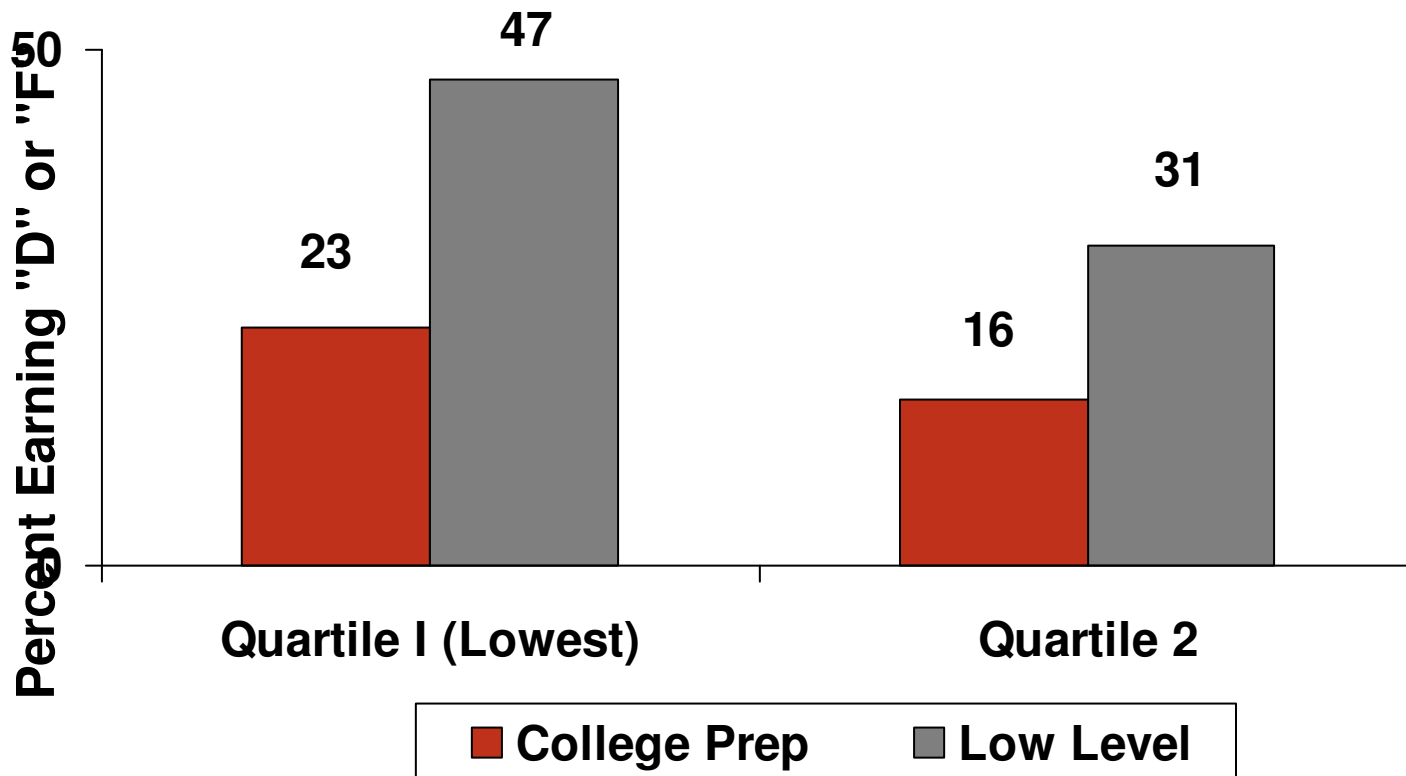
**Source:** USDOE, NCES, *Vocational Education in the United States: Toward the Year 2000, in Issue Brief: Students Who Prepare for College and Vocation*




They will also fail less often...

Challenging Curriculum Results in Lower Failure Rates, Even for Lowest Achievers


**Ninth-grade English performance, by high/low level course, and eighth-grade reading achievement quartiles**



Source: SREB, "Middle Grades to High School: Mending a Weak Link". Unpublished Draft, 2002.



And they'll be better prepared  
for the workplace.



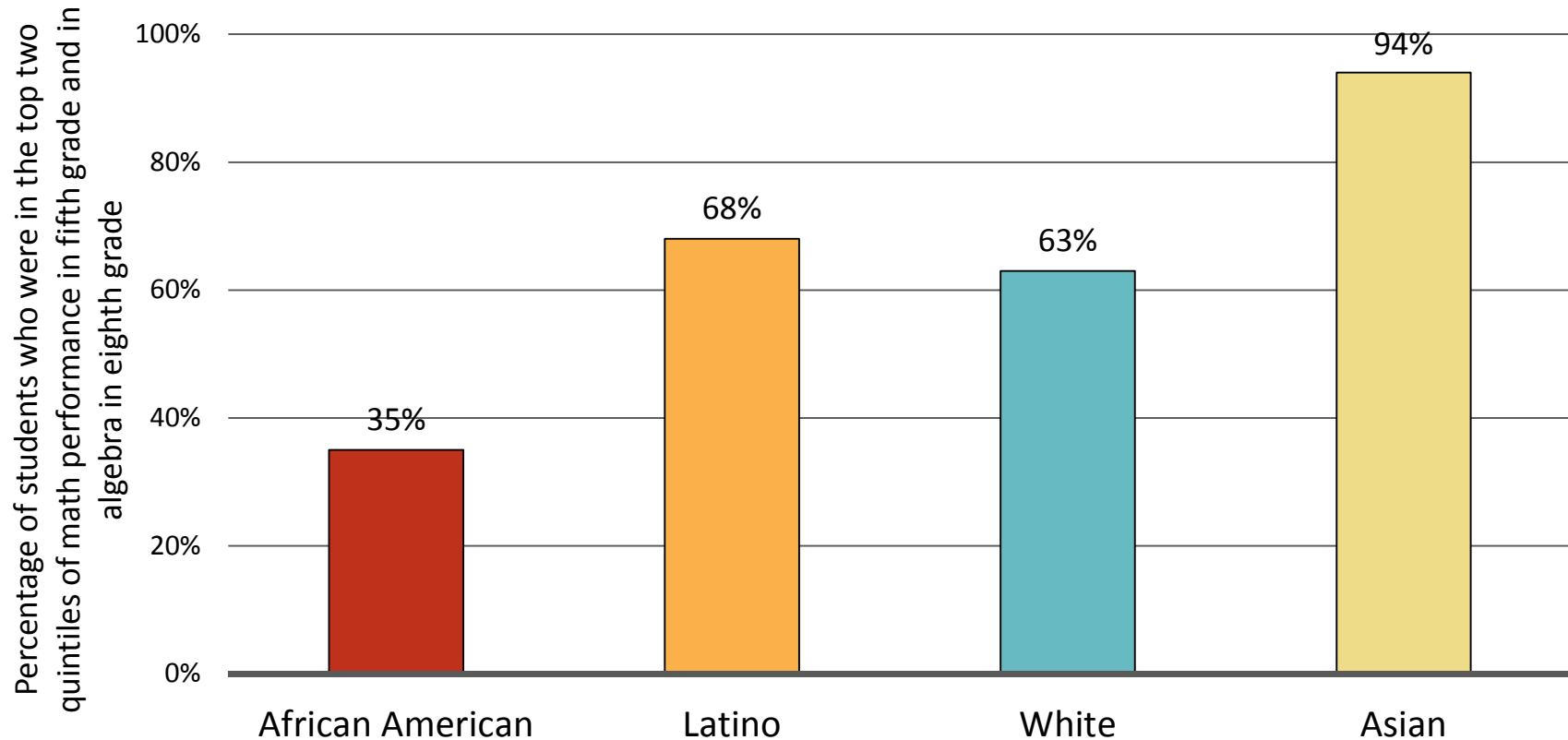
Yes, reasonable people can disagree on whether 8<sup>th</sup> grade algebra should be a goal for all of our students.






But what's harder to fathom is  
this:

# Even African-American students with *high math performance* in fifth grade are unlikely to be placed in algebra in eighth grade



Source: NCES, "Eighth-Grade Algebra: Findings from the Eighth-Grade Round of the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K)" (2010).

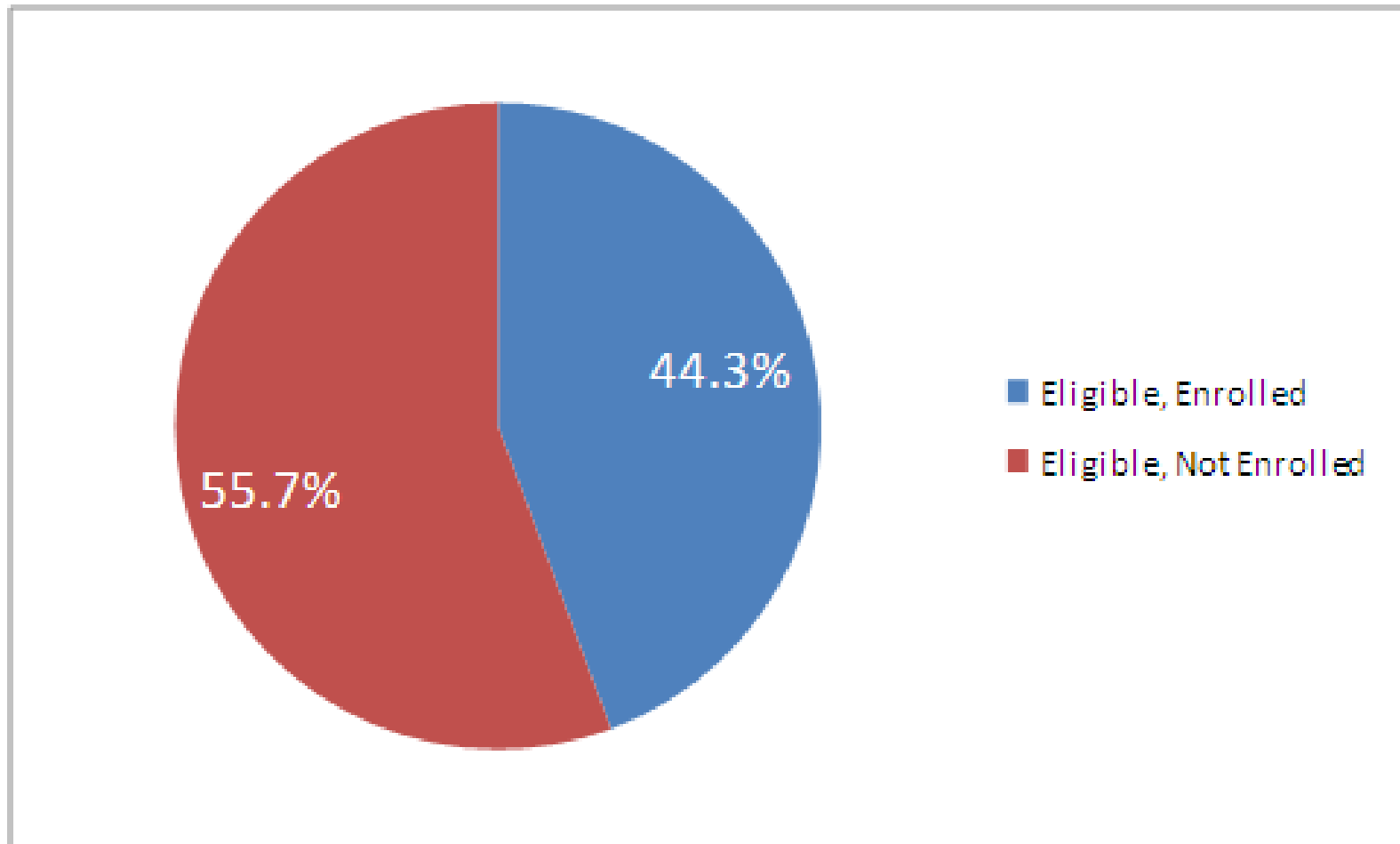


How does this happen?  
Race, Preparation and 8<sup>th</sup> Grade  
Algebra in NC  
North Carolina

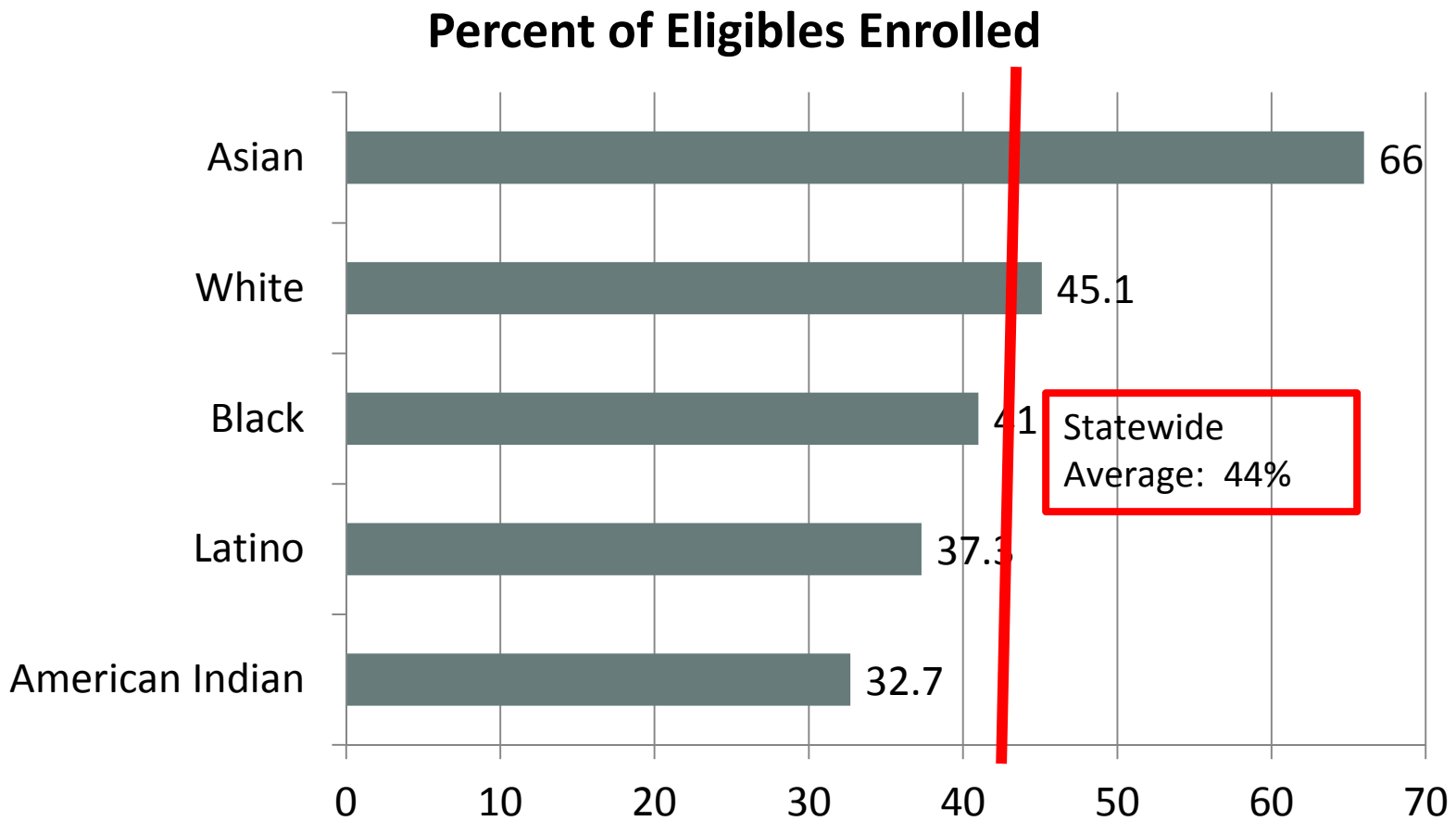
# Background

- What 7<sup>th</sup> Graders at end of 2006-2007 with EVAAS projections to proficiency in 8<sup>th</sup> Grade Algebra actually enrolled the following year?
- Students Eligible: 42,144
- Students Enrolled: 18,670

# 2008 8<sup>th</sup> Grade Algebra in NC



# Percent of Prepared Students Actually Enrolled in 8<sup>th</sup> Grade Algebra, by Race



Source:

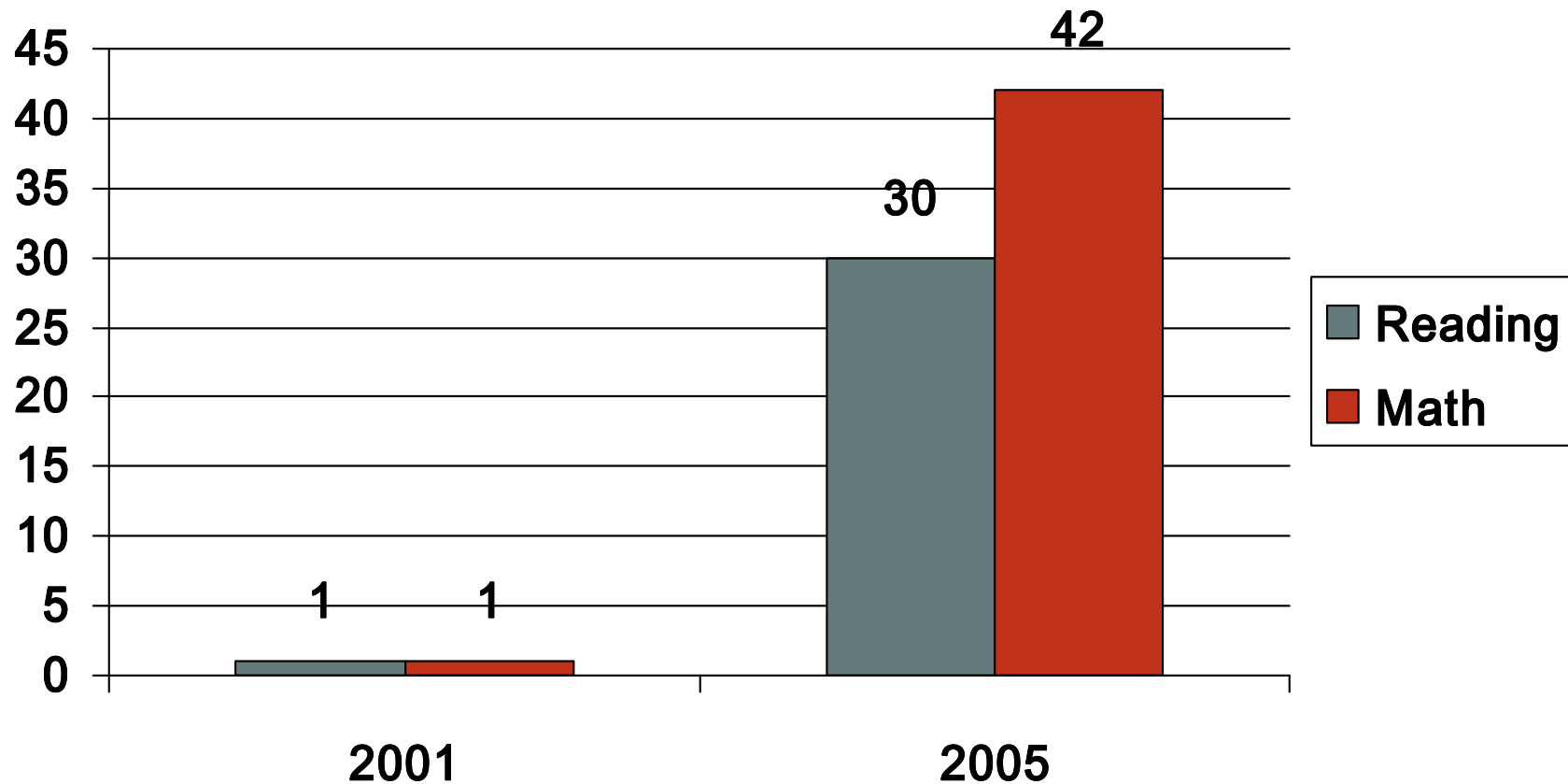
#5. Leading schools/districts set their goals high.



Elementary Version...




## M. Hall Stanton Elementary: Percent of 5<sup>th</sup> Graders ADVANCED






High School Version...



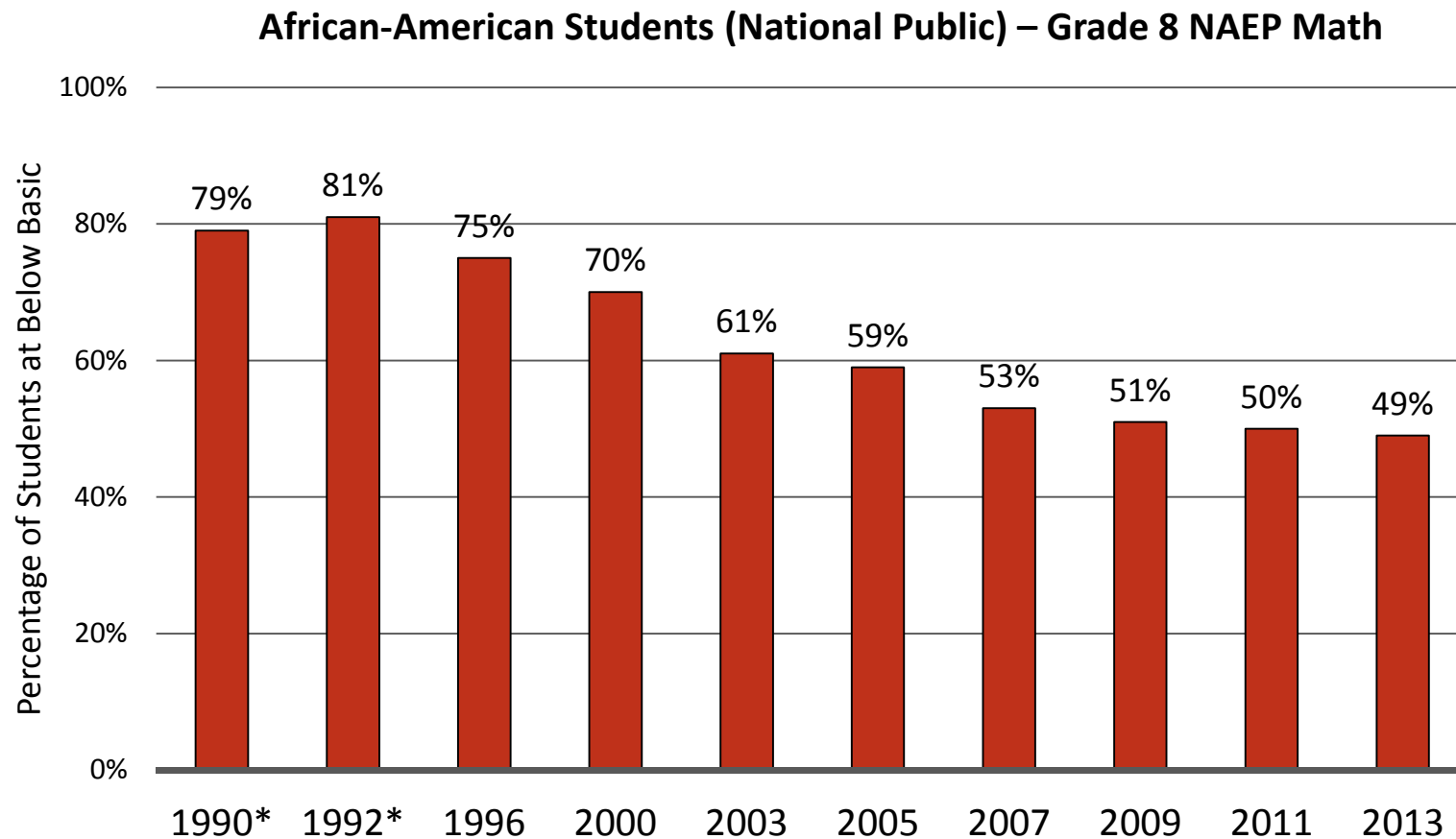
Even when they start with high drop out rates, high impact high schools focus on preparing all kids for college and careers

Education Trust 2005 study, “Gaining Traction, Gaining Ground.”



And the leaders don't think  
about closing the achievement  
gap only as “bringing the bottom  
up.”

# Percentage Below Basic Over Time

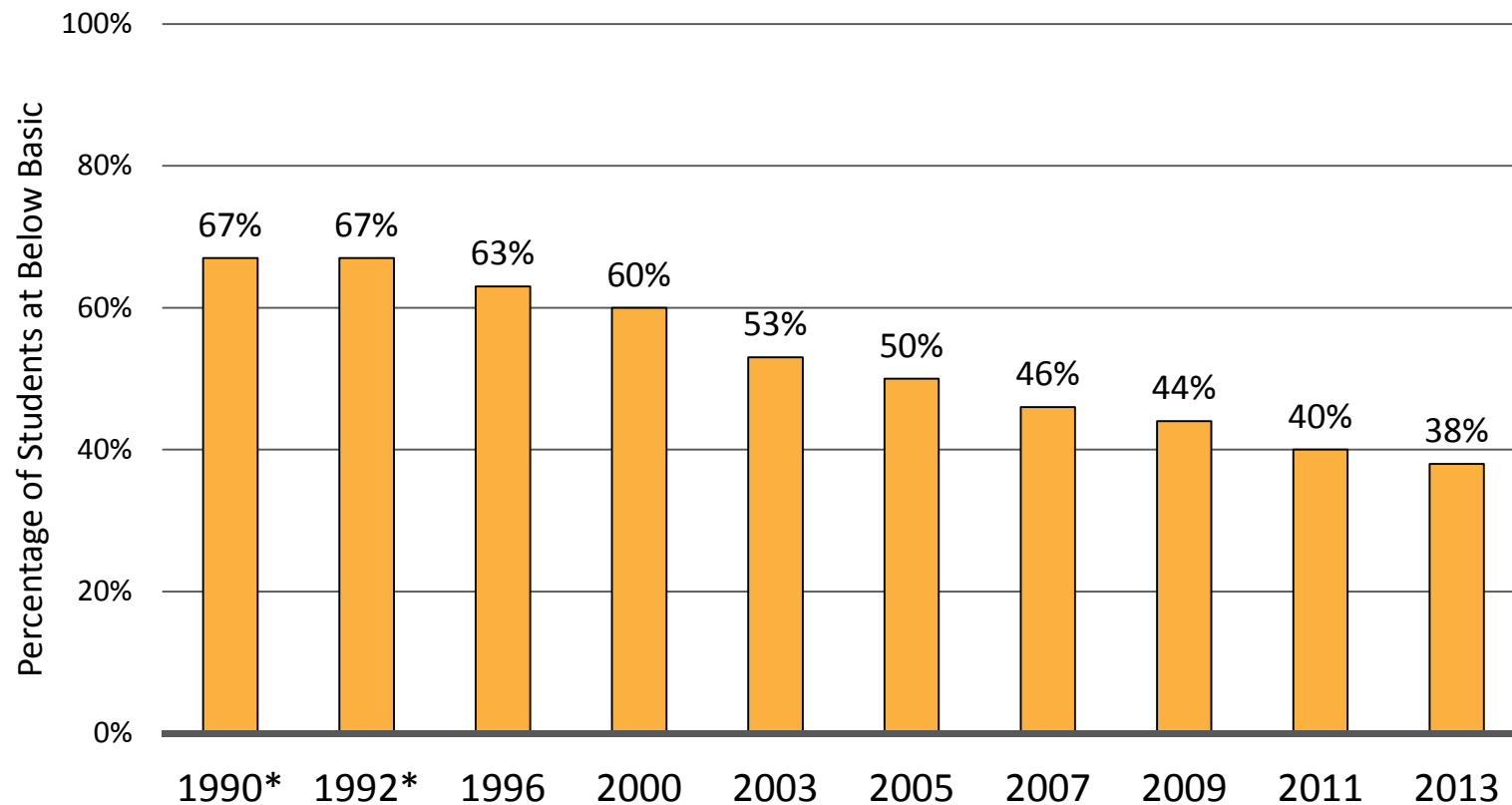


\*Accommodations not permitted

Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>

# Percentage Below Basic Over Time

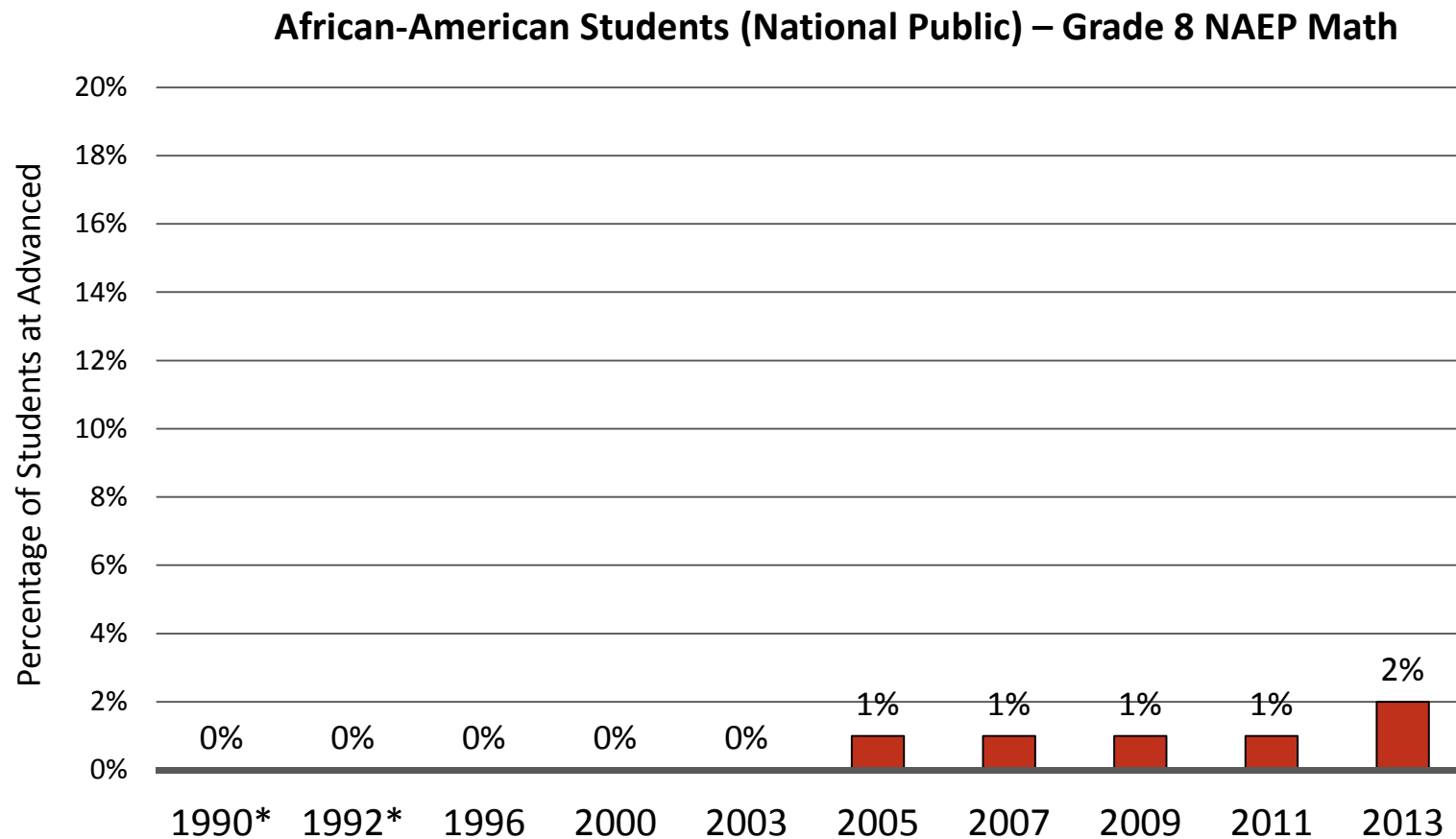
## Latino Students (National Public) – Grade 8 NAEP Math



\*Accommodations not permitted

Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>

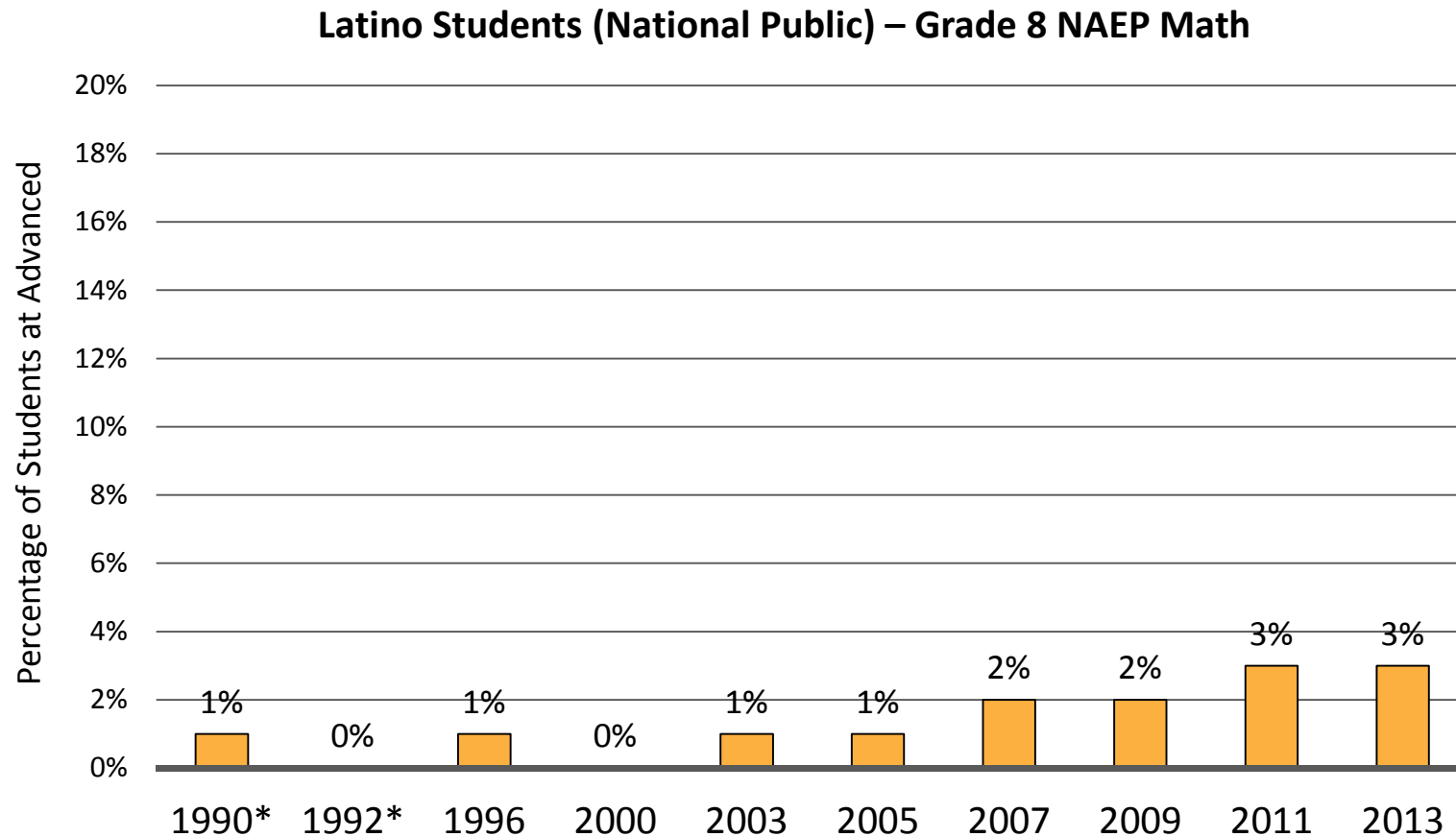
# Percentage Advanced Over Time



\*Accommodations not permitted

Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>

# Percentage Advanced Over Time

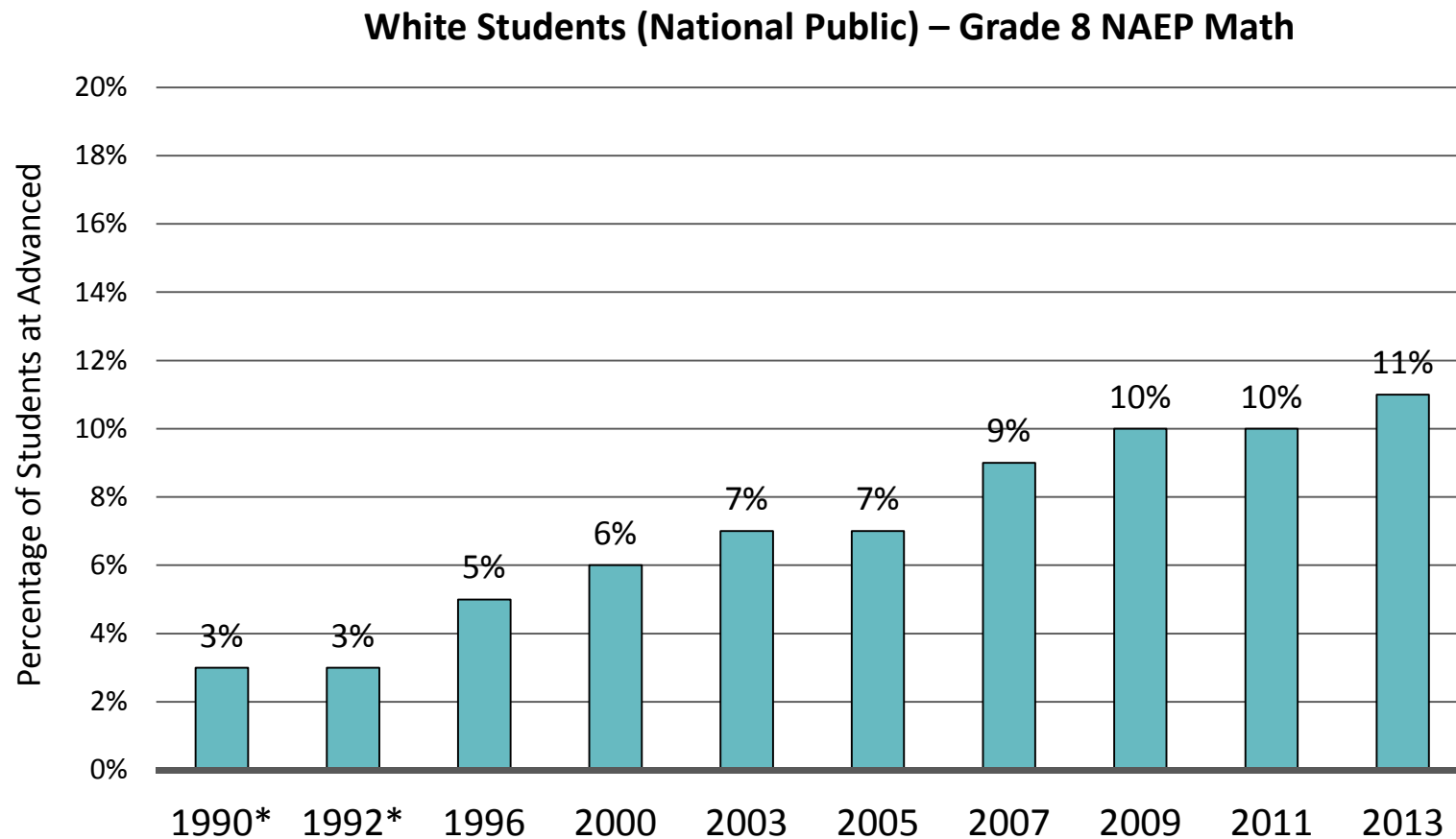


\*Accommodations not permitted

Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>



# Percentage Advanced Over Time

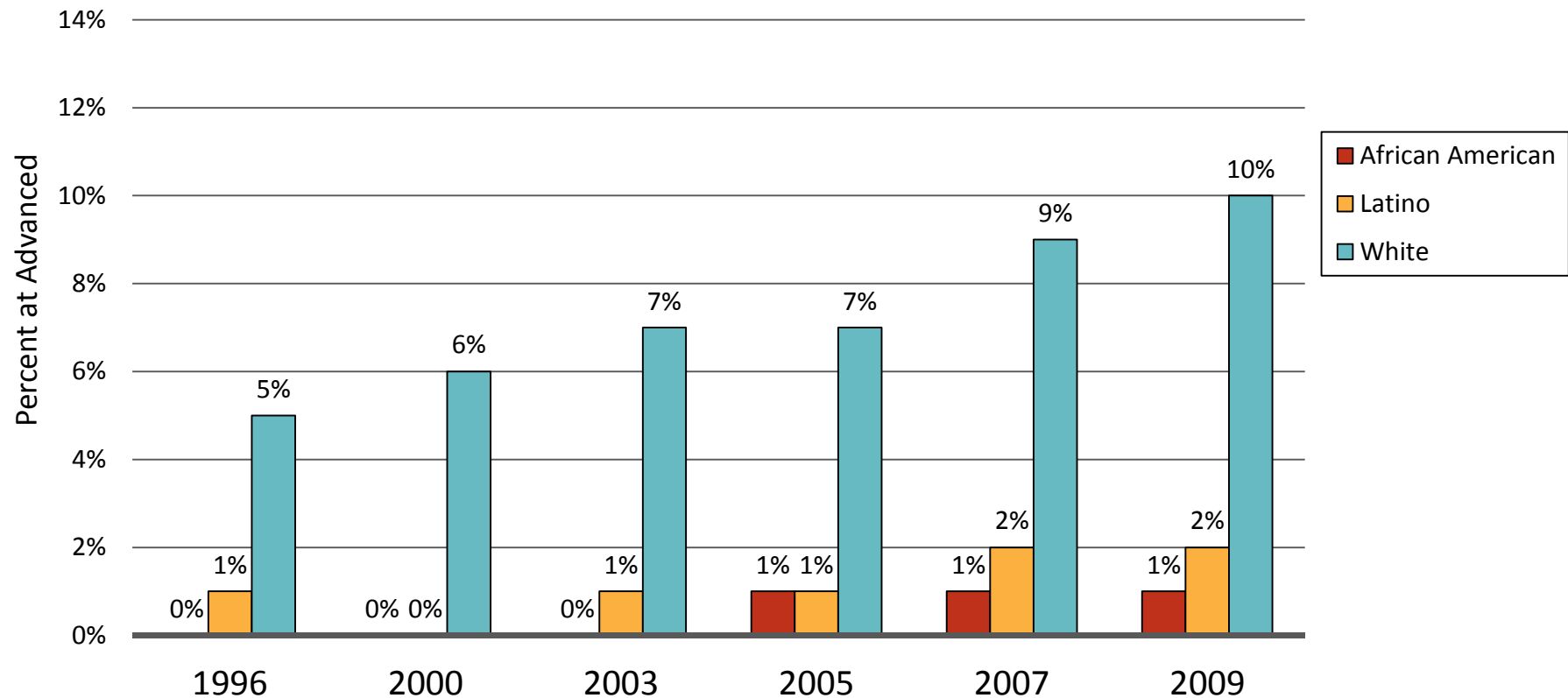


\*Accommodations not permitted

Source: National Center for Education Statistics, NAEP Data Explorer, <http://nces.ed.gov/nationsreportcard/nde/>

African American and Latino students are not making gains at the *advanced level* at the same rate as white students

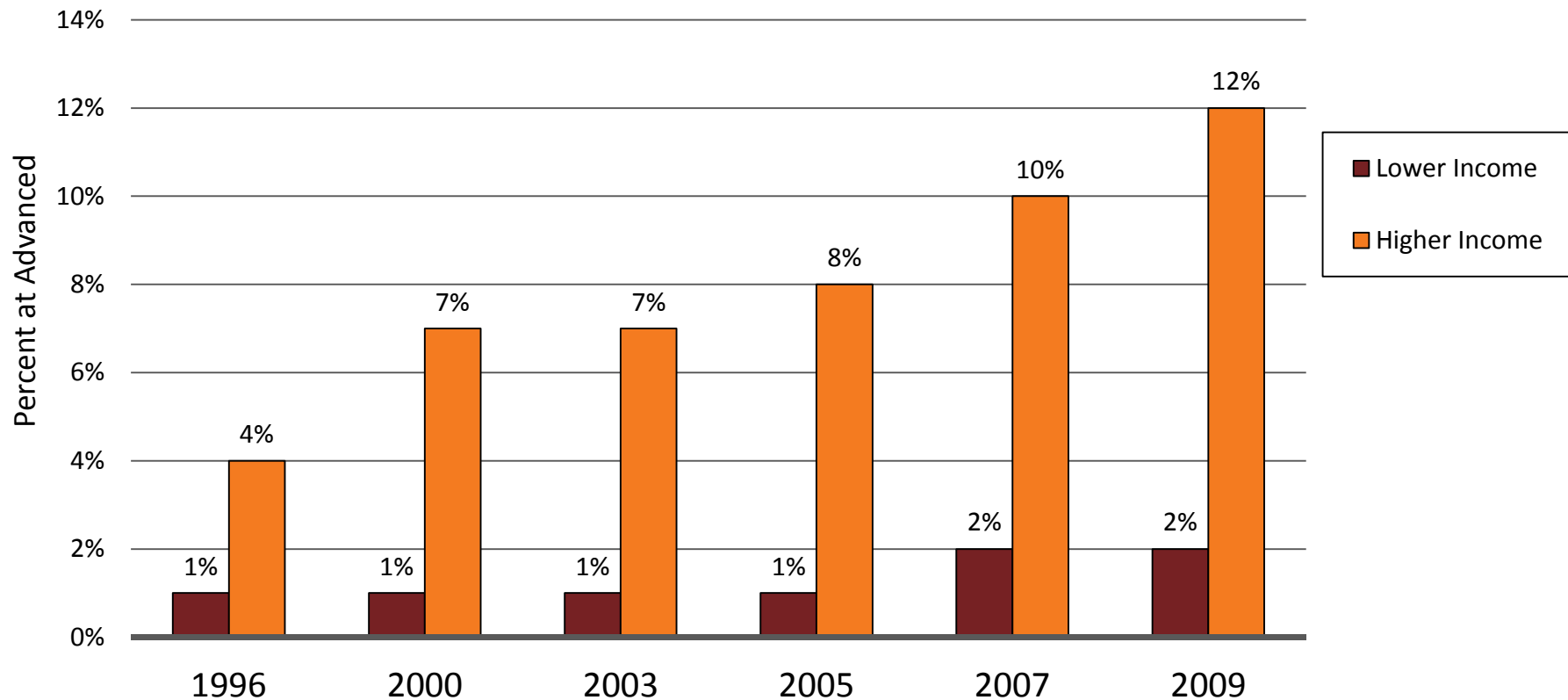
NAEP – Grade 8 Math



Source: NAEP Data Explorer, NCES

# Lower income students are not making gains at the *advanced level* at the same rate as higher income students

## NAEP – Grade 8 Math



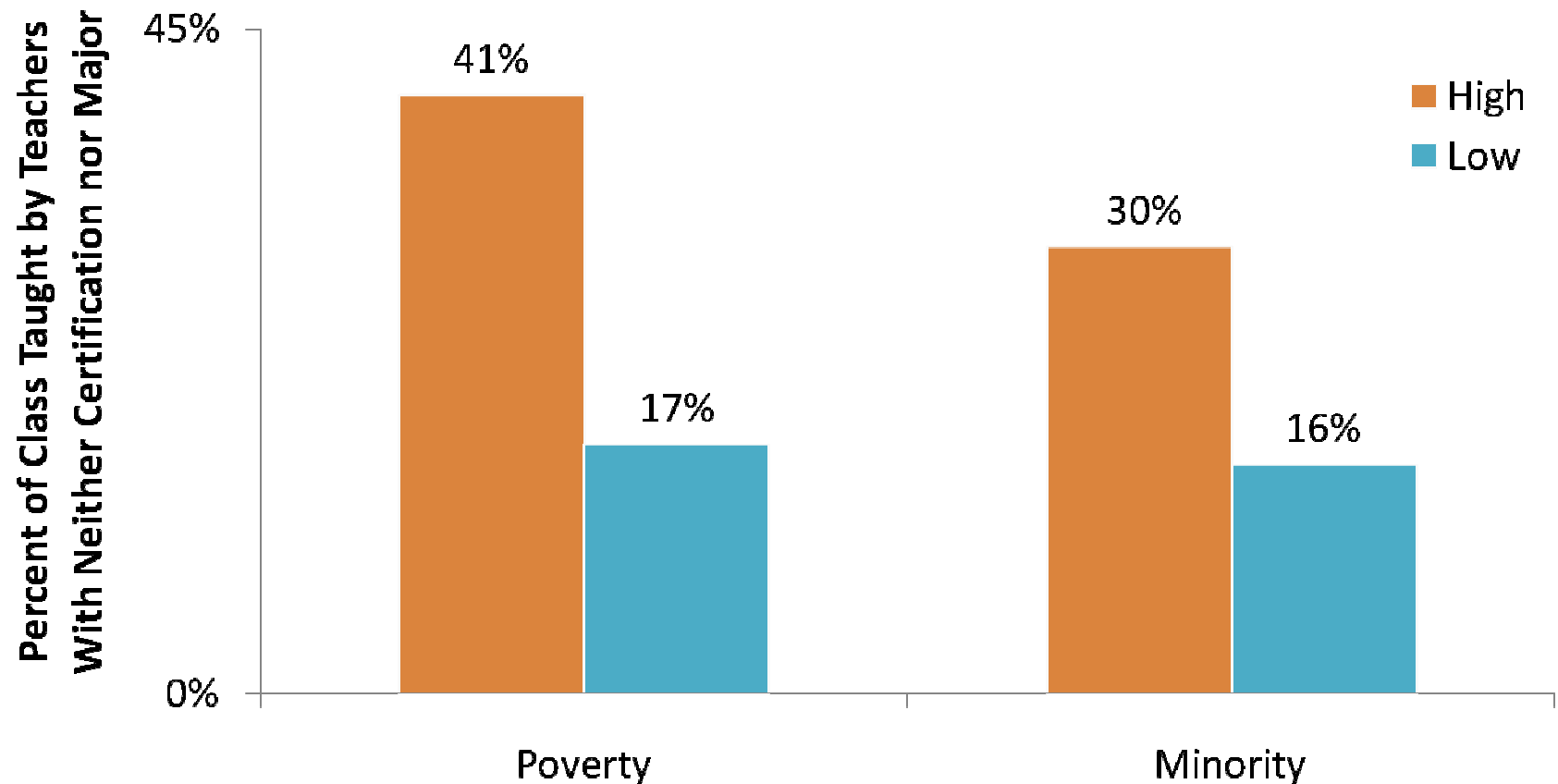
Source: NAEP Data Explorer, NCES

#6. Good schools, districts know how much teachers matter, and they act on that knowledge.



There are VERY BIG differences  
among our teachers.

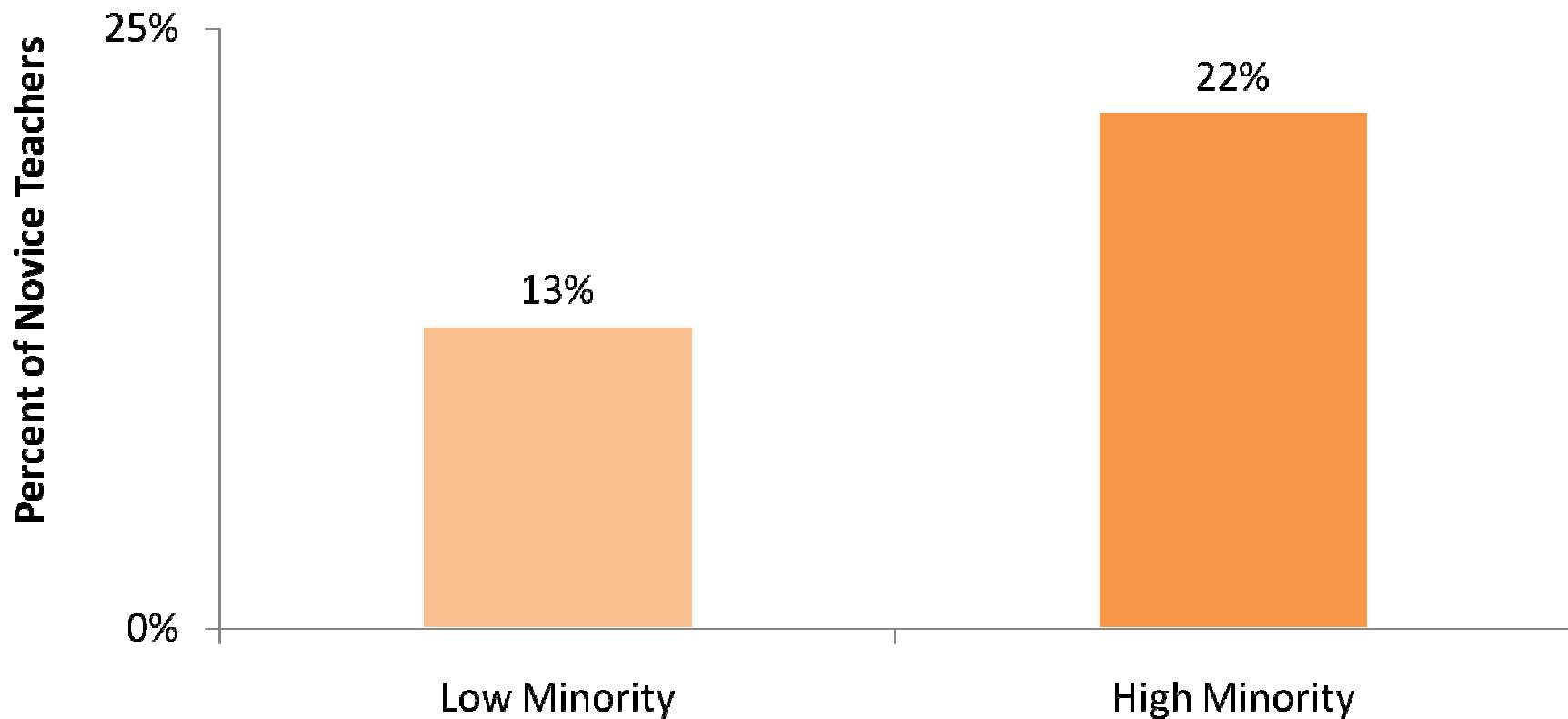
# Math Classes at High-Poverty and High-Minority Schools More Likely to be Taught by Out of Field\* Teachers



Note: High Poverty school-75% or more of the students are eligible for free/reduced price lunch. Low-poverty school -15% or fewer of the students are eligible for free/reduced price lunch. High minority school-75% or more of the students are Black, Hispanic, American Indian or Alaskan Native, Asian or Pacific Islander. Low-minority school -10% or fewer of the students are non-White students.

\*Teachers with neither certification nor major. Data for secondary-level core academic classes (Math, Science, Social Studies, English) across USA.  
Source: Analysis of 2003-2004 Schools and Staffing Survey data by Richard Ingersoll, University of Pennsylvania 2007 © 2014 THE EDUCATION TRUST

# Students at High-Minority Schools More Likely to Be Taught By Novice\* Teachers

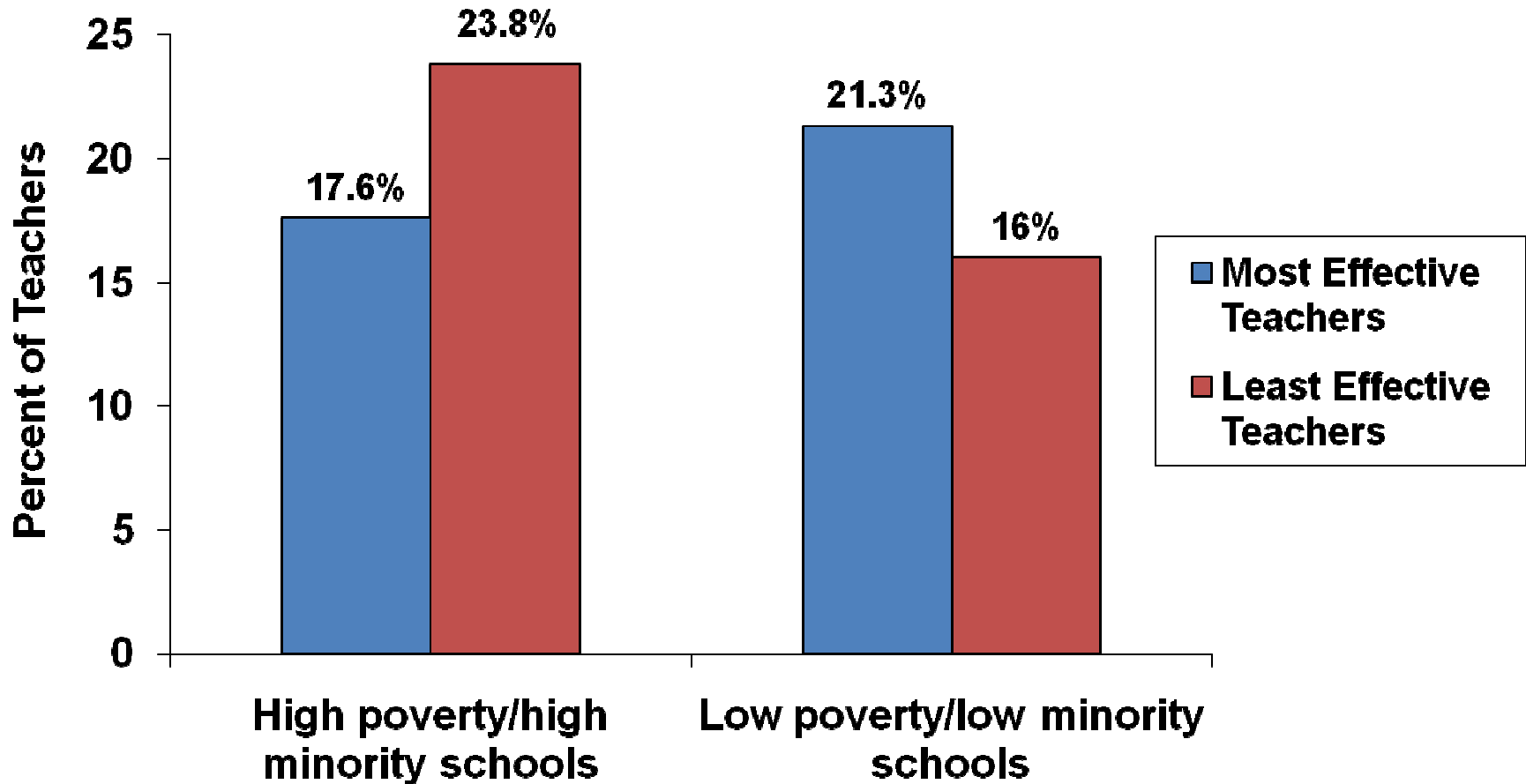


Note: High minority school-75% or more of the students are Black, Hispanic, American Indian or Alaskan Native, Asian or Pacific Islander. Low-minority school -10% or fewer of the students are non-White students.

\*Novice teachers are those with three years or fewer experience.

Source: Analysis of 2003-2004 Schools and Staffing Survey data by Richard Ingersoll, University of Pennsylvania 2007© 2014 THE EDUCATION TRUST

# Tennessee: High poverty/high minority schools have fewer of the “most effective” teachers and more “least effective” teachers



Note: High Poverty/High minority means at least 75% qualify for FRPL and at least 75% are minority.

Source: Tennessee Department of Education 2007. "Tennessee's Most Effective Teachers: Are they assigned to the schools that need them most?" [http://tennessee.gov/education/nclb/doc/TeacherEffectiveness2007\\_03.pdf](http://tennessee.gov/education/nclb/doc/TeacherEffectiveness2007_03.pdf)

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# Los Angeles: LOW-INCOME STUDENTS LESS LIKELY TO HAVE HIGH VALUE-ADDED TEACHERS

## ELA

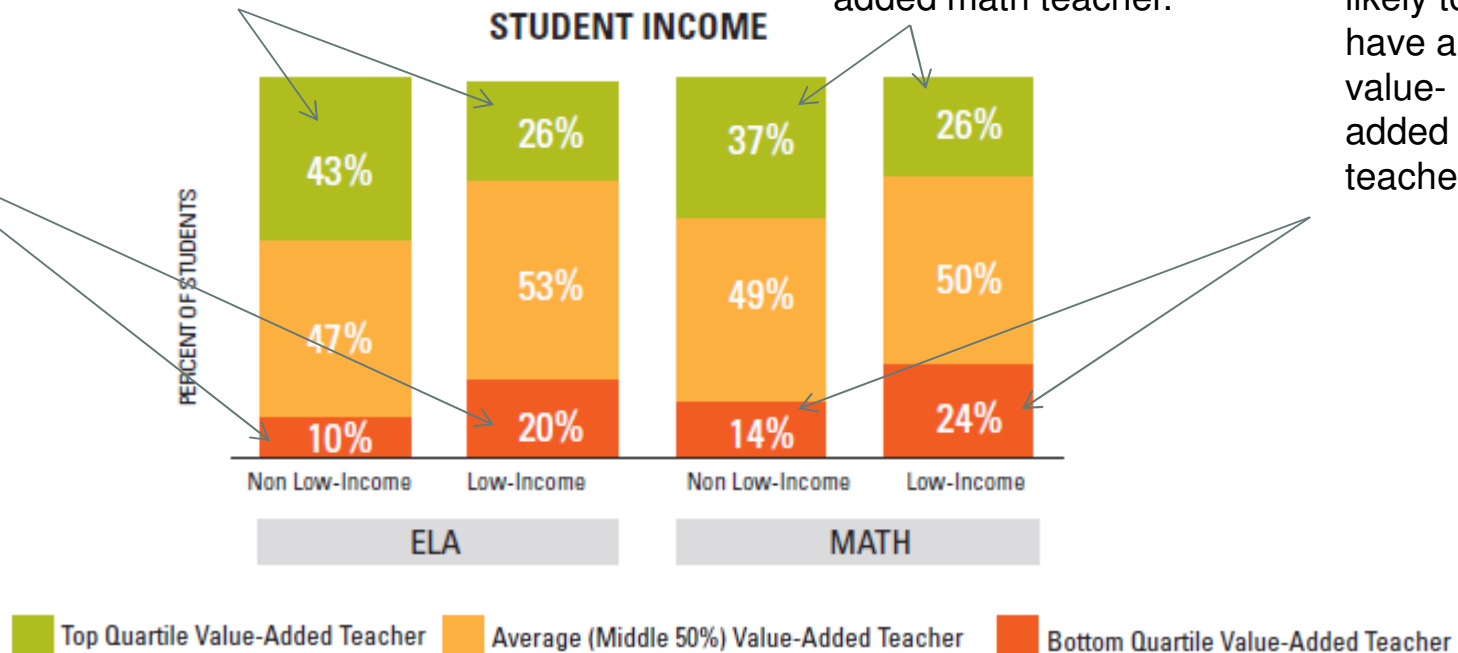
A low-income student is *more than twice as likely to have a low value-added teacher for ELA*

A student from a relatively more affluent background is 62% more likely to get a high value-added ELA teacher.

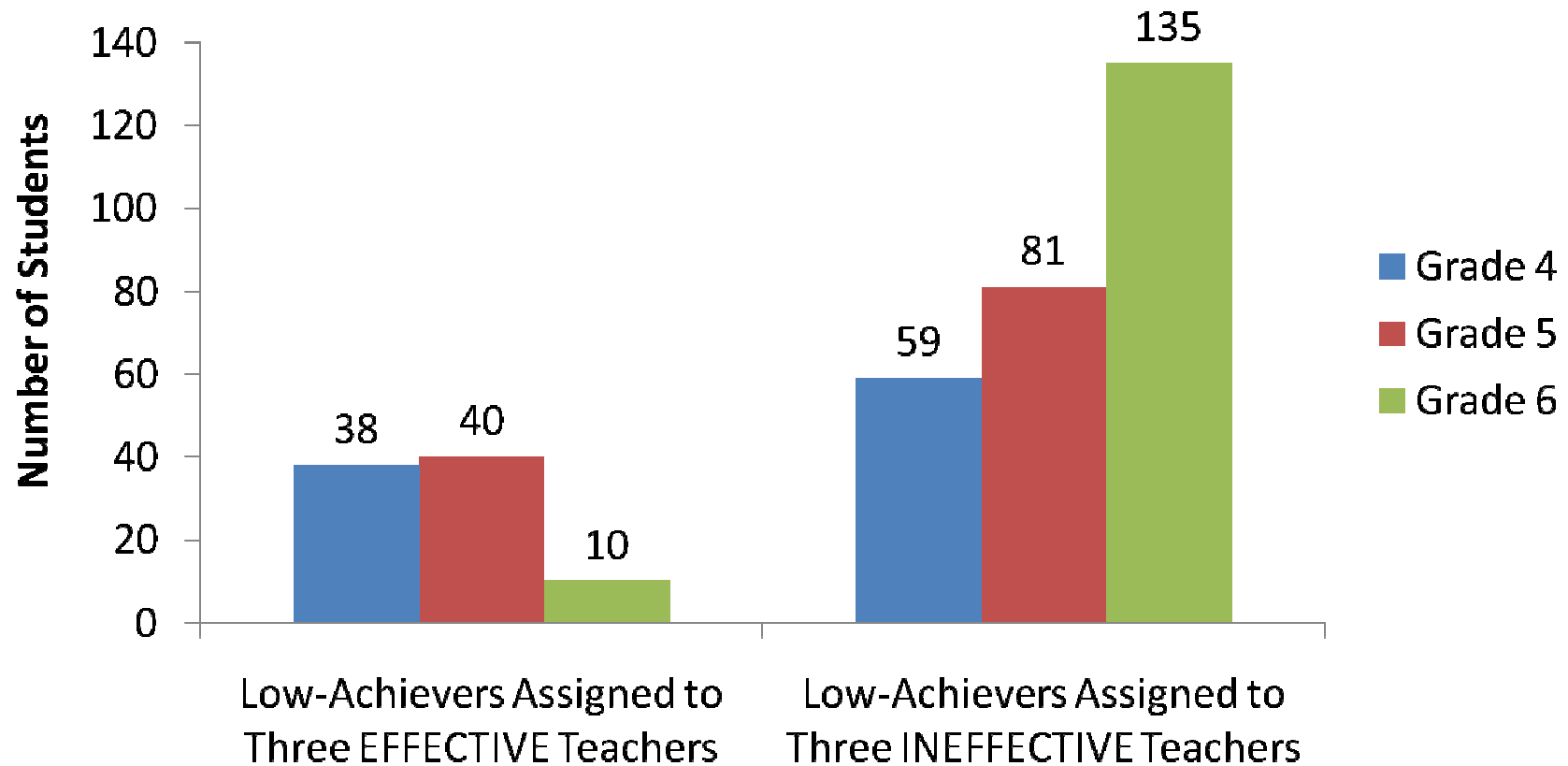
## MATH

In math, a student from a relatively more affluent background is 39% more likely to get a high value-added math teacher.

A low-income student is 66% more likely to have a low value-added teacher.

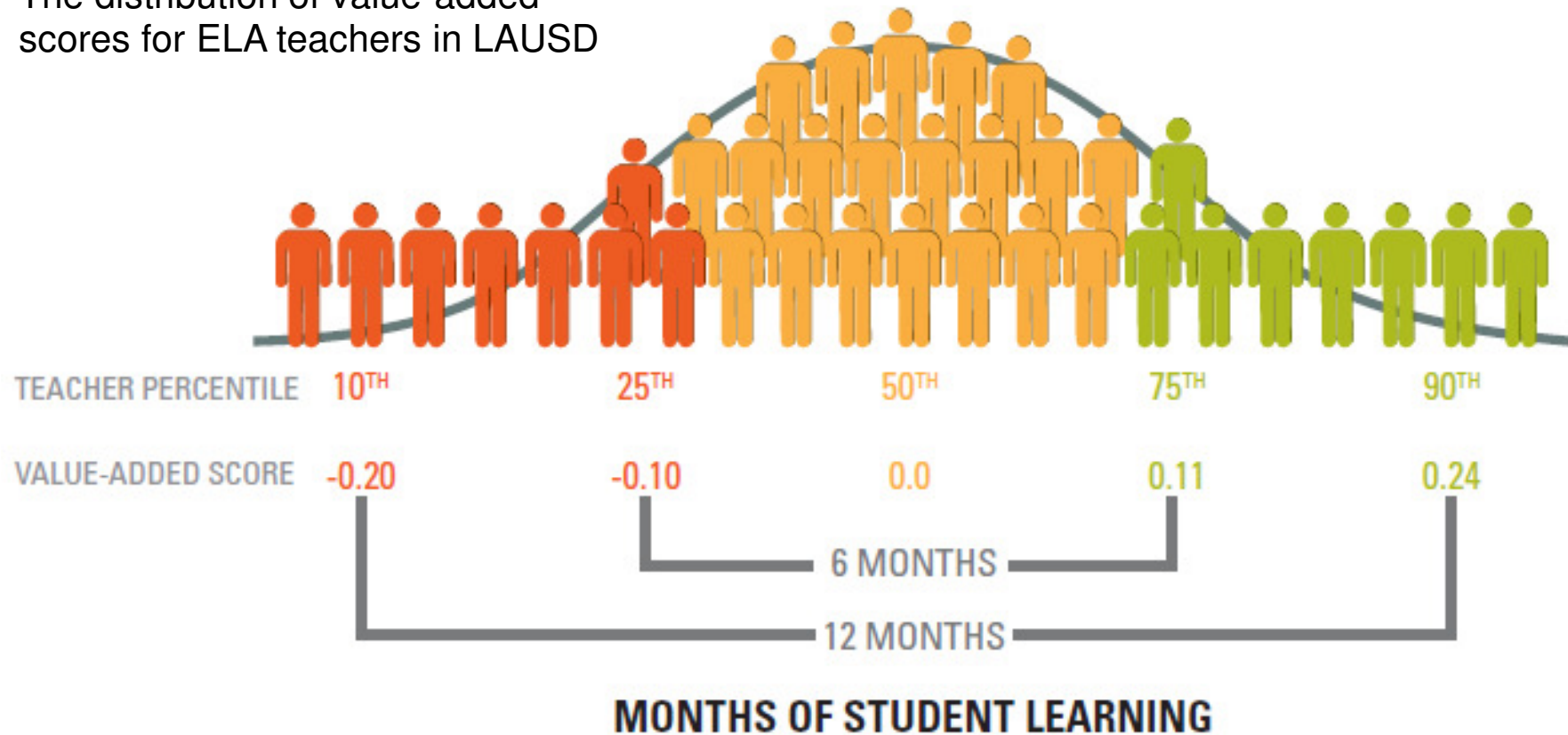


## Low-Achieving Students are More Likely to be Assigned to Ineffective Teachers than Effective Teachers



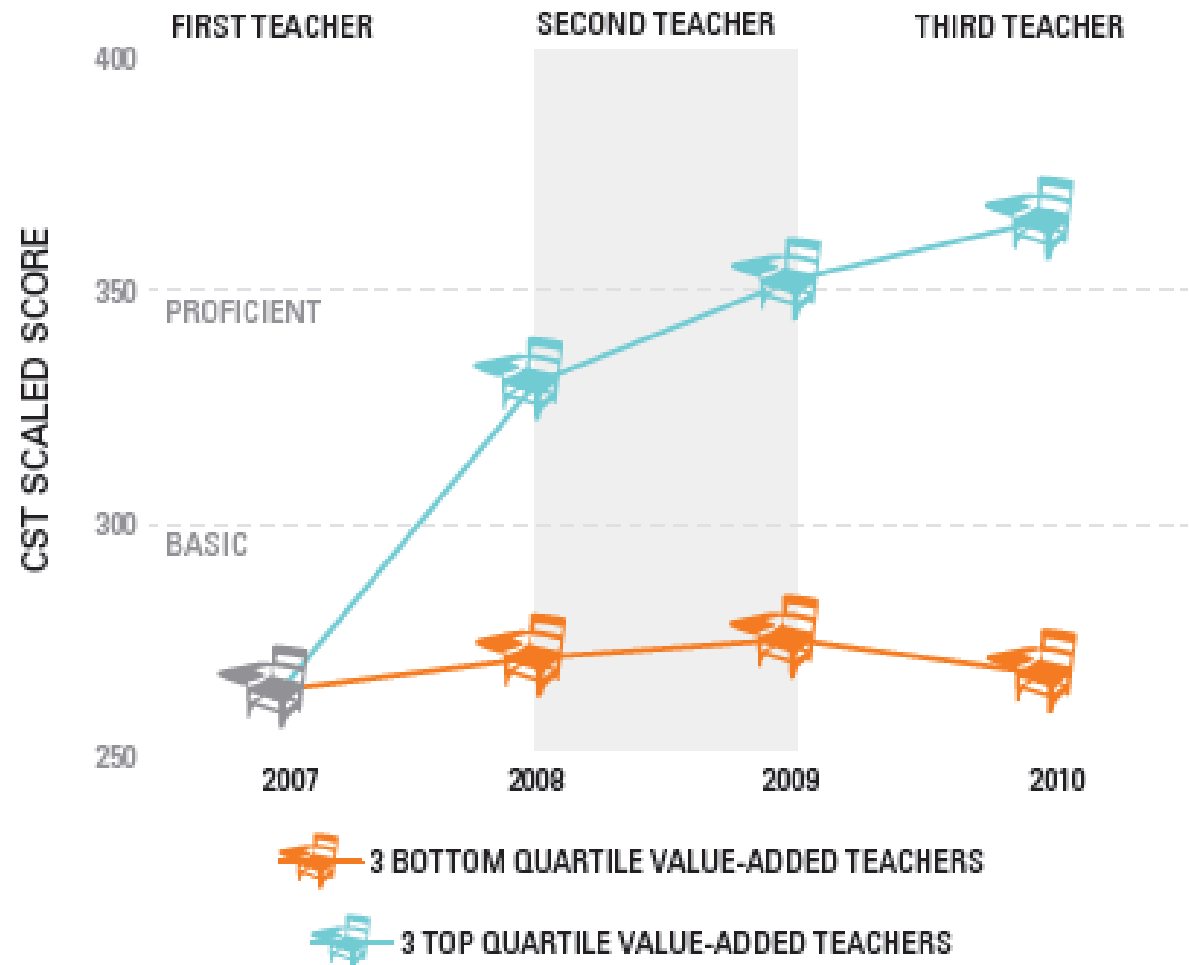
# DIFFERENCES IN TEACHER EFFECTIVENESS ACCOUNT FOR LARGE DIFFERENCES IN STUDENT LEARNING

The distribution of value-added scores for ELA teachers in LAUSD



# ACCESS TO MULTIPLE EFFECTIVE TEACHERS CAN DRAMATICALLY AFFECT STUDENT LEARNING

CST math proficiency trends for second-graders at 'Below Basic' or 'Far Below Basic' in 2007 who subsequently had three consecutive high or low value-added teachers



#7. Principals are hugely important,  
ever present, but  
NOT  
the only leaders in the school

# Elmont Memorial Junior-Senior High School



**Download this presentation and register for the  
Education Trust Annual Conference on Closing the  
Gap, Nov 13-14 in Baltimore**  
**[www.edtrust.org](http://www.edtrust.org)**



**The Education Trust**

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