Results from the 2012 Programme for International Student Assessment (PISA):

How does the United States compare to other nations?

The Education Trust

How has U.S. performance on PISA changed over time?

Performance Among the 26 OECD Countries Continuously Participating in PISA Since 2000
## U.S. Stagnant or Falling Relative to Other Countries

Subject	2000 Rank (out of 26)	2003 Rank (out of 26)	2006 Rank (out of 26)	2009 Rank (out of 26)	2012 Rank (out of 26)
Reading	13th	14th	n/a	Tied 10th	14th
Mathematics	17th	22nd	22nd	Tied 20th	22nd
Science	13th	Tied 17th	19th	13th	16th

Note: Rankings are for the 26 countries that were members of the OECD and participated in PISA in 2000, 2003, 2006, 2009, and 2012 and include Luxembourg despite changes to assessment conditions beginning in 2003. 2006 results for U.S. reading performance are not available. Rankings for this chart only are based on rounded scale scores.

Source: PISA 2012 Results, OECD, Annex B1, Table I.5.3b, Table I.4.3b, Table I.2.3b

U.S. Performance Over Time

PISA – All Subjects

Average scale score

- Reading
- Science
- Mathematics
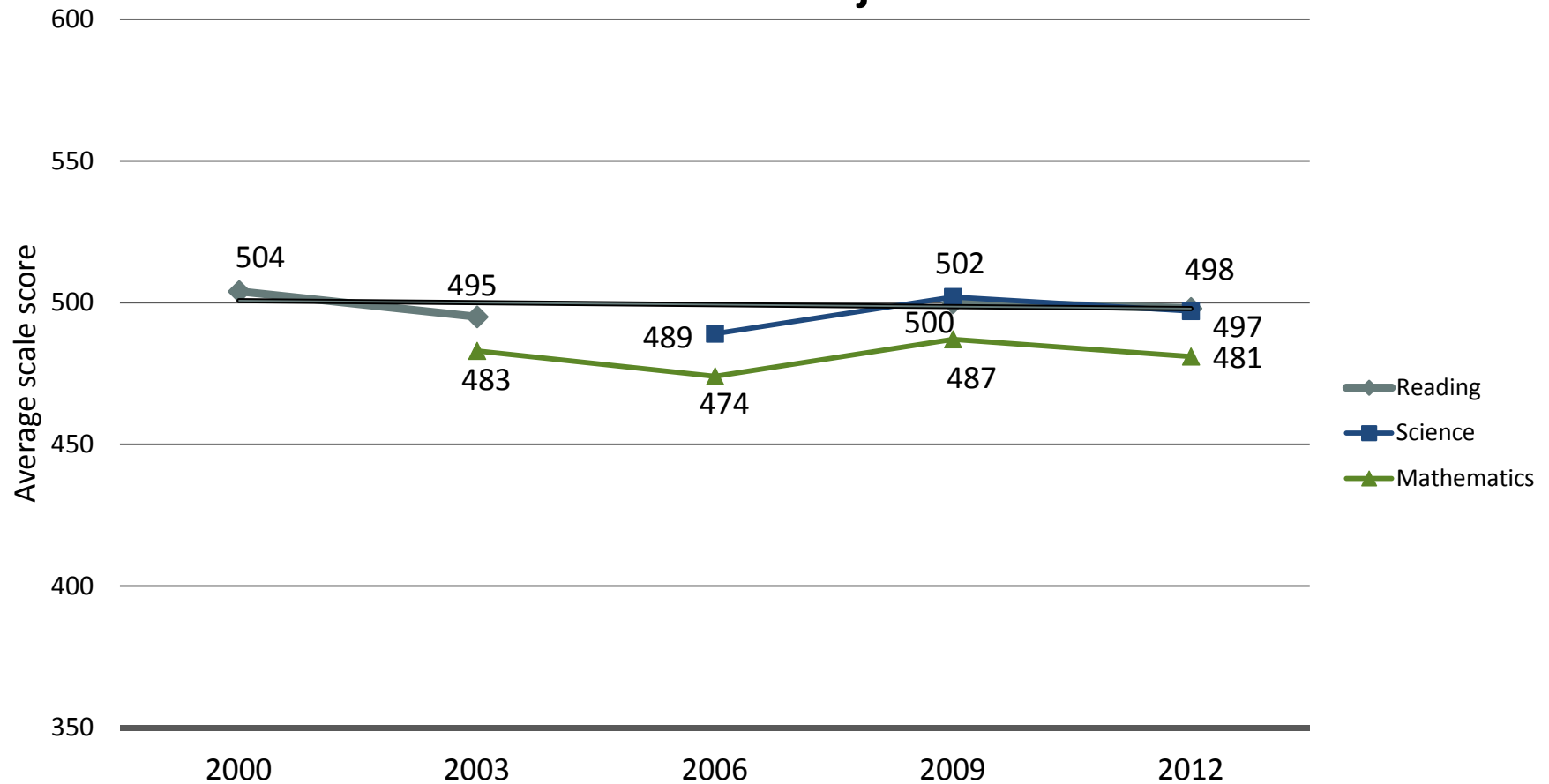
Note: Possible scores range from 0 to 1,000. Trends are not available from 2000 for all subjects due to revised assessment frameworks; 2006 results for U.S. reading performance are not available. * indicates score is significantly different from 2009 score at the p<.05 level.
Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_6.asp.
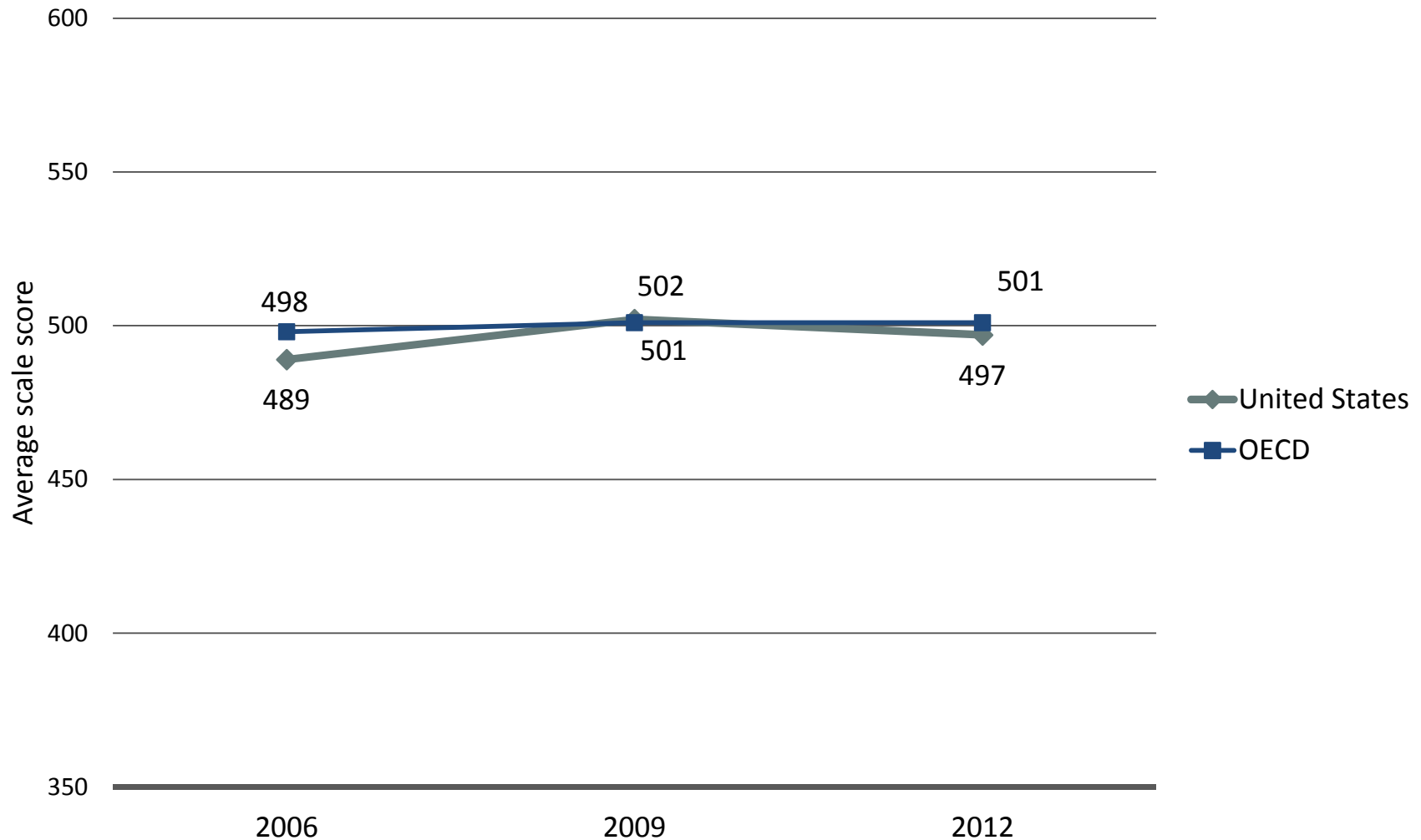
Math Performance on PISA
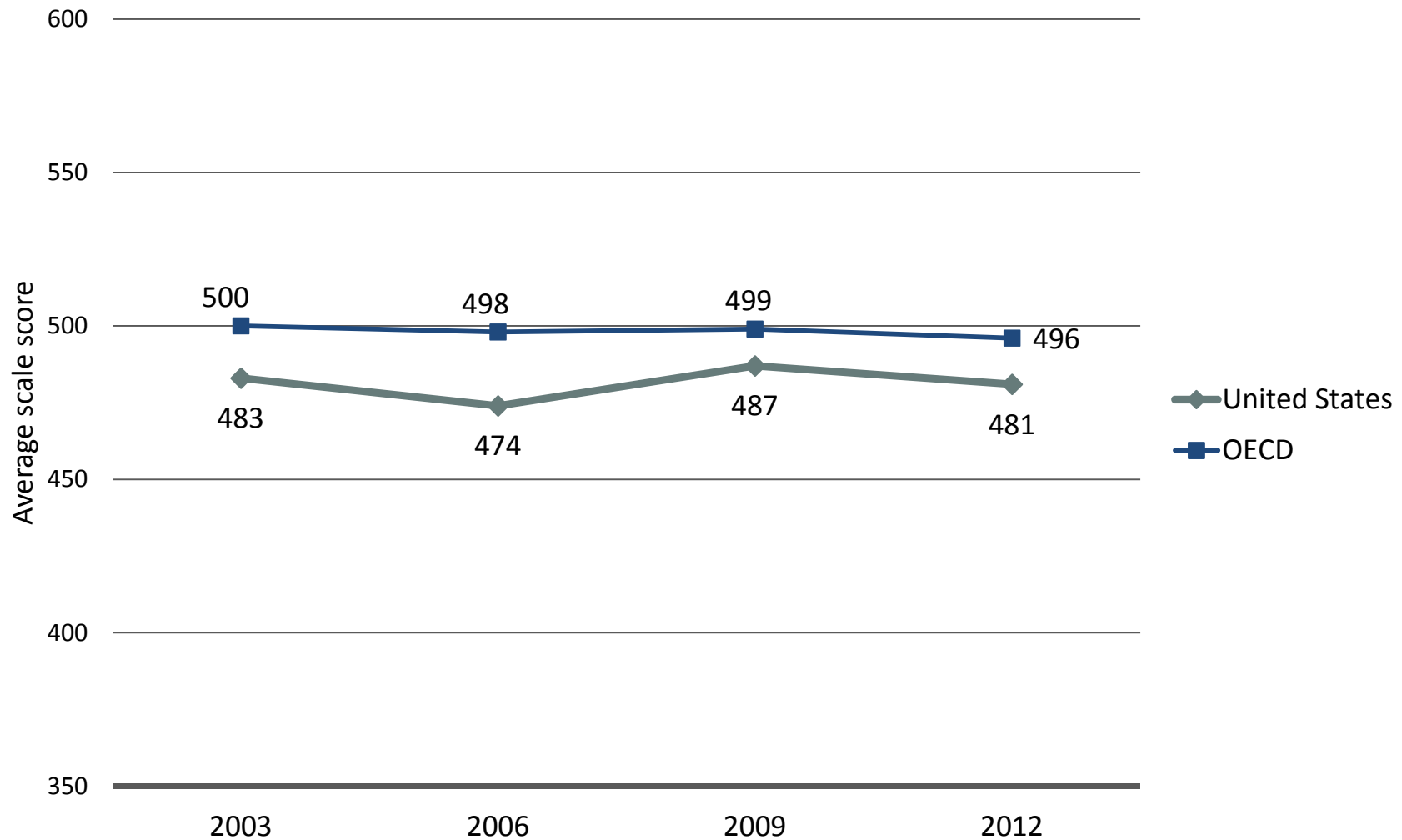
Average scale score

	2003	2006	2009	2012
OECD	500	498	499	496
United States	483	474	487	481

Note: Possible scores range from 0 to 1,000. * indicates score is significantly different from the 2012 score at the p<.05 level

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_6a.asp.

Reading Performance on PISA
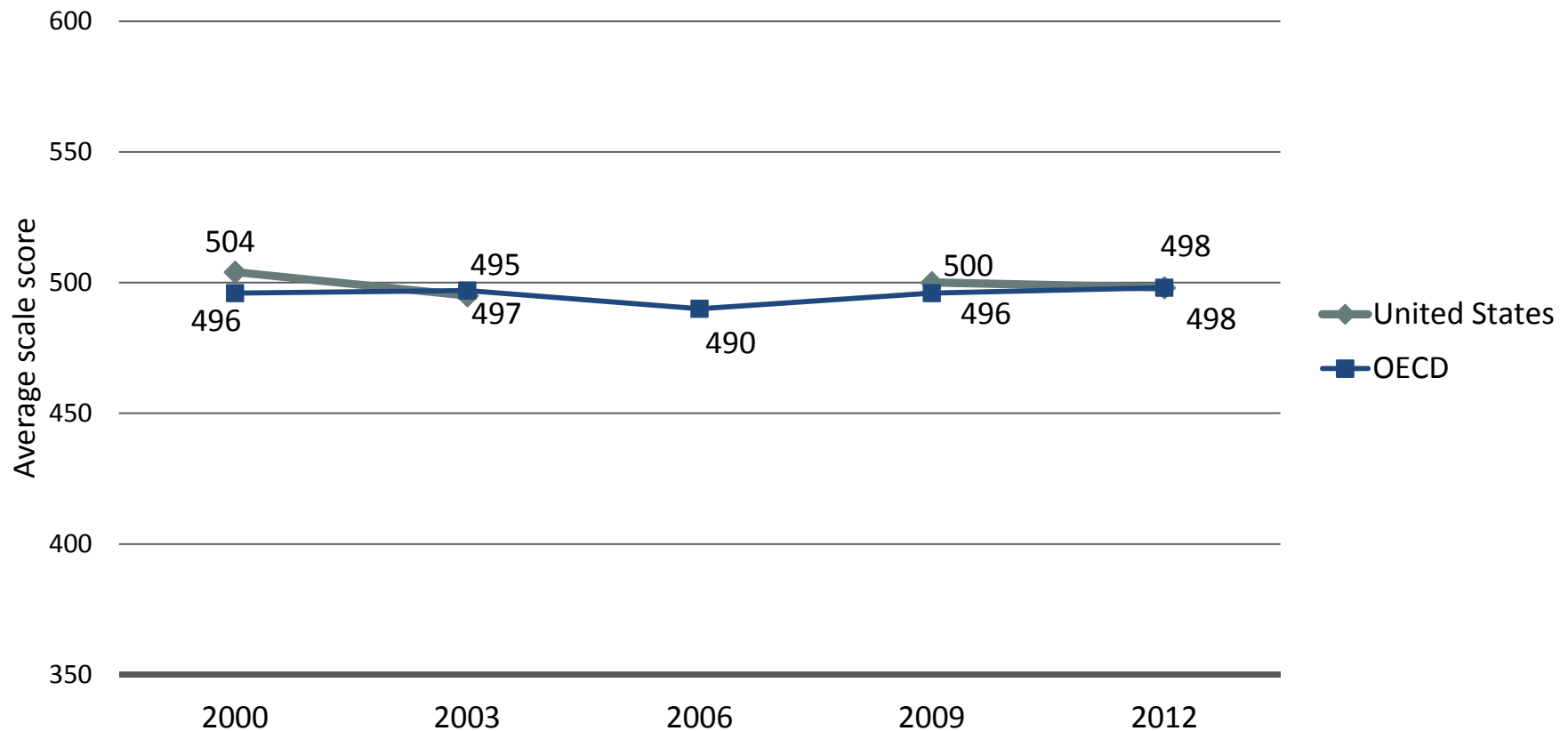
Note: Possible scores range from 0 to 1,000. * indicates score is significantly different from the 2012 score at the p<.05 level. 2006 results for U.S. reading performance are not available.
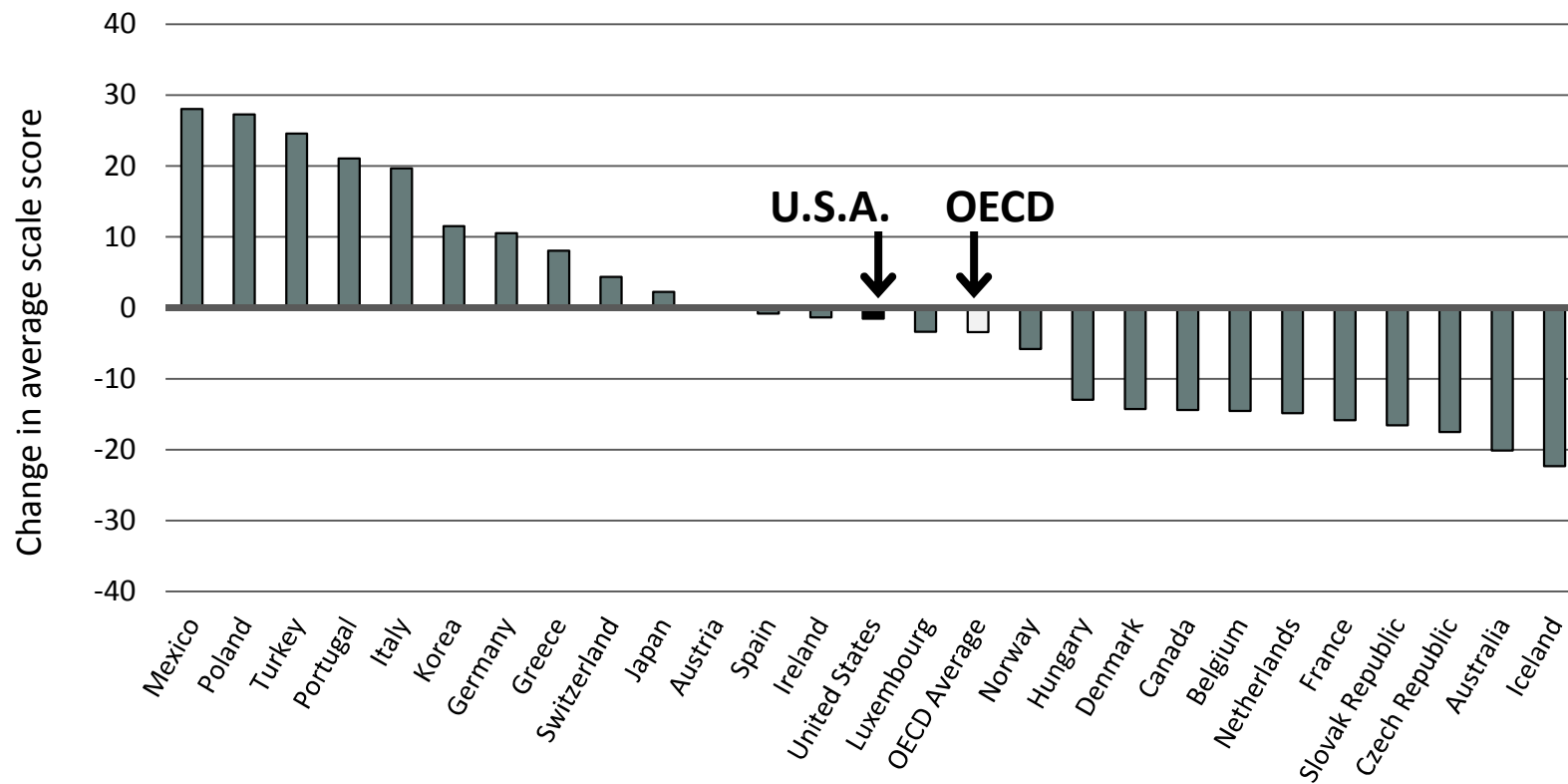Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_6a_2.asp.

Science Performance on PISA

Average scale score

	2006	2009	2012
United States	489	502	497
OECD	498	501	501

United States

OECD

Note: Possible scores range from 0 to 1,000. * indicates score is significantly different from the 2012 score at the p<.05 level
Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_6a_1.asp.

How do changes in U.S. performance compare to changes in other OECD countries?

U.S. Math Scores Have Remained Nearly Flat, In Contrast to Large Changes in Other OECD Countries

PISA 2003 and 2012 – Math

Reading Scores in Many Countries – Including the U.S. – Have Stayed Flat or Fallen

PISA 2000 and 2012 - Reading
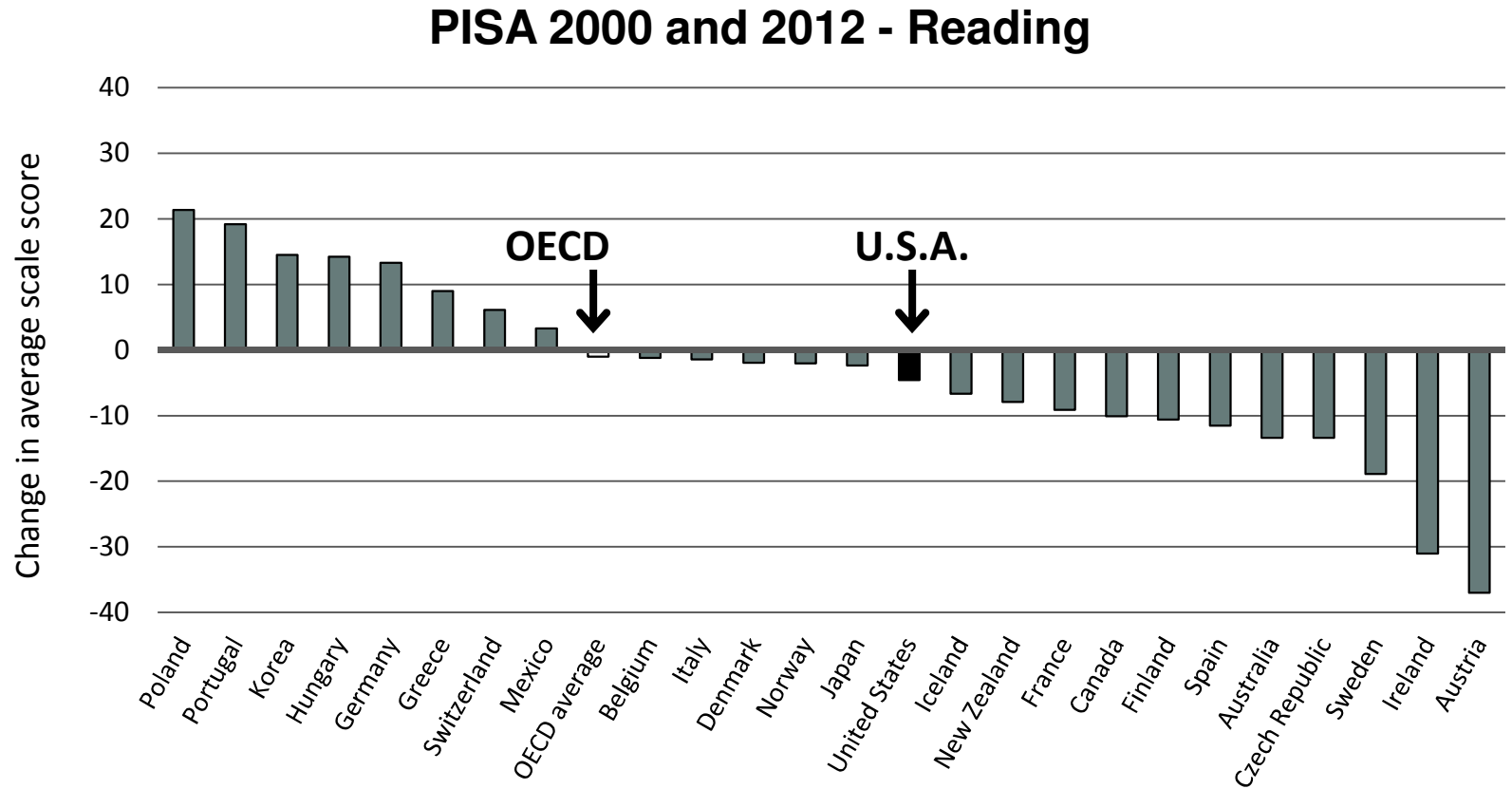
U.S. Students' Science Scores Have Risen Faster than in Many Other OECD Countries

PISA 2006 and 2012 – Science
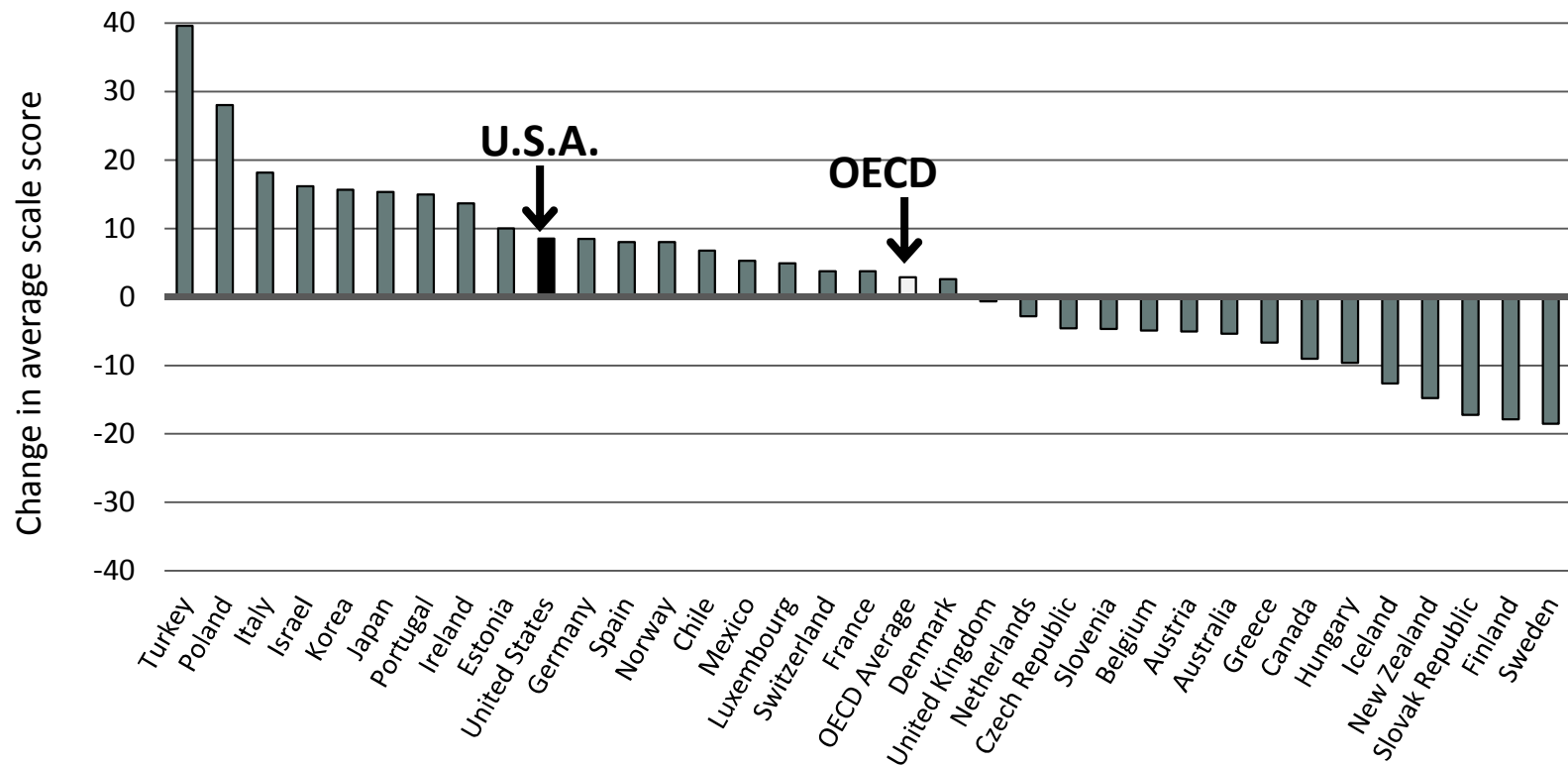
Improvements since the early 2000s have been concentrated among low-performing and average students.

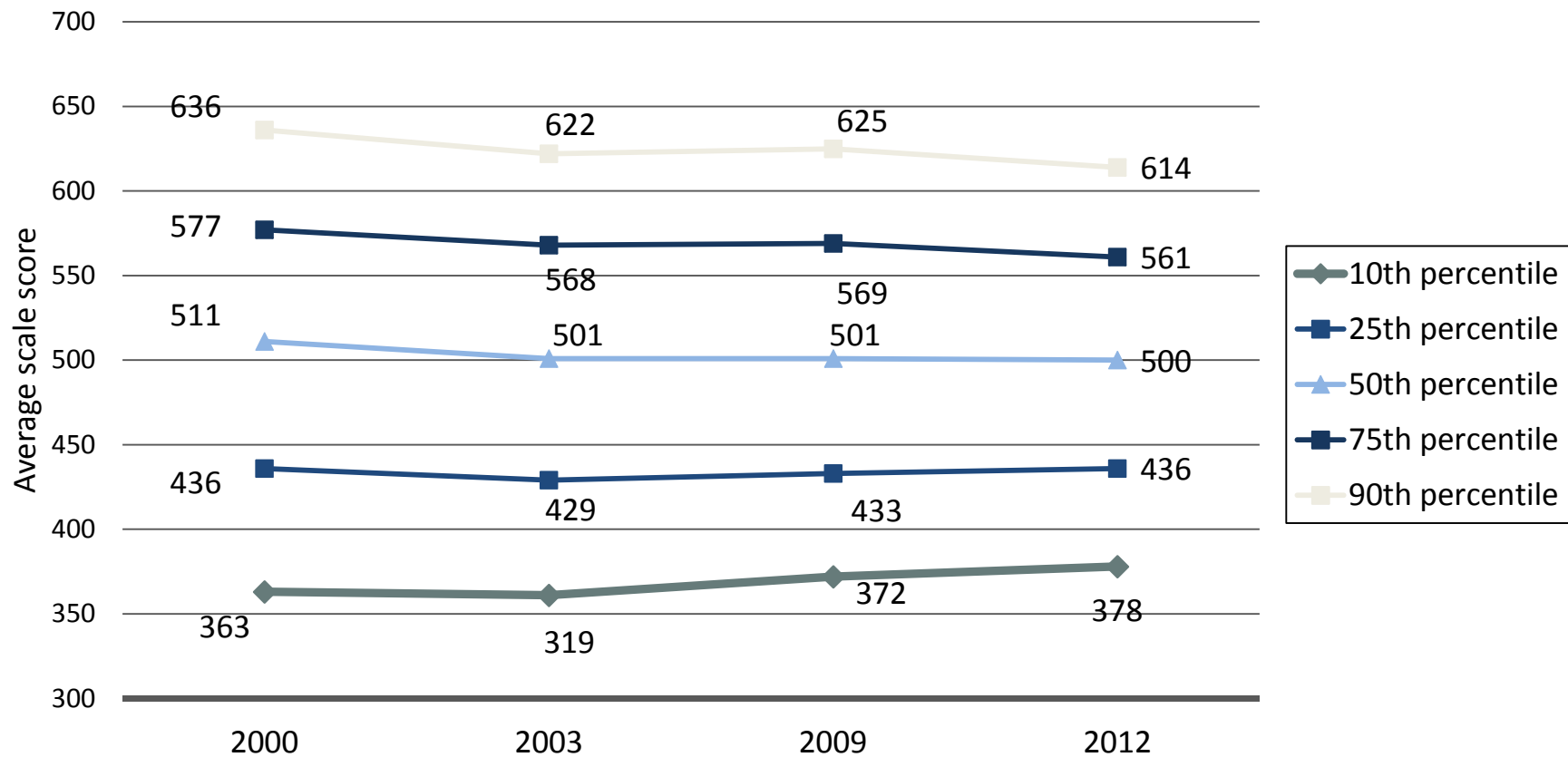# Improvement Among Lowest-Performing Students, But Flat or Falling Scores for Others

PISA – Math
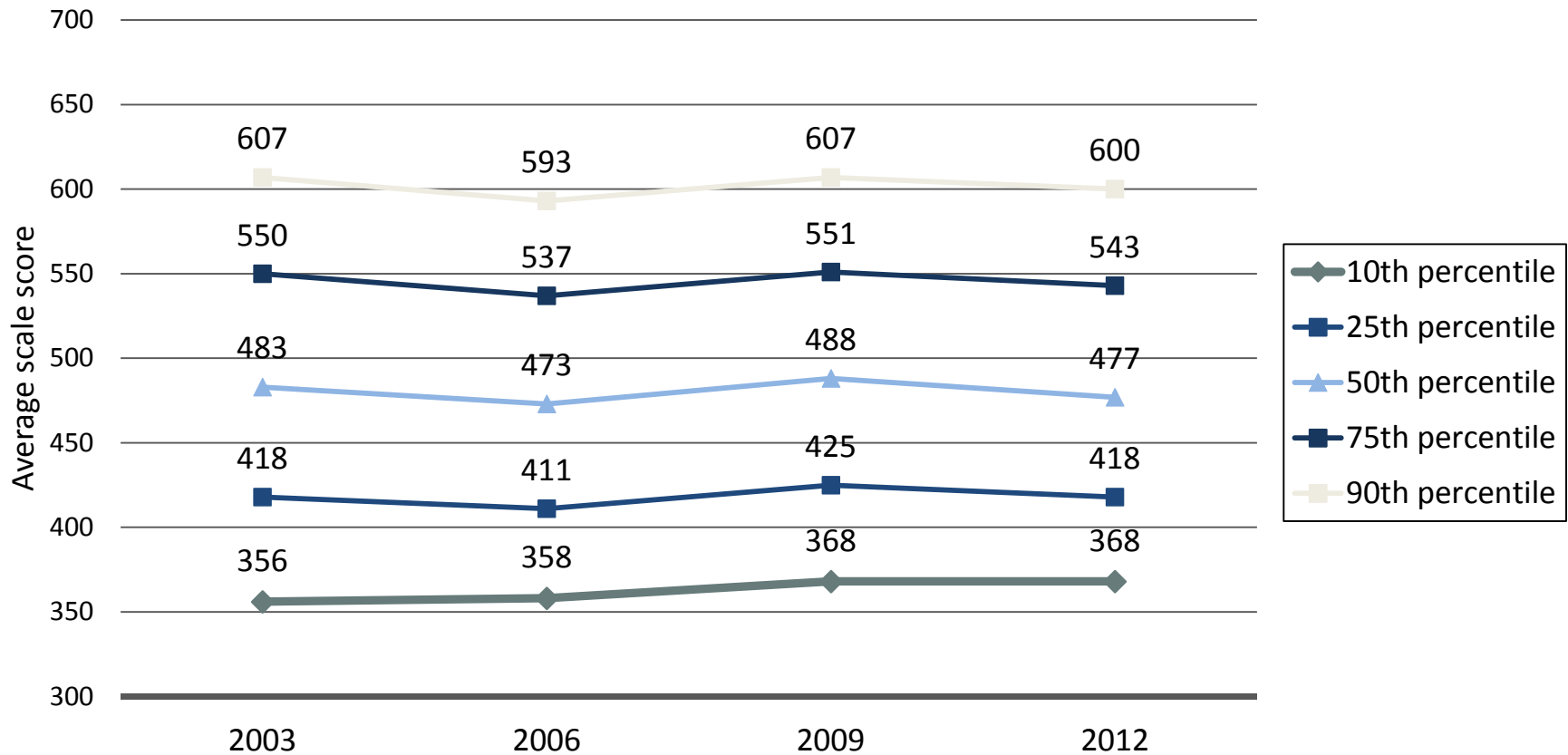
Average scale score

Year	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
2003	356	418	483	550	607
2006	358	411	473	537	593
2009	368	425	488	551	607
2012	368	418	477	543	600

Legend:
- 10th percentile
- 25th percentile
- 50th percentile
- 75th percentile
- 90th percentile

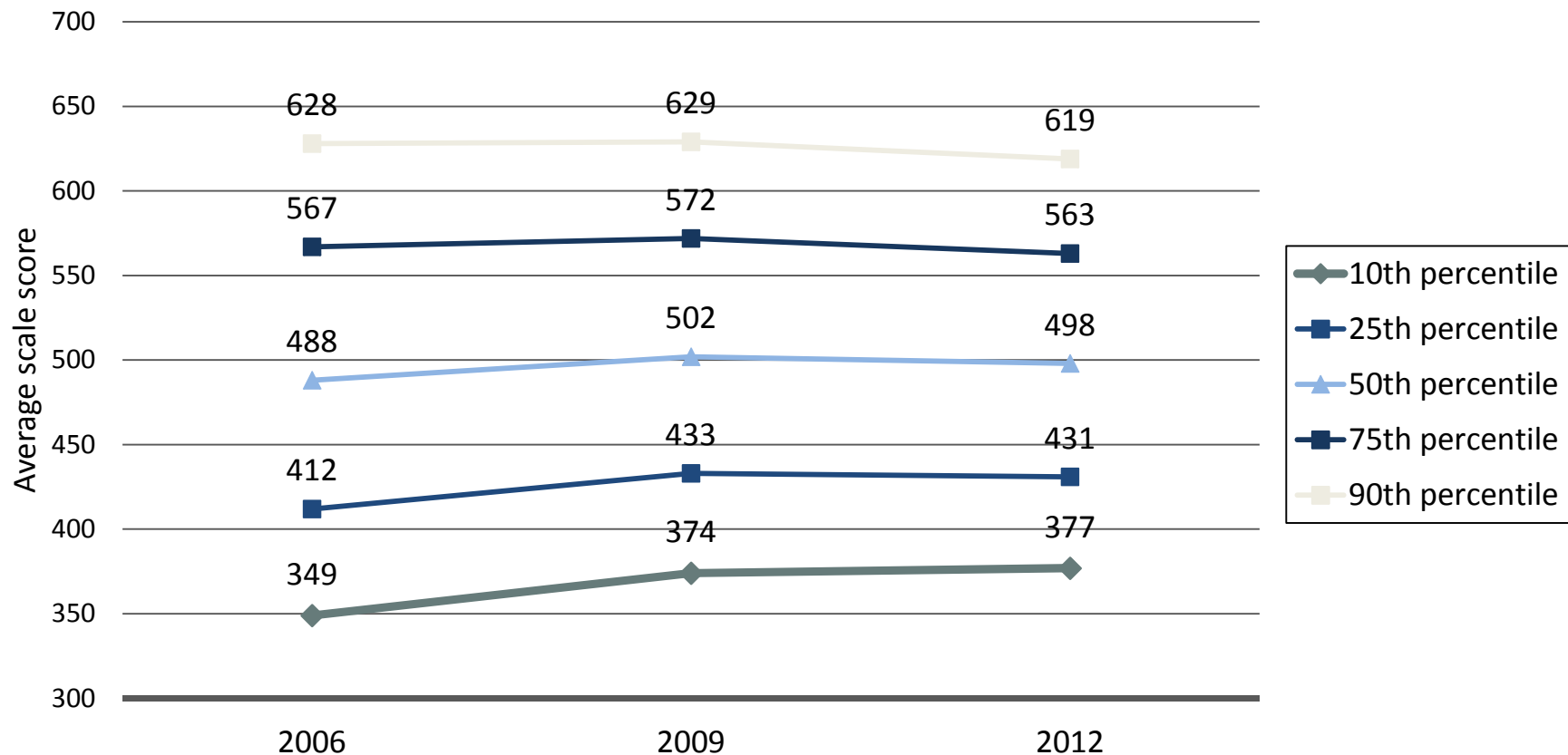# Improvement Only Among the Lowest Performing Students
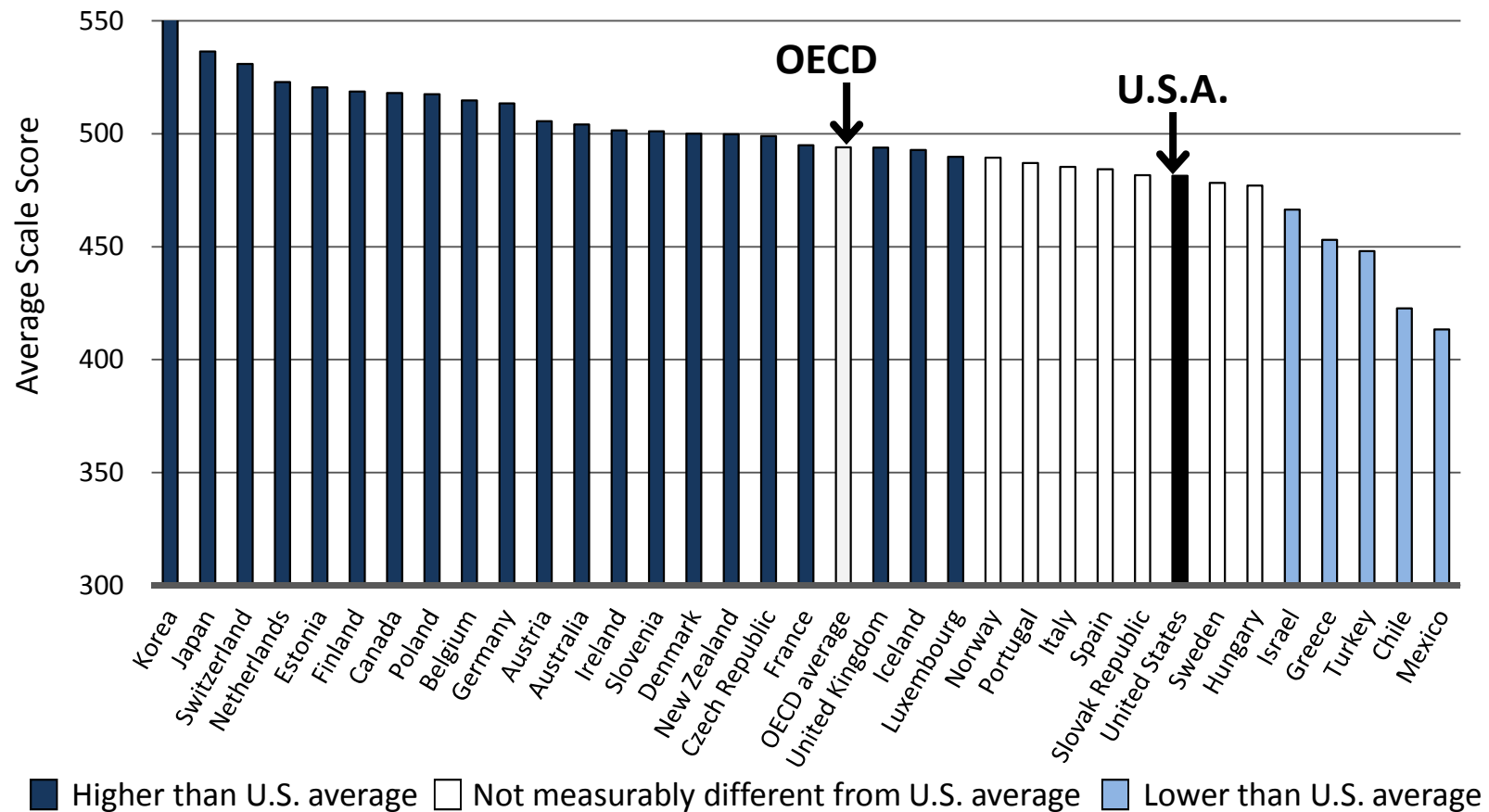
PISA – Reading

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_5b.asp; National Center for Education Statistics, International Data Explorer, http://nces.ed.gov/surveys/pisa/idepisa/report.aspx.

Since 2006, Improvement Among Average and Lower Performing Students

PISA – Science

A closer look at math

Of 34 OECD Countries, U.S.A. Ranks 27th in Math Literacy

2012 PISA - Math

Legend:
- ■ Higher than U.S. average
- □ Not measurably different from U.S. average
- ■ Lower than U.S. average

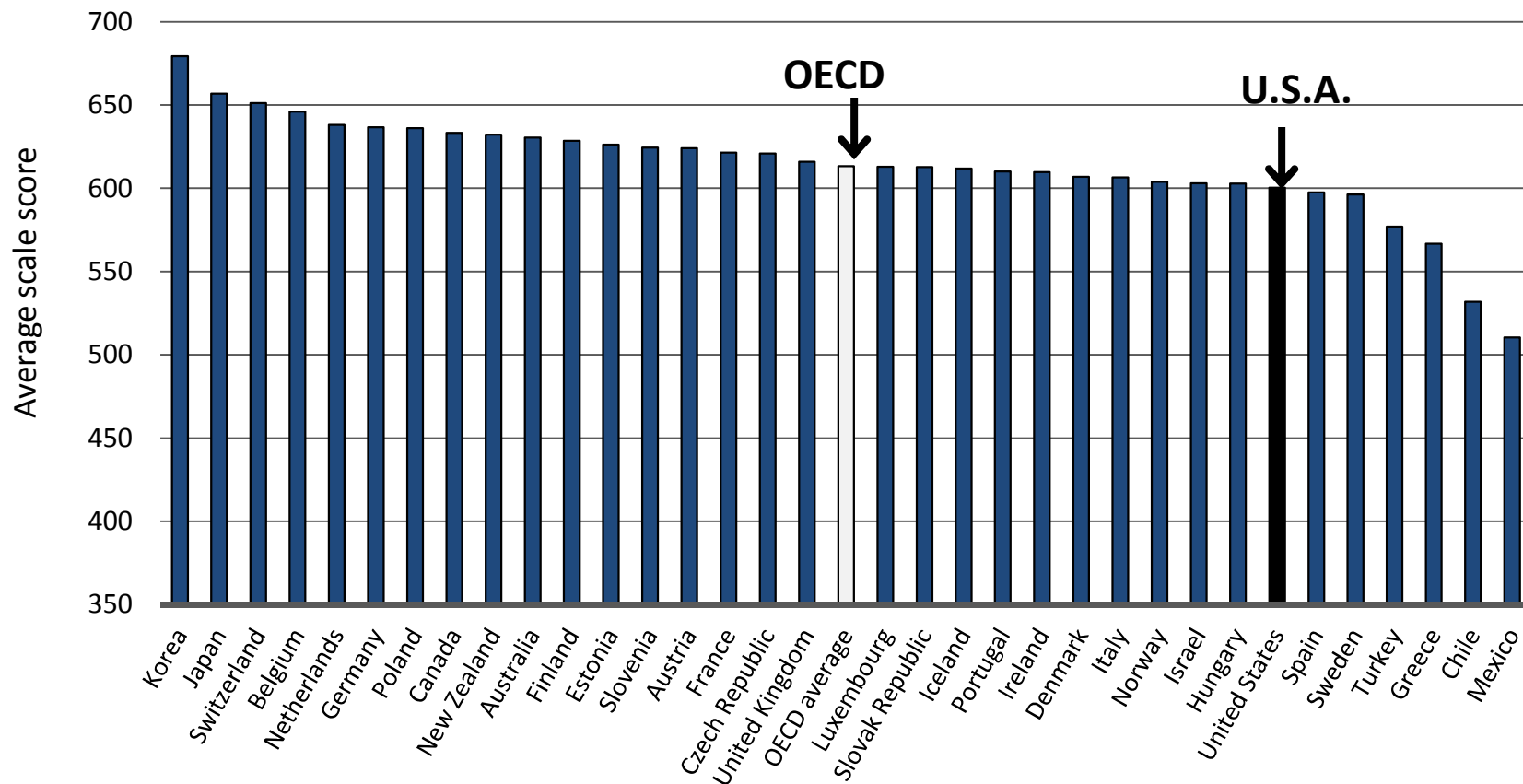# U.S.A. Ranks 28th out of 34 OECD Countries on Students Scoring at the Highest Achievement Levels

PISA 2012 – Math
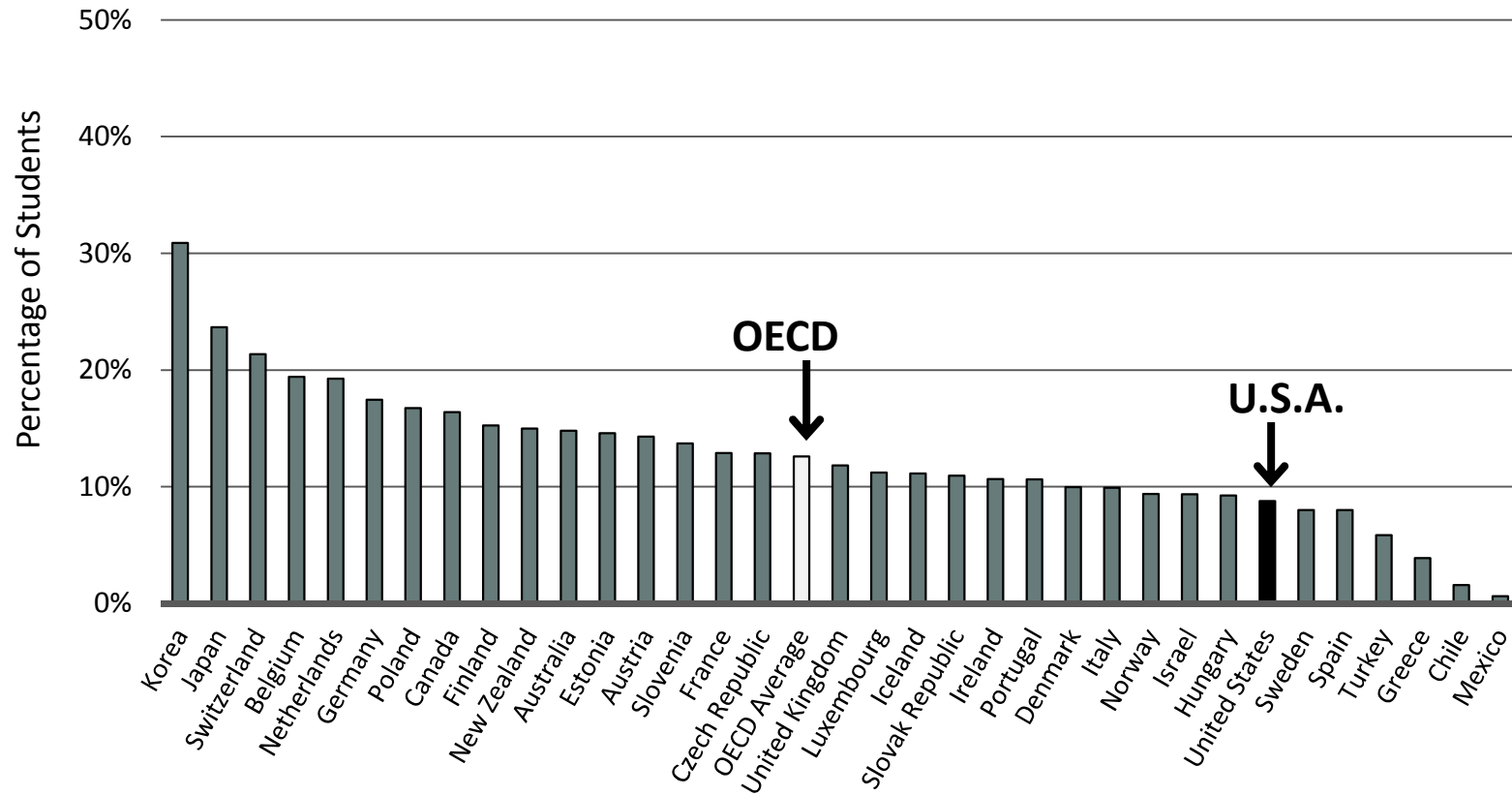
Note: Highest achievement levels are Levels 5 and above.
Source: PISA 2012 Results, OECD, Annex B1, Table I.2.1b

U.S.A. Ranks 28th out of 34 OECD Countries in the Math Achievement of the Highest-Performing Students
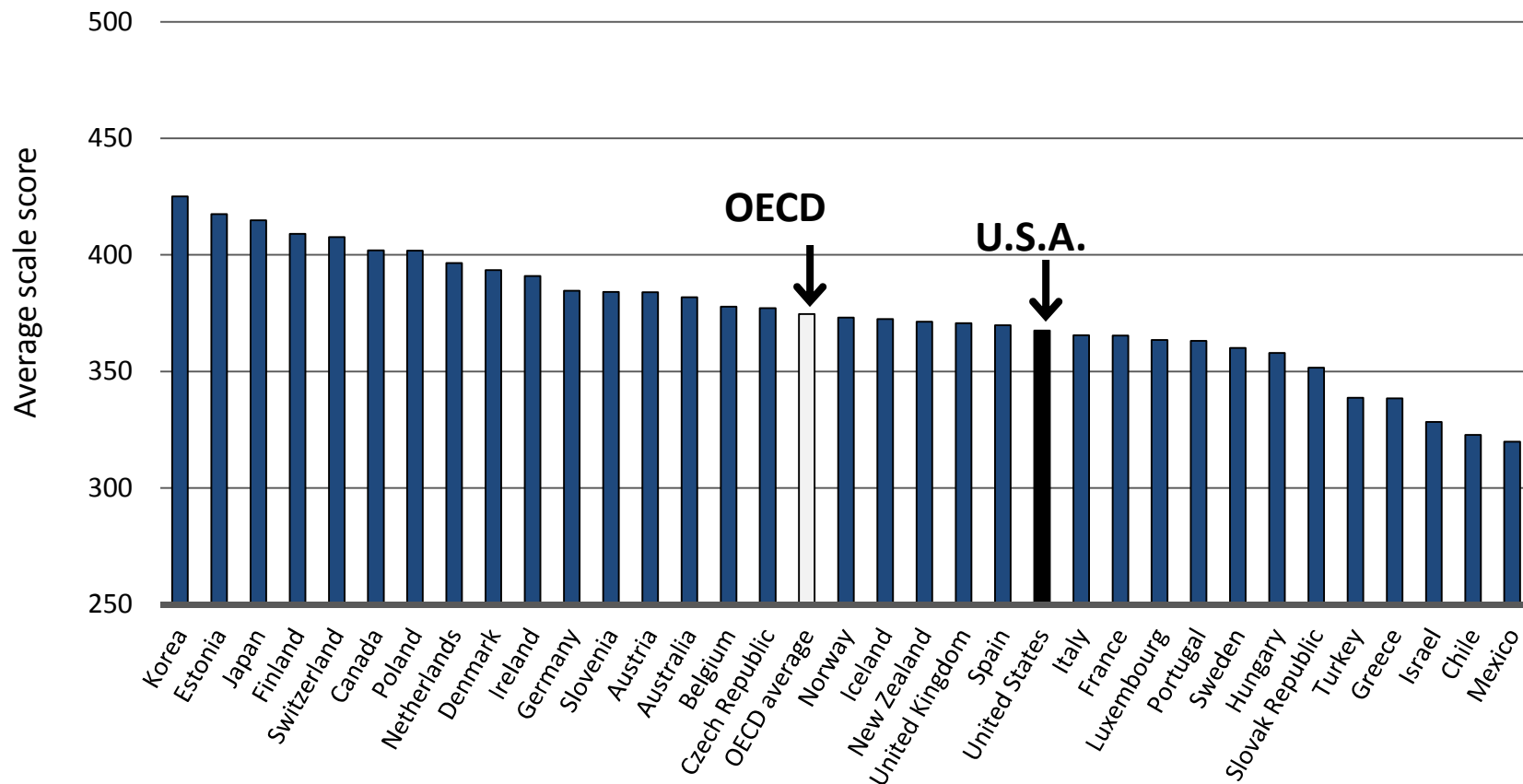
2012 PISA – Math

Note: Highest-performing students are those at the 90th Percentile.
Source: PISA 2012 results, OECD, Annex B1, Table I.2.3d.

U.S.A. Ranks 22nd out of 34 OECD Countries in the Math Achievement of the Lowest-Performing Students
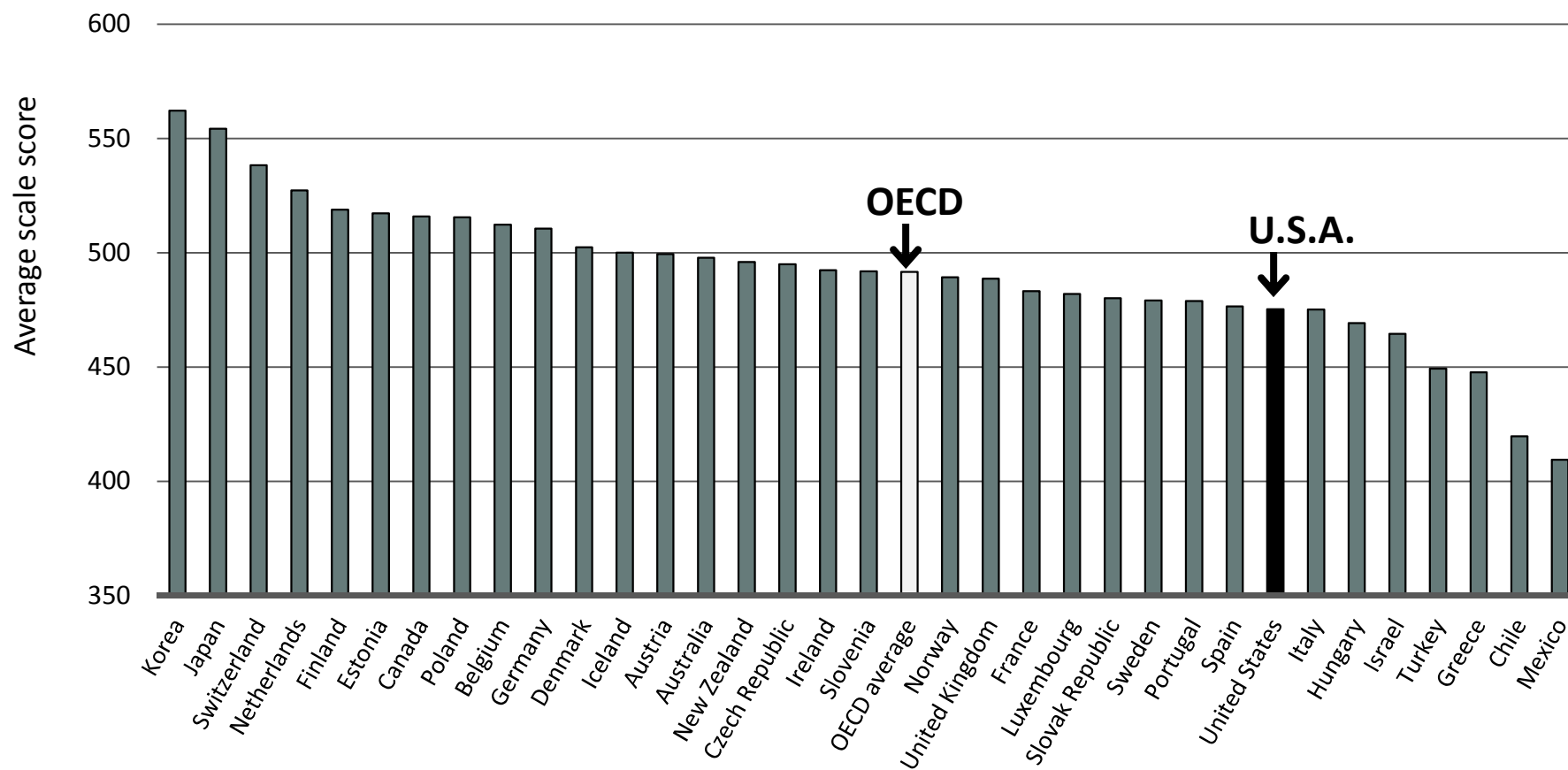
2012 PISA – Math

Note: Lowest-performing students are those at the 10th Percentile.
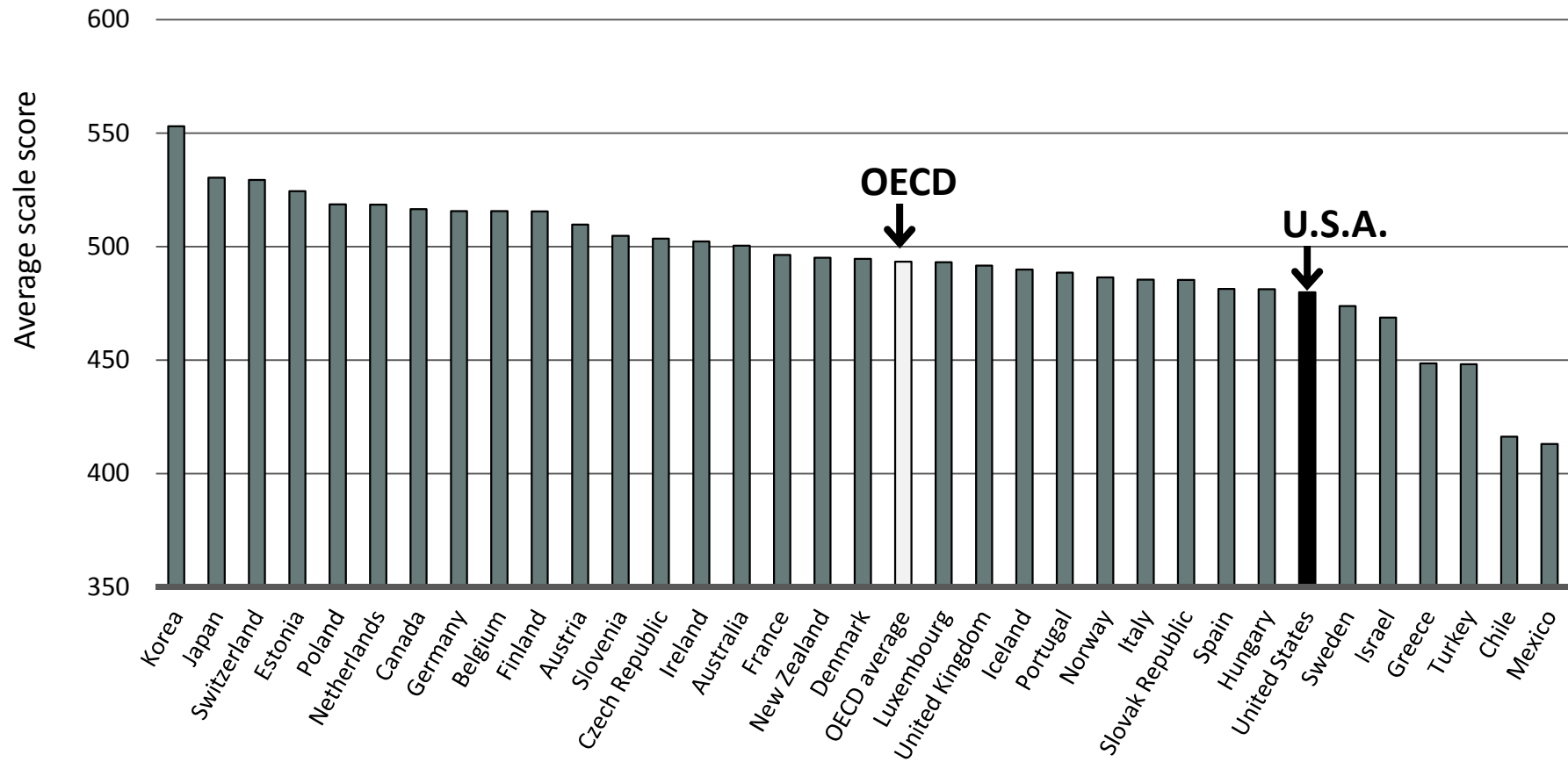Source: PISA 2012 results, OECD, Annex B1, Table I.2.3d.

U.S. students perform relatively low on all math topics

U.S.A. Ranks 27th Out of 34 OECD Countries on the "Formulating" Subscale
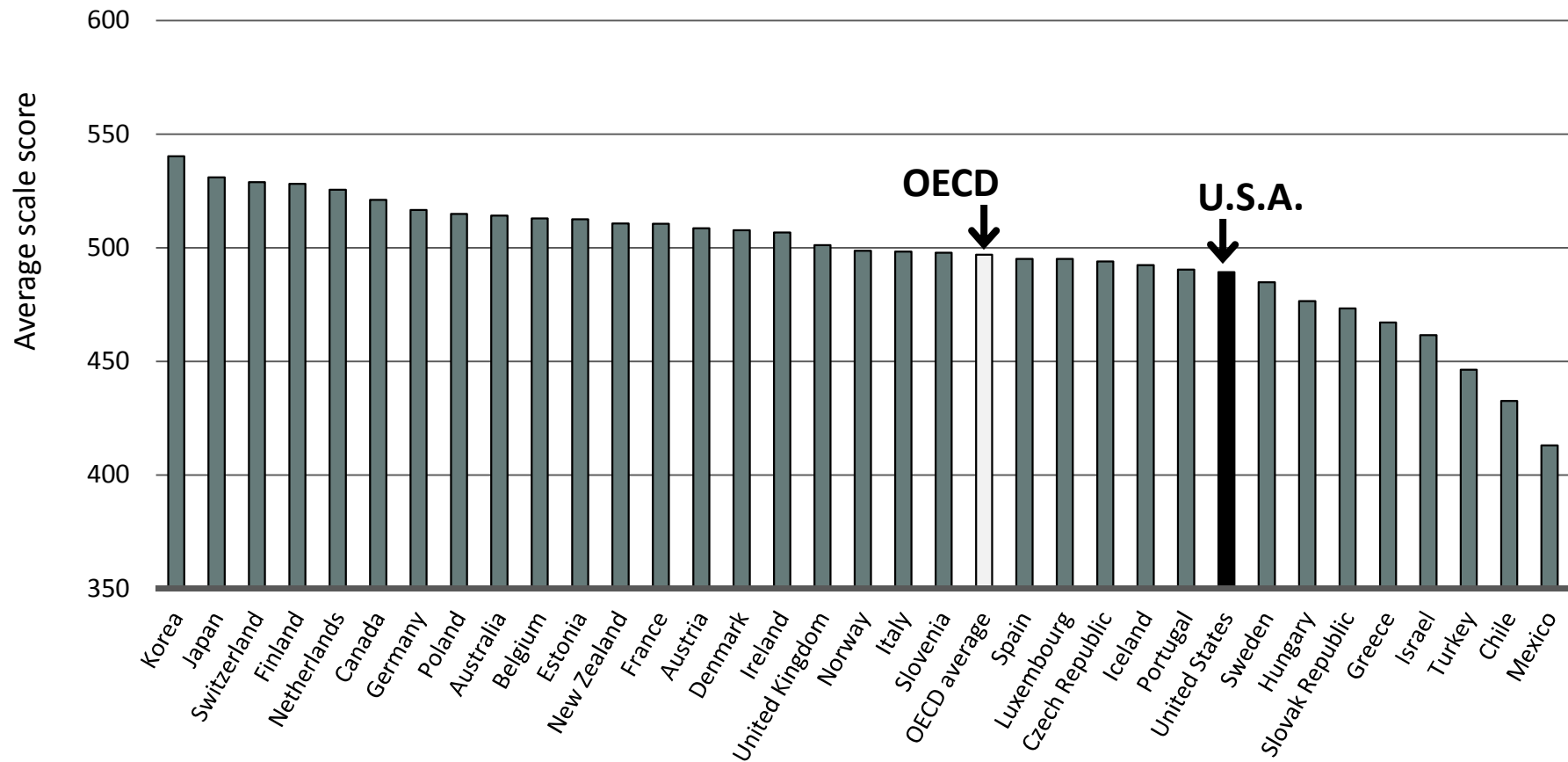## 2012 PISA – Math

Source: PISA 2012 Results, OECD, Annex B1, Table I.2.7

U.S.A. Ranks 28ᵗʰ Out of 34 OECD Countries on the "Employing" Subscale
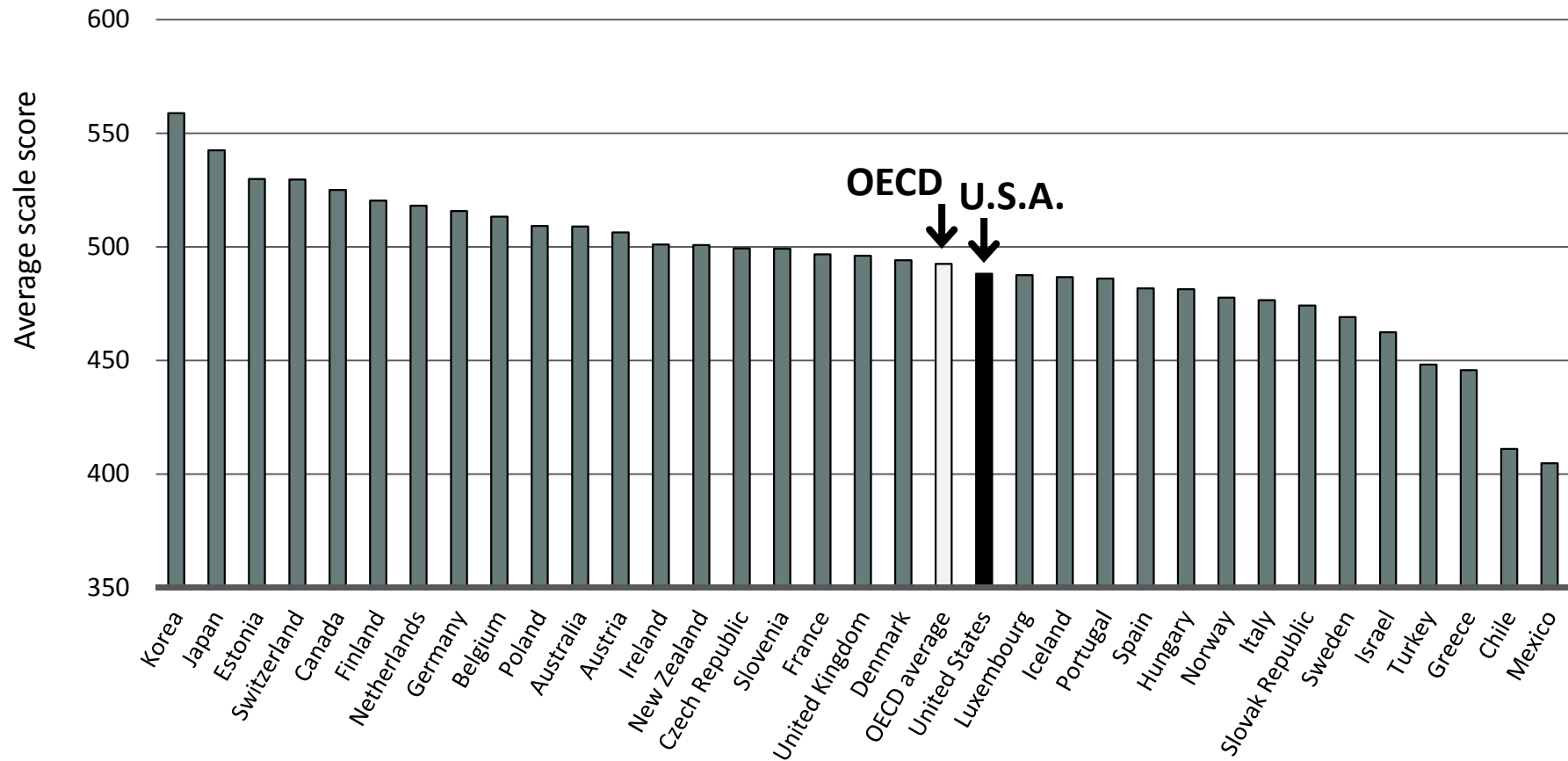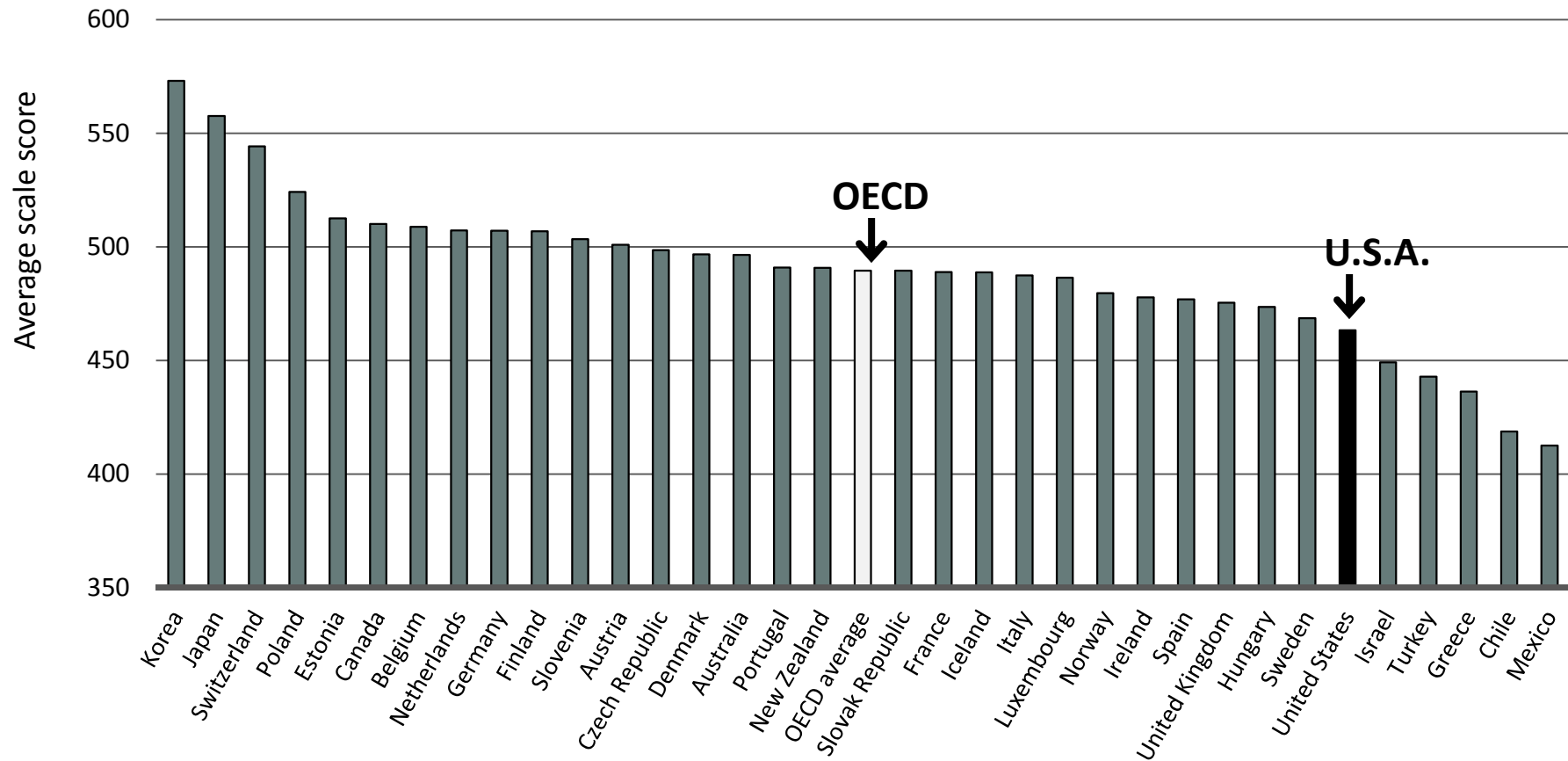
2012 PISA – Math

U.S.A. Ranks 27th Out of 34 OECD Countries on the "Interpreting" Subscale
2012 PISA – Math

U.S.A. Ranks 20ᵗʰ Out of 34 OECD Countries
on the "Change and Relationships" Subscale
2012 PISA – Math

U.S.A. Ranks 29th Out of 34 OECD Countries on the "Space and Shape" Subscale
2012 PISA – Math

U.S.A. Ranks 29ᵗʰ Out of 34 OECD Countries on the "Quantity" Subscale

2012 PISA – Math

Source: PISA 2012 Results, OECD, Annex B1, Table I.2.22

U.S.A. Ranks 22nd Out of 34 OECD Countries on the "Uncertainty and Data" Subscale
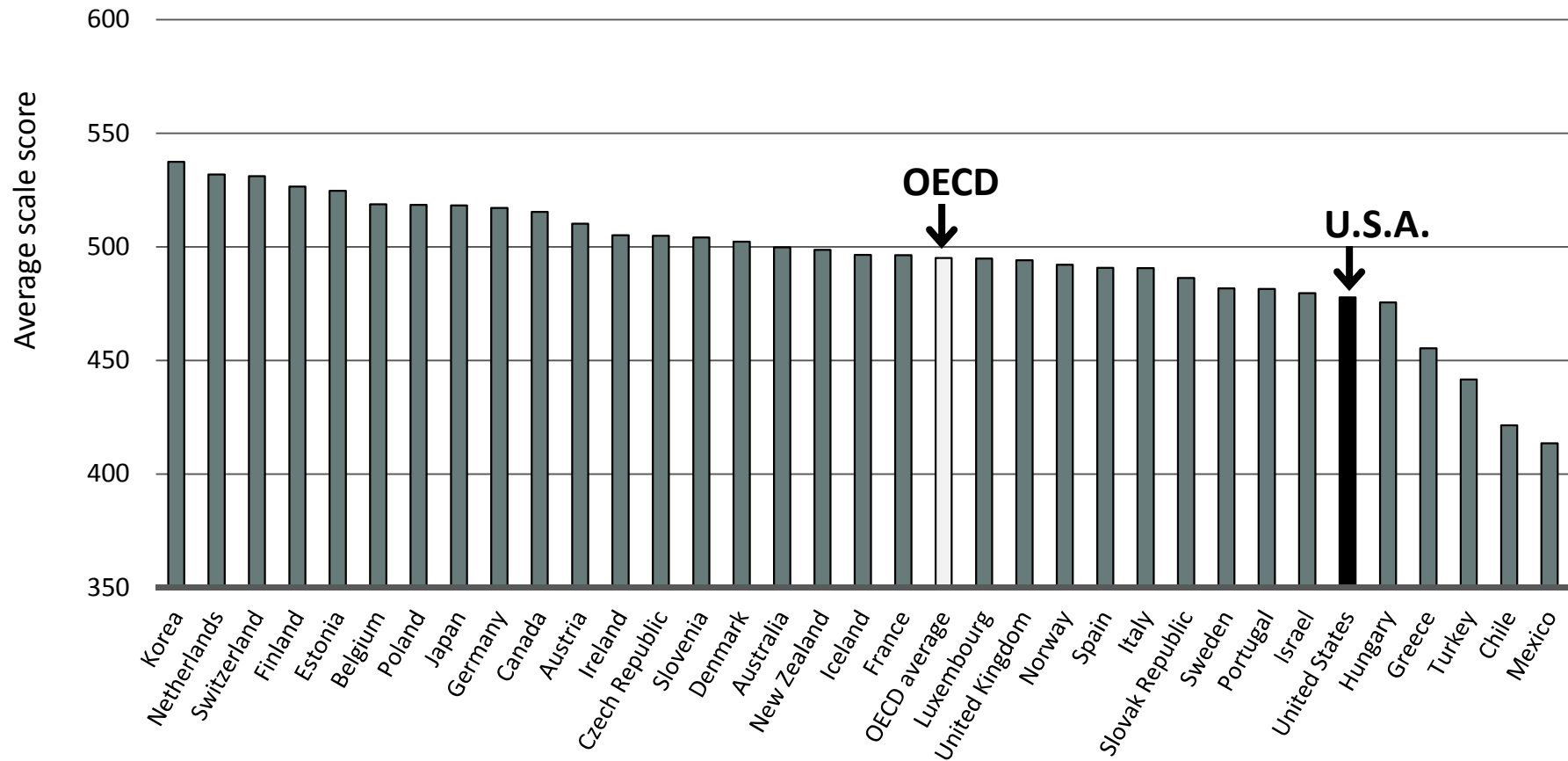
2012 PISA – Math
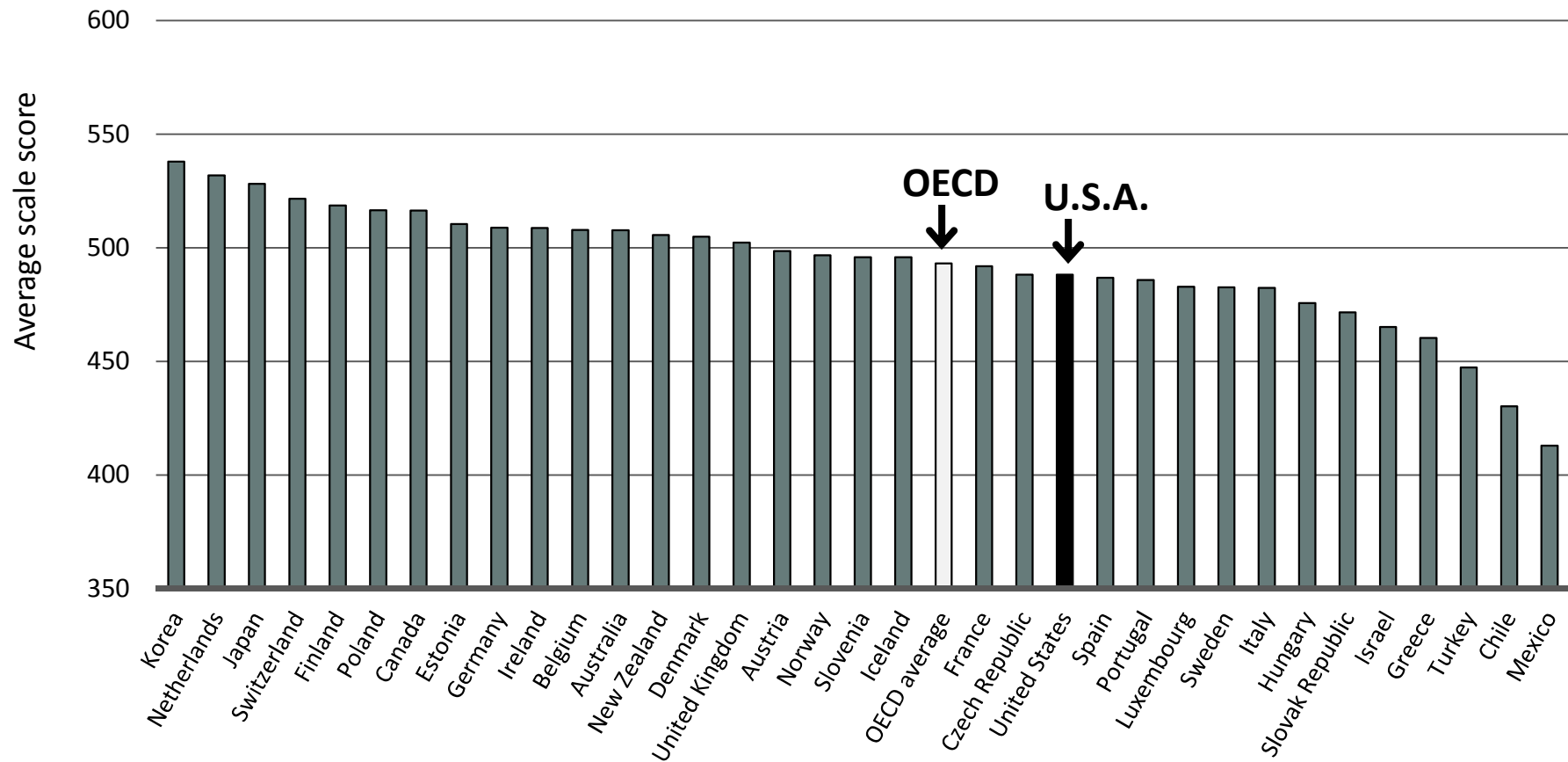
U.S. reading and science performance is about average . . .

Of 34 OECD Countries, U.S.A. Ranks 20ᵗʰ in Science

2012 PISA - Science
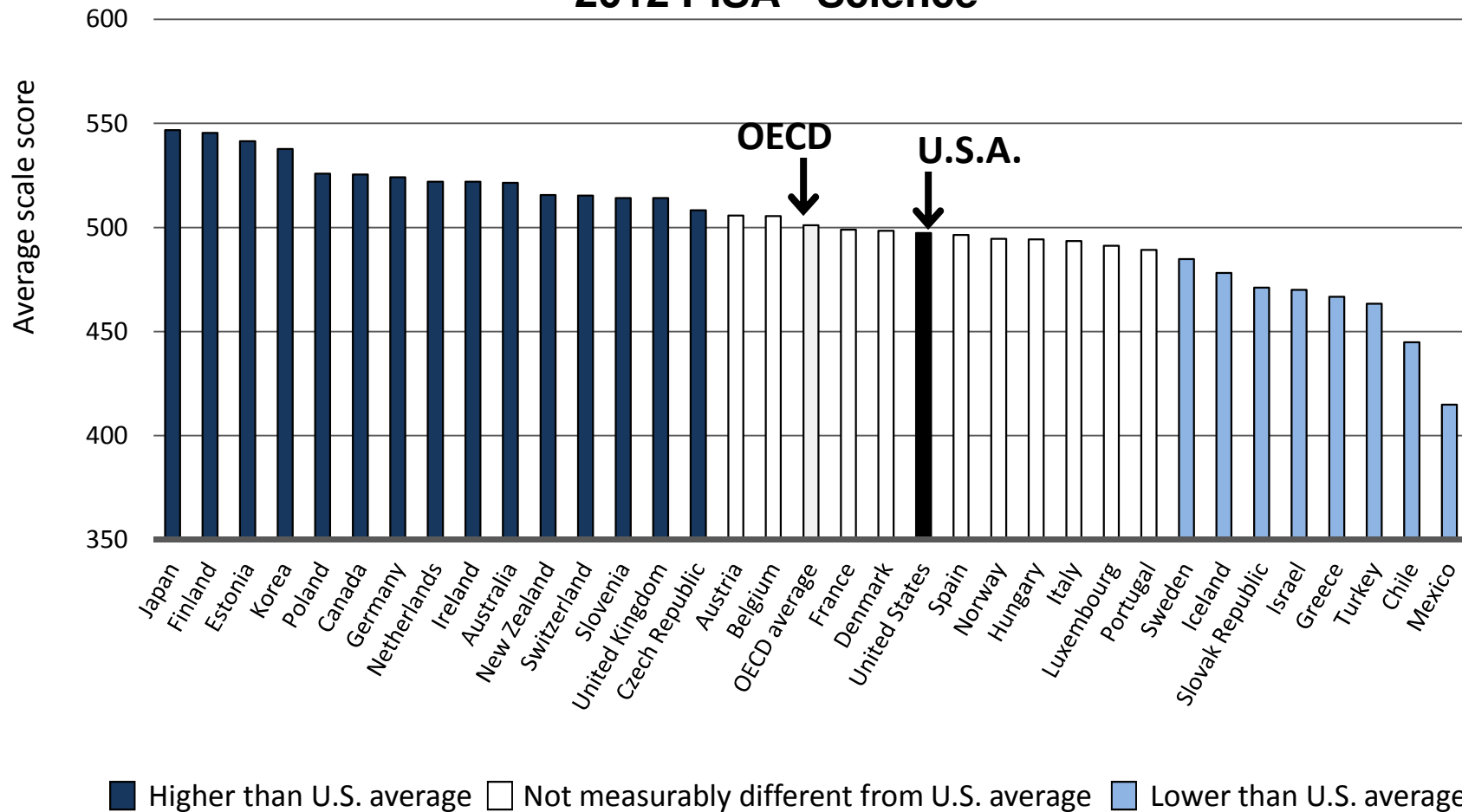
Legend:
- Higher than U.S. average
- Not measurably different from U.S. average
- Lower than U.S. average

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_4a.asp.

Of 34 OECD Countries, U.S.A. Ranks 17th in Reading

2012 PISA - Reading

Legend: ■ Higher than U.S. average □ Not measurably different from U.S. average ■ Lower than U.S. average

The U.S. fares well compared to most non-OECD partner economies, but is far behind the top performers.

Compared with the 31 Participating Non-OECD Economies, the U.S.A. Ranks 10th in Math

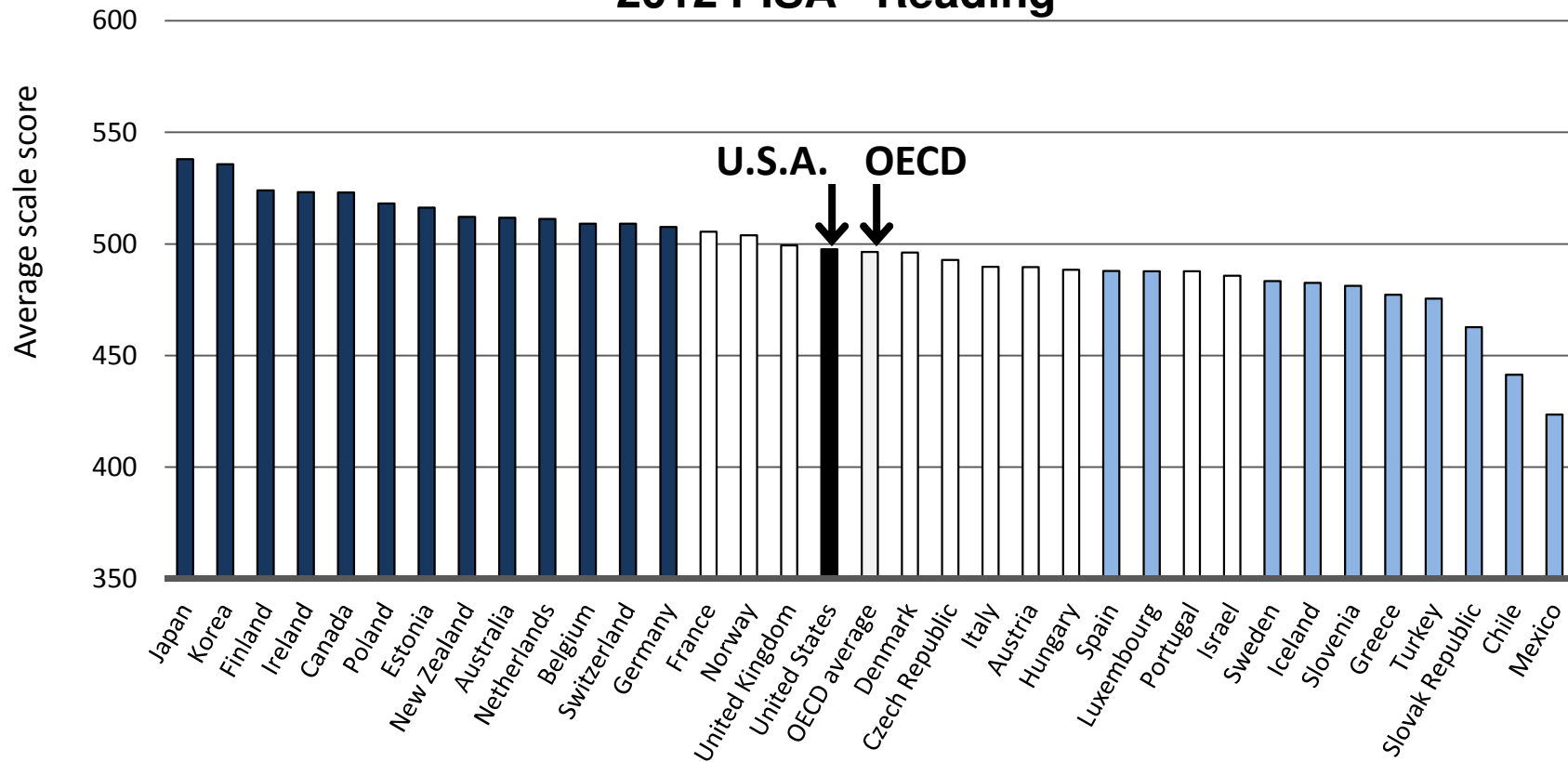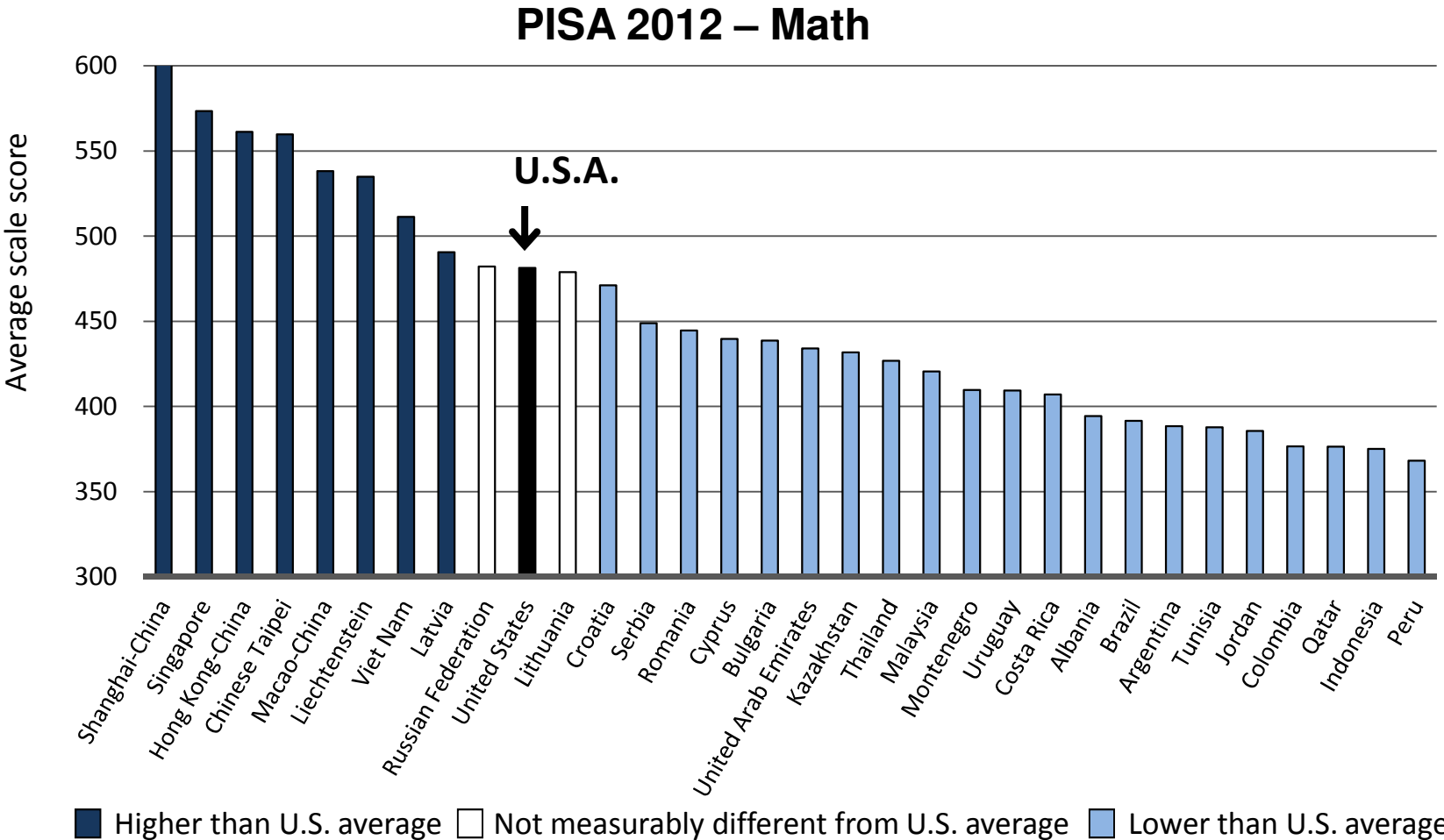**PISA 2012 – Math**

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_3a.asp.

Compared with the 31 Participating Non-OECD Economies, the U.S.A. Ranks 8th in Reading Literacy

PISA 2012 – Reading
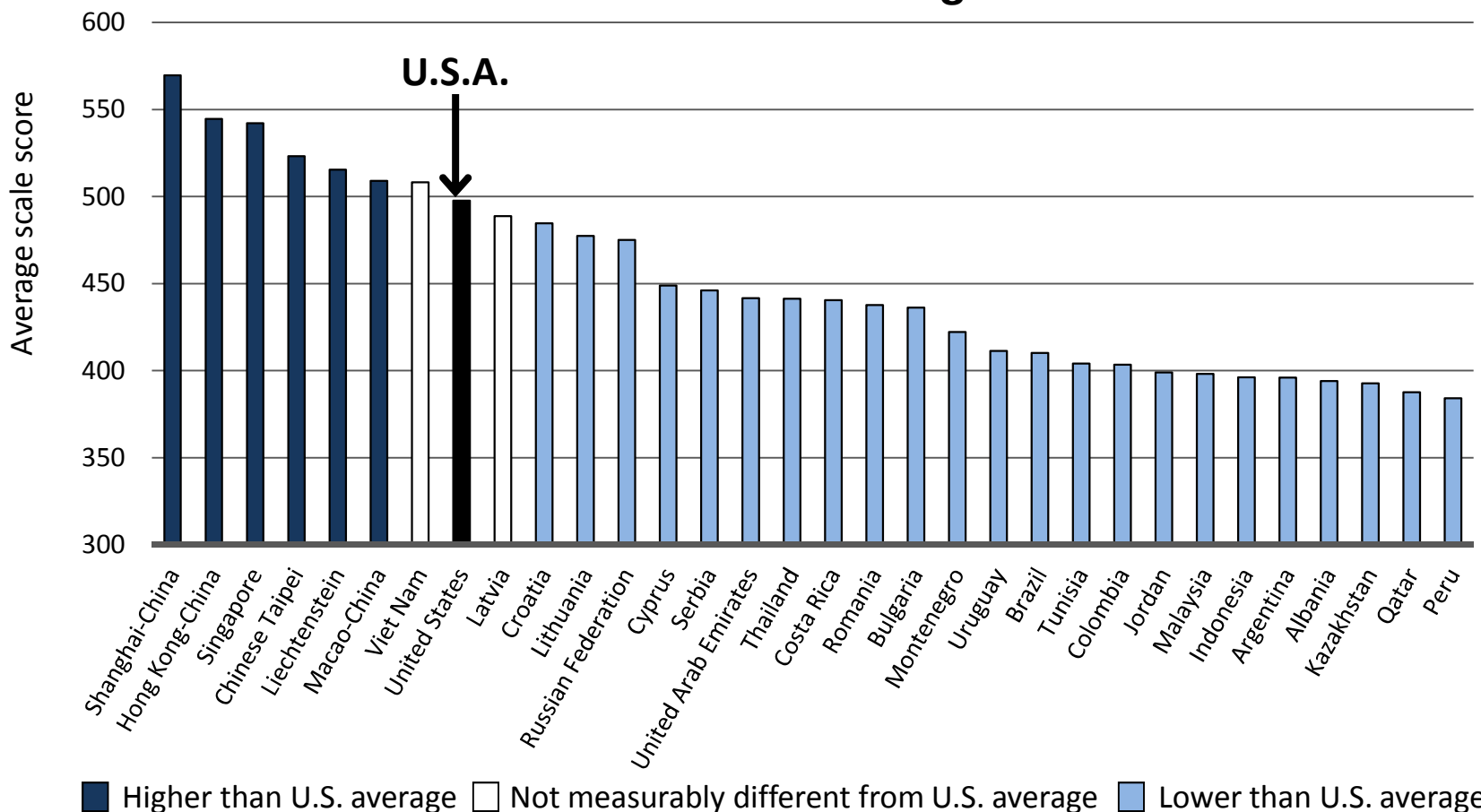
Legend: ■ Higher than U.S. average □ Not measurably different from U.S. average ■ Lower than U.S. average

Compared with the 31 Participating Non-OECD Economies, the U.S.A. Ranks 9th in Science

PISA 2012 – Science
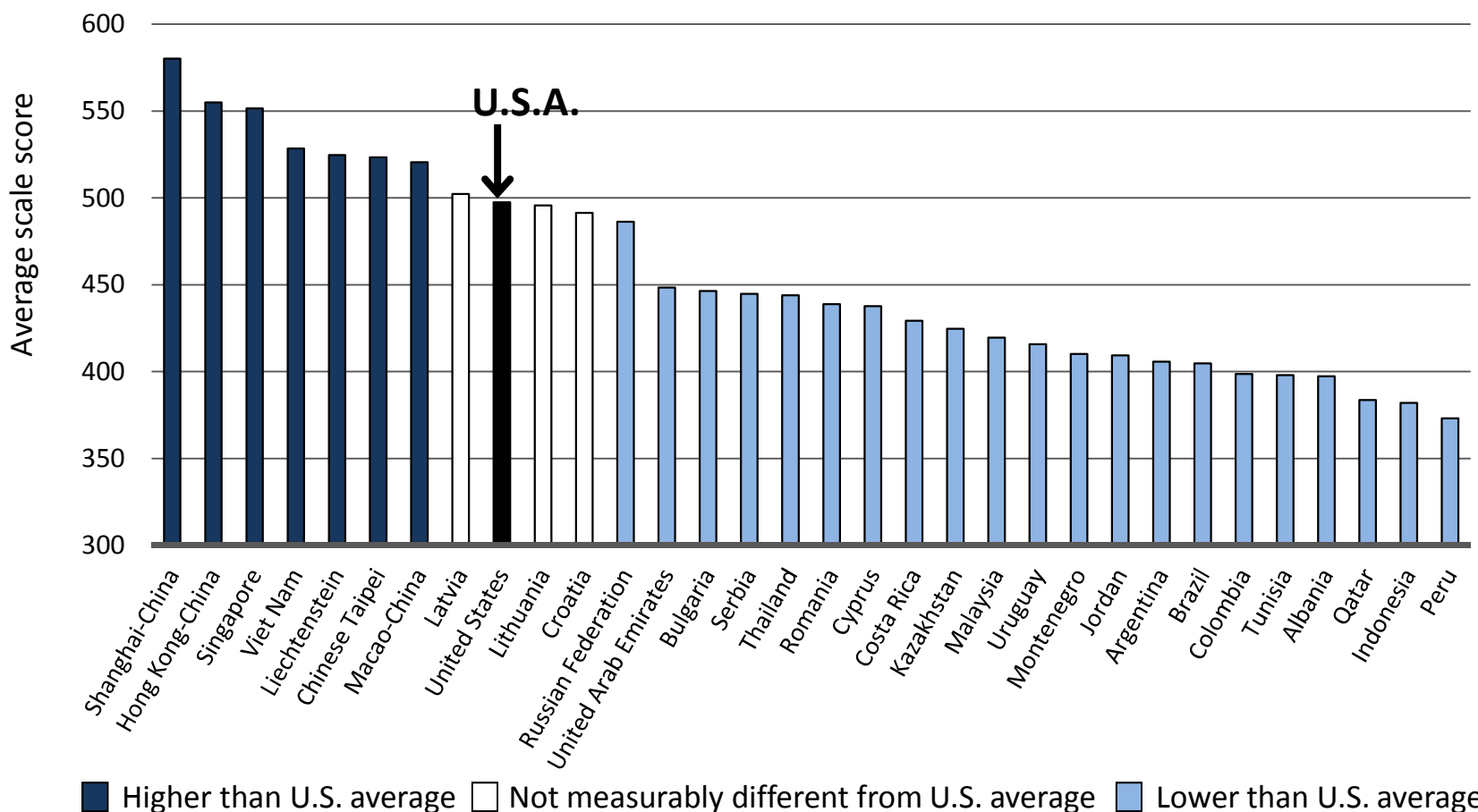
Clearly, the U.S. has
a long way to go.

The U.S. doesn't do well for any of its students – but it does especially poorly for disadvantaged students and students of color.

Neither low-SES students nor high-SES students compare well to their international counterparts . . .

U.S.A. Ranks 25th out of 34 OECD Countries in the Math Achievement of High-SES Students

PISA 2012 – Math
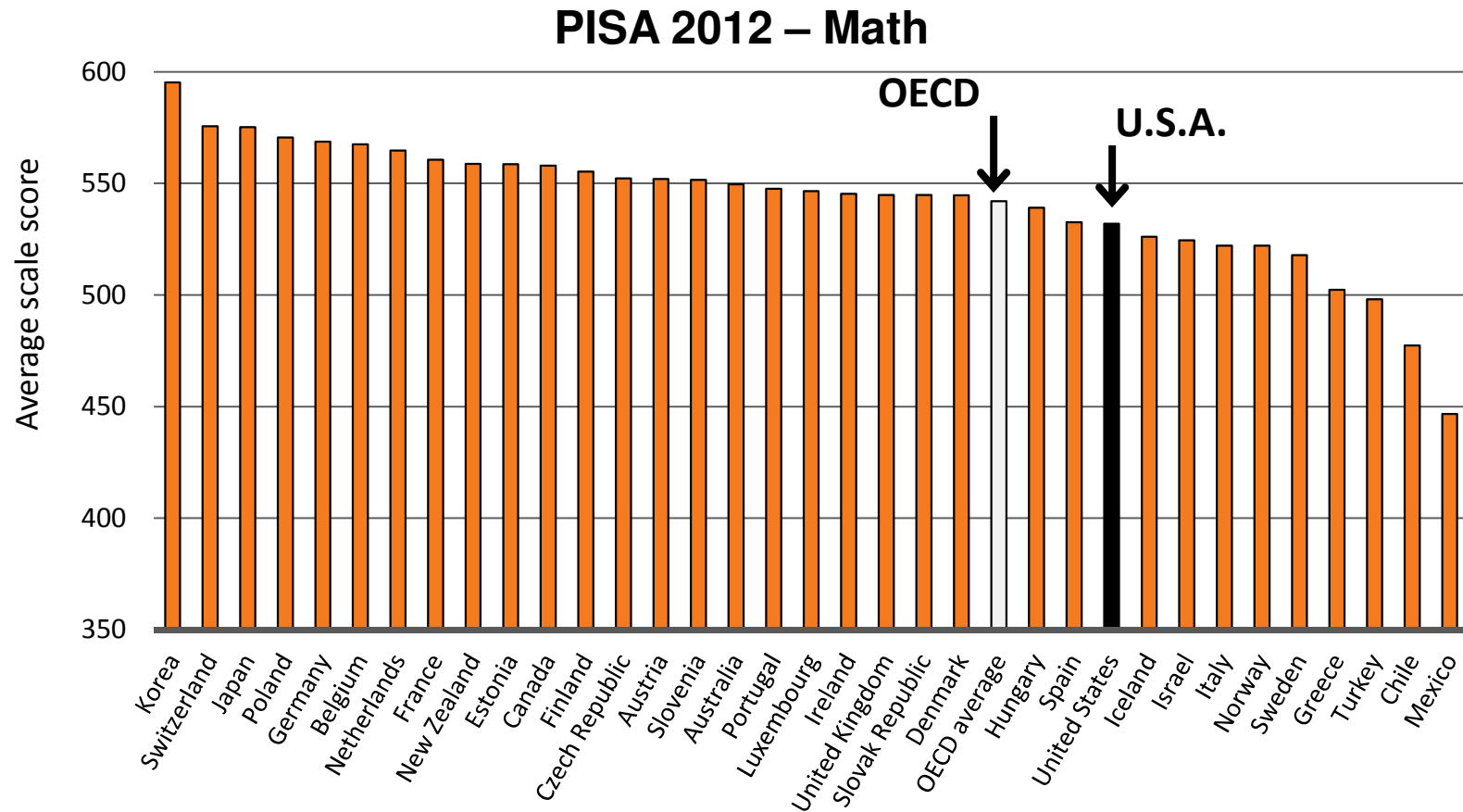
Note: High SES students are those in the top quartile on the ESCS. The ESCS (Index of Economic, Social, and Cultural Status) is comprised of information related to parents' occupational status, parents' educational attainment, family wealth, home educational resources, and possessions related to "classical" culture in the home.
Source: PISA 2012 Results, OECD, Annex B1, Chapter 2, Table II.2.4a

U.S.A. Ranks 25ᵗʰ out of 34 OECD Countries in the Math Achievement of Low-SES Students

PISA 2012 – Math
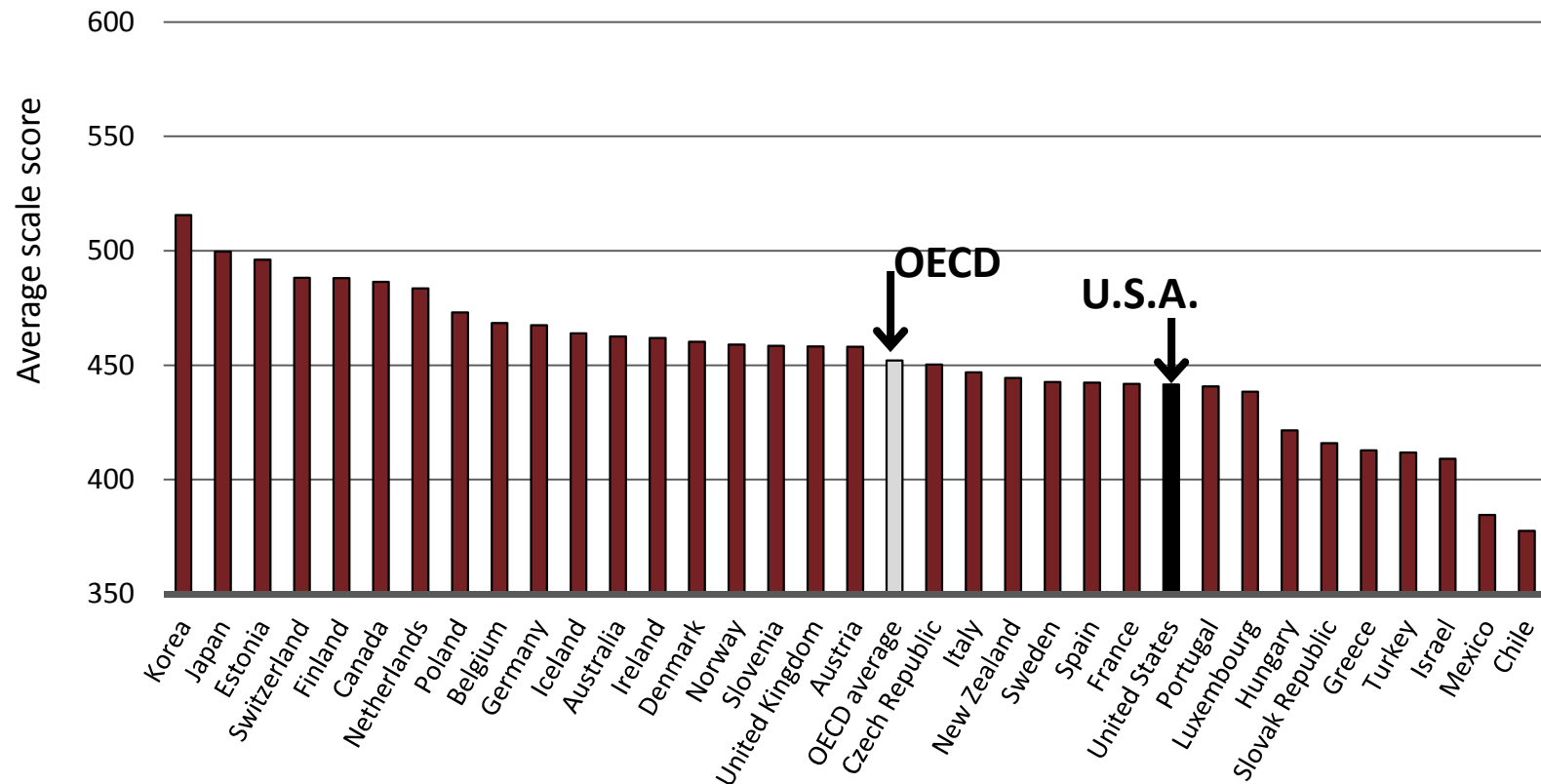
Note: Low SES students are those in the bottom quartile on the ESCS. The ESCS (Index of Economic, Social, and Cultural Status) is comprised of information related to parents' occupational status, parents' educational attainment, family wealth, home educational resources, and possessions related to "classical" culture in the home.

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

Gaps between low-SES and high-SES students are large . . .

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

2012 PISA – Math

Gap in Average Scale Score

U.S.A. OECD

Slovak Republic, France, Hungary, Israel, New Zealand, Luxembourg, Portugal, Czech Republic, Germany, Chile, Belgium, Poland, Austria, Slovenia, United States, Spain, OECD average, Greece, Switzerland, Australia, United Kingdom, Turkey, Denmark, Ireland, Netherlands, Korea, Japan, Italy, Sweden, Canada, Finland, Norway, Estonia, Iceland, Mexico
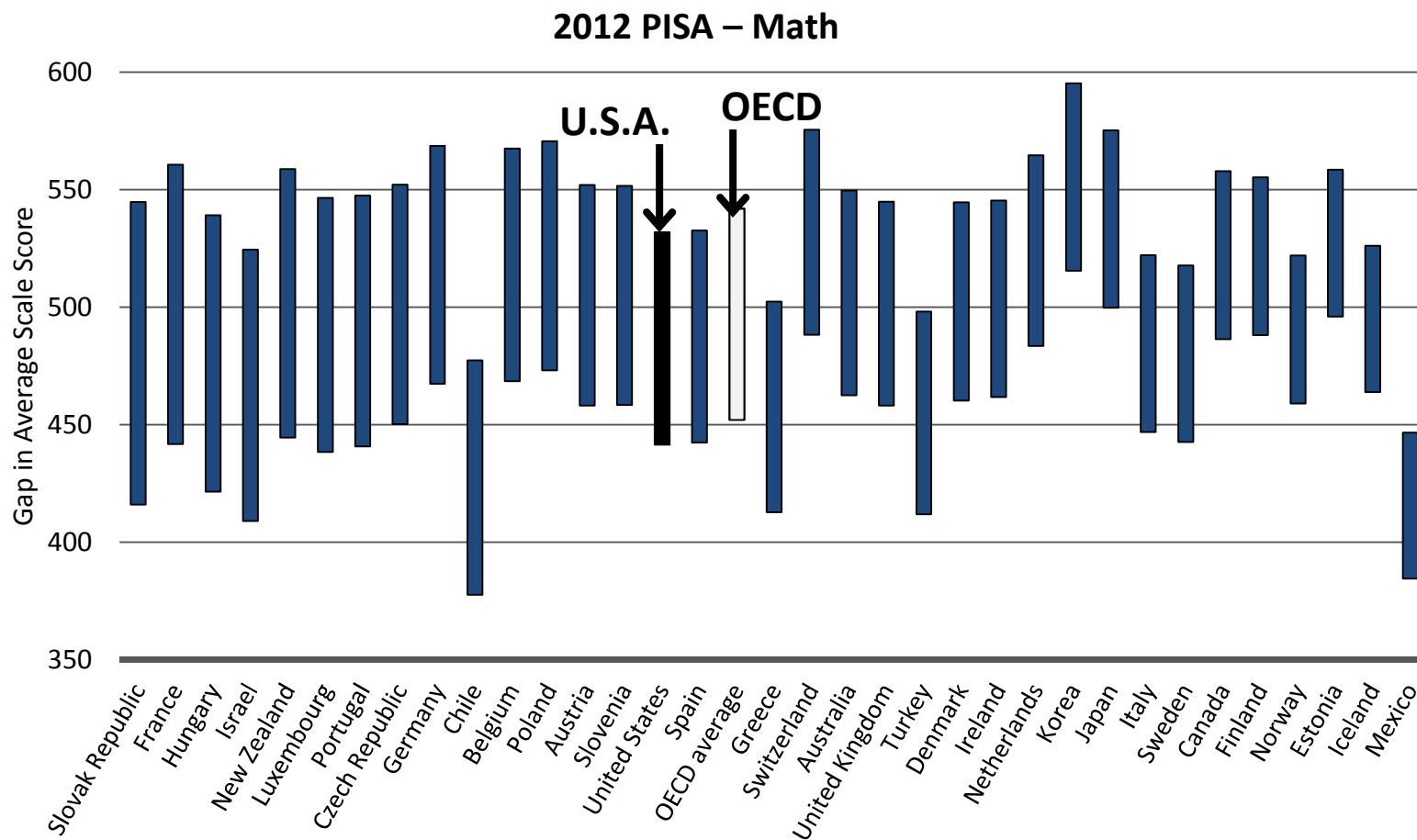
Source: PISA 2012 Results, OECD, Annex B1, Chapter 2, Table II.2.4a

Low-SES students in the U.S. are less likely to be high performing than low-SES students in most other OECD countries . . .

The U.S. ranks 26th among 34 OECD Countries on the Percentage of Low-SES Students who are High-Performing

PISA 2012 - Math
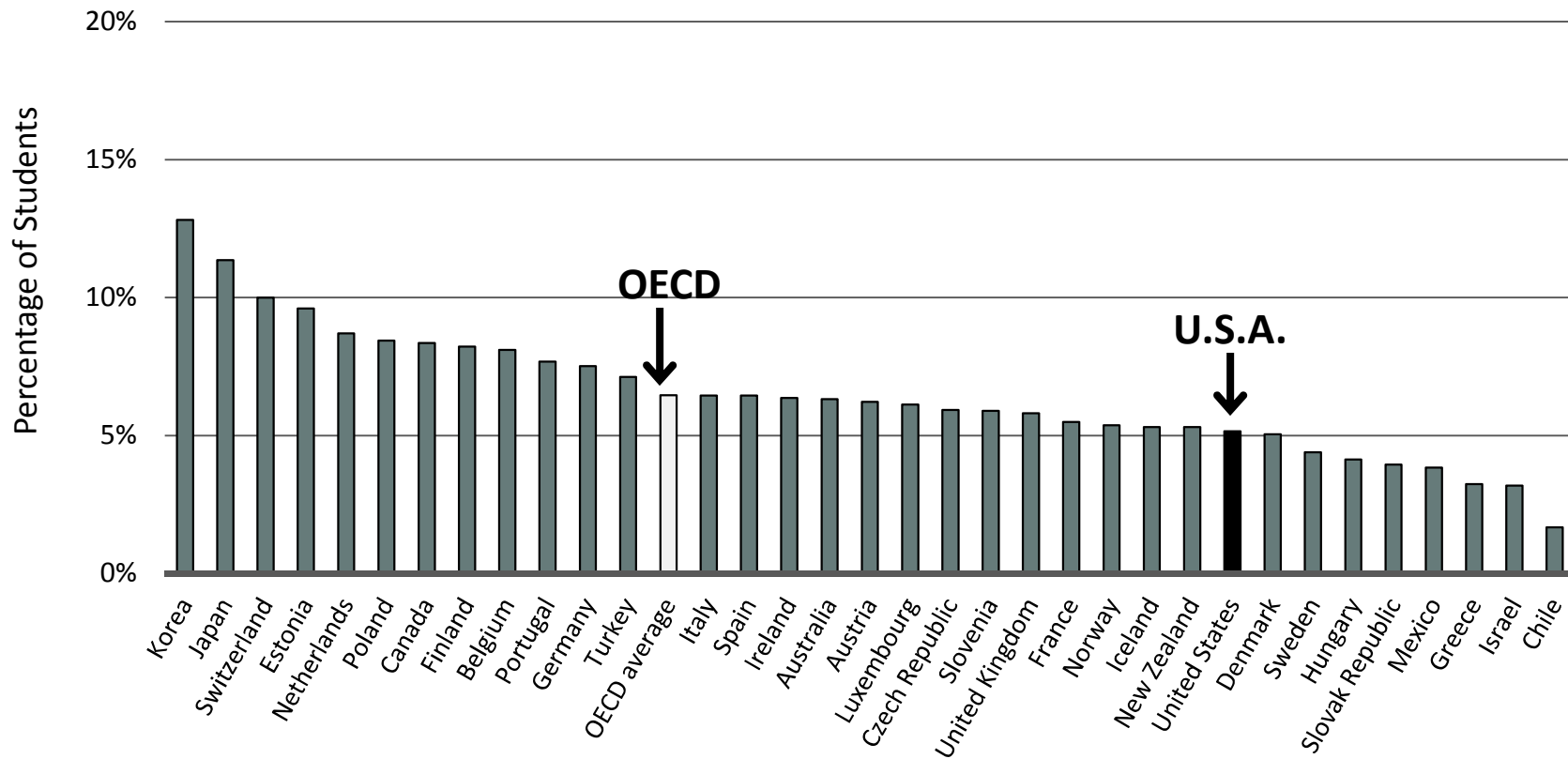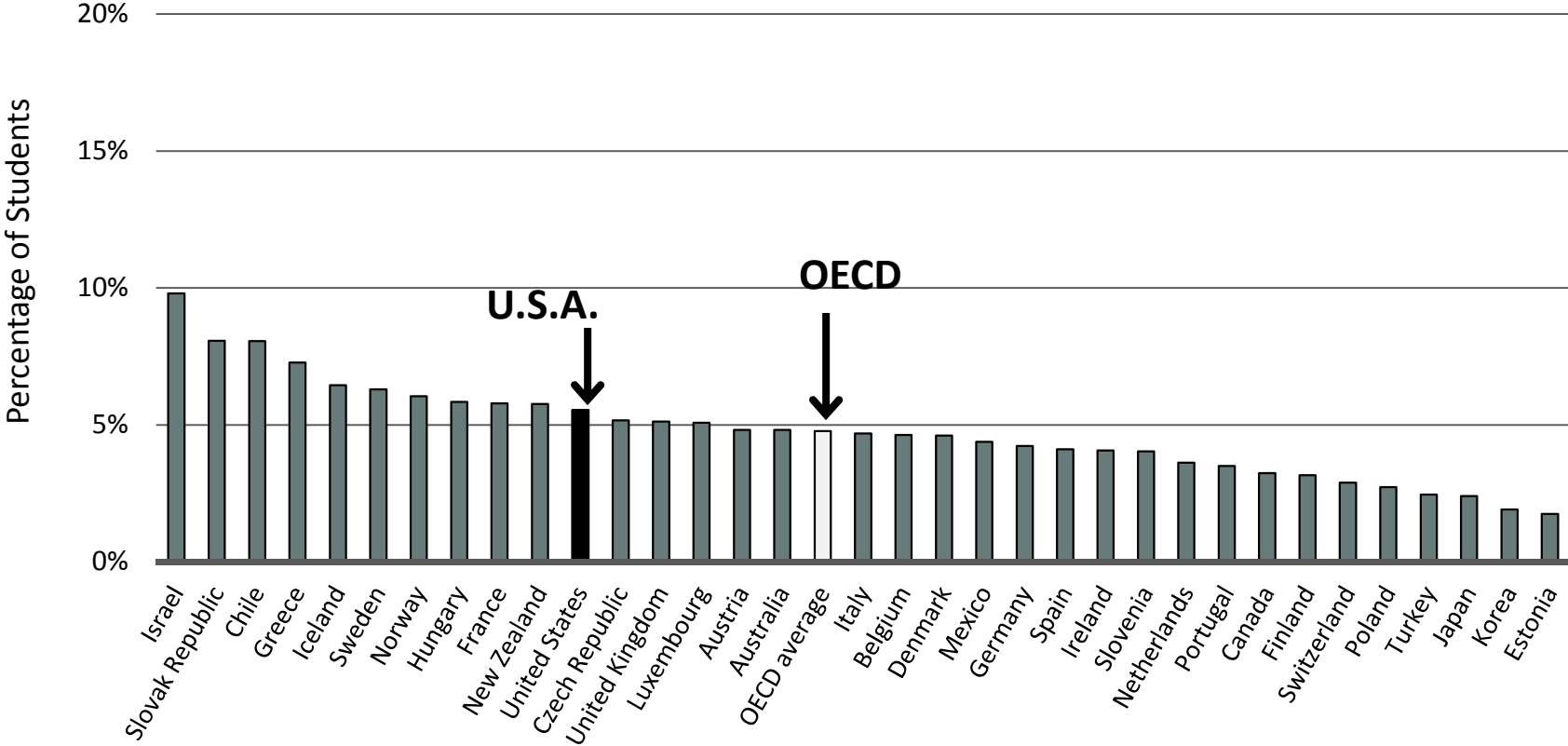

Note: High-performing, low-SES students are those who are in the bottom quarter of the ESCS in their country but perform in the top quarter across students from all countries after accounting for socioeconomic background.

Source: PISA 2012 Results, OECD, Annex B1, Chapter 2, Table II.2.7a

The U.S. ranks 11ᵗʰ among the 34 OECD Countries on the Percentage of Low-SES Students who are Low-Performing

PISA 2012 - Math

Note: Low-performing, low-SES students are those who are in the bottom quarter of the ESCS in their country and perform in the bottom quarter across students from all countries after accounting for socioeconomic background.

Source: PISA 2012 Results, OECD, Annex B1, Chapter 2, Table II.2.7a

Within the United States, performance varies widely across groups of students . . .

African American and Latino Students Score Far Below White and Asian Counterparts
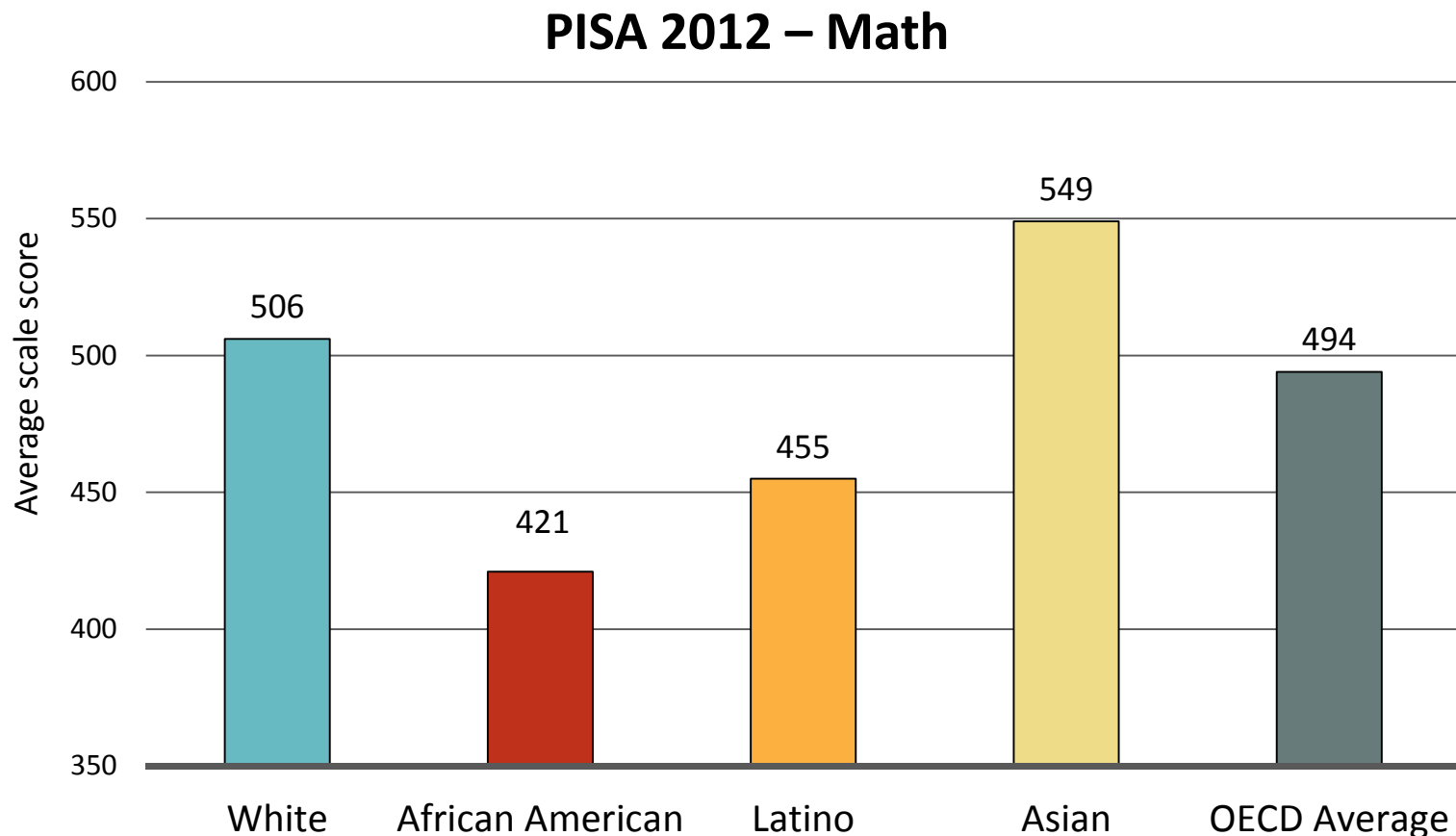
PISA 2012 – Math

Students in Low Income Schools Score Far Below Students in Higher Income Schools

PISA 2012 – Math
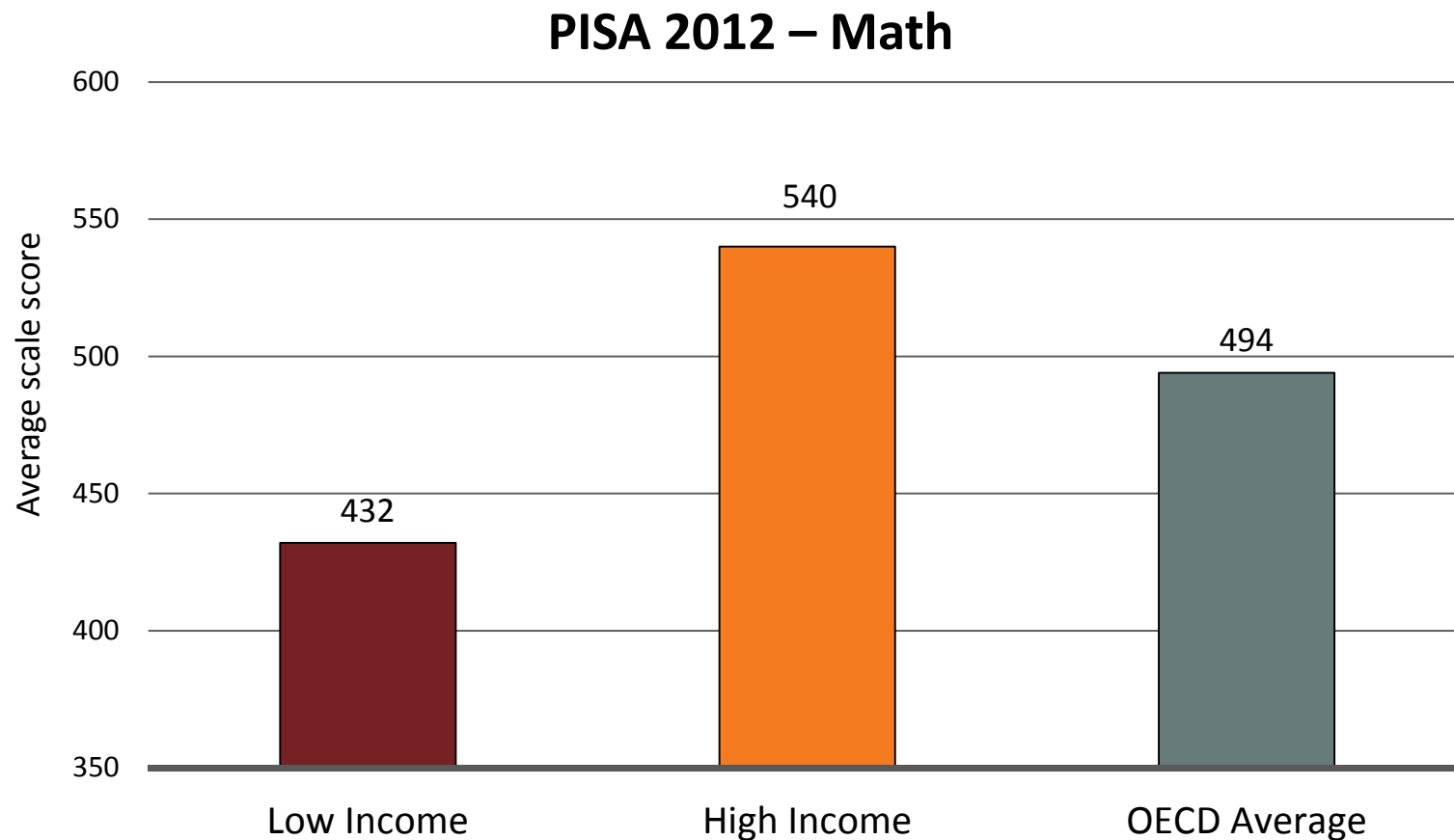
Note: Low income schools are those in which 75% or more of students are eligible for free or reduced price lunch; high income schools are those in which less than 10% are eligible
Source: International Data Explorer, NCES

PISA Math Literacy Levels: Higher-Level Skills

- Level 6: Conceptualize, generalize, and utilize information based on investigations and modeling of complex problem situations; apply insight and understanding to develop new approaches for attacking novel situations; reflect on actions and formulate and communication actions and reflections.

- Level 5: Develop and work with models for complex situations; select, compare, and evaluate appropriate problem-solving strategies; work strategically using broad, well-developed thinking and reasoning skills

- Level 4: Work with explicit models for complex concrete situations; select and integrate different representations; reason in straightforward contexts.

PISA Math Literacy Levels:
Lower-Level Skills

- Level 3: Execute clearly described procedures; select and apply simple problem-solving strategies; interpret and use representations based on different information sources and reason directly from those sources.

- Level 2: Interpret and recognize situations in contexts that require no more than direct inference; extract relevant information from a single source; make use of a single representational mode; employ basic conventions to solve problems; make literal interpretations of results.

- Level 1: Answer questions involving familiar contexts where all relevant information is present and questions are clearly defined; identify information and carry out routine procedures according to direct instructions.
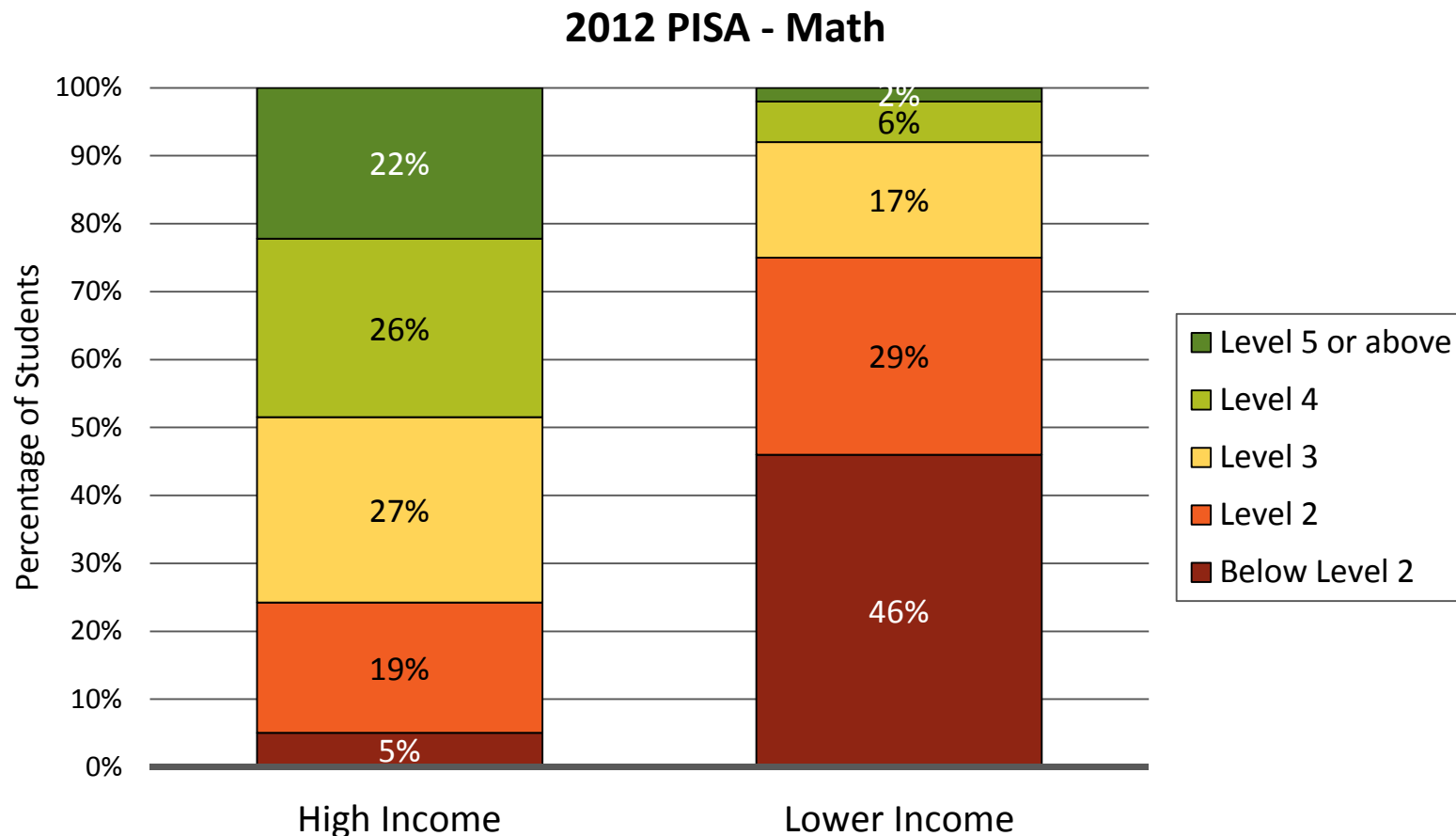
Students of Color Far Less Likely to Have Higher Order Math Skills
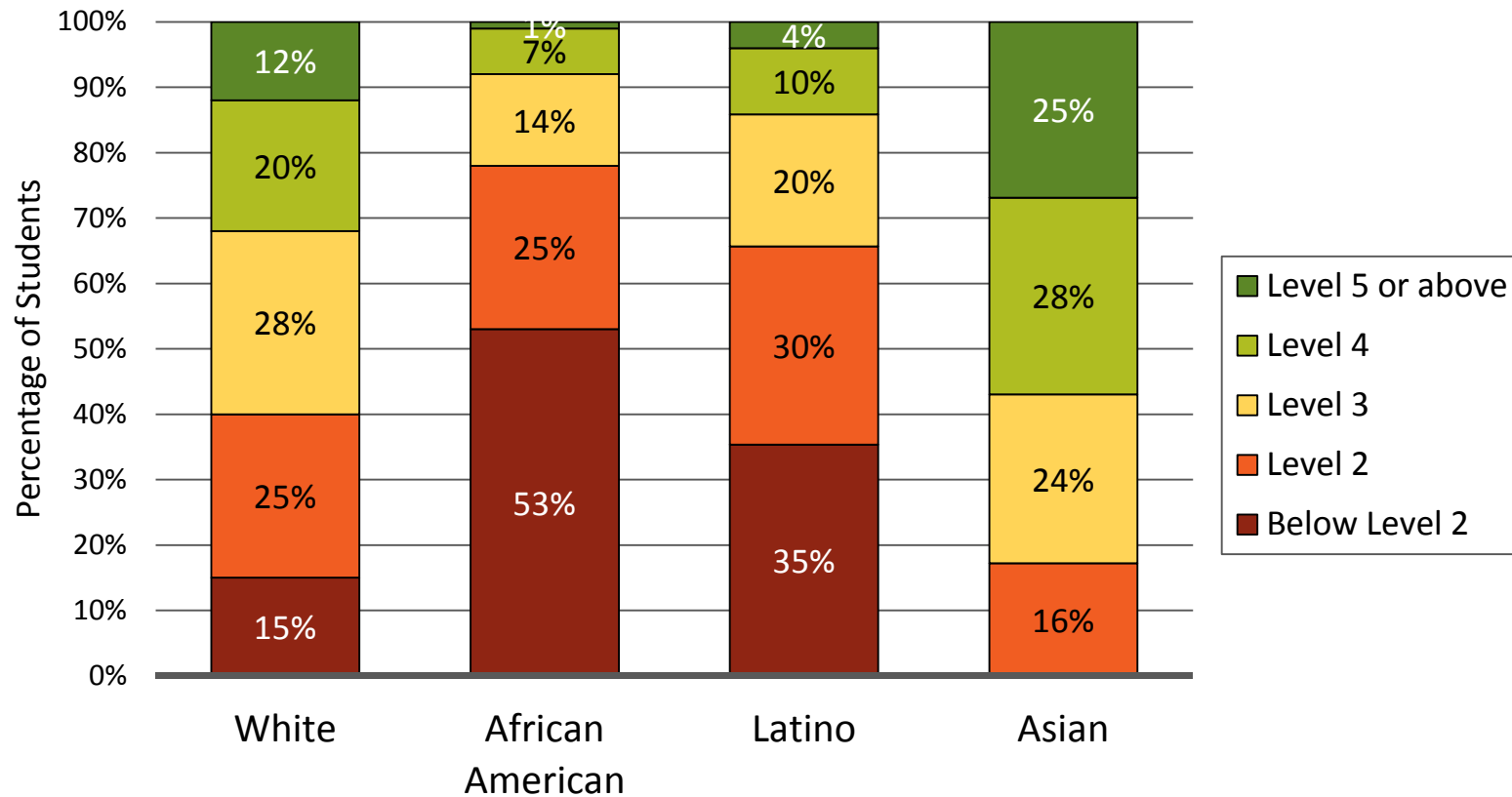
2012 PISA - Math

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_3f.asp.
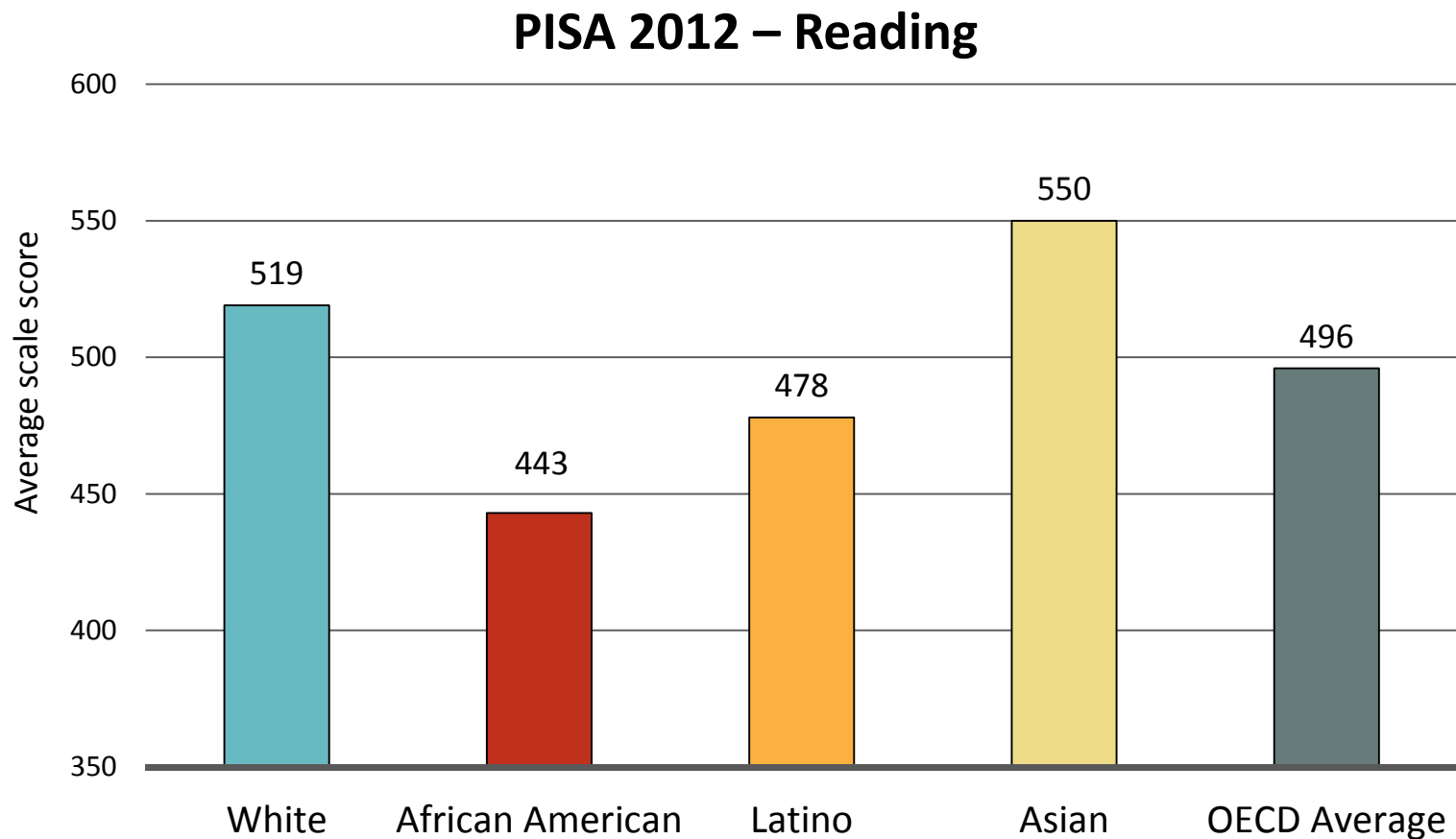
Students in Lower Income Schools Far Less Likely to Have Higher Order Math Skills

2012 PISA - Math

Lower income schools are those in which 75% or more of students are eligible for free or reduced-price lunch; high income schools are those in which less than 10% of students are eligible for free or reduced-price lunch.
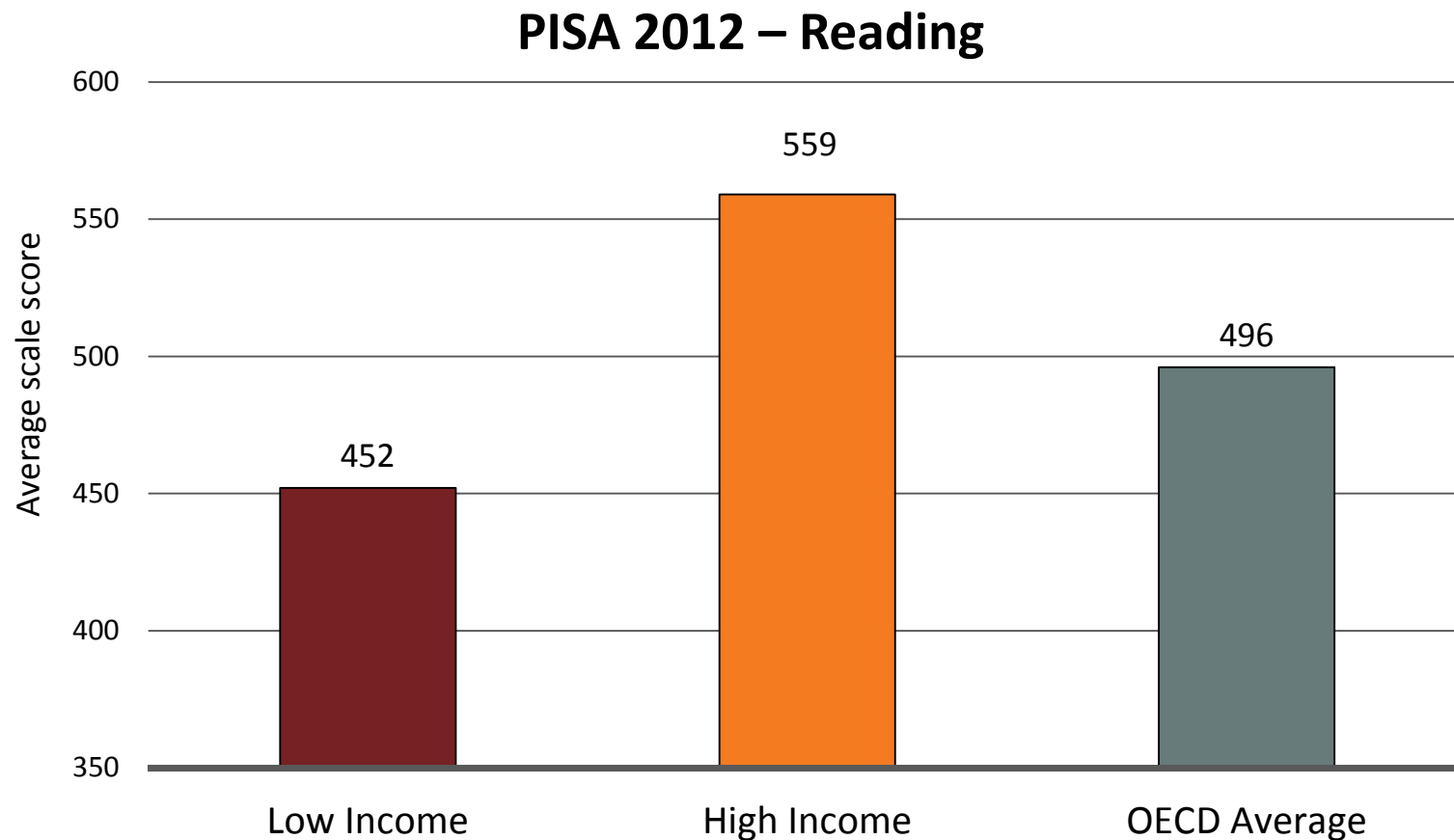Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_3f.asp.

African American and Latino Students Score Far Below White and Asian Counterparts

PISA 2012 – Reading

Average scale score

	White	African American	Latino	Asian	OECD Average
Score	519	443	478	550	496

Students in Low Income Schools Score Far Below Students in Higher Income Schools

PISA 2012 – Reading

Note: Low income schools are those in which 75% or more of students are eligible for free or reduced price lunch; high income schools are those in which less than 10% are eligible

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_5d_1.asp.

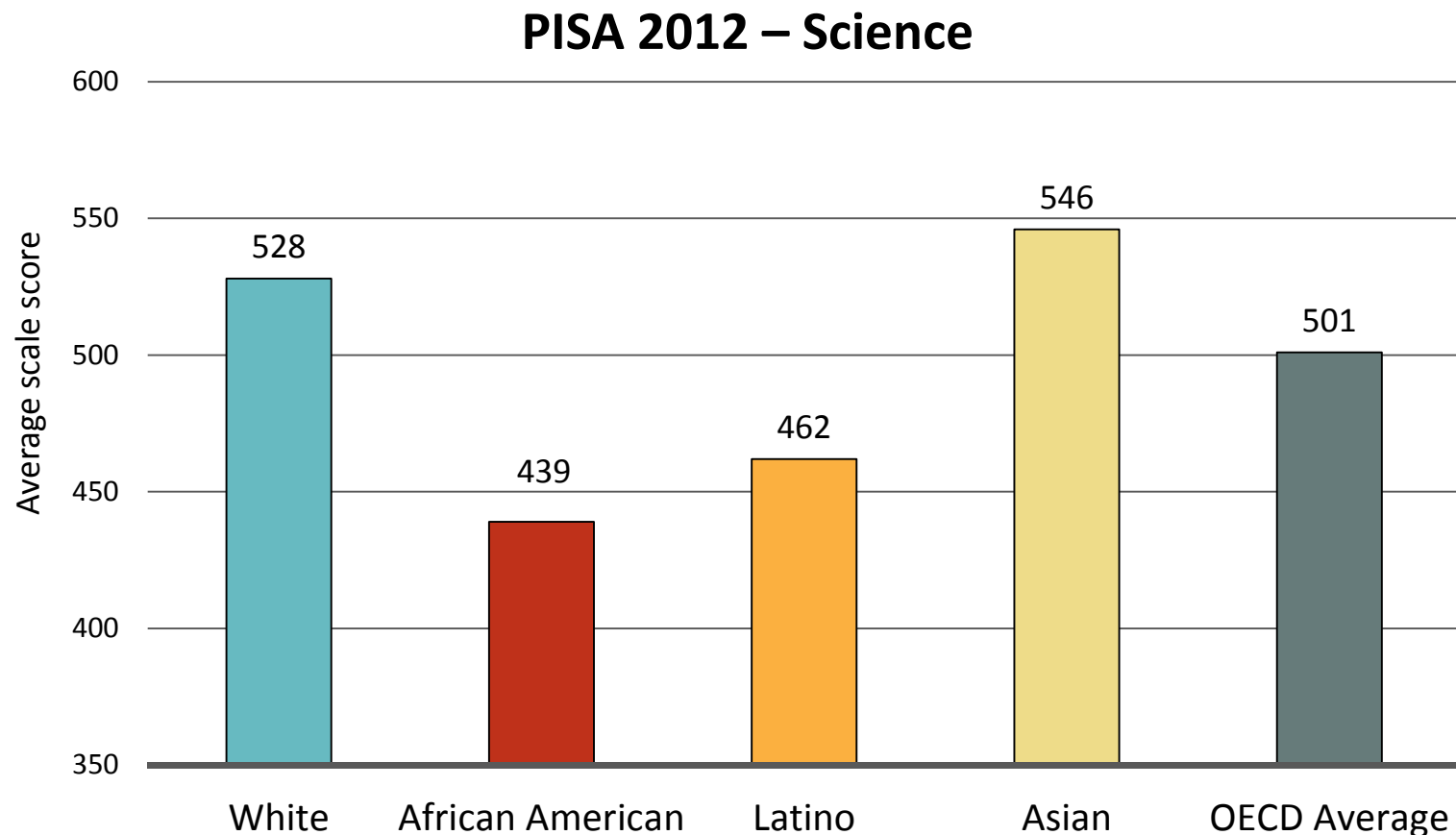# African American and Latino Students Score Far Below White and Asian Counterparts

PISA 2012 – Science

Average scale score

Category	Score
White	528
African American	439
Latino	462
Asian	546
OECD Average	501

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_4e_1.asp.

Students in Low Income Schools Score Far Below Students in Higher Income Schools
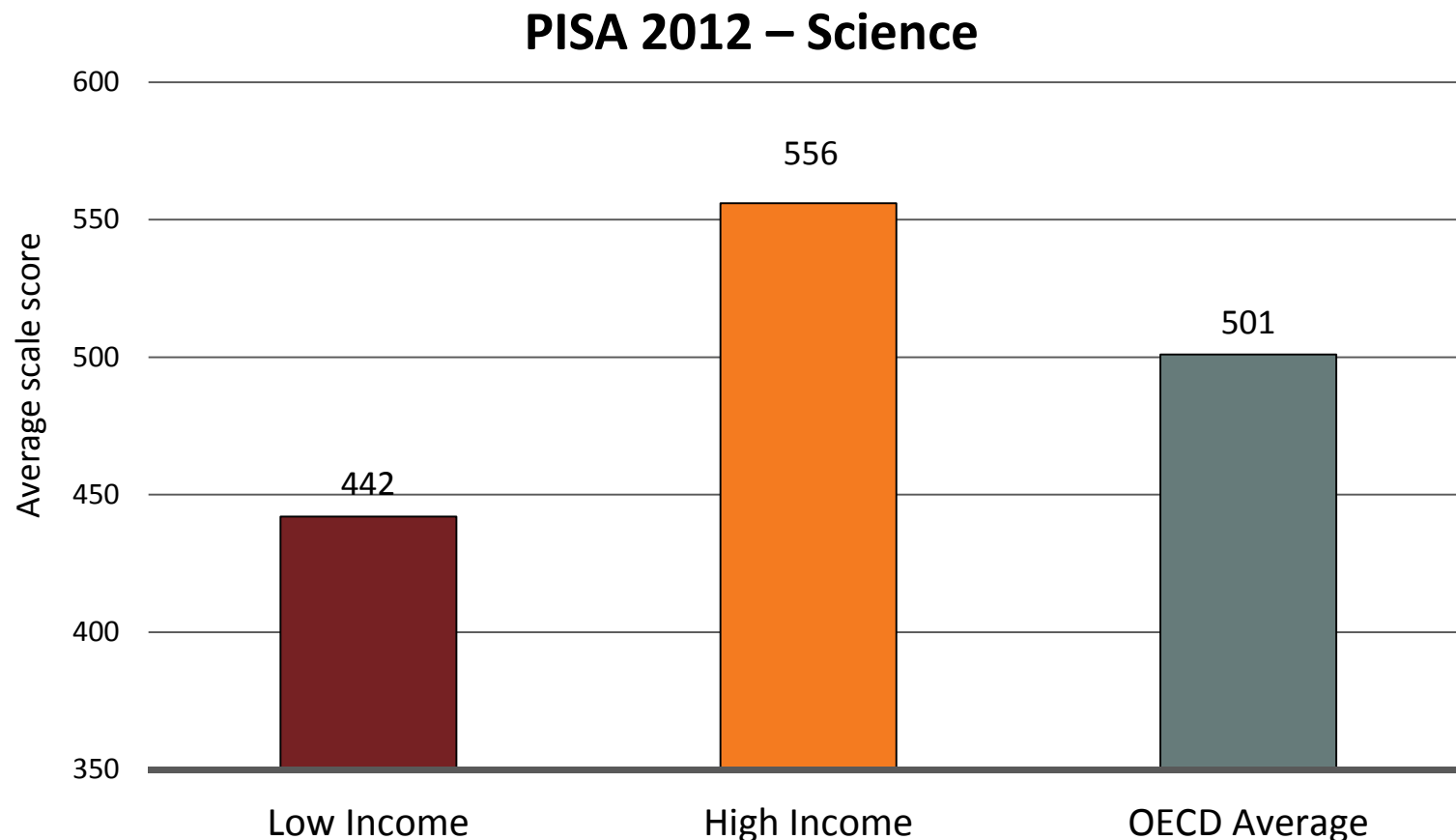
PISA 2012 – Science

Note: Low income schools are those in which 75% or more of students are eligible for free or reduced price lunch; high income schools are those in which less than 10% are eligible

Source: National Center for Education Statistics, 2013, http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_4d_1.asp.
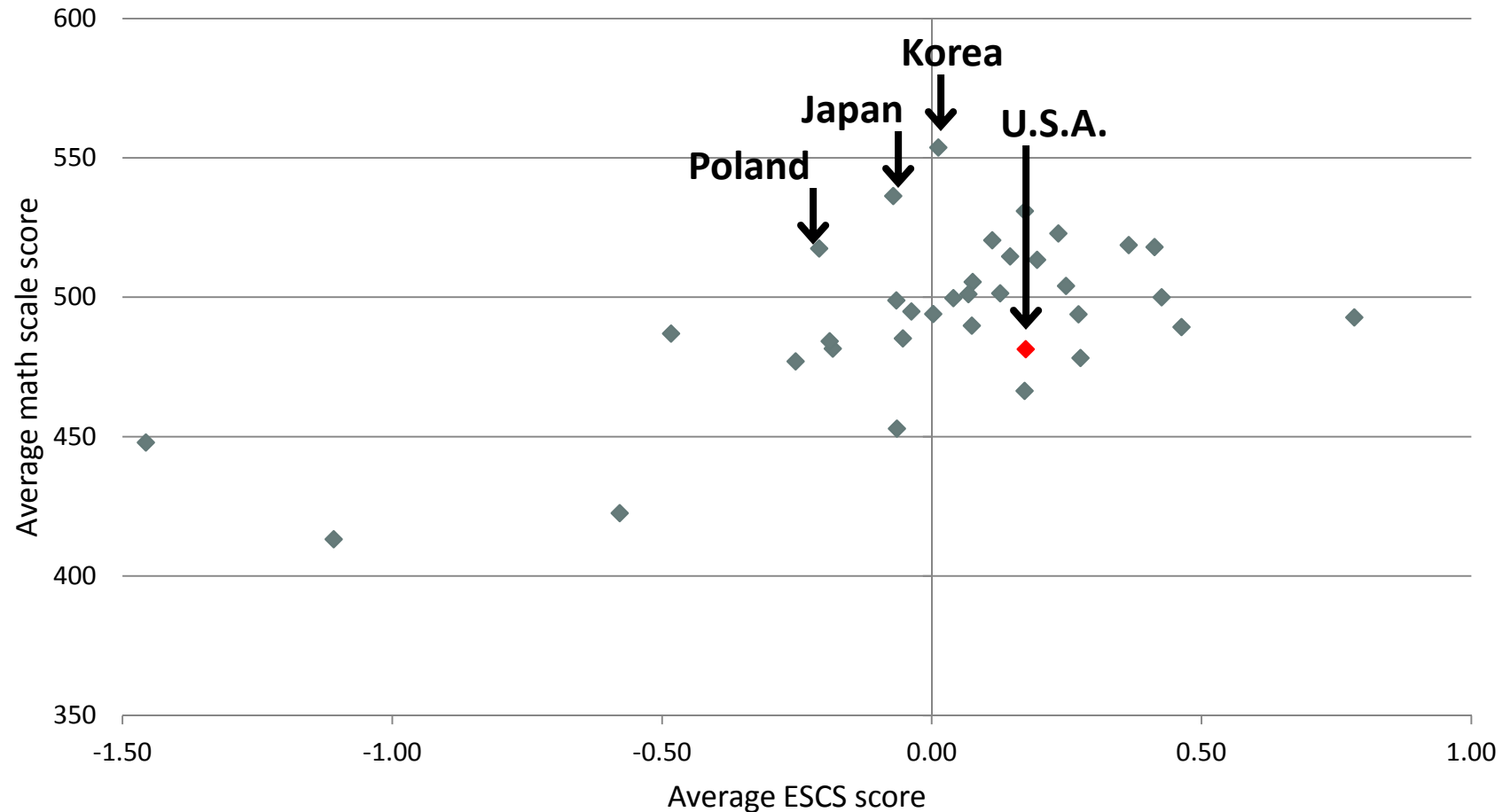
And there are no "easy" explanations for these gaps or for our low overall performance.

SES alone does not explain performance . . .

Some students in countries with much lower SES perform at higher levels

Average math scale score (y-axis, 350–600)
Average ESCS score (x-axis, -1.50 to 1.00)

Labels: Poland, Japan, Korea, U.S.A.

The U.S. rank on math performance would not change if all 34 OECD countries had the same average socioeconomic status

|	Actual Rank	Rank if SES were equalized across countries
United States	27th	27th
Hungary	29th	22nd
Poland	8th	3rd
Portugal	23rd	11th
Slovak Republic	26th	20th

Source: PISA 2012 Results, OECD, Annex B1, Chapter 2, Table II.2.1
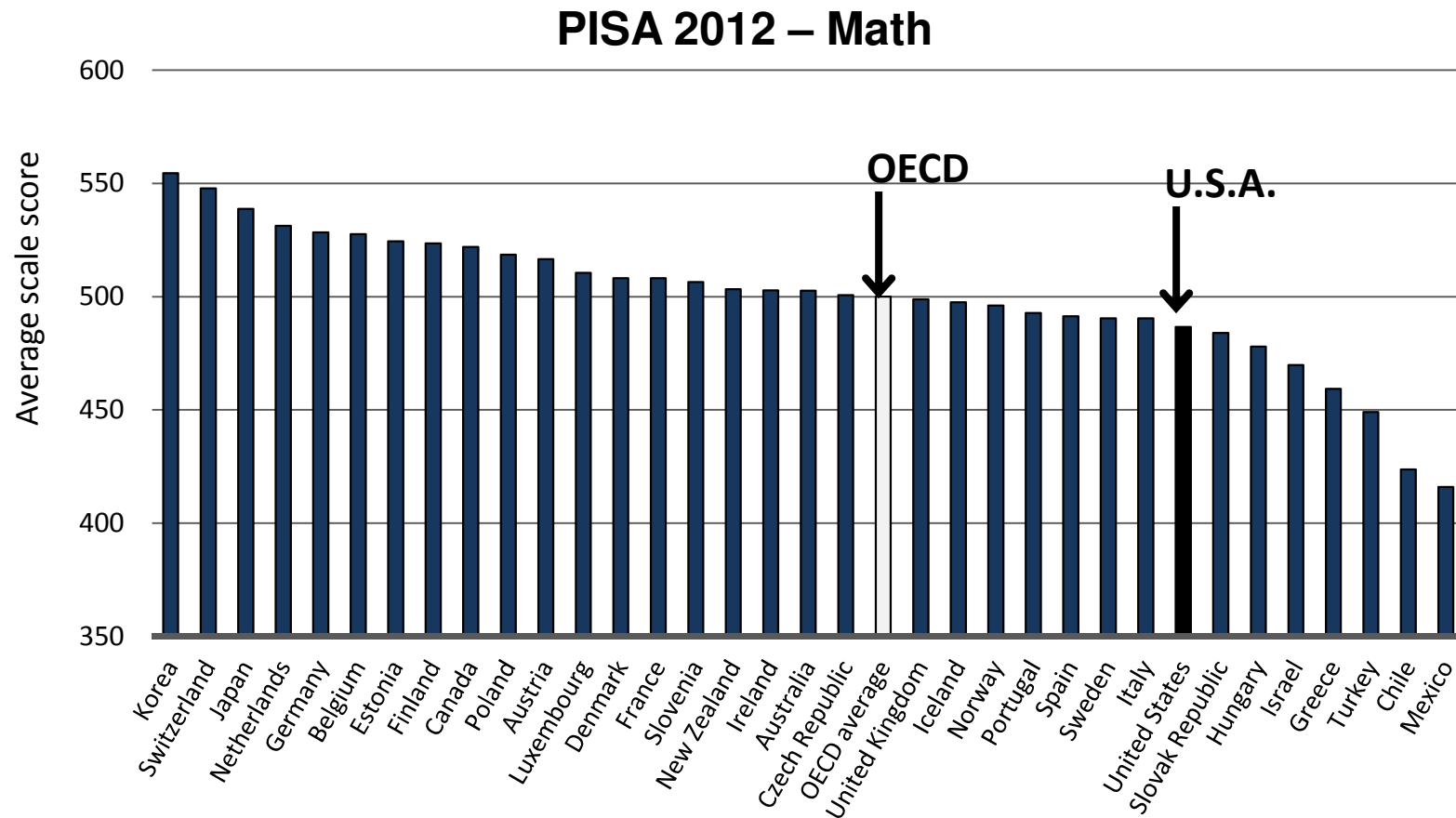
U.S. performance doesn't improve if we consider only native-born students . . .

The U.S. has a larger percentage of immigrants and children of immigrants than most OECD countries...
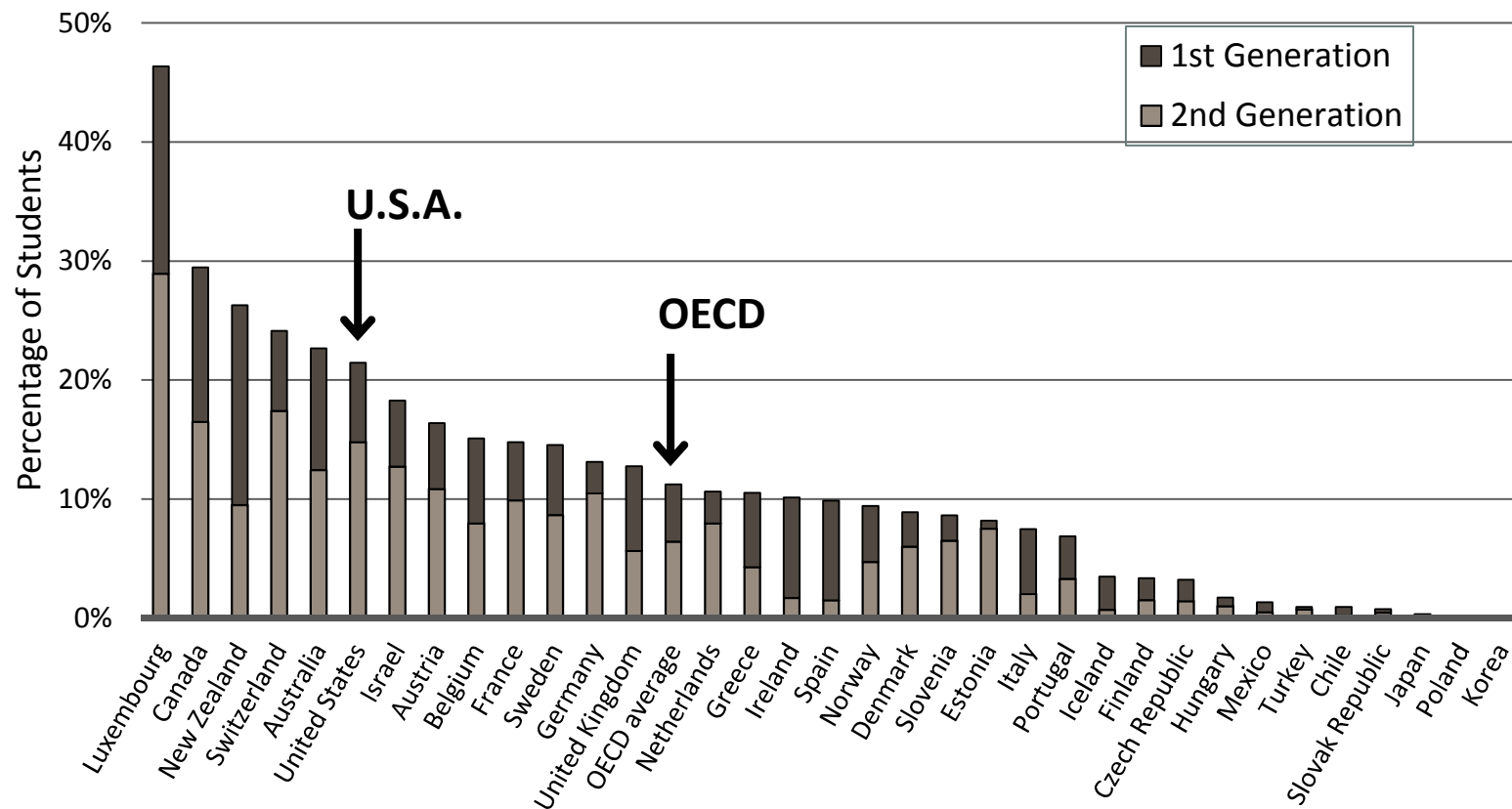
Source: PISA 2012 Results, OECD, Annex B1, Chapter 3, Table II.3.6a

…But the U.S. ranks 27th out of 34 OECD countries when only taking into account native student* scores
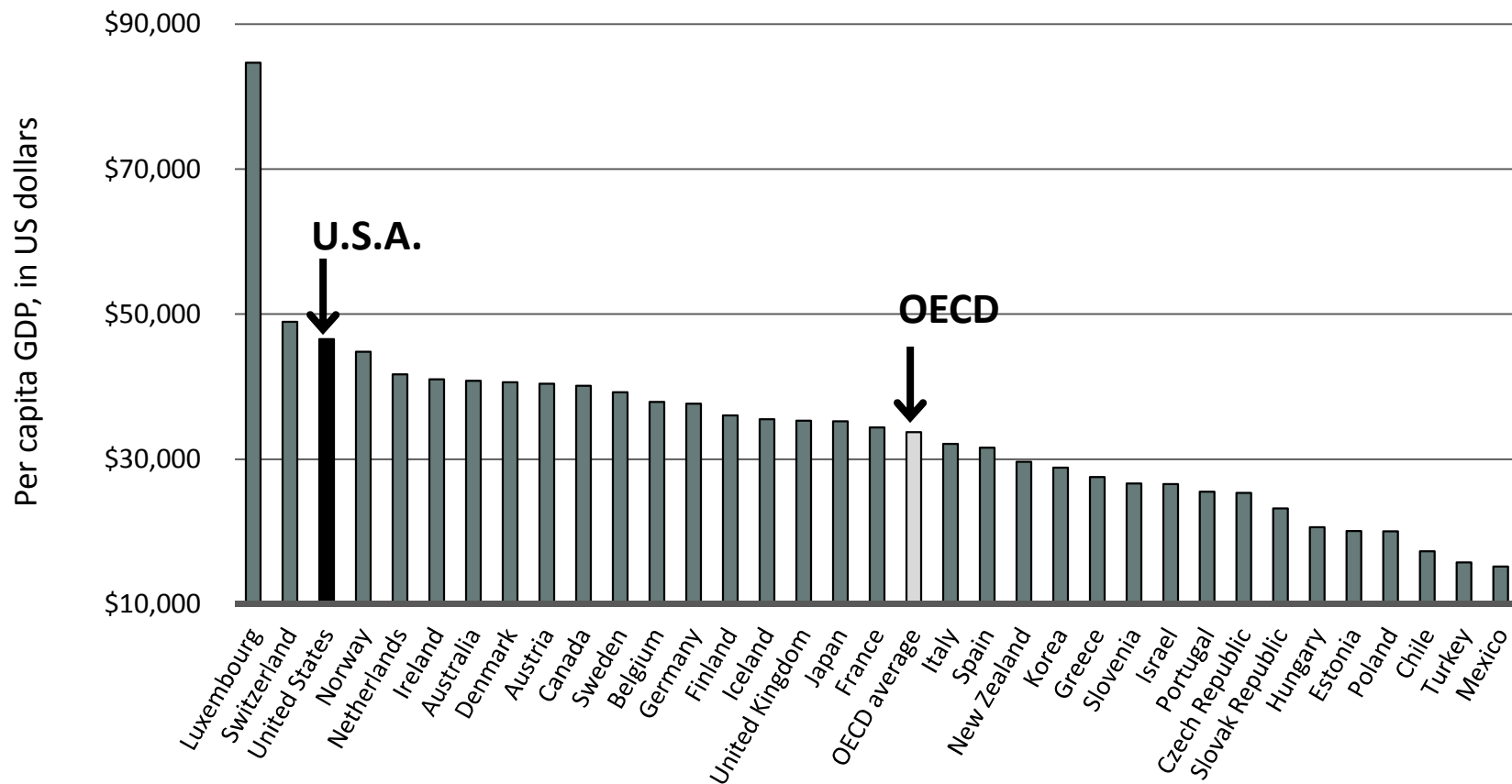
PISA 2012 – Math

*Students born in the country of assessment with at least one parent born in the same country
Source: PISA 2012 Results, OECD, Annex B1, Chapter 3, Table II.3.4a

The U.S. is wealthier than and spends more money per pupil than most other countries, but this doesn't translate into higher performance . . .
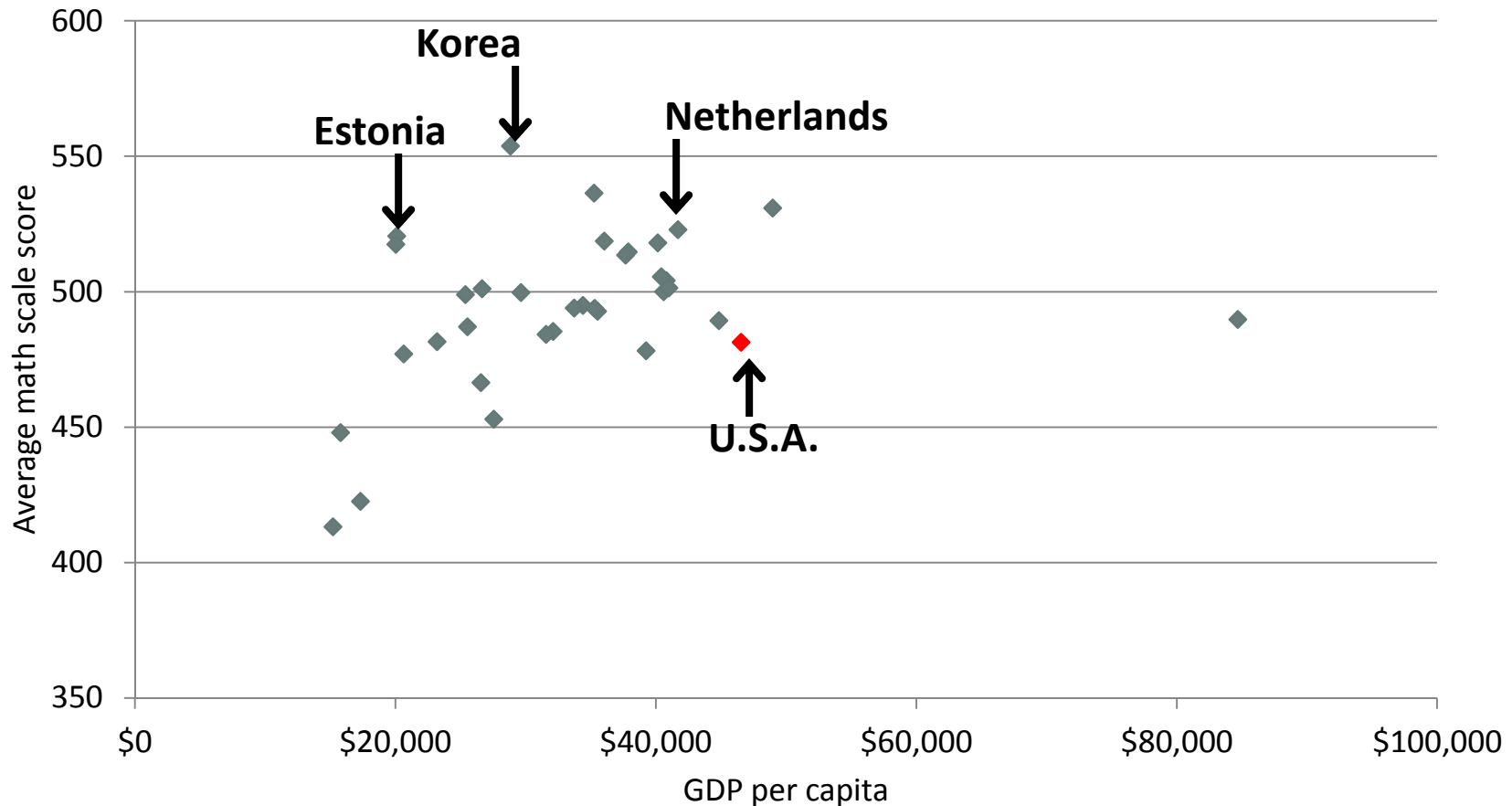
The U.S. has the third highest per capita GDP among OECD countries

Note: GDP per capita was converted into US dollars using purchasing power parities.
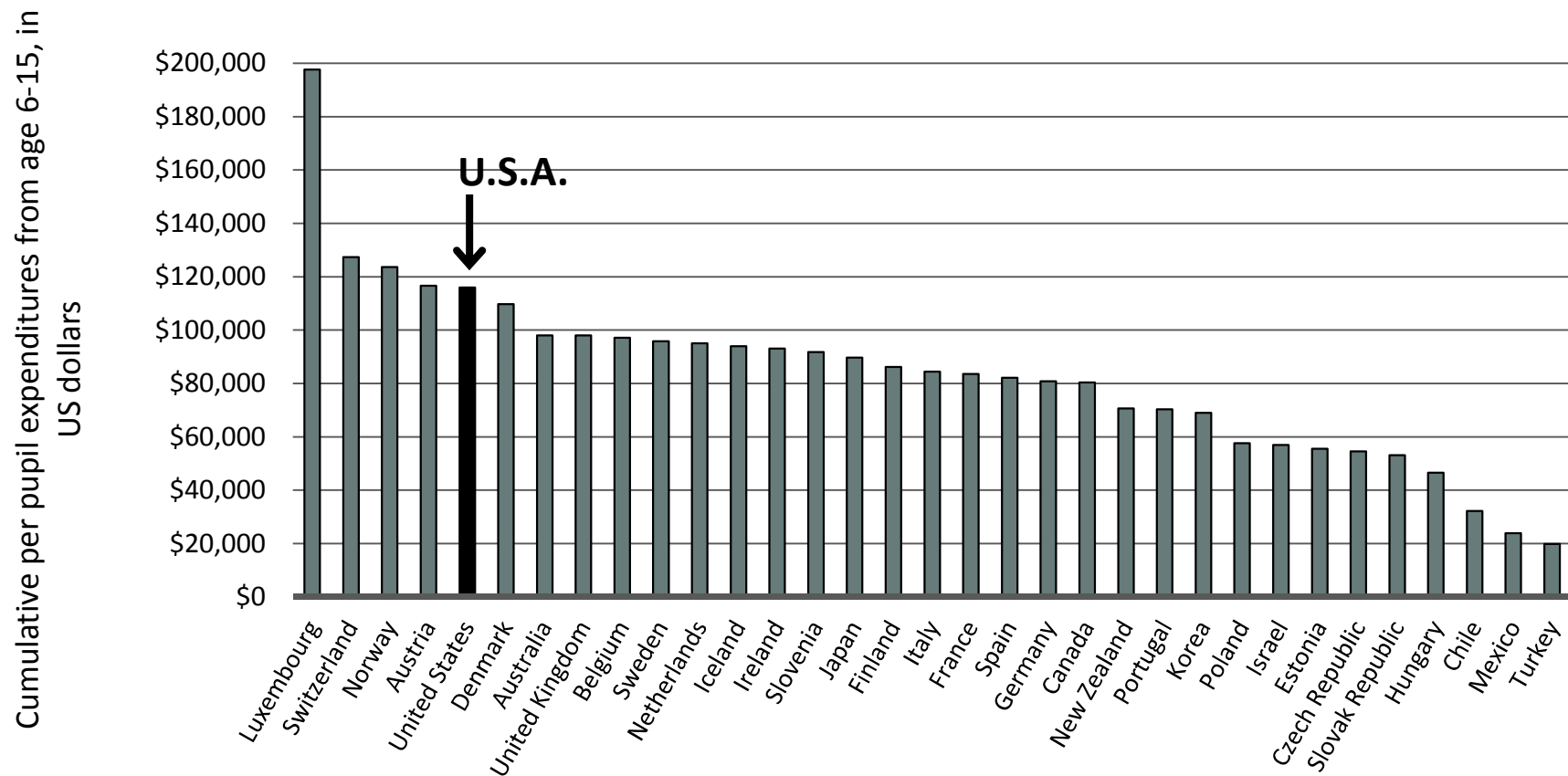Source: PISA 2012 Results, OECD, Annex B1, Chapter 3, Table IV.3.2.

The U.S. is wealthier than other countries, but students perform at a lower level

PISA 2012 - Math

The U.S. spends more money per student than nearly all other OECD countries

Cumulative per pupil expenditures from age 6-15, in US dollars

U.S.A.

Luxembourg, Switzerland, Norway, Austria, United States, Denmark, Australia, United Kingdom, Belgium, Sweden, Netherlands, Iceland, Ireland, Slovenia, Japan, Finland, Italy, France, Spain, Germany, Canada, New Zealand, Portugal, Korea, Poland, Israel, Estonia, Czech Republic, Slovak Republic, Hungary, Chile, Mexico, Turkey

The U.S. spends more money per student than other countries, but students perform at a lower level

PISA 2012 - Math

Y-axis: Average math scale score (350 to 600)

X-axis: Cumulative per pupil expenditures on students aged 6-15, in US dollars ($0 to $200,000)

Labeled points: Estonia, Japan, U.S.A.
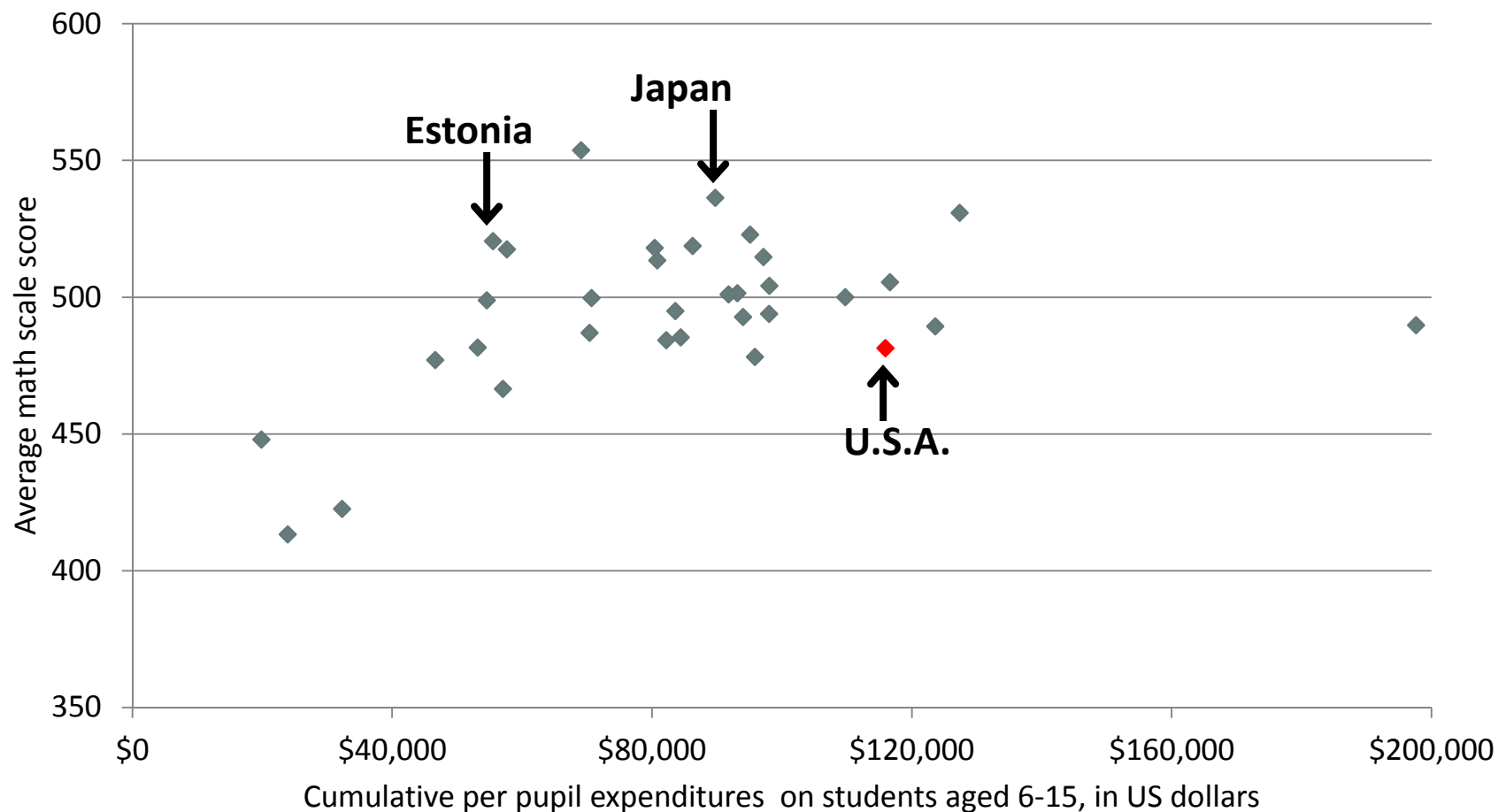
The U.S. spends more time per week on math instruction, but this doesn't translate into higher achievement. . .

The U.S. spends more time on math instruction than nearly all other OECD countries

Source: PISA 2012 Results, OECD, Annex B1, Chapter 3, Table IV3.21.

The U.S. spends more money per student than other countries, but students perform at a lower level
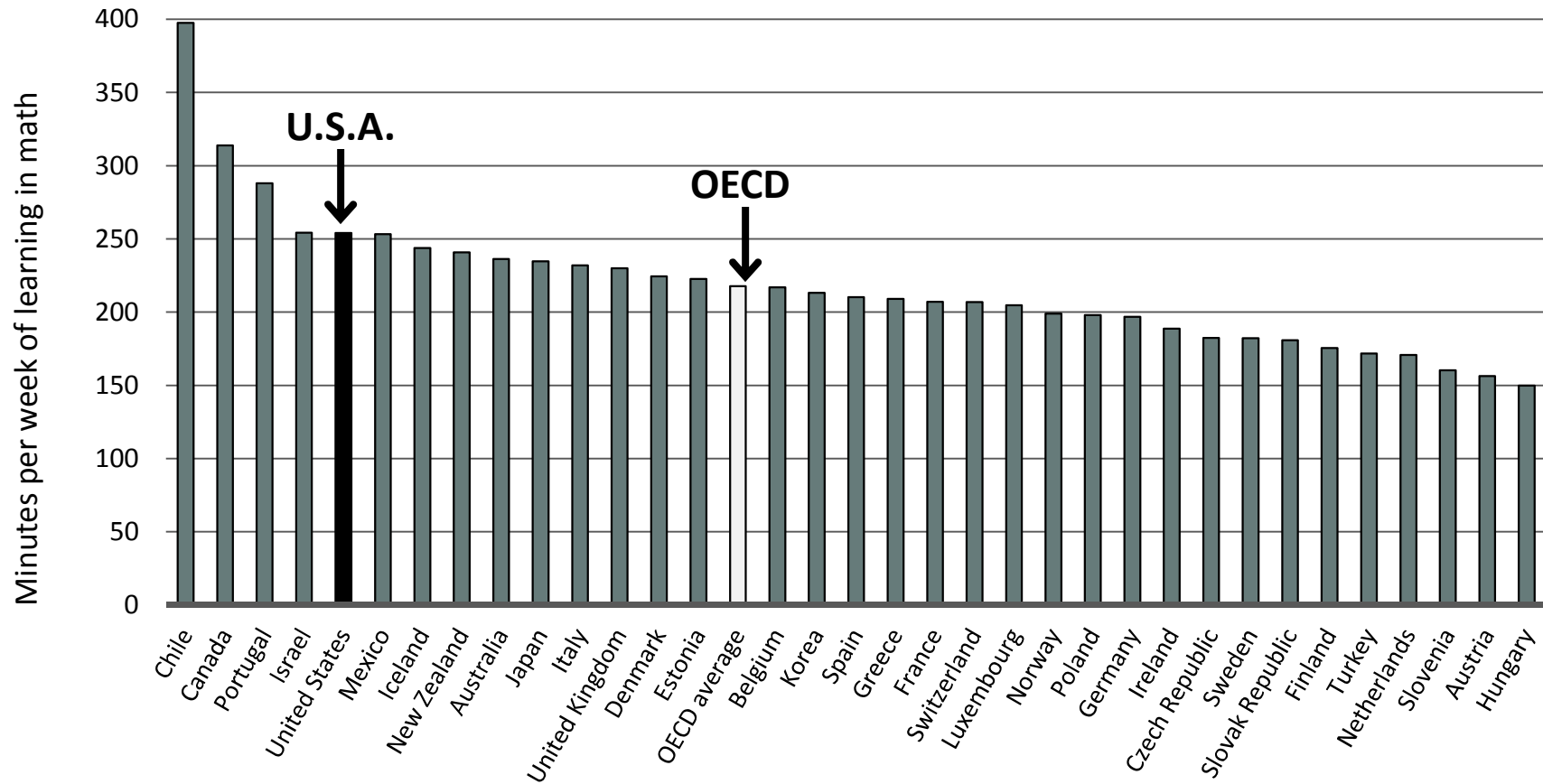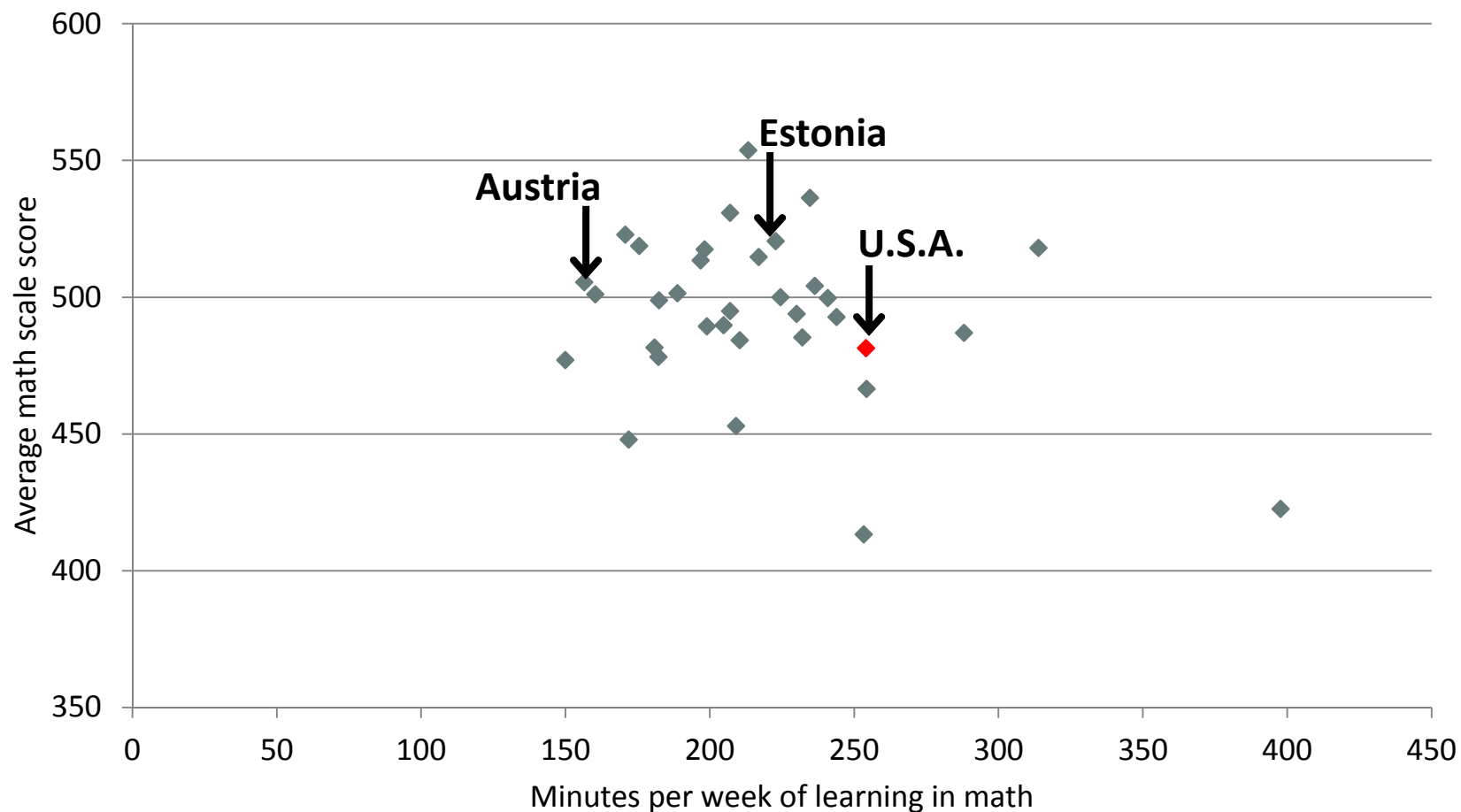
PISA 2012 - Math