PISA 2018 U.S. Results

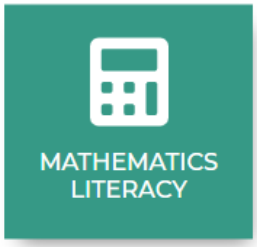
PISA results for financial literacy are in!

The Program for International Student Assessment (PISA) is a study of 15-year-old students' performance in reading, mathematics, and science literacy conducted every 3 years. The PISA 2018 results provide us with a global view of U.S. students' performance compared to their peers in nearly 80 countries and education systems.

In PISA 2018, the major domain was reading literacy, although mathematics and science literacy were also assessed. The United States, along with 20 other countries and education systems, also participated in the optional financial literacy assessment in 2018, with the results released in May 2020.

Click on the four buttons below to explore the PISA 2018 results by subject area. Make sure to continue reading down the page for more information about PISA.

Reading literacy was the major domain in PISA 2018. As the major domain, about half of the assessment was devoted to reading literacy items designed to measure students' ability to engage with texts across a variety of scenarios and tasks, including digital contexts. See an example reading item.



Mathematics literacy was a minor domain in PISA 2018. As one of the two minor domains, about one-quarter of the assessment was devoted to mathematics literacy items designed to measure students' capacity to formulate, employ, and interpret mathematics in a variety of contexts.

Science literacy was a minor domain in PISA 2018. As one of the two minor domains, about one-quarter of the assessment was devoted to science literacy items designed to measure students' ability to engage with science-related issues, and with the ideas of science, as a reflective citizen.

Financial literacy was an optional domain in PISA 2018. As an optional domain, it was presented to a sample of PISA-eligible students as blocks of financial literacy items designed to measure their knowledge and understanding of financial concepts, products, and risks, and their ability to apply what they know to real-life situations involving financial issues and decisions. Students who took the financial literacy assessment were also asked to complete a special questionnaire about their financial literacy background and experiences.

Suggested Citation: *Highlights of U.S. PISA 2018 Results Web Report* (NCES 2020-166 and NCES 2020-072). U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics. Available at https://nces.ed.gov/surveys/pisa/pisa2018/index.asp.

By design, PISA aims to measure how well students can apply knowledge obtained both in and out of school to real-world tasks as they are nearing the end of compulsory schooling. First conducted in 2000, PISA rotates the focus of the assessment among reading, mathematics, and science literacy in each cycle, with one being the major domain and the other two being minor domains. Read about the PISA cycle of domains.

PISA is conducted in the United States by NCES and is coordinated by the Organization for Economic Cooperation and Development (OECD), an intergovernmental organization of industrialized countries. The PISA assessment was administered to students on computers in the United States and most of the other participating education systems. Data collection for the most recent assessment was completed in fall 2018 for the United States.

Further information about PISA can be found in the technical notes, questionnaires, list of participating OECD and non-OECD countries, released assessment items, and FAQs.

PISA 2018 Reading Literacy Results

Explore How U.S. Reading Performance Compared Internationally in 2018

Reading literacy was the major domain in PISA 2018, as it was in 2000 and 2009. For 2018, the PISA reading literacy framework was updated to reflect the evolution and growing influence of technology. Reading involves not only the printed page but also digital formats. Increasingly, it requires readers to distinguish between fact and opinion, synthesize and interpret texts from multiple sources, and deal with conflicting information across source materials.

> **In PISA 2018, reading literacy is defined as students' capacity to understand, use, evaluate, reflect on, and engage with texts in order to achieve one's goals; develop one's knowledge and potential; and participate in society.**

To take better advantage of the administration of PISA on computer and to improve the measurement of the subject, the PISA 2018 assessment of reading literacy included multi-stage adaptive testing for the first time. Instead of using fixed, predetermined test booklets, as in previous cycles, the PISA 2018 reading assessment was dynamically determined, based on how a student performed in prior stages. Read more about the multi-stage adaptive testing design used in PISA.

International Comparisons of Student Achievement

How does ther performance of U.S. 15-year-olds in reading compare internationally?

Compared to the 76 other education systems in PISA 2018, the U.S. average reading literacy score was lower than the average in 8 education systems, higher than the average in 57 education systems, and not measurably different from the average in 11 education systems.

- The U.S. average score (505) was higher than the OECD average score (487).
- Compared to the 35 other OECD members, the U.S. average in reading literacy was lower than the average in 4 education systems, higher than in 21, and not measurably different than in 10.
- On a scale of 0 to 1,000, average scores in reading literacy across the education systems ranged from 555 in B-S-J-Z (China) to 340 in the Philippines.

See table R1 on the next page.

Table R1. Average scores of 15-year-old students on the PISA reading literacy scale, by education system: 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	Average score
OECD average	487 ▼
B-S-J-Z (China)	555 ▲
Singapore	549 ▲
Macau (China)	525 ▲
Hong Kong (China)	524 ▲
Estonia	523 ▲
Canada	520 ▲
Finland	520 ▲
Ireland	518 ▲
Korea, Republic of	514
Poland	512
Sweden	506
New Zealand	506
United States	**505**
United Kingdom	504
Japan	504
Australia	503
Chinese Taipei	503
Denmark	501
Norway	499
Germany	498
Slovenia	495 ▼
Belgium	493 ▼
France	493 ▼
Portugal	492 ▼
Czech Republic	490 ▼
Netherlands	485 ▼
Austria	484 ▼
Switzerland	484 ▼
Croatia	479 ▼
Latvia	479 ▼
Russian Federation	479 ▼
Italy	476 ▼
Hungary	476 ▼
Lithuania	476 ▼
Iceland	474 ▼
Belarus	474 ▼
Israel	470 ▼
Luxembourg	470 ▼

Education system	Average score
Ukraine	466 ▼
Turkey[1]	466 ▼
Slovak Republic	458 ▼
Greece	457 ▼
Chile	452 ▼
Malta	448 ▼
Serbia	439 ▼
United Arab Emirates	432 ▼
Romania[1]	428 ▼
Uruguay	427 ▼
Costa Rica[1]	426 ▼
Cyprus	424 ▼
Moldova, Republic of	424 ▼
Montenegro, Republic of	421 ▼
Mexico[1]	420 ▼
Bulgaria[1]	420 ▼
Jordan[1]	419 ▼
Malaysia[1]	415 ▼
Brazil[1]	413 ▼
Colombia[1]	412 ▼
Brunei Darussalam	408 ▼
Qatar	407 ▼
Albania	405 ▼
Bosnia and Herzegovina	403 ▼
Argentina	402 ▼
Peru[1]	401 ▼
Saudi Arabia	399 ▼
Thailand[1]	393 ▼
North Macedonia	393 ▼
Baku (Azerbaijan)[2]	389 ▼
Kazakhstan	387 ▼
Georgia	380 ▼
Panama[1]	377 ▼
Indonesia	371 ▼
Morocco[1]	359 ▼
Lebanon	353 ▼
Kosovo	353 ▼
Dominican Republic[1]	342 ▼
Philippines[1]	340 ▼

▲ Average score is higher than U.S. average score at the .05 level of statistical significance.

▼ Average score is lower than U.S. average score at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 average score. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. In the case of reading literacy, the 2018 OECD average does not include Spain due to issues with its PISA 2018 reading literacy data. Although Spain's PISA 2018 data met international technical standards, its reading literacy data show unusual student response behavior that prevent its data from being reported at this time. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

For More Information

- For the Accessible version of this table/figure, please see the corresponding data table (Download Excel file)
- See Technical Notes (including Coverage of Target Population Table A-4)
- Visit the OECD website
- Read the International PISA 2018 Report and Assessment Framework

What is the percentage of 15-year-olds reaching the PISA proficiency levels in reading?

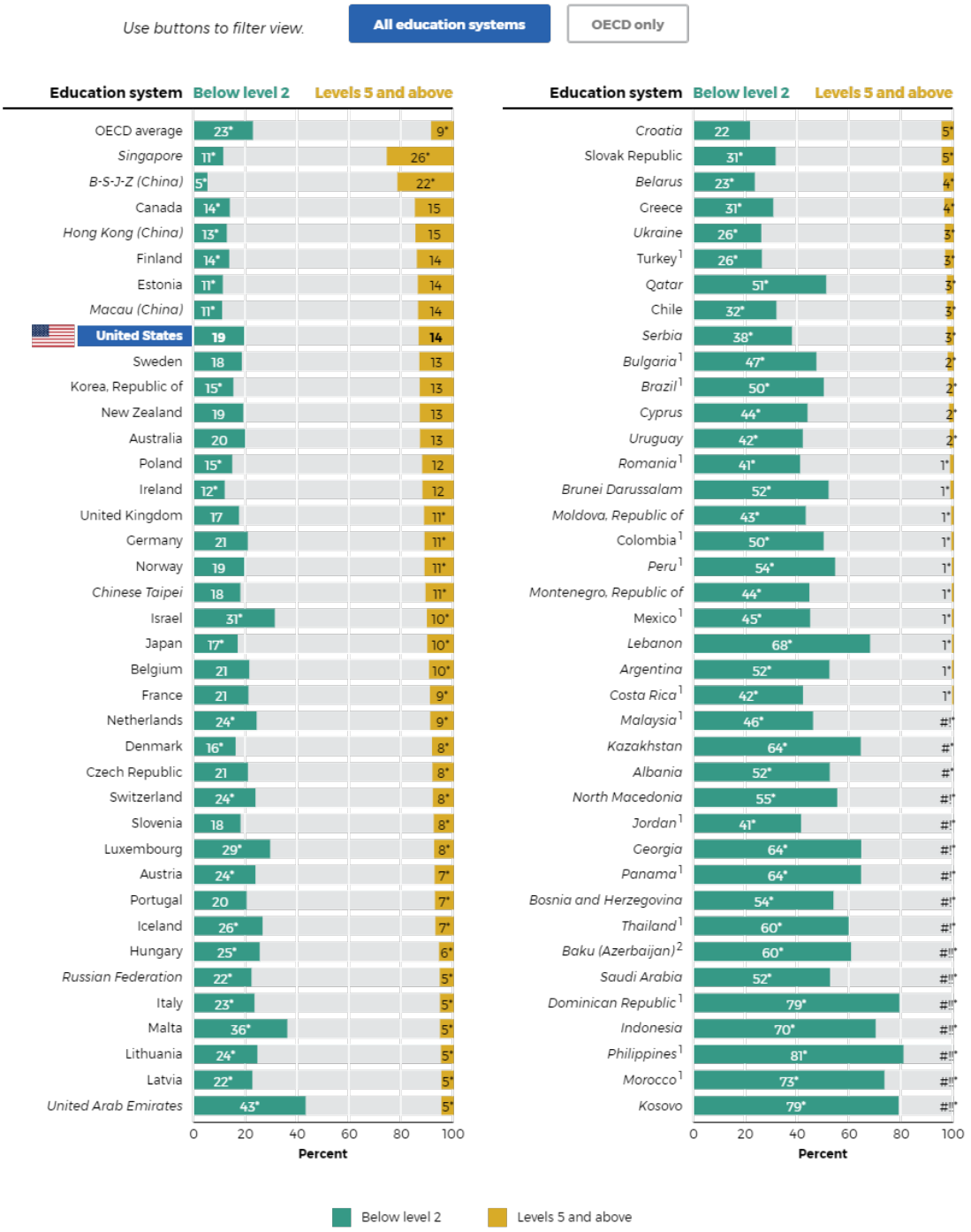
In addition to scale scores, PISA describes student performance in each subject area in terms of levels of proficiency, from the lowest level (Level 1) to the highest (Level 6). Students were classified into proficiency levels based on their scores. Descriptions of the skills and knowledge of students at each proficiency level can be found here.

In the United States, 14 percent of 15-year-old students in 2018 were top performers in reading literacy, scoring at proficiency levels 5 and above; 19 percent were low performers in reading literacy, scoring below proficiency level 2.

- The United States had a larger percentage of top performers in reading literacy than the OECD average (14 vs. 9 percent, respectively). The U.S. percentage was larger than in 63 education systems, smaller than in 2 education systems, and not measurably from 11 education systems. The percentages of top-performing 15-year-old students in reading literacy ranged from 26 percent in Singapore to nearly 0 percent in 16 education systems.
- The United States had a smaller percentage of low performers in reading literacy than the OECD average (19 vs. 23 percent, respectively). The U.S. percentage was smaller than in 51 education systems, larger than in 12 education systems, and not measurably different from 13 education systems. The percentages of low-performing 15-year-old students in reading literacy ranged from 5 percent in B-S-J-Z (China) to 81 percent in the Philippines.

See figure R2 on the next page.

Figure R2. Percentage of 15-year-old students performing below level 2 or reaching reading literacy proficiency levels 5 and above, by education system: 2018



Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (> 30 percent and ≤ 50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

* $p < .05$. Significantly different from the U.S. percentage at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 percentages of 15-year-olds in levels 5 and above. To reach a particular proficiency level, a student must correctly answer a majority of items at that level. Students were classified into reading proficiency levels according to their scores. Exact cut scores are as follows: below level 2 is a score less than or equal to 407.47; Levels 5 and above is a score equal to or greater than 625.61. See descriptions of each proficiency level here. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national percentages of the OECD member countries, with each country weighted equally. In the case of reading literacy, the 2018 OECD average does not include Spain due to issues with its PISA 2018 reading literacy data. Although Spain's PISA 2018 data met international technical standards, its reading literacy data show unusual student response behavior that prevent its data from being reported at this time. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

For More Information

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- See Technical Notes (including Coverage of Target Population Table A-4)
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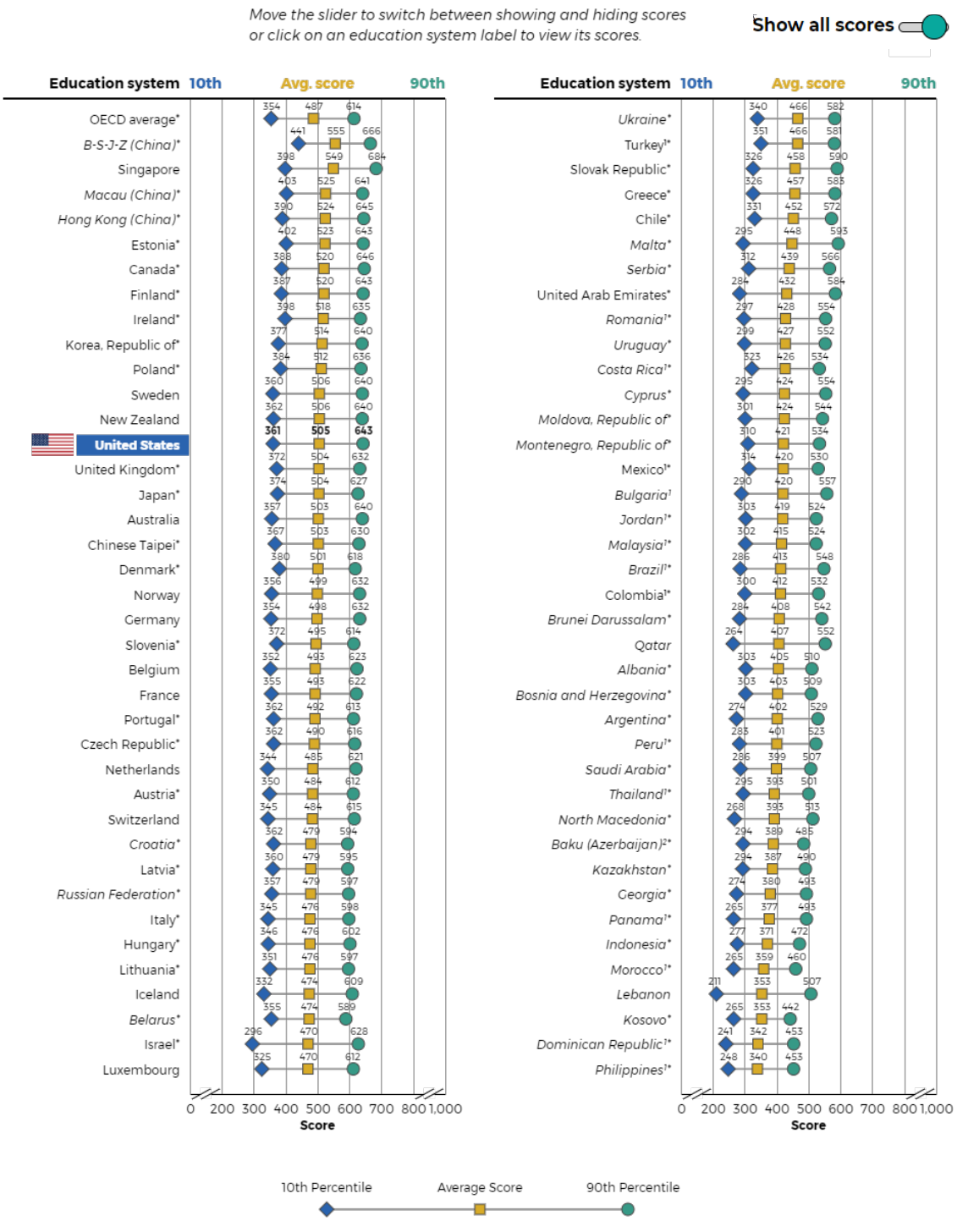
How large is the gap in reading performance between top and bottom performers?

Score gaps between top and bottom performers provide one indication of equity within an education system. The distribution of U.S. student scores in reading literacy showed a score gap of 282 points between the 90th and 10th percentiles.

- The U.S. score gap between the 90th and 10th percentiles (282 points) was larger than the score gap across the OECD countries on average (260 points).
- The U.S. score gap was smaller than the gap in 3 education systems, larger than the gap in 58, and not measurably different from the gap in 15 education systems.
- Internationally, score gaps between the 90th and 10th percentiles ranged from 177 points in Kosovo to 332 points in Israel.

See figure R3 on next page.

Figure R3. Average scores and 10th and 90th percentile scores of 15-year-old students on the PISA reading literacy scale and percentile score gaps, by education system: 2018



* $p < .05$. Score gap is significantly different from the U.S. 90th to 10th percentile score gap at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample. by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: This figure shows the threshold (or cut) scores for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 90th percentile—the top 10 percent of students. The score gap for each education system is the difference between its 90th and 10th percentile scores. The percentile ranges are specific to each education system's distribution of scores, enabling users to compare scores across education systems. Education systems are ordered by average score from largest to smallest. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. In the case of reading literacy, the 2018 OECD average does not include Spain due to issues with its PISA 2018 reading literacy data. Although Spain's PISA 2018 data met international technical standards, its reading literacy data show unusual student response behavior that prevent its data from being reported at this time. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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Trends in Student Achievement

Has there been any change in 15-year-olds' performance in reading over time?

LONG-TERM TREND

Compared to the first administration of PISA in 2000, the average reading literacy score of U.S. 15-year-olds in 2018 (505) was not measurably different from the average score in 2000 (504).

- Among the 36 other education systems that participated in both 2000 and 2018, there were 10 education systems that reported higher average reading literacy scores in 2018 than in 2000. In these education systems, score increases ranged from 14 points in Germany to 73 points in Peru.
- In 11 education systems, average reading literacy scores for 15-year-olds were lower in 2018 than in 2000. In these education systems, score declines ranged from 11 points in Italy to 38 points in Thailand.

See table R4a on the next page.

Table R4a. Average scores and changes in average scores of 15-year-old students on the PISA reading literacy scale, by education system: 2000 and 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	2000 score	2018 score	Score difference
Peru[1]	327	401	73 ▲
Albania	349	405	57 ▲
Chile	410	452	43 ▲
Poland	479	512	33 ▲
Portugal	470	492	22! ▲
Latvia	458	479	21! ▲
North Macedonia	373	393	20 ▲
Israel	452	470	18!!
Brazil[1]	396	413	17! ▲
Russian Federation	462	479	17! ▲
Germany	484	498	14! ▲
Denmark	497	501	4!!
United States	**504**	**505**	**1!!**
Indonesia	371	371	#!!
Hong Kong (China)	525	524	-1!!
Czech Republic	492	490	-1!!
Mexico[1]	422	420	-1!!
Hungary	480	476	-4!!
Norway	505	499	-6!!
Austria	492	484	-8!!
Ireland	527	518	-9!!
Switzerland	494	484	-10!!
Sweden	516	506	-11!!
Bulgaria[1]	430	420	-11!!
Korea, Republic of	525	514	-11!!
Italy	487	476	-11! ▼
France	505	493	-12! ▼
Canada	534	520	-14! ▼
Belgium	507	493	-14! ▼
Greece	474	457	-16! ▼
Argentina	418	402	-17!!
Japan	522	504	-18! ▼
New Zealand	529	506	-23 ▼
Australia	528	503	-26 ▼
Finland	546	520	-26 ▼
Iceland	507	474	-33 ▼
Thailand[1]	431	393	-38 ▼

▲ 2018 score is higher than 2000 score at the .05 level of statistical significance

▼ 2018 score is lower than 2000 score at the .05 level of statistical significance

Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Data shown for education systems that participated in both cycles of PISA in 2000 and 2018. Education systems are ordered by 2018-2000 difference in average score. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. Although Spain's PISA 2018 data met international technical standards, its reading literacy data show unusual student response behavior that prevent its data from being reported at this time. Italics indicate non-OECD countries and education systems.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2000 and 2018.

For More Information

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SHORT-TERM TREND

Compared to the most recent PISA score in reading (in 2015), the average reading literacy score of U.S. 15-year-olds in 2018 (505) was not measurably different from the U.S. average score in 2015 (497).

- Among the 62 other education systems that participated in both 2015 and 2018, there were 4 education systems that reported higher average reading litearcy scores for 15-year-olds in 2018 than in 2015. In these education systems, score increases ranged from 14 points in Singapore to 41 points in North Macedonia.
- In 13 education systems, average reading literacy scores for 15-year-olds were lower in 2018 than in 2015. In these education systems, score decreases ranged from 9 points in Latvia to 26 points in Indonesia.

See table R4b on the next page.

Table R4b. Average scores and changes in average scores of 15-year-old students on the PISA reading literacy scale, by education system: 2015 and 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	2015 score	2018 score	Score difference
North Macedonia	352	393	41 ▲
Turkey[1]	428	466	37 ▲
Macau (China)	509	525	16 ▲
Singapore	535	549	14! ▲
Jordan[1]	408	419	11‼
United States	**497**	**505**	**8‼**
Moldova, Republic of	416	424	8‼
Lebanon	347	353	7‼
Hungary	470	476	6‼
Poland	506	512	6‼
United Kingdom	498	504	6‼
Kosovo	347	353	6‼
Sweden	500	506	6‼
Brazil[2]	407	413	6‼
Chinese Taipei	497	503	6‼
Slovak Republic	453	458	5‼
Qatar	402	407	5‼
Estonia	519	523	4‼
Lithuania	472	476	3‼
Peru[1]	398	401	3‼
Czech Republic	487	490	3‼
Malta	447	448	2‼
Denmark	500	501	1‼
Albania	405	405	#‼
Australia	503	503	#‼
Austria	485	484	#‼
Costa Rica[1]	427	426	-1‼
United Arab Emirates	434	432	-2‼
Hong Kong (China)	527	524	-2‼
Ireland	521	518	-3‼
Mexico[1]	423	420	-3‼
Korea, Republic of	517	514	-3‼
New Zealand	509	506	-4‼
Belgium	499	493	-6‼
Montenegro, Republic of	427	421	-6‼
Romania[1]	434	428	-6‼
Chile	459	452	-6‼
Portugal	498	492	-6‼
Finland	526	520	-6‼
Canada	527	520	-7‼
France	499	493	-7‼
Iceland	482	474	-8‼
Croatia	487	479	-8‼
Switzerland	492	484	-8‼
Italy	485	476	-8‼
Israel	479	470	-9‼
Latvia	488	479	-9‼ ▼
Uruguay	437	427	-9‼
Greece	467	457	-10‼
Slovenia	505	495	-10! ▼
Germany	509	498	-11‼
Luxembourg	481	470	-11! ▼
Bulgaria[1]	432	420	-12‼
Japan	516	504	-12! ▼
Colombia[1]	425	412	-13! ▼
Norway	513	499	-14! ▼
Dominican Republic[1]	358	342	-16! ▼
Russian Federation	495	479	-16! ▼
Thailand[1]	409	393	-16! ▼
Netherlands	503	485	-18 ▼
Cyprus	443	424	-18 ▼
Georgia	401	380	-22 ▼
Indonesia	397	371	-26 ▼

▲ 2018 score is higher than 2015 score at the .05 level of statistical significance.

▼ 2018 score is lower than 2015 score at the .05 level of statistical significance.

Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

‼ Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Data shown for education systems that participated in both cycles of PISA in 2015 and 2018. Education systems are ordered by 2018-2015 difference in average score. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. Italics indicate non-OECD countries and education systems. Although Argentina, Malaysia, and Kazakhstan participated in PISA 2015, technical problems with their samples prevent results from being discussed in this report. Although Spain's PISA 2018 data met international technical standards, its reading literacy data show unusual student response behavior that prevent its data from being reported at this time. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015 and 2018.

For More Information

- For the Accessible version of this table/figure, please see the corresponding data table (Download Excel file)
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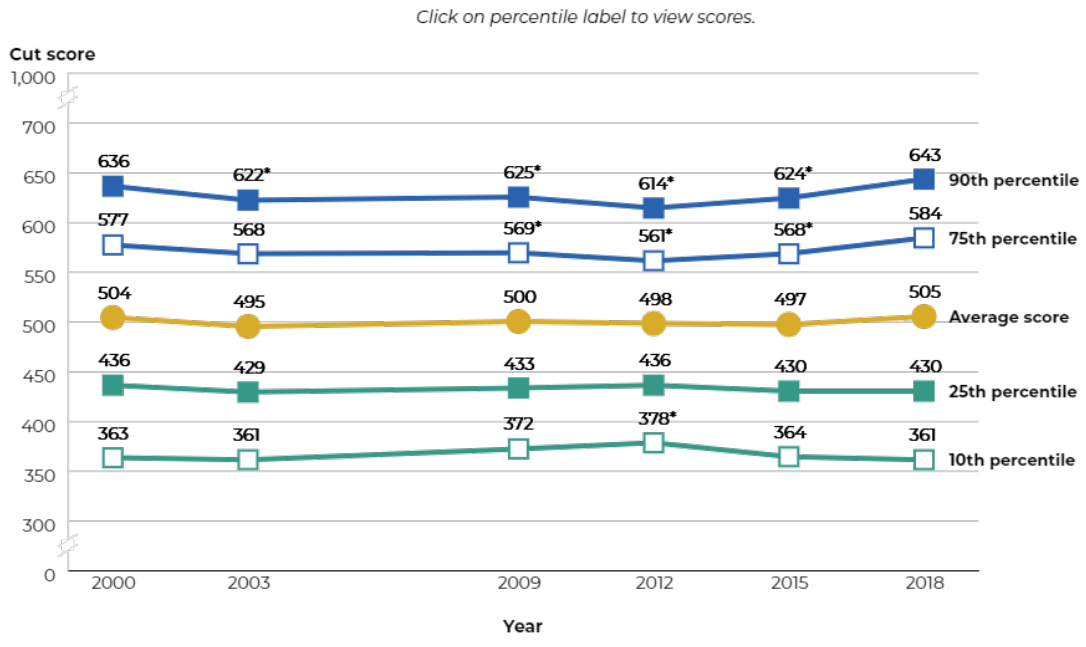
Has there been any change over time in the reading performance of U.S. 15-year-olds' scores at selected percentiles?

In 2018, U.S. students at the 90th and 75th percentiles performed, on average, higher in reading literacy than U.S. students in the same percentile groups in 2015, 2012, and 2009, and students at the 90th percentile also scored higher in 2018 than in 2003. There was no measurable difference between the 10th percentile cut score in 2018 (361) and the cut scores in 2015, 2009, and 2000. However, it was lower than the 10th percentile cut score in 2012 (378). No measurable differences were observed for the cut scores associated with the 25th percentile group in 2018 compared to any of the preceding cycles.

- Looking at the distribution of U.S. scores in reading literacy, the cut score associated with the 90th percentile in 2018 (643) was higher than the 90th percentile cut scores in 2015 (624), 2012 (614), 2009 (625), and 2003 (622). There was no measurable difference between the U.S. 90th percentile cut scores in 2018 and 2000.
- The cut score associated with the U.S. 75th percentile in 2018 (584) was also higher than the 75th percentile cut scores in 2015 (568), 2012 (561), and 2009 (569). There was no measurable difference between the U.S. 75th percentile cut scores in 2018 and 2003, nor was there a difference between the cut scores at this percentile in 2018 and 2000.

Figure R5. Average score and selected percentile scores of U.S. 15-year-old students on the PISA reading literacy scale: Selected years 2000–2018



* $p < .05$. Significantly different from the 2018 score at the .05 level of statistical significance.

NOTE: This figure shows the threshold (or cut) score for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 25th percentile—the bottom 25 percent of students; (c) 75th percentile—the top 25 percent of students; (d) 90th percentile—the top 10 percent of students. The PISA 2006 reading literacy results are not reported for the United States because of an error in printing the test booklets. For more details, see Baldi et al. 2007 (available at http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008016). Scores are reported on a scale from 0 to 1,000.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2000, 2003, 2009, 2012, 2015, and 2018

For More Information

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Achievement by Student Groups

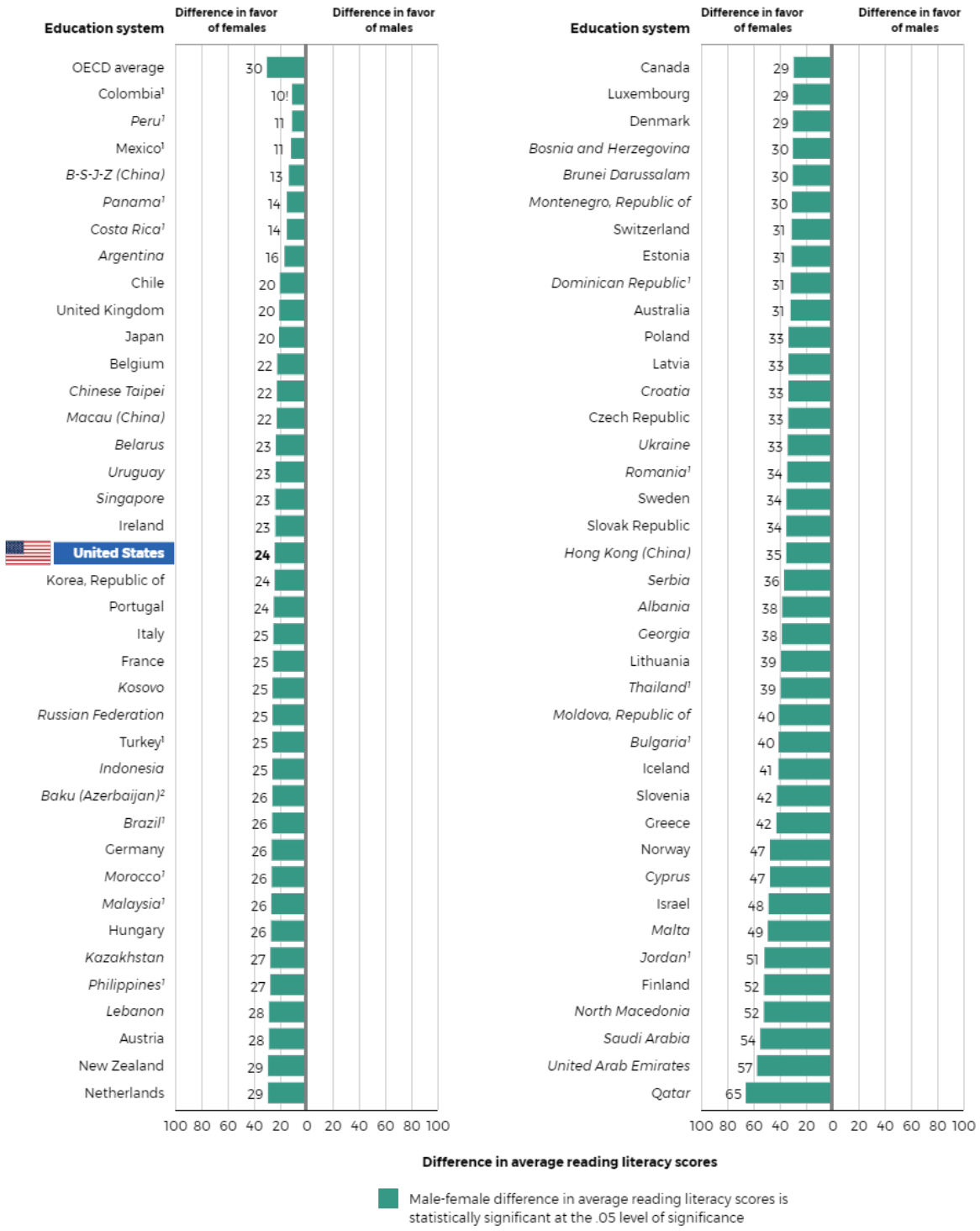
Are there gender differences in reading performance among 15-year-olds?

In 2018, the U.S. female-male score difference (24 points) was not measurably different than the score difference across the OECD countries on average (30 points). Female students scored higher, on average, than male students on the reading literacy scale in all 77 PISA education systems with reading literacy data.

- The U.S. gender score gap was smaller than the score gaps in 27 education systems (12 OECD countries and 15 non-OECD education systems), larger than the gaps in 5 education systems (2 OECD countries and 3 non-OECD education systems), and not measurably different from the gaps in 44 education systems (21 OECD countries and 23 non-OECD education systems).
- The gender score gap ranged from a difference of 10 score points in Colombia to 65 score points in Qatar.

See figure R6 on the next page.

Figure R6. Difference in average scores of 15-year-old male and female students on the PISA reading literacy scale, by education system: 2018



! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15- year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by absolute male-female difference in 2018 average scores. Differences were computed using unrounded numbers. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national average differences of the OECD member countries, with each country weighted equally. In the case of reading literacy, the 2018 OECD average does not include Spain due to issues with its PISA 2018 reading literacy data. Although Spain's PISA 2018 data met international technical standards, its reading literacy data show unusual student response behavior that prevent its data from being reported at this time. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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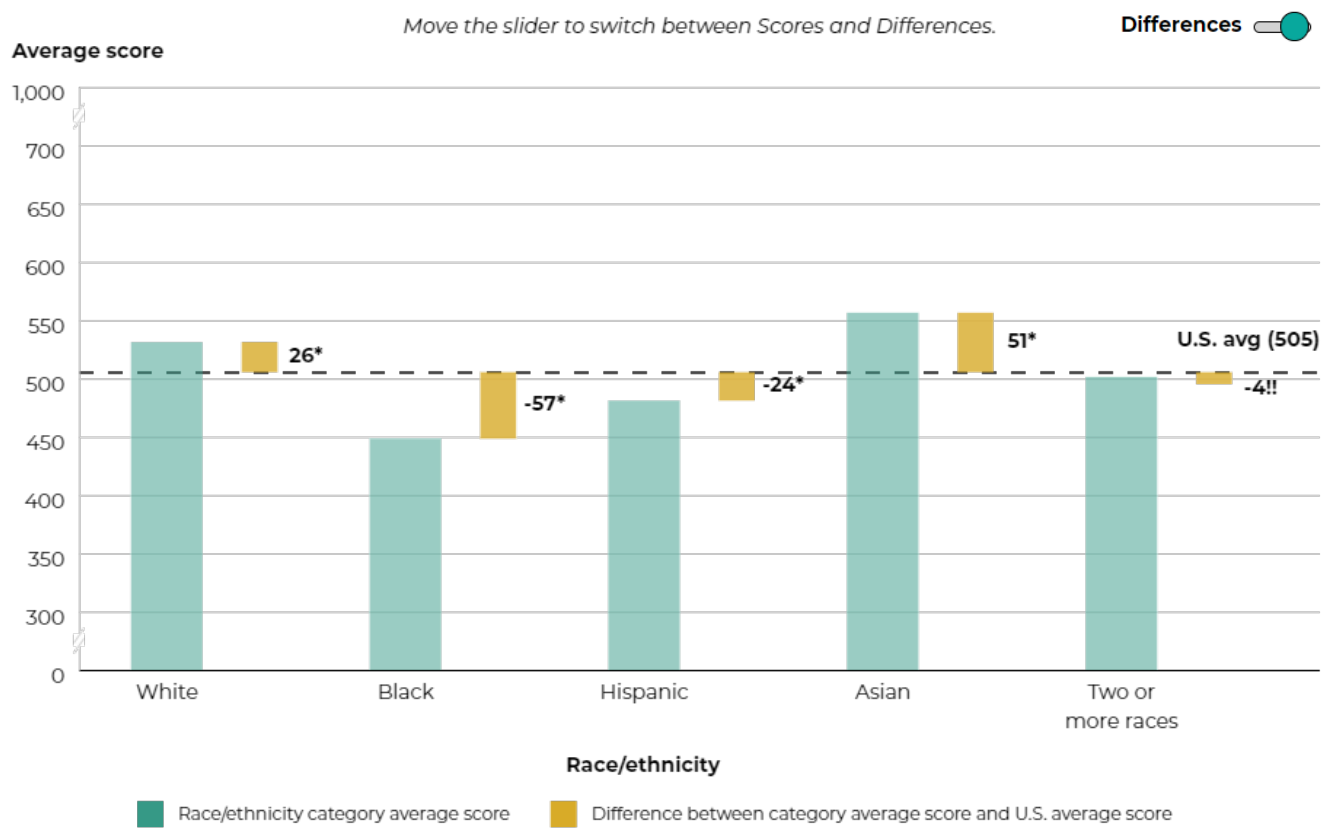
How does the reading performance of U.S. 15-year-olds vary by race/ethnicity?

In 2018, White and Asian students in the United States scored higher than the overall U.S. average in reading literacy, while Hispanic and Black students scored lower.

- Asian and White students, on average, had higher reading literacy scores (556 and 531, respectively) than the overall U.S. average score (505). The average reading literacy score of students reporting Two or more races (501) was not measurably different than the U.S. average score. Hispanic and Black students had lower average scores (481 and 448, respectively) than the U.S. average score.

Figure R7. Average scores of U.S. 15-year-old students on the PISA reading literacy scale, by race/ethnicity: 2018



!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Scores are reported on a scale from 0 to 1,000. Reporting standards were not met for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander. Black includes African American, and Hispanic includes Latino. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race. Although data for some race/ethnicities were not shown separately because the reporting standards were not met, they are included in the U.S. totals.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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How does the reading performance of U.S. 15-year-olds vary by measures of poverty?

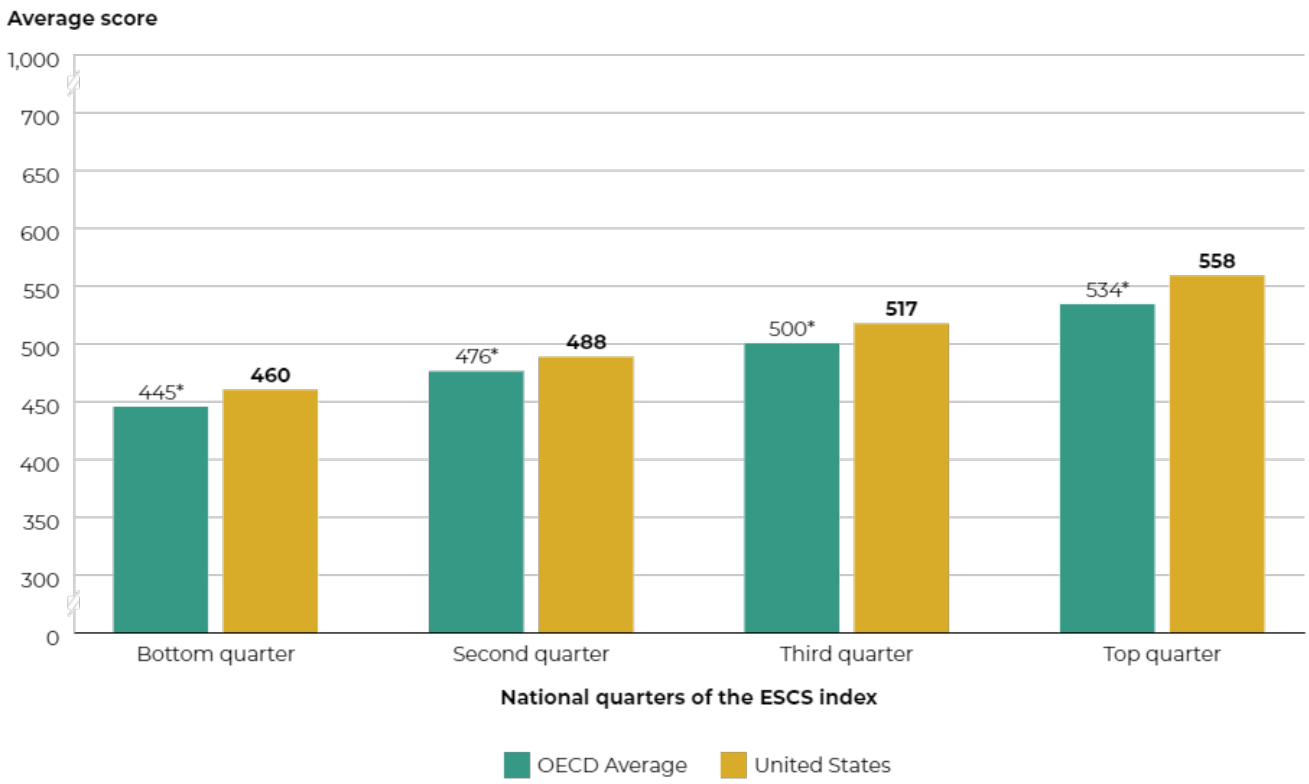
ECONOMIC, SOCIAL, AND CULTURAL STATUS

The PISA 2018 questionnaire collected data on two measures of poverty: the economic, social, and cultural status (ESCS) index and a U.S.-only free or reduced-price lunch (FRPL) variable. The ESCS index is a student-level, international measure of socioeconomic status, while FRPL is a school-level, U.S.-only variable of school poverty for public schools only. In 2018, U.S. 15-year-old students had a higher average reading literacy score than the OECD average score within each of the four ESCS quarters.

- Students were grouped into four quarters using the distribution of ESCS scores specific to each education system. Those in the bottom ESCS quarter report the highest levels of poverty while those in the top quarter report the lowest levels of poverty.
- Score differences between the United States and OECD average scores were 15, 12, 17, and 25 points in the bottom, second, third, and top ESCS quarters, respectively.
- Average scores in reading by students' socioeconomic status show that U.S. 15-year-olds in the top ESCS quarter performed 99 points higher than those in the bottom quarter. Across the OECD countries on average, this score gap was 89 points.
- The U.S. score gap between the top and the bottom ESCS quarters was lower than the score gaps in 2 education systems and higher than the score gaps in 34 education systems.
- The score gap between the top and the bottom ESCS quarters ranged from 31 points in Macau (China) to 122 points in Luxembourg.

See figure R8 on the next page.

Figure R8. Average scores of 15-year-old students on the PISA reading literacy scale, by national quarters of the PISA index of economic, social, and cultural status (ESCS): 2018



* $p < .05$. Significantly different from the U.S. average at the .05 level of statistical significance.

NOTE: The PISA index of economic, social, and cultural status (ESCS) was created using student reports on parental occupation, the highest level of parental education, and an index of home possessions related to family wealth, home educational resources and possessions related to "classical" culture in the family home. The home possessions relating to "classical" culture in the family home included possessions such as works of classical literature, books of poetry, and works of art (e.g., paintings). The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Education systems are included in the OECD average if they were OECD members in 2018. In the case of reading literacy, the 2018 OECD average does not include Spain due to issues with its PISA 2018 reading literacy data. Although Spain's PISA 2018 data met international technical standards, its reading literacy data show unusual student response behavior that prevent its data from being reported at this time. Average scores by quarter are calculated based on the distribution of student scores within each education system. Scores are reported on a scale from 0 to 1,000.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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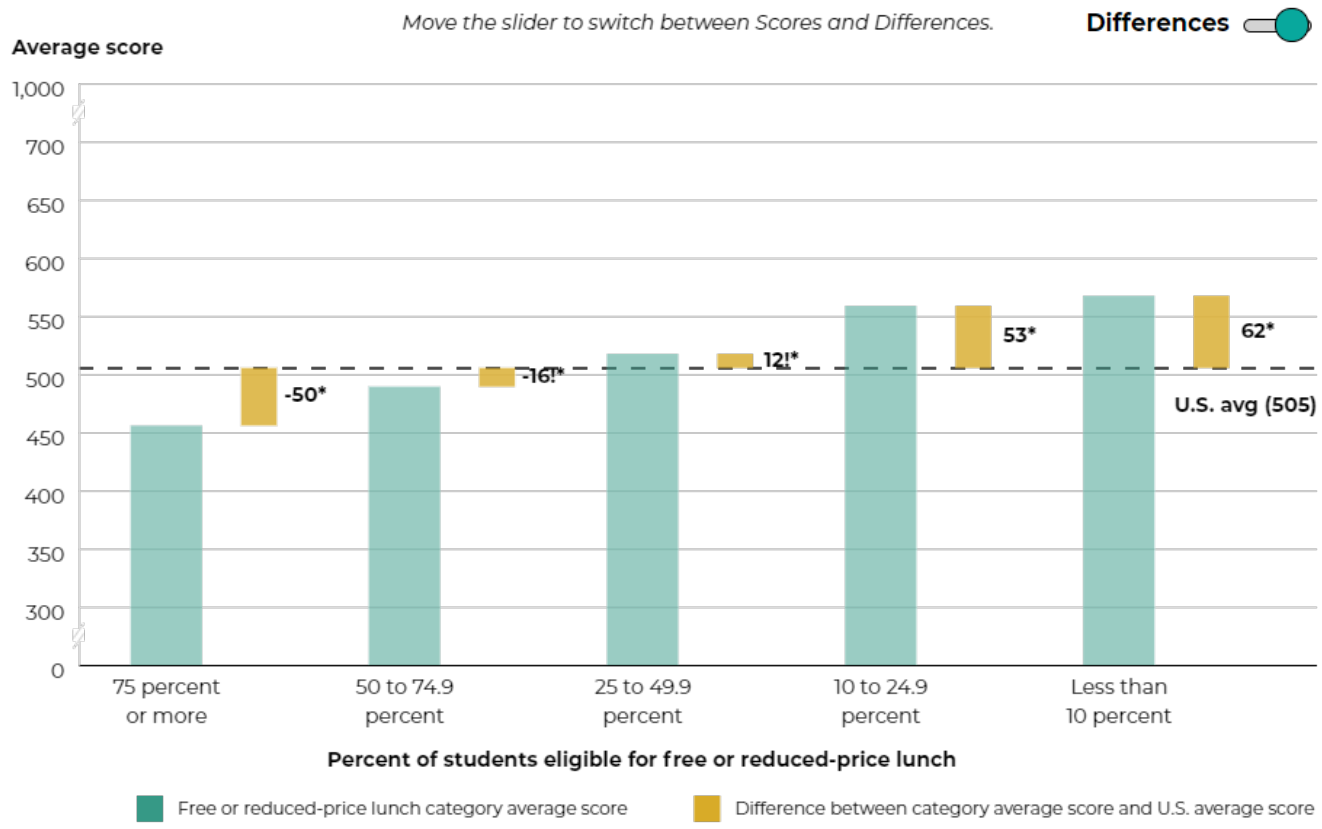
FREE OR REDUCED-PRICED LUNCH

In 2018, students in U.S. public schools with the highest levels of poverty (75 percent or more of students eligible for FRPL) scored, on average, 50 points lower than the overall U.S. average in reading literacy, whereas students in U.S. public schools with the lowest levels of poverty (less than 10 percent eligible for FRPL) scored 62 points higher on average than the overall U.S. average.

- Students in public schools in which at least half of all students were eligible for FRPL (50 to 74.9 percent and 75 percent or more) scored, on average, lower than the overall U.S. average score (489 and 456, respectively, vs. 505).
- Students in public schools in which less than half of all students were FRPL-eligible (less than 10 percent, 10 to 24.9 percent, and 25 to 49.9 percent) scored, on average, higher than the overall U.S. average score (567, 559, and 517, respectively, vs. 505).

Figure R9. Average scores of U.S. 15-year-old public school students on the PISA reading literacy scale, by percentage of students enrolled in schools eligible for free or reduced-price lunch, based on principals' reports: 2018



! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Scores are reported on a scale from 0 to 1,000. The National School Lunch Program provides free or reduced-price lunch for students meeting certain income guidelines. The percentage of students eligible for this program is an indicator of the socioeconomic level of families served by the school. Data in this figure are based on principals' responses to a question in the school questionnaire that asked the approximate percentage of eligible students in the school during the previous school year. Free or reduced-price lunch data are for public schools only.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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PISA 2018 Mathematics Literacy Results

Explore How U.S. Mathematics Performance Compared Internationally in 2018

Mathematics literacy was a minor domain in PISA 2018. For 2018, the PISA mathematics literacy assessment component included only trend items used in prior cycles of PISA, including the 2003 and 2012 cycles, when mathematics literacy was the major domain. Read more about the latest version of the mathematics literacy framework for PISA 2018.

In PISA, the assessment of mathematics literacy focuses on students' capacity to formulate, use, and interpret mathematics in a variety of contexts. In PISA, proficiency in mathematics is more than the ability to reproduce the knowledge of mathematical concepts and procedures; it is conceptualized as students' ability to extrapolate from what they know and apply their knowledge in both familiar and unfamiliar situations.

> **In PISA 2018, mathematics literacy is defined as students' capacity to formulate, employ, and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts, and tools to describe, explain, and predict phenomena.**

International Comparisons of Student Achievement

How does the performance of U.S. 15-year-olds in mathematics compare internationally?

Compared to the 77 other education systems in PISA 2018, the U.S. average mathematics literacy score was lower than the average in 30 education systems, higher than the average in 39 education systems, and not measurably different from the average in 8 education systems.

- The U.S. average score (478) was lower than the OECD average score (489).
- Compared to the 36 other OECD members, the U.S. average in mathematics literacy was lower than the average in 24 education systems, higher than in 6, and not measurably different than in 6.
- On a scale of 0 to 1,000, average scores in mathematics literacy across the education systems ranged from 591 in B-S-J-Z (China) to 325 in the Dominican Republic.

See table M1 on the next page.

Table M1. Average scores of 15-year-old students on the PISA mathematics literacy scale, by education system: 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	Average score	
OECD average	489	▲
B-S-J-Z (China)	591	▲
Singapore	569	▲
Macau (China)	558	▲
Hong Kong (China)	551	▲
Chinese Taipei	531	▲
Japan	527	▲
Korea, Republic of	526	▲
Estonia	523	▲
Netherlands	519	▲
Poland	516	▲
Switzerland	515	▲
Canada	512	▲
Denmark	509	▲
Slovenia	509	▲
Belgium	508	▲
Finland	507	▲
Sweden	502	▲
United Kingdom	502	▲
Norway	501	▲
Germany	500	▲
Ireland	500	▲
Czech Republic	499	▲
Austria	499	▲
Latvia	496	▲
France	495	▲
Iceland	495	▲
New Zealand	494	▲
Portugal	492	▲
Australia	491	▲
Russian Federation	488	▲
Italy	487	
Slovak Republic	486	
Luxembourg	483	
Spain	481	
Lithuania	481	
Hungary	481	
United States	**478**	
Belarus	472	
Malta	472	

Education system	Average score	
Croatia	464	▼
Israel	463	▼
Turkey[1]	454	▼
Ukraine	453	▼
Greece	451	▼
Cyprus	451	▼
Serbia	448	▼
Malaysia[1]	440	▼
Albania	437	▼
Bulgaria[1]	436	▼
United Arab Emirates	435	▼
Brunei Darussalam	430	▼
Romania[1]	430	▼
Montenegro, Republic of	430	▼
Kazakhstan	423	▼
Moldova, Republic of	421	▼
Baku (Azerbaijan)[2]	420	▼
Thailand[1]	419	▼
Uruguay	418	▼
Chile	417	▼
Qatar	414	▼
Mexico[1]	409	▼
Bosnia and Herzegovina	406	▼
Costa Rica[1]	402	▼
Peru[1]	400	▼
Jordan[1]	400	▼
Georgia	398	▼
North Macedonia	394	▼
Lebanon	393	▼
Colombia[1]	391	▼
Brazil[1]	384	▼
Argentina	379	▼
Indonesia	379	▼
Saudi Arabia	373	▼
Morocco[1]	368	▼
Kosovo	366	▼
Panama[1]	353	▼
Philippines[1]	353	▼
Dominican Republic[1]	325	▼

▲ Average score is higher than U.S. average score at the .05 level of statistical significance.

▼ Average score is lower than U.S. average score at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 average score. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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What is the percentage of 15-year-olds reaching the PISA proficiency levels in mathematics?

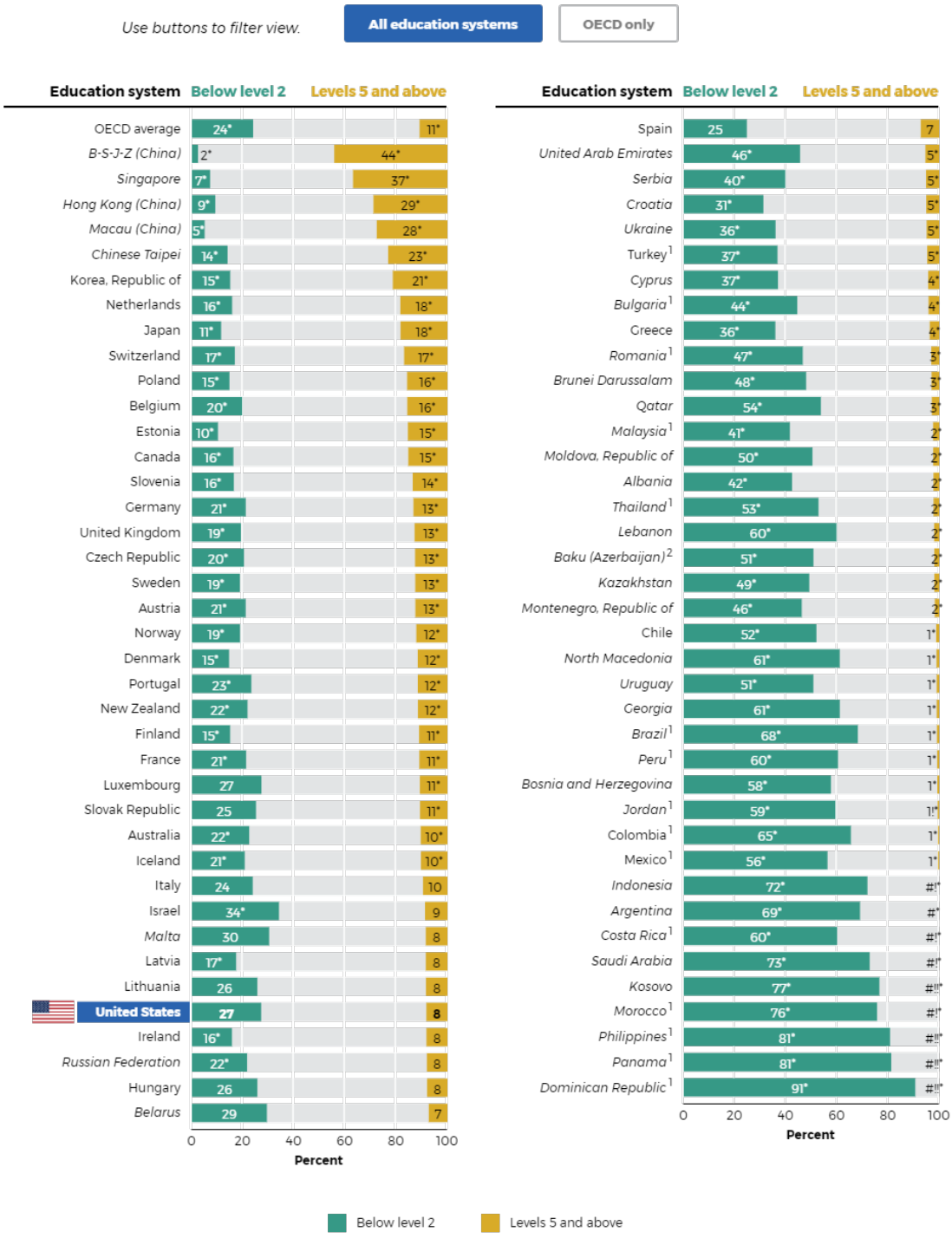
In addition to scale scores, PISA describes student performance in each subject area in terms of levels of proficiency, from the lowest level (Level 1) to the highest (Level 6). Students were classified into proficiency levels based on their scores. Descriptions of the skills and knowledge of students at each proficiency level can be found here.

In the United States, 8 percent of 15-year-old students in 2018 were top performers in mathematics literacy, scoring at proficiency levels 5 and above; 27 percent were low performers in mathematics literacy, scoring below proficiency level 2.

- The United States had a smaller percentage of top performers in mathematics literacy than the OECD average (8 vs. 11 percent, respectively). The U.S. percentage was larger than in 38 education systems, smaller than in 29 education systems, and not measurably different from 10 education systems. The percentages of top-performing 15-year-old students in mathematics literacy ranged from 44 percent in B-S-J-Z (China) to nearly 0 percent in 9 education systems.
- The United States had a larger percentage of low performers in mathematics literacy than the OECD average (27 vs. 24 percent, respectively). The U.S. percentage was larger than in 30 education systems, smaller than in 39 education systems, and not measurably different from 8 education systems. The percentages of low-performing 15-year-old students in mathematics literacy ranged from 2 percent in B-S-J-Z (China) to 91 percent in the Dominican Republic.

See figure M2 on the next page.

Figure M2. Percentage of 15-year-old students performing below level 2 or reaching mathematics literacy proficiency levels 5 and above, by education system: 2018



Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

* $p < .05$. Significantly different from the U.S. percentage at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 percentages of 15-year-olds in levels 5 and above. To reach a particular proficiency level, a student must correctly answer a majority of items at that level. Students were classified into mathematics proficiency levels according to their scores. Exact cut scores are as follows: Below Level 2 (a score less than 420.07); Levels 5 and above is a score equal to or greater than 606.99. See descriptions of each proficiency level here. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national percentages of the OECD member countries, with each country weighted equally. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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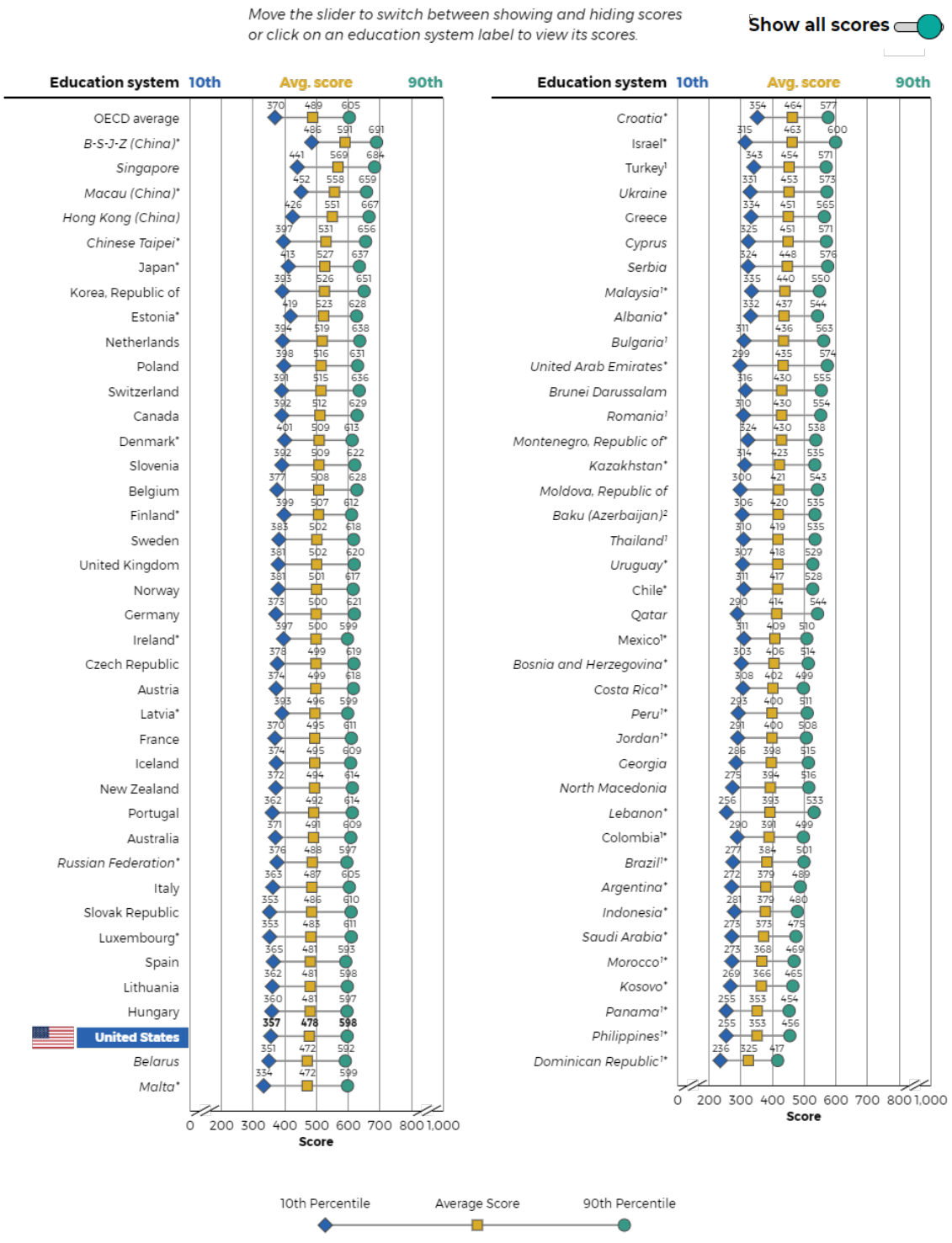
How large is the gap in mathematics performance between top and bottom performers?

Score gaps between top and bottom performers provide one indication of equity within an education system. The distribution of U.S. student scores in mathematics literacy showed a score gap of 241 points between the 90th and 10th percentiles.

- The U.S. score gap between the 90th and 10th percentiles (241 points) was not measurably different than the score gap across the OECD countries on average (235 points).
- The U.S. score gap was smaller than the gap in 6 education systems, larger than the gap in 31, and not measurably different than the gap in 40 education systems.
- Internationally, score gaps between the 90th and 10th percentiles ranged from 181 points in the Dominican Republic to 285 points in Israel.

See figure M3 on the next page.

Figure M3. Average scores and 10th and 90th percentile scores of 15-year-old students on the PISA mathematics literacy scale and percentile score gaps, by education system: 2018



* $p < .05$. Score gap is significantly different from the U.S. 90th to 10th percentile score gap at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: This figure shows the threshold (or cut) scores for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 90th percentile—the top 10 percent of students. The score gap for each education system is the difference between its 90th and 10th percentile scores. The percentile ranges are specific to each education system's distribution of scores, enabling users to compare scores across education systems.Education systems are ordered by average score from largest to smallest. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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Trend in Student Achievement

Has there been any change in 15-year-olds' performance in mathematics over time?

LONG-TERM TREND

PISA 2018 literacy scores can be compared to scores from previous cycles. For mathematics literacy, the earliest cycle to which 2018 scores can be compared is 2003. Compared to the earliest comparable PISA score in mathematics (in 2003), the average mathematics literacy score of U.S. 15-year-olds in 2018 (478) was not measurably different than the average score in 2003 (483).

- Among the 36 other education systems that participated in both 2003 and 2018, there were 10 education systems that reported higher average mathematics literacy scores in 2018 than in 2003. In these education systems, score increases from 2003 to 2018 ranged from 13 points in Latvia to 30 points each in Turkey and Macau (China).
- In 13 education systems, average mathematics literacy scores for 15-year-olds were lower in 2018 than in 2003. In these education systems, score decreases from 2003 to 2018 ranged from 10 points in Luxembourg to 37 points in Finland.

See table M4a on the next page.

Figure M4a. Average scores and changes in average scores of 15-year-old students on the PISA mathematics literacy scale, by education system: 2003 and 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	2003 score	2018 score	Score difference
Macau (China)	527	558	30 ▲
Turkey[1]	423	454	30 ▲
Brazil[1]	356	384	28 ▲
Portugal	466	492	26 ▲
Poland	490	516	25 ▲
Mexico[1]	385	409	24 ▲
Italy	466	487	21 ▲
Russian Federation	468	488	19! ▲
Indonesia	360	379	19! ▲
Latvia	483	496	13! ▲
Greece	445	451	6!!
Norway	495	501	6!!
Thailand[1]	417	419	2!!
Hong Kong (China)	550	551	1!!
Germany	503	500	-3!!
Ireland	503	500	-3!!
Spain	485	481	-4!!
Uruguay	422	418	-5!!
United States	**483**	**478**	**-5!!**
Denmark	514	509	-5!!
Sweden	509	502	-7!!
Austria	506	499	-7!!
Japan	534	527	-7!!
Hungary	490	481	-9!!
Luxembourg	493	483	-10! ▼
Switzerland	527	515	-11! ▼
Slovak Republic	498	486	-12! ▼
France	511	495	-15 ▼
Korea, Republic of	542	526	-16! ▼
Czech Republic	516	499	-17! ▼
Netherlands	538	519	-19 ▼
Iceland	515	495	-20 ▼
Canada	532	512	-20 ▼
Belgium	529	508	-21 ▼
New Zealand	523	494	-29 ▼
Australia	524	491	-33 ▼
Finland	544	507	-37 ▼

▲ 2018 score is higher than 2003 score at the .05 level of statistical significance

▼ 2018 score is lower than 2003 score at the .05 level of statistical significance

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Data shown for education systems that participated in both cycles of PISA in 2003 and 2018. Education systems are ordered by 2018-2003 difference in average score. The PISA math framework was revised in 2003. Because of changes in the framework, it is not possible to compare math learning outcomes from PISA 2000 with those from PISA 2003, 2006, 2009, 2012, 2015, and 2018. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. Italics indicate non-OECD countries and education systems.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2003 and 2018.

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SHORT-TERM TREND

Compared to the most recent comparable PISA score in mathematics (in 2015), the average mathematics literacy score of U.S. 15-year-olds in 2018 (478) was not measurably different from the U.S. average score in 2015 (470).

- Among the 63 other education systems that participated in both 2015 and 2018, there were 14 education systems that reported higher average mathematics literacy scores for 15-year-olds in 2018 than in 2015. In these education systems, score increases from 2015 to 2018 ranged from 7 points in Iceland to 33 points in Turkey.
- In three education systems, average mathematics literacy scores for 15-year-olds were lower in 2018 than in 2015. In these education systems, score decreases from 2015 to 2018 ranged from 7 points in Malta to 14 points in Romania.

See table M4b on the next page.

Figure M4b. Average scores and changes in average scores of 15-year-old students on the PISA mathematics literacy scale, by education system: 2015 and 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	2015 score	2018 score	Score difference
Turkey[1]	420	454	33 ▲
Albania	413	437	24 ▲
North Macedonia	371	394	23 ▲
Jordan[1]	380	400	20 ▲
Macau (China)	544	558	14 ▲
Latvia	482	496	14 ▲
Cyprus	437	451	14 ▲
Peru[1]	387	400	13! ▲
Qatar	402	414	12 ▲
Montenegro, Republic of	418	430	12 ▲
Poland	504	516	11! ▲
Slovak Republic	475	486	11! ▲
United Kingdom	492	502	9! ▲
United States	**470**	**478**	**9!!**
Sweden	494	502	8!!
United Arab Emirates	427	435	7!!
Iceland	488	495	7!! ▲
Czech Republic	492	499	7!!
Netherlands	512	519	7!!
Brazil[1]	377	384	6!!
Singapore	564	569	5!!
Kosovo	362	366	4!!
Hungary	477	481	4!!
Estonia	520	523	4!!
Hong Kong (China)	548	551	3!!
Thailand[1]	415	419	3!!
Lithuania	478	481	3!!
France	493	495	2!!
Austria	497	499	2!!
Costa Rica[1]	400	402	2!!
Korea, Republic of	524	526	2!!
Colombia[1]	390	391	1!!
Belgium	507	508	1!!
Moldova, Republic of	420	421	1!!
Portugal	492	492	1!!
Mexico[1]	408	409	1!!
Croatia	464	464	#!
Uruguay	418	418	#!
New Zealand	495	494	-1!!
Norway	502	501	-1!!
Slovenia	510	509	-1!!
Denmark	511	509	-2!!
Greece	454	451	-2!!
Luxembourg	486	483	-2!!
Australia	494	491	-3!!
Dominican Republic[1]	328	325	-3!!
Lebanon	396	393	-3!!
Italy	490	487	-3!!
Canada	516	512	-4!!
Finland	511	507	-4!!
Ireland	504	500	-4!!
Spain	486	481	-4!!
Bulgaria[1]	441	436	-5!!
Chile	423	417	-5!!
Japan	532	527	-5!!
Germany	506	500	-6!!
Switzerland	521	515	-6!!
Georgia	404	398	-6!!
Russian Federation	494	488	-6!!
Israel	470	463	-7!!
Malta	479	472	-7! ▼
Indonesia	386	379	-7!!
Chinese Taipei	542	531	-11! ▼
Romania[1]	444	430	-14! ▼

▲ 2018 score is higher than 2015 score at the .05 level of statistical significance.

▼ 2018 score is lower than 2015 score at the .05 level of statistical significance.

Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Data shown for education systems that participated in both cycles of PISA in 2015 and 2018. Education systems are ordered by 2018-2015 difference in average score. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. Italics indicate non-OECD countries and education systems. Although Argentina, Malaysia, and Kazakhstan participated in PISA 2015, technical problems with their samples prevent results from being discussed in this report. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015 and 2018.

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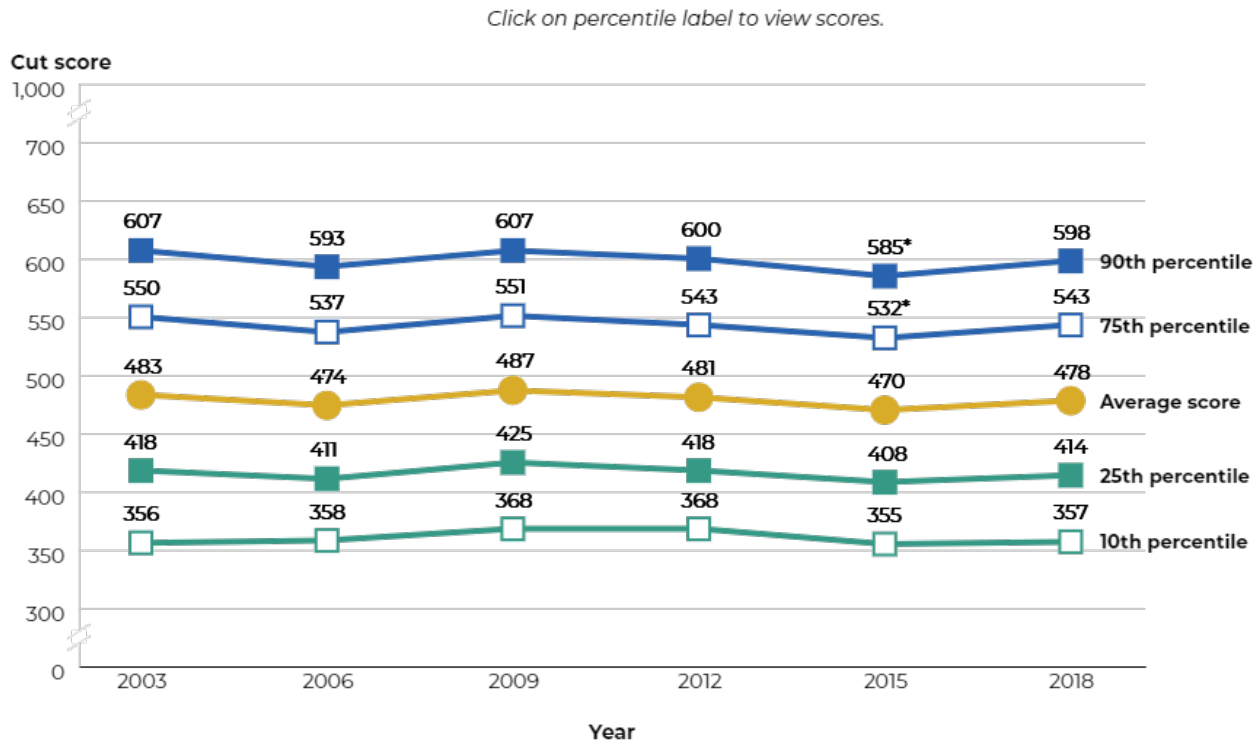
Has there been any change over time in the mathematics performance of U.S. 15-year-olds' scores at selected percentiles?

In 2018, U.S. students at the 75th and 90th percentiles performed, on average, higher in mathematics literacy than U.S. students in the same percentile groups in 2015. No measurable differences were observed for the average mathematics cut scores associated with the 25th and the 10th percentile groups in 2018 and in any of the preceding cycles.

- Looking at the distribution of U.S. scores in mathematics literacy in 2018, the cut scores associated with the 90th percentile (598) and the 75th percentile (543) were higher than the corresponding cut scores at the 90th percentile (585) and the 75th percentile (532) in 2015. There was no measurable difference between any of the U.S. percentile cut scores in 2018 and in 2012, 2009, 2006, and 2003.

Figure M5. Average score and selected percentile scores of U.S. 15-year-old students on the PISA mathematics literacy scale: Selected years 2003–2018



* $p < .05$. Significantly different from the 2018 score at the .05 level of statistical significance.

NOTE: This figure shows the threshold (or cut) score for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 25th percentile—the bottom 25 percent of students; (c) 75th percentile—the top 25 percent of students; (d) 90th percentile—the top 10 percent of students. Scores are reported on a scale from 0 to 1,000. Although mathematics was assessed in 2000, because the mathematics framework was revised for PISA 2003, it is possible to look at changes in mathematics only from 2003 forward.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2003, 2006, 2009, 2012, 2015, and 2018.

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Achievement by Student Groups

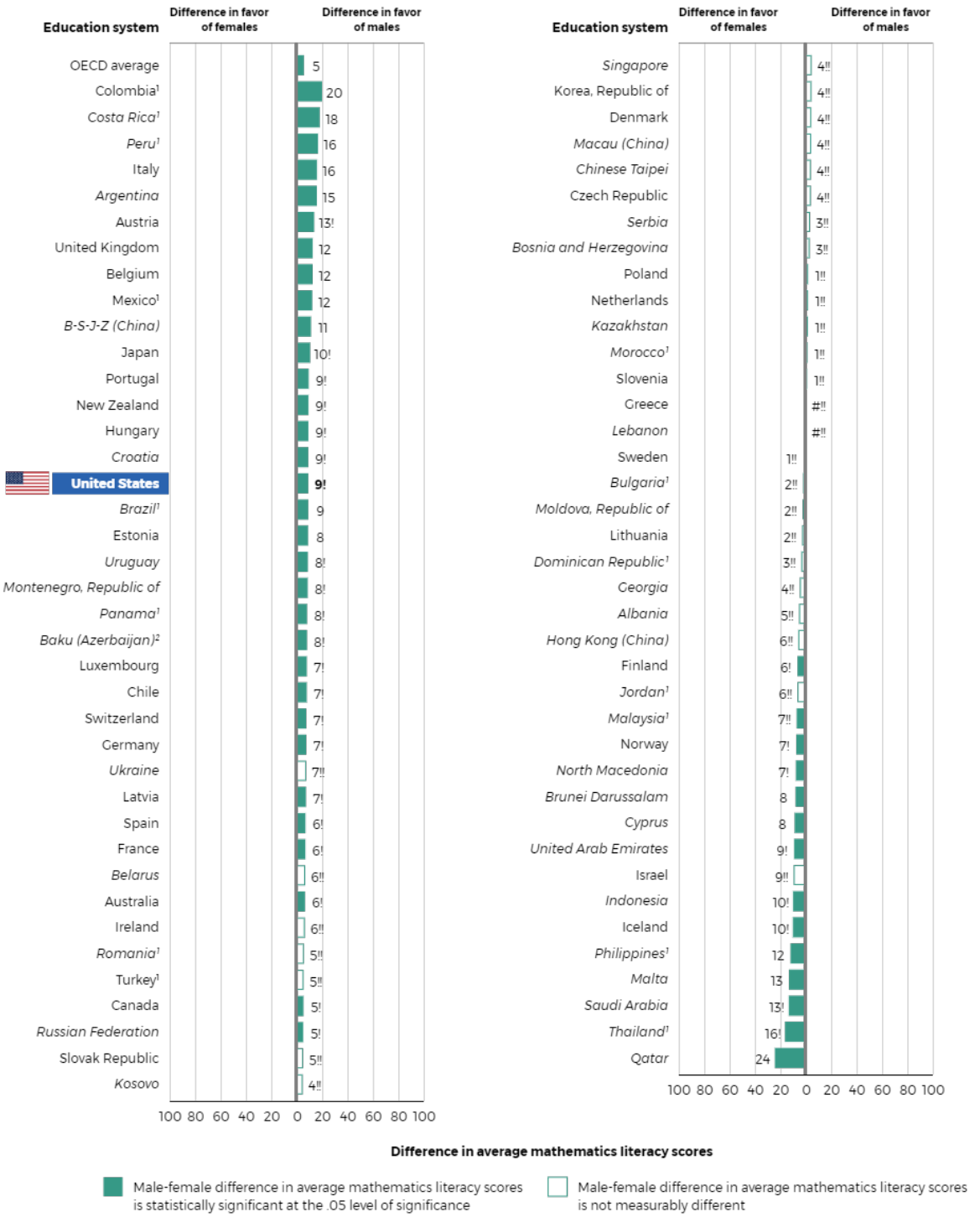
Are there gender differences in mathematics performance among 15-year-olds?

In 2018 in the United States, male 15-year-olds scored higher than their female peers. Among the 78 education systems, male students scored higher, on average, than female students in 32 education systems, and female students scored higher, on average, than male students on the mathematics literacy scale in 14 education systems.

- On average across OECD countries, male students outperformed female students in mathematics by 5 points.
- In 14 education systems, females outperformed males on average, with score gaps ranging from 6 points in Finland to 24 points in Qatar.
- In 32 education systems, males outperformed females on average, with score gaps ranging from 5 points in the Russian Federation and Canada to 20 points in Colombia.

See figure M6 on the next page.

Figure M6. Difference in average scores of 15-year-old male and female students on the PISA mathematics literacy scale, by education system: 2018



Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by absolute male-female difference in 2018 average scores. Differences were computed using unrounded numbers. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national average differences of the OECD member countries, with each country weighted equally. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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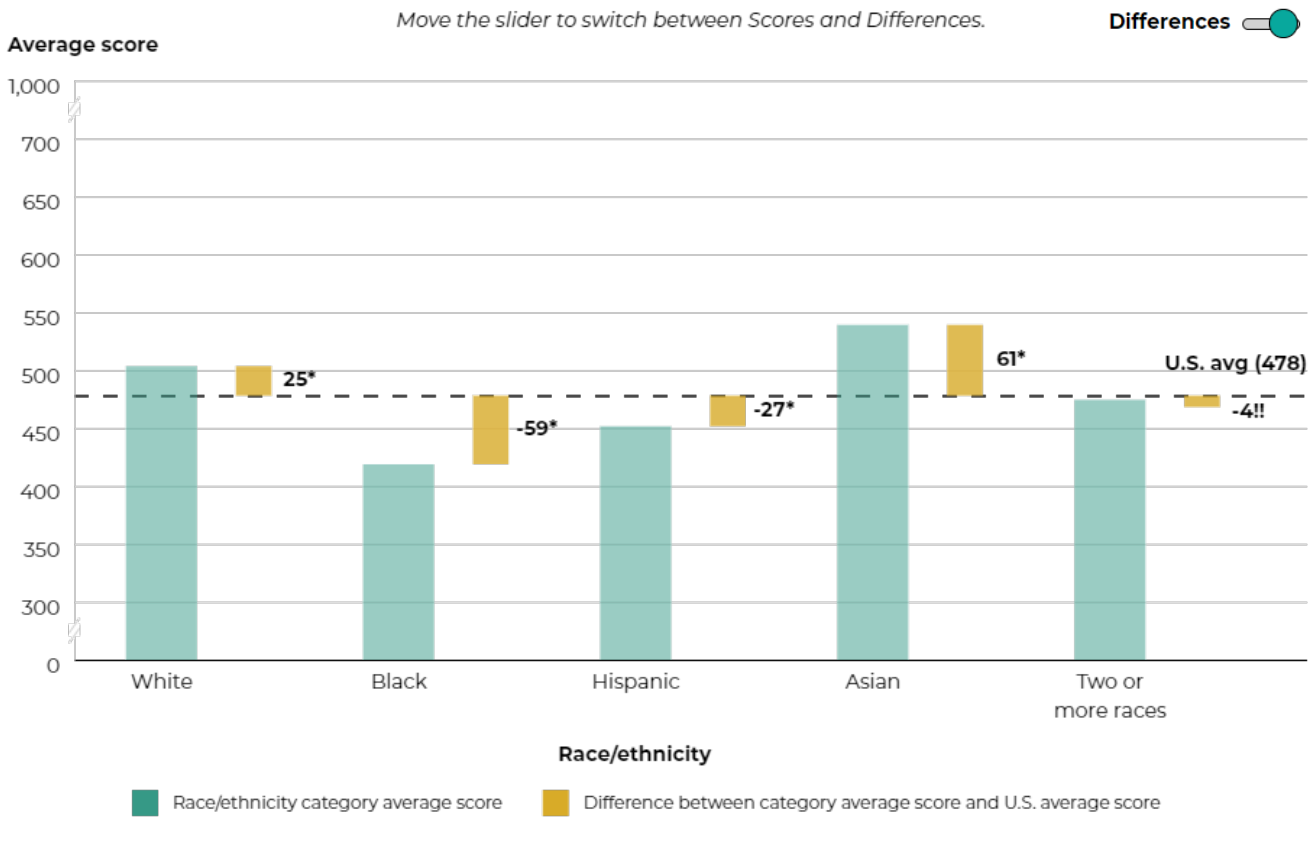
How does the mathematics performance of U.S. 15-year-olds vary by race/ethnicity?

In 2018, White and Asian students in the United States scored higher than the overall U.S. average in mathematics literacy, while Hispanic and Black students scored lower.

- Asian and White students, on average, had higher mathematics literacy scores (539 and 503, respectively) than the overall U.S. average score (478). The average mathematics literacy score of students reporting Two or more races (474) was not measurably different than the overall U.S. average score. Hispanic and Black students had lower average scores (452 and 419, respectively) than the U.S. average score.

Figure M7. Average scores of U.S. 15-year-old students on the PISA mathematics literacy scale, by race/ethnicity: 2018



!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Scores are reported on a scale from 0 to 1,000. Reporting standards were not met for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander. Black includes African American, and Hispanic includes Latino. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race. Although data for some race/ethnicities were not shown separately because the reporting standards were not met, they are included in the U.S. totals.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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How does the mathematics performance of U.S. 15-year-olds vary by measures of poverty?

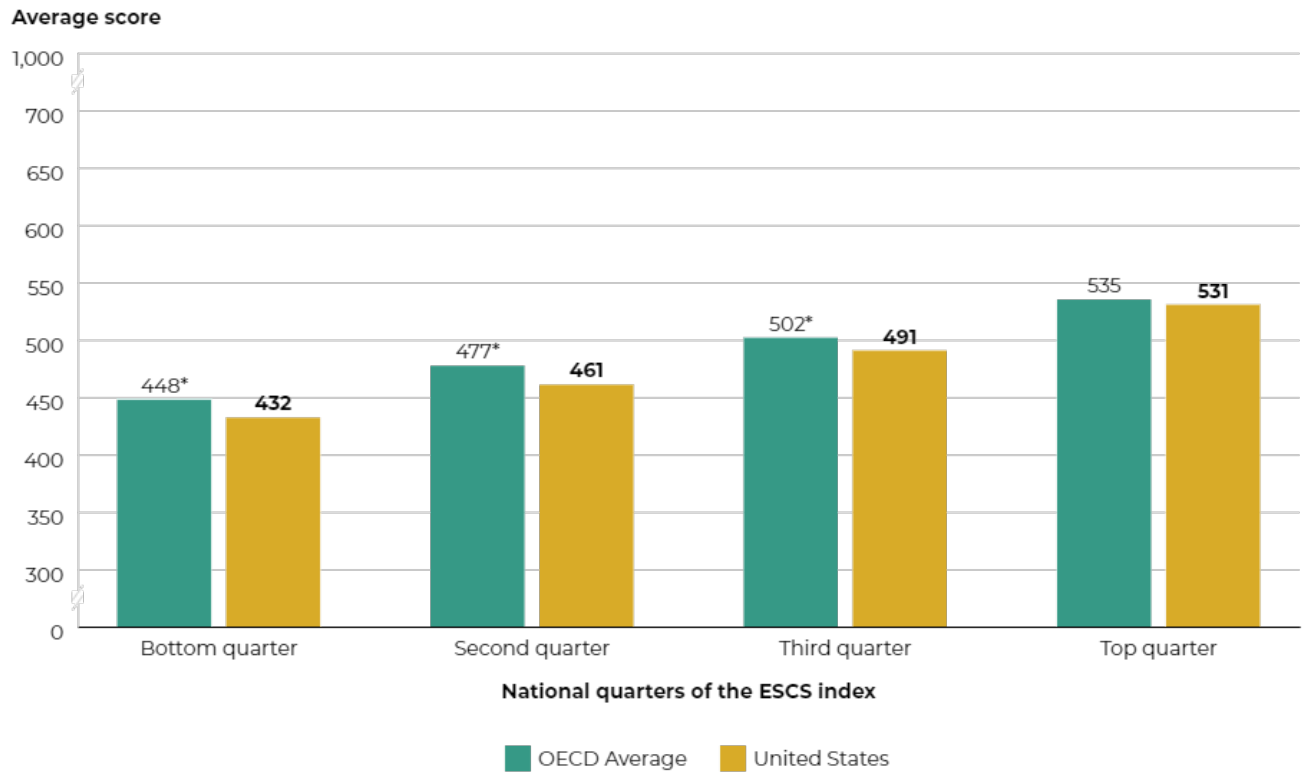
ECONOMIC, SOCIAL, AND CULTURAL STATUS

The PISA 2018 questionnaire collected data on two measures of poverty: the economic, social, and cultural status (ESCS) index and a U.S.-only free or reduced-price lunch (FRPL) variable. The ESCS index is a student-level, international measure of socioeconomic status, while FRPL is a school-level, U.S.-only variable of school poverty. In 2018, U.S. 15-year-old students had lower average mathematics literacy scores than the OECD average scores in the bottom, second, and third ESCS quarters. There was no measurable difference between U.S. students' average score and the OECD average score in the top ESCS quarter.

- Students were grouped into four quarters using the distribution of ESCS scores specific to each education system. Those in the bottom ESCS quarter report the highest levels of poverty while those in the top quarter report the lowest levels of poverty.
- U.S. students in the bottom ESCS quarter scored 16 points lower, on average, than the OECD average score in the bottom ESCS quarter.
- Average scores in mathematics by students' socioeconomic status show that U.S. 15-year-olds in the top ESCS quarter performed 98 points higher than those in the bottom quarter. Across the OECD countries on average, this score gap was smaller, at 87 points.
- The U.S. score gap between the top and the bottom ESCS quarters was smaller than the score gaps in 4 education systems and higher than the score gaps in 39 education systems.

See figure M8 on the next page.

Figure M8. Average scores of 15-year-old students on the PISA mathematics literacy scale, by national quarters of the PISA index of economic, social, and cultural status (ESCS): 2018



* $p < .05$. Significantly different from the U.S. average at the .05 level of statistical significance.

NOTE: The PISA index of economic, social, and cultural status (ESCS) was created using student reports on parental occupation, the highest level of parental education, and an index of home possessions related to family wealth, home educational resources and possessions related to "classical" culture in the family home. The home possessions relating to "classical" culture in the family home included possessions such as works of classical literature, books of poetry, and works of art (e.g., paintings). The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Education systems are included in the OECD average if they were OECD members in 2018. Average scores by quarter are calculated based on the distribution of student scores within each education system. Scores are reported on a scale from 0 to 1,000.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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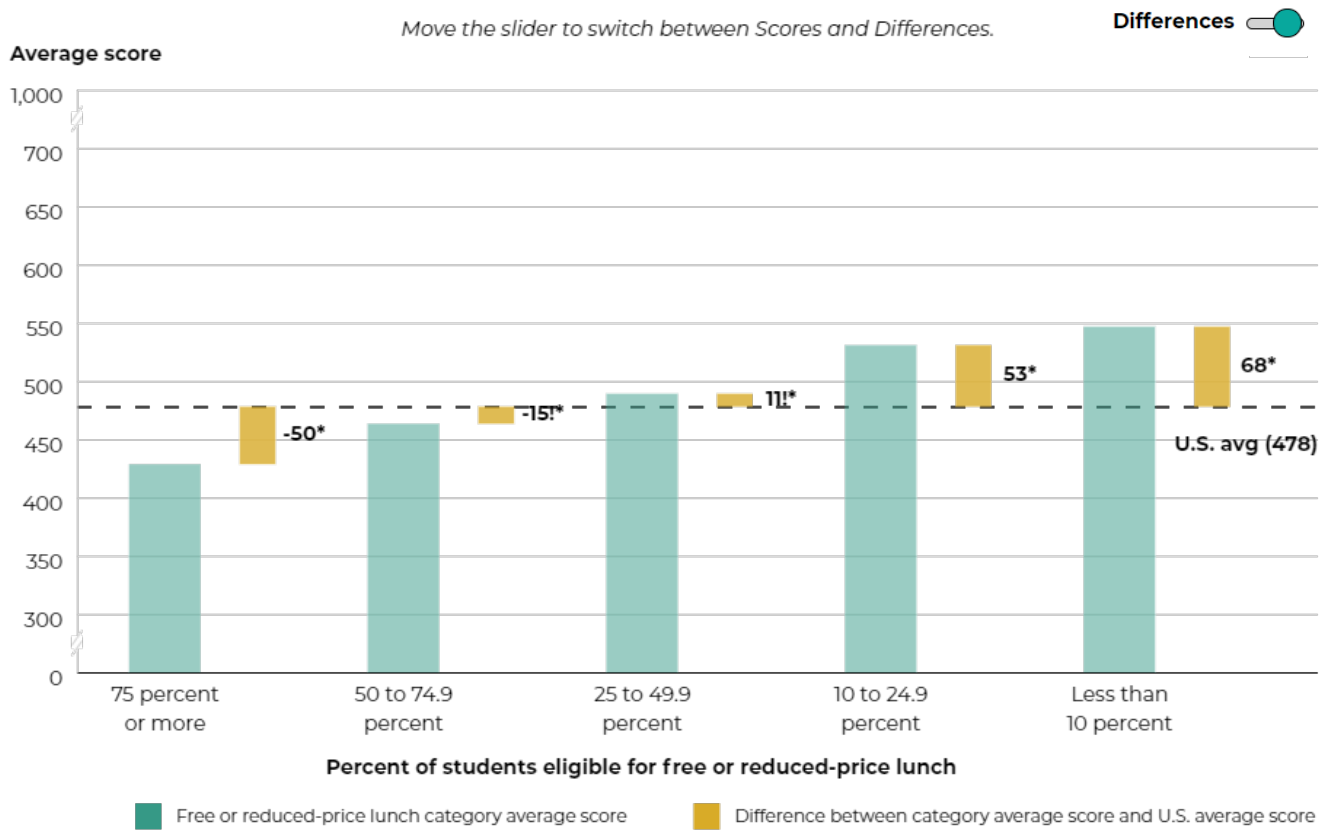
FREE OR REDUCED-PRICE LUNCH

In 2018, students in U.S. public schools with the highest levels of poverty (75 percent or more of students eligible for FRPL) scored, on average, 50 points lower than the overall U.S. average in mathematics literacy, whereas students in U.S. public schools with the lowest levels of poverty (less than 10 percent eligible for FRPL) scored 68 points higher than the overall U.S. average.

- Students in public schools in which at least half of all students were eligible for FRPL (50 to 74.9 percent and 75 percent or more) scored, on average, lower than the overall U.S. average (463 and 429, respectively, vs. 478).

- Students in public schools in which less than half of all students were FRPL-eligible (less than 10 percent, 10 to 24.9 percent, and 25 to 49.9 percent) scored, on average, higher than the overall U.S. average (547, 531, and 489, respectively, vs. 478).

Figure M9. Average scores of U.S. 15-year-old public school students on the PISA mathematics literacy scale, by percentage of students enrolled in schools eligible for free or reduced-price lunch, based on principals' reports: 2018



! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Scores are reported on a scale from 0 to 1,000. The National School Lunch Program provides free or reduced-price lunch for students meeting certain income guidelines. The percentage of students eligible for this program is an indicator of the socioeconomic level of families served by the school. Data in this figure are based on principals' responses to a question in the school questionnaire that asked the approximate percentage of eligible students in the school during the previous school year. Free or reduced-price lunch data are for public schools only.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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PISA 2018 Science Literacy Results

Explore How U.S. Science Performance Compared Internationally in 2018

Science literacy was a minor domain in PISA 2018. For 2018, the PISA science literacy assessment component administered to students included only trend items used in prior cycles of PISA, including the 2006 and 2015 cycles, when science literacy was the major domain. Read more about the latest version of the science literacy framework for PISA 2018.

In PISA, the assessment of science literacy focuses on students' ability to engage with science-related issues, and with the ideas of science, as a reflective citizen. It requires students to engage in reasoned discourse about science and technology utilizing their knowledge of facts and theories to explain phenomena scientifically. It also requires students to know the standard methodological procedures and patterns of reasoning used in science to evaluate or design scientific inquiries and interpret evidence.

> **In PISA 2018, science literacy is defined as students' ability to engage with science-related issues, and with the ideas of science, as a reflective citizen. A scientifically literate person is willing to engage in reasoned discourse about science and technology, which requires the competencies to explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically.**

International Comparisons of Student Achievement

How does the performance of U.S. 15-year-olds in science compare internationally?

Compared to the 77 other education systems in PISA 2018, the U.S. average science literacy score was lower than the average in 11 education systems, higher than the average in 55 education systems, and not measurably different from the average in 11 education systems

- The U.S. average score (502) was higher than the OECD average score (489).
- Compared to the 36 other OECD members, the U.S. average in science literacy was lower than the average in 6 education systems, higher than in 19, and not measurably different than in 11.
- On a scale of 0 to 1,000, average scores in science literacy across the education systems ranged from 590 points in B-S-J-Z (China) to 336 points in the Dominican Republic.

See table S1 on the next page.

Table S1. Average scores of 15-year-old students on the PISA science literacy scale, by education system: 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	Average score
OECD average	489 ▼
B-S-J-Z (China)	590 ▲
Singapore	551 ▲
Macau (China)	544 ▲
Estonia	530 ▲
Japan	529 ▲
Finland	522 ▲
Korea, Republic of	519 ▲
Canada	518 ▲
Hong Kong (China)	517 ▲
Chinese Taipei	516 ▲
Poland	511 ▲
New Zealand	508
Slovenia	507
United Kingdom	505
Netherlands	503
Germany	503
Australia	503
United States	**502**
Sweden	499
Belgium	499
Czech Republic	497
Ireland	496
Switzerland	495
France	493 ▼
Denmark	493 ▼
Portugal	492 ▼
Norway	490 ▼
Austria	490 ▼
Latvia	487 ▼
Spain	483 ▼
Lithuania	482 ▼
Hungary	481 ▼
Russian Federation	478 ▼
Luxembourg	477 ▼
Iceland	475 ▼
Croatia	472 ▼
Belarus	471 ▼
Ukraine	469 ▼
Turkey[1]	468 ▼

Education system	Average score
Italy	468 ▼
Slovak Republic	464 ▼
Israel	462 ▼
Malta	457 ▼
Greece	452 ▼
Chile	444 ▼
Serbia	440 ▼
Cyprus	439 ▼
Malaysia[1]	438 ▼
United Arab Emirates	434 ▼
Brunei Darussalam	431 ▼
Jordan[1]	429 ▼
Moldova, Republic of	428 ▼
Thailand[1]	426 ▼
Uruguay	426 ▼
Romania[1]	426 ▼
Bulgaria[1]	424 ▼
Mexico[1]	419 ▼
Qatar	419 ▼
Albania	417 ▼
Costa Rica[1]	416 ▼
Montenegro, Republic of	415 ▼
Colombia[1]	413 ▼
North Macedonia	413 ▼
Peru[1]	404 ▼
Argentina	404 ▼
Brazil[1]	404 ▼
Bosnia and Herzegovina	398 ▼
Baku (Azerbaijan)[2]	398 ▼
Kazakhstan	397 ▼
Indonesia	396 ▼
Saudi Arabia	386 ▼
Lebanon	384 ▼
Georgia	383 ▼
Morocco[1]	377 ▼
Kosovo	365 ▼
Panama[1]	365 ▼
Philippines[1]	357 ▼
Dominican Republic[1]	336 ▼

▲ Average score is higher than U.S. average score at the .05 level of statistical significance.

▼ Average score is lower than U.S. average score at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 average score. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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What is the percentage of 15-year-olds reaching the PISA proficiency levels in science?

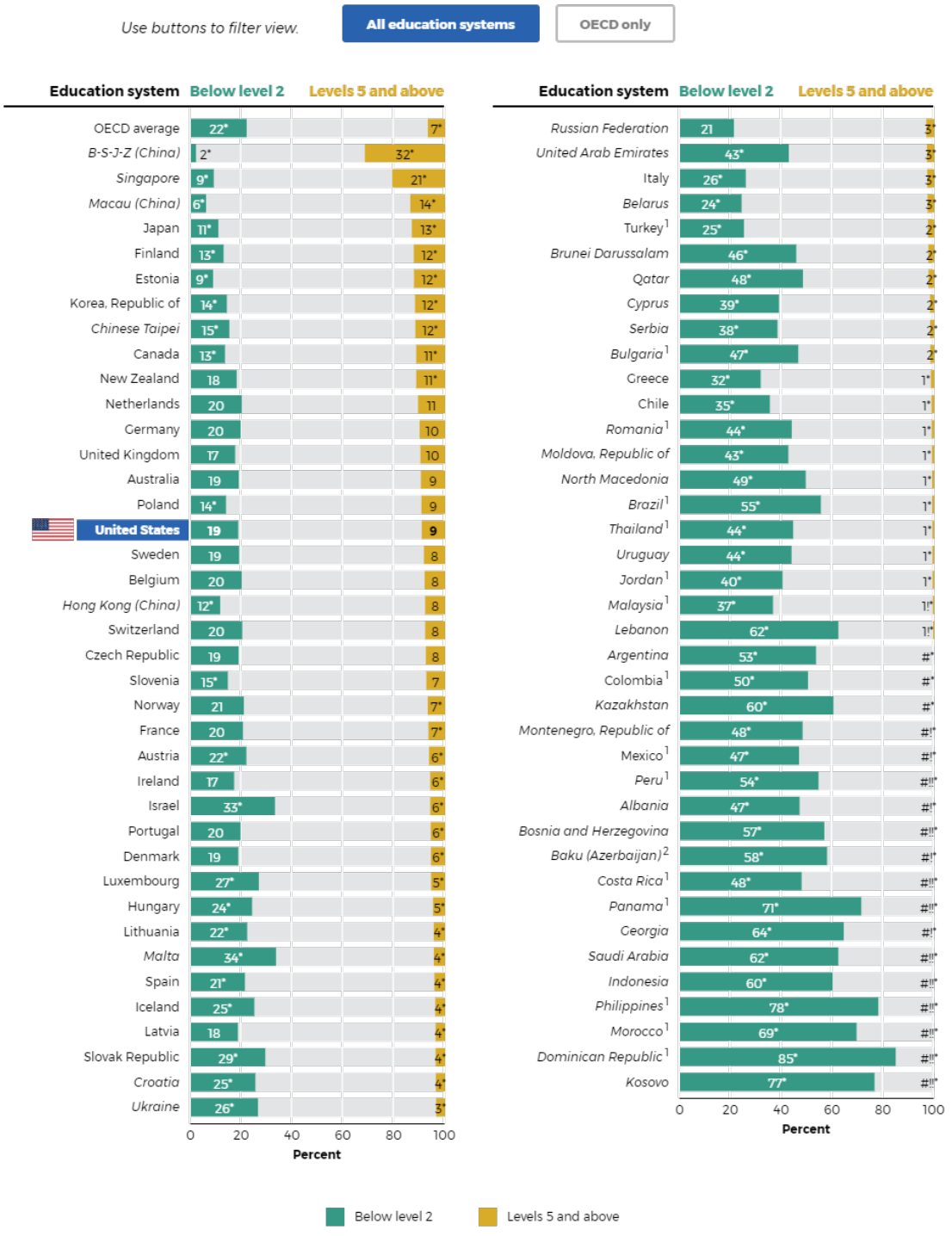
In addition to scale scores, PISA describes student performance in each subject area in terms of levels of proficiency, from the lowest level (Level 1) to the highest (Level 6). Students were classified into proficiency levels based on their scores. Descriptions of the skills and knowledge of students at each proficiency level can be found here.

In the United States, 9 percent of 15-year-old students in 2018 were top performers in science literacy, scoring at proficiency levels 5 and above; 19 percent were low performers in science literacy, scoring below proficiency level 2.

- The United States had a larger percentage of top performers in science literacy than the OECD average (9 vs. 7 percent, respectively). The U.S. percentage was larger than in 56 education systems, smaller than in 10 education systems, and not measurably different from 11 education systems. The percentages of top-performing 15-year-old students in science literacy ranged from 32 percent in B-S-J-Z (China) to nearly 0 percent in 18 education systems.
- The United States had a smaller percentage of low performers in science literacy than the OECD average (19 vs. 22 percent, respectively). The U.S. percentage was smaller than in 49 education systems, larger than in 12 education systems, and not measurably different from 16 education systems. The percentages of low-performing 15-year-old students in science literacy ranged from 2 percent in B-S-J-Z (China) to 85 percent in the Dominican Republic.

See figure S2 on the next page.

Figure S2. Percentage of 15-year-old students performing below level 2 or reaching science literacy proficiency levels 5 and above, by education system: 2018



Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (> 30 percent and ≤ 50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

* $p < .05$. Significantly different from the U.S. percentage at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 percentages of 15-year-olds in levels 5 and above. To reach a particular proficiency level, a student must correctly answer a majority of items at that level. Students were classified into science proficiency levels according to their scores. Exact cut scores are as follows: Below Level 2 (a score less than 409.54); Levels 5 and above is a score equal to or greater than 633.33. See descriptions of each proficiency level here. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national percentages of the OECD member countries, with each country weighted equally. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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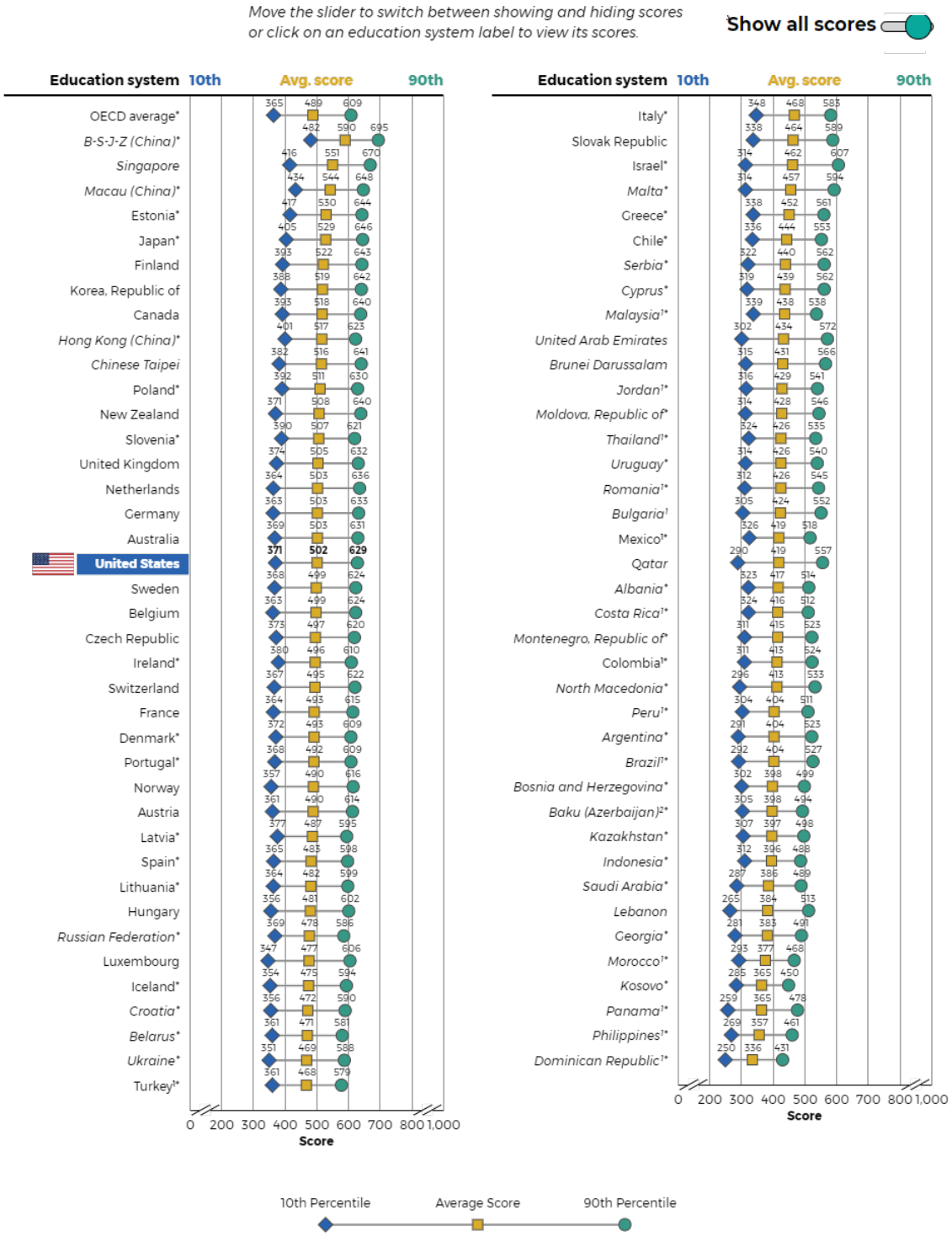
How large is the gap in science performance between top and bottom performers?

Score gaps between top and bottom performers provide one indication of equity within an education system. The distribution of U.S. student scores in science literacy showed a score gap of 259 points between the 90th and 10th percentiles.

- The U.S. score gap between the 90th and 10th percentiles (259 points) was larger than the score gap across the OECD countries on average (244 points).
- The U.S. score gap was smaller than the gap in 2 education systems, larger than the gap in 50, and not measurably different than the gap in 25 education systems.
- Internationally, score gaps between the 90th and 10th percentiles ranged from 165 points in Kosovo to 293 points in Israel.

See figure S3 on the next page.

Figure S3. Average scores and 10th and 90th percentile scores of 15-year-old students on the PISA science literacy scale and percentile score gaps, by education system: 2018



* $p < .05$. Score gap is significantly different from the U.S. 90th to 10th percentile score gap at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: This figure shows the threshold (or cut) scores for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 90th percentile—the top 10 percent of students. The score gap for each education system is the difference between its 90th and 10th percentile scores. The percentile ranges are specific to each education system's distribution of scores, enabling users to compare scores across education systems. Education systems are ordered by average score from largest to smallest. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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Trends in Student Achievement

Has there been any change in 15-year-olds' performance in science over time?

LONG-TERM TREND

PISA 2018 literacy scores can be compared to scores from previous cycles. For science literacy, the earliest cycle to which 2018 scores can be compared is 2006. Compared to the earliest comparable PISA score in science (in 2006), the average science literacy score of U.S. 15-year-olds in 2018 (502) was higher than the average score in 2006 (489).

- Among the 52 other education systems that participated in both 2006 and 2018, there were 7 education systems that reported higher average science literacy scores in 2018 than in 2006. In these education systems, score increases ranged from 13 points in Poland and Brazil to 70 points in Qatar.
- In 22 education systems, average science literacy scores for 15-year-olds were lower in 2018 than in 2006. In these education systems, score decreases from 2006 to 2018 ranged from 10 points in Bulgaria, Luxembourg, and the United Kingdom to 41 points in Finland.

See table S4a on the next page.

Table S4a. Average scores and changes in average scores of 15-year-old students on the PISA science literacy scale, by education system: 2006 and 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	2006 score	2018 score	Score difference
Qatar	349	419	70 ▲
Turkey[1]	424	468	44 ▲
Macau (China)	511	544	33 ▲
Colombia[1]	388	413	25 ▲
Portugal	474	492	17! ▲
United States	**489**	**502**	**13! ▲**
Brazil[1]	390	404	13! ▲
Poland	498	511	13! ▲
Argentina	391	404	13!!
Mexico[1]	410	419	10!!
Israel	454	462	8!!
Romania[1]	418	426	7!!
Jordan[1]	422	429	7!!
Chile	438	444	5!!
Thailand[1]	421	426	5!!
Serbia	436	440	4!!
Norway	487	490	4!!
Montenegro, Republic of	412	415	3!!
Indonesia	393	396	3!!
Estonia	531	530	-1!!
Russian Federation	479	478	-2!!
France	495	493	-2!!
Japan	531	529	-2!!
Latvia	490	487	-2!!
Uruguay	428	426	-2!!
Korea, Republic of	522	519	-3!!
Denmark	496	493	-3!!
Sweden	503	499	-4!!
Spain	488	483	-5!!
Lithuania	488	482	-6!!
Italy	475	468	-7!!
Luxembourg	486	477	-10! ▼
Bulgaria[1]	434	424	-10!! ▼
United Kingdom	515	505	-10! ▼
Belgium	510	499	-12! ▼
Slovenia	519	507	-12! ▼
Ireland	508	496	-12! ▼
Germany	516	503	-13! ▼
Iceland	491	475	-16 ▼
Czech Republic	513	497	-16! ▼
Switzerland	512	495	-16! ▼
Canada	534	518	-16 ▼
Chinese Taipei	532	516	-17! ▼
Croatia	493	472	-21 ▼
Austria	511	490	-21 ▼
Netherlands	525	503	-21 ▼
Greece	473	452	-22 ▼
New Zealand	530	508	-22 ▼
Hungary	504	481	-23 ▼
Australia	527	503	-24 ▼
Slovak Republic	488	464	-24 ▼
Hong Kong (China)	542	517	-26 ▼
Finland	563	522	-41 ▼

▲ 2018 score is higher than 2006 score at the .05 level of statistical significance.

▼ 2018 score is lower than 2006 score at the .05 level of statistical significance.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Data shown for education systems that participated in both cycles of PISA in 2006 and 2018. Education systems are ordered by 2018-2006 score difference. The PISA science framework was revised in 2006. Because of changes in the framework, it is not possible to compare science learning outcomes from PISA 2000 and 2003 with those from PISA 2006, 2009, 2012, 2015, and 2018. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. Italics indicate non-OECD countries and education systems.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2006 and 2018.

For More Information

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SHORT-TERM TREND

Compared to the most recent comparable PISA score in science (in 2015), the average science literacy score of U.S. 15-year-olds in 2018 (502) was not measurably different from the U.S. average score in 2015 (496).

- Among the 63 other education systems that participated in both 2015 and 2018, there were 6 education systems that reported higher average science literacy scores for 15-year-olds in 2018 than in 2015. In these education systems, score increases ranged from 6 points in Cyprus to 43 points in Turkey.
- In 20 education systems, average science literacy scores for 15-year-olds were lower in 2018 than in 2015. In these education systems, score decreases ranged from 6 points in Slovenia to 28 points in Georgia.

See table S4b on the next page.

Table S4b. Average scores and changes in average scores of 15-year-old students on the PISA science literacy scale, by education system: 2015 and 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	2015 score	2018 score	Score difference
Turkey[1]	425	468	43 ▲
North Macedonia	384	413	29 ▲
Jordan[1]	409	429	21 ▲
Macau (China)	529	544	15 ▲
Poland	501	511	10! ▲
Peru[1]	397	404	8‼
Lithuania	475	482	7‼
Cyprus	433	439	6! ▲
United States	**496**	**502**	**6‼**
Sweden	493	499	6‼
Thailand[1]	421	426	4‼
Hungary	477	481	4‼
Dominican Republic[1]	332	336	4‼
Czech Republic	493	497	4‼
Montenegro, Republic of	411	415	4‼
Mexico[1]	416	419	3‼
Slovak Republic	461	464	3‼
Korea, Republic of	516	519	3‼
Brazil[1]	401	404	3‼
Iceland	473	475	2‼
Qatar	418	419	2‼
Moldova, Republic of	428	428	#‼
France	495	493	-2‼
Colombia[1]	416	413	-2‼
Lebanon	386	384	-3‼
Latvia	490	487	-3‼
Croatia	475	472	-3‼
United Arab Emirates	437	434	-3‼
Greece	455	452	-3‼
Belgium	502	499	-3‼
Chile	447	444	-3‼
Costa Rica[1]	420	416	-4‼
Estonia	534	530	-4‼
Israel	467	462	-4‼
United Kingdom	509	505	-5‼
Singapore	556	551	-5‼
New Zealand	513	508	-5‼
Netherlands	509	503	-5‼
Austria	495	490	-5‼
Slovenia	513	507	-6! ▼
Luxembourg	483	477	-6! ▼
Germany	509	503	-6‼
Ireland	503	496	-6‼
Hong Kong (China)	523	517	-7‼
Australia	510	503	-7! ▼
Indonesia	403	396	-7‼
Norway	498	490	-8! ▼
Malta	465	457	-8! ▼
Finland	531	522	-9! ▼
Russian Federation	487	478	-9! ▼
Romania[1]	435	426	-9‼
Japan	538	529	-9! ▼
Denmark	502	493	-9! ▼
Portugal	501	492	-9! ▼
Spain	493	483	-10! ▼
Uruguay	435	426	-10! ▼
Canada	528	518	-10! ▼
Switzerland	506	495	-10! ▼
Albania	427	417	-10! ▼
Italy	481	468	-13! ▼
Kosovo	378	365	-14 ▼
Chinese Taipei	532	516	-17 ▼
Bulgaria[1]	446	424	-22 ▼
Georgia	411	383	-28 ▼

▲ 2018 score is higher than 2015 score at the .05 level of statistical significance.

▼ 2018 score is lower than 2015 score at the .05 level of statistical significance.

Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

‼ Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Data shown for education systems that participated in both cycles of PISA in 2015 and 2018. Education systems are ordered by 2018-2015 difference in average score. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. Italics indicate non-OECD countries and education systems. Although Argentina, Malaysia, and Kazakhstan participated in PISA 2015, technical problems with their samples prevent results from being discussed in this report. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015 and 2018.

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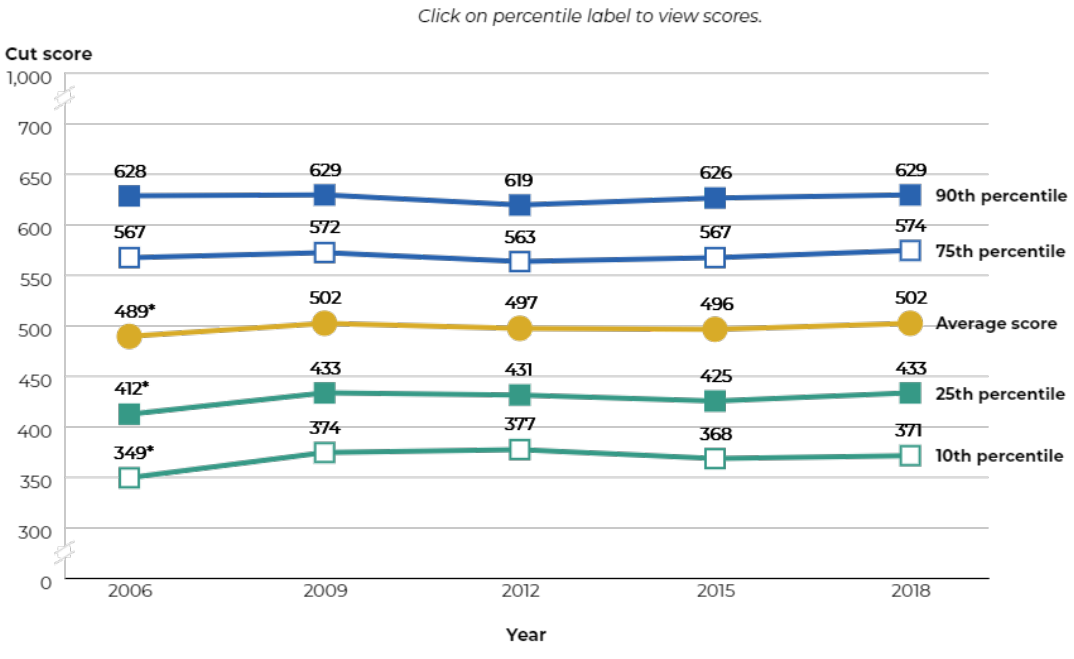
Has there been any change over time in the science performance of U.S. 15-year-olds' scores at selected percentiles?

In 2018, U.S. students at the 10th and 25th percentiles performed, on average, higher in science literacy than U.S. students in the same percentile groups in 2006. No measurable differences were observed for the average science scores and cut scores associated with the 75th and 90th percentile groups in 2018 and in any preceding cycles.

- Looking at the distribution of U.S. scores in science literacy, the cut score associated with the 25th percentile in 2018 (433) was higher than the 25th percentile cut score in 2006 (412). There was no measurable difference between the U.S. 25th percentile cut score in 2018 and the corresponding cut scores in 2015, 2012, and 2009.
- The cut score associated with the U.S. 10th percentile in 2018 (371) was also higher than the 10th percentile cut score in 2006 (349). There was no measurable difference between the U.S. 10th percentile cut score in 2018 and the corresponding cut scores in 2015, 2012, and 2009.
- There were no measurable differences between the 75th and 90th percentile cut scores in 2018 and the corresponding cut scores in 2015, 2012, 2009, and 2006.

Figure S5. Average score and selected percentile scores of U.S. 15-year-old students on the PISA science literacy scale: Selected years 2006–2018



* $p < .05$. Significantly different from the 2018 score at the .05 level of statistical significance.

NOTE: This figure shows the threshold (or cut) score for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 25th percentile—the bottom 25 percent of students; (c) 75th percentile—the top 25 percent of students; (d) 90th percentile—the top 10 percent of students. Scores are reported on a scale from 0 to 1,000. Although science was assessed in 2000 and 2003, because the science framework was revised for 2006, it is possible to look at changes in science only from 2006 forward.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2006, 2009, 2012, 2015, and 2018.

For More Information

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Achievement by Student Groups

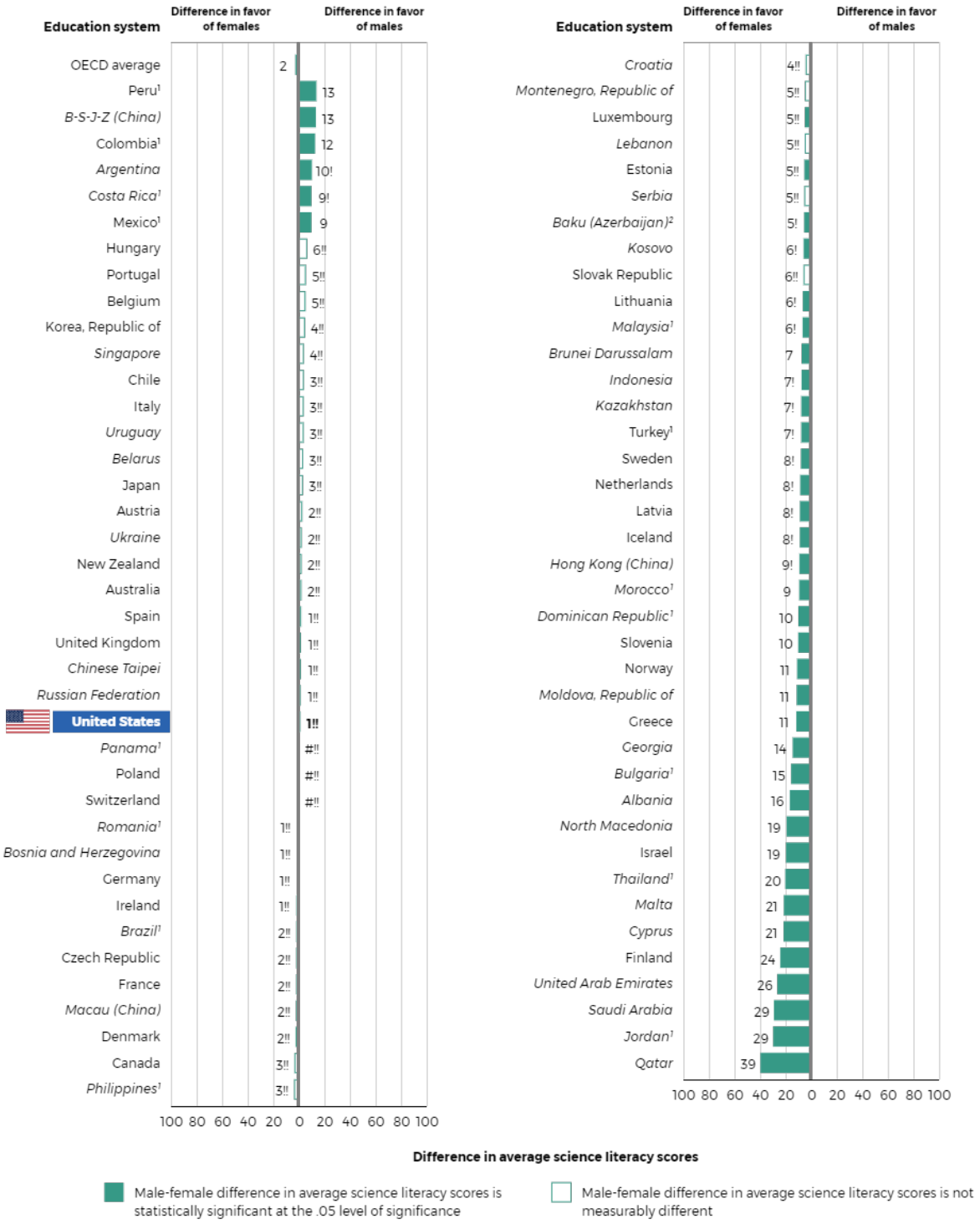
Are there gender differences in science performance among 15-year-olds?

In the United States, there was no measurable difference between the average science scores of male and female students in 2018. Female students scored higher, on average, than male students on the science literacy scale in 34 education systems, and male students scored higher in 6 education systems.

- On average across OECD countries, females outperformed male students in science by 2 points.
- In 34 education systems, females outperformed males on average, with score gaps ranging from 5 points in Luxembourg, Estonia, and Baku (Azerbaijan) to 39 points in Qatar.
- In 6 education systems, males outperformed females on average, with score gaps ranging from 13 points in Peru and B-S-J-Z (China) to 9 points in Costa Rica and Mexico.

See figure S6 on the next page.

Figure S6. Difference in average scores of 15-year-old male and female students on the PISA science literacy scale, by education system: 2018



Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] Less than 50 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by absolute male-female difference in 2018 average scores. Differences were computed using unrounded numbers. Scores are reported on a scale from 0 to 1,000. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national average differences of the OECD member countries, with each country weighted equally. Italics indicate non-OECD countries and education systems. B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this report.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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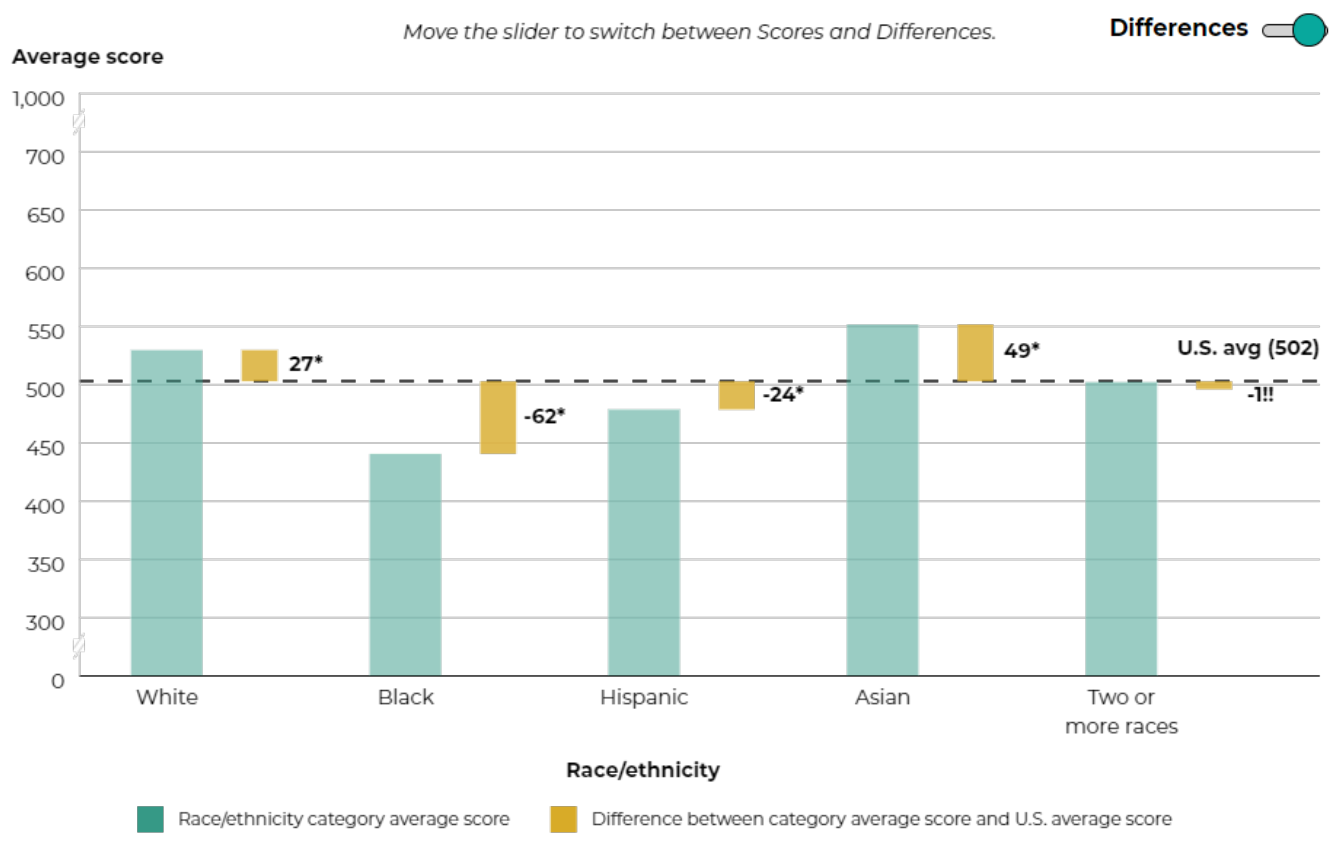
How does the science performance of U.S. 15-year-olds vary by race/ethnicity?

In 2018, White and Asian students in the United States scored higher than the overall U.S. average in science literacy, while Hispanic and Black students scored lower.

- Asian and White students, on average, had higher science literacy scores (551 and 529, respectively) than the overall U.S. average score (502). The average science literacy score of students reporting Two or more races (502) was not measurably different from the U.S. average score. Hispanic and Black students had lower average scores (478 and 440, respectively) than the U.S. average score.

Figure S7. Average scores of U.S. 15-year-old students on the PISA science literacy scale, by race/ethnicity: 2018



!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Scores are reported on a scale from 0 to 1,000. Reporting standards were not met for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander. Black includes African American, and Hispanic includes Latino. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race. Although data for some race/ethnicities were not shown separately because the reporting standards were not met, they are included in the U.S. totals.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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How does the science performance of U.S. 15-year-olds vary by measures of poverty?

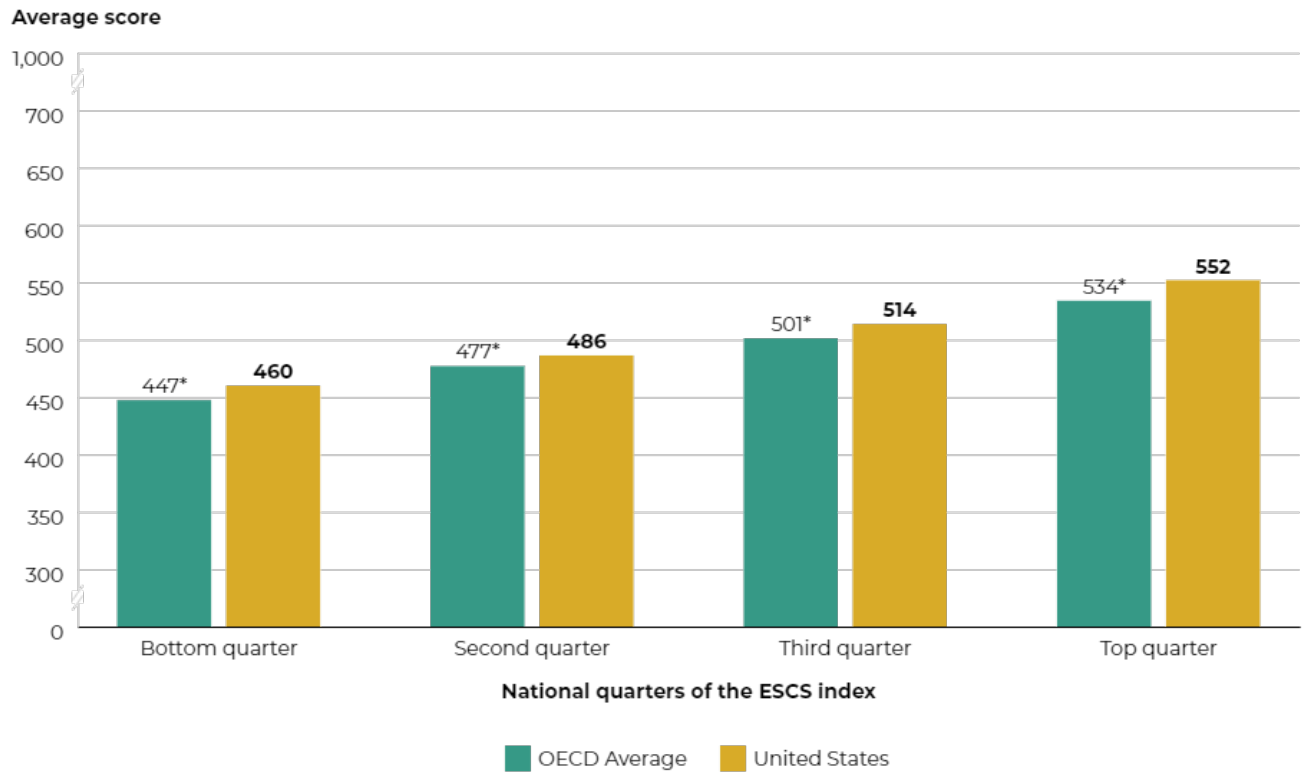
ECONOMIC, SOCIAL, AND CULTURAL STATUS

The PISA 2018 questionnaire collected data on two measures of poverty: the economic, social, and cultural status (ESCS) index and a U.S.-only free or reduced-price lunch (FRPL) variable. The ESCS index is a student-level, international measure of socioeconomic status, while FRPL is a school-level, U.S.-only variable of school poverty. In 2018, U.S. 15-year-old students had a higher average science literacy score than the OECD average score within each of the four ESCS quarters.

- Students were grouped into four quarters using the distribution of ESCS scores specific to each education system. Those in the bottom ESCS quarter report the highest levels of poverty while those in the top quarter report the lowest levels of poverty.
- Score differences between the U.S. and OECD average scores were 13, 9, 12, and 18 points in the bottom, second, third, and top ESCS quarters, respectively.
- Average scores in science by students' socioeconomic status show that U.S. 15-year-olds in the top ESCS quarter performed 92 points higher than those in the bottom quarter. Across the OECD countries on average, this score gap was 87 points.
- The U.S. score gap between the top and the bottom ESCS quarters was smaller than the score gaps in 6 education systems and higher than the score gaps in 35 education systems.

See figure S8 on the next page.

Figure S8. Average scores of 15-year-old students on the PISA science literacy scale, by national quarters of the PISA index of economic, social, and cultural status (ESCS): 2018



* $p < .05$. Significantly different from the U.S. average at the .05 level of statistical significance.

NOTE: The PISA index of economic, social, and cultural status (ESCS) was created using student reports on parental occupation, the highest level of parental education, and an index of home possessions related to family wealth, home educational resources and possessions related to "classical" culture in the family home. The home possessions relating to "classical" culture in the family home included possessions such as works of classical literature, books of poetry, and works of art (e.g., paintings). The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Education systems are included in the OECD average if they were OECD members in 2018. Average scores by quarter are calculated based on the distribution of student scores within each education system. Scores are reported on a scale from 0 to 1,000.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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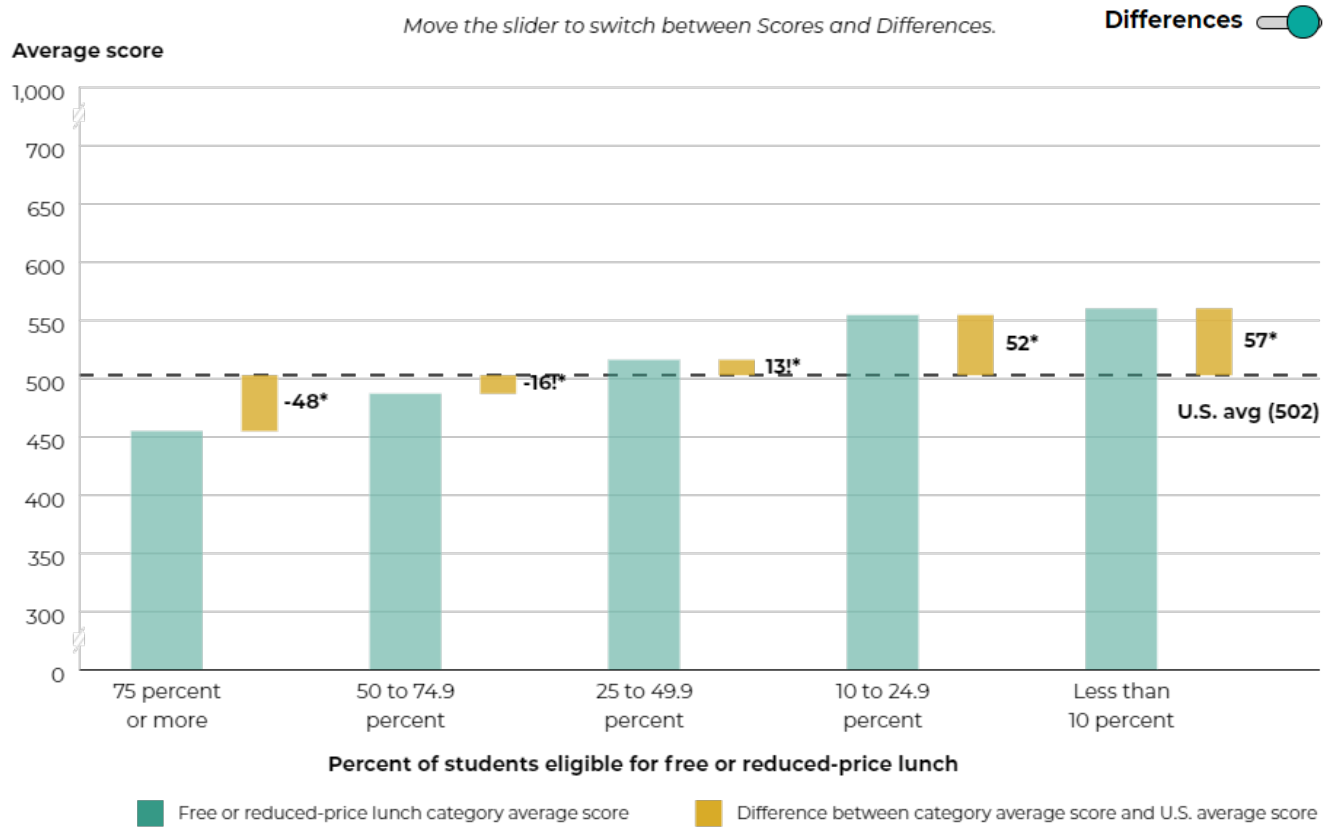
FREE OR REDUCED-PRICE LUNCH

In 2018, students in U.S. public schools with the highest levels of poverty (75 percent or more of students eligible for FRPL) scored, on average, 48 points lower than the overall U.S. average in science literacy, whereas students in U.S. public schools with the lowest levels of poverty (less than 10 percent eligible for FRPL) scored 57 points higher than the overall U.S. average.

- Students in public schools in which at least half of all students were eligible for FRPL (50 to 74.9 percent and 75 percent or more) scored, on average, lower than the overall U.S. average (487 and 454, respectively, vs. 502).

- Students in public schools in which less than half of all students were FRPL-eligible (less than 10 percent, 10 to 24.9 percent, and 25 to 49.9 percent) scored, on average, higher than the overall U.S. average (560, 554, and 516, respectively, vs. 502).

Figure S9. Average scores of U.S. 15-year-old public school students on the PISA science literacy scale, by percentage of students enrolled in schools eligible for free or reduced-price lunch, based on principals' reports: 2018



! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Scores are reported on a scale from 0 to 1,000. The National School Lunch Program provides free or reduced-price lunch for students meeting certain income guidelines. The percentage of students eligible for this program is an indicator of the socioeconomic level of families served by the school. Data in this figure are based on principals' responses to a question in the school questionnaire that asked the approximate percentage of eligible students in the school during the previous school year. Free or reduced-price lunch data are for public schools only.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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PISA 2018 Financial Literacy Results

Explore How U.S. Financial Literacy Performance Compared Internationally in 2018

Financial literacy is offered as an optional domain in PISA. For 2018, the PISA financial literacy assessment component administered to students included new interactive items, as well as trend items used in prior cycles of PISA, including the 2012 and 2015 cycles. Read more about the latest version of the financial literacy framework for PISA 2018.

In PISA, the assessment of financial literacy focuses on students' ability to understand and engage with financial concepts and risks and apply their knowledge to real-life situations.

In PISA 2018, financial literacy is defined as the *knowledge and understanding of financial concepts and risks, and the skills, motivation, and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to participate in economic life*.

International Comparison of Student Achievement

How does the performance of U.S. 15-year-olds in financial literacy compare internationally?

Compared to the 19 other education systems in PISA 2018, the U.S. average financial literacy score was lower than the average in 4 education systems, higher than the average in 11 education systems, and not measurably different from the average in 4 education systems.

- The U.S. average score (506) was not measurably different from the OECD average score (505).
- Compared to the 12 other OECD members, the U.S. average in financial literacy was lower than the average in 4 education systems, higher than the average in 4 education systems, and not measurably different from the average in 4 education systems.
- On a scale of 0 to 1,000, average scores in financial literacy across the education systems ranged from 547 in Estonia to 388 in Indonesia.

Table FL1. Average scores of 15-year-old students on the PISA financial literacy scale, by education system: 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	Average score
OECD average	505
Estonia	547 ▲
Finland	537 ▲
Canada	532 ▲
Poland	520 ▲
Australia	511
United States	**506**
Portugal	505
Latvia	501
Lithuania	498
Russian Federation	495 ▼
Spain	492 ▼
Slovak Republic	481 ▼
Italy	476 ▼
Chile	451 ▼
Serbia	444 ▼
Bulgaria[1]	432 ▼
Brazil[1]	420 ▼
Peru[1]	411 ▼
Georgia	403 ▼
Indonesia	388 ▼

▲ Average score is higher than U.S. average score at the .05 level of statistical significance.

▼ Average score is lower than U.S. average score at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 average score. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. The Netherlands participated in the PISA 2018 financial literacy assessment. However, due to issues with the selection of students for the financial literacy assessment, its results were deemed not comparable with those from other participating countries. As a result, its financial literacy data are not shown and not included in the OECD average.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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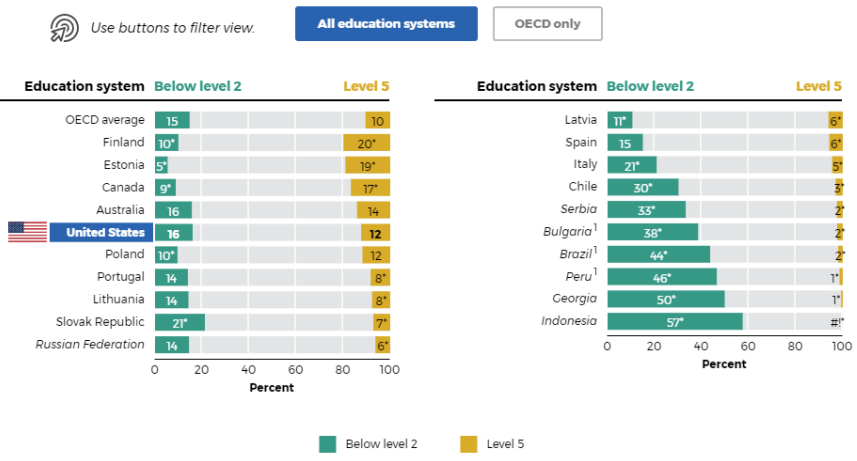
What is the percentage of 15-year-olds reaching the PISA proficiency levels in financial literacy?

In addition to scale scores, PISA describes student performance in financial literacy in terms of levels of proficiency, from the lowest level (Level 1) to the highest (Level 5). Students are classified into proficiency levels based on their scores. Descriptions of the skills and knowledge of students at each proficiency level can be found here.

In the United States, 12 percent of 15-year-old students in 2018 were top performers in financial literacy, scoring at proficiency level 5; 16 percent were low performers, scoring below proficiency level 2.

- The percentage of top performers in financial literacy in the United States was not measurably different from the OECD average. The U.S. percentage was larger than the percentage in 14 education systems, smaller than the percentage in 3 education systems, and not measurably different from the percentage in 2 education systems. The percentages of top-performing 15-year-old students in financial literacy ranged from nearly 0 percent in Indonesia to 20 percent in Finland.
- The percentage of low performers in financial literacy in the United States was not measurably different from the OECD average. The U.S. percentage was smaller than the percentage in 9 education systems, larger than the percentage in 5 education systems, and not measurably different from the percentage in 5 education systems. The percentages of low-performing 15-year-old students in financial literacy ranged from 5 percent in Estonia to 57 percent in Indonesia.

Figure FL2. Percentage of 15-year-old students performing below level 2 or reaching financial literacy proficiency level 5, by education system: 2018



Rounds to zero.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

* $p < .05$. Significantly different from the U.S. percentage at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by 2018 percentages of 15-year-olds reaching level 5. To reach a particular proficiency level, a student must correctly answer a majority of items at that level. Students were classified into financial literacy proficiency levels according to their scores. Exact cut scores are as follows: Below level 2 is a score less than 400.33; Level 5 is a score greater than or equal to 624.63. See descriptions of each proficiency level here. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national percentages of the OECD member countries, with each country weighted equally. The Netherlands participated in the PISA 2018 financial literacy assessment. However, due to issues with the selection of students for the financial literacy assessment, its results were deemed not comparable with those from other participating countries. As a result, its financial literacy data are not shown and not included in the OECD average.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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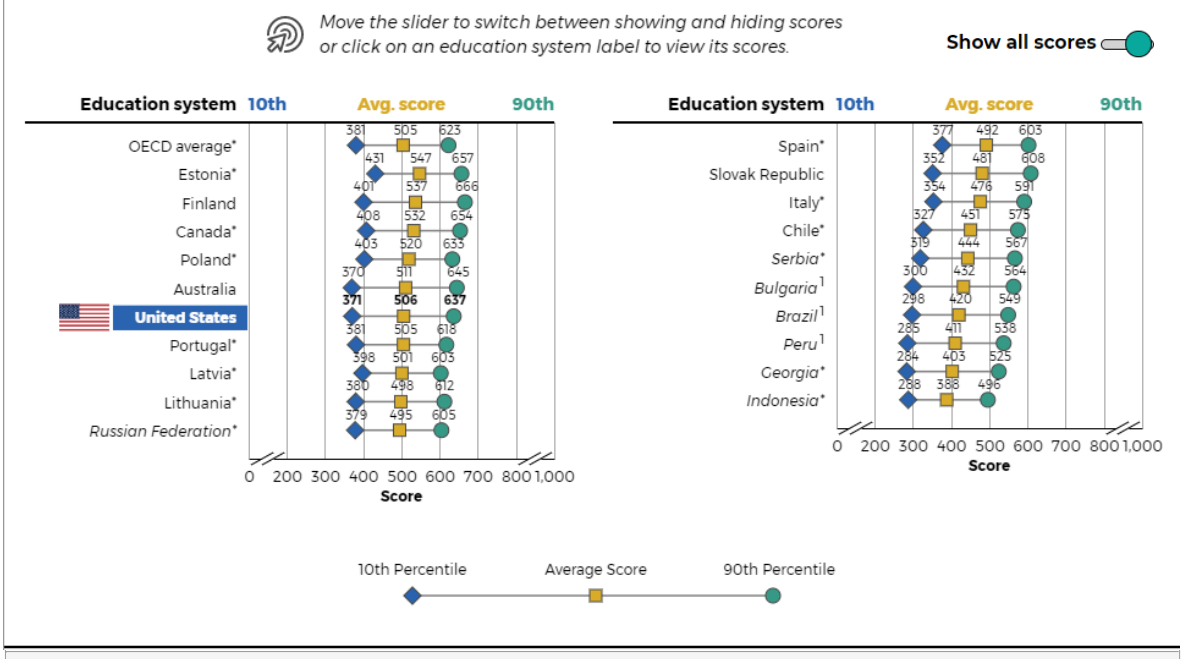
How large is the gap in financial literacy performance between top and bottom performers?

Score gaps between top and bottom performers provide one indication of equity within an education system. The distribution of U.S. student scores in financial literacy showed a score gap of 266 points between the 90th and 10th percentiles.

- The U.S. score gap between the 90th and 10th percentiles (266 points) was larger than the score gap across the OECD countries on average (242 points).
- The U.S. score gap was larger than the gap in 13 education systems and not measurably different from the gap in 6 education systems.
- Internationally, score gaps between the 90th and 10th percentiles ranged from 205 points in Latvia to 275 points in Australia.

Figure FL3. Average scores and 10th and 90th percentile scores of 15-year-old students on the PISA financial literacy scale and percentile score gaps, by education system: 2018



* $p < .05$. Score gap is significantly different from the U.S. 90th to 10th percentile score gap at the .05 level of statistical significance.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: This figure shows the threshold (or cut) scores for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 90th percentile—the top 10 percent of students. The score gap for each education system is the difference between its 90th and 10th percentile scores. The percentile ranges are specific to each education system's distribution of scores enabling users to compare scores across education systems. Education systems are ordered by average score from largest to smallest. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. The Netherlands participated in the PISA 2018 financial literacy assessment. However, due to issues with the selection of students for the financial literacy assessment, its results were deemed not comparable with those from other participating countries. As a result, its financial literacy data are not shown and not included in the OECD average.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

For More Information

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Trends in Student Achievement

Has there been any change in 15-year-olds' performance in financial literacy over time?

LONG-TERM TREND

PISA 2018 literacy scores can be compared to scores from previous cycles. For financial literacy, the earliest cycle to which 2018 scores can be compared is 2012. Compared to the earliest comparable PISA score in 2012 (492), there was no measurable difference with the average financial literacy score of U.S. 15-year-olds in 2018 (506).

- Among the 8 other education systems that participated in both 2012 and 2018, Estonia reported a higher average financial literacy score in 2018 than in 2012, with a score increase of 18 points.
- In Australia, the average financial literacy score for 15-year-olds was lower in 2018 than in 2012, with a score decrease of 15 points.

Table FL4a. Average scores and changes in average scores of 15-year-old students on the PISA financial literacy scale, by education system: 2012 and 2018

Use buttons to filter view. **All education systems** | OECD only

Education system	2012 score	2018 score	Score difference
Estonia	529	547	18! ▲
United States	**492**	**506**	**14‼**
Slovak Republic	470	481	11‼
Italy	466	476	10‼
Poland	510	520	9‼
Russian Federation	486	495	9‼
Spain	484	492	8‼
Latvia	501	501	1‼
Australia	526	511	-15! ▼

▲ 2018 score is higher than 2012 score at the .05 level of statistical significance

▼ 2018 score is lower than 2012 score at the .05 level of statistical significance

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

‼ Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

NOTE: Education systems are ordered by 2018-2012 difference in average score. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if they were OECD members in 2018.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012 and 2018.

For More Information

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SHORT-TERM TREND

Compared to the most recent comparable PISA score in 2015 (487), there was no measurable difference with the average financial literacy score of U.S. 15-year-olds in 2018 (506).

- Among the 11 other education systems that participated in both 2015 and 2018, there were 5 education systems that reported higher average financial literacy scores for 15-year-olds in 2018 than in 2015. Score increases ranged from 24 points in Spain to 50 points in Lithuania.
- None of the education systems reported a decline in average financial literacy scores between 2015 and 2018.

Table FL4b. Average scores and changes in average scores of 15-year-old students on the PISA financial literacy scale, by education system: 2015 and 2018

Use buttons to filter view. All education systems | OECD only

Education system	2015 score	2018 score	Score difference
Lithuania	449	498	50 ▲
Slovak Republic	445	481	36 ▲
Poland	485	520	34 ▲
Brazil[1]	393	420	27! ▲
Spain	469	492	24! ▲
Chile	432	451	19!!
United States	**487**	**506**	**18!!**
Peru[1]	403	411	8!!
Australia	504	511	7!!
Canada[2]	533	532	-1!!
Italy	483	476	-7!!
Russian Federation	512	495	-17!!

▲ 2018 score is higher than 2015 score at the .05 level of statistical significance.

! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

[2] All ten Canadian provinces participated in the PISA 2018 financial literacy assessment. However, seven of ten provinces in Canada participated in the PISA 2015 financial literacy assessment: British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, and Prince Edward Island.

NOTE: Education systems are ordered by 2018-2015 difference in average score. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if they were OECD members in 2018.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015 and 2018.

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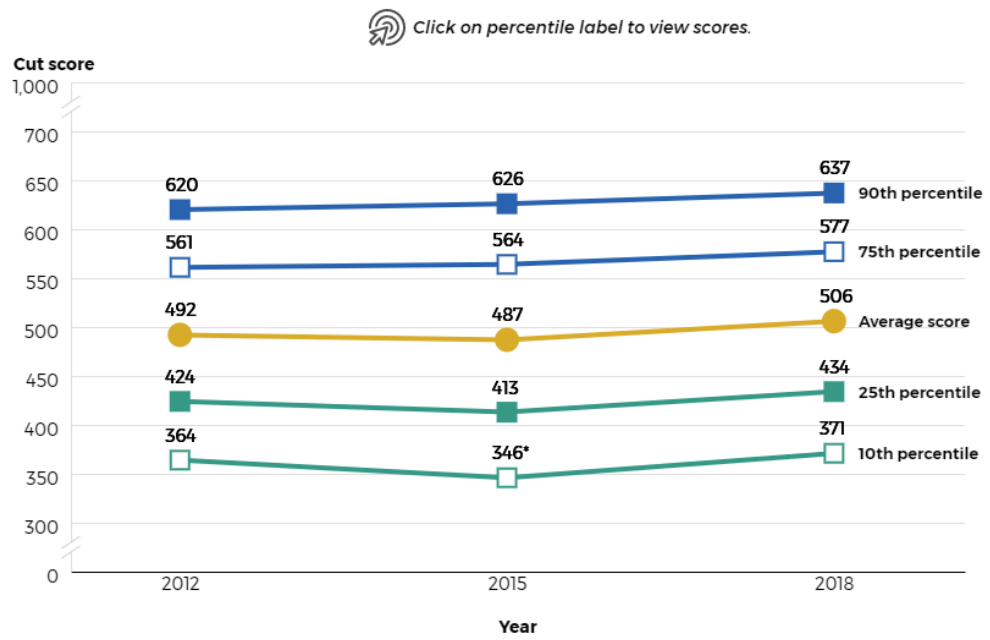
Has there been any change over time in the financial literacy performance of U.S. 15-year-olds' scores at selected percentiles?

In 2018, U.S. students at the 10th percentile performed, on average, higher in financial literacy than U.S. students in the same percentile group in 2015 but not measurably different from U.S. students in 2012. No measurable differences were observed between 2018 and either 2015 or 2012 in the financial literacy cut scores associated with the 25th, 75th, or 90th percentile groups.

- Looking at the distribution of U.S. scores in financial literacy, the cut score associated with the 10th percentile in 2018 (371) was higher than the 10th percentile cut score in 2015 (346). There was no measurable difference between the U.S. 10th percentile cut scores in 2018 and 2012.
- There were no measurable differences between the 25th, 75th, and 90th percentile cut scores in 2018 and the corresponding cut scores in 2015 and 2012.

Figure FL5. Average scores and percentile scores of U.S. 15-year-old students on the PISA financial literacy scale at selected percentiles: 2012, 2015, and 2018



* $p < .05$. Significantly different from the 2018 score at the .05 level of statistical significance.

NOTE: This figure shows the threshold (or cut) score for the following: (a) 10th percentile—the bottom 10 percent of students; (b) 25th percentile—the bottom 25 percent of students; (c) 75th percentile—the top 25 percent of students; (d) 90th percentile—the top 10 percent of students. Scores are reported on a scale from 0 to 1,000.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012, 2015, and 2018.

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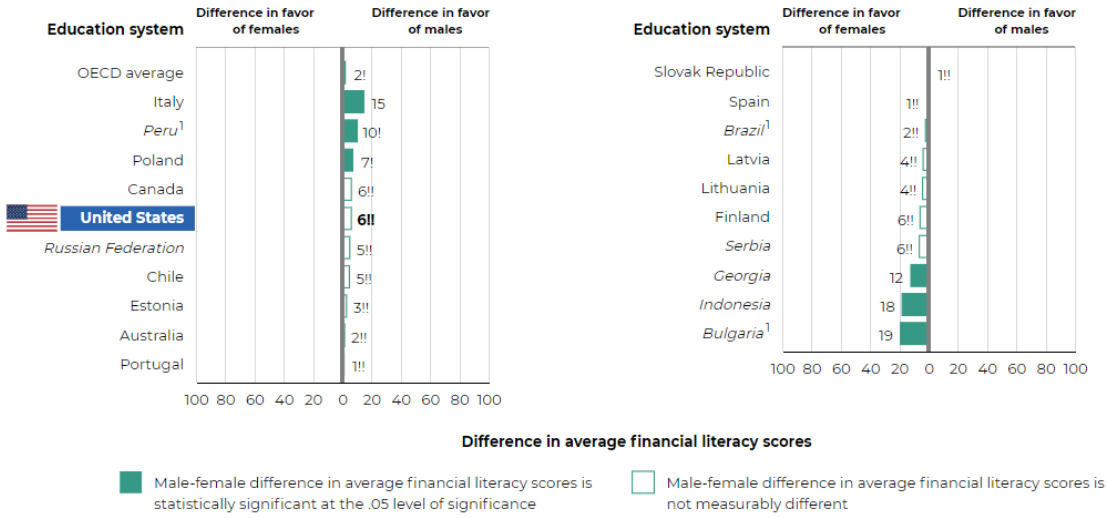
Achievement by Student Groups

Are there gender differences in financial literacy performance among 15-year-olds?

In the United States, there was no measurable difference between the average financial literacy scores of male and female students in 2018. Female students scored higher, on average, than male students on the financial literacy scale in 3 education systems, and male students scored higher in 3 education systems.

- On average across OECD countries, male students outperformed female students in financial literacy by 2 points.
- In 3 education systems, males outperformed females on average, with score gaps ranging from 7 points in Poland to 15 points in Italy.
- In 3 education systems, females outperformed males on average, with score gaps ranging from 12 points in Georgia to 19 points in Bulgaria.

Figure FL6. Difference in average scores of 15-year-old male and female students on the PISA financial literacy scale, by education system: 2018



! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

[1] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.

NOTE: Education systems are ordered by male-female difference in 2018 average scores. Differences were computed using unrounded numbers. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national average differences of the OECD member countries, with each country weighted equally. The Netherlands participated in the PISA 2018 financial literacy assessment. However, due to issues with the selection of students for the financial literacy assessment, its results were deemed not comparable with those from other participating countries. As a result, its financial literacy data are not shown and not included in the OECD average.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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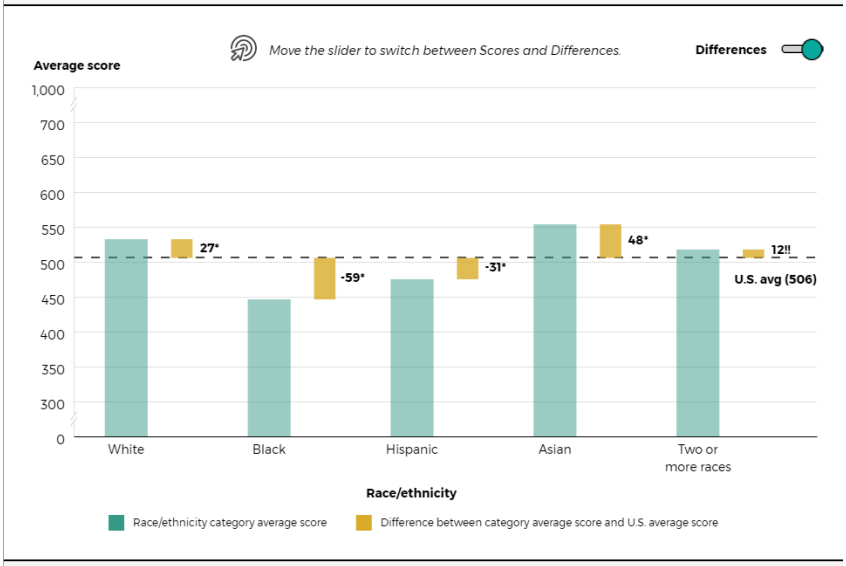
How does the financial literacy performance of U.S. 15-year-olds vary by race/ethnicity?

In 2018, White and Asian students in the United States scored higher than the overall U.S. average in financial literacy, while Hispanic and Black students scored lower.

- Asian and White students, on average, had higher financial literacy scores (554 and 532, respectively) than the overall U.S. average score (506). The average financial literacy score of students reporting Two or more races (518) was not measurably different from the U.S. average score. Hispanic and Black students had lower average scores (475 and 446, respectively) than the U.S. average score.

Figure FL7. Average scores of U.S. 15-year-old students on the PISA financial literacy scale, by race/ethnicity: 2018



!! Interpret data with caution. Estimate is unstable because the standard error represents more than 50 percent of the estimate.

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Reporting standards were not met for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander. Black includes African American, and Hispanic includes Latino. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race. Although data for some race/ethnicities were not shown separately because the reporting standards were not met, they are included in the U.S. totals. Scores are reported on a scale from 0 to 1,000.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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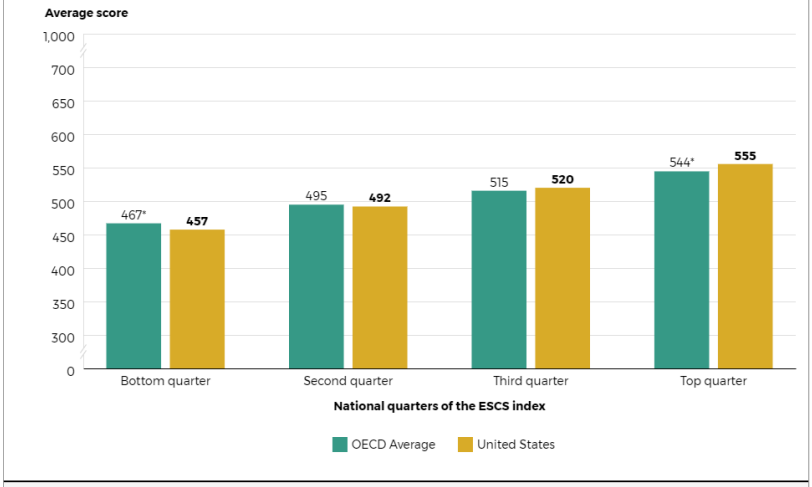
How does the financial literacy performance of U.S. 15-year-olds vary by measures of poverty?

ECONOMIC, SOCIAL AND CULTURAL STATUS

The PISA 2018 questionnaire collected data on two measures of poverty: the economic, social, and cultural status (ESCS) index and a U.S.-only free or reduced-price lunch (FRPL) variable. The ESCS index is a student-level, international measure of socioeconomic status, while FRPL is a school-level, U.S.-specific variable of school poverty for public schools only. In 2018, U.S. 15-year-old students had a lower average financial literacy score than the OECD average score in the bottom ESCS quarter and a higher average score than the OECD average score in the top quarter. There were no measurable differences between U.S. students' average scores and OECD average scores in the second and third ESCS quarters.

- Students were grouped into four quarters using the distribution of ESCS scores specific to each education system. Those in the bottom ESCS quarter report the highest levels of poverty while those in the top quarter report the lowest levels of poverty.
- The average U.S. score for students in the bottom ESCS quarter was 9 points lower than the corresponding OECD average score, while the average U.S. score for students in the top ESCS quarter was 11 points higher than the corresponding OECD average score.
- Average scores in financial literacy by students' socioeconomic status show that U.S. 15-year-olds in the top ESCS quarter performed 98 points higher than those in the bottom quarter. Across the OECD countries on average, this score gap was 78 points.
- The U.S. score gap between the top and the bottom ESCS quarters was smaller than the score gap in one education system (Peru) and larger than the score gaps in 11 education systems.
- The score gap between the top and the bottom ESCS quarters ranged from 50 points in Indonesia to 118 points in Peru.

Figure FL8. Average scores of 15-year-old students on the PISA financial literacy scale, by national quarters of the PISA index of economic, social, and cultural status (ESCS): 2018



* $p < .05$. Significantly different from the U.S. average at the .05 level of statistical significance.

NOTE: The PISA index of economic, social and cultural status (ESCS) was created using student reports on parental occupation, the highest level of parental education, and an index of home possessions related to family wealth, home educational resources and possessions related to "classical" culture in the family home. The home possessions relating to "classical" culture in the family home included possessions such as works of classical literature, books of poetry, and works of art (e.g., paintings). Average scores by quarter are calculated based on the distribution of student scores within each education system. Scores are reported on a scale from 0 to 1,000. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Education systems are included in the OECD average if they were OECD members in 2018. The Netherlands participated in the PISA 2018 financial literacy assessment. However, due to issues with the selection of students for the financial literacy assessment, its results were deemed not comparable with those from other participating countries. As a result, its financial literacy data are not shown and not included in the OECD average.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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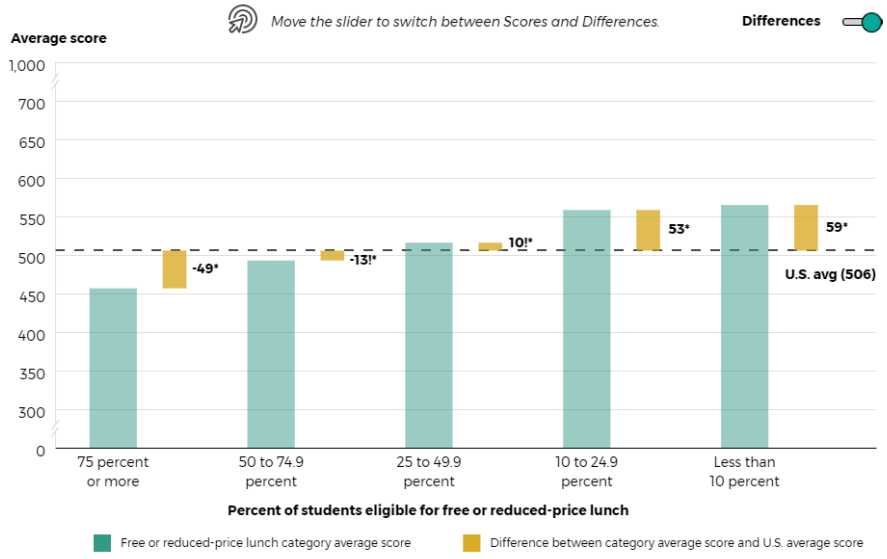
FREE OR REDUCED-PRICE LUNCH

In 2018, students in U.S. public schools with the highest levels of poverty (75 percent or more of students eligible for FRPL) scored, on average, 49 points lower than the overall U.S. average in financial literacy, whereas students in U.S. public schools with the lowest levels of poverty (less than 10 percent eligible for FRPL) scored 59 points higher than the overall U.S. average.

- Students in public schools in which at least half of all students were eligible for FRPL (50 to 74.9 percent and 75 percent or more) scored, on average, lower than the overall U.S. average score (493 and 457, respectively, vs. 506).
- Students in public schools in which less than half of all students were FRPL-eligible (less than 10 percent, 10 to 24.9 percent, and 25 to 49.9 percent) scored, on average, higher than the overall U.S. average score (565, 558, and 516, respectively, vs. 506).

Figure FL9. Average scores of U.S. 15-year-old public school students on the PISA financial literacy scale, by percentage of students enrolled in schools eligible for free or reduced-price lunch, based on principals' reports: 2018



! Interpret data with caution. Estimate is unstable due to high coefficient of variation (>30 percent and ≤50 percent).

* $p < .05$. Significant at the .05 level of statistical significance.

NOTE: Scores are reported on a scale from 0 to 1,000. The National School Lunch Program provides free or reduced-price lunch for students meeting certain income guidelines. The percentage of students eligible for this program is an indicator of the socioeconomic level of families served by the school. Data in this figure are based on principals' responses to a question in the school questionnaire that asked the approximate percentage of eligible students in the school during the previous school year. Free or reduced-price lunch data are for public schools only.

SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018.

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