# International Comparisons: Reading, Mathematics, and Science Literacy of 15-Year-Old Students

*In 2018, there were 8 education systems with higher average reading literacy scores for 15-year-olds than the United States, 30 with higher mathematics literacy scores, and 11 with higher science literacy scores.*

The Program for International Student Assessment (PISA), coordinated by the Organization for Economic Cooperation and Development (OECD), has measured the performance of 15-year-old students in reading, mathematics, and science literacy every 3 years since 2000. In 2018, PISA was administered in 79[1] countries and education systems,[2] including all 37 member countries of the OECD.

PISA 2018 results are reported by average scale score (from 0 to 1,000) as well as by the percentage of students reaching particular proficiency levels. Proficiency results are presented in terms of the percentages of students reaching proficiency level 5 and above (i.e., top performers) and the percentages of students performing below proficiency level 2 (i.e., low performers). Proficiency level 2 is considered a baseline of proficiency by the OECD.

**Table 1.** Average scores of 15-year-old students on the Program for International Student Assessment (PISA) reading literacy scale, by education system: 2018

| Education system | Average score | | Education system | Average score | |
|---|---|---|---|---|---|
| **OECD average** | **487** | ▽ | Ukraine | 466 | ▽ |
| B-S-J-Z (China)[1] | 555 | △ | Turkey[2] | 466 | ▽ |
| Singapore | 549 | △ | Slovak Republic | 458 | ▽ |
| Macau (China) | 525 | △ | Greece | 457 | ▽ |
| Hong Kong (China) | 524 | △ | Chile | 452 | ▽ |
| Estonia | 523 | △ | Malta | 448 | ▽ |
| Canada | 520 | △ | Serbia | 439 | ▽ |
| Finland | 520 | △ | United Arab Emirates | 432 | ▽ |
| Ireland | 518 | △ | Romania[2] | 428 | ▽ |
| Korea, Republic of | 514 | | Uruguay | 427 | ▽ |
| Poland | 512 | | Costa Rica[2] | 426 | ▽ |
| Sweden | 506 | | Cyprus | 424 | ▽ |
| New Zealand | 506 | | Moldova, Republic of | 424 | ▽ |
| **United States** | **505** | | Montenegro, Republic of | 421 | ▽ |
| United Kingdom | 504 | | Mexico[2] | 420 | ▽ |
| Japan | 504 | | Bulgaria[2] | 420 | ▽ |
| Australia | 503 | | Jordan[2] | 419 | ▽ |
| Chinese Taipei | 503 | | Malaysia[2] | 415 | ▽ |
| Denmark | 501 | | Brazil[2] | 413 | ▽ |
| Norway | 499 | | Colombia[2] | 412 | ▽ |
| Germany | 498 | | Brunei Darussalam | 408 | ▽ |
| Slovenia | 495 | ▽ | Qatar | 407 | ▽ |
| Belgium | 493 | ▽ | Albania | 405 | ▽ |
| France | 493 | ▽ | Bosnia and Herzegovina | 403 | ▽ |
| Portugal | 492 | ▽ | Argentina | 402 | ▽ |
| Czech Republic | 490 | ▽ | Peru[2] | 401 | ▽ |
| Netherlands | 485 | ▽ | Saudi Arabia | 399 | ▽ |
| Austria | 484 | ▽ | Thailand[2] | 393 | ▽ |
| Switzerland | 484 | ▽ | North Macedonia | 393 | ▽ |
| Croatia | 479 | ▽ | Baku (Azerbaijan)[3] | 389 | ▽ |
| Latvia | 479 | ▽ | Kazakhstan | 387 | ▽ |
| Russian Federation | 479 | ▽ | Georgia | 380 | ▽ |
| Italy | 476 | ▽ | Panama[2] | 377 | ▽ |
| Hungary | 476 | ▽ | Indonesia | 371 | ▽ |
| Lithuania | 476 | ▽ | Morocco[2] | 359 | ▽ |
| Iceland | 474 | ▽ | Lebanon | 353 | ▽ |
| Belarus | 474 | ▽ | Kosovo | 353 | ▽ |
| Israel | 470 | ▽ | Dominican Republic[2] | 342 | ▽ |
| Luxembourg | 470 | ▽ | Philippines[2] | 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] B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang.
[2] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.
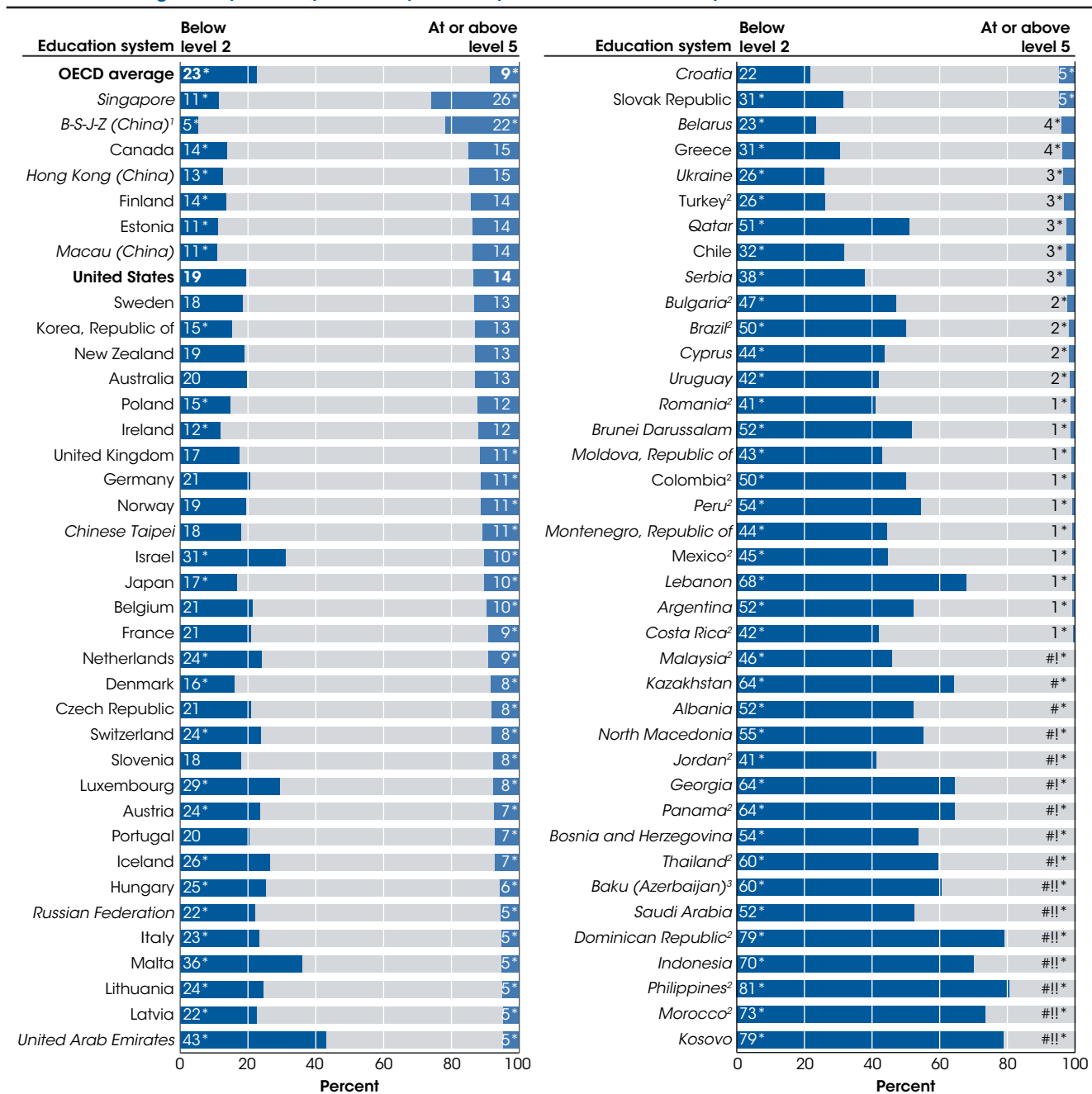[3] Less than 50 percent of the 15-year-old population is covered by the PISA sample.
NOTE: Education systems are ordered by 2018 average score. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if 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. 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 meet international technical standards, its reading literacy data show unusual student response behavior that prevent them from being reported at this time. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this indicator.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018. See *Digest of Education Statistics 2019*, table 602.50.

In 2018, average reading literacy scores ranged from 340 in the Philippines to 555 in Beijing, Shanghai, Jiangsu, and Zhejiang (B-S-J-Z) (China). The U.S. average reading score (505) was higher than the OECD average score (487).

Eight education systems had higher average reading scores than did the United States, and 11 education systems had scores that were not measurably different from the U.S. score.

**Figure 1.** Percentage of 15-year-old students performing on the Program for International Student Assessment (PISA) reading literacy scale, by selected proficiency levels and education system: 2018



| Education system | Below level 2 | At or above level 5 | Education system | Below level 2 | At or above level 5 |
|---|---|---|---|---|---|
| OECD average | 23* | 9* | Croatia | 22 | 5* |
| Singapore | 11* | 26* | Slovak Republic | 31* | 5* |
| B-S-J-Z (China)[1] | 5* | 22* | Belarus | 23* | 4* |
| Canada | 14* | 15 | Greece | 31* | 4* |
| Hong Kong (China) | 13* | 15 | Ukraine | 26* | 3* |
| Finland | 14* | 14 | Turkey[2] | 26* | 3* |
| Estonia | 11* | 14 | Qatar | 51* | 3* |
| Macau (China) | 11* | 14 | Chile | 32* | 3* |
| United States | 19 | 14 | Serbia | 38* | 3* |
| Sweden | 18 | 13 | Bulgaria[2] | 47* | 2* |
| Korea, Republic of | 15* | 13 | Brazil[2] | 50* | 2* |
| New Zealand | 19 | 13 | Cyprus | 44* | 2* |
| Australia | 20 | 13 | Uruguay | 42* | 2* |
| Poland | 15* | 12 | Romania[2] | 41* | 1* |
| Ireland | 12* | 12 | Brunei Darussalam | 52* | 1* |
| United Kingdom | 17 | 11* | Moldova, Republic of | 43* | 1* |
| Germany | 21 | 11* | Colombia[2] | 50* | 1* |
| Norway | 19 | 11* | Peru[2] | 54* | 1* |
| Chinese Taipei | 18 | 11* | Montenegro, Republic of | 44* | 1* |
| Israel | 31* | 10* | Mexico[2] | 45* | 1* |
| Japan | 17* | 10* | Lebanon | 68* | 1* |
| Belgium | 21 | 10* | Argentina | 52* | 1* |
| France | 21 | 9* | Costa Rica[2] | 42* | 1* |
| Netherlands | 24* | 9* | Malaysia[2] | 46* | #!* |
| Denmark | 16* | 8* | Kazakhstan | 64* | #* |
| Czech Republic | 21 | 8* | Albania | 52* | #* |
| Switzerland | 24* | 8* | North Macedonia | 55* | #!* |
| Slovenia | 18 | 8* | Jordan[2] | 41* | #!* |
| Luxembourg | 29* | 8* | Georgia | 64* | #!* |
| Austria | 24* | 7* | Panama[2] | 64* | #!* |
| Portugal | 20 | 7* | Bosnia and Herzegovina | 54* | #!* |
| Iceland | 26* | 7* | Thailand[2] | 60* | #!* |
| Hungary | 25* | 6* | Baku (Azerbaijan)[3] | 60* | #!!* |
| Russian Federation | 22* | 5* | Saudi Arabia | 52* | #!!* |
| Italy | 23* | 5* | Dominican Republic[2] | 79* | #!!* |
| Malta | 36* | 5* | Indonesia | 70* | #!!* |
| Lithuania | 24* | 5* | Philippines[2] | 81* | #!!* |
| Latvia | 22* | 5* | Morocco[2] | 73* | #!!* |
| United Arab Emirates | 43* | 5* | Kosovo | 79* | #!!* |

■ Below level 2
■ At or above level 5
# 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.
[1] B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang.
[2] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.
[3] 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. Descriptions of the skills and knowledge of students at each reading proficiency level are available at https://nces.ed.gov/surveys/pisa/pisa2018/pdf/ReadingProfLevelDescriptionV2.pdf. 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; at or above level 5 is a score equal to or greater than 625.61. 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. 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 meet international technical standards, its reading literacy data show unusual student response behavior that prevent them from being reported at this time. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this indicator.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018. See *Digest of Education Statistics 2019*, table 602.50.

PISA reports reading literacy in terms of eight proficiency levels, with level 1c being the lowest and level 6 being the highest. Descriptions of the skills and knowledge of students at each reading proficiency level can be found here. Students performing at levels 5 and 6 have mastered the sophisticated reading skills required to interpret and evaluate deeply embedded or abstract text and are considered top performers. The percentage of U.S. students who were top performers in reading literacy (14 percent) was larger than the OECD average percentage (9 percent). Percentages of top performers ranged from nearly 0 percent in 16 education systems to 26 percent in Singapore. Two education systems, Singapore and B-S-J-Z (China), had larger percentages of top performers in reading literacy than did the United States.

The percentage of U.S. students who were low performers in reading literacy (19 percent) was smaller than the OECD average percentage (23 percent). Percentages of low performers ranged from 5 percent in B-S-J-Z (China) to 81 percent in the Philippines. Twelve education systems had smaller percentages of low performers in reading literacy than did the United States.

**Table 2.** Average scores of 15-year-old students on the Program for International Student Assessment (PISA) mathematics
literacy scale, by education system: 2018

| Education system | Average score | Education system | Average score |
|---|---|---|---|
| **OECD average** | **489** ⬗ | *Croatia* | 464 ▼ |
| *B-S-J-Z (China)[1]* | 591 ⬗ | Israel | 463 ▼ |
| *Singapore* | 569 ⬗ | *Turkey[2]* | 454 ▼ |
| *Macau (China)* | 558 ⬗ | *Ukraine* | 453 ▼ |
| *Hong Kong (China)* | 551 ⬗ | Greece | 451 ▼ |
| *Chinese Taipei* | 531 ⬗ | *Cyprus* | 451 ▼ |
| Japan | 527 ⬗ | *Serbia* | 448 ▼ |
| Korea, Republic of | 526 ⬗ | *Malaysia[2]* | 440 ▼ |
| Estonia | 523 ⬗ | *Albania* | 437 ▼ |
| Netherlands | 519 ⬗ | *Bulgaria[2]* | 436 ▼ |
| Poland | 516 ⬗ | *United Arab Emirates* | 435 ▼ |
| Switzerland | 515 ⬗ | *Brunei Darussalam* | 430 ▼ |
| Canada | 512 ⬗ | *Romania[2]* | 430 ▼ |
| Denmark | 509 ⬗ | *Montenegro, Republic of* | 430 ▼ |
| Slovenia | 509 ⬗ | *Kazakhstan* | 423 ▼ |
| Belgium | 508 ⬗ | *Moldova, Republic of* | 421 ▼ |
| Finland | 507 ⬗ | *Baku (Azerbaijan)[3]* | 420 ▼ |
| Sweden | 502 ⬗ | *Thailand[2]* | 419 ▼ |
| United Kingdom | 502 ⬗ | *Uruguay* | 418 ▼ |
| Norway | 501 ⬗ | Chile | 417 ▼ |
| Germany | 500 ⬗ | *Qatar* | 414 ▼ |
| Ireland | 500 ⬗ | *Mexico[2]* | 409 ▼ |
| Czech Republic | 499 ⬗ | *Bosnia and Herzegovina* | 406 ▼ |
| Austria | 499 ⬗ | *Costa Rica[2]* | 402 ▼ |
| Latvia | 496 ⬗ | *Peru[2]* | 400 ▼ |
| France | 495 ⬗ | *Jordan[2]* | 400 ▼ |
| Iceland | 495 ⬗ | *Georgia* | 398 ▼ |
| New Zealand | 494 ⬗ | *North Macedonia* | 394 ▼ |
| Portugal | 492 ⬗ | *Lebanon* | 393 ▼ |
| Australia | 491 ⬗ | *Colombia[2]* | 391 ▼ |
| *Russian Federation* | 488 ⬗ | *Brazil[2]* | 384 ▼ |
| Italy | 487 | *Argentina* | 379 ▼ |
| Slovak Republic | 486 | *Indonesia* | 379 ▼ |
| Luxembourg | 483 | *Saudi Arabia* | 373 ▼ |
| Spain | 481 | *Morocco[2]* | 368 ▼ |
| Lithuania | 481 | *Kosovo* | 366 ▼ |
| Hungary | 481 | *Panama[2]* | 353 ▼ |
| **United States** | **478** | *Philippines[2]* | 353 ▼ |
| *Belarus* | 472 | *Dominican Republic[2]* | 325 ▼ |
| *Malta* | 472 | | |

⬗ 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] *B-S-J-Z (China)* refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang.
[2] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.
[3] Less than 50 percent of the 15-year-old population is covered by the PISA sample.
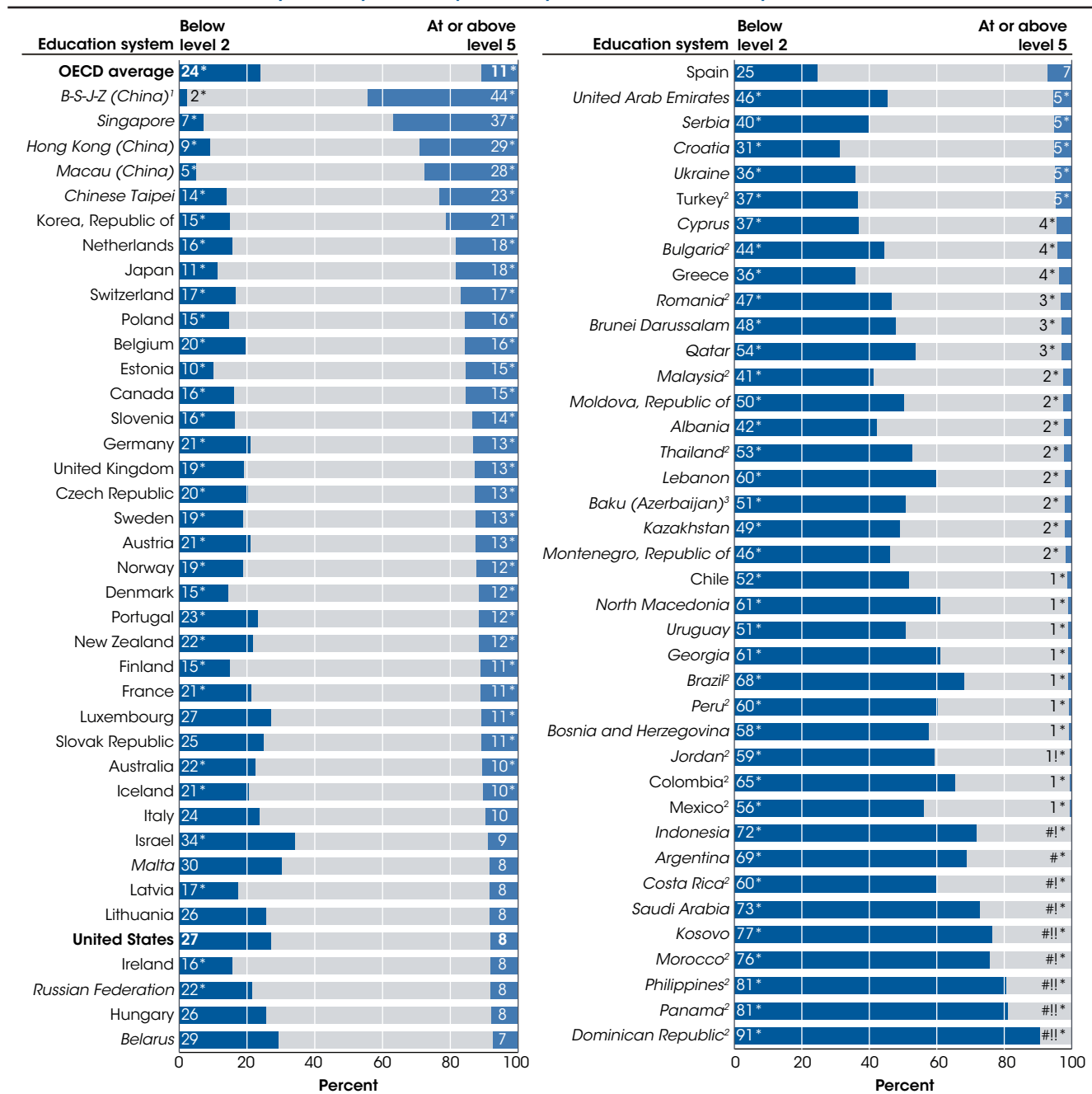NOTE: Education systems are ordered by 2018 average score. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and
education systems. Education systems are marked as OECD countries if they were OECD members in 2018. The OECD average is the average of the national
averages of the OECD member countries, with each country weighted equally. Although Vietnam participated in PISA 2018, technical problems with its data
prevent results from being discussed in this indicator.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018. See *Digest of
Education Statistics 2019,* table 602.60.

In mathematics literacy, average scores in 2018 ranged from 325 in the Dominican Republic to 591 in B-S-J-Z (China). The U.S. average mathematics score (478) was lower than the OECD average score (489). Thirty education systems had higher average mathematics scores than did the United States, and 8 education systems had scores that were not measurably different from the U.S. score.

**Figure 2.** Percentage of 15-year-old students performing on the Program for International Student Assessment (PISA) mathematics literacy scale, by selected proficiency levels and education system: 2018



| Education system | Below level 2 | At or above level 5 |
|---|---|---|
| **OECD average** | 24* | 11* |
| B-S-J-Z (China)[1] | 2* | 44* |
| Singapore | 7* | 37* |
| Hong Kong (China) | 9* | 29* |
| Macau (China) | 5* | 28* |
| Chinese Taipei | 14* | 23* |
| Korea, Republic of | 15* | 21* |
| Netherlands | 16* | 18* |
| Japan | 11* | 18* |
| Switzerland | 17* | 17* |
| Poland | 15* | 16* |
| Belgium | 20* | 16* |
| Estonia | 10* | 15* |
| Canada | 16* | 15* |
| Slovenia | 16* | 14* |
| Germany | 21* | 13* |
| United Kingdom | 19* | 13* |
| Czech Republic | 20* | 13* |
| Sweden | 19* | 13* |
| Austria | 21* | 13* |
| Norway | 19* | 12* |
| Denmark | 15* | 12* |
| Portugal | 23* | 12* |
| New Zealand | 22* | 12* |
| Finland | 15* | 11* |
| France | 21* | 11* |
| Luxembourg | 27 | 11* |
| Slovak Republic | 25 | 11* |
| Australia | 22* | 10* |
| Iceland | 21* | 10* |
| Italy | 24 | 10 |
| Israel | 34* | 9 |
| Malta | 30 | 8 |
| Latvia | 17* | 8 |
| Lithuania | 26 | 8 |
| **United States** | 27 | 8 |
| Ireland | 16* | 8 |
| Russian Federation | 22* | 8 |
| Hungary | 26 | 8 |
| Belarus | 29 | 7 |

| Education system | Below level 2 | At or above level 5 |
|---|---|---|
| Spain | 25 | 7 |
| United Arab Emirates | 46* | 5* |
| Serbia | 40* | 5* |
| Croatia | 31* | 5* |
| Ukraine | 36* | 5* |
| Turkey[2] | 37* | 5* |
| Cyprus | 37* | 4* |
| Bulgaria[2] | 44* | 4* |
| Greece | 36* | 4* |
| Romania[2] | 47* | 3* |
| Brunei Darussalam | 48* | 3* |
| Qatar | 54* | 3* |
| Malaysia[2] | 41* | 2* |
| Moldova, Republic of | 50* | 2* |
| Albania | 42* | 2* |
| Thailand[2] | 53* | 2* |
| Lebanon | 60* | 2* |
| Baku (Azerbaijan)[3] | 51* | 2* |
| Kazakhstan | 49* | 2* |
| Montenegro, Republic of | 46* | 2* |
| Chile | 52* | 1* |
| North Macedonia | 61* | 1* |
| Uruguay | 51* | 1* |
| Georgia | 61* | 1* |
| Brazil[2] | 68* | 1* |
| Peru[2] | 60* | 1* |
| Bosnia and Herzegovina | 58* | 1* |
| Jordan[2] | 59* | 1!* |
| Colombia[2] | 65* | 1* |
| Mexico[2] | 56* | 1* |
| Indonesia | 72* | #!* |
| Argentina | 69* | #* |
| Costa Rica[2] | 60* | #!* |
| Saudi Arabia | 73* | #!* |
| Kosovo | 77* | #!!* |
| Morocco[2] | 76* | #!* |
| Philippines[2] | 81* | #!!* |
| Panama[2] | 81* | #!!* |
| Dominican Republic[2] | 91* | #!!* |

■ Below level 2
■ At or above level 5
# 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.
[1] B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang.
[2] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.
[3] 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. Descriptions of the skills and knowledge of students at each mathematics proficiency level are available at https://nces.ed.gov/surveys/pisa/pisa2018/pdf/MathProfLevelDescriptionV2.pdf. 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); At or Above Level 5 is a score equal to or greater than 606.99. 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. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this indicator.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018. See *Digest of Education Statistics 2019*, table 602.60.

PISA reports mathematics literacy by six proficiency levels, with level 1 being the lowest and level 6 being the highest. Descriptions of the skills and knowledge of students at each mathematics proficiency level can be found <u>here</u>. At levels 5 and 6, students can demonstrate the advanced mathematical thinking and reasoning skills required to solve problems of greater complexity. The percentage of U.S. students who were top performers on the mathematics literacy scale (8 percent) was smaller than the OECD average percentage (11 percent). Percentages of top performers ranged from nearly 0 percent in nine education systems to 44 percent in B-S-J-Z (China). Twenty-nine education systems had larger percentages of top performers in mathematics literacy than did the United States.

The percentage of U.S. students who were low performers in mathematics literacy (27 percent) was larger than the OECD average percentage (24 percent). Percentages of low performers ranged from 2 percent in B-S-J-Z (China) to 91 percent in the Dominican Republic. Thirty education systems had smaller percentages of low performers in mathematics literacy than did the United States.

**Table 3.** Average scores of 15-year-old students on the Program for International Student Assessment (PISA) science literacy scale, by education system: 2018

| Education system | Average score | | Education system | Average score | |
|---|---|---|---|---|---|
| **OECD average** | **489** | ▼ | Italy | 468 | ▼ |
| *B-S-J-Z (China)[1]* | 590 | ⬦ | Slovak Republic | 464 | ▼ |
| *Singapore* | 551 | ⬦ | Israel | 462 | ▼ |
| *Macau (China)* | 544 | ⬦ | *Malta* | 457 | ▼ |
| Estonia | 530 | ⬦ | Greece | 452 | ▼ |
| Japan | 529 | ⬦ | Chile | 444 | ▼ |
| Finland | 522 | ⬦ | *Serbia* | 440 | ▼ |
| Korea, Republic of | 519 | ⬦ | *Cyprus* | 439 | ▼ |
| Canada | 518 | ⬦ | *Malaysia[2]* | 438 | ▼ |
| *Hong Kong (China)* | 517 | ⬦ | *United Arab Emirates* | 434 | ▼ |
| *Chinese Taipei* | 516 | ⬦ | *Brunei Darussalam* | 431 | ▼ |
| Poland | 511 | ⬦ | *Jordan[2]* | 429 | ▼ |
| New Zealand | 508 | | *Moldova, Republic of* | 428 | ▼ |
| Slovenia | 507 | | *Thailand[2]* | 426 | ▼ |
| United Kingdom | 505 | | *Uruguay* | 426 | ▼ |
| Netherlands | 503 | | *Romania[2]* | 426 | ▼ |
| Germany | 503 | | *Bulgaria[2]* | 424 | ▼ |
| Australia | 503 | | *Mexico[2]* | 419 | ▼ |
| **United States** | **502** | | *Qatar* | 419 | ▼ |
| Sweden | 499 | | *Albania* | 417 | ▼ |
| Belgium | 499 | | *Costa Rica[2]* | 416 | ▼ |
| Czech Republic | 497 | | *Montenegro, Republic of* | 415 | ▼ |
| Ireland | 496 | | *Colombia[2]* | 413 | ▼ |
| Switzerland | 495 | | *North Macedonia* | 413 | ▼ |
| France | 493 | ▼ | *Peru[2]* | 404 | ▼ |
| Denmark | 493 | ▼ | *Argentina* | 404 | ▼ |
| Portugal | 492 | ▼ | *Brazil[2]* | 404 | ▼ |
| Norway | 490 | ▼ | *Bosnia and Herzegovina* | 398 | ▼ |
| Austria | 490 | ▼ | *Baku (Azerbaijan)[3]* | 398 | ▼ |
| Latvia | 487 | ▼ | *Kazakhstan* | 397 | ▼ |
| Spain | 483 | ▼ | *Indonesia* | 396 | ▼ |
| Lithuania | 482 | ▼ | *Saudi Arabia* | 386 | ▼ |
| Hungary | 481 | ▼ | *Lebanon* | 384 | ▼ |
| *Russian Federation* | 478 | ▼ | *Georgia* | 383 | ▼ |
| Luxembourg | 477 | ▼ | *Morocco[2]* | 377 | ▼ |
| Iceland | 475 | ▼ | *Kosovo* | 365 | ▼ |
| *Croatia* | 472 | ▼ | *Panama[2]* | 365 | ▼ |
| *Belarus* | 471 | ▼ | *Philippines[2]* | 357 | ▼ |
| *Ukraine* | 469 | ▼ | *Dominican Republic[2]* | 336 | ▼ |
| *Turkey[2]* | 468 | ▼ | | | |

⬦ 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] *B-S-J-Z (China)* refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang.
[2] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.
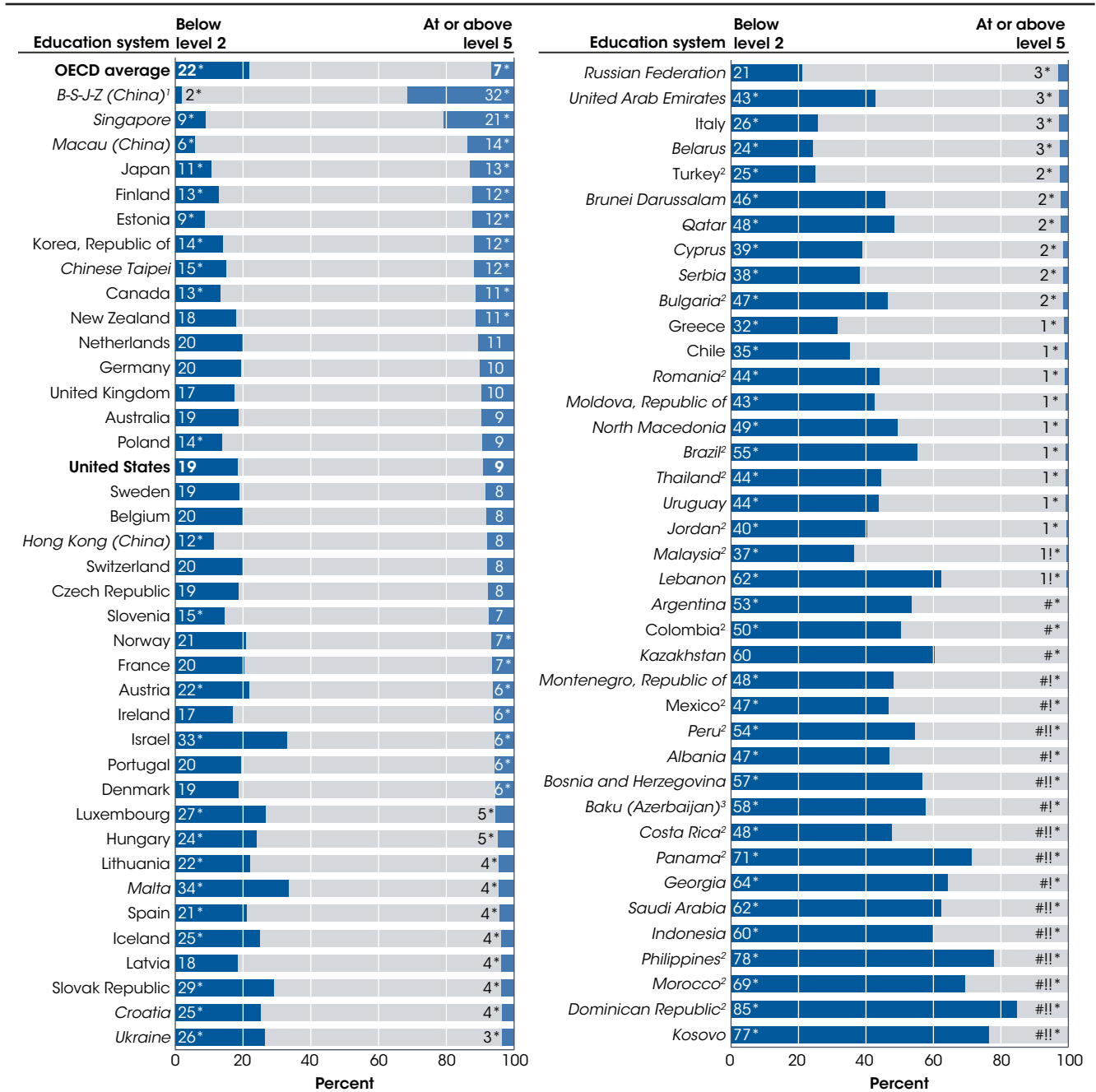[3] Less than 50 percent of the 15-year-old population is covered by the PISA sample.
NOTE: Education systems are ordered by 2018 average score. Scores are reported on a scale from 0 to 1,000. Italics indicate non-OECD countries and education systems. Education systems are marked as OECD countries if 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. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this indicator.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018. See *Digest of Education Statistics 2019*, table 602.70.

Average scores in science literacy in 2018 ranged from 336 in the Dominican Republic to 590 in B-S-J-Z (China). The U.S. average science score (502) was higher than the OECD average score (489). Eleven education systems had higher average science scores than did the United States, and eleven education systems had scores that were not measurably different from the U.S. score.

**Figure 3.** Percentage of 15-year-old students performing on the Program for International Student Assessment (PISA) science literacy scale, by selected proficiency levels and education system: 2018



| Education system | Below level 2 | At or above level 5 |
|---|---|---|
| **OECD average** | 22* | 7* |
| B-S-J-Z (China)[1] | 2* | 32* |
| Singapore | 9* | 21* |
| Macau (China) | 6* | 14* |
| Japan | 11* | 13* |
| Finland | 13* | 12* |
| Estonia | 9* | 12* |
| Korea, Republic of | 14* | 12* |
| Chinese Taipei | 15* | 12* |
| Canada | 13* | 11* |
| New Zealand | 18 | 11* |
| Netherlands | 20 | 11 |
| Germany | 20 | 10 |
| United Kingdom | 17 | 10 |
| Australia | 19 | 9 |
| Poland | 14* | 9 |
| **United States** | 19 | 9 |
| Sweden | 19 | 8 |
| Belgium | 20 | 8 |
| Hong Kong (China) | 12* | 8 |
| Switzerland | 20 | 8 |
| Czech Republic | 19 | 8 |
| Slovenia | 15* | 7 |
| Norway | 21 | 7* |
| France | 20 | 7* |
| Austria | 22* | 6* |
| Ireland | 17 | 6* |
| Israel | 33* | 6* |
| Portugal | 20 | 6* |
| Denmark | 19 | 6* |
| Luxembourg | 27* | 5* |
| Hungary | 24* | 5* |
| Lithuania | 22* | 4* |
| Malta | 34* | 4* |
| Spain | 21* | 4* |
| Iceland | 25* | 4* |
| Latvia | 18 | 4* |
| Slovak Republic | 29* | 4* |
| Croatia | 25* | 4* |
| Ukraine | 26* | 3* |

| Education system | Below level 2 | At or above level 5 |
|---|---|---|
| Russian Federation | 21 | 3* |
| United Arab Emirates | 43* | 3* |
| Italy | 26* | 3* |
| Belarus | 24* | 3* |
| Turkey[2] | 25* | 2* |
| Brunei Darussalam | 46* | 2* |
| Qatar | 48* | 2* |
| Cyprus | 39* | 2* |
| Serbia | 38* | 2* |
| Bulgaria[2] | 47* | 2* |
| Greece | 32* | 1* |
| Chile | 35* | 1* |
| Romania[2] | 44* | 1* |
| Moldova, Republic of | 43* | 1* |
| North Macedonia | 49* | 1* |
| Brazil[2] | 55* | 1* |
| Thailand[2] | 44* | 1* |
| Uruguay | 44* | 1* |
| Jordan[2] | 40* | 1* |
| Malaysia[2] | 37* | 1!* |
| Lebanon | 62* | 1!* |
| Argentina | 53* | #* |
| Colombia[2] | 50* | #* |
| Kazakhstan | 60 | #* |
| Montenegro, Republic of | 48* | #!* |
| Mexico[2] | 47* | #!* |
| Peru[2] | 54* | #!!* |
| Albania | 47* | #!* |
| Bosnia and Herzegovina | 57* | #!!* |
| Baku (Azerbaijan)[3] | 58* | #!* |
| Costa Rica[2] | 48* | #!!* |
| Panama[2] | 71* | #!!* |
| Georgia | 64* | #!* |
| Saudi Arabia | 62* | #!!* |
| Indonesia | 60* | #!!* |
| Philippines[2] | 78* | #!!* |
| Morocco[2] | 69* | #!!* |
| Dominican Republic[2] | 85* | #!!* |
| Kosovo | 77* | #!!* |

■ Below level 2
■ At or above level 5
# 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.
[1] B-S-J-Z (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Zhejiang.
[2] At least 50 percent but less than 75 percent of the 15-year-old population is covered by the PISA sample.
[3] 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. Descriptions of the skills and knowledge of students at each science proficiency level are available at https://nces.ed.gov/surveys/pisa/pisa2018/pdf/ScienceProfLevelDescriptionV2.pdf. 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); At or Above Level 5 is a score equal to or greater than 633.33. 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. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed in this indicator.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2018. See *Digest of Education Statistics 2019*, table 602.70.

PISA reports science literacy in terms of seven proficiency levels, with level 1b being the lowest and level 6 being the highest. Descriptions of the skills and knowledge of students at each science proficiency level can be found here. Students scoring at proficiency levels 5 and 6 can apply scientific knowledge in a variety of complex real-life situations. The percentage of U.S. students who were top performers in science literacy (9 percent) was larger than the OECD average percentage (7 percent). Percentages of top performers ranged from nearly 0 percent in 18 education systems to 32 percent in B-S-J-Z (China).

Ten education systems had larger percentages of top performers in science literacy than did the United States.

The percentage of U.S. students who were low performers in science literacy (19 percent) was smaller than the OECD average percentage (22 percent). Percentages of low performers ranged from 2 percent in B-S-J-Z (China) to 85 percent in the Dominican Republic. Twelve education systems had smaller percentages of low performers in science literacy than did the United States.

**Endnotes:**
[1] Although Spain's PISA 2018 data meet international technical standards, its reading literacy data show unusual student response behavior that prevent them from being reported at this time. Although Vietnam participated in PISA 2018, technical problems with its data prevent results from being discussed. Therefore, results are presented for 77 education systems for reading literacy and 78 education systems for mathematics and science literacy.
[2] For the purposes of this indicator, "education systems" refer to all entities participating in PISA, including countries as well as subnational entities (e.g., cities or provinces).

**Reference tables:** *Digest of Education Statistics 2019*, tables 602.50, 602.60, and 602.70

**Related indicators and resources:** International Comparisons: Reading Literacy at Grade 4; International Comparisons: U.S. 4th-, 8th-, and 12th-Graders' Mathematics and Science Achievement; Mathematics Performance; Reading Performance; Science Performance

**Glossary:** Organization for Economic Cooperation and Development (OECD)