## International Assessments

Among 15-year-old students, 29 education systems had higher average scores than the United States in mathematics literacy, 22 had higher average scores in science literacy, and 19 had higher average scores in reading literacy, according to the 2012 Program for International Student Assessment (PISA).

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 mathematics, science, and reading literacy every 3 years since 2000. In 2012, PISA was administered in 65 countries and education systems, including all 34 member countries of the OECD. In addition to participating in the U.S. national sample, three states-Connecticut, Florida, and Massachusetts-opted to participate as individual
education systems and had separate samples of public schools and public-school students included in PISA to obtain state-level results. PISA 2012 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 or above (i.e., percentages of top performers) and the percentages of students performing below proficiency level 2 (i.e., percentages of low performers).

Table 1. Average scores of 15 -year-old students on the Program for International Student Assessment (PISA) mathematics literacy scale, by education system: 2012

| Education system | Average sco |  | Education system | Average score |
| :---: | :---: | :---: | :---: | :---: |
| OECD average | 494 | 0 | OECD average | 4940 |
| Shanghai-CHN | 613 | 0 | Lithuania | 479 |
| Singapore | 573 | 0 | Sweden | 478 |
| Hong Kong-CHN | 561 | 0 | Hungary | 477 |
| Chinese Taipei-CHN | 560 | 0 | Croatia | 471 - |
| Korea, Republic of | 554 | 0 | Israel | 466 - |
| Macao-CHN | 538 | 0 | Greece | 453 - |
| Japan | 536 | 0 | Serbia, Republic of | 449 - |
| Liechtenstein | 535 | 0 | Turkey | 448 - |
| Switzerland | 531 | 0 | Romania | 445 - |
| Netherlands | 523 | 0 | Cyprus | 440 - |
| Estonia | 521 | 0 | Bulgaria | 439 - |
| Finland | 519 | 0 | United Arab Emirates | 434 - |
| Canada | 518 | 0 | Kazakhstan | 432 - |
| Poland | 518 | 0 | Thailand | 427 - |
| Belgium | 515 | 0 | Chile | 423 - |
| Germany | 514 | 0 | Malaysia | 421 - |
| Vietnam | 511 | 0 | Mexico | 413 - |
| Austria | 506 | 0 | Montenegro, Republic of | 410 - |
| Australia | 504 | 0 | Uruguay | 409 - |
| Ireland | 501 | 0 | Costa Rica | 407 - |
| Slovenia | 501 | 0 | Albania | 394 |
| Denmark | 500 | 0 | Brazil | 391 ( |
| New Zealand | 500 | 0 | Argentina | 388 ( |
| Czech Republic | 499 | 0 | Tunisia | 388 |
| France | 495 | 0 | Jordan | 386 |
| United Kingdom | 494 | 0 | Colombia | 376 |
| Iceland | 493 | 0 | Qatar | 376 |
| Latvia | 491 | 0 | Indonesia | 375 - |
| Luxembourg | 490 | 0 | Peru | 368 |
| Norway | 489 |  |  |  |
| Portugal | 487 |  |  |  |
| Italy | 485 |  |  |  |
| Spain | 484 |  | U.S. state education systems |  |
| Russian Federation | 482 |  | Massachusetts | 5140 |
| Slovak Republic | 482 |  | Connecticut | 5060 |
| United States | 481 |  | Florida | 467 ® |

0 Average score is higher than U.S. average score.
Average score is lower than U.S. average score.
NOTE: Education systems are ordered by 2012 average score. The Organization for Economic Cooperation and Development (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 . All average scores reported as higher or lower than the U.S. average score are different at the .05 level of statistical significance. Italics indicate non-OECD education systems. Results for Connecticut, Florida, and Massachusetts are for public school students only. SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012. See Digest of Education Statistics 2013, table 602.60.

In 2012, average scores in mathematics literacy ranged from 368 in Peru to 613 in Shanghai-CHN. The U.S. average mathematics score (481) was lower than the average for all OECD countries (494). Twenty-nine education systems and two U.S. states had higher average mathematics scores than the U.S. average score and nine had scores not measurably different from the U.S. score. The 29 education systems with scores higher than the U.S. average score were Shanghai-CHN, Singapore, Hong Kong-CHN, Chinese Taipei-CHN, the Republic of Korea, Macao-CHN, Japan, Liechtenstein, Switzerland, the Netherlands, Estonia, Finland, Canada, Poland, Belgium, Germany, Vietnam, Austria, Australia, Ireland,

Slovenia, Denmark, New Zealand, the Czech Republic, France, the United Kingdom, Iceland, Latvia, and Luxembourg. Within the United States, Massachusetts (514) and Connecticut (506) had scores higher than the U.S. average.

In addition to scoring above the U.S. average, Massachusetts scored above the OECD average. Connecticut scored above the U.S. national average, but its score was not measurably different from the OECD average. Florida's average score (467) was below the U.S. national average.

Figure 1. Percentage of 15 -year-old students performing on the Program for International Student Assessment (PISA) mathematics literacy scale, by selected proficiency level and education system: 2012


Below level 2
Levels 5 and above
\# Rounds to zero.
! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
$\ddagger$ Reporting standards not met. Either there are too few cases for a reliable estimate or the coefficient of variation (CV) is 50 percent or greater.

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

NOTE: Education systems are ordered by 2012 percentages of 15 -year-olds at 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 1 (a score less than or equal to 357.77); level 1 (a score greater than 357.77 and less than or equal to 420.07); level 2 (a score greater than 420.07 and less than or equal to 482.38); level 3 (a score greater than 482.38 and less than or equal to 544.68 ); level 4 (a score greater than 544.68 and less than or equal to 606.99); level 5 (a score greater than 606.99 and less than or equal to 669.30); and level 6 (a score greater than 669.30). Scores are reported on a scale from 0 to 1,000. The Organization for Economic Cooperation and Development (OECD) average is the average of the national percentages of the OECD member countries, with each country weighted equally. Italics indicate non-OECD education systems. Results for Connecticut, Florida, and Massachusetts are for public school students only.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012. See Digest of Education Statistics 2013, table 602.60.

PISA reports mathematics literacy in terms of six proficiency levels, with level 1 being the lowest and level 6 being the highest. Students scoring at proficiency levels 5 and above are considered to be top performers since they have demonstrated advanced mathematical thinking and reasoning skills required to solve problems of greater complexity. The percentage of top performers in the United States was lower than the average of the OECD countries' percentages of top performers ( 9 vs .

13 percent). Percentages of top performers ranged from near 0 percent in Colombia and Argentina to 55 percent in Shanghai-CHN. Twenty-seven education systems and two U.S. states had higher percentages of top performers in mathematics literacy than the United States. Massachusetts and Connecticut both had higher percentages of top performers ( 19 and 16 percent, respectively) than the United States (9 percent), while Florida had a lower percentage ( 6 percent).

A higher percentage ( 26 percent) of 15 -year-olds in the United States scored below proficiency level 2 in mathematics literacy than the average of the OECD countries' percentages ( 23 percent). Percentages of low performers ranged from 4 percent in Shanghai-CHN to 76 percent in Indonesia. Twenty-nine education systems and two U.S. states had lower percentages of

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low performers than the United States in mathematics literacy. The U.S. percentage of low performers was higher than the percentages for both Massachusetts (18 percent) and Connecticut ( 21 percent). The percentage of low performers in Florida (30 percent) was not measurably different from the U.S. percentage.

Table 2. Average scores of 15 -year-old students on the Program for International Student Assessment (PISA) science literacy scale, by education system: 2012

| Education system | Average score | Education system | Average score |
| :---: | :---: | :---: | :---: |
| OECD average | 501 | OECD average | 501 |
| Shanghai-CHN | 5800 | Russian Federation | 486 |
| Hong Kong-CHN | 5550 | Sweden | 485 |
| Singapore | 5510 | Iceland | 478 |
| Japan | 5470 | Slovak Republic | 471 |
| Finland | 5450 | Israel | 470 |
| Estonia | 5410 | Greece | 467 |
| Korea, Republic of | 5380 | Turkey | 463 - |
| Vietnam | 528 0 | United Arab Emirates | 448 |
| Poland | 5260 | Bulgaria | 446 ( |
| Canada | 5250 | Chile | 445 |
| Liechtenstein | 5250 | Serbia, Republic of | 445 |
| Germany | 5240 | Thailand | 444 |
| Chinese Taipei-CHN | 5230 | Romania | 439 |
| Netherlands | 5220 | Cyprus | 438 |
| Ireland | 5220 | Costa Rica | 429 |
| Australia | 5210 | Kazakhstan | 425 |
| Macao-CHN | 5210 | Malaysia | 420 |
| New Zealand | 5160 | Uruguay | 416 |
| Switzerland | 5150 | Mexico | 415 ® |
| Slovenia | 5140 | Montenegro, Republic of | 410 ( |
| United Kingdom | 5140 | Jordan | 409 |
| Czech Republic | 5080 | Argentina | 406 |
| Austria | 506 | Brazil | 405 |
| Belgium | 505 | Colombia | 399 |
| Latvia | 502 | Tunisia | 398 |
| France | 499 | Albania | 397 |
| Denmark | 498 | Qatar | 384 |
| United States | 497 | Indonesia | 382 |
| Spain | 496 | Peru | 373 |
| Lithuania | 496 |  |  |
| Norway | 495 |  |  |
| Hungary | 494 |  |  |
| Italy | 494 | U.S. state education systems |  |
| Croatia | 491 | Massachusetts | 5270 |
| Luxembourg | 491 | Connecticut | 5210 |
| Portugal | 489 | Florida | 485 |

[^0]Average score is lower than U.S. average score.
NOTE: Education systems are ordered by 2012 average score. The Organization for Economic Cooperation and Development (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 . All average scores reported as higher or lower than the U.S. average score are different at the . 05 level of statistical significance. Italics indicate non-OECD education systems. Results for Connecticut, Florida, and Massachusetts are for public school students only. SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012. See Digest of Education Statistics 2013, table 602.70.

In science literacy, average scores ranged from 373 in Peru to 580 in Shanghai-CHN. The U.S. average science score (497) was not measurably different from the OECD average (501). Twenty-two education systems and 2 U.S. states had higher average science scores than the United States, and 13 systems and 1 U.S. state had scores that were not measurably different. The 22 education systems with higher scores than the U.S. average score were

Shanghai-CHN, Hong Kong-CHN, Singapore, Japan, Finland, Estonia, the Republic of Korea, Vietnam, Poland, Canada, Liechtenstein, Germany, Chinese Taipei-CHN, the Netherlands, Ireland, Australia, Macao-CHN, New Zealand, Switzerland, Slovenia, the United Kingdom, and the Czech Republic. Within the United States, Massachusetts and Connecticut scored above the U.S. average.

In addition to scoring above the U.S. national average, Massachusetts (527) and Connecticut (521) also scored above the OECD average. Florida (485) had an average

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score not measurably different from the U.S. average and lower than the OECD average.

Figure 2. Percentage of 15 -year-old students performing on the Program for International Student Assessment (PISA) science literacy scale, by selected proficiency level and education system: 2012

| Education system | Below level 2 | Levels 5 and above |  | Education system | Below level 2 | Levels 5 and above |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OECD average | 18 |  | 8 | OECD average | 18 |  |  | 8 |
| Shanghai-CHN | 3* |  | 27* | Spain | 16 |  |  | 5* |
| Singapore | 10* |  | 23* | Croatia | 17 |  |  | 5* |
| Japan | 8* |  | 18* | Portugal | 19 |  |  | 5* |
| Finland | 8* |  | 17* | Latvia | 12* |  |  | 4* |
| Hong Kong-CHN | 6* |  | 17* | Russian Federation | 19 |  |  | 4* |
| Australia | 14* |  | 14* | Bulgaria | 37* |  |  | 3* |
| New Zealand | 16 |  | 13* | United Arab Emirates | 35* |  |  | 3* |
| Estonia | 5* |  | 13* | Greece | 26* |  |  | 2* |
| Germany | 12* |  | 12* | Cyprus | 38* |  |  | 21 |
| Netherlands | 13* |  | 12* | Turkey | 26* |  |  | 21 |
| Korea, Republic of | 7* |  | 12* | Serbia, Republic of | 35* |  |  | 21 |
| Canada | 10* |  | 11* | Qatar | 63* |  |  | 1* |
| United Kingdom | 15 |  | 11* | Uruguay | 47* |  |  | $1 *$ |
| Poland | 9* |  | 11* | Chile | 34* |  |  | 1* |
| Ireland | 11** |  | 11* | Thailand | 34* |  |  | $1 *$ |
| Liechtenstein | 10* |  | 10 | Romania | 37* |  |  | 1!* |
| Slovenia | 13* |  | 10* | Albania | 53* |  |  | \#!* |
| Switzerland | 13* |  | 9 | Montenegro, Republic of | 51* |  |  | \# ! ${ }^{\text {* }}$ |
| Belgium | 18 |  | 9 | Malaysia | 46* |  |  | \# ! ${ }^{*}$ |
| Chinese Taipei-CHN | 10* |  | 8 | Brazil | 54* |  |  | \# !* |
| Luxembourg | 22* |  | 8 | Jordan | 50* |  |  | $\ddagger$ |
| Vietnam | 7* |  | 8 | Argentina | 51* |  |  | \#!* |
| France | 19 |  | 8 | Costa Rica | 39* |  |  | \# !* |
| Austria | 16 |  | 8 | Kazakhstan | 42* |  |  | \# !* |
| Czech Republic | 14* |  | 8 | Mexico | 47* |  |  | \# ! ${ }^{*}$ |
| Norway | 20 |  | 8 | Colombia | 56* |  |  | $\ddagger$ |
| United States | 18 |  | 7 | Tunisia | 55* |  |  | $\ddagger$ |
| Denmark | 17 |  | 7 | Indonesia | 67* |  |  | $\ddagger$ |
| Macao-CHN | 9* |  | 7 | Peru | 68* |  |  | $\ddagger$ |
| Sweden | 22* |  | 6 |  | 020 | 4060 | 80 | 100 |
| Italy | 19 |  | 6 |  |  | Percent |  |  |
| Hungary | 18 |  | 6 |  |  |  |  |  |
| Israel | 29* |  | 6 | U.S. state education system |  |  |  |  |
| Iceland | 24* |  | 5* | Massachusetts | 11 |  |  | 14* |
| Lithuania | 16 |  | 5* | Connecticut | 13* |  |  | 13* |
| Slovak Republic | 27* |  | 5 | Florida | 21 |  |  | 5 |
|  | 020 | $\begin{array}{lr} \hline 40 & 60 \\ \text { Percent } \end{array}$ | $80 \quad 100$ |  | 020 | $\begin{array}{lr} 40 & 60 \\ \text { Percent } \end{array}$ | 80 | 100 |

## Below level 2

Levels 5 and above
\# Rounds to zero.
! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
$\ddagger$ Reporting standards not met. Either there are too few cases for a reliable estimate or the coefficient of variation (CV) is 50 percent or greater.

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

NOTE: Education systems are ordered by 2012 percentages of 15 -year-olds at 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 1 (a score less than or equal to 334.94); level 1 (a score greater than 334.94 and less than or equal to 409.54 ); level 2 (a score greater than 409.54 and less than or equal to 484.14); level 3 (a score greater than 484.14 and less than or equal to 558.73); level 4 (a score greater than 558.73 and less than or equal to 633.33); level 5 (a score greater than 633.33 and less than or equal to 707.93); and level 6 (a score greater than 707.93). Scores are reported on a scale from 0 to 1,000. The Organization for Economic Cooperation and Development (OECD) average is the average of the national percentages of the OECD member countries, with each country weighted equally. Italics indicate non-OECD education systems. Results for Connecticut, Florida, and Massachusetts are for public school students only.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012. See Digest of Education Statistics 2013, table 602.70.

Similar to PISA’s reporting of mathematics literacy, PISA also reports science literacy by six proficiency levels, with level 1 being the lowest and level 6 being the highest. Students performing at levels 5 and 6 can apply scientific knowledge in a variety of complex life situations. The percentage of U.S. top performers on the science literacy scale (7 percent) was not measurably different from the average of the OECD countries' percentages of top performers (8 percent). Percentages of top performers ranged from near 0 percent in eight education systems to 27 percent in Shanghai-CHN. Sixteen education systems and two U.S. states had percentages of top performers higher than the United States in science literacy. Massachusetts and Connecticut both had higher percentages of top performers ( 14 and 13 percent,

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respectively) than the United States, while Florida had a percentage that was not measurably different ( 5 percent).

The percentage of U.S. students who scored below proficiency level 2 in science literacy was not measurably different from the average of the OECD countries' percentages (both 18 percent). Percentages of low performers ranged from 3 percent in Shanghai-CHN to 68 percent in Peru. Twenty-one education systems and two U.S. states, Massachusetts and Connecticut (11 and 13 percent, respectively), had lower percentages of low performers than the United States in science literacy. The percentage of low performers for Florida (21 percent) was not measurably different from the percentage for the United States.

Table 3. Average scores of 15 -year-old students on the Program for International Student Assessment (PISA) reading literacy scale, by education system: 2012

| Education system | Average score | Education system | Average score |
| :---: | :---: | :---: | :---: |
| OECD average | 496 | OECD average | 496 |
| Shanghai-CHN | 570 0 | Iceland | 483 - |
| Hong Kong-CHN | 5450 | Slovenia | 481 ( |
| Singapore | 5420 | Lithuania | 477 ( |
| Japan | 538 0 | Greece | 477 - |
| Korea, Republic of | 5360 | Turkey | 475 ( |
| Finland | 5240 | Russian Federation | 475 ( |
| Ireland | 523 0 | Slovak Republic | 463 - |
| Chinese Taipei-CHN | 523 0 | Cyprus | 449 ( |
| Canada | 5230 | Serbia, Republic of | 446 |
| Poland | 518 0 | United Arab Emirates | 442 - |
| Estonia | 5160 | Chile | 441 - |
| Liechtenstein | 5160 | Thailand | 441 ( |
| New Zealand | 5120 | Costa Rica | 441 ( |
| Australia | 5120 | Romania | 438 - |
| Netherlands | 5110 | Bulgaria | 436 ( |
| Switzerland | 5090 | Mexico | 424 - |
| Macao-CHN | 5090 | Montenegro, Republic of | 422 - |
| Belgium | 5090 | Uruguay | 411 ( |
| Vietnam | 508 | Brazil | 410 - |
| Germany | 508 0 | Tunisia | 404 - |
| France | 505 | Colombia | 403 - |
| Norway | 504 | Jordan | 399 |
| United Kingdom | 499 | Malaysia | 398 |
| United States | 498 | Indonesia | 396 |
| Denmark | 496 | Argentina | 396 |
| Czech Republic | 493 | Albania | 394 ( |
| Italy | 490 | Kazakhstan | 393 - |
| Austria | 490 | Qatar | 388 - |
| Latvia | 489 - | Peru | 384 ® |
| Hungary | 488 |  |  |
| Spain | 488 - |  |  |
| Luxembourg | 488 - |  |  |
| Portugal | 488 | U.S. state education systems |  |
| Israel | 486 | Massachusetts | 527 0 |
| Croatia | 485 - | Connecticut | 5210 |
| Sweden | 483 - | Florida | 492 |

[^1]
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In reading literacy, average scores ranged from 384 in Peru to 570 in Shanghai-CHN. The U.S. average score (498) was not measurably different from the OECD average (496). Nineteen education systems and 2 U.S. states had higher average reading scores and 11 education systems and 1 U.S. state had scores that were not measurably different. The 19 education systems with higher average scores than the United States in reading literacy were

Shanghai-CHN, Hong Kong-CHN, Singapore, Japan, the Republic of Korea, Finland, Ireland, Chinese Taipei-CHN, Canada, Poland, Estonia, Liechtenstein, New Zealand, Australia, the Netherlands, Switzerland, Macao-CHN, Belgium, and Germany. Within the United States, Massachusetts and Connecticut, scored above the US. average.

Figure 3. Percentage of 15 -year-old students performing on the Program for International Student Assessment (PISA) reading literacy scale, by selected proficiency level and education system: 2012


## Below level 2

Levels 5 and above
\# Rounds to zero.
! Interpret data with caution. The coefficient of variation (CV) for this estimate is between 30 and 50 percent.
$\ddagger$ Reporting standards not met. Either there are too few cases for a reliable estimate or the coefficient of variation (CV) is 50 percent or greater.

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

NOTE: Education systems are ordered by 2012 percentages of 15 -year-olds at 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 1b (a score less than or equal to 262.04); level 1b (a score greater than 262.04 and less than or equal to 334.75); level 1a (a score greater than 334.75 and less than or equal to 407.47 ); level 2 (a score greater than 407.47 and less than or equal to 480.18 ); level 3 (a score greater than 480.18 and less than or equal to 552.98); level 4 (a score greater than 552.98 and less than or equal to 625.61 ); level 5 (a score greater than 625.61 and less than or equal to 698.32 ); and level 6 (a score greater than 698.32 ). Scores are reported on a scale from 0 to 1,000 . The Organization for Economic Cooperation and Development (OECD) average is the average of the national percentages of the OECD member countries, with each country weighted equally. Italics indicate non-OECD education systems. Results for Connecticut, Florida, and Massachusetts are for public school students only.
SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012. See Digest of Education Statistics 2013, table 602.50.

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In reading, Massachusetts (527) and Connecticut (521) scored above both the U.S. national average and the OECD average. Florida had an average reading score (492) that was not measurably different from either the U.S. average or the OECD average.

PISA reports reading literacy by seven proficiency levels, with level 1 b being the lowest and level 6 being the highest. At levels 5 and 6, students have mastered sophisticated reading skills required to interpret and evaluate deeply embedded or abstract text. The percentage of U.S. top performers on the reading literacy scale was not measurably different from the average of the OECD countries' percentages of top performers (both 8 percent). Percentages of top performers ranged from near 0 percent in three education systems to 25 percent in ShanghaiCHN. Fourteen education systems and two U.S. states had percentages of top performers higher than the United States in reading literacy. Massachusetts and Connecticut both had higher percentages of top performers (16 and 15 percent, respectively) than the United States, while Florida had a lower percentage ( 6 percent).

The percentage of U.S. students who were low performers in reading literacy was not measurably different from the average of the OECD countries' percentages of low performers ( 17 and 18 percent, respectively). Percentages of low performers ranged from 3 percent in ShanghaiCHN to 60 percent in Peru. Fourteen education systems and one U.S. state had lower percentages of low performers than the United States in reading literacy. Massachusetts had a lower percentage (11 percent) than the United States, while Connecticut and Florida both
had percentages that were not measurably different ( 13 and 17 percent, respectively).

The United States also participates in the Trends in International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS). Both assessments are coordinated by the TIMSS \& PIRLS International Study Center at Boston College, under the auspices of the International Association for the Evaluation of Educational Achievement (IEA), an international organization of national research institutions and governmental research agencies. TIMSS assesses mathematics and science knowledge and skills at grades 4 and 8, and PIRLS assesses reading literacy at grade 4 .

In 2011, there were 57 education systems that had TIMSS mathematics and science data at grade 4 and 56 education systems that had these data at grade 8 . Education systems include countries (complete, independent, and political entities) and other benchmarking education systems (portions of a country, nation, kingdom, or emirate, or other non-national entities). These benchmarking systems are able to participate in TIMSS even though they may not be members of the IEA. Participating allows them the opportunity to assess their students' achievement and to view their curricula in an international context. In addition to participating in the U.S. national sample, several U.S. states participated individually and are included as education systems. At the 4th-grade level, two U.S. states (Florida and North Carolina) participated; at the 8th-grade level, nine U.S. states (Alabama, California, Colorado, Connecticut, Florida, Indiana, Massachusetts, Minnesota, and North Carolina) participated.

Table 4. Average TIMSS mathematics assessment scale scores of 4th-grade students, by education system: 2011

| Grade 4 |  | Grade 4 |  |
| :---: | :---: | :---: | :---: |
| Education system | Average score | Education system | Average score |
| TIMSS scale average | 500 | TIMSS scale average | 500 |
| Singapore ${ }^{1}$ | 6060 | New Zealand | 486 |
| Korea, Republic of | 6050 | Spain | 482 |
| Hong Kong-CHN ${ }^{1}$ | 6020 | Romania | 482 (1) |
| Chinese Taipei-CHN | 5910 | Poland | 481 (1) |
| Japan | 585 0 | Turkey | 469 (1) |
| Northern Ireland-GBR ${ }^{2}$ | 562 0 | Azerbaijan ${ }^{1.5}$ | 463 (1) |
| Belgium (Flemish)-BEL | 549 0 | Chile | 462 ( |
| Finland | 545 | Thailand | 458 |
| England-GBR | 542 | Armenia | 452 (1) |
| Russian Federation | 542 | Georgia ${ }^{3.5}$ | 450 (1) |
| United States ${ }^{1}$ | 541 | Bahrain | 436 |
| Netherlands ${ }^{2}$ | 540 | United Arab Emirates | 434 ( |
| Denmark ${ }^{1}$ | 537 | Iran, Islamic Republic of | 431 (1) |
| Lithuania ${ }^{1.3}$ | 534 ( | Qatar ${ }^{1}$ | 413 ( |
| Portugal | 532 ( | Saudi Arabia | 410 |
| Germany | 528 (1) | Oman ${ }^{6}$ | 385 ( |
| Ireland | 527 ( | Tunisia ${ }^{6}$ | 359 |
| Serbia, Republic of ${ }^{1}$ | 516 (1) | Kuwait ${ }^{3,7}$ | 342 ( |
| Australia | 516 ( | Morocco ${ }^{7}$ | 335 |
| Hungary | 515 ( | Yemen ${ }^{7}$ | 248 ( |
| Slovenia | 513 ( |  |  |
| Czech Republic | 511 (1) |  |  |
| Austria | 508 (1) | Benchmarking educatio | ems |
| Italy | 508 | North Carolina-USA ${ }^{1,3}$ | 554 (4) |
| Slovak Republic | 507 (1) | Florida-USA ${ }^{3,8}$ | 545 |
| Sweden | 504 (1) | Quebec-CAN | 533 (1) |
| Kazakhstan ${ }^{1}$ | 501 (1) | Ontario-CAN | 518 |
| Malta | 496 (1) | Alberta-CAN ${ }^{1}$ | 507 |
| Norway ${ }^{4}$ | 495 (1) | Dubai-UAE | 468 (1) |
| Croatia ${ }^{1}$ | 490 (1) | Abu Dhabi-UAE | 417 |

(1) Average score is higher than U.S. average score.
( Average score is lower than U.S. average score.
${ }^{1}$ National Defined Population covers 90 to 95 percent of National Target Population defined by TIMSS.
${ }^{2}$ Met guidelines for sample participation rates only after replacement schools were included.
${ }^{3}$ National Target Population does not include all of the International Target Population defined by TIMSS.
${ }^{4}$ Nearly satisfied guidelines for sample participation rates after replacement schools were included.
${ }^{5}$ Exclusion rates for Azerbaijan and Georgia are slightly underestimated as some conflict zones were not covered and no official statistics were available.
${ }^{\circ}$ The TIMSS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 15 percent, though it is less than 25 percent.
${ }^{7}$ The TIMSS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 25 percent.
${ }^{8}$ National Defined Population covers less than 90 percent, but at least 77 percent, of National Target Population defined by TIMSS.
NOTE: Education systems are ordered by 2011 average score. Italics indicate participants identified and counted in this report as an education system and not as a separate country. Trends in International Mathematics and Science Study (TIMSS) scores are reported on a scale from 0 to 1,000 , with the scale average set at 500 and the standard deviation set at 100. The TIMSS average includes only education systems that are members of the International Association for the Evaluation of Educational Achievement (IEA), which develops and implements TIMSS at the international level. "Benchmarking" education systems are not members of the IEA and are therefore not included in the average. All U.S. state data are based on public school students only. SOURCE: Provasnik, S., Kastberg, D., Ferraro, D., Lemanski, N., Roey, S., and Jenkins, F. (2012). Highlights From TIMSS 2011: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context (NCES 2013-009), table 3, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2011. See Digest of Education Statistics 2013, table 602.20.

At grade 4, the U.S. average mathematics score (541) in 2011 was higher than the TIMSS scale average (500). The United States was among the top 15 education systems in mathematics (8 education systems had higher average scores, and 6 had scores that were not measurably different), and the United States scored higher, on average, than 42 education systems. Seven education systems with average mathematics scores above the U.S. score were Belgium (Flemish)-BEL, Chinese Taipei-CHN,

Hong Kong-CHN, Japan, Northern Ireland-GBR, the Republic of Korea, and Singapore. Among the U.S. states that participated at grade 4, both North Carolina and Florida had average mathematics scores above the TIMSS scale average. North Carolina's score was higher than the U.S. national average; however, Florida's score was not measurably different from the U.S. national average in mathematics.

Table 5. Average TIMSS science assessment scale scores of 4th-grade students, by education system: 2011

| Grade 4 |  | Grade 4 |  |
| :---: | :---: | :---: | :---: |
| Education system | Average score | Education system | Average score |
| TIMSS scale average | 500 | TIMSS scale average | 500 |
| Korea, Republic of | 587 0 | New Zealand | 497 |
| Singapore ${ }^{1}$ | 583 0 | Kazakhstan' | 495 |
| Finland | 570 0 | Norway ${ }^{4}$ | 494 |
| Japan | 559 0 | Chile | 480 (1) |
| Russian Federation | 5520 | Thailand | 472 |
| Chinese Taipei-CHN | 552 0 | Turkey | 463 ( |
| United States ${ }^{1}$ | 544 | Georgia ${ }^{3.5}$ | 455 |
| Czech Republic | 536 (1) | Iran, Islamic Republic of | 453 ( |
| Hong Kong-CHN ${ }^{1}$ | 535 (1) | Bahrain | 449 (1) |
| Hungary | 534 ( | Malta | 446 ( |
| Sweden | 533 ( | Azerbaijan ${ }^{1.5}$ | 438 |
| Slovak Republic | 532 (1) | Saudi Arabia | 429 |
| Austria | 532 (1) | United Arab Emirates | 428 ( |
| Netherlands ${ }^{2}$ | 531 (1) | Armenia | 416 |
| England-GBR | 529 (1) | Qatar ${ }^{1}$ | 394 |
| Denmark ${ }^{1}$ | 528 (1) | Oman | 377 |
| Germany | 528 ® | Kuwait ${ }^{3.6}$ | 347 (1) |
| Italy | 524 (1) | Tunisia ${ }^{6}$ | 346 |
| Portugal | 522 (1) | Morocco ${ }^{7}$ | 264 |
| Slovenia | 520 (1) | Yemen ${ }^{7}$ | 209 |
| Northern Ireland-GBR ${ }^{2}$ | 517 ( |  |  |
| Ireland | 516 ( |  |  |
| Croatia ${ }^{1}$ | 516 ( | Benchmarking educatio | ems |
| Australia | 516 | Florida-USA ${ }^{3.8}$ | 545 |
| Serbia, Republic of ${ }^{1}$ | 516 ( | Alberta-CAN ${ }^{1}$ | 541 |
| Lithuania ${ }^{1,3}$ | 515 (\%) | North Carolina-USA ${ }^{1,3}$ | 538 |
| Belgium (Flemish)-BEL | 509 (1) | Ontario-CAN | 528 |
| Romania | 505 ( | Quebec-CAN | 516 |
| Spain | 505 | Dubai-UAE | 461 ( |
| Poland | 505 | Abu Dhabi-UAE | 411 ( |

[^2]At grade 4, the U.S. average science score (544) was higher than the TIMSS scale average of 500 . The United States was among the top 10 education systems in science (6 education systems had higher average science scores, and 3 had scores that were not measurably different). The United States also scored higher, on average, than 47 education systems in 2011. The six education systems
with average science scores above the U.S. score were Chinese Taipei-CHN, Finland, Japan, the Republic of Korea, the Russian Federation, and Singapore. Of the participating education systems within the United States, both Florida and North Carolina scored above the TIMSS scale average, but their science scores were not measurably different from the U.S. national average.

Table 6. Average TIMSS mathematics assessment scale scores of 8th-grade students, by education system: 2011

| Grade 8 |  | Grade 8 |  |
| :---: | :---: | :---: | :---: |
| Education system | Average score | Education system | Average score |
| TIMSS scale average | 500 | TIMSS scale average | 500 |
| Korea, Republic of | 6130 | Chile | 416 |
| Singapore ${ }^{1}$ | 6110 | Iran, Islamic Republic of ${ }^{6}$ | 415 (1) |
| Chinese Taipei-CHN | 6090 | Qatar ${ }^{6}$ | 410 (1) |
| Hong Kong-CHN | 586 | Bahrain ${ }^{6}$ | 409 (1) |
| Japan | 570 | Jordan ${ }^{6}$ | 406 (1) |
| Russian Federation ${ }^{1}$ | 539 0 | Palestinian National Authority ${ }^{\text {² }}$ | 404 |
| Israel ${ }^{2}$ | 516 | Saudi Arabia ${ }^{6}$ | 394 (1) |
| Finland | 514 | Indonesia ${ }^{6}$ | 386 |
| United States ${ }^{1}$ | 509 | Syrian Arab Republic ${ }^{6}$ | 380 - |
| England-GBR ${ }^{3}$ | 507 | Morocco ${ }^{7}$ | 371 ( |
| Hungary | 505 | Oman ${ }^{6}$ | 366 (1) |
| Australia | 505 | Ghana ${ }^{7}$ | 331 ( |
| Slovenia | 505 |  |  |
| Lithuania ${ }^{4}$ | 502 |  |  |
| Italy | 498 ( |  |  |
| New Zealand | 488 | Benchmarking education syste | ems |
| Kazakhstan | 487 | Massachusetts-USA ${ }^{1.4}$ | 5610 |
| Sweden | 484 | Minnesota-USA ${ }^{4}$ | 5450 |
| Ukraine | 479 | North Carolina-USA ${ }^{2,4}$ | 537 0 |
| Norway | 475 | Quebec-CAN | 532 0 |
| Armenia | 467 ( | Indiana-USA ${ }^{1.4}$ | 522 0 |
| Romania | 458 ( | Colorado-USA ${ }^{4}$ | 518 |
| United Arab Emirates | 456 | Connecticut-USA ${ }^{1,4}$ | 518 |
| Turkey | 452 | Florida-USA ${ }^{1,4}$ | 513 |
| Lebanon | 449 | Ontario-CAN ${ }^{1}$ | 512 |
| Malaysia | 440 ( | Alberta-CAN ${ }^{1}$ | 505 |
| Georgia ${ }^{4.5}$ | 431 ( | California-USA ${ }^{1.4}$ | 493 - |
| Thailand | 427 ( | Dubai-UAE | 478 - |
| Macedonia, Republic of ${ }^{6}$ | 426 ( | Alabama-USA ${ }^{4}$ | 466 (1) |
| Tunisia | 425 | Abu Dhabi-UAE | 449 |

[^3]At grade 8, the U.S. average mathematics score (509) was higher than the TIMSS scale average of 500 . The United States was among the top 24 education systems in mathematics in 2011 (11 education systems had higher average scores, and 12 had scores that were not measurably different). In addition, the United States scored higher, on average, than 32 education systems. The 11 education systems with average mathematics scores above the U.S. score were Chinese Taipei-CHN, Hong Kong-CHN, Japan, Quebec-CAN, the Republic of Korea, the Russian Federation, Singapore, and, within the United States, Indiana, Massachusetts, Minnesota, and North Carolina.

In addition to scoring above the U.S. average in 8thgrade mathematics, Indiana, Massachusetts, Minnesota, and North Carolina also scored above the TIMSS scale average. Colorado, Connecticut, and Florida scored above the TIMSS scale average, but their scores were not measurably different from the U.S. national average. California's score was not measurably different from the TIMSS scale average, but it was below the U.S. national average; Alabama scored below both the TIMSS scale average and the U.S. national average in mathematics.

Table 7. Average TIMSS science assessment scale scores of 8th-grade students, by education system: 2011

| Grade 8 |  | Grade 8 |  |
| :---: | :---: | :---: | :---: |
| Education system | Average score | Education system | Average score |
| TIMSS scale average | 500 | TIMSS scale average | 500 |
| Singapore ${ }^{1}$ | 5900 | Saudi Arabia | 436 (1) |
| Chinese Taipei-CHN | 5640 | Malaysia | 426 - |
| Korea, Republic of | 560 0 | Syrian Arab Republic | 426 (1) |
| Japan | 558 0 | Palestinian National Authority | 420 - |
| Finland | 5520 | Georgia ${ }^{4.5}$ | 420 - |
| Slovenia | 5430 | Oman | 420 - |
| Russian Federation ${ }^{1}$ | 542 0 | Qatar | 419 ( |
| Hong Kong-CHN | 5350 | Macedonia, Republic of | 407 ( |
| England-GBR ${ }^{2}$ | 533 | Lebanon | 406 |
| United States ${ }^{1}$ | 525 | Indonesia | 406 |
| Hungary | 522 | Morocco | 376 |
| Australia | 519 | Ghana ${ }^{6}$ | 306 |
| Israel ${ }^{3}$ | 516 |  |  |
| Lithuania ${ }^{4}$ | 514 ( |  |  |
| New Zealand | 512 ( |  |  |
| Sweden | 509 (1) | Benchmarking education sys | ms |
| Italy | 501 ( | Massachusetts-USA ${ }^{1.4}$ | 567 0 |
| Ukraine | 501 (1) | Minnesota-USA ${ }^{4}$ | 553 0 |
| Norway | 494 (1) | Alberta-CAN ${ }^{1}$ | 5460 |
| Kazakhstan | 490 (1) | Colorado-USA ${ }^{4}$ | 542 0 |
| Turkey | 483 ( | Indiana-USA ${ }^{1.4}$ | 533 |
| Iran, Islamic Republic of | 474 ( | Connecticut-USA ${ }^{1.4}$ | 532 |
| Romania | 465 ( | North Carolina-USA ${ }^{3.4}$ | 532 |
| United Arab Emirates | 465 ( | Florida-USA ${ }^{1,4}$ | 530 |
| Chile | 461 (1) | Ontario-CAN ${ }^{1}$ | 521 |
| Bahrain | 452 (1) | Quebec-CAN | 520 |
| Thailand | 451 (1) | California-USA ${ }^{1,4}$ | 499 ( |
| Jordan | 449 (1) | Alabama-USA ${ }^{4}$ | 485 (1) |
| Tunisia | 439 (1) | Dubai-UAE | 485 - |
| Armenia | 437 ( | Abu Dhabi-UAE | 461 ® |

(Average score is higher than U.S. average score.
(7) Average score is lower than U.S. average score.
${ }^{1}$ National Defined Population covers 90 to 95 percent of National Target Population defined by TIMSS.
${ }^{2}$ Nearly satisfied guidelines for sample participation rates after replacement schools were included.
${ }^{3}$ National Defined Population covers less than 90 percent, but at least 77 percent, of National Target Population defined by TIMSS.
${ }^{4}$ National Target Population does not include all of the International Target Population defined by TIMSS.
${ }^{5}$ Exclusion rates for Georgia are slightly underestimated as some conflict zones were not covered and no official statistics were available.
${ }^{\circ}$ The TIMSS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 15 percent, though it is less than 25 percent.
NOTE: Education systems are ordered by 2011 average score. Italics indicate participants identified and counted in this report as an education system and not as a separate country. Trends in International Mathematics and Science Study (TIMSS) scores are reported on a scale from 0 to 1,000 , with the scale average set at 500 and the standard deviation set at 100. The TIMSS average includes only education systems that are members of the International Association for the Evaluation of Educational Achievement (IEA), which develops and implements TIMSS at the international level. "Benchmarking" education systems are not members of the IEA and are therefore not included in the average. All U.S. state data are based on public school students only. SOURCE: Provasnik, S., Kastberg, D., Ferraro, D., Lemanski, N., Roey, S., and Jenkins, F. (2012). Highlights From TIMSS 2011: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context (NCES 2013-009), table 27, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2011. See Digest of Education Statistics 2013, table 602.30.

At grade 8, the U.S. average science score (525) was higher than the TIMSS scale average of 500. The United States was among the top 23 education systems in science in 2011 ( 12 education systems had higher average scores, and 10 had scores that were not measurably different). The United States scored higher, on average, than 33 education systems. The 12 education systems with average science scores above the U.S. score were Alberta-CAN, Chinese Taipei-CHN, Finland, Hong Kong-CHN, Japan, the Republic of Korea, the Russian Federation, Singapore, Slovenia, and, within the United States, Colorado, Massachusetts, and Minnesota.

Aside from scoring above the U.S. average in 8th-grade science, Colorado, Massachusetts, and Minnesota also scored above the TIMSS scale average of 500. Connecticut, Florida, Indiana, and North Carolina scored above the TIMSS scale average, but their scores were not measurably different from the U.S. national average. California's score was not measurably different from the TIMSS scale average, but it was below the U.S. national average; Alabama scored below both the TIMSS scale average and the U.S. national average in science.

## Chapter: 3/Elementary and Secondary Education Section: Assessments

Figure 4. Number of instructional hours per year for 4th-grade students, by country or education system and subject: 2011


[^4][^5]
## Chapter: 3/Elementary and Secondary Education

 Section: AssessmentsFigure 5. Number of instructional hours per year for 8th-grade students, by country or education system and subject: 2011


[^6]${ }^{1}$ Data for number of math and/or science instructional hours are available for at least 50 percent but less than 85 percent of students.
${ }^{2}$ Nearly satisfied guidelines for sample participation rate after replacement schools were included.
${ }^{3}$ Target Population does not include all of the International Target Population defined by TIMSS.
${ }^{4}$ Exclusion rates for Georgia are slightly underestimated as some conflict zones were not covered and no official statistics were available.
${ }^{5}$ National Defined Population covers less than 90 percent, but at least 77 percent, of National Target Population defined by TIMSS.
${ }^{\circ}$ Data for instructional hours in science were not available. Other instructional hours calculated by subtracting instruction hours in mathematics from total instructional hours.
National Defined Population covers 90 to 95 percent of National Target Population defined by TIMSS
${ }^{8}$ Data for science are for 2007 and are from TIMSS 2007 International Results in Science. Met guidelines for sample participation rates only after substitute schools were included. Data for number of math instructional hours are available for at least 50 percent but less than 70 percent of students.
${ }^{9}$ Other instructional hours calculated by adding instructional hours in mathematics to instructional hours in science and then subtracting from total instructional hours.
NOTE: Instructional times shown in this table are actual or implemented times (as opposed to intended times prescribed by the curriculum). Principals reported total instructional hours per day and school days per year. Total instructional hours per year were calculated by multiplying the number of school days per year by the number of instructional hours per day. Teachers reported instructional hours per week in mathematics and science. Instructional hours per year in mathematics and science were calculated by dividing weekly instructional hours by the number of school days per week and then multiplying by the number of school days per year. International average instructional hours includes only education systems that are members of the International Association for the Evaluation of Educational Achievement (IAE), which develops and implements TIMSS at the international level. "Benchmarking" education systems are not members of the IEA and are therefore not included in the average. All U.S. state data are based on public school students only. SOURCE: Mullis, I.V.S., Martin, M.O., Foy, P., and Arora, A. (2012). TIMSS 2011 International Results in Mathematics, exhibit 8.7, and Martin, M.O., Mullis, I.V.S., Foy, P., and Stanco, G.M. (2012). TIMSS 2011 International Results in Science, exhibit 8.7. See Digest of Education Statistics 2013, table 602.30.

At grade 8, education systems (excluding the benchmarking participants) participating in TIMSS spent an average of 1,031 total annual hours on instructional time in 2011, of which 138 hours ( 13 percent) were spent on mathematics instruction and 158 hours ( 15 percent) were spent on science instruction. Similar to the findings
at grade 4, the United States' average number of total instructional hours at grade 8 ( 1,114 hours) was higher than the international average ( 1,031 hours). The average hours spent on grade 8 mathematics instruction (157 hours) in the United States was also higher than the international average (138 hours).

Table 8. Average PIRLS reading literacy assessment scale scores of 4th-grade students, by education system: 2011

|  | Overall <br> reading <br> average |  | Overall <br> reading |
| :--- | :---: | :--- | :---: | :---: |
| scale score |  |  |  |

( Average score is higher than U.S. average score.
( Average score is lower than U.S. average score.
${ }^{1}$ National Defined Population covers less than 90 percent of National Target Population defined by PIRLS
${ }^{2}$ National Defined Population covers 90 percent to 95 percent of National Target Population defined by PIRLS.
${ }^{3}$ Met guidelines for sample participation rates only affer replacement schools were included.
${ }^{4}$ National Target Population does not include all of the International Target Population defined by PIRLS.
${ }^{5}$ Nearly satisfied guidelines for sample participation rates after replacement schools were included.
${ }^{6}$ Exclusion rates for Azerbaijan and Georgia are slightly underestimated as some conflict zones were not covered and no official statistics were available.
${ }^{7}$ The PIRLS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 15 percent, though it is less than 25 percent.
${ }^{8}$ The PIRLS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 25 percent.
NOTE: Education systems are ordered by 2011 average score. Italics indicate participants identified and counted in this report as an education system and not as a separate country. The Progress in International Reading Literacy Study (PIRLS) scores are reported on a scale from 0 to 1,000 , with the scale average set at 500 and the standard deviation set at 100. The PIRLS average includes only education systems that are members of the International Association for the Evaluation of Educational Achievement (IEA), which develops and implements PIRLS at the international level. "Benchmarking" education systems are not members of the IEA and are therefore not included in the average. All U.S. state data are based on public school students only.
SOURCE:Thompson, S., Provasnik, S., Kastberg, D., Ferraro, D., Lemanski, N., Roey, S., and Jenkins, F. (2012). Highlights From PIRLS 2011: Reading Achievement of U.S. Fourth-Grade Students in an International Context (NCES 2013-010), table 3, data from the International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2011. See Digest of Education Statistics 2013, table 602.10.

In 2011, there were 53 education systems that had PIRLS reading literacy data at grade 4 . These 53 education systems included both countries and other benchmarking education systems. In addition to participating in the U.S. national sample, Florida participated individually and was included as an education system. In 2011, the U.S. average 4th-grade reading literacy score (556) was higher than the PIRLS scale average (500). The United States was among the top 13 education systems in reading literacy (5 education systems had higher average scores, and 7 had scores that were not measurably different).

The United States scored higher, on average, than 40 education systems.

The five education systems with average reading scores above the U.S. score were Finland, Hong Kong-CHN, the Russian Federation, Singapore, and, within the United States, Florida. Additionally, Florida's average score (569) was higher than the PIRLS scale average. No education system scored higher than Florida, although four had scores that were not measurably different. Forty-eight education systems scored lower than Florida.

Reference tables: Digest of Education Statistics 2013, tables 602.10, 602.20, 602.30, 602.50, 602.60, and 602.70

Related indicators: Educational Attainment of Young Adults, International Educational Attainment, U.S. Student and Adult Performance on International Assessments of Educational Achievement [The Condition of Education 2006 Special Analysis], U.S. Performance Across International Assessments of Student Achievement [The Condition of Education 2009
Special Analysis]

Glossary: Organization for Economic Cooperation and Development (OECD)


[^0]:    D Average score is higher than U.S. average score.

[^1]:    $\Delta$ Average score is higher than U.S. average score.
    Average score is lower than U.S. average score.
    NOTE: Education systems are ordered by 2012 average score. The Organization for Economic Cooperation and Development (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 . All average scores reported as higher or lower than the U.S. average score are different at the . 05 level of statistical significance. Italics indicate non-OECD education systems. Results for Connecticut, Florida, and Massachusetts are for public school students only.
    SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2012. See Digest of Education Statistics 2013, table 602.50.

[^2]:    Average score is higher than U.S. average score.
    ( Average score is lower than U.S. average score.
    ${ }^{1}$ National Defined Population covers 90 to 95 percent of National Target Population defined by TIMSS
    ${ }^{2}$ Met guidelines for sample participation rates only after replacement schools were included.
    ${ }^{3}$ National Target Population does not include all of the International Target Population defined by TIMSS.
    ${ }^{4}$ Nearly satisfied guidelines for sample participation rates after replacement schools were included.
    ${ }^{5}$ Exclusion rates for Azerbaijan and Georgia are slightly underestimated as some conflict zones were not covered and no official statistics were available.
    ${ }^{\circ}$ The TIMSS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 15 percent, though it is less than 25 percent.
    The TIMSS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 25 percent.
    ${ }^{8}$ National Defined Population covers less than 90 percent, but at least 77 percent, of National Target Population defined by TIMSS.
    NOTE: Education systems are ordered by 2011 average score. Italics indicate participants identified and counted in this report as an education system and not as a separate country. Trends in International Mathematics and Science Study (TIMSS) scores are reported on a scale from 0 to 1,000 , with the scale average set at 500 and the standard deviation set at 100. The TIMSS average includes only education systems that are members of the International Association for the Evaluation of Educational Achievement (IEA), which develops and implements TIMSS at the international level. "Benchmarking" education systems are not members of the IEA and are therefore not included in the average. All U.S. state data are based on public school students only.
    SOURCE: Provasnik, S., Kastberg, D., Ferraro, D., Lemanski, N., Roey, S., and Jenkins, F. (2012). Highlights From TIMSS 2011: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context (NCES 2013-009), table 26, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2011. See Digest of Education Statistics 2013, table 602.20.

[^3]:    Average score is higher than U.S. average score.
    $($ Average score is lower than U.S. average score.
    ${ }^{1}$ National Defined Population covers 90 to 95 percent of National Target Population defined by TIMSS.
    ${ }^{2}$ National Defined Population covers less than 90 percent, but at least 77 percent, of National Target Population defined by TIMSS.
    ${ }^{3}$ Nearly satisfied guidelines for sample participation rates after replacement schools were included.
    ${ }^{4}$ National Target Population does not include all of the International Target Population defined by TIMSS.
    ${ }^{5}$ Exclusion rates for Georgia are slightly underestimated as some conflict zones were not covered and no official statistics were available.
    ${ }^{\circ}$ The TIMSS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 15 percent, though it is less than 25 percent.
    ${ }^{7}$ The TIMSS International Study Center has reservations about the reliability of the average achievement score because the percentage of students with achievement too low for estimation exceeds 25 percent.
    NOTE: Education systems are ordered by 2011 average score. Italics indicate participants identified and counted in this report as an education system and not as a separate country. Trends in International Mathematics and Science Study (TIMSS) scores are reported on a scale from 0 to 1,000 , with the scale average set at 500 and the standard deviation set at 100. The TIMSS average includes only education systems that are members of the International Association for the Evaluation of Educational Achievement (IEA), which develops and implements TIMSS at the international level. "Benchmarking" education systems are not members of the IEA and are therefore not included in the average. All U.S. state data are based on public school students only.
    SOURCE: Provasnik, S., Kastberg, D., Ferraro, D., Lemanski, N., Roey, S., and Jenkins, F. (2012). Highlights From TIMSS 2011: Mathematics and Science Achievement of U.S. Fourth- and Eighth-Grade Students in an International Context (NCES 2013-009), table 4, data from the International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2011. See Digest of Education Statistics 2013, table 602.30.

[^4]:    See notes on next page.

[^5]:    ${ }^{1}$ Data for number of math, science, and/or total instructional hours are available for at least 50 percent but less than 85 percent of students.
    ${ }^{2}$ National Defined Population covers 90 to 95 percent of National Target Population defined by TIMSS.
    ${ }^{3}$ Exclusion rates for Azerbaijan and Georgia are slightly underestimated as some conflict zones were not covered and no official statistics were available. ${ }^{4}$ Data for instructional hours in science are not available. Other instructional hours calculated by subtracting instruction hours in mathematics from total instructional hours.
    ${ }^{5}$ National Target Population does not include all of the International Target Population defined by TIMSS.
    ${ }^{6}$ Met guidelines for sample participation rates only after replacement schools were included.
    ${ }^{7}$ National Defined Population covers less than 90 percent, but at least 77 percent, of National Target Population defined by TIMSS.
    ${ }^{8}$ Other instructional hours calculated by adding instructional hours in mathematics to instructional hours in science and then subtracting from total instructional hours.
    NOTE: Italics indicate participants identified and counted in this report as an education system and not as a separate country. Instructional times shown in this table are actual or implemented times (as opposed to intended times prescribed by the curriculum). Principals reported total instructional hours per day and school days per year. Total instructional hours per year were calculated by multiplying the number of school days per year by the number of instructional hours per day. Teachers reported instructional hours per week in mathematics and science. Instructional hours per year in mathematics and science were calculated by dividing weekly instructional hours by the number of school days per week and then multiplying by the number of school days per year. International average instructional hours includes only education systems that are members of the International Association for the Evaluation of Educational Achievement (IAE), which develops and implements TIMSS at the international level. "Benchmarking" education systems are not members of the IEA and are therefore not included in the average. All U.S. state data are based on public school students only.
    SOURCE: Mullis, I.V.S., Martin, M. O., Foy, P., and Arora, A. (2012). TIMSS 2011 International Results in Mathematics, exhibit 8.6, and Martin, M.O., Mullis, I.V.S., Foy, P., and Stanco, G.M. (2012). TIMSS 2011 International Results in Science, exhibit 8.6. See Digest of Education Statistics 2013, table 602.20.

    In addition to assessing achievement in mathematics and science, TIMSS collects information from principals on the total number of annual instructional hours in school. TIMSS also collects information from teachers on the number of annual instructional hours spent on mathematics and science instruction at grades 4 and 8. In 2011, education systems (excluding the benchmarking participants) participating in TIMSS at grade 4 spent an average of 897 total hours on instructional time, of which an average of 162 hours ( 18 percent) were spent on
    mathematics instruction and 85 hours ( 9 percent) were spent on science instruction. In 2011, the average number of total instructional hours ( 1,078 hours) spent in the United States at grade 4 was higher than the international average ( 897 hours). The average numbers of instructional hours spent on grade 4 mathematics instruction (206 hours) and science instruction (105 hours) in the United States were also higher than the international averages (162 and 85 hours, respectively).

[^6]:    See notes on next page.

