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|  | PISA 2015 Results |
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| 2015 Program for International Student Assessment (PISA)December 2016 |
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**Executive Summary**

# PISA is a system of international assessments that allows countries to compare outcomes of learning as students near the end of compulsory schooling. PISA has measured the performance of 15-year-old students in mathematics, science, and reading literacy every three years since 2000. In 2015, PISA was administered in 72 education systems, including all 35 member countries of the Organization for Economic Cooperation and Development (OECD) and 37 other countries and subnational education systems. Some countries also oversampled students at the subnational level to augment their national results with state or other regional results.

# In the United States, Massachusetts, North Carolina, and Puerto Rico opted to have separate samples of public schools and public-school students included in PISA in order to obtain state-level results. In each participating education system, probability sampling was used to obtain a representative sample of all 15-year-old students, regardless of grade, educational track, or school program type.

PISA’s goal is to assess students’ preparation for the challenges of life as young adults. PISA assesses the application of knowledge in mathematics, science, and reading literacy to problems within a real-life context. PISA does not focus explicitly on curricular outcomes and uses the term “literacy” in each subject area to indicate its broad focus on the application of knowledge and skills.

PISA results are presented in terms of average scale scores and the percentage of 15-year-old students reaching selected proficiency levels, comparing the United States (as well as Massachusetts, North Carolina, and Puerto Rico) with other participating education systems. For proficiency levels, results are reported in terms of the percentage reaching level 5 or above and the percentage below level 2. Higher proficiency levels represent the knowledge, skills, and capabilities needed to perform tasks of greater complexity. At levels 5 and 6, students demonstrate higher-level skills and are referred to as “top performers” in the subject. Conversely, students performing below level 2 are referred to as “low performers.”

All differences described here using PISA data are statistically significant at the .05 level. Differences that are not statistically significant are referred to as being “similar” or “not measurably different.”

Following are some highlights of the PISA 2015 assessment:

* Average scores in mathematics literacy ranged from 564 in Singapore to 328 in the Dominican Republic. Massachusetts’ average score (500) was higher than the U.S. average but not measurably different from the OECD average.
* Average scores in science literacy ranged from 556 in Singapore to 332 in the Dominican Republic. Massachusetts science literacy average score (529) was higher than the OECD and U.S. averages. Only Singapore scored higher than Massachusetts.
* Average scores in in reading literacy ranged from 535 in Singapore to 347 in Lebanon. Massachusetts reading literacy average score (527) was higher than the OECD and U.S. averages. Massachusetts was tied with 8 other education systems for first place.

**Background on the PISA Assessment**

“What is important for citizens to know and be able to do?” That is the question that underlies the triennial survey of 15-year-old students around the world known as the Program for International Student Assessment (PISA). PISA assesses the extent to which students near the end of compulsory education have acquired key knowledge and skills that are essential for full participation in modern societies. The assessment, which focuses on reading, mathematics, science and problem solving, does not just ascertain whether students can reproduce knowledge; it also examines how well students can extrapolate from what they have learned and apply that knowledge in unfamiliar settings, both in and outside of school. This approach reflects the fact that modern economies reward individuals not for what they know, but for what they can do with what they know.

PISA is an ongoing program that offers insights for education policy and practice, and that helps monitor trends in students’ acquisition of knowledge and skills across countries and economies and in different demographic subgroups within each country. PISA results reveal what is possible in education by showing what students in the highest-performing and most rapidly improving school systems can do. The findings allow policy makers around the world to gauge the knowledge and skills of students in their own countries in comparison with those in other countries, set policy targets against measurable goals achieved by other school systems, and learn from policies and practices applied elsewhere.

While PISA cannot identify cause-and-effect relationships between policies/practices and student outcomes, it can show educators, policy makers and the interested public how education systems are similar and different – and what that means for students.

Differences between countries in the nature and extent of pre-primary education and care, in the age of entry into formal schooling, in the structure of the school system, and in the prevalence of grade repetition mean that school grade levels are often not good indicators of where students are in their cognitive development. To better compare student performance internationally, PISA targets a specific age of students. PISA students are aged between 15 years 3 months and 16 years 2 months at the time of the assessment, and have completed at least 6 years of formal schooling.

The population of participating students is defined by strict technical standards, as are the students who are excluded from participating. The overall exclusion rate within a country was required to be below 5% to ensure that, under reasonable assumptions, any distortions in national mean scores would remain within plus or minus 5 score points, i.e., typically within the order of magnitude of 2 standard errors of sampling. Exclusion could take place either through the schools that participated or the students who participated within schools. There are several reasons why a school or a student could be excluded from PISA. Schools might be excluded because they are situated in remote regions and are inaccessible, because they are very small, or because of organizational or operational factors that precluded participation. Students might be excluded because of intellectual disability or limited proficiency in the language of the assessment.

Paper-based tests were used, with assessments lasting a total of two hours for each student.Test items were a mixture of multiple-choice items and questions requiring students to construct their own responses. The items were organized in groups based on a passage setting out a real-life situation. A total of about 390 minutes of test items were covered, with different students taking different combinations of test items.

In addition,students answered a background questionnaire that sought information about themselves, their homes and their school and learning experiences, which took 30 minutes to complete. School principals were also given a questionnaire, which covered the school system and the learning environment.

PISA results are reported in the following methods: average scale scores ranging from 1–1000 for all domains; proficiency levels which report the percentages of students scoring in 6 levels in mathematics and science literacy and 7 levels in reading literacy; trends which illustrated the change between average scores from previous years; and sub-group scores based on international (e.g., gender and economic, social and cultural status (ESCS) and U.S. specific variables ( e.g., race/ethnicity and income).

Massachusetts chose to participate as a separate educational entity in 2012 and 2015; therefore trend data is available. Following are additional resources for in-depth investigation: [**http://nces.ed.gov/surveys/pisa/**](http://nces.ed.gov/surveys/pisa/)and [**http://www.oecd.org/pisa/**](http://www.oecd.org/pisa/).

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| **Table S1. Average scores of 15-year-old students on the PISA science literacy scale, by education system: 2015** |
| **Education system** | **Average score** | ***s.e.*** |  | **Education system** | **Average score** | ***s.e.*** |
| OECD average  | 493 | *0.4* |  | image001

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| Iceland  |

 | 473 | *1.7* |
| *Singapore*  | 556 | *1.2* |  | Israel  | 467 | *3.4* |
| Japan  | 538 | *3.0* |  | *Malta*  | 465 | *1.6* |
| Estonia  | 534 | *2.1* |  | Slovak Republic  | 461 | *2.6* |
| *Chinese Taipei*  | 532 | *2.7* |  | Greece  | 455 | *3.9* |
| Finland  | 531 | *2.4* |  | Chile  | 447 | *2.4* |
| *Macau (China)*  | 529 | *1.1* |  | *Bulgaria*  | 446 | *4.4* |
| Canada  | 528 | *2.1* |  | *United Arab Emirates*  | 437 | *2.4* |
| *Vietnam*  | 525 | *3.9* |  | *Uruguay*  | 435 | *2.2* |
| *Hong Kong (China)*  | 523 | *2.5* |  | *Romania*  | 435 | *3.2* |
| *B-S-J-G (China)*  | 518 | *4.6* |  | *Cyprus*  | 433 | *1.4* |
| Korea, Republic of  | 516 | *3.1* |  | *Moldova, Republic of*  | 428 | *2.0* |
| New Zealand  | 513 | *2.4* |  | *Albania*  | 427 | *3.3* |
| Slovenia  | 513 | *1.3* |  | Turkey  | 425 | *3.9* |
| Australia  | 510 | *1.5* |  | *Trinidad and Tobago*  | 425 | *1.4* |
| United Kingdom  | 509 | *2.6* |  | *Thailand*  | 421 | *2.8* |
| Germany  | 509 | *2.7* |  | *Costa Rica*  | 420 | *2.1* |
| Netherlands  | 509 | *2.3* |  | *Qatar*  | 418 | *1.0* |
| Switzerland  | 506 | *2.9* |  | *Colombia*  | 416 | *2.4* |
| Ireland  | 503 | *2.4* |  | Mexico  | 416 | *2.1* |
| Belgium  | 502 | *2.3* |  | *Montenegro, Republic of*  | 411 | *1.0* |
| Denmark  | 502 | *2.4* |  | *Georgia*  | 411 | *2.4* |
| Poland  | 501 | *2.5* |  | *Jordan*  | 409 | *2.7* |
| Portugal  | 501 | *2.4* |  | *Indonesia*  | 403 | *2.6* |
| Norway  | 498 | *2.3* |  | *Brazil*  | 401 | *2.3* |
| **United States**  | **496** | ***3.2*** |  | *Peru*  | 397 | *2.4* |
| Austria  | 495 | *2.4* |  | *Lebanon*  | 386 | *3.4* |
| France  | 495 | *2.1* |  | *Tunisia*  | 386 | *2.1* |
| Sweden  | 493 | *3.6* |  | *Macedonia, Republic of*  | 384 | *1.2* |
| Czech Republic  | 493 | *2.3* |  | *Kosovo*  | 378 | *1.7* |
| Spain  | 493 | *2.1* |  | *Algeria*  | 376 | *2.6* |
| Latvia  | 490 | *1.6* |  | *Dominican Republic*  | 332 | *2.6* |
| *Russian Federation*  | 487 | *2.9* |  |  |  |  |
| Luxembourg  | 483 | *1.1* |  |  |  |  |
| Italy  | 481 | *2.5* |  |  |  |  |
| Hungary  | 477 | *2.4* |  | **U.S. states and territories** |   |  |
| *Lithuania*  | 475 | *2.7* |  | *Massachusetts*  | image002

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| 529 |

 | *6.6* |
| *Croatia*  | 475 | *2.5* |  | *North Carolina*  | 502 | *4.9* |
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| *Buenos Aires (Argentina)*  |

 | 475 | *6.3* |  | *Puerto Rico*  | 403 | *6.1* |

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| **Table A1. Average scores of 15-year-old students on the PISA science literacy scale in Massachusetts public schools compared with other participating education systems: 2015** |
| **Education systems higher than Massachusetts** |
| *Singapore*  |  |
| **Education systems not measurably different from Massachusetts** |
| Japan  | Canada  |
| Estonia  | *Vietnam*  |
| *Chinese Taipei*  | *Hong Kong (China)*  |
| Finland  | *B-S-J-G (China)*  |
| *Macau (China)*  | Korea, Republic of  |
| **Education systems lower than Massachusetts** |
| New Zealand  | *Malta*  |
| Slovenia  | Slovak Republic  |
| Australia  | Greece  |
| United Kingdom  | Chile  |
| Germany  | *Bulgaria*  |
| Netherlands  | *United Arab Emirates*  |
| Switzerland  | *Uruguay*  |
| Ireland  | *Romania*  |
| *North Carolina*  | *Cyprus*  |
| Belgium  | *Moldova, Republic of*  |
| Denmark  | *Albania*  |
| Poland  | Turkey  |
| Portugal  | *Trinidad and Tobago*  |
| Norway  | *Thailand*  |
| **United States**  | *Costa Rica*  |
| Austria  | *Qatar*  |
| France  | *Colombia*  |
| Sweden  | Mexico  |
| OECD average  | *Montenegro, Republic of*  |
| Czech Republic  | *Georgia*  |
| Spain  | *Jordan*  |
| Latvia  | *Indonesia*  |
| *Russian Federation*  | *Puerto Rico*  |
| Luxembourg  | *Brazil*  |
| Italy  | *Peru*  |
| Hungary  | *Lebanon*  |
| *Lithuania*  | *Tunisia*  |
| *Croatia*  | *Macedonia, Republic of*  |
| *Buenos Aires (Argentina)*  | *Kosovo*  |
| Iceland  | *Algeria*  |
| Israel  | *Dominican Republic*  |
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| **Table A2. Average scores of 15-year-old students on the PISA science literacy scale in Massachusetts public schools, by various student subgroups: 2015** |
| **Reporting groups** |  **Average score** | ***s.e.*** |
| **Massachusetts average** | **529** | **\*** | ***6.6*** |
| **U.S. average** | **496** |  | ***3.2*** |
| **OECD average** | **493** |  | ***0.4*** |
| Sex |   |   |  |
| Female | 524 | \* | *7.9* |
| Male | 534 | \* | *6.5* |
| Race/ethnicity |   |   |  |
| White | 546 | \* | *5.5* |
| Black | 469 | \* | *11.8* |
| Hispanic | 472 | \* | *9.9* |
| Asian | 551 | \* | *14.9* |
| Multiracial | 528 | \* | *14.0* |
| Percentage of students in enrolled schools eligible for free or reduced-price lunch |   |   |  |
| Less than 10 percent | 581 | \* | *7.6* |
| 10 to 24.9 percent | 553 | \* | *8.1* |
| 25 to 49.9 percent | 521 | \* | *7.8* |
| 50 to 74.9 percent | 505 | \*\* | *3.5* |
| 75 percent or more | 469 |   | *19.2* |
| \* *p*<.05. Significantly different from both the U.S. and OECD averages at the .05 level of statistical significance.\*\* p<.05. Significantly different from the OECD average at the .05 level of statistical significance.NOTE: The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Reporting standards were not met for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander. Black includes African American, and Hispanic includes Latino. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race. Although data for some race/ethnicities were not shown separately because the reporting standards were not met, they are included in the U.S. and state totals. The National School Lunch Program provides free or reduced-price lunch for students meeting certain income guidelines. The percentage of students eligible for this program is an indicator of the socioeconomic level of families served by the school. Data on free or reduced-price lunch are based on principals' responses to a question in the school questionnaire that asked the approximate percentage of eligible students in the school during the previous school year. Standard error is noted by *s.e.* SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015.  |

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| **Table R1. Average scores of 15-year-old students on the PISA reading literacy scale, by education system: 2015** |
| **Education system** | **Average score** | ***s.e.*** |  | **Education system** | **Average score** | ***s.e.*** |
| OECD average  | 493 | *0.5* |  |  |  |  |
| *Singapore*  | 535 | *1.6* |  | Hungary  | 470 | *2.7* |
| *Hong Kong (China)*  | 527 | *2.7* |  | Greece  | 467 | *4.3* |
| Canada  | 527 | *2.3* |  | Chile  | 459 | *2.6* |
| Finland  | 526 | *2.5* |  | Slovak Republic  | 453 | *2.8* |
| Ireland  | 521 | *2.5* |  | *Malta*  | 447 | *1.8* |
| Estonia  | 519 | *2.2* |  | *Cyprus*  | 443 | *1.7* |
| Korea, Republic of  | 517 | *3.5* |  | *Uruguay*  | 437 | *2.5* |
| Japan  | 516 | *3.2* |  | *Romania*  | 434 | *4.1* |
| Norway  | 513 | *2.5* |  | *United Arab Emirates*  | 434 | *2.9* |
| New Zealand  | 509 | *2.4* |  | *Bulgaria*  | 432 | *5.0* |
| Germany  | 509 | *3.0* |  | Turkey  | 428 | *4.0* |
| *Macau (China)*  | 509 | *1.3* |  | *Costa Rica*  | 427 | *2.6* |
| Poland  | 506 | *2.5* |  | *Trinidad and Tobago*  | 427 | *1.5* |
| Slovenia  | 505 | *1.5* |  | *Montenegro, Republic of*  | 427 | *1.6* |
| Netherlands  | 503 | *2.4* |  | *Colombia*  | 425 | *2.9* |
| Australia  | 503 | *1.7* |  | Mexico  | 423 | *2.6* |
| Sweden  | 500 | *3.5* |  | *Moldova, Republic of*  | 416 | *2.5* |
| Denmark  | 500 | *2.5* |  | *Thailand*  | 409 | *3.3* |
| France  | 499 | *2.5* |  | *Jordan*  | 408 | *2.9* |
| Belgium  | 499 | *2.4* |  | *Brazil*  | 407 | *2.8* |
| Portugal  | 498 | *2.7* |  | *Albania*  | 405 | *4.1* |
| United Kingdom  | 498 | *2.8* |  | *Qatar*  | 402 | *1.0* |
| *Chinese Taipei*  | 497 | *2.5* |  | *Georgia*  | 401 | *3.0* |
| **United States**  | **497** | ***3.4*** |  | *Peru*  | 398 | *2.9* |
| Spain  | 496 | *2.4* |  | *Indonesia*  | 397 | *2.9* |
| *Russian Federation*  | 495 | *3.1* |  | *Tunisia*  | 361 | *3.1* |
| *B-S-J-G (China)*  | 494 | *5.1* |  | *Dominican Republic*  | 358 | *3.1* |
| Switzerland  | 492 | *3.0* |  | *Macedonia, Republic of*  | 352 | *1.4* |
| Latvia  | 488 | *1.8* |  | *Algeria*  | 350 | *3.0* |
| Czech Republic  | 487 | *2.6* |  | *Kosovo*  | 347 | *1.6* |
| *Croatia*  | 487 | *2.7* |  | *Lebanon*  | 347 | *4.4* |
| *Vietnam*  | 487 | *3.7* |  |  |  |  |
| Austria  | 485 | *2.8* |  |  |  |  |
| Italy  | 485 | *2.7* |  |   |   |  |
| Iceland  | 482 | *2.0* |  | **U.S. states and territories** |  |  |
| Luxembourg  | 481 | *1.4* |  |  |
| Israel  | 479 | *3.8* |  | *Massachusetts*  | 527 | 6.0 |
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| *Buenos Aires (Argentina)*  |

 | 475 | *7.2* |  | *North Carolina*  | 500 | 5.4 |
| *Lithuania*  | 472 | *2.7* |  | *Puerto Rico*  | 410 | 7.1 |

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| **Table A3. Average scores of 15-year-old students on the PISA reading literacy scale in Massachusetts public schools compared with other participating education systems: 2015** |
| **Education systems higher than Massachusetts** |
|  |  |
| **Education systems not measurably different from Massachusetts** |
| *Singapore*  | Ireland  |
| *Hong Kong (China)*  | Estonia  |
| Canada  | Korea, Republic of  |
| Finland  | Japan  |
| **Education systems lower than Massachusetts** |
| Norway  | Hungary  |
| New Zealand  | Greece  |
| Germany  | Chile  |
| *Macau (China)*  | Slovak Republic  |
| Poland  | *Malta*  |
| Slovenia  | *Cyprus*  |
| Netherlands  | *Uruguay*  |
| Australia  | *Romania*  |
| Sweden  | *United Arab Emirates*  |
| *North Carolina*  | *Bulgaria*  |
| Denmark  | Turkey  |
| France  | *Costa Rica*  |
| Belgium  | *Trinidad and Tobago*  |
| Portugal  | *Montenegro, Republic of*  |
| United Kingdom  | *Colombia*  |
| *Chinese Taipei*  | Mexico  |
| **United States**  | *Moldova, Republic of*  |
| Spain  | *Puerto Rico*  |
| *Russian Federation*  | *Thailand*  |
| *B-S-J-G (China)*  | *Jordan*  |
| OECD average  | *Brazil*  |
| Switzerland  | *Albania*  |
| Latvia  | *Qatar*  |
| Czech Republic  | *Georgia*  |
| *Croatia*  | *Peru*  |
| *Vietnam*  | *Indonesia*  |
| Austria  | *Tunisia*  |
| Italy  | *Dominican Republic*  |
| Iceland  | *Macedonia, Republic of*  |
| Luxembourg  | *Algeria*  |
| Israel  | *Kosovo*  |
| *Buenos Aires (Argentina)*  | *Lebanon*  |
| *Lithuania*  |  |
| NOTE: All average scores reported as higher or lower than the Massachusetts average score are different at the .05 level of statistical significance. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Italics indicate non-OECD countries and education systems. B-S-J-G (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Guangdong. Results for Massachusetts and North Carolina are for public school students only. Although Argentina, Malaysia, and Kazakhstan participated in PISA 2015, technical problems with their samples prevent results from being discussed in this report. SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015. |
| **National Center for Education Statistics** |  |  |  |
| **Table A4. Average scores of 15-year-old students on the PISA reading literacy scale in Massachusetts public schools, by various student subgroups: 2015** |
| **Reporting groups** |  **Average score** | ***s.e.*** |
| **Massachusetts average** | **527** | **\*** | ***6.0*** |
| **U.S. average** | **497** |  | ***3.4*** |
| **OECD average** | **493** |  | ***0.5*** |
| Sex |   |   |  |
| Female | 536 | **\*** | *7.3* |
| Male | 518 | **\*** | *5.9* |
| Race/ethnicity |   |   |  |
| White | 540 | **\*** | *5.4* |
| Black | 478 |   | *13.4* |
| Hispanic | 479 |   | *10.0* |
| Asian | 557 | **\*** | *13.0* |
| Multiracial | 524 | **\*** | *12.7* |
| Percentage of students in enrolled schools eligible for free or reduced-price lunch |   |   |  |
| Less than 10 percent | 571 | **\*** | *7.4* |
| 10 to 24.9 percent | 548 | **\*** | *8.2* |
| 25 to 49.9 percent | 517 | **\*** | *8.7* |
| 50 to 74.9 percent | 506 | \*\* | *4.4* |
| 75 percent or more | 477 |   | *20.2* |
| \* *p*<.05. Significantly different from both the U.S. and OECD averages at the .05 level of statistical significance.\*\* *p*<.05. Significantly different from the OECD average at the .05 level of statistical significance.NOTE: The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Reporting standards were not met for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander. Black includes African American, and Hispanic includes Latino. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race. Although data for some race/ethnicities were not shown separately because the reporting standards were not met, they are included in the U.S. and state totals. The National School Lunch Program provides free or reduced-price lunch for students meeting certain income guidelines. The percentage of students eligible for this program is an indicator of the socioeconomic level of families served by the school. Data on free or reduced-price lunch are based on principals' responses to a question in the school questionnaire that asked the approximate percentage of eligible students in the school during the previous school year. Standard error is noted by *s.e.* SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015.  |

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| **Table M1. Average scores of 15-year-old students on the PISA mathematics literacy scale, by education system: 2015** |
| **Education system** | **Average score** | ***s.e.*** |  | **Education system** | **Average score** | ***s.e.*** |
| OECD average  | 490 | *0.4* |  | Israel  | 470 | *3.6* |
| *Singapore*  | 564 | *1.5* |  | **United States**  | **470** | ***3.2*** |
| *Hong Kong (China)*  | 548 | *3.0* |  | *Croatia*  | 464 | *2.8* |
| *Macau (China)*  | 544 | *1.1* |  | *Buenos Aires (Argentina)*  | 456 | *6.9* |
| *Chinese Taipei*  | 542 | *3.0* |  | Greece  | 454 | *3.8* |
| Japan  | 532 | *3.0* |  | *Romania*  | 444 | *3.8* |
| *B-S-J-G (China)*  | 531 | *4.9* |  | *Bulgaria*  | 441 | *4.0* |
| Korea, Republic of  | 524 | *3.7* |  | *Cyprus*  | 437 | *1.7* |
| Switzerland  | 521 | *2.9* |  | *United Arab Emirates*  | 427 | *2.4* |
| Estonia  | 520 | *2.0* |  | Chile  | 423 | *2.5* |
| Canada  | 516 | *2.3* |  | Turkey  | 420 | *4.1* |
| Netherlands  | 512 | *2.2* |  | *Moldova, Republic of*  | 420 | *2.5* |
| Denmark  | 511 | *2.2* |  | *Uruguay*  | 418 | *2.5* |
| Finland  | 511 | *2.3* |  | *Montenegro, Republic of*  | 418 | *1.5* |
| Slovenia  | 510 | *1.3* |  | *Trinidad and Tobago*  | 417 | *1.4* |
| Belgium  | 507 | *2.4* |  | *Thailand*  | 415 | *3.0* |
| Germany  | 506 | *2.9* |  | *Albania*  | 413 | *3.4* |
| Poland  | 504 | *2.4* |  | Mexico  | 408 | *2.2* |
| Ireland  | 504 | *2.1* |  | *Georgia*  | 404 | *2.8* |
| Norway  | 502 | *2.2* |  | *Qatar*  | 402 | *1.3* |
| Austria  | 497 | *2.9* |  | *Costa Rica*  | 400 | *2.5* |
| New Zealand  | 495 | *2.3* |  | *Lebanon*  | 396 | *3.7* |
| *Vietnam*  | 495 | *4.5* |  | *Colombia*  | 390 | *2.3* |
| *Russian Federation*  | 494 | *3.1* |  | *Peru*  | 387 | *2.7* |
| Sweden  | 494 | *3.2* |  | *Indonesia*  | 386 | *3.1* |
| Australia  | 494 | *1.6* |  | *Jordan*  | 380 | *2.7* |
| France  | 493 | *2.1* |  | *Brazil*  | 377 | *2.9* |
| United Kingdom  | 492 | *2.5* |  | *Macedonia, Republic of*  | 371 | *1.3* |
| Czech Republic  | 492 | *2.4* |  | *Tunisia*  | 367 | *3.0* |
| Portugal  | 492 | *2.5* |  | *Kosovo*  | 362 | *1.6* |
| Italy  | 490 | *2.8* |  | *Algeria*  | 360 | *3.0* |
| Iceland  | 488 | *2.0* |  | *Dominican Republic*  | 328 | *2.7* |
| Spain  | 486 | *2.2* |  |  |  |  |
| Luxembourg  | 486 | *1.3* |  |  |  |  |
| Latvia  | 482 | *1.9* |  |  |  |  |
| *Malta*  | 479 | *1.7* |  | **U.S. states and territories** |   |  |
| *Lithuania*  | 478 | *2.3* |  | *Massachusetts*  | 500 | *5.5* |
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| Hungary  |

 | 477 | *2.5* |  | *North Carolina* | 471 | *4.4* |
| Slovak Republic  | 475 | *2.7* |   | *Puerto Rico* | 378 | *5.6* |

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| **Table A5. Average scores of 15-year-old students on the PISA mathematics literacy scale in Massachusetts public schools compared with other participating education systems: 2015** |
| **Education systems higher than Massachusetts** |
| *Singapore*  | Korea, Republic of  |
| *Hong Kong (China)*  | Switzerland  |
| *Macau (China)*  | Estonia  |
| *Chinese Taipei*  | Canada  |
| Japan  | Netherlands  |
| *B-S-J-G (China)*  |  |
| **Education systems not measurably different from Massachusetts** |
| Denmark  | *Vietnam*  |
| Finland  | *Russian Federation*  |
| Slovenia  | Sweden  |
| Belgium  | Australia  |
| Germany  | France  |
| Poland  | United Kingdom  |
| Ireland  | Czech Republic  |
| Norway  | Portugal  |
| Austria  | OECD average  |
| New Zealand  | Italy  |
| **Education systems lower than Massachusetts** |
| Iceland  | *Uruguay*  |
| Spain  | *Montenegro, Republic of*  |
| Luxembourg  | *Trinidad and Tobago*  |
| Latvia  | *Thailand*  |
| *Malta*  | *Albania*  |
| *Lithuania*  | Mexico  |
| Hungary  | *Georgia*  |
| Slovak Republic  | *Qatar*  |
| *North Carolina*  | *Costa Rica*  |
| Israel  | *Lebanon*  |
| **United States**  | *Colombia*  |
| *Croatia*  | *Peru*  |
| *Buenos Aires (Argentina)*  | *Indonesia*  |
| Greece  | *Jordan*  |
| *Romania*  | *Puerto Rico*  |
| *Bulgaria*  | *Brazil*  |
| *Cyprus*  | *Macedonia, Republic of*  |
| *United Arab Emirates*  | *Tunisia*  |
| Chile  | *Kosovo*  |
| Turkey  | *Algeria*  |
| *Moldova, Republic of*  | *Dominican Republic*  |
| NOTE: All average scores reported as higher or lower than the Massachusetts average score are different at the .05 level of statistical significance. The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Italics indicate non-OECD countries and education systems. B-S-J-G (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, and Guangdong. Results for Massachusetts and North Carolina are for public school students only. Although Argentina, Malaysia, and Kazakhstan participated in PISA 2015, technical problems with their samples prevent results from being discussed in this report. SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015. |
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| **Table A6. Average scores of 15-year-old students on the PISA mathematics literacy scale in Massachusetts public schools, by various student subgroups: 2015** |
|  |  **Average score** | ***s.e.*** |
| **Massachusetts average** | **500** | **\*\*\*** | ***5.5*** |
| **U.S. average** | **470** | **\*\*** | ***3.2*** |
| **OECD average** | **490** | **\*\*\*** | ***0.4*** |
| Sex |   |   |  |
| Female | 496 | **\*\*\*** | *6.5* |
| Male | 505 | \* | *5.7* |
| Race/ethnicity |   |   |  |
| White | 514 | \* | *4.9* |
| Black | 451 | **\*\*** | *9.4* |
| Hispanic | 450 | \* | *9.1* |
| Asian | 526 | \* | *12.3* |
| Multiracial | 490 |   | *13.0* |
| Percentage of students in enrolled schools eligible for free or reduced-price lunch |   |   |  |
| Less than 10 percent | 542 | \* | *5.1* |
| 10 to 24.9 percent | 521 | \* | *7.2* |
| 25 to 49.9 percent | 492 | **\*\*\*** | *6.3* |
| 50 to 74.9 percent | 478 | **\*\*** | *3.8* |
| 75 percent or more | 449 | **\*\*** | *16.7* |
| \* *p*<.05. Significantly different from both the U.S. and OECD averages at the .05 level of statistical significance.\*\* *p*<.05. Significantly different from the OECD average at the .05 level of statistical significance.\*\*\* *p*<.05. Significantly different from the U.S. average at the .05 level of statistical significance.NOTE: The OECD average is the average of the national averages of the OECD member countries, with each country weighted equally. Reporting standards were not met for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander. Black includes African American, and Hispanic includes Latino. Students who identified themselves as being of Hispanic origin were classified as Hispanic, regardless of their race. Although data for some race/ethnicities were not shown separately because the reporting standards were not met, they are included in the U.S. and state totals. The National School Lunch Program provides free or reduced-price lunch for students meeting certain income guidelines. The percentage of students eligible for this program is an indicator of the socioeconomic level of families served by the school. Data on free or reduced-price lunch are based on principals' responses to a question in the school questionnaire that asked the approximate percentage of eligible students in the school during the previous school year. Standard error is noted by *s.e.* SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015.  |

**List of Additional Resources**

<http://www.doe.mass.edu/mcas/natl-intl/pisa/>

<http://nces.ed.gov/surveys/international/>

<http://nces.ed.gov/surveys/pisa/>

<http://nces.ed.gov/surveys/pisa/idepisa/>

[www.oecd.org/pisa/](http://www.oecd.org/pisa/)

[www.youtube.com/watch?v=q1I9tuScLUA](http://www.youtube.com/watch?v=q1I9tuScLUA)