



## PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA) RESULTS FROM PISA 2015

### Massachusetts

#### Key findings

- Fifteen-year-old students in public schools in Massachusetts<sup>1</sup> are high performers in science, scoring 529 points, on average – above both the OECD (493 points) and the United States (496 points) averages and comparable with some of the top-performing education systems in the world. Among the 122 countries and regions with comparable data, only Singapore (556 points) shows significantly higher science scores than Massachusetts (Figures I.2.13 and I.2.14).
- Students in Massachusetts also perform above the OECD and United States averages in reading, scoring 527 points, on average, comparable with some of the top-performing education systems in the world (Figures I.4.1 and I.4.2).
- The United States, as a whole, performs below the OECD average in mathematics and is among the lowest-performing OECD countries (Figure I.5.1) in the subject. However, students in Massachusetts score 500 points in mathematics, on average – close to the OECD average (490 points) and above the United States average (470 points) (Figure I.5.2).
- On average across OECD countries, average science performance declined between 2012 (501 points) and 2015 (493 points) – a significant decrease (Table I.2.4a). But in Massachusetts, the average science score in 2015 was not significantly different than in 2012 (the average score increased by two points, but the change was not significant) (Table B2.I.2).
- As in other countries, economies and subnational regions, socio-economically disadvantaged students<sup>2</sup> in public schools in Massachusetts are less likely to succeed at school than their more advantaged peers. In Massachusetts, the strength of the relationship between socio-economic status and performance is similar to that observed across OECD countries (Table I.2.11 and Figure I.2.8).
- Immigrant students (first or second generation) in Massachusetts do not perform as well in science as students without an immigrant background. However, after accounting for the socio-economic status of students, in Massachusetts as in many OECD countries, there is no significant difference in performance between students with and without an immigrant background (Tables I.7.4b and B2.I.72).

<sup>1</sup> For Massachusetts, the desired target population covers 15-year-old students in grade 7 or above in public schools only. The same definition for the desired target population was applied in PISA 2012. In this note, results for Massachusetts concern those for 15-year-old students in grade 7 or above in public schools only, unless otherwise stated.

<sup>2</sup> This is measured by the PISA index of economic, social and cultural status of student.

- There is no significant difference in average science performance between boys and girls in Massachusetts (Table I.2.6a), but girls are more likely than boys to expect to work in a science-related occupation (Table I.3.10c).
- By international standards, Massachusetts and the United States use standardised tests extensively – almost all students are assessed with mandatory tests at least once a year – but not intensely – over 97% of students in both Massachusetts and the United States, as a whole, are assessed less than once a month. Neither Massachusetts nor the United States is among the PISA participants that use mandatory standardised tests the most frequently (Tables II.4.19 and B2.II.25).
- Approximately 1 700 students in public schools in Massachusetts completed the PISA assessment in 2015, representing about 61 000 15-year-old students in the state.

## Student performance in science

- Students in public schools in Massachusetts score 529 points in science, on average – above both the United States and the OECD average and comparable with some of the top-performing education systems in the world, including those in Beijing-Shanghai-Jiangsu-Guangdong (China), Canada, Estonia, Finland, Hong Kong (China), Japan, Korea, Macao (China), Chinese Taipei and Viet Nam. Singapore outperforms Massachusetts (Table I.2.3 and Figure I.2.14).
- Massachusetts's mean score in science did not change significantly since 2012 (527 points in 2012 and 529 points in 2015).
- On average across OECD countries, just over 20% of students do not reach the baseline level of proficiency in science, Level 2 (Table I.2.2a). At this level, students can draw on their knowledge of basic science content and procedures to identify an appropriate explanation, interpret data, and identify the question being addressed in a simple experiment. Some 12% of students in Massachusetts are low performers in science – a proportion that has not changed significantly since 2012 (Table B2.I.1). In the United States as a whole, just over 20% of students do not reach Level 2, similar to the proportion across OECD countries.
- Some 8% of students across OECD countries are top performers in science, meaning that they are proficient at Level 5 or 6 (Table I.2.2a). At these levels, students can creatively and autonomously apply their scientific knowledge and skills to a wide variety of situations, including unfamiliar ones. The share of top-performing students in public schools in Massachusetts, 14%, is above the OECD and the United States (9%) averages and has remained unchanged since 2012 (Table B2.I.1).

### *Gender differences in science performance*

- Boys in Massachusetts outperform girls in science by an average of 10 points, but this is not statistically significant (Table B2.I.4).

## Student performance in reading

- Massachusetts scores 527 points, on average, in reading, above the OECD and the United States averages and comparable with some of the top-performing education systems in the world, including those in Canada, Estonia, Finland, Hong Kong (China), Ireland, Japan, Korea and Singapore (Figure I.4.2).
- Massachusetts' mean performance in reading has remained unchanged since 2012.
- Around 20% of students in OECD countries, on average, do not attain the baseline level of proficiency in reading, considered the level of proficiency at which students begin to demonstrate

the reading skills that will enable them to participate effectively and productively in life (Table I.4.2a). In Massachusetts, only 11% of students perform below Level 2 in reading, below both the OECD and the United States (19%) averages (Table B2.I.5).

- The share of low performers in reading in Massachusetts remained unchanged between 2012 and 2015.
- Across OECD countries, 8% of students are top performers in reading, meaning that they are proficient at Level 5 or 6 (Table I.4.2a). At these levels students can find information in texts that are unfamiliar in form or content, demonstrate detailed understanding, and infer which information is relevant to the task. They are also able to critically evaluate such texts and build hypotheses about them, drawing on specialised knowledge and accommodating concepts that may be contrary to expectations. Some 14% of students in Massachusetts are top performers, above both the OECD and the United States (10%) averages (Table B2.I.5).
- Massachusetts has seen a two percentage-point decrease in its share of top performers since 2012, a non-significant difference.

#### *Gender differences in reading performance*

- In Massachusetts, girls outperform boys in reading by an average of 18 points, less than the OECD average difference of 27 points (but not significantly so) and similar to the average difference of 20 points for the United States (Tables B2.I.8 and I.4.8a). This gender gap in Massachusetts has narrowed since 2012 (significant at the 10% level), when it was 32 points.

### Student performance in mathematics

- Students in Massachusetts score 500 points in mathematics, on average – close to the OECD average but above the United States average (Figure I.5.2). Their performance is comparable to that of students in Australia, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, New Zealand, Norway, Poland, Portugal, the Russian Federation, Slovenia, Sweden, the United Kingdom and Viet Nam.
- On average across OECD countries, 23% of students do not reach the PISA baseline level of proficiency in mathematics (Level 2) (Table I.5.6a). In Massachusetts, only 17% of students are low achievers, below both the OECD and United States (29%) averages (Table B2.I.9).
- The share of low performers in mathematics in Massachusetts remained unchanged between 2012 and 2015.
- Just over one in ten students in OECD countries are top performers in mathematics, on average; but in Singapore, more than one in three students are top performers in the subject (Table I.5.6a). In public schools in Massachusetts, one in ten students is a top performer, similar to the OECD average but above the United States average of roughly one in 17 students (Table B2.I.9).

#### *Gender differences in mathematics performance*

- Boys in Massachusetts outperform girls in mathematics by an average of nine points, but the difference is not significant (Table B2.I.12).

### Students' engagement with science

#### *Disposition towards the scientific method of enquiry*

PISA 2015 asked students about their beliefs about the nature of science knowledge and the validity of scientific methods of enquiry (collectively known as epistemic beliefs). Students whose epistemic

beliefs are in agreement with current views about the nature of science can be said to value scientific approaches to enquiry.

- Students in Massachusetts reported strong epistemic beliefs. Some 95% of these students agreed that it is good to try experiments more than once to make sure of [your] findings and that good answers are based on evidence from many different experiments (Table B2.I.58). By contrast, across OECD countries, only 85% of students agreed with the first statement and 86% agreed with the second (Table I.2.12a). More than 90% of students in the United States as a whole agreed with these statements.

### *Students' expectations of a career in science*

PISA 2015 asked students what occupation they expect to be working in when they are 30 years old.

- Even though many 15-year-olds are undecided about their future, 24% of students across OECD countries – and 33% of students in Massachusetts – reported that they expect to work in an occupation that requires further science training beyond compulsory education (Table I.3.10a and B2.I.63). In the United States as a whole, 38% of students expect to pursue a career in science.
- In almost all countries/economies, the expectation to pursue a career in science is strongly related to proficiency in science. On average across OECD countries, only 13% of students who score below PISA proficiency Level 2 in science hold such expectations, but that percentage more than triples to 41% among top performers in science (those who score at or above Level 5) (Table I.3.10b). In Massachusetts, 20% of students who score below PISA proficiency Level 2 (compared with 28% of these students in the United States as a whole) and 45% of students who are top performers (compared with 51% of top performers in the United States as a whole) expect to pursue a career in science (Table B2.I.64).
- The shares of boys (25%) and girls (24%) who expect to pursue a science-related career are similar across OECD countries, even though boys and girls tend to envisage themselves working in different fields of science (Table I.3.10b). In all countries, girls see themselves as health professionals more than boys do; and in almost all countries, boys see themselves as becoming ICT professionals, scientists or engineers more than girls do (Tables I.3.11a-d). In Massachusetts, 30% of boys and 36% of girls expect to pursue a science-related career, compared to 33% of boys and 43% of girls nationwide (Table B2.I.64).

### *Student truancy*

In general, student truancy is highly correlated with student performance. On average across OECD countries, students who had skipped a whole day of school at least once in the two weeks prior to the PISA assessment score 45 points lower in the science assessment than students who had not skipped a day of school (33 points lower after accounting for the socio-economic profile of students and schools – the equivalent of almost one full year of schooling) (Table II.3.4). In the United States, as a whole, students who reported that they had skipped a day of school score 29 points lower than those who reported that they had not skipped school.

- On average across OECD countries, 20% of students reported that they had skipped a day of school or more in the two weeks prior to the PISA test; in public schools in Massachusetts, 29% of students so reported (Tables II.3.1 and B2.II.11). Some 37% of students in the United States as a whole also reported that they had skipped at least one day of school in the two weeks prior to the PISA test.
- However, in Massachusetts, only 25% of students reported that they had arrived late for school at least once over the same period, compared with 35% of students, on average, in the United States and 44% across OECD countries (Tables II.3.1 and B2.II.11).

- Students who arrive late or play truant miss learning opportunities. They also disrupt class, creating a disciplinary climate that is not conducive to learning for their fellow students. In PISA-participating countries and economies, skipping a whole day of school is more common in disadvantaged schools than in advantaged schools. This is observed in 44 countries and economies, compared to only 4 education systems where students in advantaged schools are more likely to have skipped a day of school (Table II.3.4).

## Context for student achievement

### *The impact of socio-economic status on performance*

Canada, Estonia, Finland and Japan achieve high levels of performance and equity in education outcomes as assessed in PISA 2015, with 10% or less of the variation in student performance attributed to differences in students' socio-economic status, compared with 13% of the variation across OECD countries (Table I.6.3a).

- In Massachusetts, 14% of the variation in student performance in science is attributed to differences in students' socio-economic status (Table B2.I.66). In the United States as a whole, about 11% of the variation is explained by socio-economic status (Table I.6.3a).
- Across OECD countries, a socio-economically advantaged student scores 38 points higher in science – the equivalent of more than one year of schooling – than a disadvantaged student (Table I.6.3a). Similar differences in performance related to socio-economic status are observed in Massachusetts (37 points) and in the United States as a whole (33 points) (Tables B2.I.66 and I.6.3a).

### *Students with an immigrant background*

- The share of immigrant students (both first and second generation) in OECD countries increased from 9% in 2006 to 12% in 2015 while the difference in science performance between immigrant and non-immigrant students shrank by 9 score points during the same period (Tables I.7.1 and I.7.15a). In Massachusetts, the proportion of students with an immigrant background rose marginally from 19% in 2012, the first year for which data are available, to 20% in 2015 (Table B2.I.71). The share of immigrants in the United States as whole increased from 15% in 2006 to 23% in 2015.
- Non-immigrant students in public schools in Massachusetts score 39 score points higher than their immigrant peers, while the gap across the United States as a whole is 32 points (Tables B2.I.72 and I.7.4a). However, after accounting for students' socio-economic status, the differences are no longer significant: 14 points in Massachusetts and 6 points in the United States as a whole.

## Education policies and practices

### *Extracurricular science activities*

Extracurricular activities, such as science clubs and competitions, help students understand scientific concepts, raise interest in science and even nurture future scientists. On average across OECD countries, students in schools that offer science competitions score 36 points higher in science and are 55% more likely to expect to work in a science-related occupation than students in schools that do not offer such activities; those in schools offering a science club score 21 score points higher and are 30% more likely to expect to pursue a career in science (Tables II.2.12 and II.2.13). Across OECD countries, students who attend schools that offer science-related extracurricular activities, particularly science competitions, hold stronger epistemic beliefs, such as believing that scientific ideas sometimes change or that evidence comes from experiments.

- In Massachusetts, 85% of students attend schools that offer a science club, higher than the OECD average (39%) but similar to the proportion across the United States (75%) (Tables B2.II.6 and II.2.12). Some 67% of students in the state attend schools that offer science competitions, on par with both the OECD average (66%) and the United States average (72%) (B2.II.6 and II.2.13).

### *Teaching strategies*

How teachers teach science is more strongly associated with science performance and students' expectations of working in a science-related career than the material and human resources of science departments, including the qualifications of teachers or the kinds of extracurricular science activities offered to students. Almost everywhere, students who say that their teachers explain scientific ideas more frequently score higher in science, even after accounting for socio-economic status (Table II.2.18).

- In public schools in Massachusetts, 74% of students say that their teachers explain scientific ideas in many or all lessons while in the United States, 65% of students say that their teachers explain scientific ideas in many or all lessons (Tables B2.II.7 and II.2.16). On average across the nation, these students score 51 points higher in science than students who say that their teachers explain scientific ideas only in some lessons or never. By contrast, 55% of students across OECD countries say that their teachers explain scientific ideas in many or all lessons, and these students score 37 points higher in science, on average (Table II.2.18).
- In almost all school systems, students who say that their teachers adapt the lesson to the class's needs and knowledge score higher in science, even after accounting for socio-economic status (Table II.2.24). In Massachusetts, 51% of students say that their teachers adapt most or every lesson to the class's needs and knowledge (Table B2.II.9). Some 48% of students in the United States and 45% of students across OECD countries, on average, say that their teachers adapt most or every lesson to the class's needs and knowledge (Table II.2.22). Students in the United States who so report score 18 points higher in science than students who say that their teachers never or only sometimes adapt lessons to the class's needs and knowledge. By contrast, students across OECD countries who so report score 25 points higher, on average.

### *Grade repetition*

Grade repetition is more prevalent in school systems where students score lower on the PISA science assessment and where students' socio-economic status is most strongly associated with science performance. Students might have been kept back to repeat course content that they had not fully mastered, or they might have been invited to skip a grade when their teachers felt they were capable of taking on more challenging schoolwork.

- In 13 countries and economies, at least 30% of students had repeated a grade at least once in primary or secondary education (Table II.5.9). In contrast, only 5% of students in Massachusetts had repeated a grade in primary or secondary school, while across the United States, 11% had done so (Table B2.II.33).
- Across OECD countries, boys are more likely than girls, socio-economically disadvantaged students are more likely than advantaged students, and students with an immigrant background are more likely than students without an immigrant background to have repeated a grade (Table II.5.12). In the United States, boys and disadvantaged students are more likely to have repeated a grade, while there are no differences between students with and without an immigrant background.
- One promising finding is that, across OECD countries, the percentage of students who reported that they had repeated a grade at least once decreased by almost 3 percentage points between 2009 and 2015 (Table II.5.11). In Massachusetts, the proportion of students who had repeated a grade remained small between 2012 (7%) and 2015 (5%), while in the United States, the




percentage of students who had repeated a grade dropped by 4 percentage points between 2009 and 2015, similar to the OECD average.

### *School governance*

In education systems where school principals hold greater responsibility for school governance, students score higher in science (Table II.4.5). This positive association between the autonomy exercised by principals or teachers and science performance is also stronger across countries where students are more frequently assessed with mandatory standardised tests and achievement data is more frequently tracked over time by an administrative authority or posted publicly than in countries where this happens less frequently.

- In Massachusetts, as in the United States as a whole and across OECD countries, 39% of the responsibility for resources, on average, lies with principals. Principals in Massachusetts hold a larger share of the responsibility for the curriculum (33%) than do principals in the United States as a whole (24%) and principals across OECD countries (22%), on average (Tables B2.II.21 and II.4.2).
- Some 96% of students in Massachusetts are in schools where achievement data are posted publicly (compared to the OECD average of 44% of students and the United States average of 92% of students). Virtually all students in the state (compared with 71% of students across OECD countries and 99% of students in the United States, on average) attend schools where achievement data are tracked over time by an administrative authority (Tables B2.II.27 and II.4.27).
- Mandatory standardised testing *per se* may not be positively associated with science performance, but it may be used as a way of holding accountable those schools that enjoy greater autonomy. In Massachusetts, all students attend schools where students are assessed using mandatory standardised tests at least once a year. By comparison, 76% of students across OECD countries and 92% of students in the United States, on average, are similarly assessed (Tables B2.II.25 and II.4.19). There is significant variety in the use of mandatory standardised testing among other high-performing systems. For example, in British Columbia (Canada) and Singapore, almost all 15-year-old students are assessed with mandatory tests at least once a year, but in Alberta (Canada), fewer than one in four 15-year-old students must sit such a test.
- Despite the common belief that students in the United States are incessantly subjected to standardised testing, there are at least another 19 education systems where over 90% of students are in schools where students are assessed using mandatory standardised tests at least once a year (Tables II.4.19 and B2.II.25). Only 2% of students in Massachusetts are assessed with these tests at least once a month, while 3% of students in the United States as a whole and on average across OECD countries sit such standardised evaluations at least once a month. Massachusetts and the United States fall near the middle of the range of such testing among high-performing systems: over 8% of students in Chinese Taipei sit a standardised assessment at least once a month, while virtually no students in Estonia, Korea and Macao (China) do.

## Snapshot of performance in science, reading and mathematics

	Countries/economies with a mean performance/share of top performers <b>above</b> the OECD average Countries/economies with a share of low achievers <b>below</b> the OECD average
	Countries/economies with a mean performance/share of top performers/ share of low achievers not significantly different from the OECD average
	Countries/economies with a mean performance/share of top performers <b>below</b> the OECD average Countries/economies with a share of low achievers <b>above</b> the OECD average

	Science		Reading		Mathematics		Science, reading and mathematics	
	Mean score in PISA 2015	Average three-year trend	Mean score in PISA 2015	Average three-year trend	Mean score in PISA 2015	Average three-year trend	Share of top performers in at least one subject (Level 5 or 6)	Share of low achievers in all three subjects (below Level 2)
	Mean	Score dif.	Mean	Score dif.	Mean	Score dif.	%	%
OECD average	493	-1	493	-1	490	-1	15.3	13.0
Singapore	556	7	535	5	564	1	39.1	4.8
Japan	538	3	516	-2	532	1	25.8	5.6
Estonia	534	2	519	9	520	2	20.4	4.7
Chinese Taipei	532	0	497	1	542	0	29.9	8.3
Finland	531	-11	526	-5	511	-10	21.4	6.3
Macao (China)	529	6	509	11	544	5	23.9	3.5
Canada	528	-2	527	1	516	-4	22.7	5.9
Viet Nam	525	-4	487	-21	495	-17	12.0	4.5
Hong Kong (China)	523	-5	527	-3	548	1	29.3	4.5
B-S-J-G (China)	518	m	494	m	531	m	27.7	10.9
Korea	516	-2	517	-11	524	-3	25.6	7.7
New Zealand	513	-7	509	-6	495	-8	20.5	10.6
Slovenia	513	-2	505	11	510	2	18.1	8.2
Australia	510	-6	503	-6	494	-8	18.4	11.1
United Kingdom	509	-1	498	2	492	-1	16.9	10.1
Germany	509	-2	509	6	506	2	19.2	9.8
Netherlands	509	-5	503	-3	512	-6	20.0	10.9
Switzerland	506	-2	492	-4	521	-1	22.2	10.1
Ireland	503	0	521	13	504	0	15.5	6.8
Belgium	502	-3	499	-4	507	-5	19.7	12.7
Denmark	502	2	500	3	511	-2	14.9	7.5
Poland	501	3	506	3	504	5	15.8	8.3
Portugal	501	8	498	4	492	7	15.6	10.7
Norway	498	3	513	5	502	1	17.6	8.9
United States	496	2	497	-1	470	-2	13.3	13.6
Austria	495	-5	485	-5	497	-2	16.2	13.5
France	495	0	499	2	493	-4	18.4	14.8
Sweden	493	-4	500	1	494	-5	16.7	11.4
Czech Republic	493	-5	487	5	492	-6	14.0	13.7
Spain	493	2	496	7	486	1	10.9	10.3
Latvia	490	1	488	2	482	0	8.3	10.5
Russia	487	3	495	17	494	6	13.0	7.7
Luxembourg	483	0	481	5	486	-2	14.1	17.0
Italy	481	2	485	0	490	7	13.5	12.2
Hungary	477	-9	470	-12	477	-4	10.3	18.5
Lithuania	475	-3	472	2	478	-2	9.5	15.3
Croatia	475	-5	487	5	464	0	9.3	14.5
CABA (Argentina)	475	51	475	46	456	38	7.5	14.5
Iceland	473	-7	482	-9	488	-7	13.2	13.2
Israel	467	5	479	2	470	10	13.9	20.2
Malta	465	2	447	3	479	9	15.3	21.9
Slovak Republic	461	-10	453	-12	475	-6	9.7	20.1
Greece	455	-6	467	-8	454	1	6.8	20.7
Chile	447	2	459	5	423	4	3.3	23.3
Bulgaria	446	4	432	1	441	9	6.9	29.6
United Arab Emirates	437	-12	434	-8	427	-7	5.8	31.3
Uruguay	435	1	437	5	418	-3	3.6	30.8
Romania	435	6	434	4	444	10	4.3	24.3
Cyprus <sup>1</sup>	433	-5	443	-6	437	-3	5.6	26.1
Moldova	428	9	416	17	420	13	2.8	30.1
Albania	427	18	405	10	413	18	2.0	31.1
Turkey	425	2	428	-18	420	2	1.6	31.2
Trinidad and Tobago	425	7	427	5	417	2	4.2	32.9
Thailand	421	2	409	-6	415	1	1.7	35.8
Costa Rica	420	-7	427	-9	400	-6	0.9	33.0
Qatar	418	21	402	15	402	26	3.4	42.0
Colombia	416	8	425	6	390	5	1.2	38.2
Mexico	416	2	423	-1	408	5	0.6	33.8
Montenegro	411	1	427	10	418	6	2.5	33.0
Georgia	411	23	401	16	404	15	2.6	36.3
Jordan	409	-5	408	2	380	-1	0.6	35.7
Indonesia	403	3	397	-2	386	4	0.8	42.3
Brazil	401	3	407	-2	377	6	2.2	44.1
Peru	397	14	398	14	387	10	0.6	46.7
Lebanon	386	m	347	m	396	m	2.5	50.7
Tunisia	386	0	361	-21	367	4	0.6	57.3
FYROM	384	m	352	m	371	m	1.0	52.2
Kosovo	378	m	347	m	362	m	0.0	60.4
Algeria	376	m	350	m	360	m	0.1	61.1
Dominican Republic	332	m	358	m	328	m	0.1	70.7

1. Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".


Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Notes: Values that are statistically significant are marked in bold (see Annex A3).

The average trend is reported for the longest available period since PISA 2006 for science, PISA 2009 for reading, and PISA 2003 for mathematics.

Countries and economies are ranked in descending order of the mean science score in PISA 2015.

Source: OECD, PISA 2015 Database, Tables I.2.4a, I.2.6, I.2.7, I.4.4a and I.5.4a.

StatLink  <http://dx.doi.org/10.1787/888933431961>



## Snapshot of students' science beliefs, engagement and motivation

	Mean science score	Beliefs about the nature and origin of scientific knowledge		Share of students with science-related career expectations			Motivation for learning science			
		Index of epistemic beliefs (support for scientific methods of enquiry)	Score-point difference per unit on the index of epistemic beliefs	All students	Boys	Girls	Increased likelihood of boys expecting a career in science	Index of enjoyment of learning science	Score-point difference per unit on the index of enjoyment of learning science	Gender gap in enjoyment of learning science (Boys - Girls)
		Mean index	Score dif.	%	%	%	Relative risk	Mean index	Score dif.	Dif.
<b>OECD average</b>	493	0.00	<b>33</b>	24.5	25.0	23.9	<b>1.1</b>	0.02	25	<b>0.13</b>
Singapore	556	0.22	<b>34</b>	28.0	31.8	23.9	<b>1.3</b>	0.59	35	<b>0.17</b>
Japan	538	-0.06	<b>34</b>	18.0	18.5	17.5	1.1	-0.33	27	<b>0.52</b>
Estonia	534	0.01	<b>36</b>	24.7	28.9	20.3	<b>1.4</b>	0.16	24	0.05
Chinese Taipei	532	0.31	<b>38</b>	20.9	25.6	16.0	<b>1.6</b>	-0.06	28	<b>0.39</b>
Finland	531	-0.07	<b>38</b>	17.0	15.4	18.7	<b>0.8</b>	-0.07	30	0.04
Macao (China)	529	-0.06	<b>26</b>	20.8	22.0	19.6	<b>1.1</b>	0.20	21	<b>0.16</b>
Canada	528	0.30	<b>29</b>	33.9	31.2	36.5	<b>0.9</b>	0.40	26	<b>0.15</b>
Viet Nam	525	-0.15	<b>31</b>	19.6	21.2	18.1	<b>1.2</b>	0.65	14	<b>0.06</b>
Hong Kong (China)	523	0.04	<b>23</b>	23.6	22.9	24.2	0.9	0.28	20	<b>0.26</b>
B-S-J-G (China)	518	-0.08	<b>37</b>	16.8	17.1	16.5	1.0	0.37	28	<b>0.14</b>
Korea	516	0.02	<b>38</b>	19.3	21.7	16.7	<b>1.3</b>	-0.14	31	<b>0.32</b>
New Zealand	513	0.22	<b>40</b>	24.8	21.7	27.9	<b>0.8</b>	0.20	32	0.03
Slovenia	513	0.07	<b>33</b>	30.8	34.6	26.8	<b>1.3</b>	-0.36	22	-0.03
Australia	510	0.26	<b>39</b>	29.2	30.3	28.2	<b>1.1</b>	0.12	33	<b>0.16</b>
United Kingdom	509	0.22	<b>37</b>	29.1	28.7	29.6	1.0	0.15	30	<b>0.18</b>
Germany	509	-0.16	<b>34</b>	15.3	17.4	13.2	<b>1.3</b>	-0.18	29	<b>0.43</b>
Netherlands	509	-0.19	<b>46</b>	16.3	16.9	15.7	1.1	-0.52	30	<b>0.25</b>
Switzerland	506	-0.07	<b>34</b>	19.5	19.8	19.1	1.0	-0.02	30	<b>0.17</b>
Ireland	503	0.21	<b>36</b>	27.3	28.0	26.6	1.1	0.20	32	<b>0.09</b>
Belgium	502	0.00	<b>34</b>	24.5	25.3	23.6	1.1	-0.03	28	<b>0.20</b>
Denmark	502	0.17	<b>32</b>	14.8	11.8	17.7	<b>0.7</b>	0.12	26	<b>0.09</b>
Poland	501	-0.08	<b>27</b>	21.0	15.4	26.8	<b>0.6</b>	0.02	18	-0.10
Portugal	501	0.28	<b>33</b>	27.5	26.7	28.3	0.9	0.32	23	<b>0.08</b>
Norway	498	-0.01	<b>35</b>	28.6	28.9	28.4	1.0	0.12	29	<b>0.27</b>
United States	496	0.25	<b>32</b>	38.0	33.0	43.0	<b>0.8</b>	0.23	26	<b>0.21</b>
Austria	495	-0.14	<b>36</b>	22.3	26.6	18.0	<b>1.5</b>	-0.32	25	<b>0.23</b>
France	495	0.01	<b>30</b>	21.2	23.6	18.7	<b>1.3</b>	-0.03	30	<b>0.31</b>
Sweden	493	0.14	<b>38</b>	20.2	21.8	18.5	<b>1.2</b>	0.08	27	<b>0.22</b>
Czech Republic	493	-0.23	<b>41</b>	16.9	18.6	15.0	<b>1.2</b>	-0.34	27	-0.06
Spain	493	0.11	<b>30</b>	28.6	29.5	27.8	1.1	0.03	28	<b>0.11</b>
Latvia	490	-0.26	<b>27</b>	21.3	21.1	21.5	1.0	0.09	18	0.03
Russia	487	-0.26	<b>27</b>	23.5	23.2	23.8	1.0	0.00	16	0.07
Luxembourg	483	-0.15	<b>35</b>	21.1	24.3	18.0	<b>1.4</b>	0.10	26	<b>0.14</b>
Italy	481	-0.10	<b>34</b>	22.6	24.7	20.6	<b>1.2</b>	0.00	22	<b>0.24</b>
Hungary	477	-0.36	<b>35</b>	18.3	23.9	12.8	<b>1.9</b>	-0.23	20	-0.02
Lithuania	475	0.11	<b>22</b>	23.9	22.5	25.4	<b>0.9</b>	0.36	20	-0.14
Croatia	475	0.03	<b>32</b>	24.2	26.8	21.8	<b>1.2</b>	-0.11	22	0.05
CABA (Argentina)	475	0.09	<b>28</b>	27.8	26.2	29.3	0.9	-0.20	15	-0.14
Iceland	473	0.29	<b>28</b>	23.8	20.1	27.3	<b>0.7</b>	0.15	24	<b>0.26</b>
Israel	467	0.18	<b>38</b>	27.8	26.1	29.5	<b>0.9</b>	0.09	20	0.06
Malta	465	0.09	<b>54</b>	25.4	30.2	20.4	<b>1.5</b>	0.18	48	<b>0.11</b>
Slovak Republic	461	-0.35	<b>36</b>	18.8	18.5	19.0	1.0	-0.24	25	-0.02
Greece	455	-0.19	<b>36</b>	25.3	25.7	24.9	1.0	0.13	27	<b>0.12</b>
Chile	447	-0.15	<b>23</b>	37.9	36.9	39.0	0.9	0.08	15	-0.09
Bulgaria	446	-0.18	<b>34</b>	27.5	28.8	25.9	1.1	0.28	17	-0.16
United Arab Emirates	437	0.04	<b>33</b>	41.3	39.9	42.6	<b>0.9</b>	0.47	22	-0.02
Uruguay	435	-0.13	<b>27</b>	28.1	23.8	31.9	<b>0.7</b>	-0.10	16	-0.07
Romania	435	-0.38	<b>27</b>	23.1	23.3	23.0	1.0	-0.03	17	-0.05
Cyprus*	433	-0.15	<b>33</b>	29.9	29.3	30.5	1.0	0.15	29	0.06
Moldova	428	-0.14	<b>37</b>	22.0	22.5	21.3	1.1	0.33	22	-0.17
Albania	427	-0.03	m	24.8	m	m	m	0.72	m	m
Turkey	425	-0.17	<b>18</b>	29.7	34.5	24.9	<b>1.4</b>	0.15	12	0.01
Trinidad and Tobago	425	-0.02	<b>28</b>	27.8	24.6	31.0	<b>0.8</b>	0.19	24	-0.01
Thailand	421	-0.07	<b>35</b>	19.7	12.4	25.2	<b>0.5</b>	0.42	18	-0.05
Costa Rica	420	-0.15	<b>16</b>	44.0	43.8	44.2	1.0	0.35	4	-0.03
Qatar	418	-0.10	<b>33</b>	38.0	36.3	39.9	<b>0.9</b>	0.36	25	0.00
Colombia	416	-0.19	<b>21</b>	39.7	37.1	42.0	<b>0.9</b>	0.32	7	-0.02
Mexico	416	-0.17	<b>17</b>	40.7	45.4	35.8	<b>1.3</b>	0.42	12	0.01
Montenegro	411	-0.32	<b>23</b>	21.2	20.1	22.4	<b>0.9</b>	0.09	14	-0.07
Georgia	411	0.05	<b>42</b>	17.0	16.4	17.7	0.9	0.34	23	-0.13
Jordan	409	-0.13	<b>28</b>	43.7	44.6	42.8	1.0	0.53	23	-0.25
Indonesia	403	-0.30	<b>16</b>	15.3	8.6	22.1	<b>0.4</b>	0.65	6	-0.06
Brazil	401	-0.07	<b>27</b>	38.8	34.4	42.8	<b>0.8</b>	0.23	19	-0.04
Peru	397	-0.16	<b>23</b>	38.7	42.7	34.6	<b>1.2</b>	0.40	9	0.01
Lebanon	386	-0.24	<b>35</b>	39.7	41.0	38.5	1.1	0.38	32	-0.04
Tunisia	386	-0.31	<b>18</b>	34.4	28.5	39.5	<b>0.7</b>	0.52	15	-0.12
FYROM	384	-0.18	<b>30</b>	24.2	20.0	28.8	<b>0.7</b>	0.48	17	-0.29
Kosovo	378	0.03	<b>22</b>	26.4	24.7	28.1	<b>0.9</b>	0.92	14	-0.16
Algeria	376	-0.31	<b>16</b>	26.0	23.1	29.2	<b>0.8</b>	0.46	14	-0.12
Dominican Republic	332	-0.10	<b>13</b>	45.7	44.7	46.8	1.0	0.54	6	-0.05

\* See note 1 under Figure I.1.1.

Note: Values that are statistically significant are indicated in bold (see Annex A3).

Countries and economies are ranked in descending order of the mean science score in PISA 2015.

Source: OECD, PISA 2015 Database, Tables I.2.12a-b, I.3.1a-c and I.3.10a-b.

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**Science performance among PISA 2015 participants,  
at national and subnational levels**

	Science scale					
	Mean score	95% confidence interval	Range of ranks			
			OECD countries		All countries/economies	
		Upper rank	Lower rank	Upper rank	Lower rank	
Singapore	556	553 - 558			1	1
Alberta (Canada)	541	533 - 549				
British Columbia (Canada)	539	530 - 547				
Japan	538	533 - 544	1	2	2	3
Quebec (Canada) <sup>1</sup>	537	528 - 546				
Estonia	534	530 - 538	1	3	2	5
Chinese Taipei	532	527 - 538			2	7
Finland	531	526 - 535	2	4	3	7
Massachusetts (United States)	529	516 - 542				
Macao (China)	529	526 - 531			5	8
Canada	528	524 - 532	3	4	5	9
Viet Nam	525	517 - 532			4	10
Ontario (Canada)	524	516 - 532				
Hong Kong (China)	523	518 - 528			7	10
Castile and Leon (Spain)	519	512 - 526				
B-S-J-G (China)	518	509 - 527			8	16
Nova Scotia (Canada)	517	508 - 526				
Korea	516	510 - 522	5	8	9	14
Madrid (Spain)	516	509 - 523				
Flemish community (Belgium)	515	510 - 521				
Bolzano (Italy)	515	511 - 520				
Prince Edward Island (Canada)	515	504 - 525				
New Zealand	513	509 - 518	5	9	10	15
Slovenia	513	510 - 515	5	9	11	15
England (United Kingdom)	512	506 - 518				
Navarre (Spain)	512	504 - 520				
Galicja (Spain)	512	506 - 518				
Trento (Italy)	511	506 - 515				
Australia	510	507 - 513	6	11	12	17
United Kingdom	509	504 - 514	6	13	12	19
Germany	509	504 - 514	6	13	12	19
Netherlands	509	504 - 513	7	13	13	19
Aragon (Spain)	508	498 - 517				
New Brunswick (Canada)	506	498 - 515				
Newfoundland and Labrador (Canada)	506	500 - 512				
Switzerland	506	500 - 511	8	17	14	23
German-speaking community (Belgium)	505	496 - 515				
Catalonia (Spain)	504	495 - 513				
Ireland	503	498 - 507	11	18	17	24
Lombardia (Italy)	503	493 - 512				
North Carolina (United States)	502	493 - 512				
Belgium	502	498 - 506	12	19	18	25
Denmark	502	497 - 507	12	19	18	25
Poland	501	497 - 506	12	19	18	25
Asturias (Spain)	501	494 - 509				
Portugal	501	496 - 506	12	19	18	25
Northern Ireland (United Kingdom)	500	495 - 506				
Manitoba (Canada)	499	490 - 509				
Norway	498	494 - 503	14	21	20	27
La Rioja (Spain)	498	487 - 509				
Castile-La Mancha (Spain)	497	490 - 505				
Scotland (United Kingdom)	497	492 - 501				
United States	496	490 - 502	15	25	21	31
Saskatchewan (Canada)	496	490 - 502				
Cantabria (Spain)	496	485 - 507				
Austria	495	490 - 500	17	24	23	30
France	495	491 - 499	18	24	24	30
Comunidad Valenciana (Spain)	494	488 - 500				
Sweden	493	486 - 500	18	25	24	32

	Science scale					
	Mean score	95% confidence interval	Range of ranks			
			OECD countries		All countries/economies	
		Upper rank	Lower rank	Upper rank	Lower rank	
<b>Czech Republic</b>	493	488 - 497	19	25	25	31
<b>Spain</b>	493	489 - 497	20	25	25	31
<b>Latvia</b>	490	487 - 493	23	25	28	32
<b>Russia</b>	487	481 - 492			30	34
<i>French community (Belgium)</i>	485	477 - 494				
<i>Balearic Islands (Spain)</i>	485	476 - 493				
<i>Wales (United Kingdom)</i>	485	479 - 490				
<i>Murcia (Spain)</i>	484	476 - 491				
<i>Basque Country (Spain)</i>	483	477 - 489				
<b>Luxembourg</b>	483	481 - 485	26	27	32	34
<b>Italy</b>	481	476 - 485	26	28	32	36
<i>Dubai (UAE)</i>	480	477 - 483				
<b>Hungary</b>	477	472 - 481	27	29	34	39
<b>Lithuania</b>	475	470 - 481			34	39
<i>Canary Islands (Spain)</i>	475	468 - 482				
<b>Croatia</b>	475	471 - 480			35	39
<i>CABA (Argentina)</i>	475	463 - 487			32	41
<i>Extremadura (Spain)</i>	474	467 - 482				
<b>Iceland</b>	473	470 - 477	28	29	36	39
<i>Andalusia (Spain)</i>	473	465 - 481				
<i>Região Autónoma dos Açores (Portugal)</i>	470	465 - 474				
<b>Israel</b>	467	460 - 473	30	31	39	42
<b>Malta</b>	465	462 - 468			40	42
<b>Slovak Republic</b>	461	456 - 466	30	32	41	43
<i>Bogotá (Colombia)</i>	458	448 - 467				
<b>Greece</b>	455	447 - 463	31	32	42	44
<b>Chile</b>	447	442 - 452	33	33	44	45
<b>Bulgaria</b>	446	437 - 454			43	46
<i>Campania (Italy)</i>	445	435 - 455				
<b>United Arab Emirates</b>	437	432 - 441			46	49
<b>Uruguay</b>	435	431 - 440			46	49
<b>Romania</b>	435	429 - 441			46	50
<i>Manizales (Colombia)</i>	434	426 - 443				
<i>Medellín (Colombia)</i>	433	425 - 442				
<b>Cyprus*</b>	433	430 - 435			47	50
<i>Sharjah (UAE)</i>	432	414 - 451				
<b>Moldova</b>	428	424 - 432			49	53
<b>Albania</b>	427	421 - 434			49	54
<b>Turkey</b>	425	418 - 433	34	34	49	55
<b>Trinidad and Tobago</b>	425	422 - 427			51	54
<i>Abu Dhabi (UAE)</i>	423	414 - 432				
<b>Thailand</b>	421	416 - 427			51	57
<i>Cali (Colombia)</i>	421	412 - 430				
<b>Costa Rica</b>	420	416 - 424			53	57
<b>Qatar</b>	418	416 - 420			55	58
<b>Colombia</b>	416	411 - 420			55	60
<b>Mexico</b>	416	412 - 420	35	35	55	59
<b>Montenegro</b>	411	409 - 413			59	61
<b>Georgia</b>	411	406 - 416			58	61
<b>Jordan</b>	409	403 - 414			59	62
<b>Indonesia</b>	403	398 - 408			61	63
<b>Puerto Rico<sup>2</sup></b>	403	391 - 415				
<i>Ajman (UAE)</i>	402	395 - 408				
<i>Fujairah (UAE)</i>	401	391 - 412				
<b>Brazil</b>	401	396 - 405			62	64
<i>Ras Al Khaimah (UAE)</i>	400	384 - 417				
<b>Peru</b>	397	392 - 401			63	64
<i>Umm Al Quwain (UAE)</i>	387	379 - 395				
<b>Lebanon</b>	386	380 - 393			65	67
<b>Tunisia</b>	386	382 - 391			65	67
<b>FYROM</b>	384	381 - 386			65	67
<b>Kosovo</b>	378	375 - 382			68	69
<b>Algeria</b>	376	371 - 381			68	69
<b>Dominican Republic</b>	332	327 - 337			70	70

1. Results for the province of Quebec in this table should be treated with caution due to a possible non-response bias (see Annex A4 for further details).

2. Note by Turkey: The information in this document with reference to “Cyprus” relates to the southern part of the island. There is no single authority representing both Turkish and Greek Cypriot people on the island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

3. Puerto Rico is an unincorporated territory of the United States. As such, PISA results for the United States do not include Puerto Rico.

Note: OECD countries are shown in bold black. Partner countries, economies and subnational entities that are not included in national results are shown in bold blue.

Regions are shown in black italics (OECD countries) or blue italics (partner countries).

Countries and economies are ranked in descending order of mean science performance.

Source: OECD, PISA 2015 Database.

## Reading performance among PISA 2015 participants, at national and subnational levels

	Reading scale					
	Mean score	95% confidence interval	Range of ranks			
			OECD countries		All countries/economies	
			Upper rank	Lower rank	Upper rank	Lower rank
<i>British Columbia (Canada)</i>	536	525 - 547				
<i>Singapore</i>	535	532 - 538			1	1
<i>Alberta (Canada)</i>	533	523 - 544				
<i>Quebec (Canada)<sup>1</sup></i>	532	523 - 541				
<i>Ontario (Canada)</i>	527	519 - 536				
<i>Massachusetts (United States)</i>	527	515 - 539				
<i>Hong Kong (China)</i>	527	521 - 532				5
<i>Canada</i>	527	522 - 531	1	3	2	4
<i>Finland</i>	526	521 - 531	1	3	2	5
<i>Castile and Leon (Spain)</i>	522	513 - 530				
<i>Ireland</i>	521	516 - 526	2	6	4	8
<i>Madrid (Spain)</i>	520	512 - 529				
<i>Estonia</i>	519	515 - 523	3	6	5	8
<i>Korea</i>	517	511 - 524	3	8	4	9
<i>Nova Scotia (Canada)</i>	517	508 - 527				
<i>Japan</i>	516	510 - 522	3	8	5	10
<i>Prince Edward Island (Canada)</i>	515	503 - 527				
<i>Navarre (Spain)</i>	514	504 - 524				
<i>Norway</i>	513	508 - 518	5	9	7	11
<i>Trento (Italy)</i>	512	506 - 517				
<i>Flemish community (Belgium)</i>	511	505 - 516				
<i>New Zealand</i>	509	505 - 514	7	11	9	14
<i>Germany</i>	509	503 - 515	6	12	8	15
<i>Galicia (Spain)</i>	509	500 - 518				
<i>Macao (China)</i>	509	506 - 511			10	13
<i>Aragon (Spain)</i>	506	494 - 519				
<i>Poland</i>	506	501 - 511	8	14	10	17
<i>New Brunswick (Canada)</i>	505	495 - 516				
<i>Slovenia</i>	505	502 - 508	9	13	12	17
<i>Lombardia (Italy)</i>	505	496 - 514				
<i>Newfoundland and Labrador (Canada)</i>	505	498 - 512				
<i>Netherlands</i>	503	498 - 508	9	17	12	21
<i>Australia</i>	503	500 - 506	10	16	13	19
<i>Bolzano (Italy)</i>	503	486 - 519				
<i>Cantabria (Spain)</i>	501	490 - 512				
<i>German-speaking community (Belgium)</i>	501	493 - 509				
<i>Sweden</i>	500	493 - 507	10	21	13	26
<i>North Carolina (United States)</i>	500	489 - 511				
<i>Denmark</i>	500	495 - 505	12	21	14	25
<i>England (United Kingdom)</i>	500	493 - 506				
<i>Catalonia (Spain)</i>	500	491 - 508				
<i>France</i>	499	494 - 504	12	21	15	26
<i>Castile-La Mancha (Spain)</i>	499	491 - 507				
<i>Comunidad Valenciana (Spain)</i>	499	492 - 506				
<i>Belgium</i>	499	494 - 503	13	21	16	26
<i>Manitoba (Canada)</i>	498	489 - 508				
<i>Portugal</i>	498	493 - 503	13	22	16	27
<i>United Kingdom</i>	498	493 - 503	13	22	16	27
<i>Asturias (Spain)</i>	498	485 - 510				
<i>Chinese Taipei</i>	497	492 - 502			17	27
<i>Northern Ireland (United Kingdom)</i>	497	488 - 506				
<i>United States</i>	497	490 - 504	13	22	16	28
<i>Saskatchewan (Canada)</i>	496	489 - 503				
<i>Spain</i>	496	491 - 500	16	22	19	28
<i>Russia</i>	495	489 - 501			19	30
<i>B-S-J-G (China)</i>	494	484 - 504			15	33
<i>Scotland ((United Kingdom)</i>	493	489 - 498				
<i>Switzerland</i>	492	486 - 498	18	24	22	32
<i>Basque Country (Spain)</i>	491	482 - 501				
<i>La Rioja (Spain)</i>	491	472 - 509				
<i>Latvia</i>	488	484 - 491	22	26	28	34
<i>Czech Republic</i>	487	482 - 492	22	27	27	35
<i>Croatia</i>	487	482 - 492			27	35
<i>Viet Nam</i>	487	479 - 494			27	37
<i>Murcia (Spain)</i>	486	477 - 496				

	Reading scale					
	Mean score	95% confidence interval	Range of ranks			
			OECD countries		All countries/economies	
		Upper rank	Lower rank	Upper rank	Lower rank	
<b>Austria</b>	485	479 - 490	23	29	29	37
<b>Italy</b>	485	480 - 490	23	28	29	37
<i>Balearic Islands (Spain)</i>	485	469 - 500				
<i>French community (Belgium)</i>	483	474 - 493				
<i>Canary Islands (Spain)</i>	483	475 - 491				
<b>Iceland</b>	482	478 - 485	25	29	33	38
<b>Luxembourg</b>	481	479 - 484	26	29	33	38
<b>Israel</b>	479	472 - 486	25	30	32	39
<i>Andalusia (Spain)</i>	479	470 - 487				
<i>Wales (United Kingdom)</i>	477	470 - 484				
<i>Dubai (UAE)</i>	475	472 - 479				
<i>Extremadura (Spain)</i>	475	467 - 484				
<i>CABA (Argentina)</i>	475	461 - 489			30	41
<b>Lithuania</b>	472	467 - 478			38	41
<i>Região Autónoma dos Açores (Portugal)</i>	470	464 - 475				
<b>Hungary</b>	470	464 - 475	30	31	38	41
<i>Bogotá (Colombia)</i>	469	460 - 478				
<b>Greece</b>	467	459 - 476	30	32	38	42
<b>Chile</b>	459	454 - 464	32	33	41	43
<i>Campania (Italy)</i>	455	444 - 466				
<b>Slovak Republic</b>	453	447 - 458	32	33	42	43
<i>Medellin (Colombia)</i>	451	441 - 461				
<i>Manizales (Colombia)</i>	449	440 - 458				
<b>Malta</b>	447	443 - 450			44	45
<b>Cyprus*</b>	443	440 - 446			44	46
<b>Uruguay</b>	437	432 - 442			46	49
<i>Sharjah (UAE)</i>	435	415 - 455				
<b>Romania</b>	434	426 - 442			46	52
<b>United Arab Emirates</b>	434	428 - 439			46	50
<i>Calí (Colombia)</i>	432	422 - 443				
<b>Bulgaria</b>	432	422 - 442			46	55
<b>Turkey</b>	428	421 - 436	34	35	47	55
<b>Costa Rica</b>	427	422 - 433			49	55
<b>Trinidad and Tobago</b>	427	424 - 430			49	54
<b>Montenegro</b>	427	424 - 430			49	54
<b>Colombia</b>	425	419 - 431			50	55
<b>Mexico</b>	423	418 - 428	34	35	51	55
<i>Abu Dhabi (UAE)</i>	419	409 - 429				
<b>Moldova</b>	416	411 - 421			55	57
<b>Puerto Rico<sup>2</sup></b>	410	396 - 424				
<b>Thailand</b>	409	403 - 416			56	60
<b>Jordan</b>	408	402 - 414			57	61
<b>Brazil</b>	407	402 - 413			57	61
<b>Albania</b>	405	397 - 413			57	63
<b>Qatar</b>	402	400 - 404			60	63
<i>Ajman (UAE)</i>	401	390 - 413				
<b>Georgia</b>	401	395 - 407			59	64
<i>Fujairah (UAE)</i>	398	383 - 412				
<b>Peru</b>	398	392 - 403			61	64
<b>Indonesia</b>	397	392 - 403			61	64
<i>Ras Al Khaimah (UAE)</i>	391	371 - 412				
<i>Umm Al Quwain (UAE)</i>	386	375 - 396				
<b>Tunisia</b>	361	355 - 367			65	66
<b>Dominican Republic</b>	358	352 - 364			65	67
<b>FYROM</b>	352	349 - 355			67	69
<b>Algeria</b>	350	344 - 356			67	70
<b>Kosovo</b>	347	344 - 350			68	70
<b>Lebanon</b>	347	338 - 355			67	70

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Countries and economies are ranked in descending order of mean reading performance.

Source: OECD, PISA 2015 Database.

## Mathematics performance among PISA 2015 participants, at national and subnational levels

	Mathematics scale					
	Mean score	95% confidence interval	Range of ranks			
			OECD countries		All countries/economies	
			Upper rank	Lower rank	Upper rank	Lower rank
Singapore	564	561 - 567			1	1
Hong Kong (China)	548	542 - 554			2	3
Quebec (Canada) <sup>1</sup>	544	535 - 553				
Macao (China)	544	542 - 546			2	4
Chinese Taipei	542	536 - 548			2	4
Japan	532	527 - 538	1	1	5	6
B-S-J-G (China)	531	522 - 541			4	7
Korea	524	517 - 531	1	4	6	9
British Columbia (Canada)	522	512 - 531				
Flemish community (Belgium)	521	517 - 526				
Switzerland	521	516 - 527	2	5	7	10
Estonia	520	516 - 524	2	5	7	10
Bolzano (Italy)	518	505 - 531				
Navarre (Spain)	518	503 - 533				
Trento (Italy)	516	511 - 521				
Canada	516	511 - 520	3	7	8	12
Netherlands	512	508 - 517	5	9	10	14
Alberta (Canada)	511	502 - 521				
Denmark	511	507 - 515	5	10	10	15
Finland	511	507 - 516	5	10	10	15
Slovenia	510	507 - 512	6	10	11	15
Ontario (Canada)	509	501 - 518				
Lombardia (Italy)	508	495 - 520				
Belgium	507	502 - 512	7	13	12	18
Castile and Leon (Spain)	506	497 - 515				
Germany	506	500 - 512	8	14	12	19
La Rioja (Spain)	505	486 - 523				
Poland	504	500 - 509	10	14	14	19
Ireland	504	500 - 508	10	14	15	19
Madrid (Spain)	503	495 - 511				
German-speaking community (Belgium)	502	492 - 512				
Norway	502	497 - 506	11	15	16	20
Aragon (Spain)	500	490 - 510				
Massachusetts (United States)	500	489 - 511				
Catalonia (Spain)	500	491 - 509				
Prince Edward Island (Canada)	499	486 - 511				
Nova Scotia (Canada)	497	488 - 506				
Austria	497	491 - 502	14	21	18	27
New Zealand	495	491 - 500	15	22	20	28
Cantabria (Spain)	495	477 - 513				
Viet Nam	495	486 - 503			18	32
Russia	494	488 - 500			20	30
Sweden	494	488 - 500	15	24	20	30
Australia	494	491 - 497	15	22	21	29
Galicia (Spain)	494	486 - 502				
England (United Kingdom)	493	488 - 499				
France	493	489 - 497	15	23	21	30
Northern Ireland (United Kingdom)	493	484 - 502				
New Brunswick (Canada)	493	483 - 502				
United Kingdom	492	488 - 497	15	24	21	31
Czech Republic	492	488 - 497	16	24	21	31
Basque Country (Spain)	492	484 - 499				
Portugal	492	487 - 497	16	24	21	31
Asturias (Spain)	492	481 - 502				
Scotland (United Kingdom)	491	486 - 496				
Italy	490	484 - 495	17	26	23	33
French community (Belgium)	489	481 - 498				
Manitoba (Canada)	489	481 - 497				
Iceland	488	484 - 492	21	26	27	33
Castile-La Mancha (Spain)	486	479 - 493				
Spain	486	482 - 490	23	27	29	34
Luxembourg	486	483 - 488	24	27	31	34

	Mathematics scale					
	Mean score	95% confidence interval	Range of ranks			
			OECD countries		All countries/economies	
			Upper rank	Lower rank	Upper rank	Lower rank
<i>Newfoundland and Labrador (Canada)</i>	486	479 - 492				
<i>Comunidad Valenciana (Spain)</i>	485	478 - 492				
<i>Saskatchewan (Canada)</i>	484	479 - 490				
<b>Latvia</b>	482	479 - 486	26	28	32	36
<b>Malta</b>	479	475 - 482			34	38
<b>Lithuania</b>	478	474 - 483			34	38
<i>Wales (United Kingdom)</i>	478	471 - 485				
<b>Hungary</b>	477	472 - 482	28	30	35	39
<i>Balearic Islands (Spain)</i>	476	464 - 489				
<b>Slovak Republic</b>	475	470 - 480	28	30	35	39
<i>Extremadura (Spain)</i>	473	464 - 482				
<i>North Carolina (United States)</i>	471	462 - 480				
<i>Murcia (Spain)</i>	470	457 - 484				
<b>Israel</b>	470	463 - 477	29	31	37	41
<b>United States</b>	470	463 - 476	29	31	38	41
<i>Dubai (UAE)</i>	467	464 - 471				
<i>Andalusia (Spain)</i>	466	458 - 474				
<b>Croatia</b>	464	459 - 469			40	42
<i>Região Autónoma dos Açores (Portugal)</i>	462	458 - 467				
<i>CABA (Argentina)</i>	456	443 - 470			40	44
<i>Campania (Italy)</i>	456	445 - 466				
<b>Greece</b>	454	446 - 461	32	32	42	43
<i>Canary Islands (Spain)</i>	452	443 - 461				
<b>Romania</b>	444	437 - 451			43	45
<b>Bulgaria</b>	441	433 - 449			44	46
<b>Cyprus*</b>	437	434 - 441			45	46
<i>Sharjah (UAE)</i>	429	414 - 444				
<b>United Arab Emirates</b>	427	423 - 432			47	48
<i>Bogotá (Colombia)</i>	426	417 - 435				
<b>Chile</b>	423	418 - 428	33	34	47	51
<b>Turkey</b>	420	412 - 429	33	34	47	54
<b>Moldova</b>	420	415 - 424			48	54
<b>Uruguay</b>	418	413 - 423			49	55
<b>Montenegro</b>	418	415 - 421			49	54
<b>Trinidad and Tobago</b>	417	414 - 420			50	55
<b>Thailand</b>	415	410 - 421			49	55
<b>Albania</b>	413	406 - 420			51	56
<i>Abu Dhabi (UAE)</i>	413	403 - 422				
<b>Mexico</b>	408	404 - 412	35	35	55	57
<i>Medellin (Colombia)</i>	408	399 - 416				
<i>Manizales (Colombia)</i>	407	400 - 415				
<b>Georgia</b>	404	398 - 409			56	59
<b>Qatar</b>	402	400 - 405			57	59
<i>Ras Al Khaimah (UAE)</i>	402	383 - 420				
<b>Costa Rica</b>	400	395 - 405			57	60
<b>Lebanon</b>	396	389 - 403			58	61
<i>Cali (Colombia)</i>	394	385 - 402				
<i>Fujairah (UAE)</i>	393	382 - 404				
<b>Colombia</b>	390	385 - 394			60	63
<i>Ajman (UAE)</i>	387	374 - 400				
<b>Peru</b>	387	381 - 392			61	64
<b>Indonesia</b>	386	380 - 392			61	64
<i>Umm Al Quwain (UAE)</i>	384	375 - 394				
<b>Jordan</b>	380	375 - 385			63	65
<b>Puerto Rico<sup>2</sup></b>	378	367 - 389				
<b>Brazil</b>	377	371 - 383			64	65
<b>FYROM</b>	371	369 - 374			66	67
<b>Tunisia</b>	367	361 - 373			66	68
<b>Kosovo</b>	362	358 - 365			67	69
<b>Algeria</b>	360	354 - 365			68	69
<b>Dominican Republic</b>	328	322 - 333			70	70

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Source: OECD, PISA 2015 Database.

### What is PISA?

The Programme for International Student Assessment (PISA) is an ongoing triennial survey that assesses the extent to which 15-year-olds students near the end of compulsory education have acquired key knowledge and skills that are essential for full participation in modern societies. The assessment 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 offers insights for education policy and practice, and helps monitor trends in students' acquisition of knowledge and skills across countries and in different demographic subgroups within each country. 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 education systems, and learn from policies and practices applied elsewhere.

### Key features of PISA 2015

- The PISA 2015 survey focused on science, with reading, mathematics and collaborative problem-solving as minor areas of assessment. For the first time, PISA 2015 delivered the assessment of all subjects via computer. Paper-based assessments were provided for countries that chose not to test their students by computer, but the paper-based assessment was limited to questions that could measure trends in science, reading and mathematics performance.

### The students

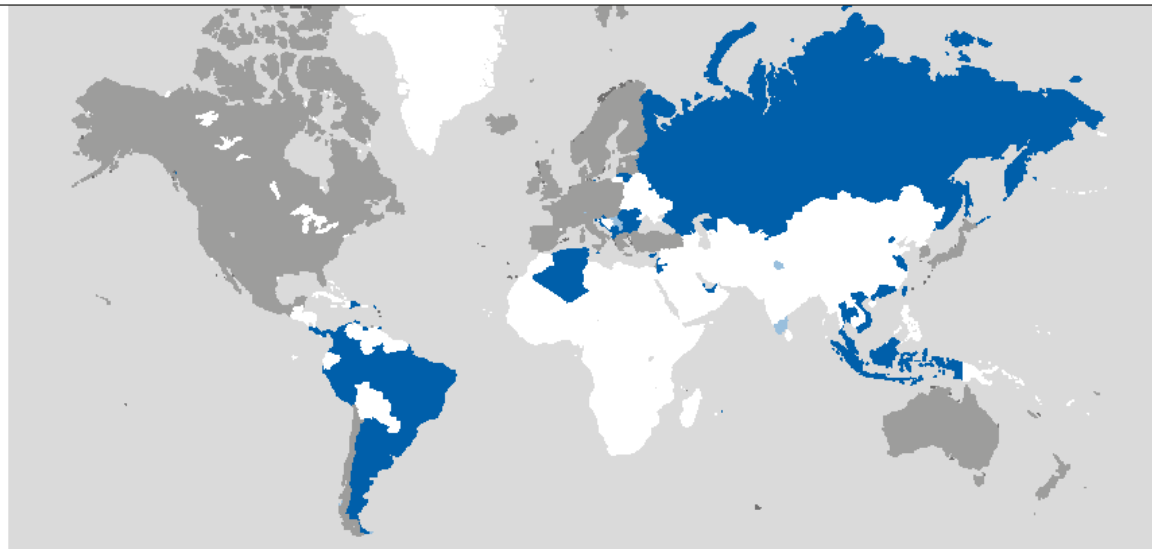
- Around 540 000 students completed the assessment in 2015, representing about 29 million 15-year-olds in the schools of the 72 participating countries and economies.

### The assessment

- Computer-based tests were used, with assessments lasting a total of two hours for each student.
- Test items were a mixture of multiple-choice questions and questions requiring students to construct their own responses. The items were organised in groups based on a passage setting out a real-life situation. About 810 minutes of test items were covered, with different students taking different combinations of test items.
- Students also answered a background questionnaire, which took 35 minutes to complete. The questionnaire sought information about the students themselves, their homes, and their school and learning experiences. School principals completed a questionnaire that covered the school system and the learning environment. For additional information, some countries/economies decided to distribute a questionnaire to teachers. It was the first time that this optional teacher questionnaire was offered to PISA-participating countries/economies. In some countries/economies, optional questionnaires were distributed to parents, who were asked to provide information on their perceptions of and involvement in their child's school, their support for learning in the home, and their child's career expectations, particularly in science. Countries could choose two other optional questionnaires for students: one asked students about their familiarity with and use of information and communication technologies (ICT); and the second sought information about students' education to date, including any interruptions in their schooling, and whether and how they are preparing for a future career.



Map of PISA countries and economies



■ OECD countries	■ Partner countries and economies in PISA 2015	■ Partner countries and economies in previous cycles
Australia	Albania	Azerbaijan
Austria	Algeria	Himachal Pradesh-India
Belgium	Argentina	Kyrgyzstan
Canada	Brazil	Liechtenstein
Chile	B-S-J-G (China)*	Mauritius
Czech Republic	Bulgaria	Miranda-Venezuela
Denmark	Colombia	Panama
Estonia	Costa Rica	Serbia
Finland	Croatia	Tamil Nadu-India
France	Cyprus <sup>1</sup>	
Germany	Dominican Republic	
Greece	Former Yugoslav Republic of Macedonia	
Hungary	Georgia	
Iceland	Hong Kong (China)	
Ireland	Indonesia	
Israel	Jordan	
Italy	Kazakhstan	
Japan	Kosovo	
	Lebanon	
	Lithuania	
	Macao (China)	
	Malaysia	
	Malta	
	Moldova	
	Montenegro	
	Peru	
	Qatar	
	Romania	
	Russian Federation	
	Singapore	
	Chinese Taipei	
	Thailand	
	Trinidad and Tobago	
	Tunisia	
	United Arab Emirates	
	Uruguay	
	Viet Nam	

\* B-S-J-G (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, Guangdong.

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This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

**Note regarding data from Israel**

The statistical data for Israel are supplied by and are under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

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For more information on the Programme for International Student Assessment and to access the full set of PISA 2015 results, visit:

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

