OECD

# PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA) RESULTS FROM PISA 2018

The Programme for International Student Assessment (PISA) is a triennial survey of 15-year-old students that assesses the extent to which they have acquired the key knowledge and skills essential for full participation in society. The assessment focuses on proficiency in reading, mathematics, science and an innovative domain, and on students' well-being.

Italy

Key findings

- In 2018, Italy scored below the OECD average in reading and science, and around the OECD average in mathematics. Mean performance in Italy declined, after 2012, in reading and science, and remained stable (and above the level observed in 2003 and 2006) in mathematics. Reading performance declined, in particular, amongst girls (and remained stable among boys). Science performance declined most markedly amongst the highest-achieving students, by a similar amount for both boys and girls.

Figure 1. Snapshot of performance in reading, mathematics and science
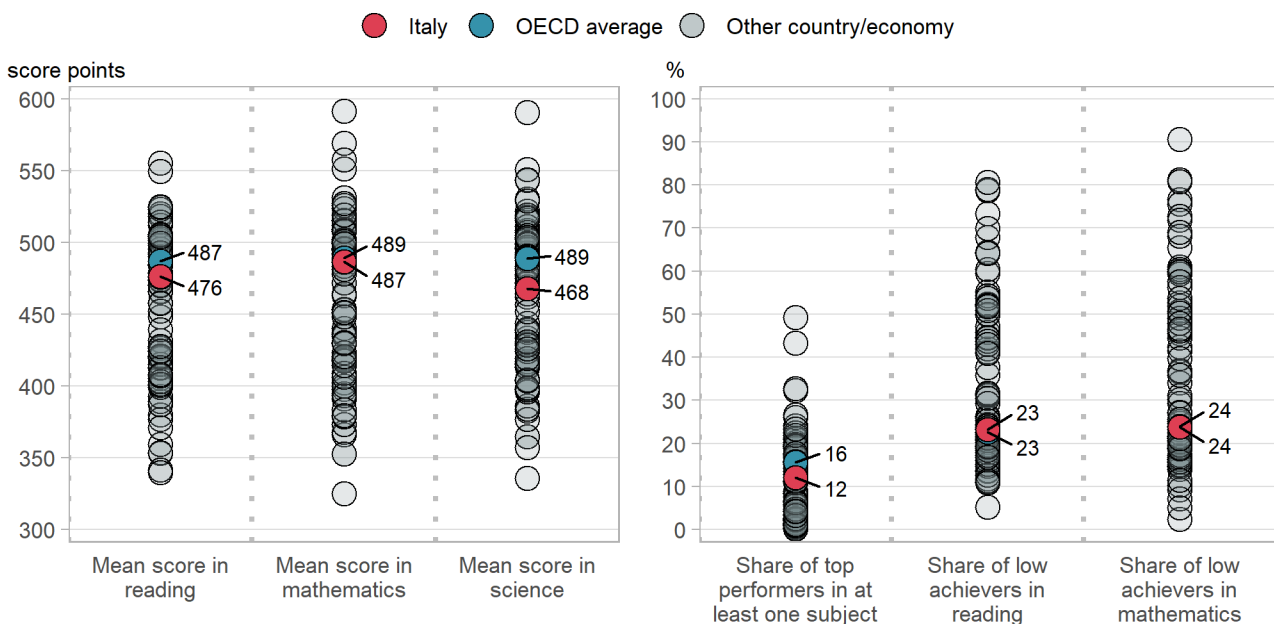
Note: Only countries and economies with available data are shown.
Source: OECD, PISA 2018 Database, Tables I.1 and I.10.1.

- In all three subjects, mean performance in Italy was lower than that in Belgium, France, Germany, the Netherlands, Poland, Slovenia, Sweden and the United Kingdom (amongst other countries). Italy scored at a similar level as Portugal and Spain in mathematics, but lower than these two countries in science and lower than Portugal in reading, and scored at a similar level as Switzerland in reading, but below Switzerland in mathematics and science.

- Four regions and provinces in Italy sampled a sufficiently large number of schools and students to enable separate reporting of results. In reading, Trento and Bolzano scored at a similar level as Germany and Slovenia, and above the national average; Toscana scored close to the national average; and Sardegna scored below the national average, and at a similar level as Greece and Turkey. In mathematics, Trento and Bolzano scored close to the top-performing European countries (Estonia, the Netherlands, Poland and Switzerland), and were outperformed only by the top-performing Asian countries and economies.

- Many high-achieving students hold lower ambitions than would be expected given their academic achievement, and this is especially true amongst high-achieving students who are socio-economically disadvantaged. In Italy, only about three in five high-achieving disadvantaged students – but seven in eight high-achieving advantaged students – expects to complete tertiary education.

- The career expectations of the highest-achieving 15-year-old students reflect strong gender stereotypes. Amongst high-performing students in mathematics or science, about one in four boys in Italy expects to work as an engineer or science professional at the age of 30, while only one in eight girls expects to do so; about one in four girls expects to work in health-related professions, while only one in nine high-performing boys expects so. Only 7% of boys and almost no girls in Italy expects to work in ICT-related professions.

- In 2018, 10% of students in Italy had an immigrant background, up from 6% in 2009; and almost half of them were amongst the quarter of the most socio-economically disadvantaged students in Italy. Still, 14% of immigrant students scored in the top quarter of reading performance in Italy and were amongst the country's highest-achieving students.

- Compared to 15-year-old students in other OECD countries, students in Italy missed out on a greater amount of learning time due to absences and indiscipline in class. Some 57% of students had skipped a day of school in the two weeks prior to the PISA test (OECD average: 21%); and 30% of students in Italy (OECD average: 26%) reported that their language-of-instruction teacher has to wait a long time for students to quiet down at the beginning of most lessons. There were wide disparities between Italian regions: in Bolzano, less than 40% of students had skipped a day of school, while in Sardegna, some 67% of students so reported.

- Between 2012 and 2018, the average amount of time that 15-year-olds in Italy spent on the Internet, on a typical weekday, more than doubled, from less than two hours per day to about four hours per day (one of which was at school).

- The four criteria that were rated by more than three out of four parents in Italy as "important" or "very important" when choosing their child's school were: "There is a safe school environment"; "There is an active and pleasant school climate"; "The school has a good reputation"; and "The school has a focus on foreign-language instruction". Only about two out of three parents rated "The academic achievements of students in the school are high" as "important" or "very important".

What 15-year-old students in Italy know and can do

- Students in Italy scored lower than the OECD average in reading, not significantly different from the OECD average in mathematics, and lower than the OECD average in science.

- Compared to the OECD average, a smaller proportion of students in Italy performed at the highest levels of proficiency (Level 5 or 6) in at least one subject; while a similar proportion of students achieved a minimum level of proficiency (Level 2 or higher) in at least one subject.

What students know and can do in reading

- In Italy, 77% of students attained at least Level 2 proficiency in reading (OECD average: 77%). At a minimum, these students can identify the main idea in a text of moderate length, find information based on explicit, though sometimes complex criteria, and can reflect on the purpose and form of texts when explicitly directed to do so.

- Some 5% of students in Italy were top performers in reading, meaning that they attained Level 5 or 6 in the PISA reading test (OECD average: 9%). At these levels, students can comprehend lengthy texts, deal with concepts that are abstract or counterintuitive, and establish distinctions between fact and opinion, based on implicit cues pertaining to the content or source of the information. In 20 education systems, including those of 15 OECD countries, more than 10% of 15-year-old students were top performers.

### *What students know and can do in mathematics*

- Some 76% of students in Italy attained Level 2 or higher in mathematics (OECD average: 76%). At a minimum, these students can interpret and recognise, without direct instructions, how a (simple) situation can be represented mathematically (e.g. comparing the total distance across two alternative routes, or converting prices into a different currency). The share of 15-year-old students who attained minimum levels of proficiency in mathematics (Level 2 or higher) varied widely – from 98% in Beijing, Shanghai, Jiangsu and Zhejiang (China) to 9% in the Dominican Republic. On average across OECD countries, 76% of students attained at least Level 2 proficiency in mathematics.

- In Italy, 10% of students scored at Level 5 or higher in mathematics (OECD average: 11%). Six Asian countries and economies had the largest shares of students who did so: Beijing, Shanghai, Jiangsu and Zhejiang (China) (44%), Singapore (37%), Hong Kong (China) (29%), Macao (China) (28%), Chinese Taipei (23%) and Korea (21%). These students can model complex situations mathematically, and can select, compare and evaluate appropriate problem-solving strategies for dealing with them.

What students know and can do in science

- Some 74% of students in Italy attained Level 2 or higher in science (OECD average: 78%). At a minimum, these students can recognise the correct explanation for familiar scientific phenomena and can use such knowledge to identify, in simple cases, whether a conclusion is valid based on the data provided.

- In Italy, 3% of students were top performers in science, meaning that they were proficient at Level 5 or 6 (OECD average: 7%). These students can creatively and autonomously apply their knowledge of and about science to a wide variety of situations, including unfamiliar ones.

Performance trends

Figure 2. Trends in performance in reading, mathematics and science
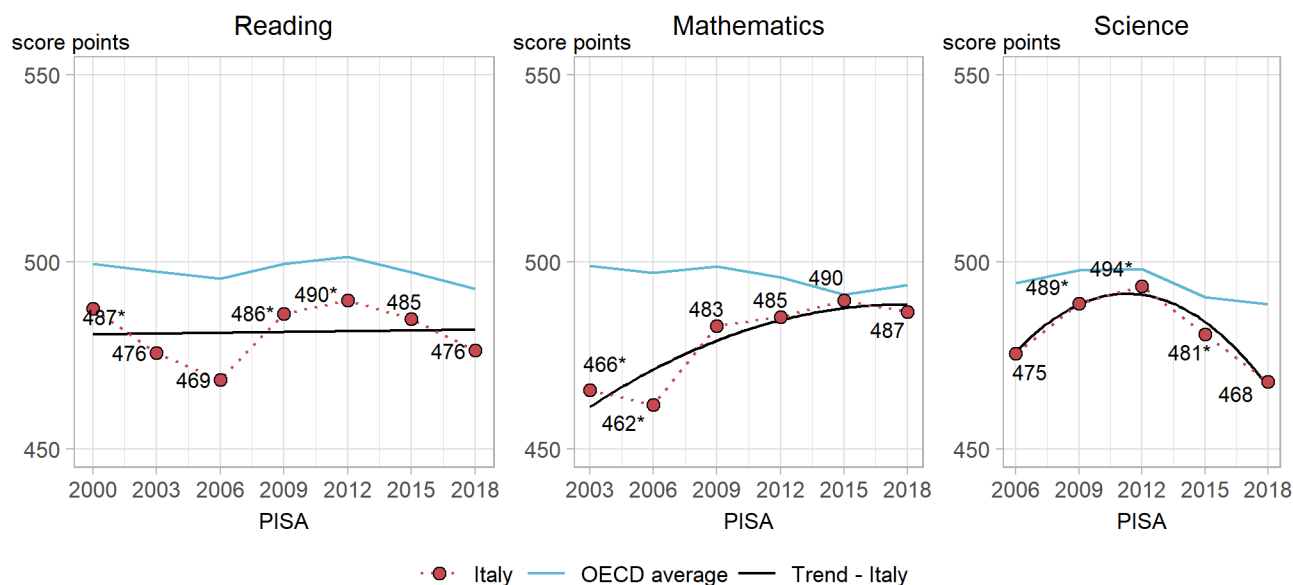
Notes:*indicates mean-performance estimates that are statistically significantly above or below PISA 2018 estimates for Italy.
The blue line indicates the average mean performance across OECD countries with valid data in all PISA assessments. The red dotted line indicates mean performance in Italy. The black line represents a trend line for Italy (line of best fit).
Source: OECD, PISA 2018 Database, Tables I. B1.10, I. B1.11 and I. B1.12.

- In Italy, mean reading performance in 2018 was below the level observed in PISA 2000 and PISA 2009 (the two prior assessments with reading as the main focus), but close to the level observed in most remaining assessments, and no clear direction of change could be determined. Mean science performance in 2018 was significantly below the level observed over the 2009-15 period, and returned to a level last observed in 2006. Mean mathematics performance in Italy improved between 2006 and 2009, then remained stable after 2009.

- Over the 2006-18 period, science performance declined most markedly amongst the highest-achieving students. The 90th percentile of performance in science, i.e. the level above which only 10% of all students scored, declined by 4.3 score points per 3-year period, significantly faster than the 10th percentile. As a result, performance gaps in science narrowed, and the proportion of students who scored at Level 5 or 6 in science (top-performing students) shrank by 1.9 percentage points.

Where All Students Can Succeed

### Figure 3. Differences in performance and expectations related to personal characteristics
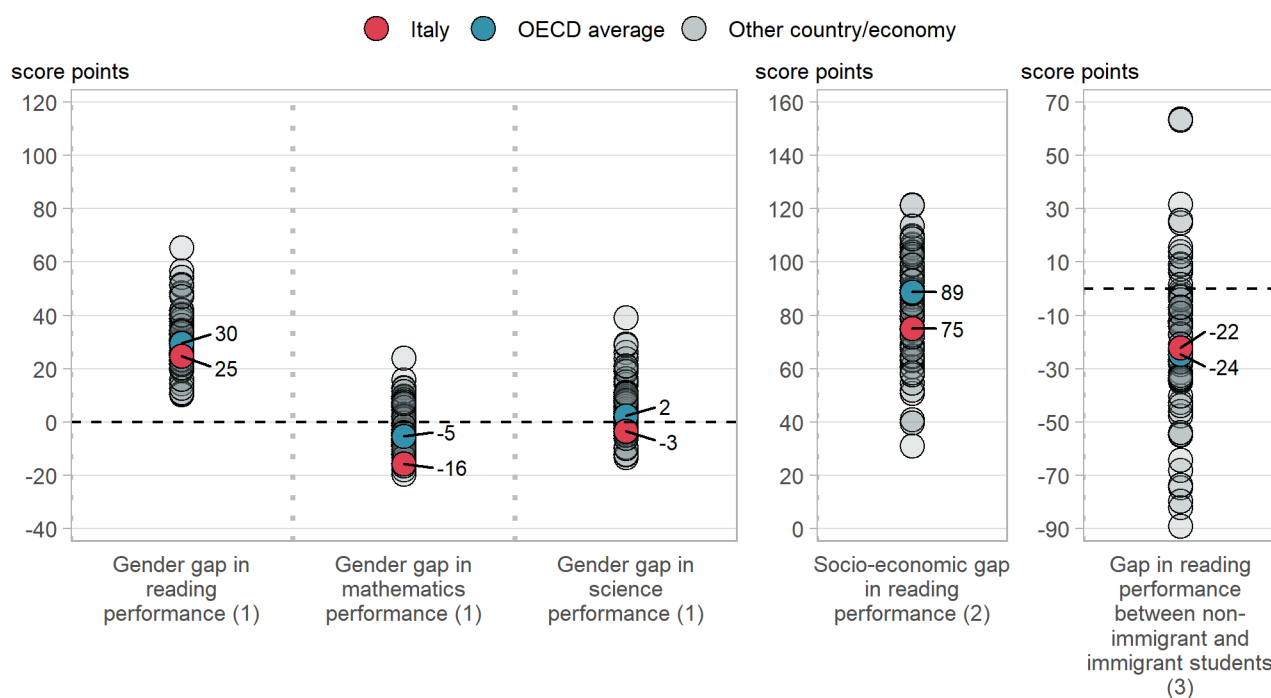
Notes: Only countries and economies with available data are shown. (1) Girls' minus boys' performance; (2) Advantaged minus disadvantaged students' performance; (3) Immigrants' minus non-immigrants' performance in reading; After accounting for students' and schools' socio-economic profile.
Source: OECD, PISA 2018 Database, Tables II.B1.2.3, II.B1.7.1 and II.B1.9.3.

Equity related to socio-economic status

- In Italy, socio-economically advantaged students outperformed disadvantaged students in reading by 75 score points in PISA 2018 (OECD average: 89 score points). In PISA 2009, the performance gap related to socio-economic status was 85 score points in Italy (and 87 score points on average across OECD countries).

- Some 10% of advantaged students in Italy, but 2% of disadvantaged students, were top performers in reading in PISA 2018. On average across OECD countries, 17% of advantaged students, and 3% of disadvantaged students, were top performers in reading.

- Socio-economic status was a strong predictor of performance in mathematics and science in all PISA participating countries. It explained 11% of the variation in mathematics performance in PISA 2018 in Italy (compared to 14% on average across OECD countries), and 9% of the variation in science performance (compared to the OECD average of 13% of the variation).

- Some 12% of disadvantaged students in Italy were able to score in the top quarter of reading performance within Italy, indicating that disadvantage is not destiny. On average across OECD countries, 11% of disadvantaged students scored amongst the highest performers in reading in their countries.

- In Italy, low- and high-performing students are clustered in the same schools more often than the OECD average.

Figure 4. School segregation, and gap in material and staff shortage between advantaged and disadvantaged schools
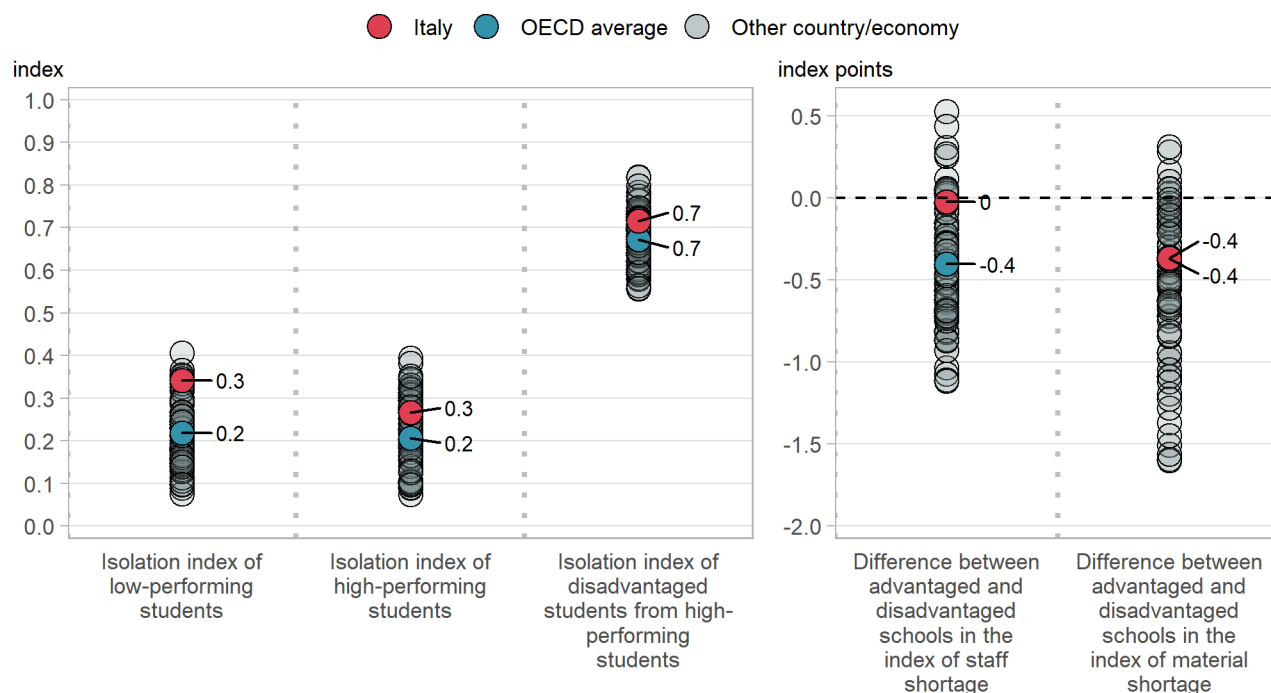
Notes: Only countries and economies with available data are shown. The isolation indices ranging from 0 (no segregation) to 1 (full segregation) measure whether low-/high-performing students or disadvantaged students are more or less concentrated in some schools. See detailed description of the indices in Volume II Chapter 4.
Source: OECD, PISA 2018 Database, Tables II.B1.4.1, II.B1.4.8, II.B1.5.13 and II.B1.5.14.

- School principals in Italy reported more staff shortage and more material shortage than the OECD average; but there was no significant difference in staff shortages between advantaged and disadvantaged schools. In Italy, 27% of students enrolled in a disadvantaged school and 18% of students enrolled in an advantaged school attend a school whose principal reported that the capacity of the school to provide instruction is hindered at least to some extent by a lack of teaching staff. On average across OECD countries, 34% of students in disadvantaged schools and 18% of students in advantaged schools attend such a school.

- According to school principals in Italy, 84% of teachers in advantaged schools and 80% of teachers in disadvantaged schools are "fully certified" (the difference is not statistically significant). The proportions of teachers with at least a master's degree are similar in advantaged and disadvantaged schools.

- Many students, especially disadvantaged students, hold lower ambitions than would be expected given their academic achievement. In Italy, about two in five high-achieving disadvantaged students – but one in eight high-achieving advantaged students – do not expect to complete tertiary education.

Equity related to gender

- In all countries and economies that participated in PISA 2018, girls significantly outperformed boys in reading – by 30 score points on average across OECD countries. In Italy, the gender gap in reading (25 score points) was lower than the average gap. The gap was lower than that observed in 2009 (46 score points), as boys' performance remained stable and girls' performance declined over the period.

- In Italy, boys outperformed girls in mathematics by 16 score points, which was wider than the average gender gap in mathematics across OECD countries (5 score points). While girls slightly outperformed boys in science (by two score points) on average across OECD countries in PISA 2018, in Italy girls and boys performed similarly in science.

- Amongst high-performing students in mathematics or science, about one in four boys in Italy expect to work as an engineer or science professional at the age of 30, while one in eight girls expects to do so. About one in four high-performing girls expects to work in health-related professions, while one in nine high-performing boys expects to do so. Some 7% of boys and a negligible percentage of girls in Italy expect to work in ICT-related professions.

### *Equity related to immigrant background*

- In 2018, some 10% of students in Italy had an immigrant background, up from 6% in 2009. Amongst these immigrant students, three in seven were socio-economically disadvantaged.

- The average difference in reading performance between immigrant and non-immigrant students in Italy was 43 score points in favour of non-immigrant students. After accounting for students' and schools' socio-economic profile the difference shrank to 22 score points.

- On average across OECD countries, 17% of immigrant students scored in the top quarter of reading performance in 2018. In Italy, 14% of immigrant students performed at that level.

What School Life Means for Students' Lives

How is the school climate in Italy?

- In Italy, 24% of students reported being bullied at least a few times a month, compared to 23% on average across OECD countries. At the same time, 87% of students in Italy (and 88% of students on average across OECD countries) agreed or strongly agreed that it is a good thing to help students who cannot defend themselves.

- Some 30% of students in Italy (OECD average: 26%) reported that, in every or most language-of-instruction lessons, their teacher has to wait a long time for students to quiet down. In Italy, students who reported that, in every or most lessons, the teacher has to wait a long time for students to quiet down scored 21 score points lower in reading than students who reported that this never happens or happens only in some lessons, after accounting for socio-economic status.

- On average across OECD countries, 21% of students had skipped a day of school and 48% of students had arrived late for school in the two weeks prior to the PISA test. In Italy, 57% of students had skipped a day of school and 45% of students had arrived late for school during that period. In most countries and economies, frequently bullied students were more likely to have skipped school, whereas students who valued school, enjoyed a better disciplinary climate and received greater emotional support from parents were less likely to have skipped school.

Figure 5. School climate
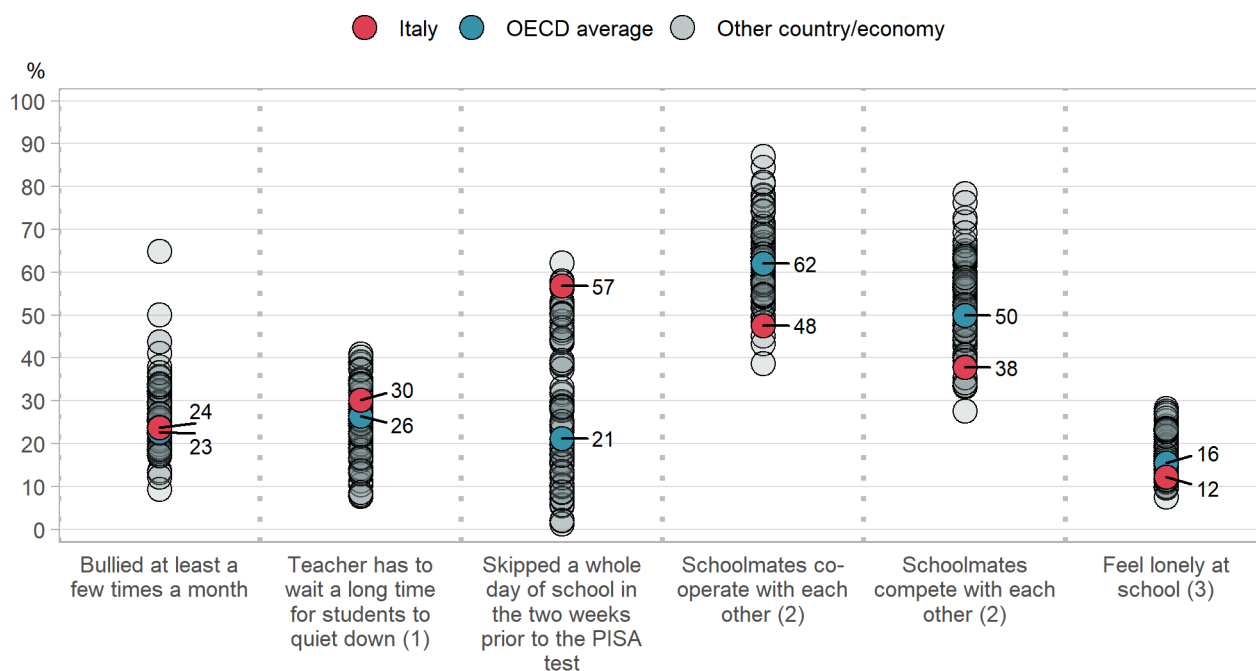
Notes: Only countries and economies with available data are shown. (1) In every or most language-of-instruction lessons; (2) Very or extremely true; (3) Agreed or strongly agreed.
Source: OECD, PISA 2018 Database, Tables III.B1.2.1, III.B1.3.1, III.B1.4.1, III.B1.8.1, III.B1.8.2 and III.B1.9.1

- Some 74% of students in Italy (OECD average: 74%) agreed or strongly agreed that their teacher shows enjoyment in teaching. In most countries and economies, including in Italy, students scored higher in reading when they perceived their teacher as more enthusiastic, especially when students said their teachers are interested in the subject.

- In Italy, 48% of students reported that their schoolmates co-operate with each other (OECD average: 62%) and 38% reported that they compete with each other (OECD average: 50%).

- Some 12% of students in Italy (OECD average: 16%) agreed or strongly agreed that they feel lonely at school.

How do students in Italy feel about their lives and learning?

- In Italy, 67% of students (OECD average: 67%) reported that they are satisfied with their lives (students who reported between 7 and 10 on the 10-point life-satisfaction scale).

- Some 91% of students in Italy reported sometimes or always feeling happy and about 6% of students reported always feeling sad. In most countries and economies, students were more likely to report positive feelings when they reported a stronger sense of belonging at school and greater student co-operation, and were more likely to express sadness when they were bullied more frequently.

- In Italy, 86% of students agreed or strongly agreed that they can usually find a way out of difficult situations (OECD average: 84%), and 57% agreed or strongly agreed that, when they fail, they worry about what others think of them (OECD average: 56% of students). In almost every education system, including Italy, girls expressed greater fear of failure than boys, and this gender gap was considerably wider amongst top-performing students.

- A majority of students across OECD countries holds a growth mindset (they disagreed or strongly disagreed with the statement "Your intelligence is something about you that you can't change very much"). In Italy, 59% of students hold a growth mindset.

Figure 6. Student well-being and growth mindset
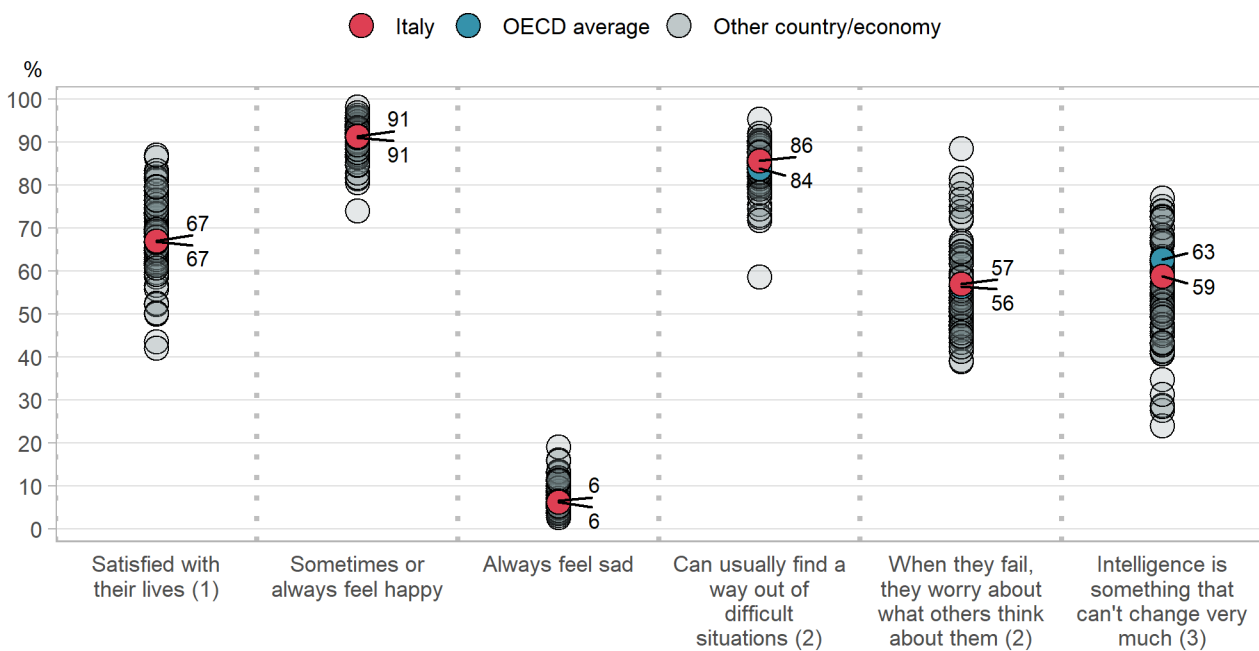
Notes: Only countries and economies with available data are shown. (1) Between 7 and 10 on the life-satisfaction scale; (2) Agreed or strongly agreed; (3) Disagreed or strongly disagreed.
Source: OECD, PISA 2018 Database, Tables III.B1.11.1, III.B1.12.1, III.B1.12.2, III.B1.13.1, III.B1.13.2 and III.B1.14.1

Key features of PISA 2018

The content

- The PISA 2018 survey focused on reading, with mathematics, science and global competence as minor areas of assessment; Italy did not participate in the assessment of global competence. PISA 2018 also included an assessment of young people's financial literacy, which was optional for countries and economies. Results for reading, mathematics and science are released on 3 December 2019 and results for global competence and financial literacy in 2020.

The students

- Some 600 000 students completed the assessment in 2018, representing about 32 million 15-year-olds in the schools of the 79 participating countries and economies. In Italy, 11 785 students, in 550 schools, completed the assessment, representing 521 223 15-year-old students (85% of the total population of 15-year-olds).

The assessment

- Computer-based tests were used in most countries, with assessments lasting a total of two hours. In reading, a multi- stage adaptive approach was applied in computer-based tests whereby students were assigned a block of test items based on their performance in preceding blocks.
- Test items were a mixture of multiple-choice questions and questions requiring students to construct their own responses. The items were organised into groups based on a passage of text describing a real-life situation. More than 15 hours of test items for reading, mathematics, science and global competence were covered, with different students taking different combinations of test items.
- Students also answered a background questionnaire, which took about 35 minutes to complete. The questionnaire sought information about the students themselves, their attitudes, dispositions and beliefs, their homes, and their school and learning experiences. School principals completed a questionnaire that covered school management and organisation, and the learning environment.
- Some countries/economies also distributed additional questionnaires to elicit more information. These included: in 19 countries/economies, a questionnaire for teachers asking about themselves and their teaching practices; and in 17 countries/economies, a questionnaire for parents asking them to provide information about their perceptions of and involvement in their child's school and learning.
- Countries/economies could also chose to distribute three other optional questionnaires for students: 52 countries/economies distributed a questionnaire about students' familiarity with computers; 32 countries/economies distributed a questionnaire about students' expectations for further education; and 9 countries/economies distributed a questionnaire, developed for PISA 2018, about students' well-being.
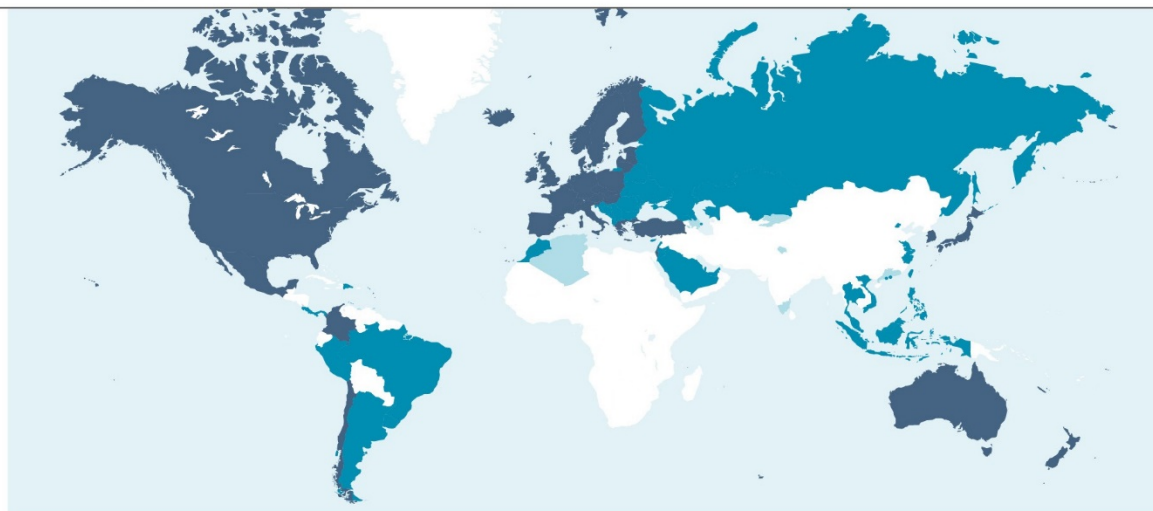
References

OECD (2019), *PISA 2018 Results (Volume I): What Students Know and Can Do*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/5f07c754-en

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b5fd1b8f-en

OECD (2019), *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/acd78851-en

Map of PISA countries and economies

OECD member countries

Australia	Lithuania
Austria	Luxembourg
Belgium	Mexico
Canada	Netherlands
Chile	New Zealand
Colombia	Norway
Czech Republic	Poland
Denmark	Portugal
Estonia	Slovak Republic
Finland	Slovenia
France	Spain
Germany	Sweden
Greece	Switzerland
Hungary	Turkey
Iceland	United Kingdom
Ireland	United States*
Israel	
Italy	
Japan	
Korea	
Latvia	

Partner countries and economies in PISA 2018

Albania	Malaysia
Argentina	Malta
Baku (Azerbaijan)	Republic of Moldova
Belarus	Montenegro
Bosnia and Herzegovina	Morocco
Brazil	Republic of North Macedonia
Brunei Darussalam	Panama
B-S-J-Z (China)**	Peru
Bulgaria	Philippines
Costa Rica	Qatar
Croatia	Romania
Cyprus¹	Russian Federation
Dominican Republic	Saudi Arabia
Georgia	Serbia
Hong Kong (China)	Singapore
Indonesia	Chinese Taipei
Jordan	Thailand
Kazakhstan	Ukraine
Kosovo	United Arab Emirates
Lebanon	Uruguay
Macao (China)	Viet Nam

Partner countries and economies in previous cycles

Algeria
Azerbaijan
Guangdong (China)
Himachal Pradesh (India)
Kyrgyzstan
Liechtenstein
Mauritius
Miranda (Venezuela)
Tamil Nadu (India)
Trinidad and Tobago
Tunisia

* Puerto Rico participated in the PISA 2015 assessment (as an unincorporated territory of the United States).

** B-S-J-Z (China) refers to four PISA 2018 participating Chinese provinces: Beijing, Shanghai, Jiangsu and Zhejiang. In PISA 2015, the four PISA participating Chinese provinces were: Beijing, Shanghai, Jiangsu and Guangdong.

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.

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For more information about PISA 2018 visit http://www.oecd.org/pisa/

Data can also be found on line by following the *StatLinks* 🔗 under the tables and charts in the publication.

Explore, compare and visualise more data and analysis using: http://gpseducation.oecd.org/.

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