

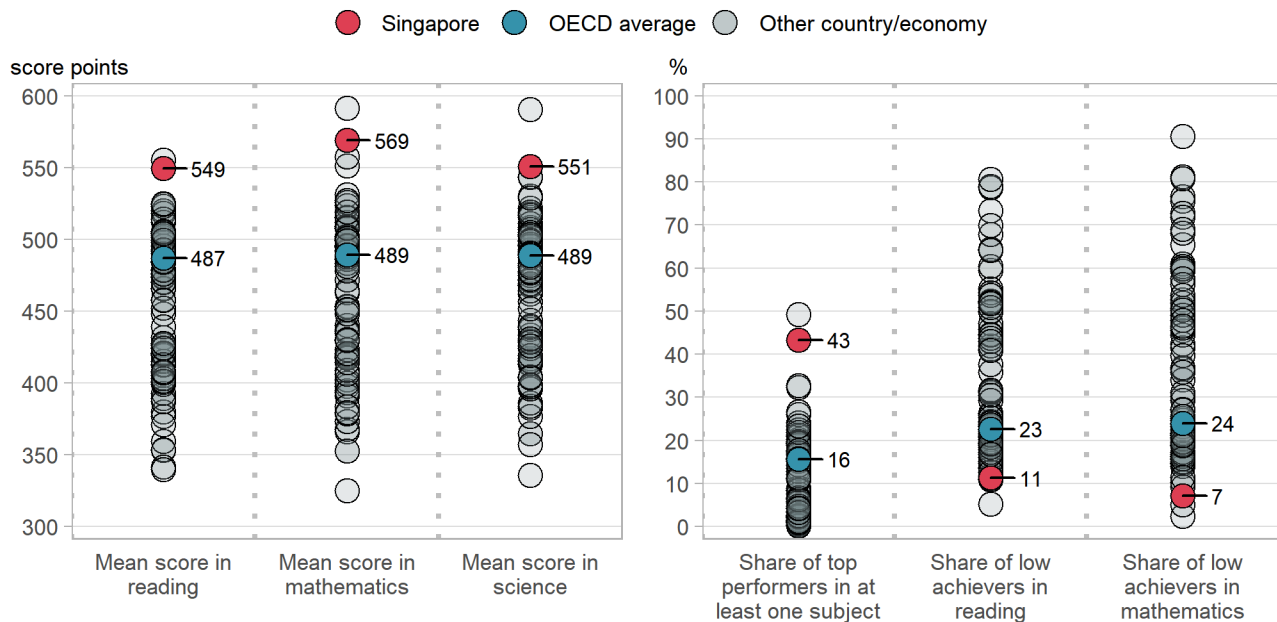
## PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA) RESULTS FROM PISA 2018

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 (in 2018, the innovative domain was global competence), and on students' well-being.

### Singapore

#### What 15-year-old students in Singapore know and can do

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.

- Students in Singapore scored higher than the OECD average in reading, mathematics and science.
- Compared to the OECD average, a larger proportion of students in Singapore performed at the highest levels of proficiency (Level 5 or 6) in at least one subject; at the same time a larger 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 Singapore, 89% of students attained at least Level 2 proficiency in reading, significantly more than on average across OECD countries (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. Over 85% of students in Beijing, Shanghai, Jiangsu and Zhejiang (China), Canada, Estonia, Finland, Hong Kong (China), Ireland, Macao (China), Poland and Singapore performed at this level or above.
- Some 26% of students in Singapore 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**

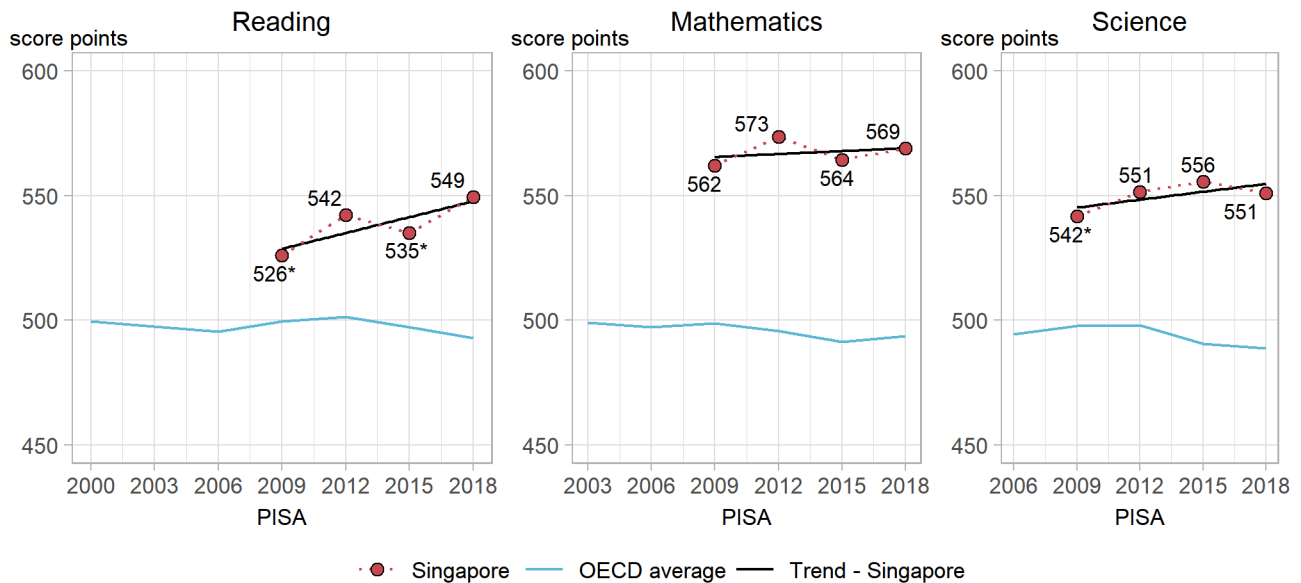
- Some 93% of students in Singapore attained Level 2 or higher in mathematics (OECD average: 76%). At a minimum, these students can interpret and recognise, without direct instructions, how a (simple) situation can be represented mathematically (e.g. comparing the total distance across two alternative 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 2% in Zambia, which participated in the PISA for Development assessment in 2017. On average across OECD countries, 76% of students attained at least Level 2 proficiency in mathematics.
- In Singapore, 37% 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 91% of students in Singapore attained Level 2 or higher in science significantly more than on average across OECD countries (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. More than 90% of students in Beijing, Shanghai, Jiangsu and Zhejiang (China) (98%), Macao (China) (94%), Estonia (91%) and Singapore (91%) met this benchmark.
- In Singapore, 21% 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 Singapore.

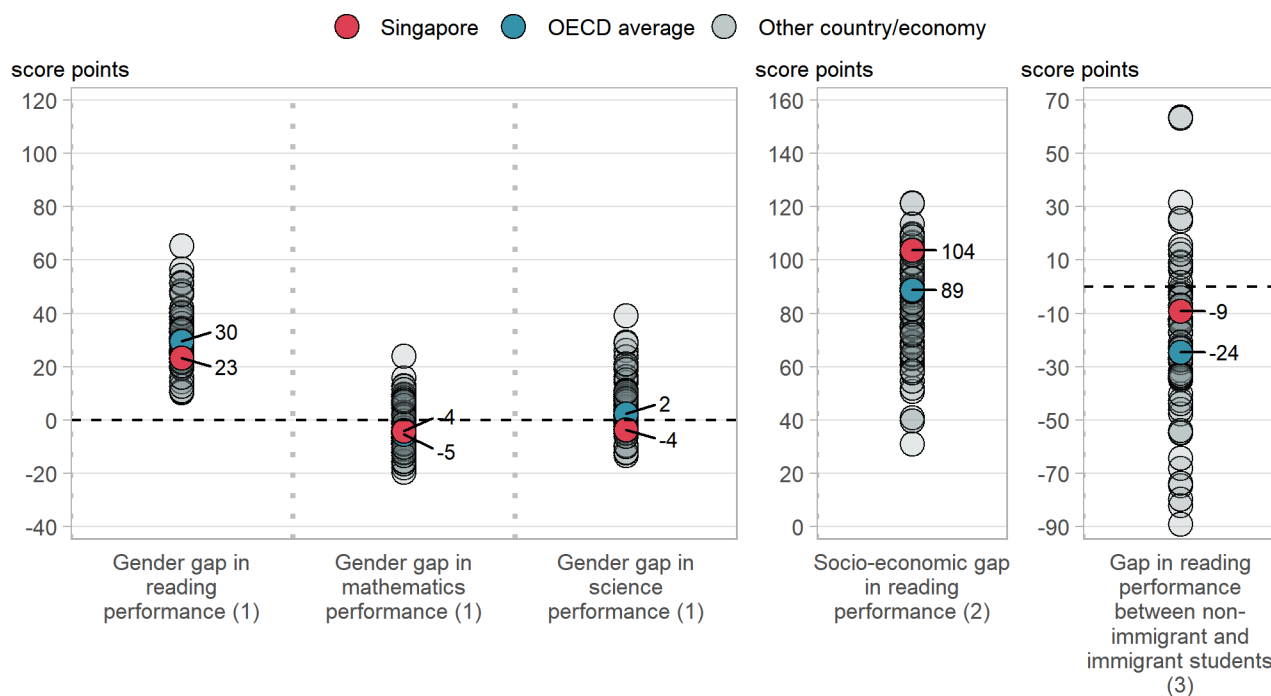
The blue line indicates the average mean performance across OECD countries with valid data in all PISA assessments. The red dotted line indicates mean performance in Singapore. The black line represents a trend line for Singapore (line of best fit).

Source: OECD, PISA 2018 Database, Tables I. B1.10, I. B1.11 and I. B1.12.

- Mean performance in Singapore improved significantly in reading, both over the longer period (2009-2018) and between 2015 and 2018. Mean mathematics performance in 2018 stood close to the average level observed over previous assessments (2009-2015), while mean performance in science improved between 2009 and 2018.
- Performance in reading improved, particularly amongst the country's highest-achieving students. Between 2009 and 2018 the proportion of 15-year-old students scoring at Level 5 or 6 on the PISA scale increased by 10 percentage points; meanwhile, the proportion of low-achieving students in reading remained stable. In science, by contrast, improvements in mean performance were driven by improvements amongst the lowest-achieving students: the proportion of low-achievers in science (those scoring below Level 2) shrank by 2.5 percentage points.

## Where All Students Can Succeed

Figure 3. Differences in performance related to personal characteristics



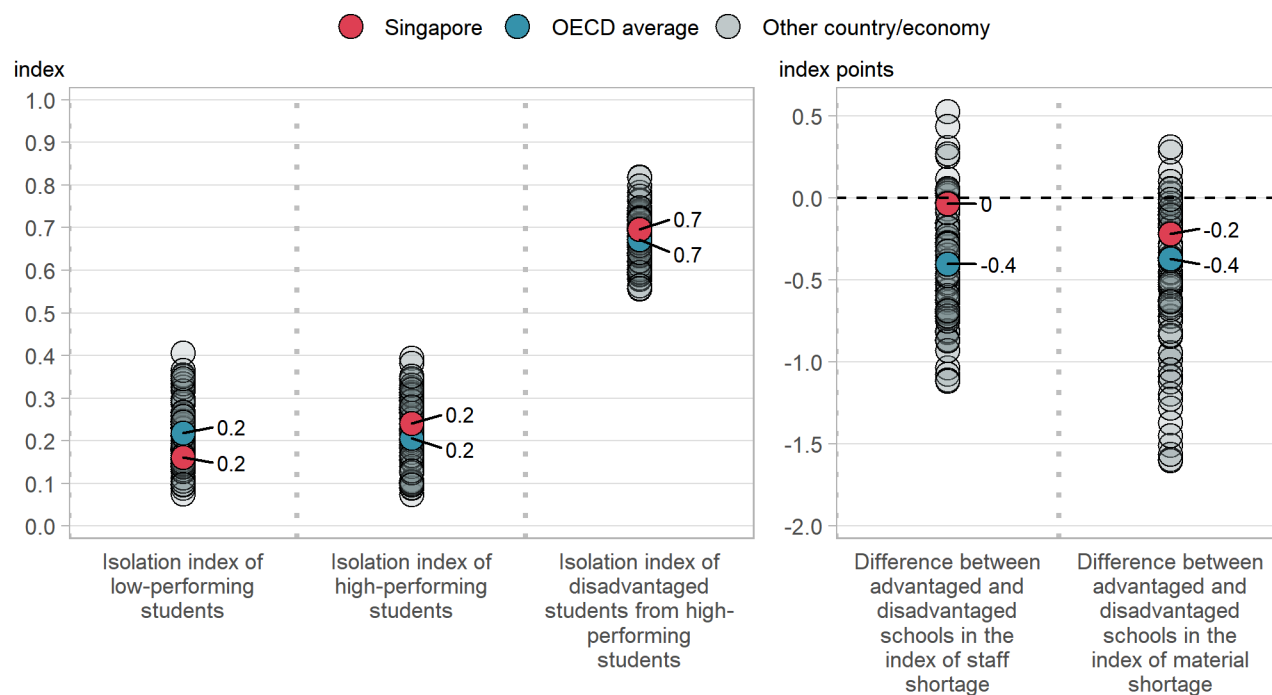
Notes: Only countries and economies with available data are shown. (1) Girls' minus boys' performance; (2) Advantaged minus disadvantaged students' performance; (3) Immigrants' minus non-immigrants' performance in reading; After accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2018 Database, Tables II.B1.2.3, II.B1.7.1, II.B1.7.3, II.B1.7.5 and II.B1.9.3.

### Equity related to socio-economic status

- In Singapore, socio-economically advantaged students outperformed disadvantaged students in reading by 104 score points in PISA 2018. This is larger than the average difference between the two groups (89 score points) across OECD countries. In PISA 2009, the performance gap related to socio-economic status was 97 score points in Singapore (and 87 score points on average across OECD countries).
- Some 43% of advantaged students in Singapore, but 10% 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 14% of the variation in mathematics performance in PISA 2018 in Singapore (compared to 14% on average across OECD countries), and 14% of the variation in science performance (compared to the OECD average of 13% of the variation).
- Some 10% of disadvantaged students in Singapore were able to score in the top quarter of reading performance within Singapore, 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.

**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.

- In Singapore, low-performing students are clustered in certain schools less often than the OECD average, and high-performing students more often clustered. A disadvantaged student has a 15% chance, on average, of being enrolled in a school with those who score in the top quarter of reading performance (OECD average: a 17% chance).
- School principals in Singapore reported less staff shortage and less material shortage than the OECD average; but there was no significant difference in staff shortages between advantaged and disadvantaged schools. In Singapore, 7% of students enrolled in a disadvantaged school and 3% 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 Singapore, 56% of teachers in advantaged schools and 97% of teachers in disadvantaged schools are “fully certified”. The proportions of teachers with at least a master’s degree are larger in advantaged schools than in disadvantaged schools.
- Many students, especially disadvantaged students, hold lower ambitions than would be expected given their academic achievement. But this holds not true in Singapore, where high-achieving advantaged students hold similar ambitions, regardless of their socio-economic background.

### **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 Singapore, the gender gap in

reading (23 score points) was lower than the average gap. The gap was lower than that observed in 2009 (31 score points), and both boys' and girls' performance remained stable over the period.

- In Singapore, girls scored similar to boys in mathematics. Across OECD countries, boys outperformed girls by five score points. While girls slightly outperformed boys in science (by two score points) on average across OECD countries in PISA 2018, in Singapore girls and boys performed similarly in science.
- Amongst high-performing students in mathematics or science, about one in four boys in Singapore expect to work as an engineer or science professional at the age of 30, while one in eight girls expects to do so. Three in ten high-performing girls expect to work in health-related professions, while about one in seven high-performing boys expects to do so. Some 6% of boys and 1% of girls in Singapore expect to work in ICT-related professions.

### ***Equity related to immigrant background***

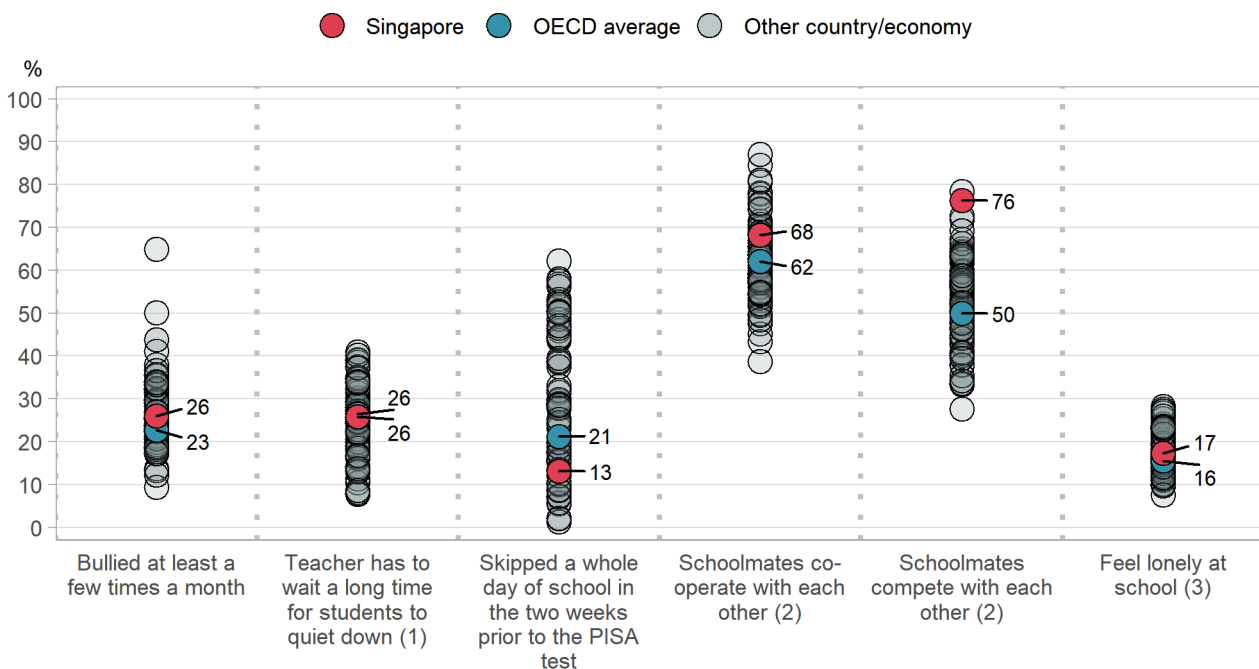
- The average difference in reading performance between immigrant and non-immigrant students in Singapore was 19 score points in favour of immigrant students. After accounting for students' and schools' socio-economic profile the difference shrank to nine score points.
- On average across OECD countries, 17% of them scored in the top quarter of reading performance in 2018. In Singapore, 29% of immigrant students performed at that level.

## What School Life Means for Students' Lives

### How is the school climate in Singapore?

- In Singapore, 26% of students reported being bullied at least a few times a month, compared to 23% on average across OECD countries. At the same time, 94% of students in Singapore (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 26% of students in Singapore (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 Singapore, students who reported that, in every or most lessons, the teacher has to wait a long time for students to quiet down scored 24 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 Singapore, 13% of students had skipped a day of school and 37% 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

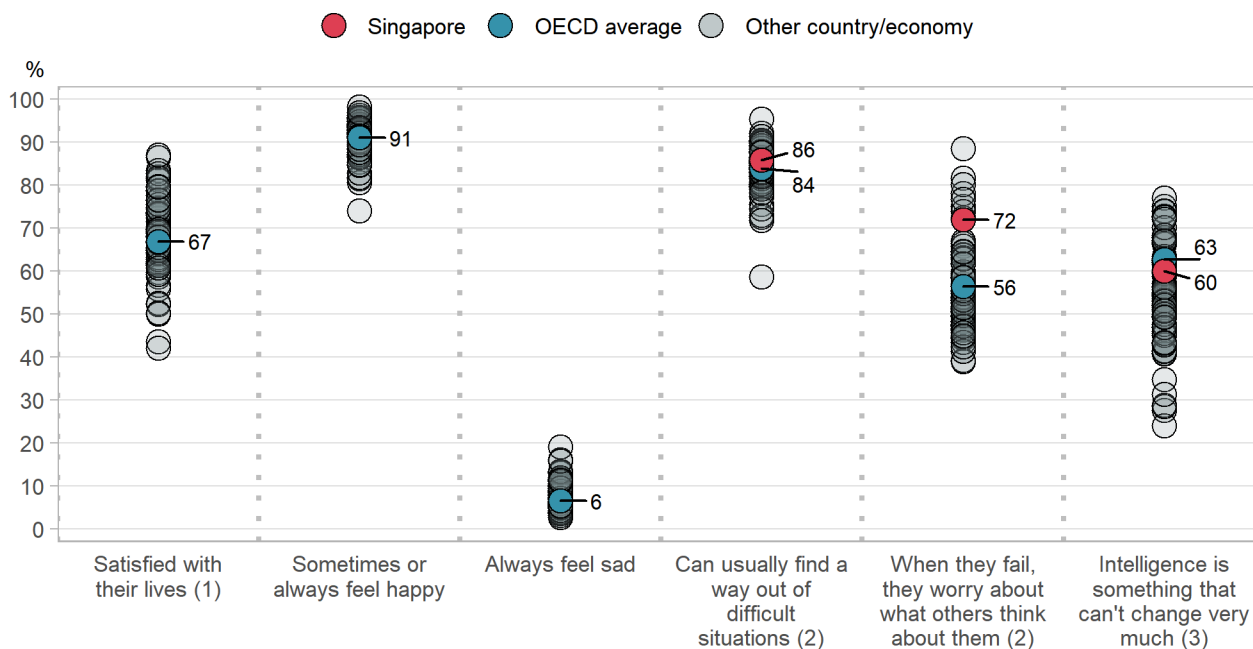
- Some 84% of students in Singapore (OECD average: 74%) agreed or strongly agreed that their teacher shows enjoyment in teaching. In most countries and economies, including in Singapore, students scored higher in reading when they perceived their teacher as more enthusiastic, especially when students said their teachers are interested in the subject.

- In Singapore, 68% of students reported that their schoolmates co-operate with each other (OECD average: 62%) and 76% reported that they compete with each other (OECD average: 50%).
- Some 17% of students in Singapore (OECD average: 16%) agreed or strongly agreed that they feel lonely at school.

### How do students in Singapore feel about their lives and learning?

- In Singapore, 86% of students agreed or strongly agreed that they can usually find a way out of difficult situations (OECD average: 84%), and 72% 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 Singapore, 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 Singapore, 60% 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. 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 Singapore, 6 676 students, in 167 schools, completed the assessment, representing 44 058 15-year-old students (95% 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**

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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  
Austria  
Belgium  
Canada  
Chile  
Colombia  
Czech Republic  
Denmark  
Estonia  
Finland  
France  
Germany  
Greece  
Hungary  
Iceland  
Ireland  
Israel  
Italy  
Japan  
Korea  
Latvia

Lithuania  
Luxembourg  
Mexico  
Netherlands  
New Zealand  
Norway  
Poland  
Portugal  
Slovak Republic  
Slovenia  
Spain  
Sweden  
Switzerland  
Turkey  
United Kingdom  
United States\*

**Partner countries and economies in PISA 2018**

Albania  
Argentina  
Baku (Azerbaijan)  
Belarus  
Bosnia and Herzegovina  
Brazil  
Brunei Darussalam  
B-S-J-Z (China)\*\*  
Bulgaria  
Costa Rica  
Croatia  
Cyprus<sup>1</sup>  
Dominican Republic  
Georgia  
Hong Kong (China)  
Indonesia  
Jordan  
Kazakhstan  
Kosovo  
Lebanon  
Macao (China)

Malaysia  
Malta  
Republic of Moldova  
Montenegro  
Morocco  
Republic of North Macedonia  
Panama  
Peru  
Philippines  
Qatar  
Romania  
Russian Federation  
Saudi Arabia  
Serbia  
Singapore  
Chinese Taipei  
Thailand  
Ukraine  
United Arab Emirates  
Uruguay  
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/municipalities: Beijing, Shanghai, Jiangsu and Zhejiang. In PISA 2015, the four PISA participating Chinese provinces/municipalities 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/>.

**Questions can be directed to:**

PISA team  
Directorate for Education and Skills  
[edu.pisa@oecd.org](mailto:edu.pisa@oecd.org)

**Country note authors:**

F. Avvisati, A. Echazarra, P. Givord and M. Schwabe  
Directorate for Education and Skills