How do countries/economies perform in mathematics overall?

– *The partner economy Shanghai, China shows the highest average mathematics score among countries participating in PISA 2009, followed by the partner country Singapore, the partner economy Hong Kong, China, the OECD country Korea and, in fifth place, the partner economy Chinese Taipei.*

– *Students in Shanghai, China performed nearly one proficiency level above those in the OECD country Finland, the best-performing country outside East Asia.*

– *In most OECD countries, average mathematics performance is at Level 3, but in partner countries and economies, the average varies widely, from below Level 1 to nearly Level 5.*

What it means

The mean PISA mathematics score for each country/economy summarises the performance of students overall. The results show a much wider range of scores in mathematics than in reading among countries and economies. Of the three subjects assessed by PISA, reading, mathematics and science, mathematics is the one where high-performing East Asian countries and economies show the largest advantage over all other countries that participated in PISA 2009.

Findings

The partner economy Shanghai, China and the partner country Singapore show mean mathematics scores that are much higher than those of any other country or economy that participated in PISA 2009. Shanghai, China is furthest ahead, with students there more than half a proficiency level, on average, above those in any other country or economy.

Canada, Finland, Japan, Korea, the Netherlands, Switzerland and the partner countries and economies Chinese Taipei; Hong Kong, China; Liechtenstein and Macao, China all perform at between one half and an entire proficiency level above the OECD average in mathematics.

The abovementioned countries, together with Australia, Belgium, Denmark, Estonia, Germany, Iceland, New Zealand and Slovenia, all score significantly above the OECD average in mathematics.

Overall, the range in country performance is wide, representing large differences in how well students in different countries can think mathematically. Students in Shanghai-China are, on average, proficient at using their well-developed mathematical skills and representing complex situations mathematically, tasks that are defined as near the top of Level 4. In comparison, the OECD average rests near the bottom of Level 3. In the lowest-performing OECD country, Mexico, students are, on average, more than one proficiency level below the OECD average; some 14 partner countries also show an average at Level 1 and, in the case of Kyrgyzstan, below Level 1. Students at this level are only able to use mathematics in the most familiar and explicit contexts.

Definitions

In the 2003 PISA survey, the first where mathematics was assessed in detail, the mean mathematics score was set at 500 points for participating OECD countries. In 2009, with a slightly wider range of OECD countries, the average score was 496 points. The original PISA scale was set such that approximately two-thirds of students across OECD countries score between 400 and 600 points. A gap of 62 points in mathematics scores is equivalent to one proficiency level in mathematics.

The country averages shown here are estimates based on the PISA sample. In many cases, differences between countries/economies are too close to be statistically significant. In such cases, it cannot be said which of a pair of countries/economies has students with higher average performance.

Information on data for Israel: *http://dx.doi.org/10.1787/888932315602.*

Going further

A full set of comparisons across countries, showing in which cases differences between mean country performance are statistically significant, can be found in Chapter 3 of *PISA 2009 Results Volume I, What Students Know and Can Do: Student Performance in Reading, Mathematics and Science.*
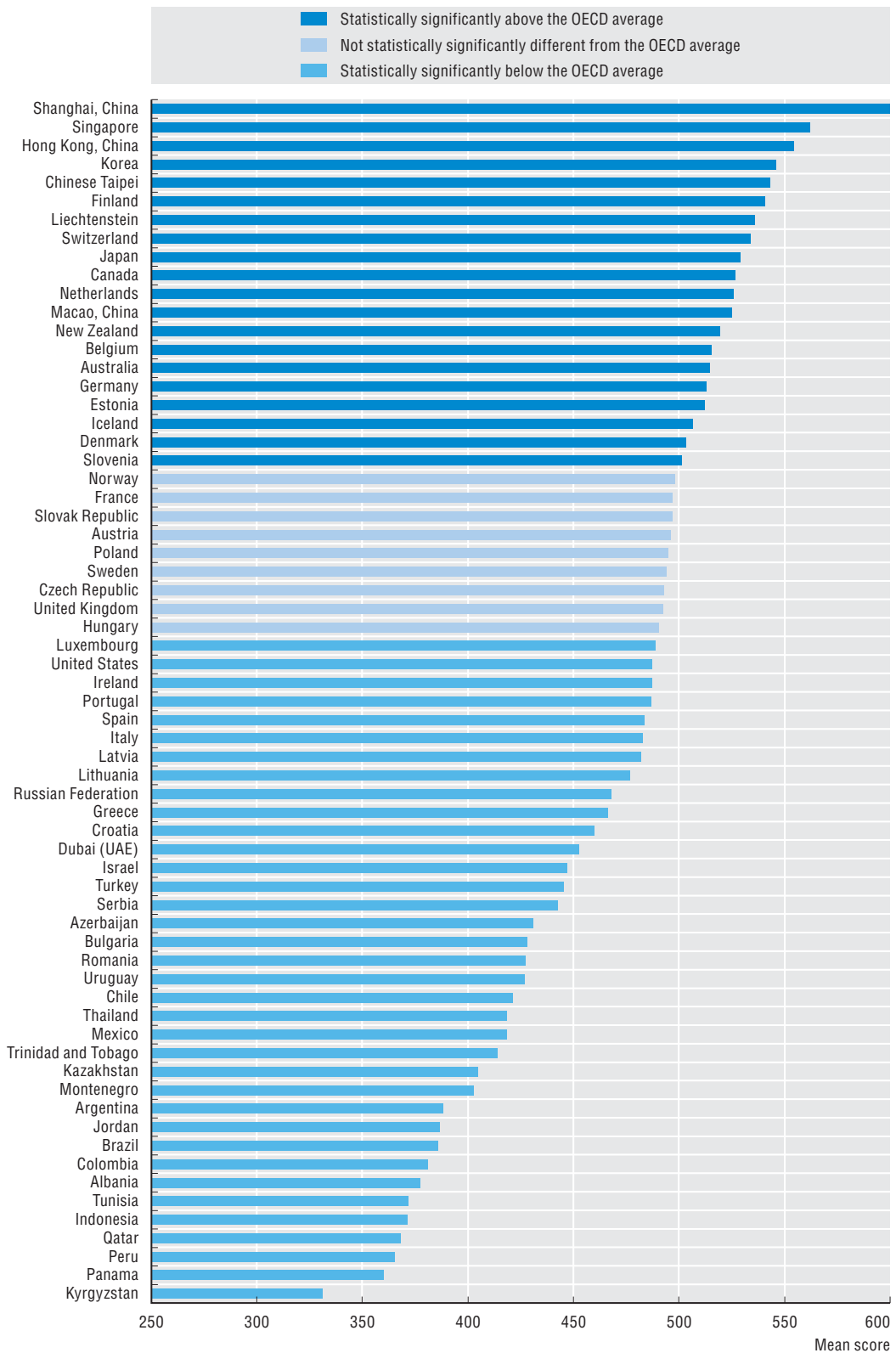
Further reading from the OECD

Mathematics performance was assessed in depth in 2003, and will be again in 2012. See: *The PISA 2003 Assessment Framework* (2003) and *Learning for Tomorrow's World, First Results From PISA 2003* (2004).

Figure 1.5. **Comparing performance in mathematics**

Legend:
- Statistically significantly above the OECD average
- Not statistically significantly different from the OECD average
- Statistically significantly below the OECD average

Countries (top to bottom): Shanghai, China; Singapore; Hong Kong, China; Korea; Chinese Taipei; Finland; Liechtenstein; Switzerland; Japan; Canada; Netherlands; Macao, China; New Zealand; Belgium; Australia; Germany; Estonia; Iceland; Denmark; Slovenia; Norway; France; Slovak Republic; Austria; Poland; Sweden; Czech Republic; United Kingdom; Hungary; Luxembourg; United States; Ireland; Portugal; Spain; Italy; Latvia; Lithuania; Russian Federation; Greece; Croatia; Dubai (UAE); Israel; Turkey; Serbia; Azerbaijan; Bulgaria; Romania; Uruguay; Chile; Thailand; Mexico; Trinidad and Tobago; Kazakhstan; Montenegro; Argentina; Jordan; Brazil; Colombia; Albania; Tunisia; Indonesia; Qatar; Peru; Panama; Kyrgyzstan

Mean score axis: 250, 300, 350, 400, 450, 500, 550, 600