

## EXPECTATIONS FOR SCIENCE-RELATED CAREERS BY GENDER

Gender patterns in education are important for identifying the sources of inequalities in learning, for increasing average performance and for improving understanding of how and why students learn. Gender differences in expectations for science-related careers can be described drawing on data from the OECD's Programme for International Student Assessment (PISA).

### Definition

Achievement scores are based on assessments administered as part of the OECD PISA programme, which was carried out in 2006 (with a special focus on science). Students refer to 15-year-olds enrolled in secondary education. Science-related careers include those that involve a considerable amount of science, plus those careers that involve tertiary education in a scientific field as well as some specific careers such as engineer, weather forecaster, optician and medical doctor. Specifically, students were asked "What kind of job do you expect to have when you are

about 30 years old?". Answers were then coded using ISCO codes.

### Comparability

Leading experts in countries participating in PISA advise on the scope and nature of the assessments, and final decisions on this are taken by OECD governments. Substantial efforts and resources are devoted to achieving cultural and linguistic breadth and balance in the assessment materials. Stringent quality assurance mechanisms are applied in translation, sampling and data collection.

Over 400 000 15-year-old students in 57 participating countries were assessed for PISA 2006. Because the results are based on probability samples, standard errors are shown in the tables.

### Overview

Males and females did not have significantly different attitudes to school science. However, when looking at their future aspirations, there are marked differences in their expectations for a science-related career at the age of 30.

On average, across OECD countries, 25% of students expected a science-related career at age 30, with only small differences between boys (24%) and girls (27%). However, when looking at the particular type of science job that students indicated, there are some large gender differences. Across the OECD, 17% of boys who expected a scientific career indicated computer sciences compared to 2% of girls, with no country showing a higher percentage for females. In some countries the difference is very large. In the Slovak Republic, for example, 44% of boys who expected a scientific career chose computer sciences compared to 2% of girls.

There were also large differences between boys and girls expecting to become engineers. Across OECD countries, an average of 30% of boys who anticipated a scientific career expected to be an engineer compared with 10% of girls. This gender difference prevails in all countries, and is especially marked in Ireland (with a difference of 36 percentage points) and Denmark (with a difference of 35 percentage points).

On the other hand there were also occupations which girls reported more frequently than boys. For example, 30% of girls who expressed an expectation for a science-related career named nursing, compared to only 4% of boys. In Belgium, the shares were 44% for females compared with 7% for males. A similar pattern holds for occupations relating to health sciences (including medical doctor, dentists, veterinarians and pharmacists). Across the OECD, 42% of girls who expressed an expectation for a science-related career reported health sciences compared with 20% of males. In France the equivalent figures were 58% for girls and 18% for boys.

### Sources

- OECD (2007), *PISA 2006: Science Competencies for Tomorrow's World: Volume 1 Analysis*, OECD, Paris.
- OECD (2009), *Equally Prepared for Life?: How 15-Year-Old Boys and Girls Perform in School*, OECD, Paris.

### Further information

#### Analytical publications

- OECD (2009), *Top of the Class: High Performers in Science in PISA 2006*, OECD, Paris.
- OECD (2009), *Green at Fifteen?: How 15-Year-Olds Perform in Environmental Science and Geoscience in PISA 2006*, OECD, Paris.

#### Methodological publications

- OECD (2006), *Assessing Scientific, Reading and Mathematical Literacy: A Framework for PISA 2006*, OECD, Paris.

#### Online databases

- OECD PISA Database.

#### Web sites

- PISA Web site, [www.pisa.oecd.org](http://www.pisa.oecd.org).



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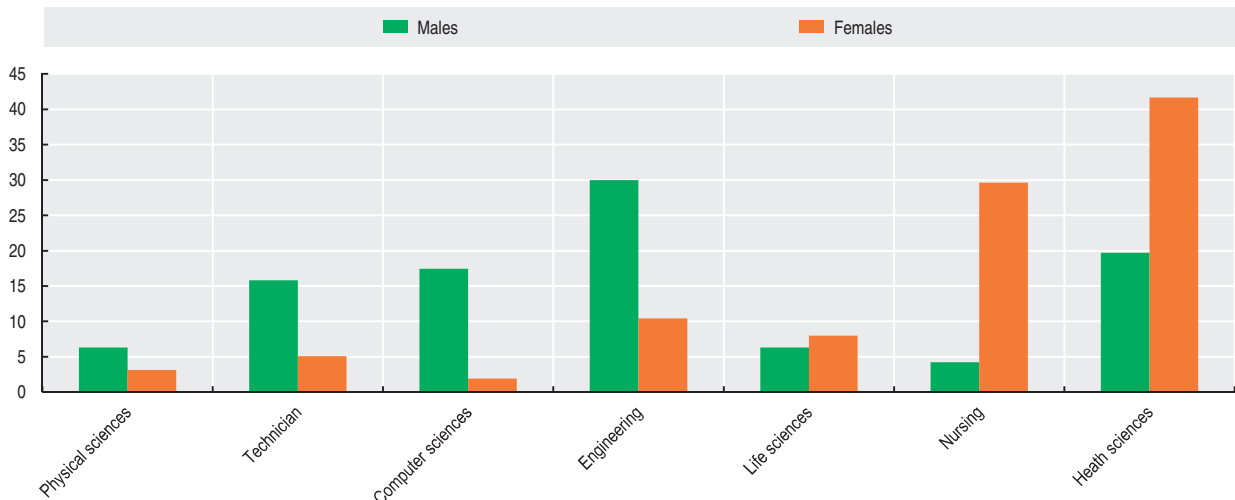
Students expecting a science-related career at age 30 by field of science in PISA 2006

|                    | Share of all students aged 15 |      |            |      | Share of students expecting a science-related career, by field: |      |            |      |                             |      |            |      |
|--------------------|-------------------------------|------|------------|------|---|------|------------|------|-----------------------------|------|------------|------|
|                    | Males                         |      | Females    |      | Computer sciences and Engineering                               |      |            |      | Health sciences and Nursing |      |            |      |
|                    | Percentage                    | S.E. | Percentage | S.E. | Males   |      | Females    |      | Males                       |      | Females    |      |
|                    |                               |      |            |      | Percentage  | S.E. | Percentage | S.E. | Percentage                  | S.E. | Percentage | S.E. |
| Australia          | 27.0                          | 0.7  | 28.7       | 0.8  | 46.3  | 1.7  | 8.1        | 0.5  | 26.2                        | 1.4  | 64.9       | 1.2  |
| Austria            | 17.8                          | 1.6  | 22.3       | 1.2  | 32.8  | 3.1  | 9.9        | 1.5  | 18.3                        | 2.4  | 75.6       | 2.5  |
| Belgium            | 25.7                          | 1.0  | 28.4       | 0.9  | 52.9  | 2.0  | 13.0       | 1.1  | 23.3                        | 1.5  | 75.4       | 1.5  |
| Canada             | 32.7                          | 0.8  | 41.4       | 0.9  | 45.7  | 1.2  | 6.5        | 0.6  | 31.5                        | 1.3  | 75.4       | 1.2  |
| Czech Republic     | 17.0                          | 1.0  | 18.0       | 1.3  | 57.1  | 2.7  | 18.5       | 4.1  | 11.7                        | 1.7  | 64.4       | 4.1  |
| Denmark            | 18.9                          | 0.9  | 24.8       | 0.9  | 49.3  | 2.3  | 8.7        | 1.3  | 24.2                        | 1.8  | 71.9       | 1.9  |
| Finland            | 15.1                          | 0.7  | 21.1       | 1.0  | 40.2  | 2.8  | 8.2        | 1.3  | 24.6                        | 2.7  | 76.5       | 1.8  |
| France             | 26.6                          | 1.3  | 29.9       | 1.0  | 37.2  | 2.2  | 7.4        | 1.0  | 25.4                        | 1.9  | 79.2       | 1.5  |
| Germany            | 18.0                          | 0.9  | 18.8       | 0.8  | 39.2  | 2.3  | 11.8       | 1.6  | 18.8                        | 2.1  | 66.0       | 2.5  |
| Greece             | 23.7                          | 1.1  | 26.4       | 1.0  | 42.4  | 2.6  | 19.3       | 1.8  | 20.8                        | 2.0  | 57.0       | 2.1  |
| Hungary            | 17.3                          | 1.2  | 16.2       | 1.1  | 66.6  | 2.8  | 15.2       | 2.2  | 17.8                        | 2.2  | 68.5       | 2.7  |
| Iceland            | 27.4                          | 1.1  | 37.1       | 1.1  | 34.9  | 2.0  | 15.9       | 1.4  | 33.1                        | 2.2  | 68.3       | 1.9  |
| Ireland            | 28.3                          | 1.2  | 30.2       | 0.9  | 51.4  | 2.2  | 9.2        | 1.4  | 27.9                        | 2.1  | 77.5       | 1.8  |
| Italy              | 32.3                          | 1.1  | 31.0       | 1.0  | 49.7  | 2.8  | 13.2       | 1.4  | 25.3                        | 2.6  | 73.2       | 1.7  |
| Korea              | 20.4                          | 0.8  | 16.6       | 0.9  | 44.7  | 2.7  | 13.4       | 1.8  | 25.6                        | 1.7  | 72.5       | 2.9  |
| Luxembourg         | 23.4                          | 0.8  | 24.9       | 1.0  | 47.4  | 2.3  | 15.9       | 1.5  | 22.1                        | 1.7  | 70.0       | 2.0  |
| Mexico             | 35.6                          | 1.3  | 33.6       | 1.0  | 52.6  | 1.4  | 17.0       | 1.2  | 25.4                        | 1.3  | 60.9       | 1.8  |
| Netherlands        | 15.9                          | 0.8  | 30.0       | 1.1  | 39.1  | 3.1  | 7.0        | 1.0  | 33.7                        | 3.1  | 83.6       | 1.3  |
| New Zealand        | 20.5                          | 1.0  | 27.6       | 1.0  | 41.5  | 2.3  | 10.3       | 1.1  | 34.3                        | 2.4  | 70.3       | 1.5  |
| Norway             | 20.8                          | 0.9  | 29.3       | 1.0  | 63.8  | 2.2  | 18.5       | 1.8  | 18.2                        | 1.8  | 70.4       | 1.9  |
| Poland             | 33.9                          | 1.1  | 28.7       | 1.0  | 44.8  | 1.9  | 19.2       | 1.5  | 14.9                        | 1.2  | 70.5       | 1.5  |
| Portugal           | 35.4                          | 1.4  | 42.1       | 1.0  | 50.9  | 2.3  | 12.1       | 1.1  | 25.0                        | 1.6  | 71.9       | 1.4  |
| Slovak Republic    | 21.7                          | 1.2  | 17.5       | 1.3  | 62.3  | 3.0  | 10.9       | 2.0  | 14.9                        | 2.0  | 75.9       | 3.1  |
| Spain              | 25.2                          | 1.0  | 30.3       | 0.9  | 57.7  | 1.6  | 14.2       | 1.1  | 21.4                        | 1.5  | 71.6       | 1.4  |
| Sweden             | 20.3                          | 1.0  | 24.6       | 1.0  | 37.4  | 2.4  | 12.3       | 1.6  | 19.1                        | 2.0  | 65.3       | 2.2  |
| Switzerland        | 20.7                          | 0.6  | 23.2       | 0.8  | 49.9  | 2.3  | 10.3       | 1.3  | 12.7                        | 1.2  | 67.8       | 1.9  |
| Turkey             | 23.1                          | 1.5  | 25.3       | 1.4  | 53.8  | 2.3  | 21.3       | 2.5  | 32.9                        | 2.5  | 69.8       | 2.8  |
| United Kingdom     | 22.5                          | 0.9  | 26.6       | 0.8  | 45.4  | 1.8  | 6.4        | 0.8  | 31.9                        | 1.7  | 75.1       | 1.5  |
| United States      | 32.0                          | 1.2  | 44.4       | 1.1  | 40.3  | 1.7  | 5.3        | 0.7  | 35.1                        | 1.6  | 80.3       | 1.3  |
| OECD average       | 23.5                          | 0.2  | 27.0       | 0.2  | 47.5  | 0.4  | 12.4       | 0.3  | 24.0                        | 0.4  | 71.4       | 0.4  |
| Brazil             | 28.6                          | 1.1  | 41.9       | 1.1  | 10.1  | 1.1  | 4.9        | 0.8  | 39.3                        | 2.3  | 74.2       | 1.6  |
| Chile              | 39.8                          | 1.4  | 40.9       | 1.8  | 47.4  | 1.8  | 11.7       | 1.1  | 31.8                        | 1.6  | 74.3       | 1.6  |
| Estonia            | 21.4                          | 0.9  | 20.2       | 1.0  | 67.7  | 2.2  | 29.0       | 2.0  | 8.5                         | 1.1  | 51.2       | 2.6  |
| Indonesia          | 17.7                          | 1.3  | 28.3       | 1.3  | 22.9  | 7.2  | 13.3       | 2.9  | 50.4                        | 9.9  | 68.4       | 3.7  |
| Israel             | 37.5                          | 1.7  | 40.8       | 1.2  | 35.0  | 3.1  | 11.5       | 1.4  | 38.2                        | 3.0  | 73.3       | 1.8  |
| Russian Federation | 22.7                          | 1.3  | 22.8       | 2.5  | 64.3  | 2.8  | 18.0       | 2.0  | 13.6                        | 1.7  | 67.4       | 2.5  |
| Slovenia           | 28.1                          | 0.8  | 17.6       | 2.0  | 44.4  | 1.8  | 7.5        | 1.3  | 20.2                        | 1.6  | 74.2       | 1.8  |

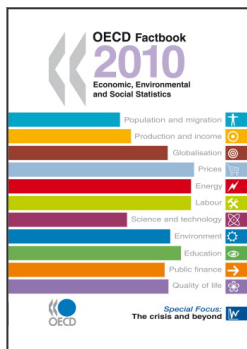
StatLink <http://dx.doi.org/10.1787/826070053352>

Ratio of students by science field in PISA 2006

As a percentage of students expecting a science-related career



StatLink <http://dx.doi.org/10.1787/821518875177>



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