

Highlights from Education at a Glance 2009



Highlights from Education at a Glance 2009



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Foreword

Highlights from *Education at a Glance 2009* offers a reader-friendly introduction to the OECD's collection of internationally comparable data on education.

As the name suggests, it is derived from *Education at a Glance 2009*, the OECD's flagship compendium of education statistics. However, it differs from that publication in a number of ways, most significantly in its structure, which is made up of five sections that explore the following topics:

- **Education levels and student numbers:** This section looks at education levels in the general population, how and where young people are studying and how well they make the transition into the world of work, overseas study and social barriers to education.
- **The economic benefits of education:** This section looks at the extent to which education brings economic gains to individuals, in the form of higher incomes and lower unemployment rates, and at how these benefits serve as an incentive for people and societies to invest in education.
- **Paying for education:** This section looks at how much countries spend on education, the role of private spending, what education money is spent on and whether countries are getting value for money.
- **The school environment:** This section looks at how time teachers spend at work, and how much of that time is spent teaching, class sizes, teachers' salaries and the age and gender distribution of teachers.
- **TALIS:** This section introduces the OECD's new Teaching and Learning International Survey, which provides the first internationally comparative perspective on conditions of teaching and learning.

In general, this publication uses the same terminology employed in *Education at a Glance*. However, in one or two places terminology has been simplified. Readers who wish to find out more should consult the Reader's Guide.

Tables and charts in this volume are all accompanied by a dynamic hyperlink, or StatLink, that will direct readers to an Internet site where the corresponding data are available in Excel™ format. In addition, reference is sometimes made in text to charts and tables that appear in *Education at a Glance 2009*. This material can generally be accessed via the StatLinks accompanying the tables and charts in the relevant indicator, or at www.oecd.org/edu/eag2009.

Readers wishing to find out more about the OECD's work on education should go to www.oecd.org/edu. For more on TALIS, visit www.oecd.org/edu/talis.

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This book has...



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If you're reading the PDF e-book edition, and your PC is connected to the Internet, simply click on the link. You'll find *StatLinks* appearing in more OECD books.

Reader's Guide

This section introduces some of the terminology used in this publication, and explains how readers can use the links provided to get further information.

Levels of education

Education systems vary considerably from country to country, including the ages at which students typically begin and end each phase of schooling, the duration of courses, and what students are taught and expected to learn. These variations greatly complicate the compilation of internationally comparable statistics on education. In response, the United Nations created an International Standard Classification of Education (ISCED), which provides a basis for comparing different education and a standard terminology.

The table below introduces this system of classification and explains what is meant by each level of education. Readers should note that this publication uses slightly simplified terminology, which differs from that used in both the ISCED classification and in *Education at a Glance 2009*. The table shows the equivalent terms in the two publications, the ISCED classifications, and definitions of what it all means.

| Term used to describe levels of education in <i>Education at a Glance 2009</i> ISCED classification (and subcategories) | Term generally used in this publication |
|--|---|
| Pre-primary education ISCED 0 | Pre-primary education The first stage of organised instruction designed to introduce very young children to the school atmosphere. Minimum entry age of 3. |
| Primary education ISCED 1 | Primary education Designed to provide a sound basic education in reading, writing and mathematics and a basic understanding of some other subjects. Entry age: between 5 and 7. Duration: 6 years. |
| Lower secondary education ISCED 2 (subcategories: 2A prepares students for continuing academic education, leading to 3A; 2B has stronger vocational focus, leading to 3B; 2C offers preparation for entering workforce) | Lower secondary education Completes provision of basic education, usually in a more subject-oriented way with more specialist teachers. Entry follows 6 years of primary education; duration is 3 years. In some countries, the end of this level marks the end of compulsory education. |
| Upper secondary education ISCED 3 (subcategories: 3A prepares students for university-level education at level 5A; 3B for entry to vocationally-oriented tertiary education at level 5B; 3C prepares students for workforce or for post-secondary non tertiary education, ISCED 4) | Upper secondary education Even stronger subject specialisation than at lower-secondary level, with teachers usually more qualified. Students typically expected to have completed 9 years of education or lower secondary schooling before entry and are generally around the age of 15 or 16. |
| Post-secondary non-tertiary education ISCED 4 (subcategories: 4A may prepare students for entry to tertiary education, both university-level and vocationally-oriented education; 4B typically prepares students to enter the workforce) | Post-secondary non-tertiary education Programmes at this level may be regarded nationally as part of upper secondary or post-secondary education, but in terms of international comparison their status is less clear cut. Programme content may not be much more advanced than in upper secondary, and is certainly lower than at tertiary level. Entry typically requires completion of an upper secondary programme. Duration usually equivalent to between 6 months and 2 years of full-time study. |

| Term used to describe levels of education in <i>Education at a Glance 2009</i> ISCED classification (and subcategories) | Term generally used in this publication |
|--|---|
| Tertiary education ISCED 5 (subcategories 5A and 5B, see below) | Tertiary education ISCED 5 is the first stage of tertiary education (the second—ISCED 6—involves advanced research). At level 5, it is often more useful to distinguish between two subcategories: 5A, which represent longer and more theoretical programmes; and 5B, where programmes are shorter and more practically oriented. Note, though, that as tertiary education differs greatly between countries, the demarcation between these two subcategories is not always clear cut. |
| Tertiary-type A ISCED 5A | University-level education “Long-stream” programmes that are theory based and aimed at preparing students for further research or to give access to highly skilled professions, such as medicine or architecture. Entry preceded by 13 years of education, students typically required to have completed upper secondary or post-secondary non-tertiary education. Duration equivalent to at least 3 years of full-time study, but 4 is more usual. |
| Tertiary-type B ISCED 5B | Vocationally oriented tertiary education “Short-stream” programmes that are more practically oriented or focus on the skills needed for students to directly enter specific occupations. Entry preceded by 13 years of education; students may require mastery of specific subjects studied at levels 3B or 4A. Duration equivalent to at least 2 years of full-time study, but 3 is more usual. |
| Advanced research programmes ISCED 6 | Advanced research programmes The second stage of tertiary education. Programmes are devoted to advanced study and original research. |

For fuller definitions and explanations of the ISCED standard, please consult *Classifying Education Programmes: Manual for ISCED-97 Implementation in OECD Countries* (1999).

Country coverage

Sections 1 to 4: In the interests of simplifying charts and tables, data in the first four sections refer only to OECD countries. Readers should note that data in the full edition of *Education at a Glance 2009* cover a number of additional partner countries and territories. This data are accessible via the StatLinks that accompany charts and tables in this publication.

Special Section – TALIS: Data in the special section on TALIS cover only countries and territories that took part in the first round of TALIS.

Belgium: Data on Belgium may be applicable only to either the Flemish Community or the French Community. Where this is the case, the text and charts refer to Belgium (Fl) for the Flemish Community, and Belgium (Fr) for the French community.

EU19: The European Union countries prior to the Union’s expansion in 2004, plus the four eastern European member countries of the OECD, namely Czech Republic, Hungary, Poland, Slovak Republic.

EU25: The 25 members of the EU following the 2004 expansion (and excluding Romania and Bulgaria, which entered in 2007).

Notes to tables and charts

See the relevant indicator in *Education at a Glance 2009* or click on the hyperlink in the source.

Symbols for missing data:

A number of symbols are employed in the tables and charts to denote missing data:

- c** There are too few observations to provide reliable estimates (*i.e.* there are fewer than 3% of students for this cell or too few schools for valid inferences). However, these statistics were included in the calculation of cross-country averages.
- m** Data are not available. In a few cases data have been included in other categories (see Table 1.1).
- n** Magnitude is either negligible or zero.





1. EDUCATION LEVELS AND STUDENT NUMBERS

To what level have adults studied?

How have education levels risen over time?

Who participates in education?

How many secondary students go on to tertiary education?

How many young people graduate from tertiary education?

Is education meeting the needs of the workforce?

How successful are students in moving from education to work?

How many students study abroad?

Where do students go to study?

PISA: Who are the top performers?

PISA: What is the family background of top performers?

PISA: What are top performers' attitudes and motivations?

1. EDUCATION LEVELS AND STUDENT NUMBERS

To what level have adults studied?

- On average across OECD countries, 30% of all adults have attained only primary or lower secondary levels of education, 44% upper secondary education and 27% tertiary level education.
- Upper secondary education is now the norm among younger adults in OECD countries, with substantially higher rates of attainment than among older adults.
- Among younger adults, tertiary attainment is also higher, reaching 34% of 25-34 year-olds.

Significance

Education is important for both the present, giving individuals the knowledge and skills to participate fully and effectively in society, and for the future, as it helps expand scientific and cultural knowledge. This spread shows the level to which adults have studied, a measure that is often used as a proxy to illustrate “human capital,” or the skills available in a population and labour force.

Findings

In 23 OECD countries, 60% or more of all adults (25-64 year-olds) have completed at least upper secondary education, however levels vary between countries. For instance, in Mexico, Portugal and Turkey, this proportion falls to less than half.

Comparing younger adults (25-34 year-olds) with older adults (55-64 year-olds) shows marked progress with regard to attainment of upper secondary education, except in the United States. On average across OECD countries, the proportion of younger adults who have attained at least upper secondary education is 22 percentage points higher than among older adults. This increase has been particularly dramatic in Belgium, Greece, Ireland, Italy, Korea, Portugal and Spain, all of which have seen an increase in upper secondary attainment of at least 30 percentage points.

Differences between age groups are less pronounced in countries with generally high levels of educational attainment. In the 10 OECD countries where more than 80% of all adults have at least upper secondary attainment, the difference in the proportions of younger adults and older adults is, on average, 13 percentage points. In Germany and the United States, there is no significant difference between the two age groups. For countries with more room for growth, the average gain in attainment between the age groups is typically large, but situations differ

widely. In Norway, the difference is 7 percentage points; in Korea it is 59 percentage points.

In almost all countries, younger adults have higher levels of tertiary attainment than the generation about to leave the labour market. On average across OECD countries, 28% of all adults have completed tertiary education, but among younger adults this level rises to 34% while among the older age group it falls to 20%. The expansion of tertiary education differs substantially among countries. In France, Ireland, Japan and Korea there is a difference of 25 percentage points or more in tertiary attainment of the oldest and youngest age cohorts.

This rapid expansion of the tertiary sector has put Japan and Korea in the top group together with Canada with over 50% of younger adults having attained tertiary education. Attainment levels between the youngest and oldest groups have changed by 5 percentage points or less in Austria, the Czech Republic, Germany and the United States. Attainment levels in the total population are still substantially above the OECD average in the United States, whereas in the case of Austria, the Czech Republic and Germany they are below the OECD average.

Definitions

Data on population and education attainment are taken from OECD and EUROSTAT databases, which are compiled from National Labour Force Surveys.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A1).

Areas covered include:

- Educational attainment of adults (aged 25 to 64).
- Educational attainment, by gender.

Additional data on gender gaps in secondary and tertiary education is available online in Indicator A1 at www.oecd.org/edu/eag2009.

Further reading from OECD

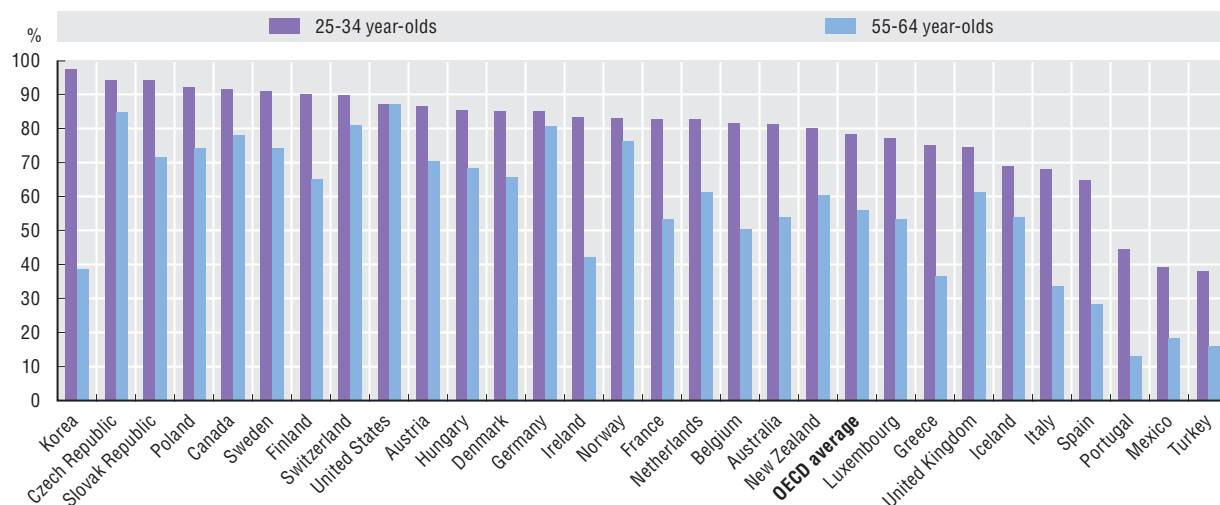
Reviews of National Policies for Education (series).

1. EDUCATION LEVELS AND STUDENT NUMBERS

To what level have adults studied?

Figure 1.1. Population that has attained upper secondary education, 2007

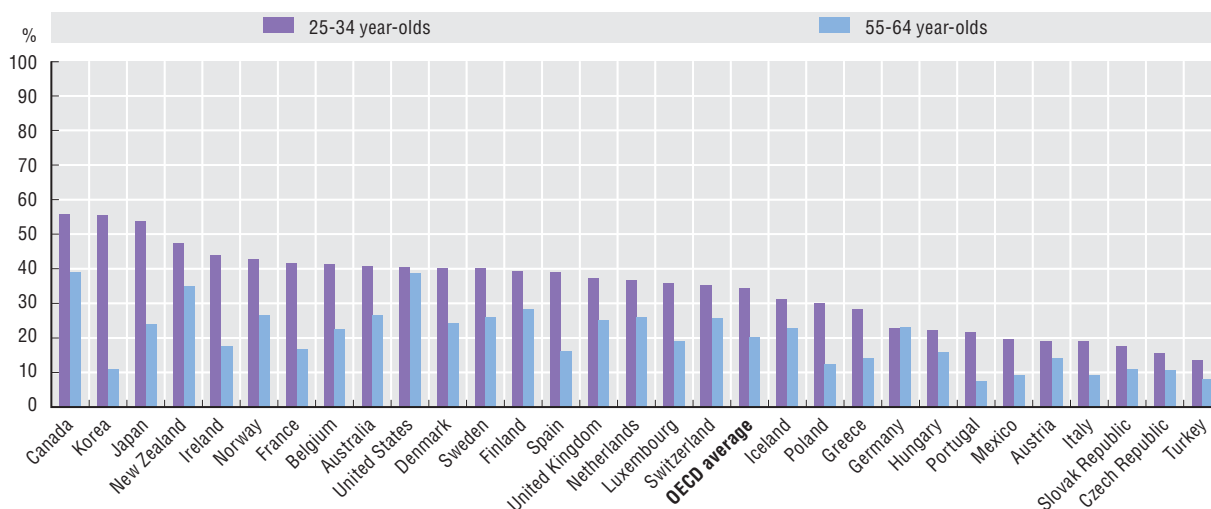
This figure shows the percentage of 25-34 year-olds and 55-64 year-olds who have been through at least upper secondary education. The rapid expansion of education in recent decades means younger people tend to have higher levels of education.



Source: OECD (2009), Education at a Glance 2009, Table A1.2a, available at <http://dx.doi.org/10.1787/664024334566>.

Figure 1.2. Population that has attained tertiary education, 2007

This figure shows the percentage of 25-34 year-olds and 55-64 year-olds who have been through at least tertiary education.



Source: OECD (2009), Education at a Glance 2009, Table A1.3a, available at <http://dx.doi.org/10.1787/664024334566>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

How have education levels risen over time?

- In 1997, on average across OECD countries, 37% of all adults had not completed upper secondary education while 20% had completed tertiary education.
- A decade later, the proportion of adults with below upper secondary education was down by 7 percentage points, while for tertiary attainment it was up by the same amount. There was no change in attainment in upper secondary and post-secondary non-tertiary education.
- The number of tertiary graduates available to the labour market has grown by an average of 4.5% per year across OECD countries.

Significance

The previous spread looked at how education attainment levels differ between age groups, which provides a rough representation of the evolution of human capital in different countries. However, it is also possible to look at trends in attainment levels over time, which can provide a complementary picture. For example, because attainment levels are not evenly distributed within an age group, analysing trends will in some circumstances reveal a slightly different picture. Attainment levels have also risen as a result of the trend for people to go on to study in later life. Finally, in some countries immigration can have a big impact on attainment levels over time.

Findings

In 1997, on average across OECD countries, 37% of all adults (25-64 year-olds) had not completed upper secondary education, 43% had completed upper secondary and post-secondary non-tertiary education and 20% tertiary education. These figures have changed quite dramatically since then as a consequence of efforts to expand higher education. The proportion of the adult population with below upper secondary education has fallen to 30%, while for tertiary attainment it has risen to 27%; attainment of upper secondary and post-secondary non-tertiary education has remained unchanged at 43%.

The big change has thus been at the low and high ends of the skill distribution. The average annual growth rate in tertiary attainment levels has exceeded 5% in Italy, Poland, and Portugal, although it should be noted that overall levels of tertiary attainment in these countries were low to begin with. The proportion of the population with below upper secondary education decreased by 5% or more per year in

the Czech Republic, Finland, Hungary and Poland. Only Portugal and Spain have seen growth rates above 5% for upper secondary and post-secondary non-tertiary attainment.

The number of tertiary graduates available to the labour market has grown by an average of 4.5% per year across OECD countries. Some of this growth is due to the retirement of older people with lower levels of tertiary attainment. Nevertheless, the total investments made in the human capital and the overall change in supply of highly educated individuals during this period is impressive.

The average annual growth in the adult population with an upper secondary and post-secondary non-tertiary education has been substantially below that of tertiary education. This reflects the fact that many individuals have already achieved this level of education. The total number of individuals who have not completed an upper secondary education has decreased by an average of 1.9% per year during this period. With the exception of Germany, Japan, Mexico, Poland, Turkey and the United States, the number of individuals with below secondary education available to the labour market decreased between 1998 and 2006, and in some countries substantially so.

Definitions

Data on population and education attainment are taken from OECD and EUROSTAT databases, which are compiled from National Labour Force Surveys.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A1).

Areas covered include:

- Trends in educational attainment for adults.
- Average annual growth in adult population.

Further reading from OECD

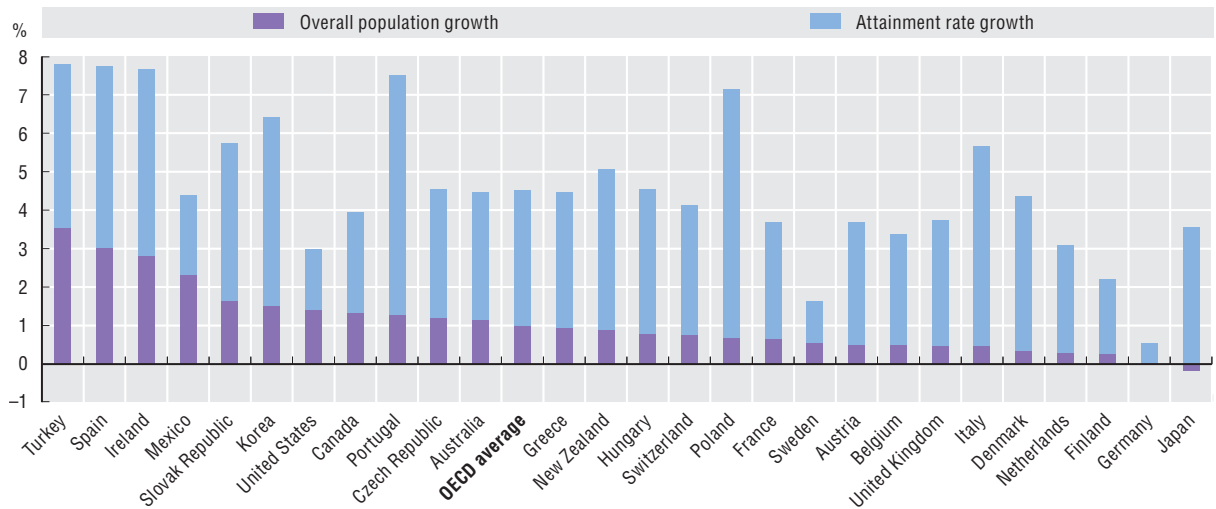
Reviews of National Policies for Education (series).

1. EDUCATION LEVELS AND STUDENT NUMBERS

How have education levels risen over time?

Figure 1.3. Trends in the numbers of adults with tertiary education (1998-2006)

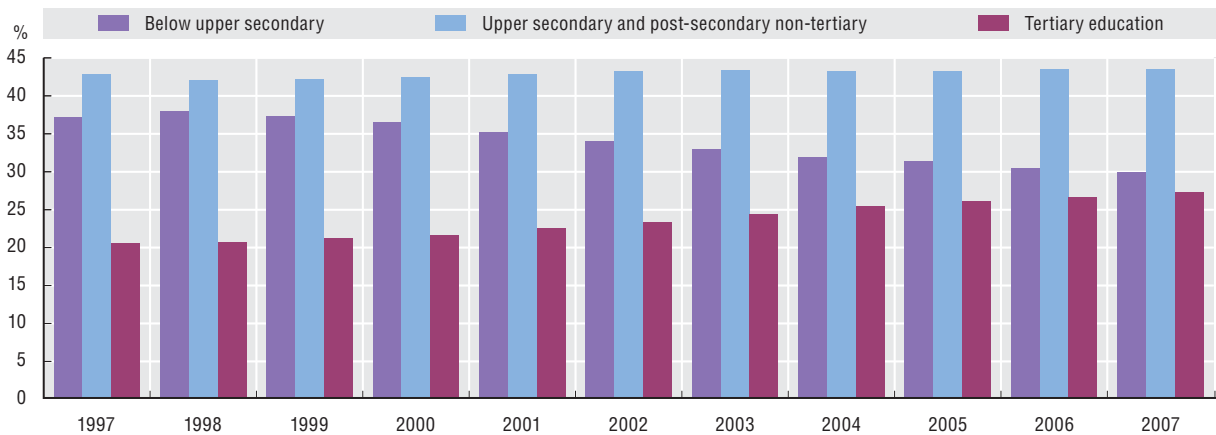
The figure depicts the annual average growth rate of 25-64 years-olds with tertiary education, and breaks down that growth to show the expansion that would have happened due to population growth and the expansion arising from the growth of tertiary education.



Source: OECD (2009), Education at a Glance 2009, Tables A1.4 and A1.5, available at <http://dx.doi.org/10.1787/664024334566>.

Figure 1.4. Trends in education attainment across the OECD area (1997-2007)

This figure shows the OECD average for the percentage of 25-64 year-olds with attainment at each level of education in OECD countries.



Source: Source: OECD (2009), Education at a Glance 2009, Table A1.4, available at <http://dx.doi.org/10.1787/664024334566>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

Who participates in education?

- In most OECD countries, virtually everyone has access to at least 12 years of formal education.
- In more than half of OECD countries, over 70% of 3-4 year-olds are enrolled in either pre-primary or primary programmes.
- From 1995 to 2007, enrolment rates for 20-29 year-olds increased in all but one OECD country.

Significance

A well-educated population is essential to economic and social development, so societies have a real interest in ensuring that children and adults have access to a wide range of educational opportunities. This spread examines access to education, and its evolution, from 1995 to 2007. It looks mainly at when children begin their education and how long they remain in schooling. At the other end of the scale, it looks at the number of young people who continue studying once compulsory education has ended.

Findings

At least 90% of students are enrolled for a period of 14 or more years in Belgium, France, Germany, Hungary, Iceland, Ireland, Japan, the Netherlands, Norway, Spain and Sweden. However, this falls to ten years in Greece and Mexico and six years in Turkey.

On average, a child is more likely to be enrolled in formal education at age 4 and under in the EU19 countries than in other OECD countries. In most OECD countries, full enrolment (meaning more than 90% enrolment) begins between the ages of 5 and 6. However, in Austria, Belgium, the Czech Republic, Denmark, France, Germany, Hungary, Iceland, Italy, Japan, Luxembourg, New Zealand, Norway, Portugal, the Slovak Republic, Spain, Sweden and the United Kingdom, at least 70% of 3-4 year-olds are enrolled in either pre-primary or primary programmes.

The age at which compulsory education ends ranges from 14 in Korea, Portugal and Turkey, to 18 in Belgium, Germany, Hungary and the Netherlands. In all OECD countries, enrolment rates begin to decline after students reach the age of 16. However, in most, the main decline occurs not at the end of compulsory education but towards the end of upper secondary education.

On average in OECD countries, 25% of 20-29 year-olds are enrolled in education; for 15-19 year-olds, the figure is 81%.

Trends

Enrolment rates for 15-19 year-olds increased on average from 74% to 81% from 1995 to 2007 (see Chart 1.2 in *Education at a Glance 2009*). There has been growth, too, in enrolment for 20-29 year-olds, the age span during which most students are enrolled in tertiary education; between 1995 and 2007, their enrolment rates increased in all OECD countries except Portugal. Growth stood at over 12 percentage points in nine OECD countries, and was particularly significant in the Czech Republic, Greece and Hungary.

Definitions

Data for the 2006-2007 school year are based on the UOE data collection on education statistics, administered annually by the OECD. Except where otherwise noted, figures are based on head counts and do not distinguish between full-time and part-time study.

In the table, percentages may be in excess of 100% for the following reasons:

- 3-4 year-olds: This category may include children aged under 3.
- 5-14 year-olds: There may be discrepancies between the data on population and the data on enrolments. Non-resident students may travel into the country for their schooling.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator C1).

Areas covered include:

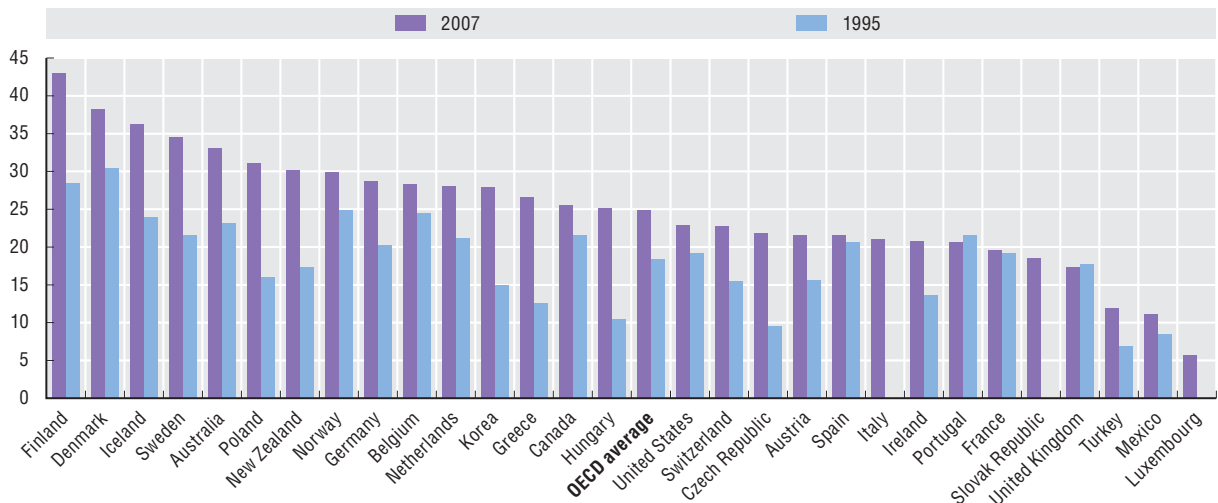
- Enrolment rates of 15-19 year-olds.
- Trends in enrolment rates for 15-19 and 20-29 year-olds.
- Students in secondary and tertiary education by type of institution and mode of study.

1. EDUCATION LEVELS AND STUDENT NUMBERS

Who participates in education?

Figure 1.5. **Enrolment rates of 20-29 year-olds (1995, 2007)**

This figure shows the increase or decrease in the percentage of 20-29 year-olds enrolled in full-time and part-time education.



Source: OECD (2009), *Education at a Glance 2009*, Table C1.2, available at <http://dx.doi.org/10.1787/664625546654>.

Table 1.1. **Enrolment rates by age, 2007**

This table shows the percentage of people in each age group enrolled in full-time and part-time education (see "Definitions" for explanation of percentages above 100%).

| OECD countries | Percentage of age group in education | | | | | |
|---------------------|--------------------------------------|-------------|-------------|-------------|------------|-------------|
| | 4 and under | 5 to 14 | 15 to 19 | 20 to 29 | 30 to 39 | 40 and over |
| Australia | 32.2 | 99.3 | 82.3 | 33.1 | 13.5 | 5.8 |
| Austria | 70.1 | 98.3 | 79.0 | 21.6 | 3.5 | 0.5 |
| Belgium | 126.0 | 99.3 | 94.4 | 28.3 | 8.5 | 3.8 |
| Canada | m | m | 81.1 | 25.9 | 5.5 | 1.7 |
| Czech Republic | 80.0 | 99.8 | 90.1 | 21.8 | 4.4 | 0.4 |
| Denmark | 94.0 | 98.0 | 83.3 | 38.2 | 8.1 | 1.5 |
| Finland | 46.0 | 95.3 | 87.9 | 43.0 | 14.4 | 3.4 |
| France | 111.2 | 100.9 | 85.7 | 19.5 | 2.6 | m |
| Germany | 99.0 | 99.2 | 88.1 | 28.7 | 2.5 | 0.1 |
| Greece | 27.7 | 97.7 | 79.7 | 26.6 | 7.6 | m |
| Hungary | 82.7 | 99.8 | 88.8 | 25.1 | 5.9 | 0.6 |
| Iceland | 96.0 | 98.3 | 84.4 | 36.2 | 12.4 | 3.6 |
| Ireland | 23.8 | 102.6 | 89.7 | 20.8 | 5.6 | 0.2 |
| Italy | 104.4 | 100.3 | 80.0 | 21.0 | 3.5 | 0.1 |
| Japan | 84.4 | 100.5 | m | m | m | m |
| Korea | 27.3 | 95.7 | 86.8 | 27.8 | 2.1 | 0.5 |
| Luxembourg | 81.5 | 95.9 | 73.6 | 5.7 | 0.5 | 0.1 |
| Mexico | 60.4 | 102.1 | 50.1 | 11.1 | 3.5 | 0.6 |
| Netherlands | 49.6 | 99.5 | 89.3 | 28.0 | 2.7 | 0.7 |
| New Zealand | 90.1 | 99.7 | 75.4 | 30.2 | 12.7 | 6.0 |
| Norway | 91.8 | 99.2 | 87.4 | 29.9 | 6.8 | 1.7 |
| Poland | 40.7 | 94.5 | 93.1 | 31.0 | 4.3 | m |
| Portugal | 72.0 | 104.2 | 77.3 | 20.6 | 3.7 | 0.6 |
| Slovak Republic | 76.0 | 96.8 | 85.5 | 18.5 | 3.9 | 0.6 |
| Spain | 125.9 | 100.7 | 80.4 | 21.5 | 4.0 | 1.1 |
| Sweden | 98.4 | 100.3 | 87.0 | 34.5 | 12.9 | 2.9 |
| Switzerland | 27.0 | 100.4 | 84.4 | 22.7 | 3.8 | 0.4 |
| Turkey | 6.7 | 84.3 | 47.2 | 11.9 | 1.6 | 0.2 |
| United Kingdom | 89.9 | 99.3 | 71.4 | 17.3 | 5.7 | 1.7 |
| United States | 49.8 | 98.3 | 79.9 | 22.8 | 5.5 | 1.4 |
| OECD average | 71.2 | 98.6 | 81.5 | 24.9 | 5.9 | 1.5 |

Source: OECD (2009), *Education at a Glance 2009*, Table C1.1, available at <http://dx.doi.org/10.1787/664625546654>.

How many secondary students go on to tertiary education?

- In the last twelve years, the proportion of students graduating from upper secondary programmes has grown by seven percentage points on average in OECD countries with comparable data.
- Girls are now more likely than boys to complete upper secondary education in OECD countries, a reversal of historical trends.
- Entry rates to university-level education increased by nearly 20 percentage points on average in OECD countries between 1995 and 2007.

Significance

This indicator shows how many students finish secondary education and then make the transition into tertiary education. Completing upper secondary education does not in itself guarantee that students are adequately equipped with the basic skills and knowledge necessary to enter the labour market or tertiary studies. However, research has shown that young people in OECD countries who do not finish secondary education face severe difficulties when it comes to finding work.

Findings

In 22 of the 25 OECD countries with comparable data, the percentage of young people graduating from upper secondary education exceeds 70%. In Finland, Germany, Greece, Ireland, Japan, Korea and Norway it is at least 90%. Graduation rates for girls exceed those for boys in 23 of the countries. The gap is greatest in Denmark, Finland, Hungary, Iceland, Ireland, New Zealand, Norway, Portugal and Spain, where girls' graduation rates exceed those of boys by more than 10 percentage points (see Table A2.1 in *Education at a Glance 2009*).

In most countries, upper secondary education is designed to prepare students to enter university-level education (tertiary-type A). (In Austria, Germany and Switzerland, however, students are more likely to graduate programmes that lead to vocationally oriented tertiary education, or tertiary-type B.) Despite this, there is significant variation between countries in the numbers of young people graduating from upper secondary who actually go on to university. For instance, in Belgium, Finland, Greece, Ireland, Italy, Japan and Turkey, the gap is more than 20 percentage points, suggesting that many young people who could go on to university do not do so. It should be noted that the structure of national education systems, such as

the prevalence of vocationally oriented tertiary education, account for some of these variations.

In Australia and New Zealand, the percentage of young people graduating from upper secondary education is substantially lower than the percentage entering university-level education. This apparent anomaly is explained in large part by the presence of international students. When data on such students are excluded, the entry rate for university-level education in Australia falls by 23 percentage points and by 14 in New Zealand (see chart A2.5 in *Education at a Glance 2009*).

Trends

The proportion of students graduating from upper secondary programmes grew by seven percentage points on average in OECD countries with comparable data between 1995 and 2007. Entry rates to university-level education also rose substantially, by nearly 20 percentage points.

Definitions

The data for the 2006-2007 school year are based on the UOE data collection on education statistics, administered by the OECD in 2008. Upper secondary or post-secondary non-tertiary graduation rates are calculated for the years 2005, 2006 and 2007 as net graduation rates, which represent the estimated percentage of the age cohort that will complete education at those levels (except for countries that are unable to provide such detailed data). Gross graduation rates are presented for the years 1995, 2000-2004 for all countries. The net entry rate for a specific age is obtained by dividing the number of first-time entrants of that age to each type of tertiary education by the total population in the corresponding age group. (Data for the United States in Figure 1.7 refer to tertiary-type A and B.)

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A2).

Areas covered include:

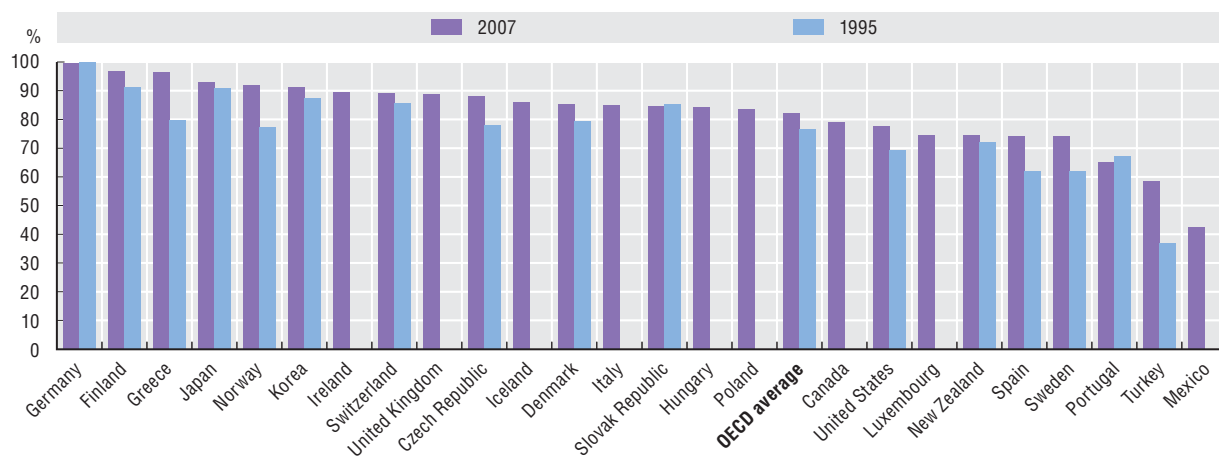
- Current upper secondary graduation rates and trends.
- Graduation rates from non-tertiary post-secondary education.

1. EDUCATION LEVELS AND STUDENT NUMBERS

How many secondary students go on to tertiary education?

Figure 1.6. **Upper secondary graduation rates (1995, 2007)**

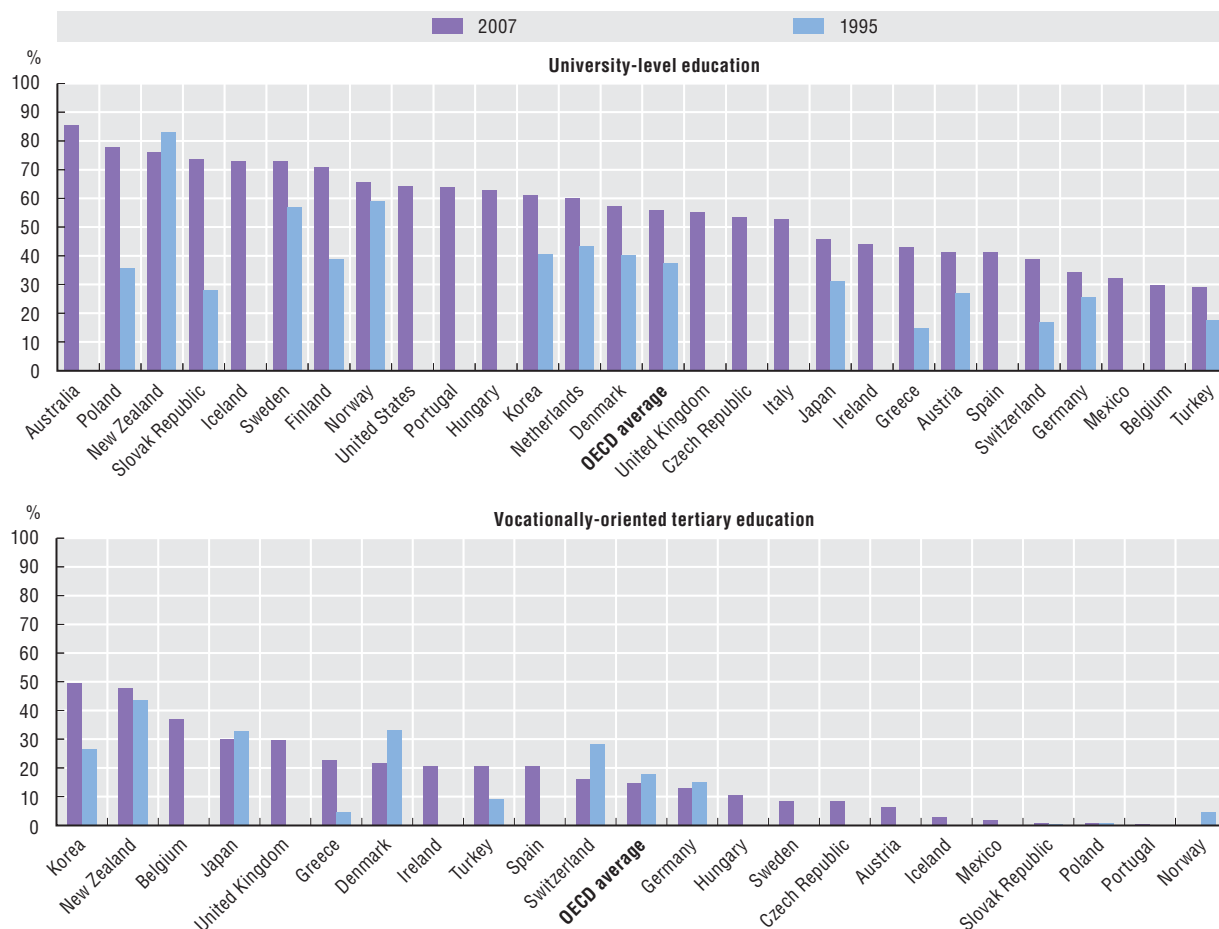
This figure shows the growth – or otherwise – in the numbers of young people graduating from upper secondary education.



Source: OECD (2009), *Education at a Glance 2009*, Table A2.2, available at <http://dx.doi.org/10.1787/664035755120>.

Figure 1.7. **Trends in entry rates to tertiary education (1995, 2007)**

These figures show the growth – or otherwise – in the percentage of young people entering university-level education and vocationally oriented tertiary education.



Source: OECD (2009), *Education at a Glance 2009*, Table A2.5, available at <http://dx.doi.org/10.1787/64035755120>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

How many young people graduate from tertiary education?

- On average across 24 OECD countries with comparable data, 39% of young people complete university-level education.
- Graduation rates range from 20% or less in Greece to 45% or more in Australia, Denmark, Finland, Iceland, Ireland, New Zealand and Poland.
- Graduation rates for young women are notably higher than those for young men – 47% versus 31%.

Significance

Tertiary education serves as an indicator of the rate at which countries produce advanced knowledge. Countries with high graduation rates at tertiary level are also those most likely to be developing or maintaining a highly skilled labour force. Graduation rates from tertiary education (the structure and scope of which varies widely between countries) are influenced both by the degree of access to tertiary programmes and by the demand for higher skills in the labour market.

Findings

Graduation rates vary significantly between countries: In Greece, 20% or less of young people graduate from university-level education (tertiary-type A); by contrast, the proportion is at least 45% in Australia, Denmark, Finland, Iceland, Ireland, New Zealand and Poland. (Note, however, that graduation rates for some countries, notably Australia and New Zealand, are artificially inflated by the presence of international students. For more, see Table A3.1 in *Education at a Glance 2009*.)

Disparities in graduation rates are even greater between men and women. On average in OECD countries, significantly more women obtain university-level qualifications than men, 47% versus 31%. The gender gap is at least 25 percentage points in Finland, Norway, Poland and Sweden and nearly 50 percentage points in Iceland. In Austria, Germany and Switzerland, the sexes are quite balanced. In Japan, by contrast, significantly more men graduate from university-level education.

In university-level education, countries with longer programmes tend to see lower graduation rates: In Australia, Sweden and the United Kingdom programmes of three to less than five years are the norm, and graduation rates are around 40% or more. By contrast, in Austria and Germany, most students complete programmes of at least five years' duration and graduation rates are below 25%.

For the 22 OECD countries with comparable data, 9% of young people graduate from vocationally oriented tertiary education (tertiary-type B). Graduation rates

are significant – in excess of 20% of young people – in only a few OECD countries, most notably Ireland, Japan and New Zealand. At the highest levels of tertiary education, about 1.5% of young people graduate from advanced research programmes in the OECD area (see Table A3.1 in *Education at a Glance 2009*).

Trends

On average across OECD countries, graduation rates from university-level education have increased by 18 percentage points over the past 12 years, and there were increases – often quite substantial – in virtually every country for which data are available.

Definitions

Data for the 2006-2007 academic year are based on the UOE data collection on education statistics that is administered annually by the OECD. Tertiary graduates are those who obtain a university degree, vocational qualifications, or advanced research degrees of doctorate standard. Net graduation rates represent the estimated percentage of an age group that will complete tertiary education. (Graduation rates should not be confused with completion rates, which represent the proportion of people already enrolled in tertiary education who complete their course as opposed to those who drop out.) Data presented here refer only to first-time graduates.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A3).

Areas covered include:

- Graduation rates and trends in tertiary education.
- International students' contribution to graduate output.
- Completion rates in tertiary education.

Further reading from OECD

Higher Education Management and Policy (journal).

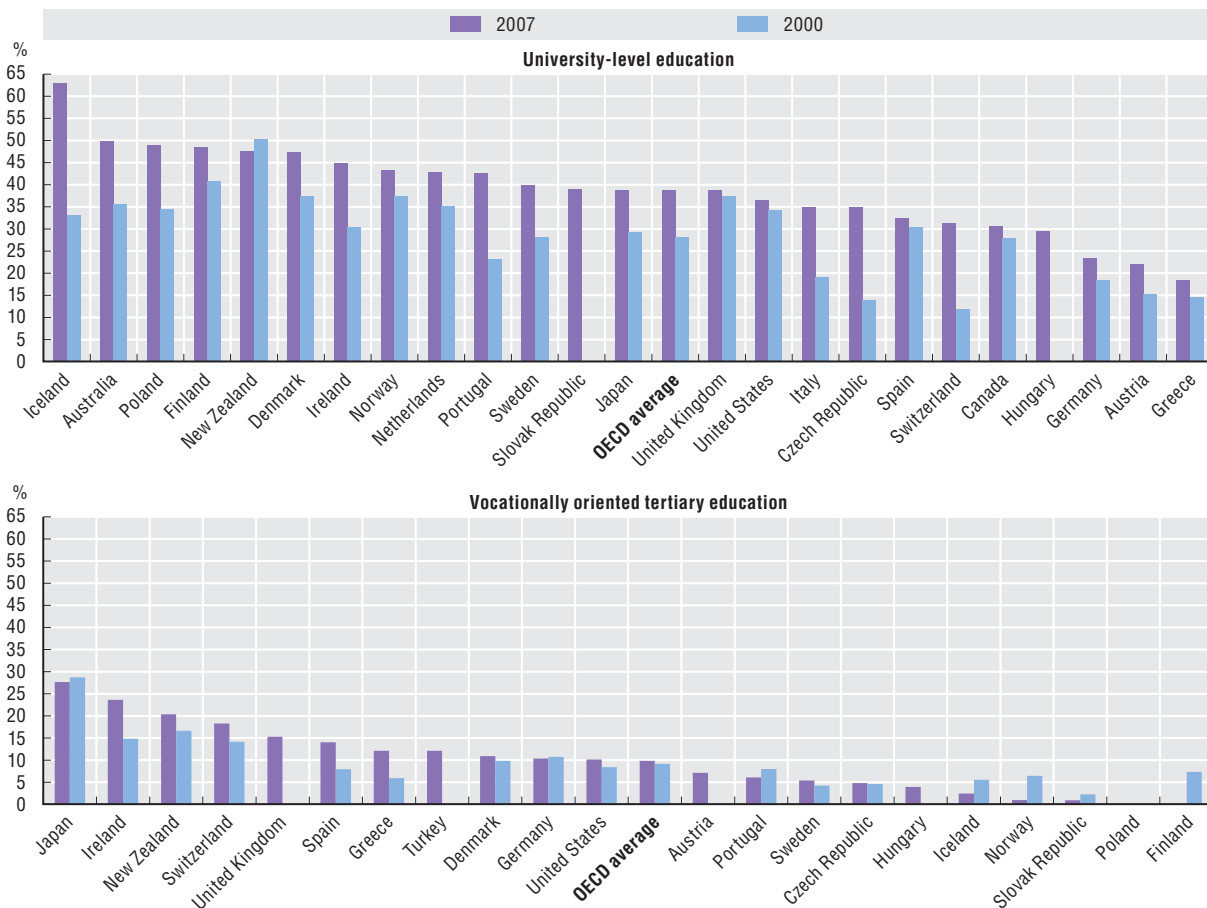
OECD Reviews of Tertiary Education (series of national reviews).

1. EDUCATION LEVELS AND STUDENT NUMBERS

How many young people graduate from tertiary education?

Figure 1.8. **Graduation rates from tertiary education (1995, 2007)**

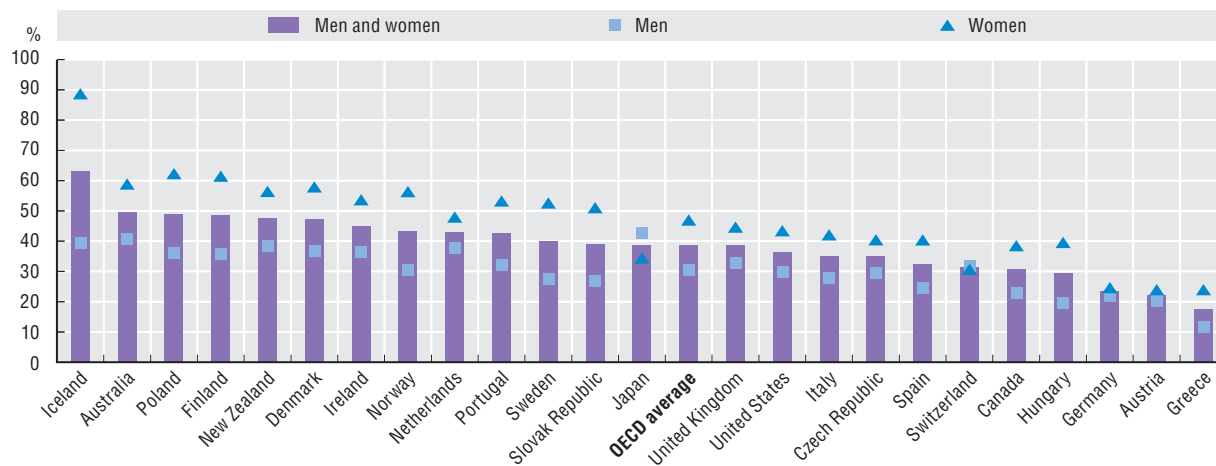
These figures show the growth – or otherwise – in the percentage of young people who are first-time graduates from university-level and vocationally oriented tertiary education.



Source: OECD (2009), *Education at a Glance 2009*, Table A3.2, available at <http://dx.doi.org/10.1787/664042306054>.

Figure 1.9. **Graduation rates from university-level education by gender, 2007**

This chart shows the percentage of young men and young women who are first-time graduates from university-level education.



Source: OECD (2009), *Education at a Glance 2009*, Table A3.1, available at <http://dx.doi.org/10.1787/664042306054>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

Is education meeting the needs of the workforce?

- On average across OECD countries, about a quarter of people without a tertiary qualification have a skilled job; for people with a tertiary qualification the figure is over 80%.
- Between 1998 and 2006, there was a marginal decrease in the proportion of younger people succeeding in obtaining skilled jobs.

Significance

A key issue for any education system is how well it supplies the labour market with the level and diversity of skills it requires. The match between educational attainment and occupations can thus be seen as a signal of demand for education. This spread looks at one aspect of this by examining trends in the proportions of tertiary graduates and non-graduates in skilled occupations in OECD countries over the period 1998 and 2006.

Findings

On average across OECD countries, about a quarter of people without a tertiary qualification succeed in obtaining a skilled job; for people with a tertiary qualification – or graduates – this figure rises to more than 80%. The overall proportions of both graduates and non-graduates holding skilled jobs was relatively stable between 1998 and 2006, suggesting that demand has kept up with the influx of more educated individuals.

Younger adults (25-34 year-olds) are typically more sensitive to changes in supply and demand for skills as they try to get a foothold in the labour market. Between 1998 and 2006, there was a marginal decrease in the proportion of younger people succeeding in obtaining skilled jobs, but it differed widely among countries. In Sweden the proportion of young graduates in skilled jobs fell by 13 percentage points, in Poland by 11 and in Portugal by 8. By contrast, there were increases of between 4 and 9 percentage points in Austria, Finland, Germany and Switzerland, indicating improving job prospects for younger graduates.

Another way to look at the supply of and demand for high-end skills is to examine how access to skilled jobs changes across age groups. As people accumulate more human capital over time, they might be expected to move up into skilled jobs. Against that, if too few graduates are entering the labour market, employers will

be forced to take in younger, lower educated individuals, which might even turn the advantage towards younger cohorts. The opposite applies if too many individuals with higher levels of education are entering the labour market; young individuals with lower levels of education will find it increasingly difficult to find a skilled job, steepening the advantage of older workers. On average across OECD countries, the proportion of the non-graduate age group in skilled jobs increases by 3 percentage points between 25-34 year-olds and 45-54 year-olds, indicating that more experienced workers have some advantage in obtaining a skilled job. (These questions are examined graphically in the second figure opposite.)

Definitions

Data on population and educational attainment are taken from OECD and Eurostat databases, which are compiled from National Labour Force Surveys. Data are provided by the Supply of Skills working group of INES Network on Labour Market, Economic and Social Outcomes of Learning, based on information collection by the ISCO (International Standard Classification of Occupations). “Skilled jobs” describes jobs in ISCO occupational categories 1-3, namely legislators, senior officials and managers (1); professionals (2); and technician and associate professionals (3).

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A1).

Areas covered include:

- Proportion of people by age group in skilled jobs in 1998 and 2006.

Further reading from OECD

Teaching, Learning and Assessment for Adults: Improving Foundation Skills (2008).

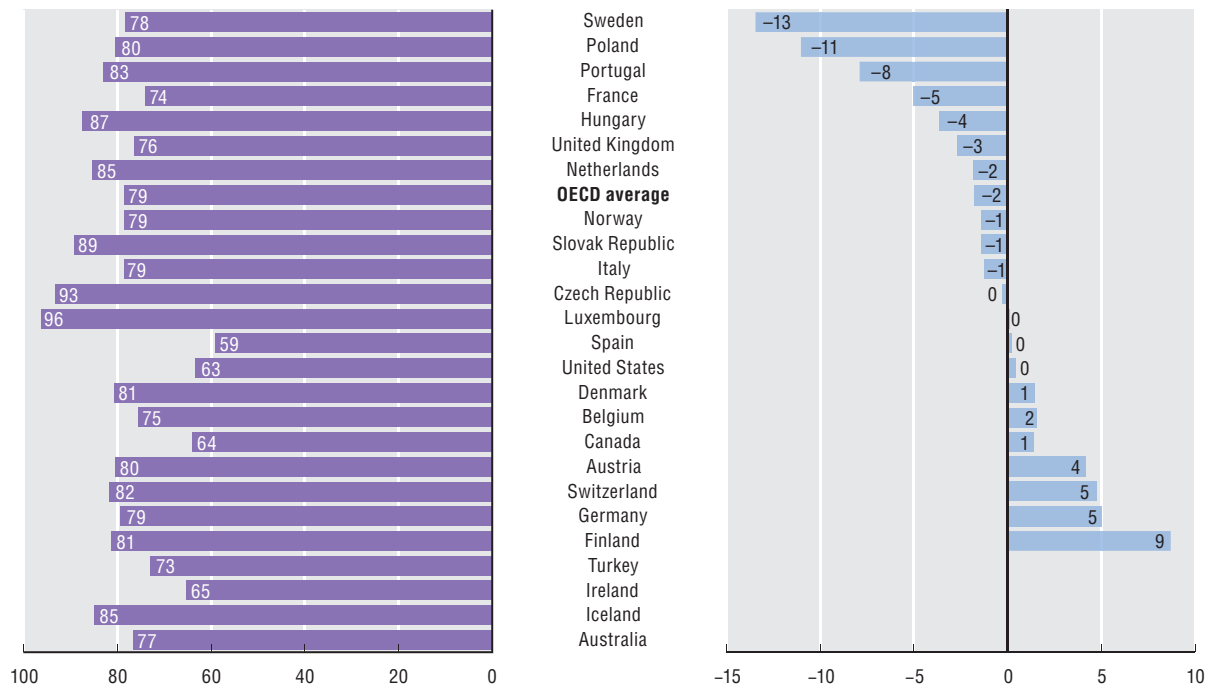
Learning a Living: First Results of the Adult Literacy and Life Skills Survey (2005).

1. EDUCATION LEVELS AND STUDENT NUMBERS

Is education meeting the needs of the workforce?

Figure 1.10. **Proportion of younger graduates in skilled jobs in 2006 and change since 1998**

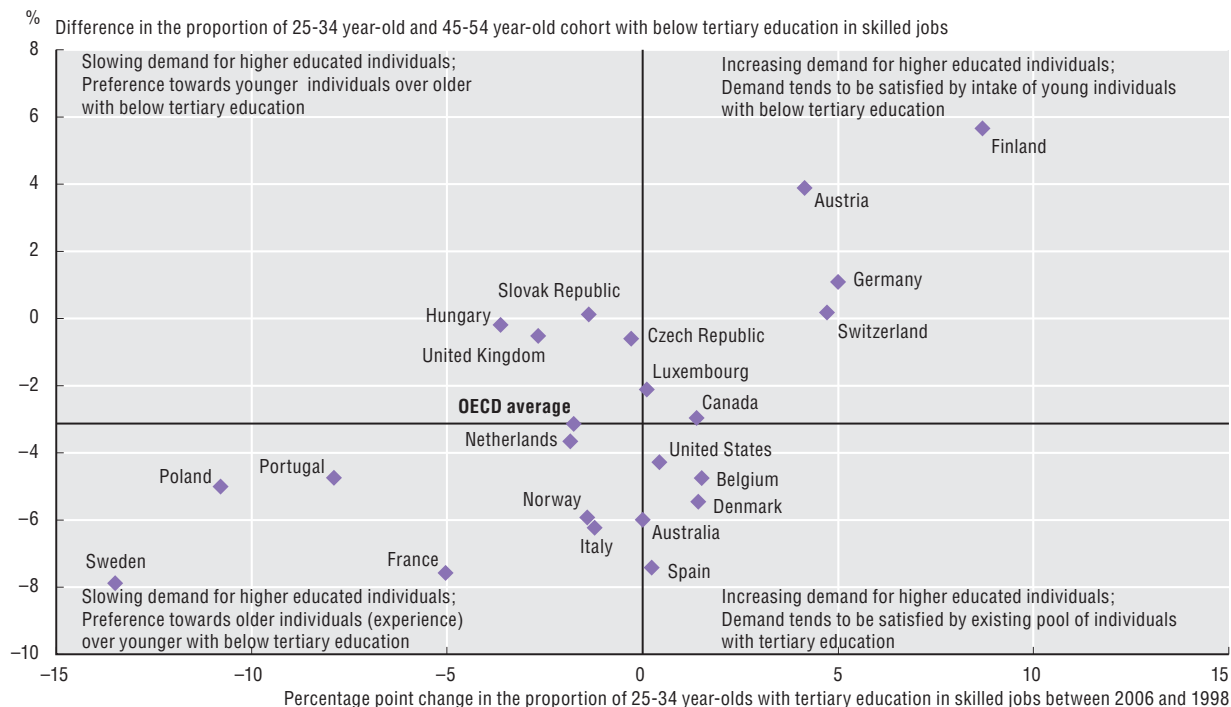
This figure shows (left) the proportion of 25-34 year-olds with tertiary qualifications who were in skilled jobs in 2006, and (right) how much these levels have changed since 1996.



Source: OECD (2009), *Education at a Glance 2009*, Table A1.6, available at <http://dx.doi.org/10.1787/664024334566>.

Figure 1.11. **Supply of and demand for young graduates in skilled jobs, 1998-2006**

This figure examines the performance of younger (23-34) versus older (45-54) graduates in skilled employment.



Source: OECD (2009), *Education at a Glance 2009*, Table A1.6, available at <http://dx.doi.org/10.1787/664024334566>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

How successful are students in moving from education to work?

- On average across OECD countries, a 15-year-old in 2007 could expect to continue in formal education for about another 6 years and 8 months.
- On average, completing upper secondary education reduces unemployment among 20-24 year-olds by 6.7 percentage points and that of 25-29 year-olds by 6.2 percentage points.
- Among young unemployed adults with below upper secondary education, the proportion of those who are long-term unemployed exceeds 50% in more than half of OECD countries.

Significance

This spread looks at the number of years young people can expect to spend in education, employment and non-employment. All OECD countries are experiencing rapid social and economic changes that make the transition to working life more uncertain for younger individuals. As the economic crisis bites, long-term unemployment among young adults is likely to rise in most countries.

Findings

On average, a 15-year-old can expect to remain in school for an additional 6 years and 8 months, but this rises to a high of at least 8 years in Finland, Iceland, the Netherlands and Poland and a low of 5 years or less in Ireland and Turkey. In addition, an average 15-year-old can expect over the next 15 years to hold a job for 6 years and 2 months, to be unemployed for 8 months and to be out of the labour market – neither in education nor seeking work – for 1 year and 4 months.

Young people (15-19 years-old) who are not in employment, education or training, or “NEETs”, have attracted considerable attention in some countries, in part because they receive little or no support from the welfare system in most countries. On average across OECD countries, the proportion of NEETs among 15-19 year-olds is 4.8%, ranging from over 31% in Turkey to about 1% in the Czech Republic.

An upper secondary education usually provides some insurance against long-term unemployment, but this varies substantially among countries. In Denmark, Greece, Hungary, Italy and Turkey, long-term unemployment rates among 25-34 year olds are higher for those with upper secondary and post-secondary non-tertiary education than for those with qualifications below upper secondary level. However, this

needs to be seen in the context of substantially higher overall unemployment rates among those with below upper secondary education.

As the labour market deteriorates, it can be virtually impossible for young individuals to get a foothold in the labour market as they compete with more experienced workers for jobs, a phenomenon that particularly affects people in the 20-to-29 age group (most 15-19 year-olds are still in education). At the same time, the incentives to invest in education improve, especially if the alternative is unemployment. In this context, it is important for education systems to increase access and to make additional resources available to educational institutions.

Trends

Over the past 10 years, the rates for not being in education nor in employment among 20-24 year-olds have varied substantially in most countries. In Greece, Hungary, Poland and the Slovak Republic rates have varied by 10 percentage points or more over economic cycles (see chart C3.4 in *Education at a Glance 2009*).

Definitions

Data are collected as part of the annual OECD Labour Force Survey. For certain European countries, the data come from the annual European Labour Force Survey. Persons in education include those attending school part-time and full-time. Non-formal education or educational activities of very short duration are excluded.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator C3).

- Areas covered include:
- Expected years in education and not in education for 15-29 year-olds, plus trends and gender differences.

Further reading from OECD

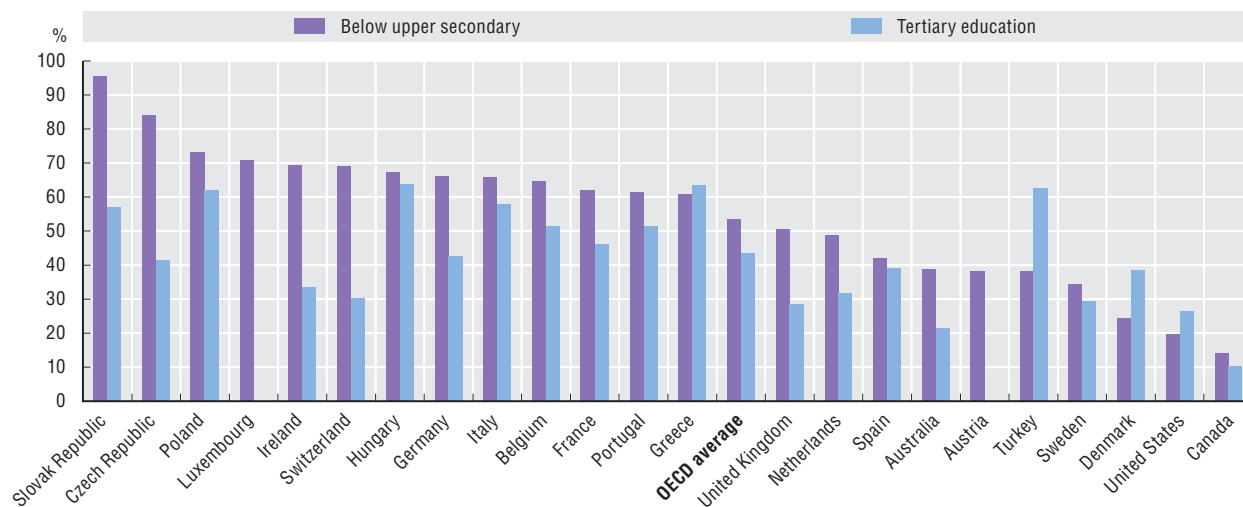
From Education to Work (2005).

1. EDUCATION LEVELS AND STUDENT NUMBERS

How successful are students in moving from education to work?

Figure 1.12. **Percentage of jobless 25-34 year-olds who are long-term unemployed, 2007**

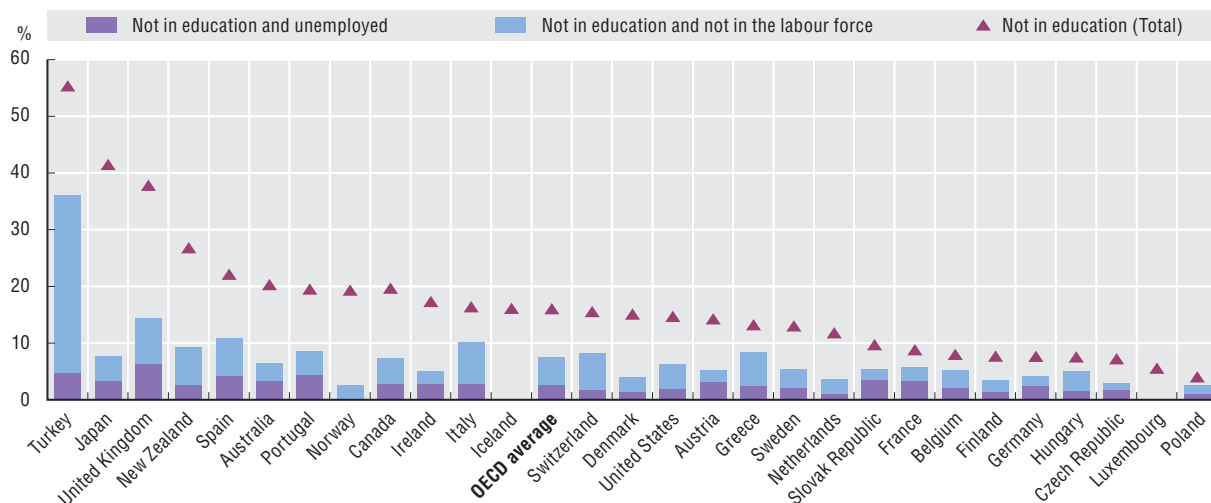
This figure shows that more than half of jobless people with below upper secondary education are long-term unemployed. However, in some countries the prevalence of long-term unemployment among jobless tertiary graduates is higher than for jobless people with below upper secondary education.



Source: OECD (2009), *Education at a Glance 2009*, Table C3.5, available at <http://dx.doi.org/10.1787/664770480457>.

Figure 1.13. **Percentage of 15-19 year-olds who are not in the labour market or the education system, 2007**

This figure shows the percentage of 15-19 year-olds who are not in education, as well as the proportion who are not in education and not working and/or not seeking work.



Source: OECD (2009), *Education at a Glance 2009*, Table C3.3, available at <http://dx.doi.org/10.1787/664770480457>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

How many students study abroad?

- In 2007, over 3 million tertiary students were enrolled outside their country of citizenship.
- Just over 83% of students worldwide who study abroad do so in OECD countries.
- Asians account for almost 47% of all students studying abroad in the OECD area.

Significance

This spread looks at the extent to which students are studying abroad. One way for students to expand their knowledge of other cultures and languages, and to better equip themselves in an increasingly globalized labour market, is to pursue their higher-level education in countries other than their own. Some countries, particularly in the European Union, have even established policies and schemes that promote such mobility to foster intercultural contacts and help build social networks.

Findings

OECD countries attract the bulk of students who study abroad worldwide – more than four out of five. In the OECD area, the countries that send most students abroad are France, Germany, Japan and Korea, each representing between 2.2% and 4.4% of the total. But the biggest single source country is China, which accounts for 16.3% of all students studying abroad in the OECD area (or 17.7% if Hong Kong, China is included). Indeed, Asia generally is the biggest source area for such students, accounting for just under 47% of the total in OECD countries. Their presence is particularly strong in Australia, Japan and Korea, where they account for more than 75% of international and foreign students. In the OECD area, the Asian group is followed by the Europeans, accounting for 24.9% of international and foreign students, followed by Africa with 10.5%, South America with 5.4% and North America with 3.8%. Altogether, 31.2% of international students enrolled in OECD countries come from other OECD countries (see Table C2.2 in *Education at a Glance 2009*).

There are big variations between countries in the percentage of international students enrolled in their tertiary student body. In Australia, international students represent 19.5% of tertiary students; 12.4% in Austria; 13.6% in New Zealand; 14.0% in Switzerland; and 14.9% in the United Kingdom. By contrast, in the Slovak Republic, international students account for only 1% or less of the tertiary-level student body.

As noted on page 18, the large presence of international students has a significant impact on tertiary entry rates in a number of countries, especially Australia and New Zealand (see chart A2.5 in *Education at a Glance 2009*). Equally, as the second chart on the opposite page shows, international and foreign students can have a big impact on tertiary graduation rates. If data from international students is excluded, graduation rates from university-level education in Australia drop by 15% and by 10% in New Zealand.

Trends

Over the past three decades, the number of international students has grown substantially, from 0.8 million worldwide in 1975 to 3 million in 2007, a more than three-fold increase. This growth accelerated during the past ten years, mirroring the globalization of economies and societies (see Box C2.1 in *Education at a Glance 2009*).

Definitions

Data on international and foreign students are based on the UOE data collection on education statistics, administered annually by the OECD. Data from the UNESCO Institute for Statistics are also included. Students are classified as “international” if they left their country of origin and moved to another country to study. Students are classified as “foreign” if they are not citizens of the country in which they are studying. This latter category includes some students who are permanent residents, albeit not citizens, of the countries in which they are studying (for example, young people from immigrant families).

Going further

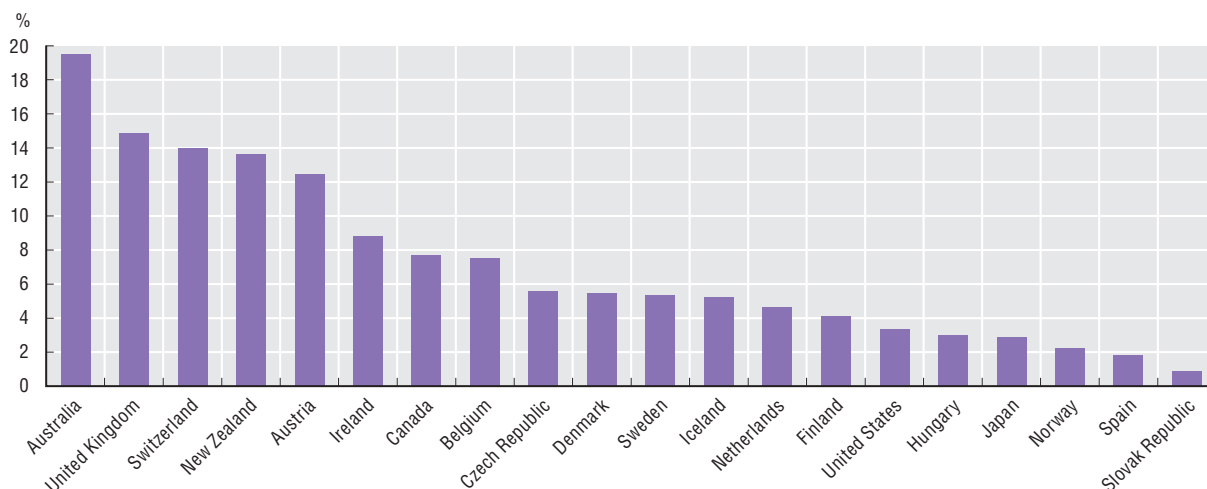
For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator C2).

Areas covered include:

- Distribution of students by country of origin and destination.
- Trends in the numbers of students studying abroad.

Figure 1.14. **Percentage of international students enrolled in tertiary education, 2007**

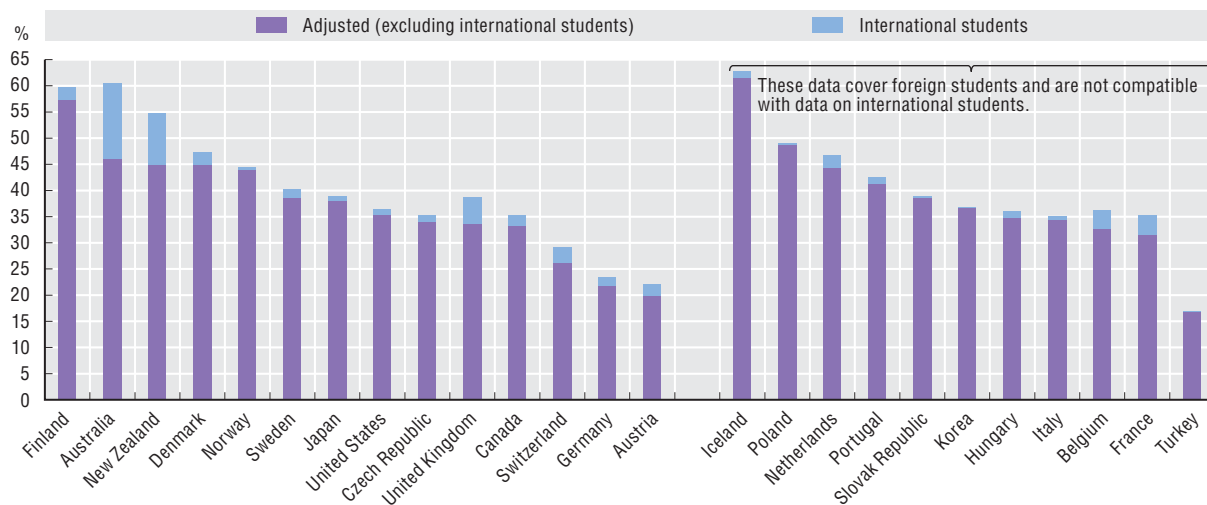
This figure shows the share of international students in each country's student body at tertiary level.



Source: OECD (2009), *Education at a Glance 2009*, Table C2.1, available at <http://dx.doi.org/10.1787/664653153762>.

Figure 1.15. **Impact of international/foreign students on graduation rates in university-level education, 2007**

This figure shows the percentage of international and foreign students compared with domestic students among graduates taking a first degree.



Source: OECD (2009), *Education at a Glance 2009*, Table A3.3, available at <http://dx.doi.org/10.1787/664042306054>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

Where do students go to study?

- Four countries – France, Germany, the United Kingdom and the United States – hosted just under half of the world's students who studied abroad in 2007.
- The United States saw a significant drop as a preferred destination of foreign students between 2000 and 2007, falling from about 25% of the global market share to 20%.
- Thirty percent or more of international students are enrolled in sciences, agriculture or engineering in Canada, Finland, Germany, Sweden, Switzerland and the United States.

Significance

This indicator describes students' preferred destinations and the subjects they study. As well as its social and educational impact, international study has a substantial economic impact. Some OECD countries already show signs of specialisation in education exports, and the internationalisation of education is likely to have a growing impact on countries' balance of payments as a result of revenue from tuition fees and domestic consumption by international students. There are financial benefits, too, for educational institutions; international students can also help them to reach the critical mass needed to diversify the range of their educational programmes.

Findings

The four most popular destination countries in 2007 were as follows: The United States, which took in 20% of all foreign students; the United Kingdom, 12%; Germany, 9%; and France, 8%. Besides these, significant numbers of foreign and international students were also enrolled in Australia, which was the destination of 7% of the world's foreign students; Canada, 4%; Japan, 4%; and New Zealand, 2%. (Figures for Australia, the United Kingdom and United States refer to international students.)

The dominance of English-speaking destinations, such as Australia, Canada, the United Kingdom and the United States, may be explained by the fact that students intending to study abroad are most likely to have learned English in their home country or wish to improve their English language skills through immersion and study abroad. An increasing number of institutions in non-English-speaking countries now offer courses in English as a way of attracting more foreign students.

Sciences attract at least one in six international students in Canada (18.5%), against 17% in Germany, 18% in Iceland, just over 18% in New Zealand, almost 17% in Switzerland, and almost 19% in the United States; in Japan, however, the figure is fewer than one in fifty (1.2%). Non-Anglophone countries tend to

enrol high proportions of such students in the humanities and the arts, ranging from just under 22% in Germany to almost 43% in Iceland. Social sciences, business and law programmes also attract students in large numbers. In Australia, the Netherlands and New Zealand, these fields enrol around half of all international students. In EU countries, health and welfare programmes attract large proportions of international students, most notably in Belgium, accounting for almost 42% of international students, and Hungary with almost 33%.

Trends

A number of countries saw a fall in their market shares in the first half of this decade. The most notable decline was in the United States, which was the designation for one in four international students in 2000, but only one in five in 2007. Germany's market share fell by about 1 percentage point, while Belgium and Canada registered decreases of about one-half of a percentage point. By contrast, New Zealand's share grew by 1.7%, Australia's by 1.4% and France and Korea's by about a percentage point. The slump in the United States' share may be attributable to the tightening of conditions of entry for foreign students following the September 2001 attacks, and to increasingly active marketing by universities in the Asia-Pacific.

Definitions

See previous spread.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator C2).

Areas covered include:

- Trends in international education market shares.

Further reading from OECD

Cross-border Tertiary Education: A Way towards Capacity Development (2007).

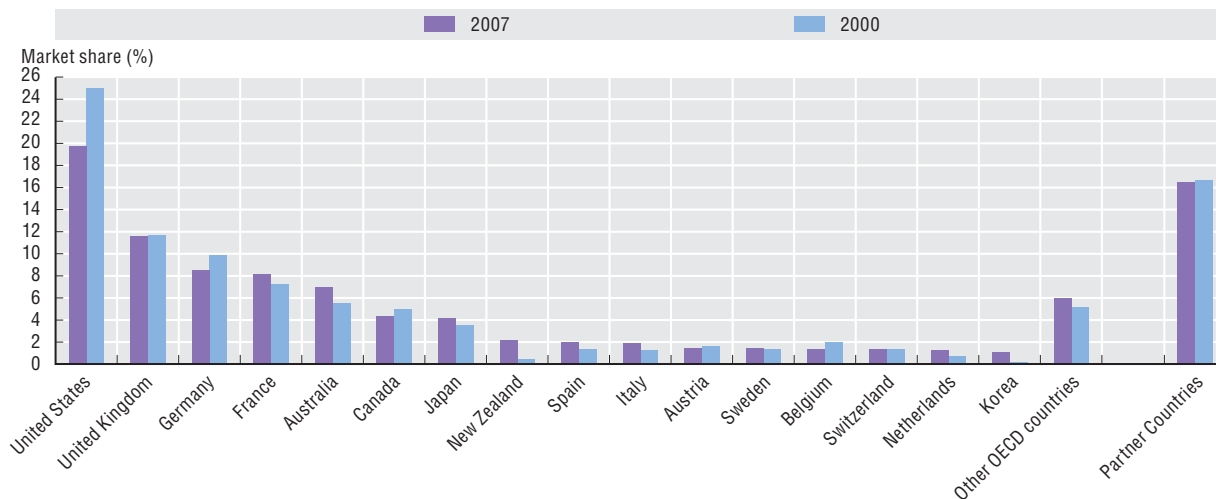
Internationalisation and Trade in Higher Education: Opportunities and Challenges (2004).

1. EDUCATION LEVELS AND STUDENT NUMBERS

Where do students go to study?

Figure 1.16. Trends in market share for international education (2000, 2007)

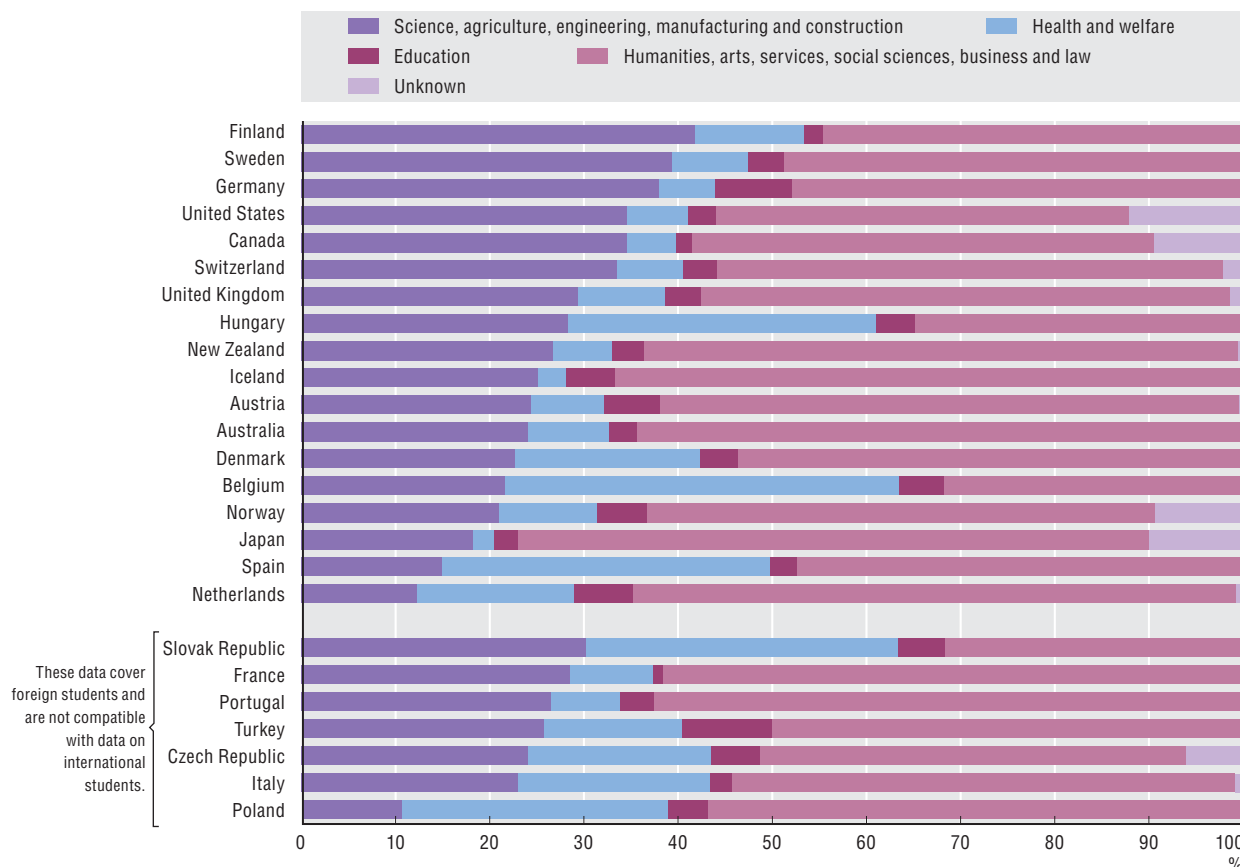
This figure shows the share of all foreign tertiary students taken by each of the major study destinations, and how that share has changed. Most notably, around a quarter of all foreign students went to the United States in 2000, but this has since fallen to about a fifth.



Source: OECD (2009), *Education at a Glance 2009*, Table C2.7, available at <http://dx.doi.org/10.1787/664653153762>.

Figure 1.17. Subjects studied by international students, 2007

This figure shows the fields of study pursued by international students.



Source: OECD (2009), *Education at a Glance 2009*, Table C2.5, available at <http://dx.doi.org/10.1787/664653153762>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

PISA: Who are the top performers?

- On average across OECD countries, 18% of students are top performers in at least one of the subject areas of science, mathematics or reading. However, only 4% are top performers in all three areas.
- The proportion of students who are top performers in science ranges from more than 13% in some countries to less than 5% in others.
- Across all three subject areas, there is little difference in the numbers of girls and boys who are top performers.

Significance

The rapidly growing demand for highly skilled workers has led to a global competition for talent. High-level skills are critical for the creation of new knowledge, technologies and innovation and therefore an important determinant of economic growth and social development. Drawing on data from the OECD's Programme for International Student Assessment (PISA), this spread looks at top-performing students in science.

Findings

The proportion of top performers in science varies widely across countries and, interestingly, scientific excellence is only weakly related to average performance in countries. Although on average across OECD countries, 9% of students reach PISA's Level 5 in science, and slightly more than 1% reach Level 6, these proportions vary substantially across countries. For example, among the OECD countries, seven have at least 13% of top performers in science, whereas there are six with 5% or less.

To what extent do students who are strong in science also do well in other subject areas? Across OECD countries, 4% of students are top performers in all three assessment subject areas: science, reading and mathematics.

Girls do as well as boys: On average across OECD countries, 4.1% of girls and 3.9% of boys are top performers in all three subject areas and 17.3% of girls and 18.6% of boys are top performers in at least one subject area. These averages, however, hide significant variations, both between countries and across subject areas. While the gender gap among students who are top performers in science only is small (1.1%

of girls and 1.5% of boys), it is significant among students who are top performers in reading only (3.7% of girls and 0.8% of boys) as well as in mathematics only (3.7% of girls and 6.8% of boys).

While there is no difference in the average performance in science of boys and girls, boys tend to show a marked advantage among the top performers. In eight of the 17 OECD countries with at least 3% of both boys and girls among the top performers in science, a significantly higher proportion of them are boys, and there are no countries with a higher proportion of girls. On average across OECD countries, almost half of the top performers in science (44%) were also top performers in reading and mathematics, but this was the case for 50% of girls and 37% of boys.

Definitions

Achievement scores are based on assessments administered as part of the OECD's PISA programme, which were carried out in 2006 (with a special focus on students' abilities in science). "Students" refers here to 15-year-olds enrolled in secondary education. "Top performers" refers to students who attain Levels 5 and 6 on the PISA science scale, Level 5 on the reading scale, and Levels 5 and 6 on the mathematics scale.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A4).

Further reading from OECD

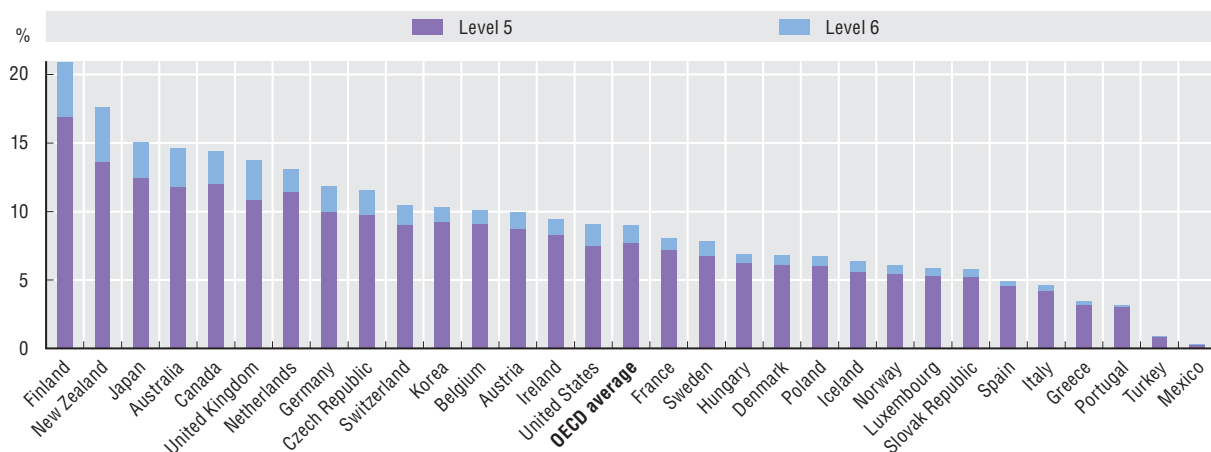
PISA 2006: *Science Competencies for Tomorrow's World*, Vol. 1 Analysis (2007).

Top of the Class: High Performing Learners in PISA 2006 (2009).

PISA website: www.pisa.oecd.org.

Figure 1.18. **Percentage of top performers on the science scale in PISA 2006**

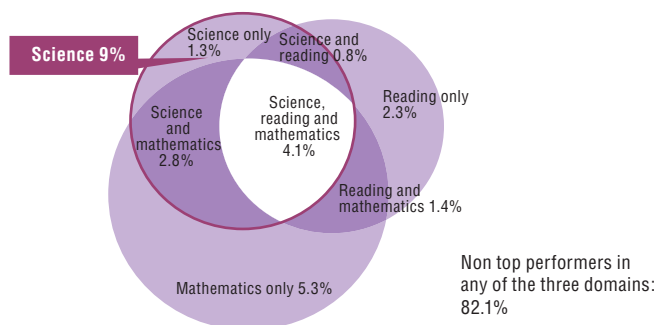
This chart shows the percentage of students who performed at Levels 5 or 6 in the science subject area.



Source: OECD (2009), *Education at a Glance 2009*, Chart A4.1, available at <http://dx.doi.org/10.1787/664076271473>.

Figure 1.19. **Overlapping of top performers in science, reading and mathematics in PISA 2006**

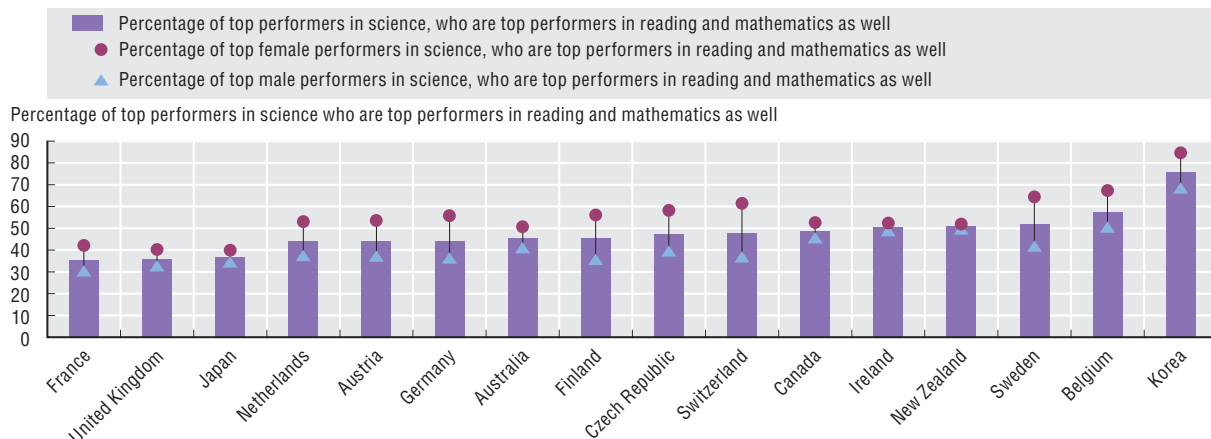
This chart shows the degree of overlap among top performers among OECD countries in PISA's three subject areas.



Source: OECD (2009), *Education at a Glance 2009*, Chart A4.2, available at <http://dx.doi.org/10.1787/664076271473>.

Figure 1.20. **Overlapping of top performers by gender in PISA 2006**

This chart shows percentage of boys and girls among top performers in science who are also top performers in reading and mathematics.



Source: OECD (2009), *Education at a Glance 2009*, Chart A4.3, available at <http://dx.doi.org/10.1787/664076271473>.

- In France, Greece, Luxembourg, Portugal and the United States, 80% or more of top performers come from a more advantaged socio-economic background.
- But about a quarter of top performers in science come from a socio-economic background below the country's average.
- Much of the variation in immigrant students' performance falls away when account is taken of their families' socio-economic status.

Significance

Results from all three rounds of PISA since 2001 show that socio-economic background and performance are closely related – in basic terms, students from wealthier families tend to do better. Similarly, coming from an immigrant background can have a significant impact on how well students perform. From an equity perspective it is important to understand the effect of these background characteristics on the proportion of top performers.

Findings

Socio-economic status: In virtually every country for which there are comparable data, students in the top performing category come from families with comparatively advantaged socio-economic backgrounds. In France, Greece, Luxembourg, Portugal and the United States, for example, 80% or more of top performers come from a background that is better off than the average for their country. There are at least two reasons for this linkage: First, families with more educated parents, higher income and better material, educational and cultural resources are better placed to provide children with superior educational opportunities both at home and outside the home. Second, such families often have much more choice over where they can enrol their children.

However, a disadvantaged background is not an insurmountable barrier to excellence. In the typical OECD country about a quarter of top performers in science come from a socio-economic background below their country's average. In some countries the chances for such relatively disadvantaged students to become top performers are even greater. For example, in Austria, Finland, Japan, one-third or more of top performers come from such a background.

Immigrant status: Coming from an immigrant background can have a significant impact on student performance. There are more top performers in science among native students than among students

with an immigrant background, but in large part this reflects differences in socio-economic backgrounds. Indeed, in half of the countries being compared, this difference is no longer significant after accounting for students' socio-economic background.

There is considerable variation between countries in how well immigrant students do. In Australia, Canada, Greece, Ireland, New Zealand, Norway and Portugal, there are no significant differences between immigrant and native students in the proportion of top performers, which reflects in part differing immigration patterns and policies. Language is also a factor: Not surprisingly, students in homes where a different language is spoken than the national or an official language face additional learning challenges and a smaller proportion of these students tend to be top performers (see Tables A4.4 and A4.5 in *Education at a Glance 2009*).

Definitions

Achievement scores are based on assessments administered as part of the OECD's PISA programme, which were carried out in 2006 (with a special focus on students' abilities in science). "Students" refers here to 15-year-olds enrolled in secondary education. "Top performers" refers to students who attain Levels 5 and 6 on the PISA science scale, Level 5 on the reading scale, and Levels 5 and 6 on the mathematics scale. "Strong performers" refers to students who attain Level 4 on the PISA scales. The PISA index of economic, social and cultural status (ESCS) provides a comprehensive measure of student socio-economic background, based on parents' education levels and occupational status and possessions in the home.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A4).

Further reading from OECD

PISA 2006: Science Competencies for Tomorrow's World, Vol. 1 Analysis (2007).

Top of the Class: High Performing Learners in PISA 2006 (2009).

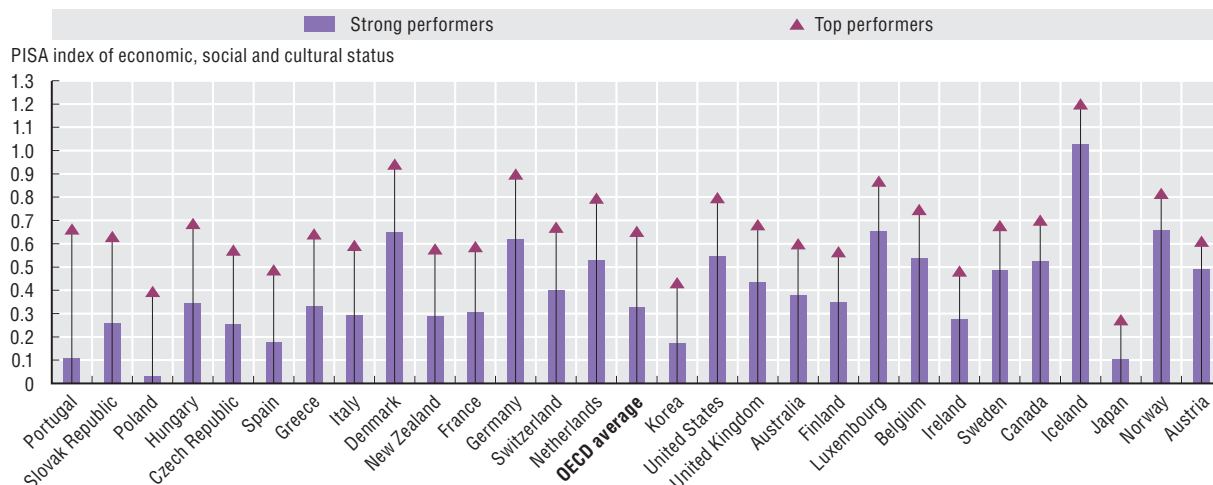
PISA website: www.pisa.oecd.org.

1. EDUCATION LEVELS AND STUDENT NUMBERS

PISA: What is the family background of top performers?

Figure 1.21. **Difference in socio-economic background between top performers and strong performers in PISA 2006**

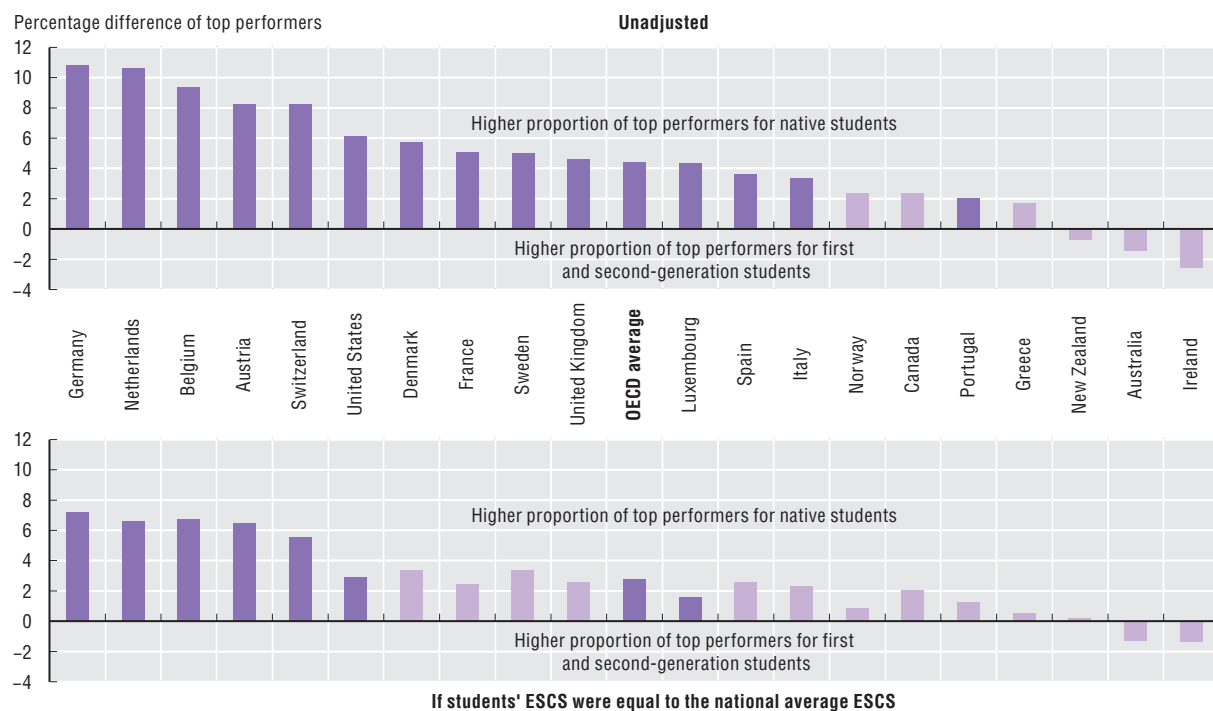
This chart shows the value of the PISA index of economic, social and cultural status (ESCS) for strong performers (i.e., those who perform at Level 4 on the PISA science scale) and top performers (Levels 5 and 6).



Source: OECD (2009), *Education at a Glance 2009*, Chart A4.4, available at <http://dx.doi.org/10.1787/664076271473>.

Figure 1.22. **Percentage difference of top performers by immigrant status in PISA 2006**

The top chart looks at the proportion of immigrant students compared with native students who are among top performers; the bottom chart uses PISA's ESCS index to adjust for the fact that migrant families are frequently at an economic disadvantage in OECD countries. Significant differences are highlighted in a darker tone.



Source: OECD (2009), *Education at a Glance 2009*, Chart A4.6, available at <http://dx.doi.org/10.1787/664076271473>.

1. EDUCATION LEVELS AND STUDENT NUMBERS

PISA: What are top performers' attitudes and motivations?

- On average across OECD countries, 68% of top performers in science report being happy doing science problems, against 53% of strong performers.
- Similarly, 56% of top performers report that they would like to study science after secondary school compared with 39% of strong performers.

Significance

Students' attitudes and motivations tend to be closely associated with how well they do. Fostering interest and motivation in science, as well as preparing and informing students about science-related careers, are thus important policy goals. This spread shows how top performers in science tend to be dedicated and engaged learners who aspire to a career in science and feel well informed about potential career opportunities in science.

Findings

Enjoyment: Across OECD countries, the top performers' index of enjoyment is two-thirds higher than the OECD average and the difference between top performers and strong performers is statistically significant in all OECD countries.

Top performers in science are engaged science learners, reporting that they enjoy learning science, that they want to learn more, that their science lessons are fun and that they are motivated to do well in science. On average, 68% of top performers report being happy doing science problems (against only 53% of strong performers) and 75% like reading about science (compared with 60% of strong performers). Over 80% of top performers report that they enjoy acquiring new knowledge in science, are interested in learning about science and generally have fun when learning science (see Tables A5.1b and A5.7a in *Education at a Glance 2009*).

Motivation: Top performers in science report being motivated to learn science because they believe it will help them with their future studies or career. Top performers report that they study science because they know it is useful for them (81%), because what they learn will improve their career prospects (76%) or that they need it for what they want to study later on (70%). Among OECD countries, the difference in the index of future-orientated motivation to learn science between

top performers and strong performers is substantial: For example, only 39% of the strong performers report that they would like to study science after secondary school – this compares to 56% of top performers.

Given that women have traditionally been less likely than men to choose science subjects and go on to work in science careers, it is interesting to look at differences in aspirations between boys and girls. Of the 28 OECD countries included in this comparison, 12 show that boys who are top performers in science have significantly higher aspirations to use science in the future than girls. But, just as with boys, girls who are top performers report higher aspirations to use science in the future than girls who are strong performers. So, the goal of increasing the numbers of adults engaged in the study and pursuit of scientific activities by fostering aspirations is valid for both boys and girls.

Definitions

Achievement scores are based on assessments administered as part of the OECD's PISA programme, which were most recently carried out in 2006 (with a special focus on students' abilities in science). "Students" refers here to 15-year-olds enrolled in secondary education. "Top performers" refers to students who attain Levels 5 and 6 on the PISA science scale, Level 5 on the reading scale, and Levels 5 and 6 on the mathematics scale. "Strong performers" are students who attain Level 4 on the PISA scales.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A5).

Further reading from OECD

PISA 2006: Science Competencies for Tomorrow's World, Vol. 1 Analysis (2007).

Top of the Class: High Performing Learners in PISA 2006 (2009).

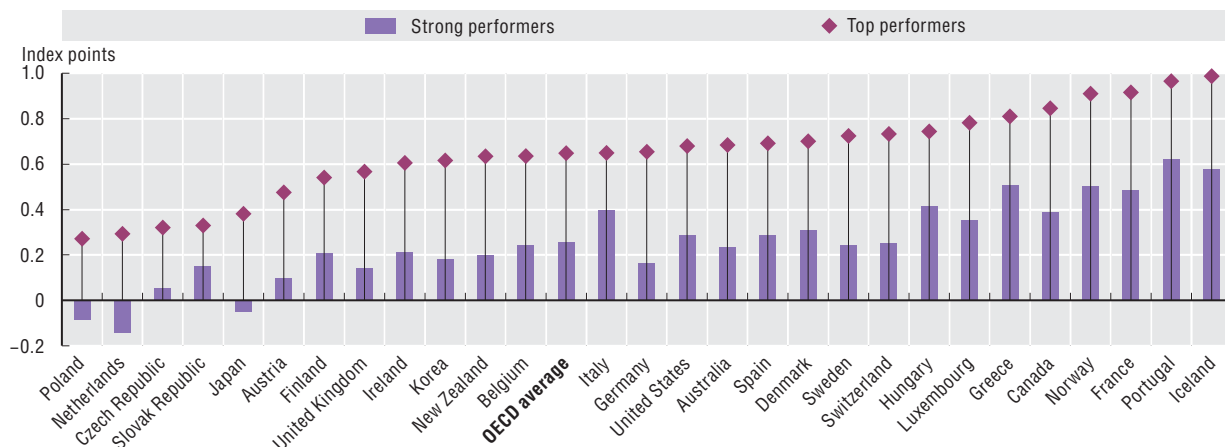
PISA website: www.pisa.oecd.org.

1. EDUCATION LEVELS AND STUDENT NUMBERS

PISA: What are top performers' attitudes and motivations?

Figure 1.23. **Enjoyment of science for strong performers and top performers in PISA 2006**

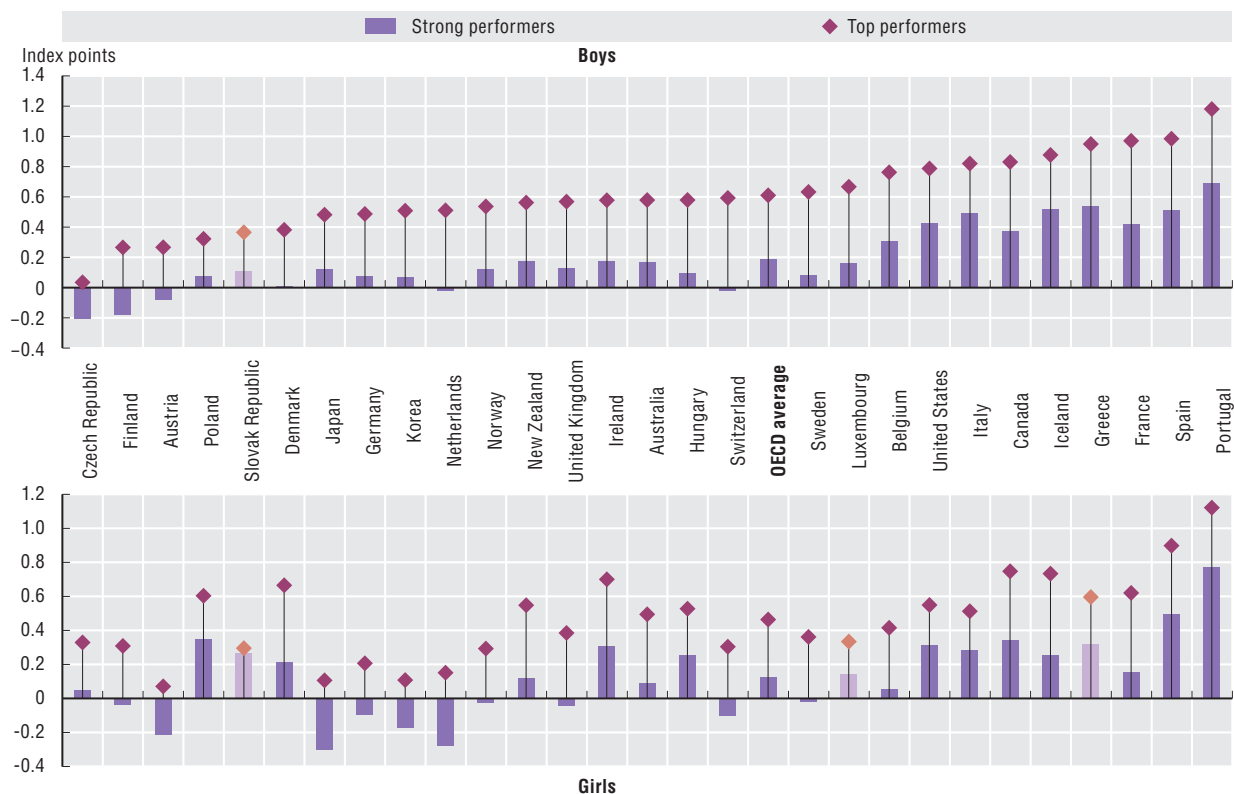
This chart shows that students who are top performers in science score higher than strong performers on the index of enjoyment of science.



Source: OECD (2009), *Education at a Glance 2009*, Chart A5.1, available at <http://dx.doi.org/10.1787/664103188707>.

Figure 1.24. **Index of future-oriented motivation to learn science in PISA 2006**

This chart shows the extent to which top and strong performers in science are motivated by the prospect of going on to study and work in science. Among both boys and girls, top performers are more likely to want to go on pursuing science than strong performers. Significant differences are highlighted in darker tones.



Source: OECD (2009), *Education at a Glance 2009*, Chart A5.5, available at <http://dx.doi.org/10.1787/664103188707>.





2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

How much more do tertiary graduates earn?

How does education affect employment rates?

What are the incentives for people to invest in education?

What are the incentives for societies to invest in education?

What are the social benefits of education?

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

How much more do tertiary graduates earn?

- Earnings tend to rise in line with people's level of education.
- The earnings premium for tertiary education is substantial and exceeds 50% in more than half the countries studied.
- The earnings advantage for those with higher levels of education increases with age, but so too does the earnings disadvantage of those with less than upper secondary education.

Significance

This spread examines the relative earnings of workers with different levels of education. Differences in pre-tax earnings between educational groups provide a good indication of supply and demand for education. Combined with data on earnings over time, these differences provide a strong signal of whether education systems are meeting the demands of the labour market.

Findings

Variations among countries in relative earnings reflect a number of factors, including the demand for skills in the labour market, minimum wage legislation, the strength of unions, the coverage of collective bargaining agreements, the supply of workers at various levels of educational attainment, and levels of part-time and seasonal work.

Still, earnings differentials are among the more straightforward indications as to whether the supply of educated individuals meets demand, particularly in the light of changes over time. As the data show, there is a strong positive relationship between educational attainment and average earnings. In all countries, graduates of tertiary education earn more overall than upper secondary and post-secondary non-tertiary graduates.

Financial rewards from tertiary education benefit women more than men in Australia, Austria, Canada, Germany, Ireland, Korea, the Netherlands, Norway, Spain, Switzerland and the United Kingdom. The reverse is true in the remaining countries, with the exception of Turkey, where – relative to upper secondary education – the earnings of men and women are equally enhanced by tertiary education. Despite the earnings advantages of higher education, earnings differentials between men and women with the same educational attainment remain substantial.

The earnings advantage from education increases with age. Tertiary earnings are relatively higher at an older age in all countries except Australia, Italy, New

Zealand, Turkey and the United Kingdom. For those with below upper secondary education the earnings disadvantage generally increases with age (see Chart A7.3 in *Education at a Glance 2009*).

Trends

The earnings premium for those with tertiary education has risen in most countries over the past ten years, indicating that the demand for more educated individuals still exceeds supply in most countries. In Germany, Hungary and Italy, the earnings premium has increased substantially during this period. At the same time, in these countries tertiary attainment levels are also low compared to the OECD average.

Some countries have seen a decline in the earnings premium. New Zealand, Norway and Sweden have seen a marginal decrease in the earnings premiums for those with tertiary education. It is as yet difficult to say whether this is an indication of weakening demand or a reflection the fact that younger tertiary educated individuals with relatively low starting salaries have entered the labour market.

Definitions

Earnings data differ across countries in a number of ways, including whether they are reported annually, monthly or weekly. Thus results shown here should be interpreted with caution. Similarly, the prevalence of part-time and part-year earnings in most countries suggest that caution is needed in interpreting earnings differentials in countries, particularly between men and women.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A7).

Areas covered include:

- Trends in relative earnings of the population.
- Differences in earnings by gender and by age.

Further reading from OECD

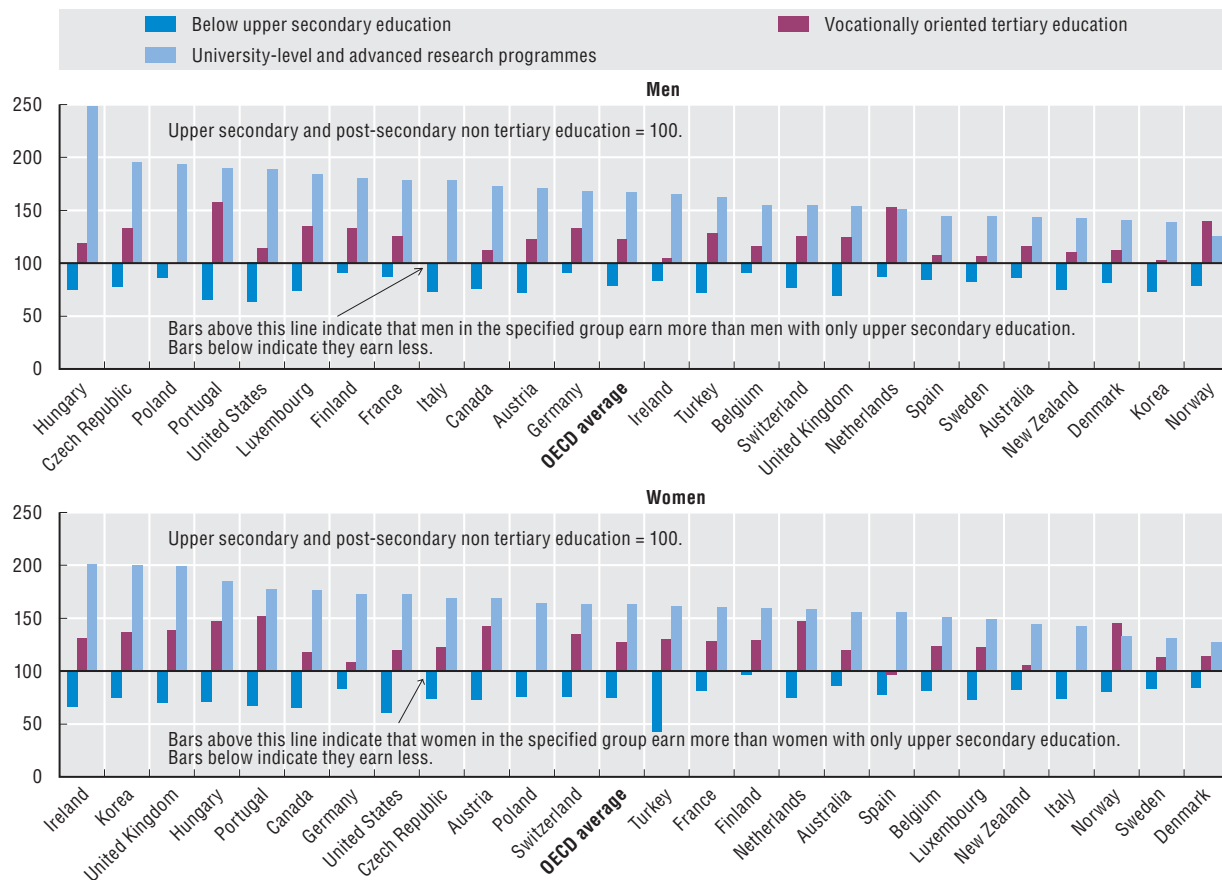
Understanding the Social Outcomes of Learning (2007).

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

How much more do tertiary graduates earn?

Figure 2.1. **Relative earnings from employment, 2007**

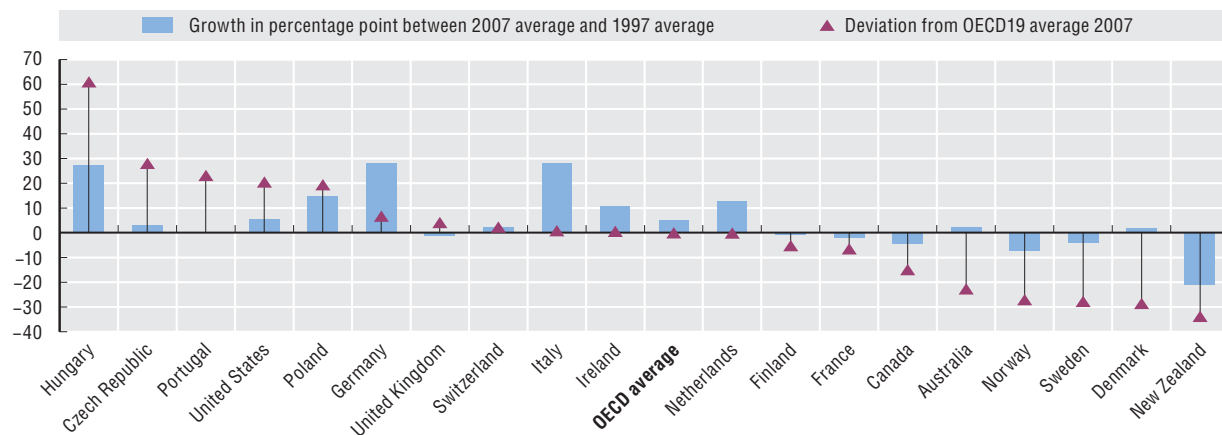
These figures show the earnings of men and women by their level of educational attainment (relative to the earnings of graduates of upper secondary and post-secondary non-tertiary education).



Source: OECD (2009), *Education at a Glance 2009*, Table A7.1.a, available at <http://dx.doi.org/10.1787/664140647056>.

Figure 2.2. **Trends in relative earnings for tertiary graduates (1997, 2007)**

This figure shows by how much the earnings premium of tertiary graduates has risen – or fallen – since 1997, and how far countries deviate from the 2007 OECD average.



Source: OECD (2009), *Education at a Glance 2009*, Table A7.2a, available at <http://dx.doi.org/10.1787/664140647056>.

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

How does education affect employment rates?

- In most countries, employment rates increase as people's levels of education rise.
- The employment gap between those who have attained upper secondary education and those who have not is particularly wide.
- On average across OECD countries, more than 40% of individuals with below secondary education are not employed.

Significance

This spread examines the relationship between education and the labour force. OECD countries depend upon a stable supply of well-educated workers to promote economic development. Data on employment and unemployment rates – and how they evolve over time – can thus carry important information for policy makers about the supply, and potential supply, of skills available to the labour market and about employers' demand for these skills.

Findings

(After years of relatively strong performance, labour markets in OECD countries have been hit hard by the financial and economic crisis that began in late 2008. Jobs data here relate to 2007, and thus predate the crisis. Rising unemployment, which is forecast to hit 10% in OECD countries by the end of 2010, is likely to exacerbate the jobs gap between higher and lower educated people in the coming years.)

Employment rates for women with an upper secondary education are at least 30 percentage points higher than for those with below secondary education in Hungary, Italy and the Slovak Republic. Women with a tertiary education appear to be particularly advantaged in Turkey, where their employment rates are 35 percentage points higher than for women with an upper secondary education.

Similarly, there is a particularly wide gap in employment rates for men between those who are upper secondary graduates and those who are not. The extreme cases are the Czech Republic, Hungary and the Slovak Republic, where employment rates for men who have completed upper secondary education are at least 29 percentage points higher than for men who have not. The gap in employment rates between men with and without an upper secondary education is 4 percentage points or less in Iceland, Mexico and Portugal.

Education is generally a good insurance against unemployment, particularly in an economic downturn. In all countries except Greece and Mexico, unemployment rates for those with below upper secondary education vary more than for those with tertiary education, and substantially so in many countries (see chart A6.3 in *Education at a Glance 2009*).

Trends

From 1997 to 2007, unemployment rates have, on average across OECD countries, improved by 1.8 percentage points for those with upper secondary and post-secondary non-tertiary education, 1.1 percentage points for those with below upper secondary education, and 0.8 percentage points for those with tertiary education. Although differences in unemployment rates between educational groups narrowed somewhat, it is likely that these differences will widen once again in light of the economic downturn (see chart A6.1 in *Education at a Glance 2009*).

Definitions

The employment rate refers to the number of persons in employment as a percentage of the population of working age. The unemployment rate refers to unemployed persons as a percentage of the civil labour force. The unemployed are defined as people actively seeking employment and currently available to start work. The employed are defined as those who work for pay or profit for at least one hour a week, or who have a job but are temporarily not at work due to illness, leave or industrial action.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A6).

Areas covered include:

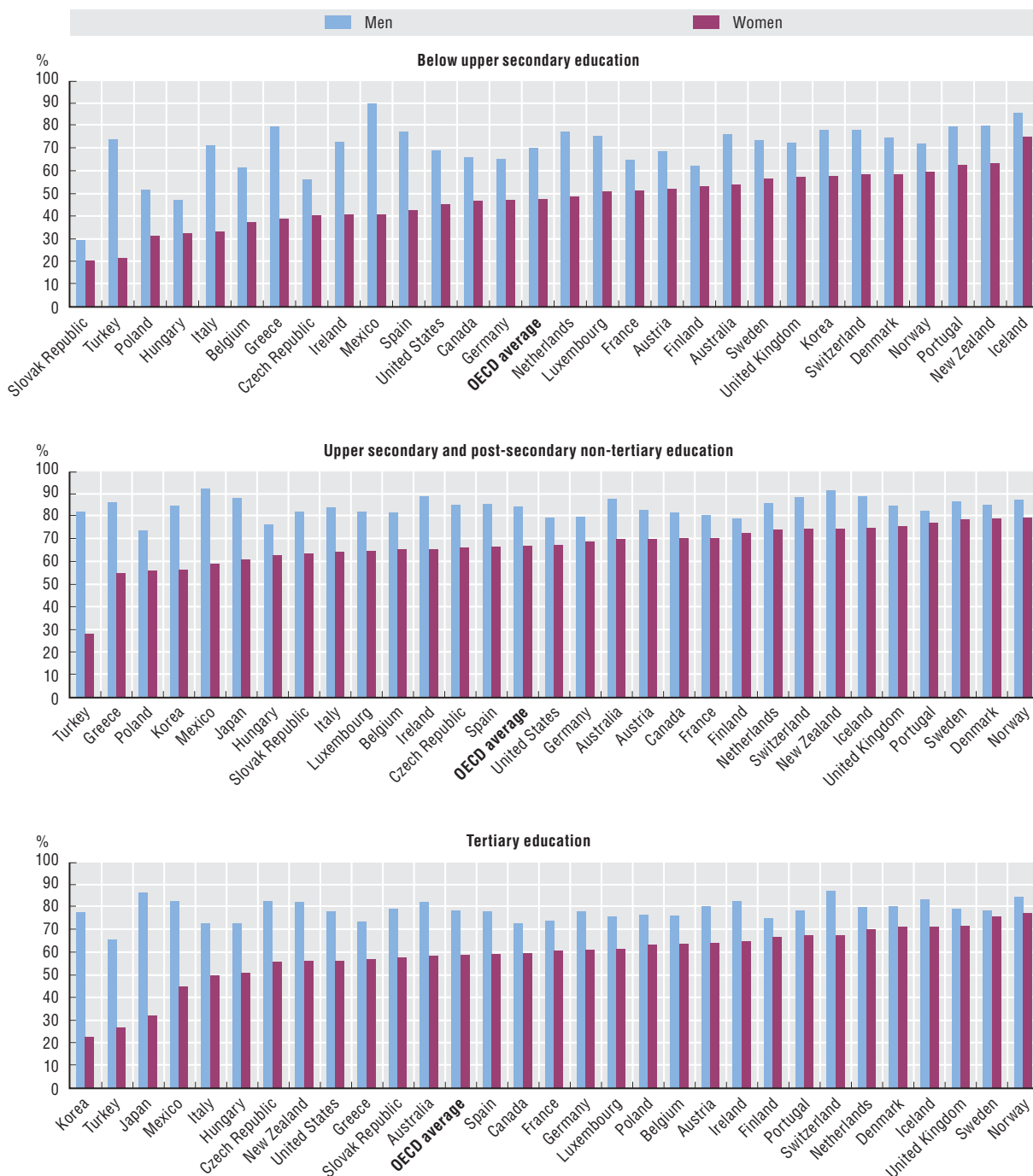
- Employment rates and educational attainment, by gender.
- Unemployment rates and educational attainment, by gender.
- Trends in employment and unemployment rates, by educational attainment.

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

How does education affect employment rates?

Figure 2.3. **Employment rates by level of educational attainment, 2007**

These figures show the employment rates for men and women depending on their levels of education. Graduates of tertiary education are more likely to have a job than people whose education ended before upper secondary level.



Source: OECD (2009), *Education at a Glance 2009*, Tables A6.2b and A6.2c, available at <http://dx.doi.org/10.1787/664108032182>.

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

What are the incentives for people to invest in education?

- Rewards are typically higher for individuals attaining tertiary education than upper secondary education or post-secondary non-tertiary education.
- Tertiary education brings substantial rewards in most countries generating a net financial return over a working life of more than USD 100 000 in the Czech Republic, Hungary, Ireland, Italy, Poland, Portugal and the United States.
- Rewards for investing in tertiary education are typically lower for women, except in Australia, Denmark, Korea, Norway, Spain and Turkey.

Significance

The efforts people make to continue education after compulsory schooling can be thought of as an investment with the potential to bring rewards in the form of future financial returns. People invest in education in several ways: directly, through the payment of tuition fees, for example, and indirectly, by sacrificing potential income when they are in college and not in work (these can be thought of as “costs”). As with any investment, a rate of return can be calculated. In this case, it is driven mainly by the reality that people with higher levels of education earn more and are more likely to be in work (“benefits”). Where the rate of return is high, it implies a real financial incentive for people to continue their education.

Findings

Across the 21 OECD countries for which relevant data are available, tertiary education brings significant rewards. In the Czech Republic, Hungary, Ireland, Italy, Poland, Portugal and the United States an investment generates a net financial return over the working life of more than USD 100 000, indicating strong incentives to continue education. Rewards are substantially lower in Denmark, France, New Zealand, Norway and Sweden at USD 40 000 or below. The rewards for investing in tertiary education are typically lower for women, except in Australia, Denmark, Korea, Norway, Spain and Turkey.

For a woman investing in an upper secondary education or post-secondary non-tertiary education, the

direct cost for education are typically negligible and the main investment cost consists of foregone earnings. Gross earnings effects and unemployment effects make up the benefit side. In Austria, Germany and the United States the discounted gross earnings effect exceeds USD 100 000 over the working life of a woman attaining an upper secondary education or post-secondary non-tertiary education. Unemployment effects play an important role in Belgium, the Czech Republic and Germany where the better employment prospects over a working life are valued at USD 30 000 or more.

Social safety nets play an invaluable role in OECD countries in reducing the impact of hardship and poverty on families and individuals. However, by providing a safety net to low income earners they also have the effect of limiting incentives to invest in education. This is particularly the case in Denmark and New Zealand where social transfers reduce the returns to upper secondary or post-secondary non-tertiary education for women by USD 25 000 or more.

Definitions

The economic returns to education are measured in terms of net present value, or NPV, (and not internal rate of return, as in previous editions of *Education at a Glance*). In the calculations, private investment costs include after-tax foregone earnings adjusted for the probability of finding a job (unemployment rate) and direct private expenditures on education. The discount rate is set at 5%, which largely reflects the typical interest on an investment in long-term government bonds in an OECD country.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, as well as a technical explanation of how the NPV is derived, see *Education at a Glance 2009* (Indicator A8).

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

What are the incentives for people to invest in education?

Figure 2.4. **Economic returns for individuals obtaining a tertiary education, 2005**

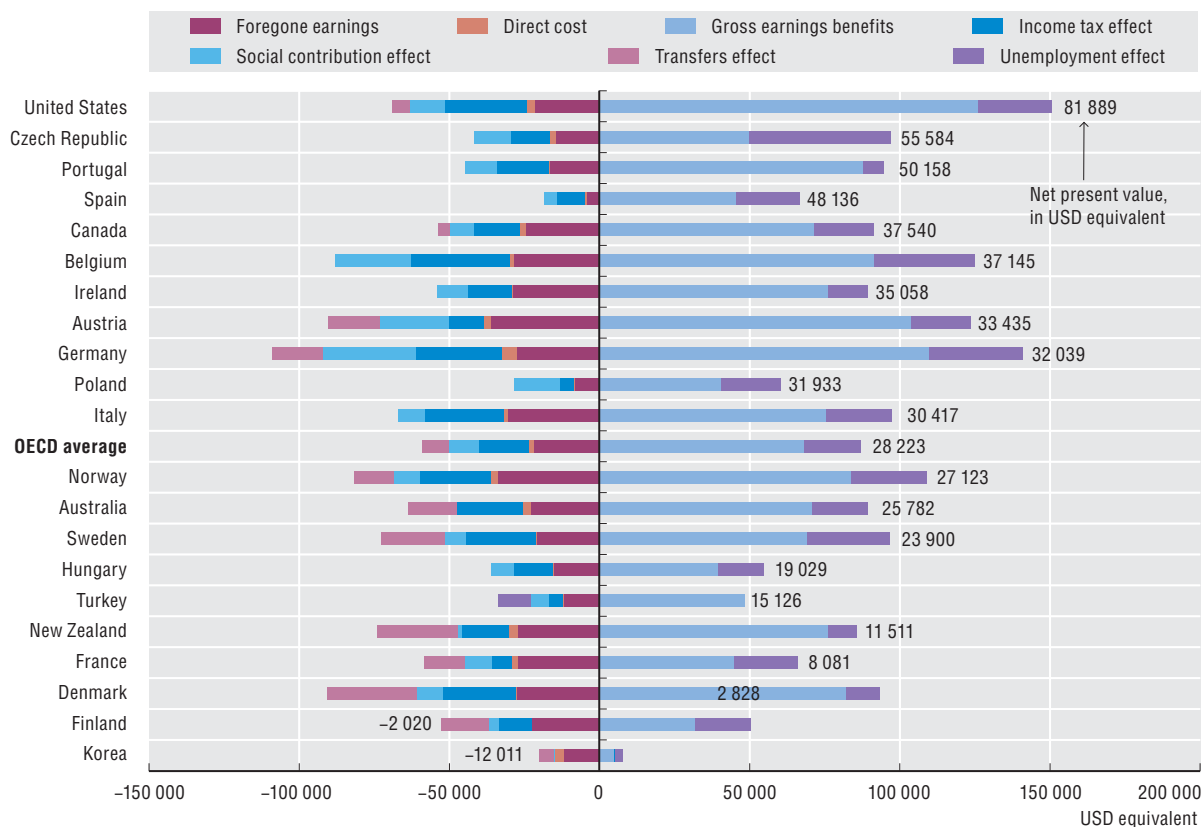
This figure shows the financial rewards for men and women in OECD countries from investing in tertiary education.



Source: OECD (2009), *Education at a Glance 2009*, Table A8.2, available at <http://dx.doi.org/10.1787/664146203473>.

Figure 2.5. **Components of the private net present value for women obtaining an upper secondary or post-secondary non tertiary education, 2005**

This figure shows the balance of costs and benefits that determine the rewards for a women investing in upper secondary or post-secondary non tertiary education.



Source: OECD (2009), *Education at a Glance 2009*, Table A8.1, available at <http://dx.doi.org/10.1787/664146203473>.

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

What are the incentives for societies to invest in education?

- On average among OECD countries, the total present value of public investment for a male obtaining a tertiary qualification is USD 28 000.
- The net public return from such a public investment exceeds USD 50 000.
- As with returns to individuals, the benefits to the public purse are higher when people complete tertiary rather than upper secondary education.

Significance

The economic benefits of education flow not just to individuals but also to governments through additional tax receipts when people enter the labour market. These public returns, which take into account the fact that providing education is also a cost to governments, offer an additional perspective on the overall returns to education. Of course, they must also be understood in the much wider context of the benefits that economies and societies gain from increasing levels of education.

Findings

For the public sector, the costs of education include direct expenditures on education (such as paying teachers' salaries), public-private transfers (such as paying grants to students), and lost tax revenues on students' foregone earnings. The benefits include increased revenue from income taxes and social insurance payments on higher wages as well as a lower need for social transfers. But in practice, rising levels of education give rise to a much wider – and more complex – set of fiscal effects on the benefit side. For instance, better educated individuals generally have better health, which lowers public expenditure on provision of health care. Also, their earnings premium means they spend more on goods and services, which has wider economic benefits. However, data on these indirect effects of education are not readily available.

Direct costs for education are generally borne by the public side with the exceptions of Australia, Canada and the United States, where tuition fees constitute a significant share of the overall private investment costs for tertiary education. Together with foregone public earnings in form of taxes and social contributions, direct and indirect public investment costs exceeds USD 40 000 in Austria, Denmark, Germany and Norway for a man with tertiary education. In Korea, Spain and Turkey the total public investment

cost does not exceed USD 15 000. On average among OECD countries, the total present value of public investment for a male obtaining a tertiary qualification is USD 28 000.

On average across countries, the net public return from an investment in tertiary education exceeds USD 50 000 for a male student, accounting for the main cost and benefits at this level of education. This is almost twice the amount of public investments made in tertiary education across OECD countries, and as such, provides a strong incentive for governments to expand higher education.

The public returns to tertiary education are substantially higher than for upper secondary or post-secondary non-tertiary education, in part because a larger share of the investment costs are borne by the individuals themselves.

Definitions

The economic returns to education are measured by the net present value (see previous spread). Public costs include lost tax receipts during the schooling years, and public expenditures. The benefits for the public sector are additional tax and social contribution receipts associated with higher earnings and savings from transfers, i.e. housing benefits and social assistance that the public sector does not have to pay above a certain level of earnings.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A8).

Areas covered include:

- Public rates of return for an individual obtaining higher education, as part of initial education.
- Public rates of return for an individual obtaining an upper secondary education or post-secondary non-tertiary education, as part of initial education.

Further reading from OECD

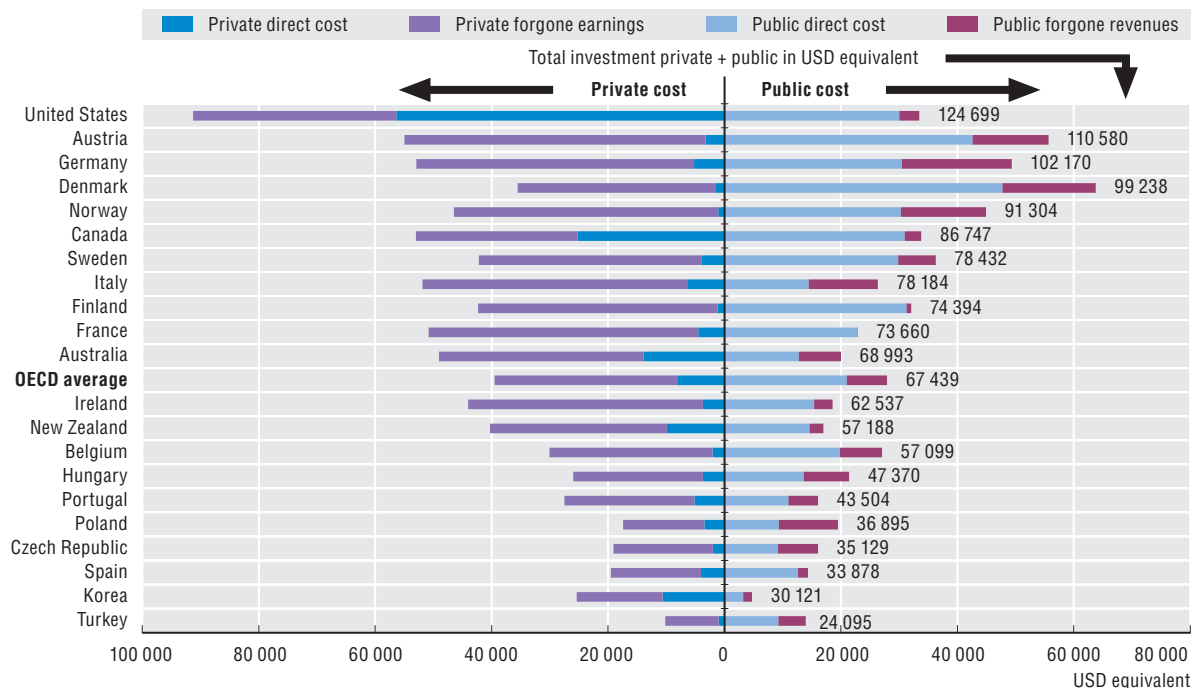
Understanding the Social Outcomes of Learning (2007).

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

What are the incentives for societies to invest in education?

Figure 2.6. **Public versus private investment for a man obtaining tertiary education, 2005**

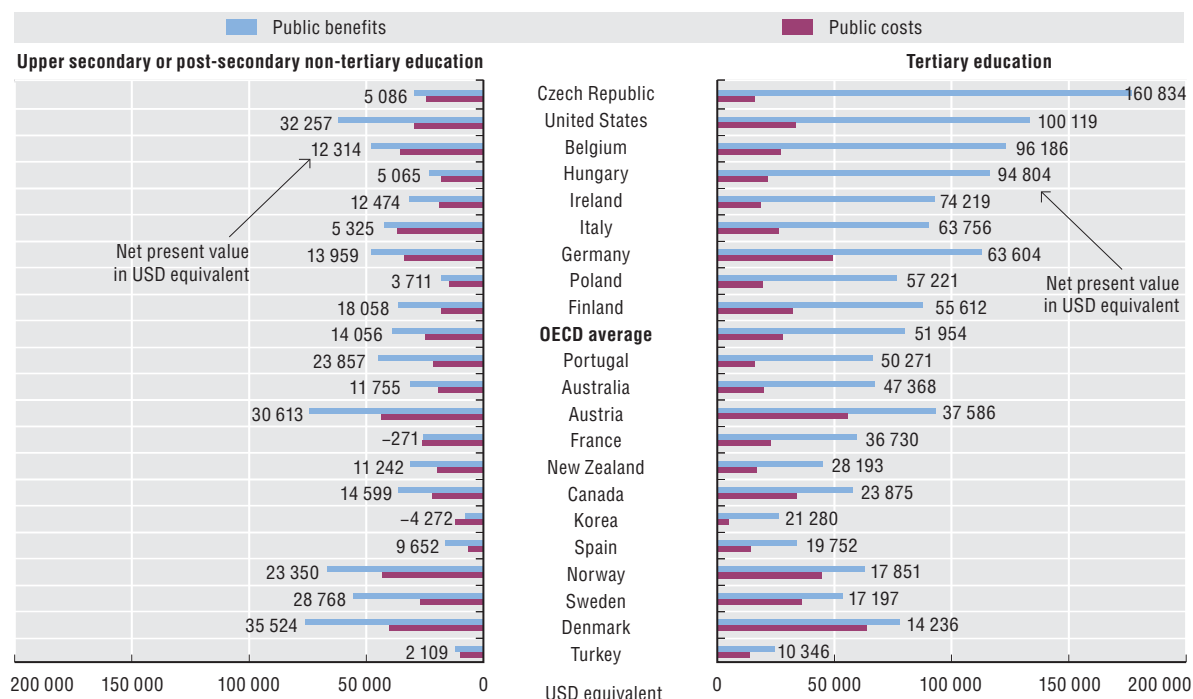
This figure shows the balance between the costs to the individual and the costs to the public purse for a male student pursuing tertiary education



Source: OECD (2009), *Education at a Glance 2009*, Tables A8.2 and A8.4, available at <http://dx.doi.org/10.1787/664146203473>.

Figure 2.7. **Public cost and benefits for a man obtaining higher levels of education, 2005**

This figure shows both the costs and the benefits to the public purse from a male student obtaining upper secondary or post-secondary non-tertiary education and tertiary education.



Source: OECD (2009), *Education at a Glance 2009*, Tables A8.3 and A8.4, available at <http://dx.doi.org/10.1787/664146203473>.

2. THE ECONOMIC AND SOCIAL BENEFITS OF EDUCATION

What are the social benefits of education?

- Adults with higher levels of educational attainment are more likely to report that their health is “good”, that they are interested in politics and have more interpersonal trust.
- The biggest increase in the likelihood (i.e. marginal effect) of people reporting better health is seen among those who have completed upper secondary, rather than tertiary, education. By contrast, for political interest and interpersonal trust, the marginal effect is higher among those who have completed tertiary, rather than upper secondary, education.
- The association between educational attainment and social outcomes generally remains after adjusting for gender, age and income.

Significance

Raising people’s standard of health and improving social cohesion are major concerns for OECD governments. There is general agreement on the important role education can play in attaining both these outcomes, but far less certainty over how exactly this can be achieved. Against this background, this spread introduces a new indicator on the relationship between educational attainment and social measures of well-being for 21 OECD countries. It focuses on three outcomes that reflect the health and cohesiveness of the society: self-assessed health, political interest and interpersonal trust.

Findings

Adults who have higher levels of educational attainment are more likely than those with lower levels of attainment to respond positively regarding the three social outcomes – they report that their health is at least “good”, that they are at least fairly interested in politics, and believe that most people try to be fair (an indication of interpersonal trust).

For self-reported health, an increase in educational attainment from below-upper secondary to upper secondary level is generally associated with a stronger and more consistent increase in outcomes, compared to an increase in educational attainment from upper secondary to tertiary level. For political interest and interpersonal trust, an increase in educational attainment from upper secondary to tertiary level is broadly associated with stronger and more consistent

increases in social outcomes, compared to an increase in educational attainment at the lower level.

The association between educational attainment and social outcomes generally remains after adjusting for gender, age and income (see Charts A9.2 to A9.4 in *Education at a Glance 2009*). This suggests that what individuals potentially acquire through education – for example competencies and psycho-social features such as attitudes and resilience – may have an important role in raising social outcomes, independent of education’s effect on income.

Definitions

Developmental work for this indicator was carried out by INES Network on Labour Market, Economic and Social Outcomes of Learning in collaboration with the OECD’s Centre for Educational Research and Innovation (CERI). Methodologies are based on work conducted by CERI’s Social Outcomes of Learning project. Calculations are based on micro-data from the European Social Survey 2004 and 2006, Adult Literacy and Lifeskills Survey 2003, World Values Survey 2005, and International Social Survey Programme 2004 and 2006.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator A9).

Areas covered include:

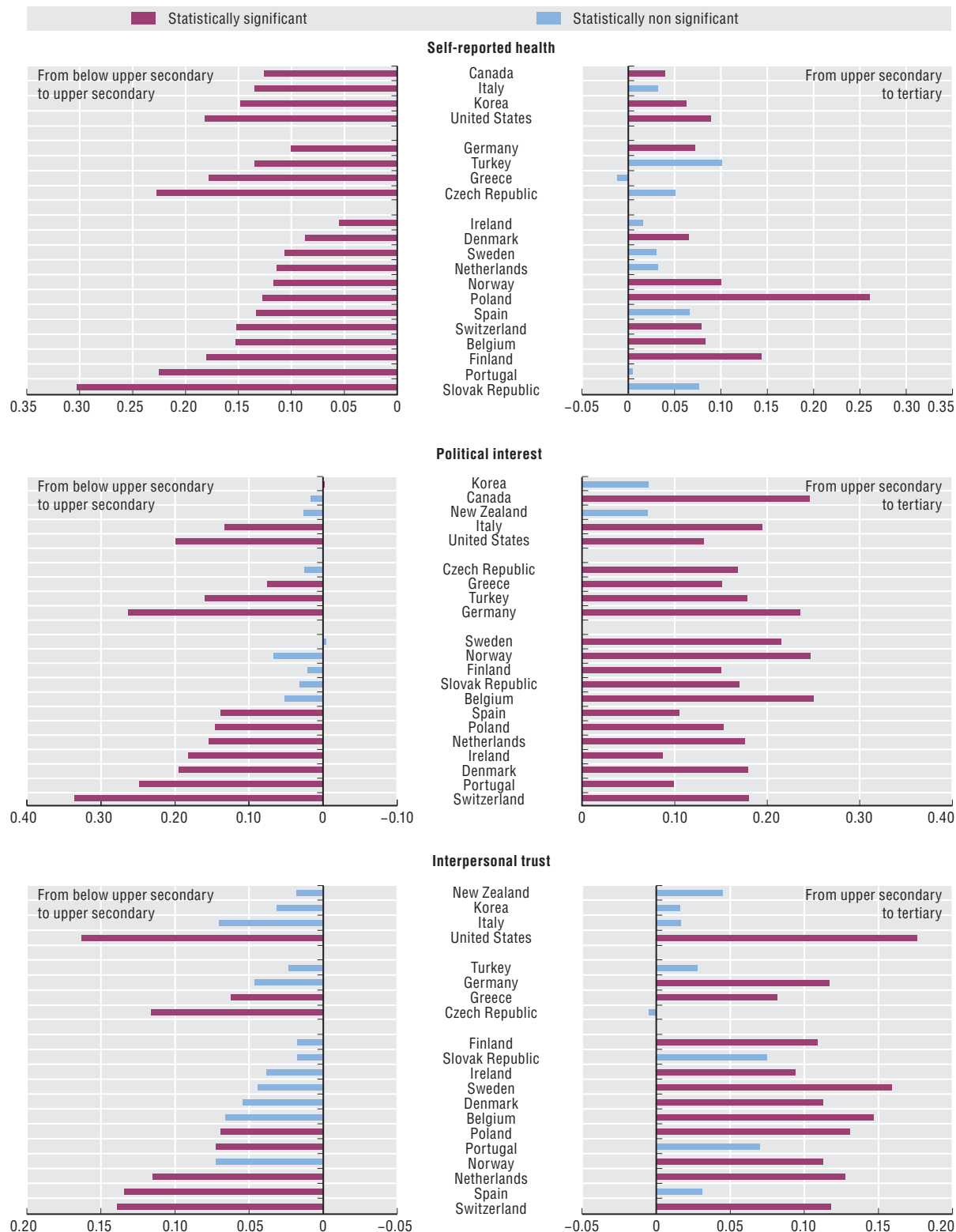
- Marginal effects of education on self-reported health, political interest and interpersonal trust with and without controls for age, gender and income.
- Predicted probabilities of expressing positive self-rated health, political interest and interpersonal trust.

Further reading from OECD

Understanding the Social Outcomes of Learning (2007).

Figure 2.8. **Marginal effects of education on social outcomes**

These figures show the increases in the proportions of people expressing positive social outcomes that are associated with moving from one level of education to the next. (Countries are grouped by data source.)



Source: OECD (2009), *Education at a Glance 2009*, Tables A9.2, A9.3 and A9.4, available at <http://dx.doi.org/10.1787/664176010158>.





3. PAYING FOR EDUCATION

How much is spent per student?

Has spending per student increased?

What share of national wealth is spent on education?

What share of public spending goes on education?

What is the role of private spending?

How much do tertiary students pay?

What are education funds spent on?

What accounts for variations in spending on salary costs?

3. PAYING FOR EDUCATION

How much is spent per student?

- OECD countries as a whole spend USD 8 857 per student each year between primary and tertiary education, although spending levels vary widely among countries.
- On average, OECD countries spend nearly twice as much per student at the tertiary level than at the primary level.
- Most spending in education is devoted to salaries for teachers and other staff.

Significance

This spread shows the levels of combined public and private spending on education. In debates about learning, demand for high-quality education, which may mean spending more per student, is often tempered by the desire not to raise taxes. While it is difficult to determine the level of spending needed to prepare a student for work and life, international comparisons can provide reference points for comparisons of education resources.

Findings

OECD countries as a whole spend USD 8 857 per student each year for primary, secondary and tertiary education. But spending varies widely among individual countries, from USD 4 000 per student or less in Mexico, Poland, the Slovak Republic and Turkey, to more than USD 10 000 in Austria, Denmark, Norway, Switzerland and the United States.

The drivers of expenditure per student vary among countries: Among the five countries with the highest expenditure on educational institutions per student enrolled in primary to tertiary education, Switzerland has the highest teachers' salaries at secondary level, the United States has the highest level of private expenditure at tertiary level and Austria, Denmark and Norway are among the countries with the lowest ratios for students to teaching staff (see Section 4).

In each OECD country, spending rises sharply from primary to tertiary education. OECD countries as a whole spend USD 6 517 per student at primary level, USD 7 966 at secondary level and USD 15 791 at tertiary level.

Most spending in education is devoted to salaries for teachers and other staff. At tertiary level, however, other services, particularly research and development

activities, also account for a large slice of expenditure. Once R&D activities and ancillary services are excluded, expenditure on educational core services in tertiary institutions falls to an average USD 8 418 per student. By contrast, spending on ancillary services at primary, secondary and post-secondary non-tertiary levels exceeds 10% of expenditure per student only in Finland, France, Korea, the Slovak Republic, Sweden and the United Kingdom (see Chart B1.2 in *Education at a Glance 2009*).

Finally, it should be noted that examining only the annual spending per student may not fully reflect the total spent on a student at each level of education. For example, annual spending per tertiary student in Japan is about the same as in Germany, at USD 13 418 and USD 13 016, respectively. But because on average it takes more than a year extra to complete tertiary studies in Germany than in Japan, the cumulative expenditure for each tertiary student is more than USD 15 000 higher in Germany than in Japan (see Chart B1.5 in *Education at a Glance 2009*).

Definitions

Data refer to the financial year 2006 and are based on the UOE data collection on education statistics administered by the OECD in 2008. Spending per student at a particular level of education is calculated by dividing the total expenditure on educational institutions at that level by the corresponding full-time equivalent enrolment.

Going further

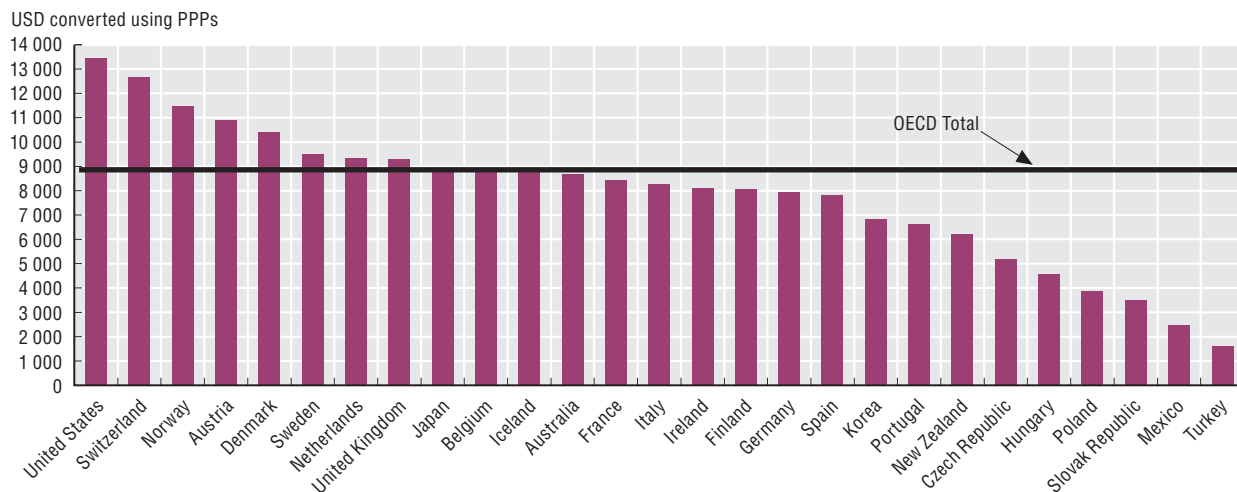
For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B1).

Areas covered include:

- Annual expenditure on educational institutions per student for all services, and compared to GDP per capita.
- Cumulative expenditure on educational institutions per student.

Figure 3.1. Annual expenditure per student, 2006

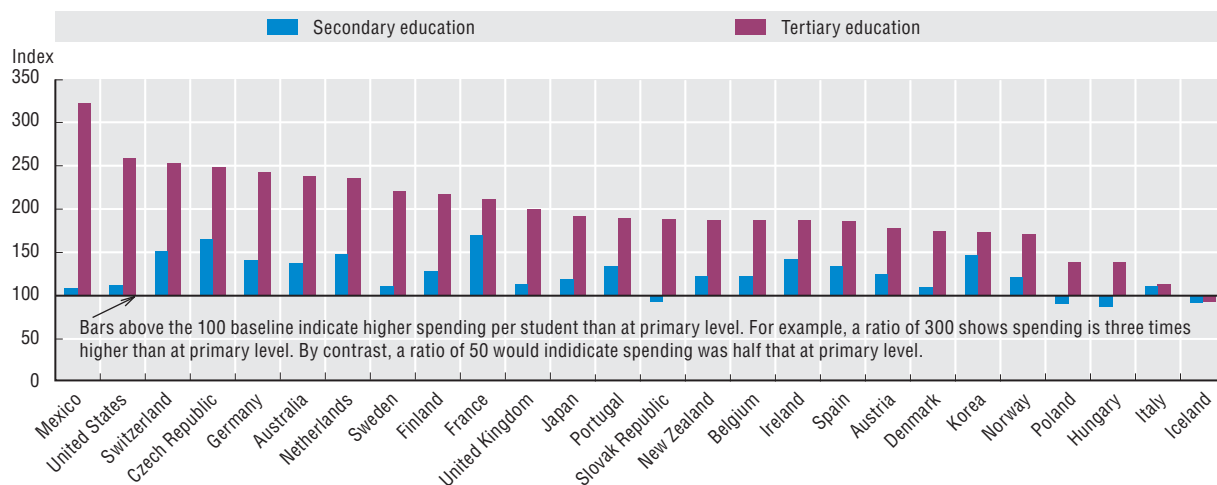
This figure shows how much is spent annually (on educational institutions) per student between primary and tertiary education; these data give a sense of the cost per student of formal education.



Source: OECD (2009), *Education at a Glance 2009*, Table B1.1a, available at <http://dx.doi.org/10.1787/664234230084>.

Figure 3.2. Expenditure on education relative to spending on primary education, 2006

This figure shows annual spending (on educational institutions) per student for different levels of education compared with spending at primary level.



Source: OECD (2009), *Education at a Glance 2009*, Table B1.1a, available at <http://dx.doi.org/10.1787/664234230084>.

3. PAYING FOR EDUCATION

Has spending per student increased?

- Expenditure on educational institutions per student at primary, secondary and post-secondary non-tertiary level increased on average by 40% between 1995 and 2006, a period when enrolment levels remained generally static.
- At tertiary level, however, student numbers generally rose and spending per student has fallen in some countries as spending failed to keep up with increasing enrolment.

Significance

This spread looks at whether spending on education has risen or fallen in recent years. Policy makers are under constant pressure to find ways of improving the quality of educational services while expanding access to educational opportunities, notably at tertiary level. Over time, spending on educational institutions does indeed tend to rise, in large part because teachers' salaries rise in line with general earnings. However, if the cost of schooling each student is not accompanied by improvements in educational outcomes, it raises the spectre of falling productivity levels.

Findings

Expenditure on educational institutions per student at the primary, secondary and post-secondary non-tertiary levels increased in every country, on average, by 40% between 1995 and 2006 during a period of relatively stable student numbers. The increase is quite similar over the first and second halves of this time period; only the Czech Republic, Norway and Switzerland showed a decrease between 1995 and 2000, followed by an increase between 2000 and 2006. Changes in enrolments do not seem to have been the main factor behind changes in expenditure at these levels of education.

The pattern is different at the tertiary level where spending per student between 1995 and 2006 fell in some cases, as expenditure failed to keep up with expanding student numbers. Such spending per student remained stable between 1995 and 2000 but then increased by 11% on average in OECD countries from 2000 to 2006, as governments invested massively in response to the expansion of tertiary education. The Czech Republic, Korea, Poland, Portugal, the Slovak Republic and the United Kingdom followed this pattern. However, the increase in expenditure per student between 2000 and 2006 did not totally

counterbalance the decrease between 1995 and 2000 in the Czech Republic and the Slovak Republic.

Between 2000 and 2006, Germany, Hungary, Iceland, Ireland, the Netherlands, Norway and Sweden recorded decreases in per-student expenditure in tertiary education. In all of these countries, except Germany, these declines were mainly the result of rapid increases – at least 10% – in tertiary student numbers. Of the eight OECD countries that saw a rise of more than 20% in enrolments in tertiary education, five (the Czech Republic, Mexico, Poland, the Slovak Republic and Switzerland) matched this with an at least equivalent increase in per-student expenditure while the other three (Hungary, Iceland and Ireland) did not. Austria and Spain were the only OECD countries that saw falls in tertiary enrolment over this period, and increases in expenditure per student were above the OECD average of 11%.

Definitions

Data for the 2006 financial year are based on the UOE data collection on education statistics administered by the OECD in 2008. OECD countries were asked to collect the 2000 data according to the definitions and the coverage of UOE 2007 data collection. All expenditure data, as well as the GDP for 2000, are adjusted to 2006 prices using the GDP price deflator. Spending per student at a particular level of education is calculated by dividing the total expenditure on educational institutions at that level by the corresponding full-time equivalent enrolment.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B1).

Areas covered include:

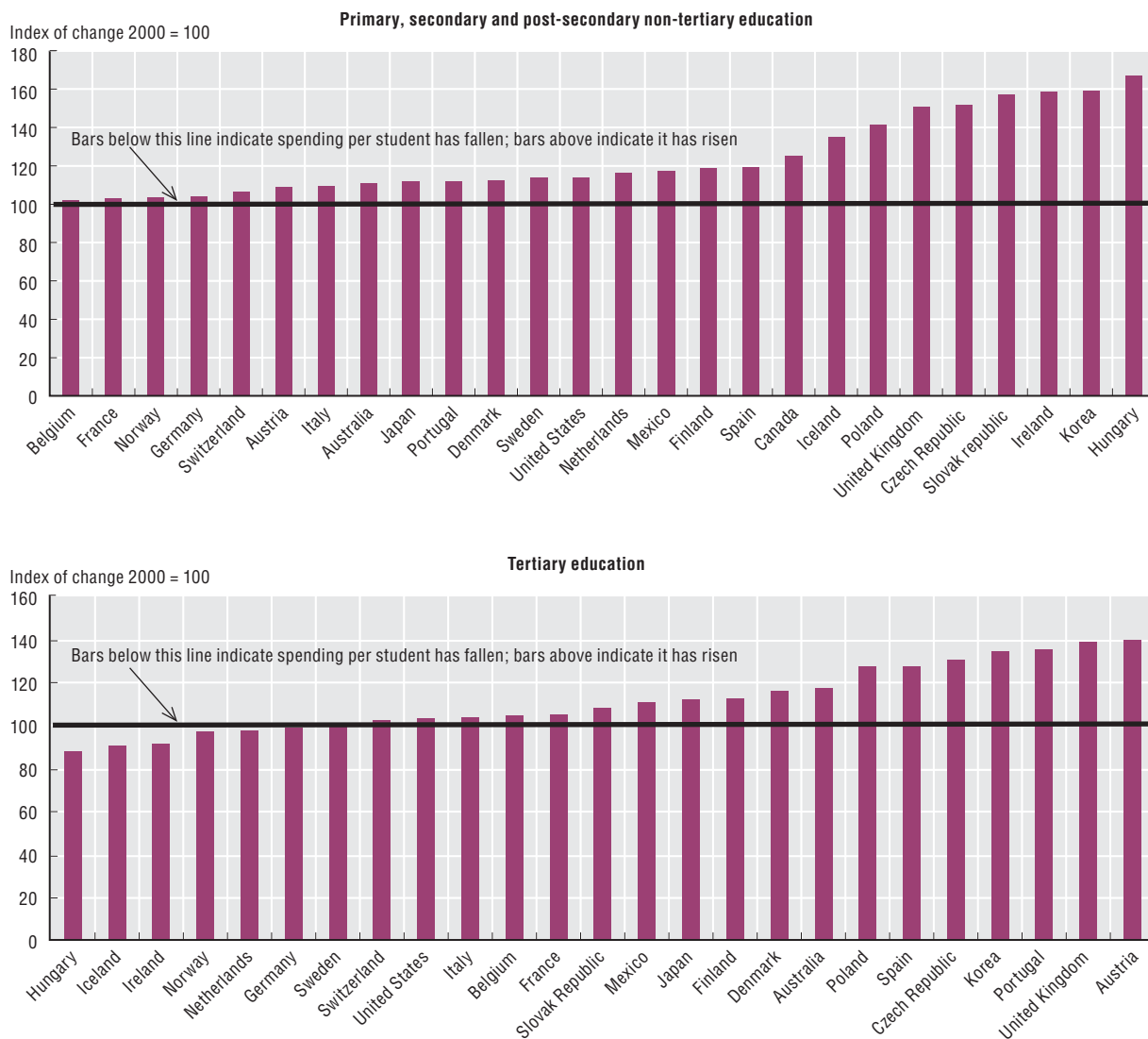
- Changes in expenditure on educational institutions by level of education.
- Changes in expenditure and in GDP per capita.

Further reading from OECD

Trends Shaping Education (2008).

Figure 3.3. Trends in expenditure per student (2000, 2006)

These figures show the increase – or otherwise – in spending in real terms (on educational institutions) per student.



Source: OECD (2009), *Education at a Glance 2009*, Table B1.5, available at <http://dx.doi.org/10.1787/664234230084>.

What share of national wealth is spent on education?

- OECD countries spend 6.1% of their collective GDP on education institutions.
- Between 1995 and 2006, expenditure on educational institutions for all levels of education increased by 44% on average in OECD countries, reflecting the fact that more people are completing upper secondary and tertiary education than ever before.
- On average in OECD countries, expenditure on educational institutions for all levels of education combined outpaced GDP growth between 1995 and 2006.

Significance

This spread shows the proportion of a nation's wealth that is invested in education. In other words, it shows to what extent a country, which includes the government, private enterprise and individual students and their families, prioritises education in relation to overall spending.

Findings

OECD countries spend 6.1% of their collective GDP on education, but levels vary greatly between countries: As a proportion of GDP, Denmark, Iceland, Korea and the United States spend more than 7% on educational institutions compared with 2.7% in Turkey.

A little under two-thirds of combined OECD spending on education, or 3.7% of combined GDP, is devoted to primary, secondary and post-secondary non-tertiary education. Tertiary education accounts for nearly one-third of the combined OECD spending on education, or 1.9% of combined GDP. Canada, Korea and the United States spend between 2.5% and 2.9% of their GDP on tertiary institutions, and the United States spends over three times more on tertiary education than Italy and the Slovak Republic and nearly four times more than Turkey.

Differences in spending on educational institutions are most striking at the pre-primary level, where they range from less than 0.1% of GDP in Australia to 0.8% or more in Hungary and Iceland (see Table B2.2 in *Education at a Glance 2009*). However, as pre-primary education is structured and funded very differently between OECD countries it is unsafe to draw inferences from these data on access to and quality of early childhood education.

Trends

Since more people completed secondary and tertiary education between 1995 and 2006 than ever before, many countries made massive financial investments in education during that period. For all levels of education combined, public and private investment in education increased on average by 44% in OECD countries over this period. In three-quarters of these countries, the increase is larger for tertiary education than for primary to post-secondary non-tertiary levels combined.

On average in OECD countries, expenditure for all levels of education combined increased relatively more than GDP between 1995 and 2006 (see the web-only Table B2.5 for *Education at a Glance 2009*). The increase in expenditure on educational institutions as a proportion of GDP exceeded 0.7 percentage points over this period in Denmark, Turkey, the United Kingdom and the United States.

Definitions

Data refer to the 2006 financial year and are based on the UOE data collection on education statistics administered by the OECD in 2008. Expenditure on educational institutions includes expenditure on both instructional institutions (those that provide teaching to individuals in an organized group setting or through distance education) and non-instructional institutions (those that provide administrative, advisory or professional services to other educational institutions, but do not enrol students, themselves).

Going further

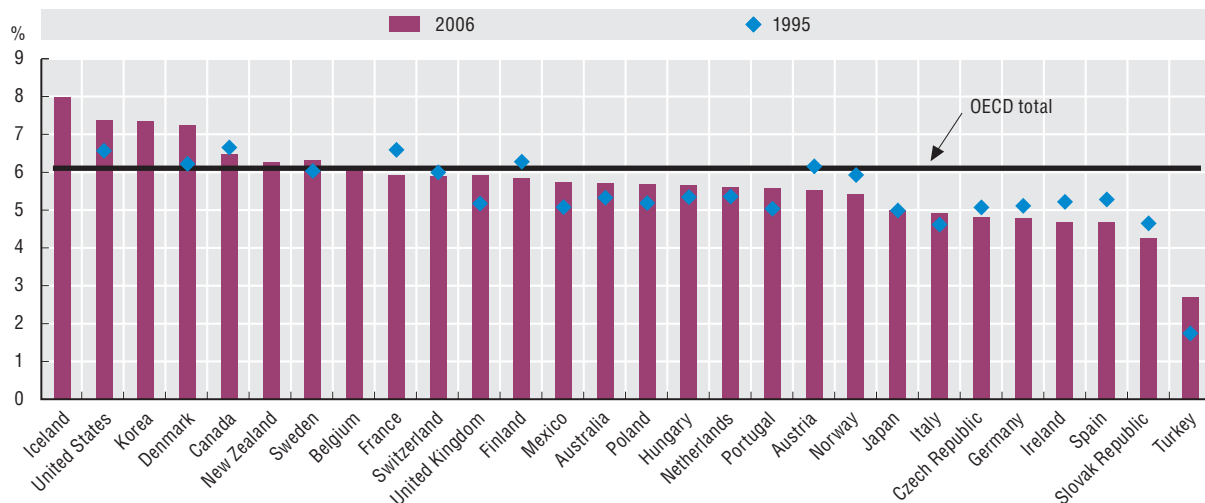
For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B2).

Areas covered include:

- Expenditure on educational institutions as a percentage of GDP.
- Change in expenditure, 1995-2006.

Figure 3.4. Trends in education expenditure as a percentage of GDP (1995, 2006)

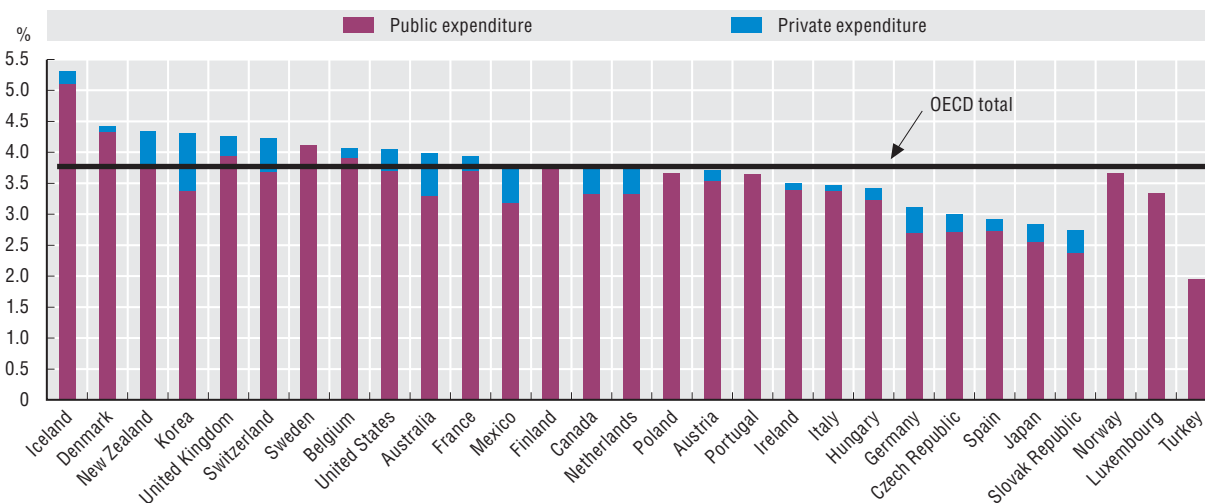
This figure shows the share of national income countries devote to spending on educational institutions, and how that share has changed.



Source: OECD (2009), *Education at a Glance 2009*, Table B2.1, available at <http://dx.doi.org/10.1787/664243822887>.

Figure 3.5. Expenditure as a percentage of GDP, 2006

These figures show the share of national income that countries devote to primary, secondary and post-secondary non-tertiary education.



Source: OECD (2009), *Education at a Glance 2009*, Table B2.4, available at <http://dx.doi.org/10.1787/664243822887>.

What share of public spending goes on education?

- Even in countries with little public involvement in other areas, public funding of education is a social priority, accounting for 13.3% of total public expenditure on average in OECD countries.
- Public funding of primary, secondary and post-secondary, non-tertiary education is, on average, about three times that of tertiary education in OECD countries.
- Between 1995 and 2006, education accounted for a growing share of total public expenditure in most countries.

Significance

Public spending on education, as a percentage of total public spending, indicates the value placed on education relative to that of other areas of public spending, such as health care, social security and national security. Since the second half of the 1990s, most OECD countries have sought to consolidate public budgets, and education has had to compete with a wide range of other areas for public financial support. This spread evaluates the change in spending on education both in absolute terms and relative to changes in the size of public budgets.

Findings

On average, OECD countries devoted 13.3% of total public expenditures to education in 2006, with levels ranging from 10% or below in Germany, Italy and Japan, to 22% in Mexico.

Even in countries with relatively low rates of public spending, education is considered a priority. For example, the share of public spending devoted to education in Korea, Mexico, and the Slovak Republic is among the highest of OECD countries, yet total public spending accounts for a relatively low proportion of GDP in these countries.

On average in OECD countries, public funding of primary, secondary and post-secondary non-tertiary education is nearly three times that of tertiary education, mainly due to near universal enrolment rates below tertiary education, but also because the private share tends to be greater at the tertiary level. This ratio varies from less than double in Canada, Finland and Norway to five times in Korea. The latter figure is

indicative of the relatively high proportion of private funds going to tertiary education in Korea.

Trends

Although budget consolidation puts pressure on education along with every other service, from 1995 to 2006 public expenditure on education typically grew faster than total public spending and as fast as national income. The main increase in public expenditure on education relative to total public spending took place from 1995 to 2000; between 2000 and 2006, public expenditure on education and on other public sectors increased in the same proportions.

Over this period the proportion of public budgets spent on education in OECD countries rose from 12.0% to 13.3%. The figures suggest that the greatest relative increases in the share of public expenditure on education during this period took place in Denmark, increasing from 12.2 to 15.6%; Ireland (12.2 to 14.4%), the Netherlands (9.1 to 12.0%), New Zealand (16.5 to 18.9%), the Slovak Republic (14.1 to 19.5%) and the United States (12.6 to 14.8%).

Definitions

Data refer to the financial year 2006 and are based on the UOE data collection on education statistics administered by the OECD in 2008. Public expenditure on education includes expenditure by all public entities, including ministries other than the ministry of education, local and regional governments and other public agencies.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B4).

Areas covered include:

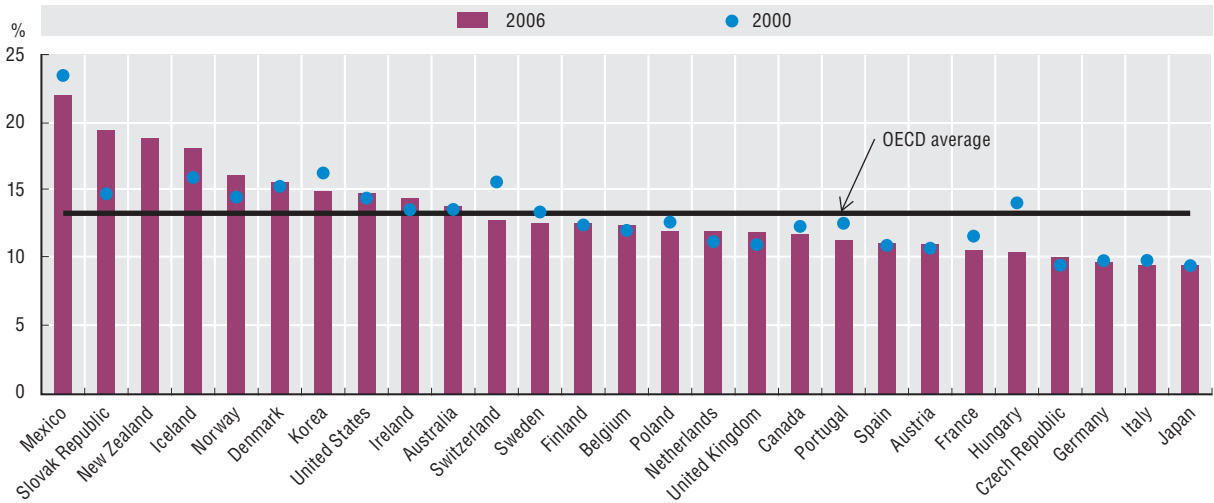
- Total public expenditure on education.
- Distribution of total public expenditure on education.

3. PAYING FOR EDUCATION

What share of public spending goes on education?

Figure 3.6. Trends in spending on education as a percentage of total public expenditure (2000, 2006)

This figure shows total public spending on education (which includes spending on educational institutions and items such as public subsidies to households), and how it has evolved.



Source: OECD (2009), Education at a Glance 2009, Table B4.1, available at <http://dx.doi.org/10.1787/664366200117>.

Figure 3.7. Total public expenditure on all services as a percentage of GDP (2000, 2006)

This figure shows the size of public spending as a percentage of the overall economy. These data provide a context for looking at how much of public spending is devoted to education.



Source: OECD (2009), Education at a Glance 2009, Chart B4.2, available at <http://dx.doi.org/10.1787/664366200117>.

3. PAYING FOR EDUCATION

What is the role of private spending?

- On average, 84.7% of expenditure for all levels of education combined is from public sources.
- Tertiary institutions obtain the largest proportions of funds from private sources, at 27%, followed by pre-primary institutions, at 19%.
- For the 18 OECD countries for which trend data are available, the share of public funding in tertiary institutions fell from 78% in 1995 to 72% in 2006.

Significance

This spread shows how the financing of educational institutions is shared between public and private entities, particularly at tertiary level. Public funding provides a very large part of investment in education, but the role of private sources has become more important. Some stakeholders are concerned that this balance should not become so tilted that it discourages some potential students from attending tertiary education. Thus, it is important to look at changes in public/private funding shares to determine if they are influencing patterns and levels of student participation.

Findings

In all OECD countries for which comparable data are available, public funding for all levels education represents 84.7% of all funds, on average. Tertiary institutions and to a lesser extent pre-primary institutions obtain the largest proportions of funds from private sources. At the pre-primary level, it represents an average of 19% of total funding in OECD countries, which is higher than the percentage for all levels of education combined (see chart B3.2 in *Education at a Glance 2009*). This proportion varies widely, ranging from 5% or less in Belgium, France, the Netherlands and Sweden to over 50% in Japan and Korea.

At tertiary level, private funding represents on average 27% of total expenditure on educational institutions. The proportion of expenditure on tertiary institutions covered by individuals, businesses and other private sources, including subsidised private payments, ranges from less than 5% in Denmark, Finland and Norway, to more than 40% in Australia, Canada, Japan, and the United States to over 75% in Korea.

Private entities other than households contribute more, on average, to tertiary education than to other levels of education. In Australia, Austria, Canada, Japan, Korea, the Netherlands, Sweden and the United States, 10% or more of spending on tertiary education

comes from private entities other than individual households.

Trends

While public funding for all levels of education increased across OECD countries for which comparable data are available between 2000 and 2006, private spending on education increased even more in nearly three-quarters of these countries. As a result, the decrease in the share of public funding on educational institutions was more than 5 percentage points in Canada, Mexico, Portugal, the Slovak Republic and the United Kingdom.

Decreases in the share of public expenditure in total expenditure on educational institutions and, consequently increases in the share of private expenditure, have not generally gone hand in hand with cuts (in real terms) in public expenditure on educational institutions. In fact, many OECD countries with the highest growth in private spending have also shown the highest increase in public funding of education. This indicates that an increase in private spending tends not to replace public investment but to complement it.

Definitions

Data refer to the 2006 financial year and are based on the UOE data collection on education statistics, administered by the OECD in 2008. Private spending includes all direct expenditure on educational institutions, whether partially covered by public subsidies or not.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B3).

Areas covered include:

- Relative proportions of public and private expenditure on educational institutions for all levels of education, and trends.

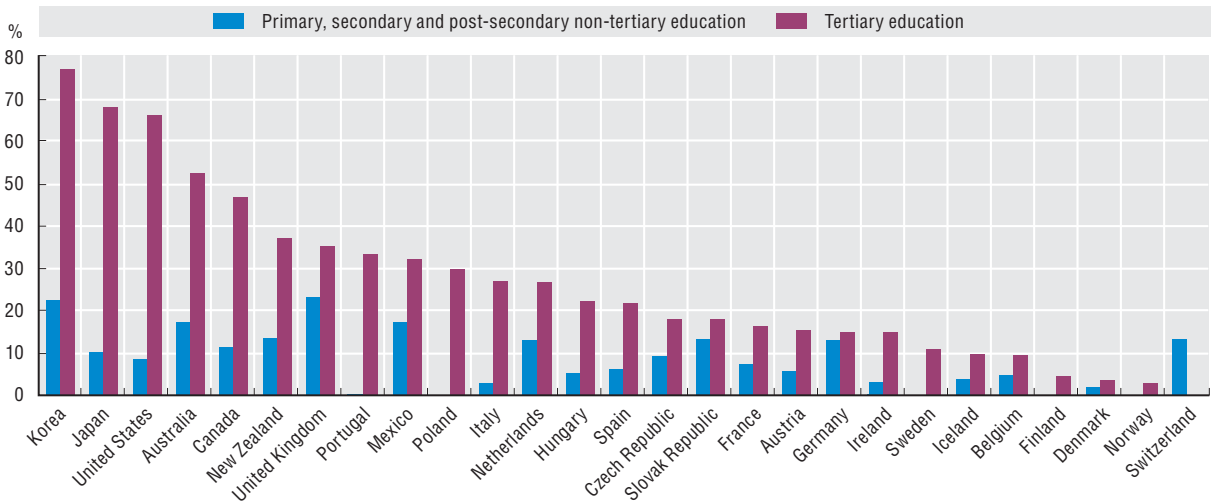
Further reading from OECD

OECD *Reviews of Tertiary Education* (ongoing).

Higher Education Management and Policy (journal).

Figure 3.8. **Share of private expenditure on educational institutions, 2006**

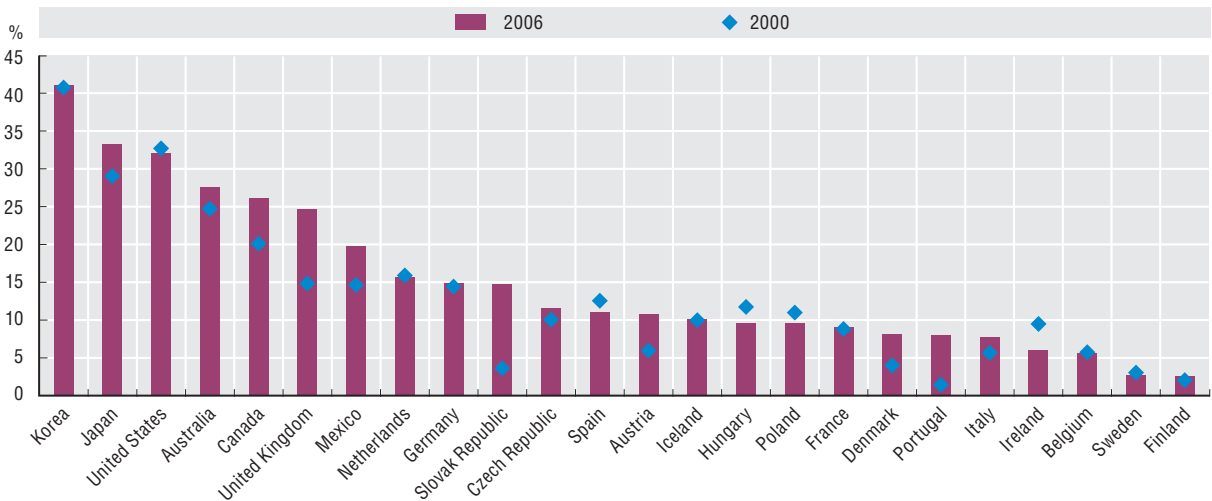
This figure shows the percentage of spending on educational institutions accounted for by private spending.



Source: OECD (2009), *Education at a Glance 2009*, Tables B3.2a and B3.2b, available at <http://dx.doi.org/10.1787/664257001651>.

Figure 3.9. **Trends in share of private expenditure (2000, 2006)**

This figure shows the increase – or otherwise – in private spending as a percentage of total expenditure on all levels of education from 2000 to 2006.



Source: OECD (2009), *Education at a Glance 2009*, Tables B3.1, B3.2a and B3.2b, available at <http://dx.doi.org/10.1787/664257001651>.

3. PAYING FOR EDUCATION

How much do tertiary students pay?

- Public university-level institutions charge no annual tuition fees in the Nordic countries, the Czech Republic and Ireland; in a number of other countries tuition fees exceed USD 1 500, rising to more than USD 5 000 in the United States.
- An average of 19% of public spending on tertiary education is devoted to supporting students, households and other private entities.
- There is no systematic link between low annual tuition fees and a low proportion of students who benefit from public subsidies.

Significance

This spread examines the relationships between annual tuition fees, direct and indirect public spending on education, and public subsidies for student living costs. Governments can address issues of access to and equality of education opportunities by subsidising tuition fees and financially aiding students and their families, particularly students from low-income families. But how this aid is given – whether through grants or loans – is a subject for debate in many countries.

Findings

There are large differences among OECD countries in the average tuition fees charged in university-level education. Public universities charge negligible or low fees in the Nordic countries, the Czech Republic, Ireland and Turkey; by contrast, tuition fees in the United States reach more than USD 5 000. However, tuition fees are only one part of the picture. It is important also to look at broader support that may be available to students. In this context, countries can be placed into four main groups:

1. No or low tuition fees, and generous student support systems; these include the Nordics, the Czech Republic and Turkey.
2. High tuition fees and well-developed student support systems; these include Australia, Canada, the Netherlands, New Zealand, the United Kingdom, and the United States.
3. High tuition fees but less developed student support systems; Japan and Korea.
4. Low tuition fees and less developed student support systems; these include Austria, Belgium, France, Ireland, Italy, Portugal and Spain.

Although tuition fees for university-level education are generally high (more than USD 1 500) in group 2, large public subsidies are available to students. At 68%, the average entry rate into university-level

education among these countries is slightly above the OECD average, and higher than most countries with low tuition fees, except the Nordics. In countries with low tuition fees and relatively low subsidies for students, such as those in group 4, the average entry rate into university-level education is a relatively low 48%.

The question of loans versus grants in supporting tertiary students is under debate in a number of countries. Public loan systems have developed particularly extensively in Australia and Sweden, where at least 75% of students benefit from a public loan during their university studies. In contrast, the United States has the highest level of tuition fees in public universities, but only 55% of students there take out a loan in any given year. Some studies conclude that loans may encourage middle and upper-income students to finish their studies, but not lower-income students; the converse may be true for grants.

Definitions

Data refer to the financial year 2006 and are based on the UOE data collection on education statistics administered by the OECD in 2008. Data on tuition fees charged by educational institutions and financial aid to students were collected through a special survey undertaken in 2007 and updated in 2008 and refer to the academic year 2006/07. Public subsidies to households include grants/scholarships, public student loans, family or child allowances contingent on student status, public subsidies in cash or in kind for housing, transport, medical expenses, books and supplies, social, recreational and other purposes, and interest-related subsidies for private loans.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B5).

Areas covered include:

- Average tuition fees charged by tertiary-type A educational institutions.
- Distribution of financial aid to students.

Further reading from OECD

OECD Reviews of Tertiary Education (ongoing).
Higher Education Management and Policy (journal).

Figure 3.10. **Tuition fees in university-level education, 2006-07**

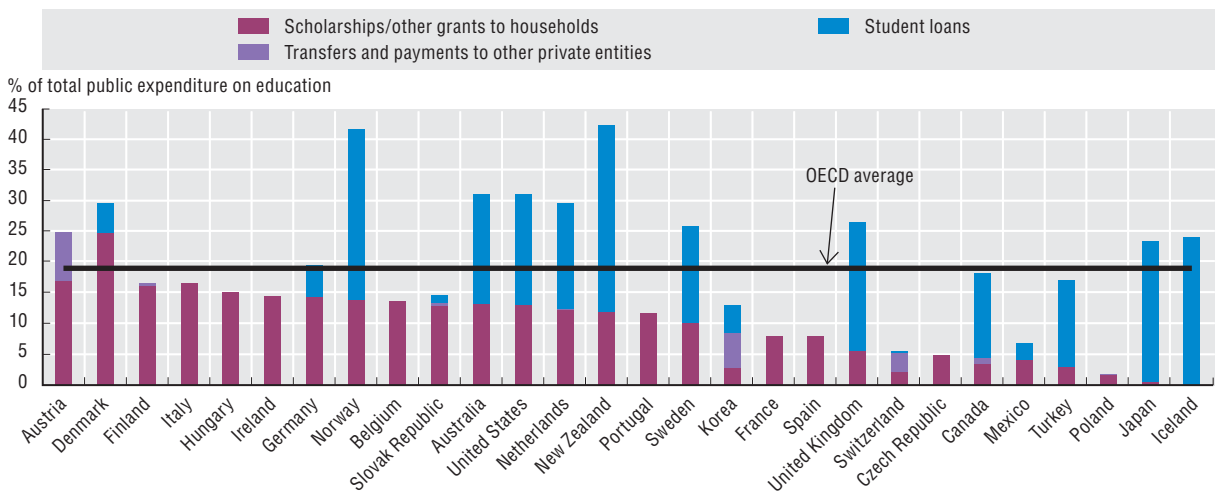
This figure shows the average annual tuition fees charged to full-time national students in public institutions for university-level education.



Source: OECD (2009), *Education at a Glance 2009*, Table B5.1a, available at <http://dx.doi.org/10.1787/664366467748>.

Figure 3.11. **Public subsidies for university-level education, 2006**

This figure shows the public subsidies for education given to households and other private entities as a percentage of total public expenditure on education, broken down by the type of subsidy.



Source: OECD (2009), *Education at a Glance 2009*, Table B5.4, available at <http://dx.doi.org/10.1787/664366467748>.

What are education funds spent on?

- In primary, secondary and post-secondary non-tertiary education combined, current expenditure accounts for an average of just under 92% of total spending in OECD countries.
- Staff costs account for 80% of current expenditure at the primary, secondary and post-secondary, non-tertiary levels.
- High spending on R&D is a distinctive feature of tertiary institutions and averages over one-quarter of expenditure.

Significance

This spread shows how OECD countries spend their funds for education, including the split between capital expenditure, which is one-off spending on things like school buildings, and current expenditure, which is recurring spending on things like teacher salaries. How spending is apportioned, both between current and capital outlays and within these categories, can affect the quality of services, the condition of facilities, and the ability of education systems to adjust to changing demographic and enrolment trends.

Findings

In primary, secondary, and post-secondary non-tertiary education, current expenditure accounts for nearly 92% of total spending, on average, across all OECD countries. In large part this is attributable to the labour-intensiveness of education, with teacher salaries accounting for a very large slice of current – and total – education spending (see below). At these levels of education, the split between current and capital spending varies significantly between countries. The current shares ranges from 84% in Luxembourg to at least 97% in Belgium, Mexico and Portugal.

At tertiary level, the proportion of total expenditure for capital outlays is larger than at the primary, secondary and post-secondary non-tertiary levels (9.7 versus 8.0%), generally because of greater differentiation and sophistication of teaching facilities.

On average across OECD countries, staff salaries account for 80% of current expenditure at the primary, secondary and post-secondary, non-tertiary levels,

rising to 90% or more in Mexico and Portugal. On average, OECD countries spend 0.2% of GDP on ancillary services provided by primary, secondary and post-secondary non-tertiary institutions, representing 6% of total spending on these institutions.

At tertiary level, OECD countries spend an average of 32% of current expenditure for purposes other than staff salaries. This is explained by the higher cost of facilities and equipment at this level of education.

Variations among OECD countries in spending on R&D activities in tertiary education can also explain a significant part of the differences in overall spending on students at this level. High levels of R&D spending (between 0.4 and 0.8% of GDP) in universities in Australia, Austria, Belgium, Canada, Finland, France, Germany, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom imply that spending on education per student in these countries would be considerably lower if the R&D component were excluded.

Definitions

Data refer to the financial year 2006 and are based on UOE data collection on education statistics administered by the OECD in 2008. R&D expenditure includes all spending on research performed at universities and other tertiary education institutions, regardless of whether the research is financed from general institutional funds or through separate grants or contracts from public or private sponsors.

Going further

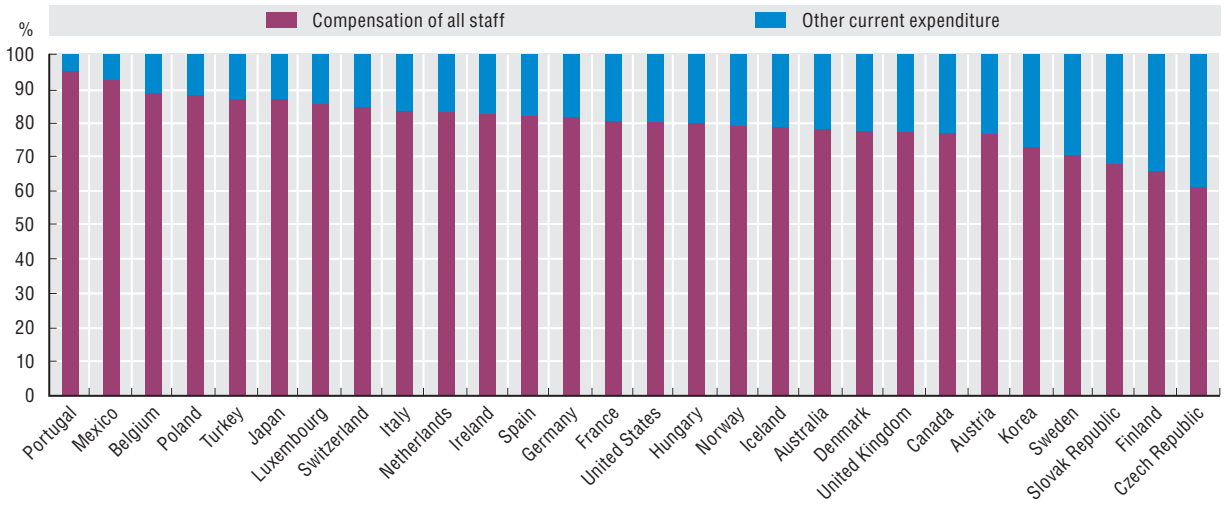
For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B6).

Areas covered include:

- Expenditure on educational institutions by service category as a percentage of GDP.
- Distribution of current expenditure on educational institutions by level of education.

Figure 3.12. Staff costs as a proportion of current expenditure in education, 2006

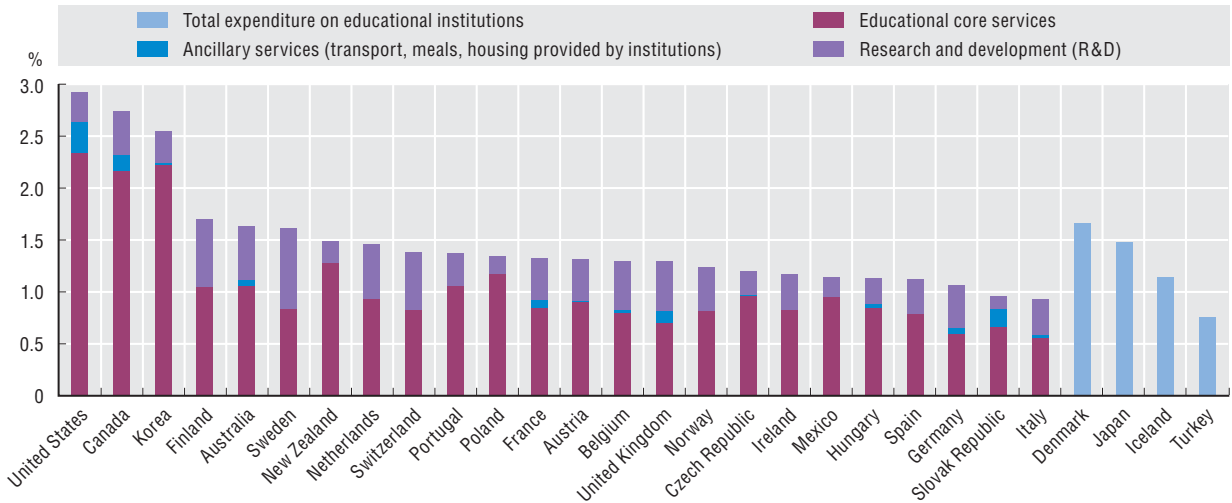
This figure shows the proportion of current expenditure devoted to paying staff in primary, secondary and post-secondary non-tertiary education. Other areas of current spending include transport, student counselling, and recurring spending on school materials and research.



Source: OECD (2009), *Education at a Glance 2009*, Table B6.2b, available at <http://dx.doi.org/10.1787/664447618002>.

Figure 3.13. Expenditure on services and research in tertiary education, 2006

This figure shows expenditure on educational core services, R&D and ancillary services in tertiary educational institutions as a percentage of GDP.



Source: OECD (2009), *Education at a Glance 2009*, Table B6.1, available at <http://dx.doi.org/10.1787/664447618002>.

What accounts for variations in spending on salary costs?

- Similar levels of expenditure among countries in primary and secondary education can mask a variety of contrasting policy choices. This helps to explain why there is no simple relationship between the overall spending on education and the level of student performance.
- The higher the level of education analysed, the higher the impact of teachers' salaries and the lower the impact of class size on salary cost per student as a percentage of GDP (compared to the OECD average).
- Salary cost per student at upper secondary level of education varies significantly between countries, from 3.6% of GDP per capita in the Slovak Republic to 22% in Portugal.

Significance

The relationship between resources devoted to education and outcomes has been the focus of much interest in recent years, as governments seek to ensure value for money in public spending while satisfying the education needs of society and the economy. Consequently, there is considerable interest in international comparisons of how various school systems allocate resources. This spread examines these questions from the perspective of salary cost per student – a calculation based on the hours students spend in the classroom, teachers' teaching hours, class size and teachers' salaries. Salary cost per student (as a percentage of GDP per capita) is calculated for each country and then compared with the OECD average.

Findings

Comparisons of the different levels of education show that differences between countries at the level of the salary cost per student are largest at the upper secondary level of education, and these differences between countries decrease with the level of education analysed.

At upper secondary level, salary cost per student ranges from USD 574 in the Slovak Republic to about USD 10 065 in Luxembourg. However, to control for differences in wealth levels between countries, the analysis that follows focuses on salary cost per student as a percentage of GDP per capita. Under this heading, salary cost per student for OECD countries is equivalent to an average rate of 11.4% of GDP per capita, but there are big variations between countries, ranging from 3.6% in the Slovak Republic to 22% in Portugal.

Four factors influence these differences – salary level, instruction time for students, the amount of time

teachers spend teaching and average class size. As a result, a given level of salary cost per student can result from many different combinations of the four factors. For example, in Korea the salary cost per student is 15.5% while in Greece it is 15.2%, both above the OECD average. However, Korea's high salary cost results mainly from higher teacher salaries, while in Greece it is a reflection of relatively high instruction time for students and lower teaching time for teachers.

Despite such differences, in 15 out of the 28 OECD countries with available data, one factor – teachers' salaries – is the main driver of the deviation of salary cost per student from the OECD average in upper secondary education.

Differences between countries tend to decrease at lower levels of education. This trend is most obvious in countries where the salary cost per student is furthest from the OECD average. For example, Belgium, Korea, Portugal, Spain and Switzerland have the highest levels of salary cost per student at upper secondary level of education, but they are up to 8 percentage points lower at lower secondary level. (For details on primary education, see chart B7.2 in *Education at a Glance 2009*).

Definitions

Values for variables are derived mainly from *Education at a Glance 2008*, and refer to the school year 2005/06 and the calendar year 2005 for indicators related to finance. To compensate for missing values, some data have been estimated on the basis of data published in previous editions of *Education at a Glance* while others have been replaced by the average for all OECD countries. Salary cost per student is calculated based on the salary of teachers, the number of hours of instruction for students, the number of hours of teaching for teachers and a proxy class size.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator B7).

Areas covered include:

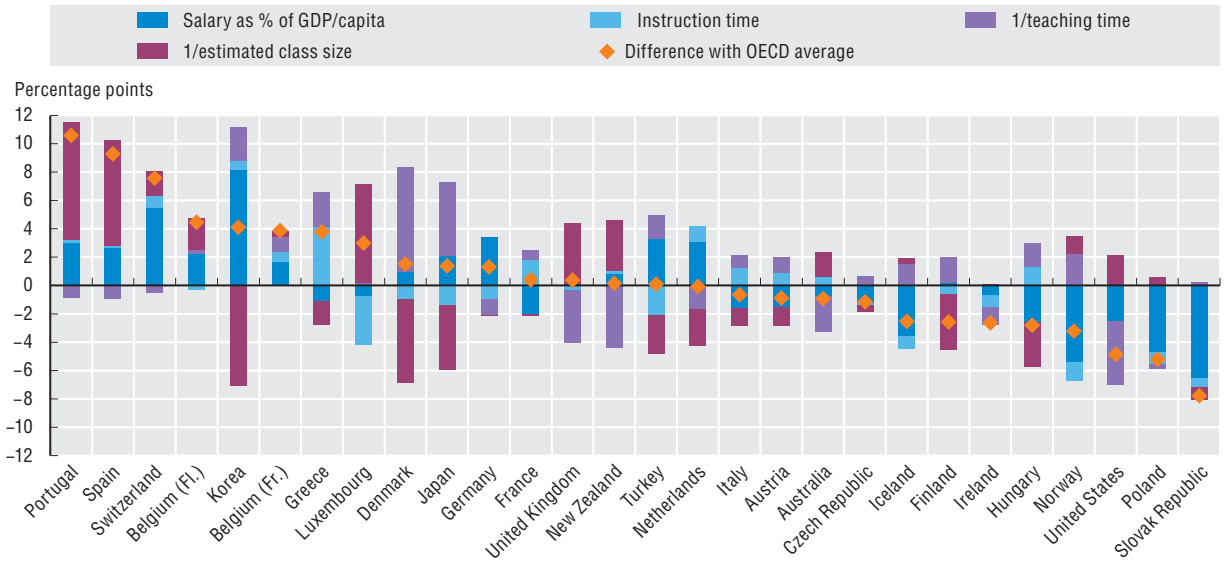
- Salary cost per student by levels of education.
- Salary cost per student expressed in USD.

3. PAYING FOR EDUCATION

What accounts for variations in spending on salary costs?

Figure 3.14. **Contribution of various factors to salary cost per student at upper secondary level, 2006**

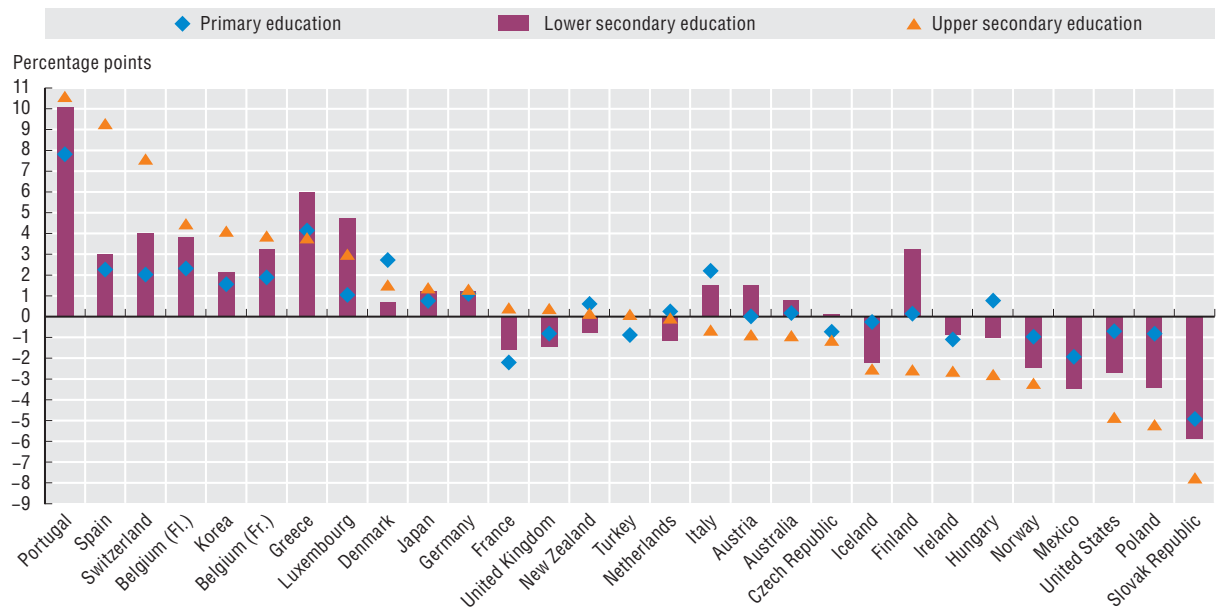
This figure shows the contribution (in percentage points) of the four factors to differences between salary cost per student as a percentage of GDP per capita in each country and the OECD average.



Source: OECD (2009), *Education at a Glance 2009*, Table B7.3, available at <http://dx.doi.org/10.1787/664466141103>.

Figure 3.15. **Differences in salary cost per student by level of education, 2006**

This figure shows the difference between the salary cost per student as a percentage of GDP per capita and the OECD average for each level of education.



Source: OECD (2009), *Education at a Glance 2009*, Tables B7.1, B7.2 and B7.3, available at <http://dx.doi.org/10.1787/664466141103>.





4. THE SCHOOL ENVIRONMENT

How long do students spend in the classroom?

How many students are in each classroom?

How much are teachers paid?

How much time do teachers spend teaching?

Who are the teachers?

4. THE SCHOOL ENVIRONMENT

How long do students spend in the classroom?

- In OECD countries, 7-8 year-olds receive 769 hours per year of compulsory instruction; the time devoted to compulsory instruction is 41 hours longer for 9-11 year-olds and 123 hours longer for 12-14 year-olds.
- The teaching of reading, writing and literature, mathematics and science accounts for 47% of compulsory instruction time for 9-11 year-olds in OECD countries, and just over 40% for 12-14 year-olds.
- The proportion of compulsory instruction time for 9-11 year-olds devoted to reading, writing and literature ranges from 13% in Australia to at least 30% in France, Mexico and the Netherlands.

Significance

This spread examines the amount of time students spend in formal education between the ages of 7 and 15. The choices that countries make about how much time should be devoted to education and which subjects should be compulsory reflect national education priorities. Since a large part of public investment in education goes to instruction time in formal classroom settings, the length of time students spend in school is an important factor in determining the amount of funding that should be devoted to education.

Findings

In OECD countries, the total number of instruction hours that students are intended to receive (including both compulsory and non-compulsory parts) between the ages of 7 and 14 averages 6 862 hours. However, formal requirements range from fewer than 6 000 hours in Finland, Korea, Norway and Sweden to over 8 000 hours in Italy.

In OECD countries, 47% of the compulsory curriculum for 9-11 year-olds is devoted to three basic subject areas: reading, writing and literature (23%), mathematics (16%) and science (8%). But there is great variation among countries in the percentage of class time devoted to these subjects. Reading, writing and literature, for example, accounts for 13% or less of instruction time in Australia, for example, compared with 30% or more in France, Mexico and the Netherlands.

There are also great differences in the time spent learning modern languages. In Australia, Japan, Mexico and the Netherlands, 1% or less of instruction time for 9-11 year-olds is spent on learning other languages, compared with over 10% in the Czech Republic, Portugal, Spain and Sweden, and 21% in Luxembourg.

For 12-14 year-olds in OECD countries, an average of nearly 40% of the compulsory curriculum is devoted to three subjects: reading, writing and literature (16%), mathematics (13%) and science (12%). Compared with 9-11 year-olds, a relatively larger part of the curriculum for this older age group is devoted to social studies (12%) and modern foreign languages (13%).

Most OECD countries define a specific number of hours for compulsory instruction. Within that part of the curriculum, students have varying degrees of freedom to choose the subjects they want to learn. Australia offers the greatest degree of flexibility in the compulsory curriculum for 9-11 year-olds: up to 58% of that curriculum can be shaped by the students themselves.

Definitions

Data on instruction time distinguish between “compulsory” and “intended” teaching time. Compulsory teaching time refers to the minimum amount of teaching that schools are expected to provide. Intended instruction time is an estimate of the number of hours during which students are taught both compulsory and non-compulsory parts of the curriculum. It does not, however, indicate the quality of the education provided nor the level or quality of the human and material resources involved. Data on instruction time are from the 2008 OECD-INES Survey on Teachers and the Curriculum and refer to the 2006-07 school year.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D1).

Areas covered include:

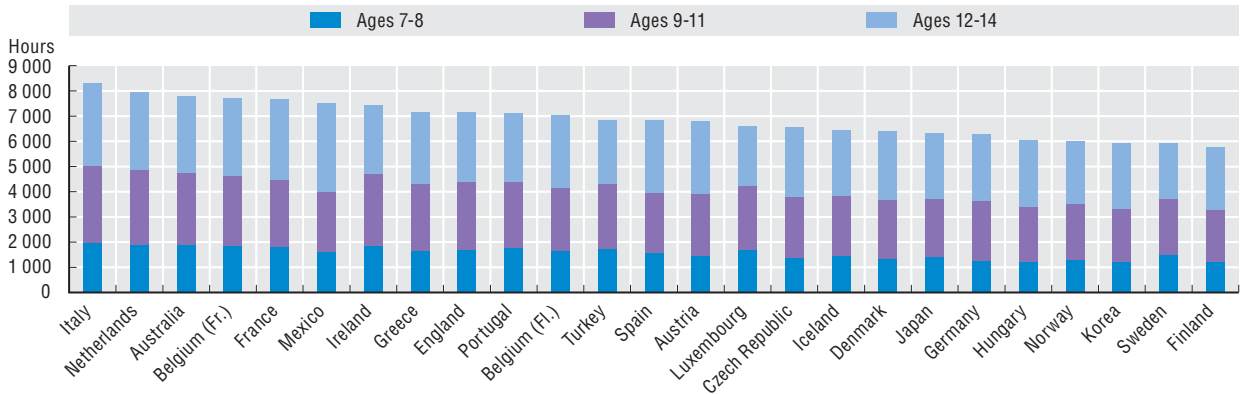
- Compulsory and intended instruction time in public institutions.
- Instruction time per subject.

Further reading from OECD

21st Century Learning Environments (2006).

Figure 4.1. Total number of instruction hours in public institutions, 2007

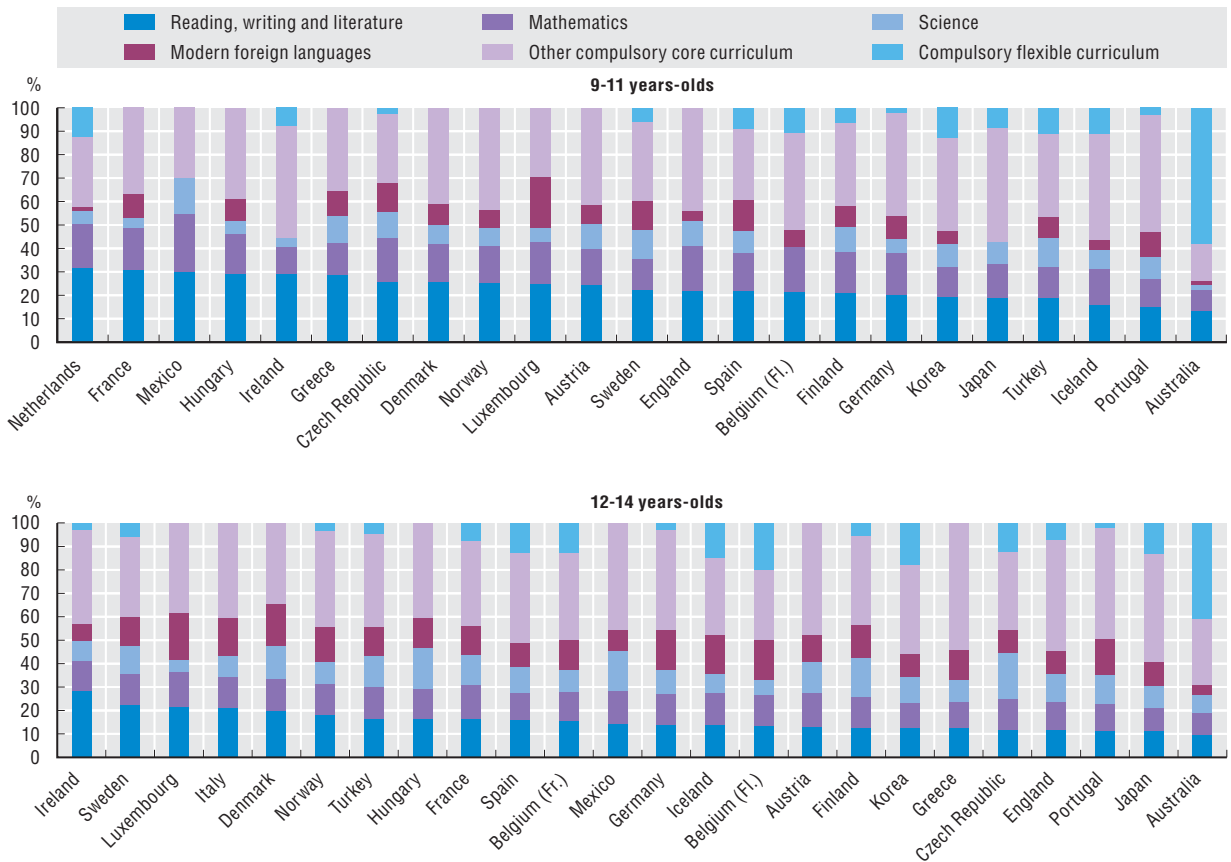
This figure shows the hours of intended instruction that students receive between ages 7 and 14 (this represents the compulsory instruction time public schools are required to deliver as well as the time devoted to non-compulsory instruction).



Source: OECD (2009), Education at a Glance 2009, Table D1.1, available at <http://dx.doi.org/10.1787/664775782328>.

Figure 4.2. Instruction time by subject, 2007

This figure shows the percentage of compulsory instruction time devoted to each subject.



Source: OECD (2009), Education at a Glance 2009, Tables D1.2a and D1.2b, available at <http://dx.doi.org/10.1787/664775782328>.

4. THE SCHOOL ENVIRONMENT

How many students are in each classroom?

- On average, there are just over 21 students per class at primary level in the OECD area, but this varies from 31 per class in Korea to nearly half that number in Luxembourg.
- The number of students per class increases by an average of nearly three between primary and lower secondary education.
- The student-to-teacher ratio in lower and upper secondary education is lower in private than in public institutions.

Significance

This spread examines the number of students per class at the primary and lower secondary levels, and the ratio of students to teachers at all levels. Class size is a hotly debated topic in many OECD countries. While smaller classes are often perceived as enabling a higher quality of education, evidence on the impact of class size on student performance is mixed.

Findings

At the primary level, the average class size in OECD countries is slightly more than 21 students per class, ranging from 31 students per class in Korea to fewer than 20 in Austria, the Czech Republic, Denmark, Finland, Greece, Iceland, Italy, Luxembourg, Mexico, Poland, Portugal, the Slovak Republic and Switzerland (public institutions).

In lower secondary education, the average class size is 24 students, ranging from nearly 36 students per class in Korea to 20 or fewer in Denmark, Finland, Iceland, Luxembourg and Switzerland (public institutions) (see chart D2.2 in *Education at a Glance 2009*).

At the primary level, the ratio of students to teaching staff, expressed in full-time equivalents, ranges from 25 students or more per teacher in Korea, Mexico and Turkey to fewer than 11 in Greece, Hungary and Italy. The OECD average in primary education is 16 students per teacher, and 13 at secondary level (see chart D2.3 in *Education at a Glance 2009*).

Across the OECD, average class sizes at the primary and lower secondary levels do not differ by more than 1 student per class between public and private institutions. However, there are differences between countries. For example, in the Czech Republic, Poland, Turkey, the United Kingdom and the United States, the average class size in public schools is higher – four students or more per class – than in private schools. (But it should be noted that, with the exception of

the United States, the private sector accounts for at most 5% of primary students in these countries.) By contrast, class sizes in private institutions exceed those of public institutions to at least a similar degree in Greece, Japan and Spain.

Trends

Among countries with comparable data, there was little substantial change in class sizes between 2000 and 2007. Where there was change, class size tended to decrease among those countries that had larger class sizes in 2000, such as Japan, Korea and Turkey, while it increased or remained the same in countries that had the smallest class sizes in 2000, such as Iceland.

Definitions

Data refer to the 2006-07 school year, and are based on the UOE data collection on education statistics administered by the OECD in 2008. Class sizes have been calculated by dividing the number of students enrolled by the number of classes. The ratio of students to teachers has been calculated by dividing the number of full-time students at a given level of education by the number of full-time teachers at that level.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D2).

Areas covered include:

- Average class size, by type of institution and level of education.
- Ratio of students to teaching staff.
- Teaching staff and non-teaching staff employed in educational institutions.

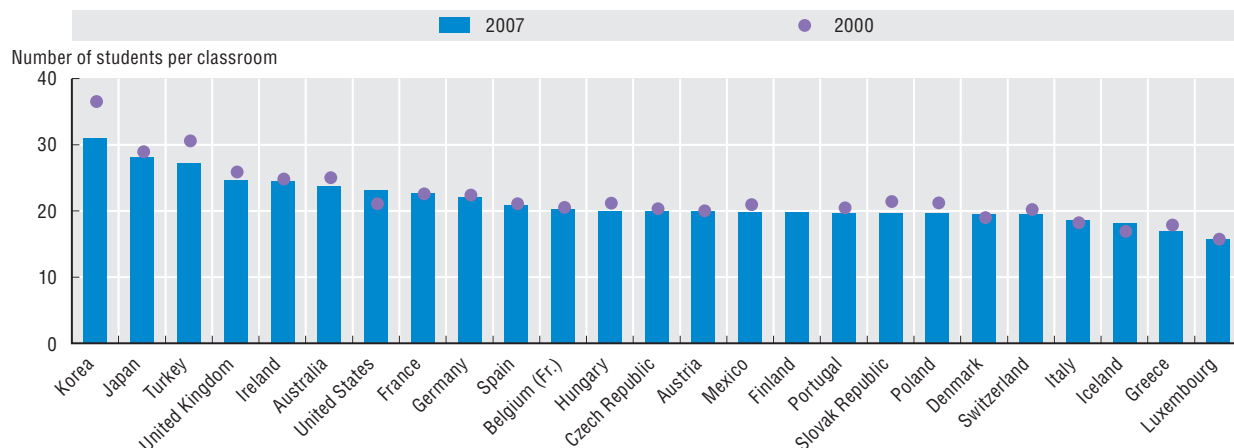
Further reading from OECD

Improving School Leadership (Vol. 1: Policy and Practice) (2008).

21st Century Learning Environments (2006).

Figure 4.3. Trends in average class size in primary education (2000, 2007)

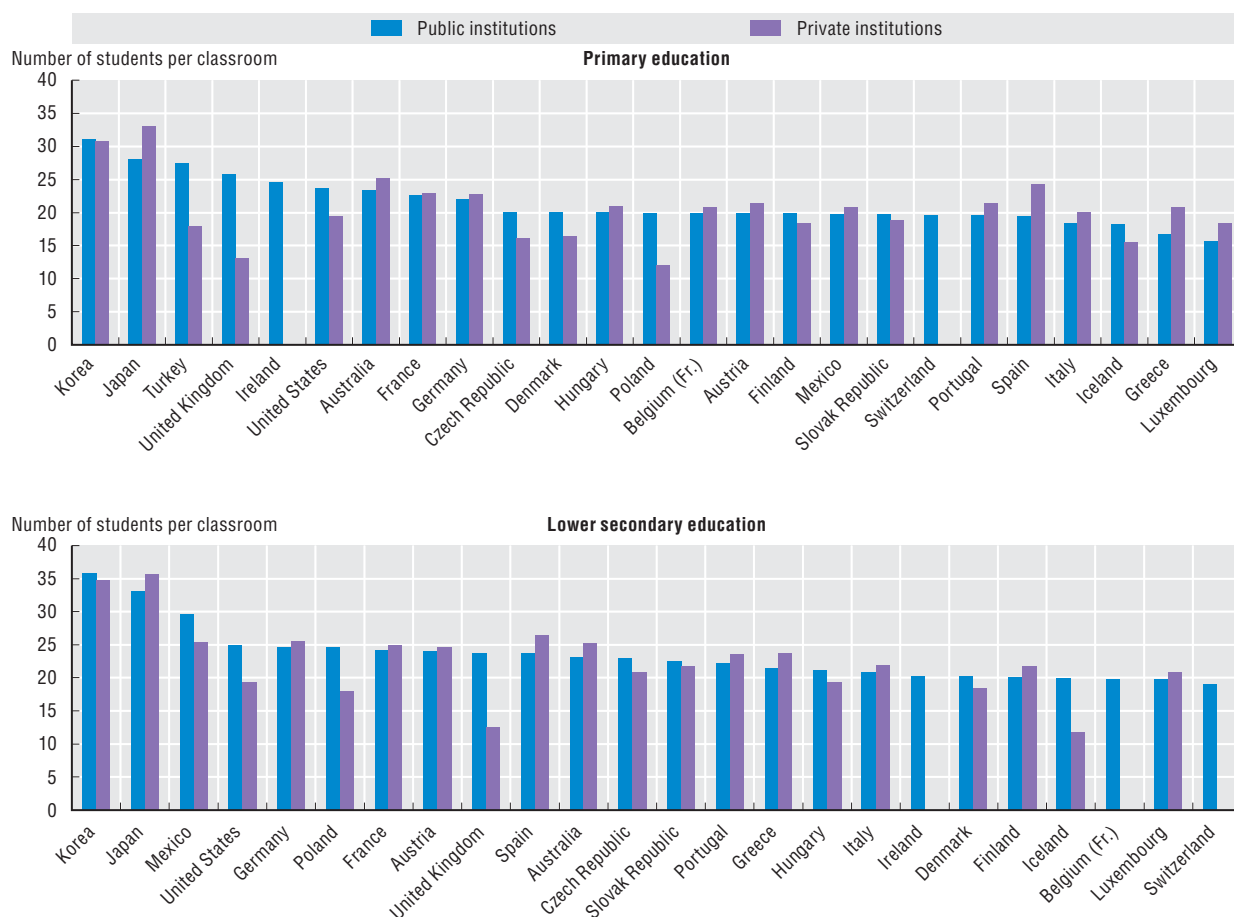
This figure shows the number of students on average in primary classes, and whether these numbers have risen or fallen.



Source: OECD (2009), *Education at a Glance 2009*, Tables D2.1 and D2.5, available at <http://dx.doi.org/10.1787/664810147180>.

Figure 4.4. Average class size in public and private institutions, 2007

These figures show whether class sizes differ between public and private schools.



Source: OECD (2009), *Education at a Glance 2009*, Table D2.1, available at <http://dx.doi.org/10.1787/664810147180>.

4. THE SCHOOL ENVIRONMENT

How much are teachers paid?

- Salaries for lower secondary teachers with at least 15 years' experience range from less than USD 15 000 in Hungary to more than USD 89 000 in Luxembourg.
- For both primary and secondary education, salaries at the top of the scale are on average around 70% higher than starting salaries.
- Salaries in primary and secondary education have grown in real terms since 1996 in almost all OECD countries, with the biggest rises in Finland, Hungary, Mexico and Australia.

Significance

This spread shows the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education. Since teachers' salaries are the largest single cost in education, teacher compensation is a critical consideration for policy-makers seeking to maintain both the quality of teaching and a balanced education budget.

Findings

In most OECD countries, teachers' salaries rise with the level of education they teach. For example, in Belgium (Fl.), Belgium (Fr.), Iceland, Luxembourg, the Netherlands and Switzerland, the salary of an upper secondary teacher with at least 15 years experience is at least 25% higher than that of a primary teacher with the same experience. The difference is less than 5%, however, in Australia, England, Greece, Ireland, Japan, Korea, New Zealand, Portugal, Scotland, Turkey and the United States.

Salaries at the top of the scale are on average around 70% higher than starting salaries for both primary and secondary education, although this differential largely varies among countries in line with the number of years it takes to progress through the scale. Top-of-the-scale salaries in Korea are almost three times starting salaries, but it takes 37 years to reach the top of the scale. In Portugal the ratio is similar to Korea's, but teachers reach the top of the salary scale after 26 years of service.

Trends

Teachers' salaries grew in real terms at both primary and secondary levels in virtually all OECD countries between 1996 and 2007. The biggest increases occurred in Finland, Hungary and Mexico (and in starting salaries in Australia). Trends have also varied at different points on the salary scale. For instance, starting salaries have risen faster than mid-career or top-of-the-scale salaries in Australia, Denmark, England and Scotland. By contrast, in Austria, Japan,

the Netherlands and Portugal, the biggest growth has been in salaries of teachers with at least 15 years of experience.

Finding the right balance in setting salaries at different stages of teachers' careers represents an important challenge in education. For example, if teachers are attracted by higher salaries in the early stages of their careers, they may expect salary increases to continue throughout their working lives. If those increases fail to materialise, it may reduce teachers' satisfaction and motivation, creating problems in teacher retention.

Definitions

Data are from the 2008 OECD-INES Survey on Teachers and the Curriculum and refer to the 2006-07 school year. Gross teachers' salaries were converted using GDP and purchasing power parities (PPPs) exchange rate data from the OECD National Accounts database. Starting salaries refer to the average scheduled gross salary per year for a fully qualified full-time teacher. Data presented here offer a simplified illustration of international comparisons in teacher compensation. Large differences in taxation, social benefits and allowances and additional payments for teachers as well as variations in teaching time, workloads and the use of part-time teachers must also be taken into account in making international comparisons of teachers' benefits. It is thus important to exercise caution in interpreting comparisons of teachers' salaries.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D3).

Areas covered include:

- Teachers' salaries, and trends.
- Additional payments for teachers.

Further reading from OECD

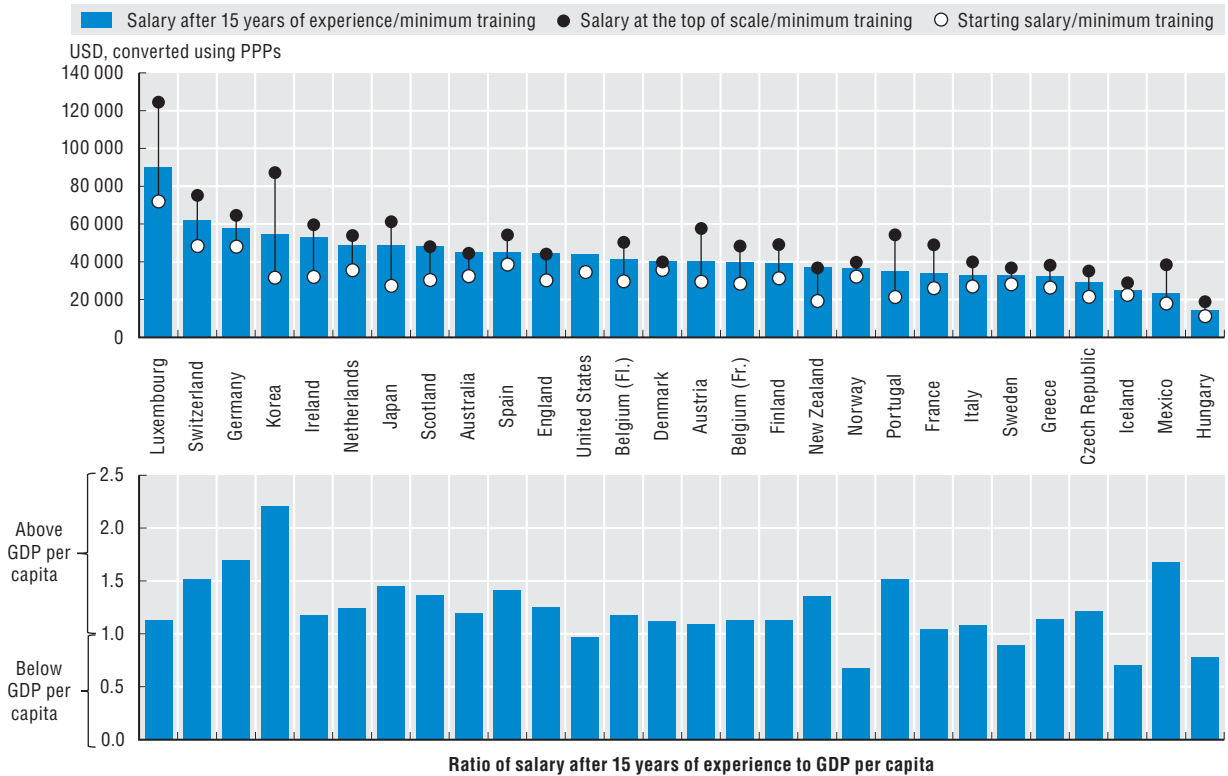
Improving School Leadership (Vol. 1: Policy and Practice) (2008).

21st Century Learning Environments (2006).

Teachers Matter: Attracting, Developing and Retaining Effective Teachers (2005).

Figure 4.5. **Teachers' salaries in lower secondary education, 2007**

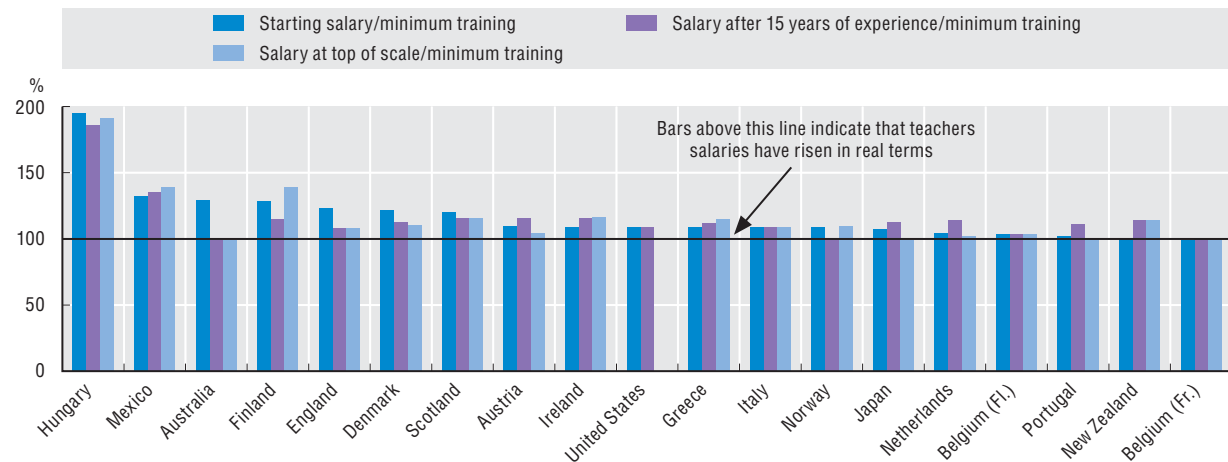
The upper chart in this figure shows how much teachers are paid, and how this varies depending on their years of experience. The lower chart compares the salaries of teachers (with 15 years' experience) with GDP per capita, so offering a way of assessing the salaries' relative value.



Source: OECD (2009), *Education at a Glance 2009*, Table D3.1, available at <http://dx.doi.org/10.1787/665004614152>.

Figure 4.6. **Trends in teachers' salaries in lower secondary education (1996, 2007)**

This figure shows how the salaries of teachers with different levels of experience have changed in real terms from 1996 to 2007.



Source: OECD (2009), *Education at a Glance 2009*, Table D3.2, available at <http://dx.doi.org/10.1787/665004614152>.

4. THE SCHOOL ENVIRONMENT

How much time do teachers spend teaching?

- The number of teaching hours per year in public primary schools averages 798, but ranges from fewer than 650 hours in Denmark, Hungary and Turkey to 1 080 in the United States.
- The average number of teaching hours per year in upper secondary schools is 653, but ranges from 364 in Denmark to 1 080 in the United States.
- The way teachers' working time is regulated varies substantially among countries.

Significance

This spread examines the time teachers spend teaching and doing non-teaching work, such as preparing lessons and assessing students. Although working time and teaching time only partly determine teachers' actual workload, they do provide valuable insight into differences in what is demanded of teachers in different countries and so may be related to the attractiveness of teaching as a profession. The amount of time teachers spend teaching is also one of the factors that affect the financial resources countries need to allocate to education.

Findings

Primary teachers tend to spend more hours teaching than secondary teachers, although the size of the gap varies between countries. In the Czech Republic and France, a primary teacher is required to teach over 210 hours more than a lower secondary teacher and 240 hours more than an upper secondary teacher (general programmes). By contrast, the gap is less than 60 hours or almost non-existent in Hungary, New Zealand, Scotland and the United States.

The composition of teachers' annual teaching time, in terms of days, weeks and hours a day, varies considerably between countries. For instance, while teachers in Denmark teach for 42 weeks a year (in primary and secondary education) and teachers in Iceland for 35 to 36 weeks a year, teachers in Iceland actually put in slightly more hours of teaching over the year than counterparts in Denmark. (The difference is accounted for by the fact that teachers in Iceland teach for about 30 minutes longer each day.) Korea is the only country in which primary teachers teach more than five days a week, on average; yet their total annual teaching time is below the average because they teach, on average, fewer hours per day.

While some countries formally regulate contact time only, others also set working hours. Indeed, in most countries, teachers are formally required to work a specified number of hours each week, including teaching and non-teaching time, to earn their full-time salary. These hours vary between countries, as does the allocation of time to teaching and non-teaching activities. Usually, the number of teaching hours is specified, but some countries also regulate, at the national level, the amount of time a teacher must be present in the school.

In Belgium (Fr.), Finland, France, Italy and New Zealand, there are no formal requirements for primary and secondary education as to how much time teachers should spend on non-teaching duties. However, this does not mean that teachers are given total freedom to carry out other tasks.

Definitions

Data are from the 2008 OECD-INES Survey on Teachers and the Curriculum and refer to the 2006-07 school year. Teaching time is defined as the number of hours per year that a full-time teacher teaches a group or class of students. Working time refers to the normal working hours of a full-time teacher and includes time directly associated with teaching and hours devoted to teaching-related activities, such as preparing lessons, counselling students, correcting assignments and tests, and meeting with parents and other staff.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D4).

Areas covered include:

- Organisation of teachers' working time.
- Number of teaching hours per year, by level of education.

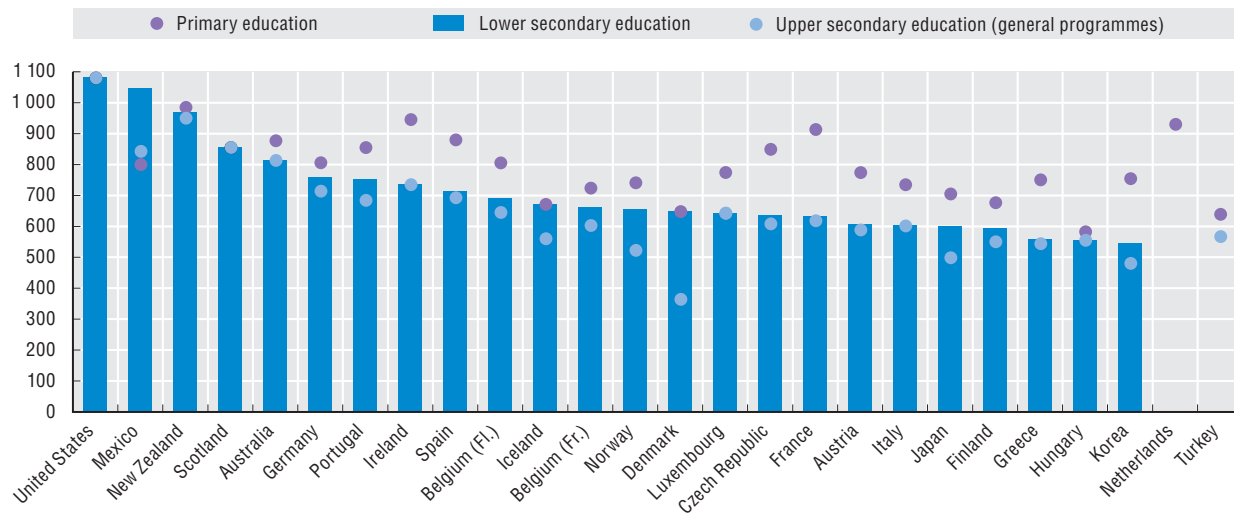
Further reading from OECD

21st Century Learning Environments (2006).

Teachers Matter: Attracting, Developing and Retaining Effective Teachers (2005).

Figure 4.7. **Annual teaching hours by education level, 2007**

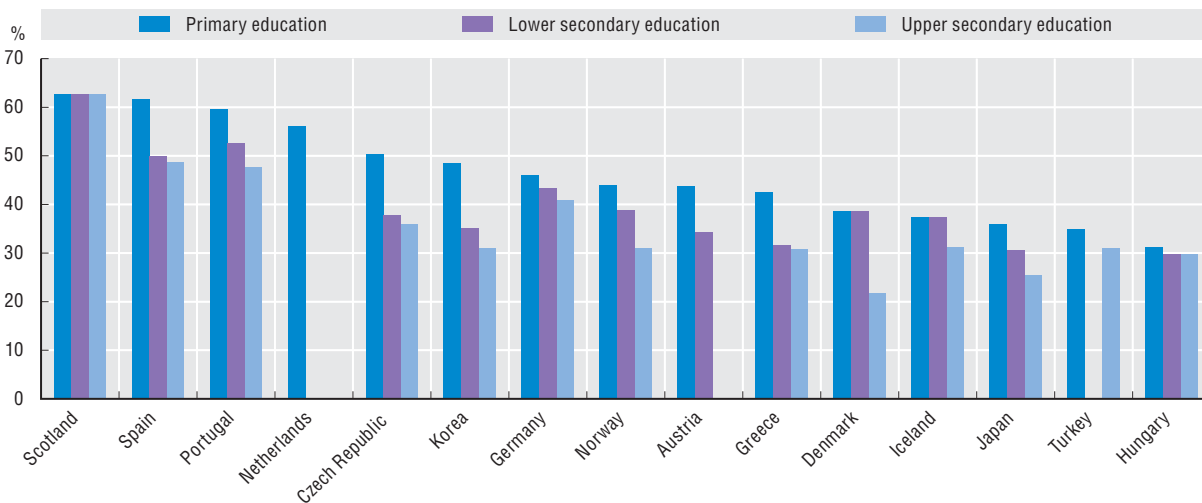
This figure shows the variation in annual teaching hours for teachers in different levels of education.



Source: OECD (2009), *Education at a Glance 2009*, Table D4.1, available at <http://dx.doi.org/10.1787/665026260448>.

Figure 4.8. **Percentage of teachers working time spent teaching, 2007**

This figure shows the amount of their working time that teachers spend teaching. Contact time with students is a major part of teachers' workloads, but duties also include preparing classes and correcting assignments.



Source: OECD (2009), *Education at a Glance 2009*, Table D4.1, available at <http://dx.doi.org/10.1787/665026260448>.

4. THE SCHOOL ENVIRONMENT

Who are the teachers?

- The ageing of the teaching workforce is raising recruitment concerns. On average in OECD countries, almost 29% of primary teachers, 32% of lower secondary teachers and almost 36% of upper secondary teachers are 50 or older.
- On average, nearly 80% of primary school teachers in OECD countries are women.

Significance

This spread presents a profile of the teaching workforce. Getting a better understanding of the teaching workforce means countries can anticipate teacher shortages and work to improve the teaching profession's attractiveness as a career choice.

Findings

On average across the OECD, just under 29% of primary teachers are 50 or older, but the levels are much higher in some countries: just under 53% in Germany and under 49% in Sweden and 46% in Italy. Except Sweden, these countries also have high proportions of lower secondary teachers aged over 50: 52% for Germany and 59% for Italy. In Italy, only 1% of lower secondary school teachers are aged below 30, compared with an OECD average of just over 12%.

As for the broader age distribution of teachers across the OECD area, the average percentage of teachers in the 40-49 age group is roughly the same in primary and lower and upper secondary education – between 29% and 30%. Teachers aged 39 or below tend to be more prevalent in primary education, where they account for just over 42% of teachers on average. At lower secondary level, they account for almost 39% of teachers, and at upper secondary a little more than 34%.

Looking at all levels of education, including tertiary, women represent an average of just over 65% of all teachers in the OECD area, but the percentage of women teachers tends to fall from one level of education to the next: On average across the OECD area, women account for almost 97% of teachers at pre-primary level; just under 80% at primary level; almost 67% at lower secondary level; slightly more than 53% at upper secondary level; and 39% in tertiary education.

Trends

The majority of OECD countries experienced ageing in their teaching workforce throughout the 1990s. An ageing workforce has budgetary implications, since

more experienced teachers usually earn higher salaries. An increase in teacher compensation can limit the capacity of school systems to take other initiatives; and more resources might be required to update skills, knowledge and motivation among those who have been teaching for a long time. In addition, unless appropriate action is taken to train and recruit more teachers, teacher shortages are likely to increase as more teachers retire.

According to Australian research, the growing “feminisation” of teaching may be the result of a combination of factors, including low teaching salaries relative to other professions, especially for men, cultural stereotyping of teaching as “women’s work,” particularly primary education, and men’s fear that, if they enter the teaching profession, particularly as primary school teachers, they may be potentially vulnerable to accusations of child abuse. In addition, research from Finland and Ireland, two countries where the teaching profession enjoys a relatively high status, suggests that boys tend to have lower school examination results than girls, and thus comprise a smaller proportion of well-qualified applicants for teaching positions.

Definitions

Data refer to the academic year 2006-07 and are based on the UOE data collection on education statistics administered by the OECD in 2008. Information on trends is taken from OECD's *Teachers Matter: Attracting, Developing and Retaining Effective Teachers* (2005).

Going further

For additional data and notes go to Indicator D7 at www.oecd.org/edu/eag2009.

Areas covered include:

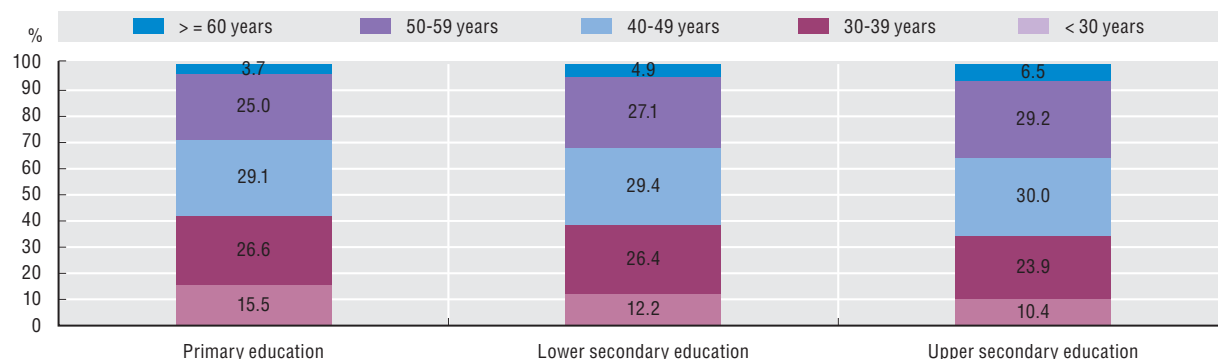
- Age distribution of teachers by country and level of education.
- Gender distribution of teachers by country and level of education.

Further reading from OECD

Teachers Matter: Attracting, Developing and Retaining Effective Teachers (2005).

Figure 4.9. **Age distribution of teachers, OECD average, 2007**

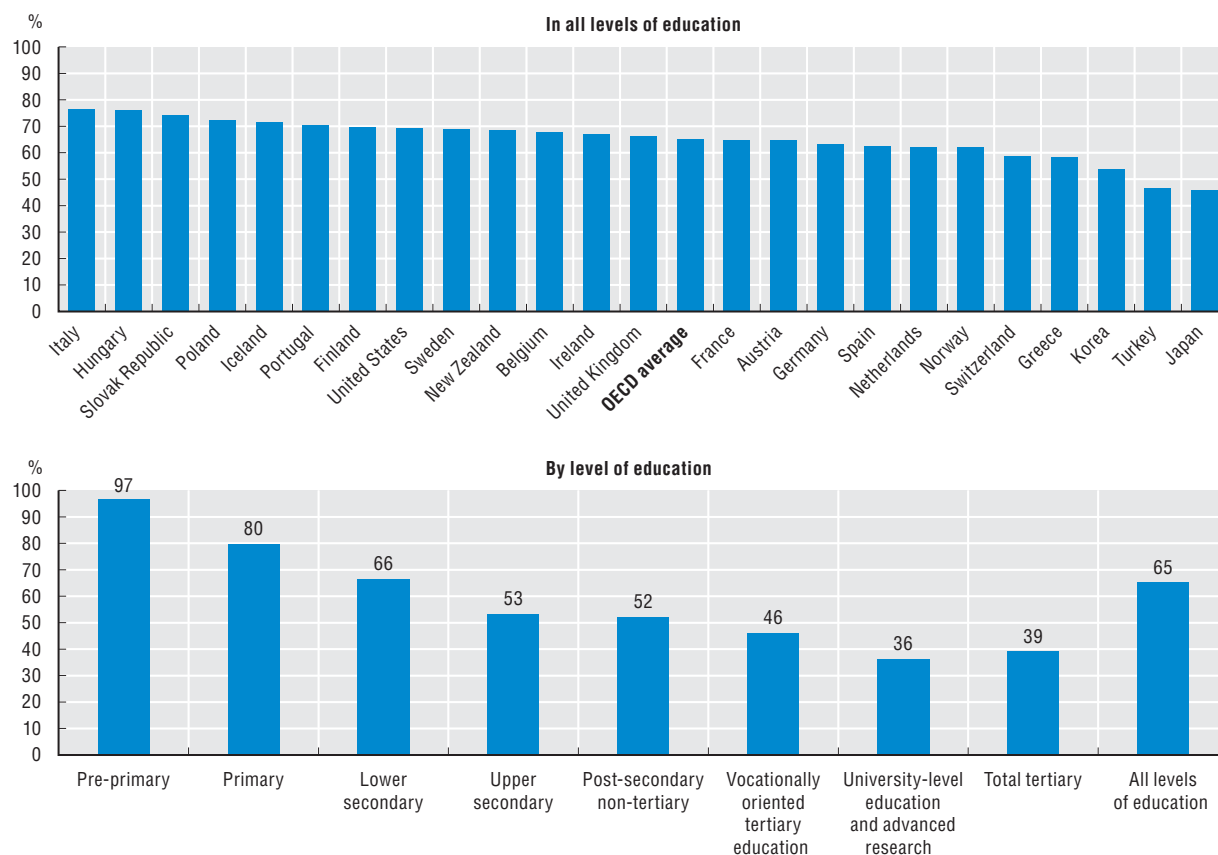
This figure shows the OECD average percentages of teachers in each age group in primary, lower secondary and upper secondary education.



Source: OECD (2009), *Education at a Glance 2009*, Table D7.1, available online at www.oecd.org/edu/eag2009, Indicator D7.

Figure 4.10. **Gender distribution of teachers in OECD countries, 2007**

These figures show the percentage of women teachers in all levels of education and by each level of education in OECD countries.



Source: OECD (2009), *Education at a Glance 2009*, Table D7.2, available online at www.oecd.org/edu/eag2009, Indicator D7.





SPECIAL SECTION: TALIS

What is TALIS?

How extensive is teacher appraisal and feedback?

How much class time is lost to indiscipline?

What are teachers' beliefs and practices?

Are teachers satisfied in their jobs?

What is TALIS?

- TALIS is the first survey providing internationally comparative perspective on conditions of teaching and learning.
- A total of 75 000 teachers took part, and the findings cover 23 countries.
- TALIS reveals some major challenges facing teaching, including a shortage of well-trained teachers and a failure to provide teachers with sufficient opportunities for the professional development they need.

Introduction

TALIS, which is the OECD's Teaching and Learning International Survey, provides the first internationally comparative perspective on conditions of teaching and learning. The survey's findings, which cover 16 OECD and 7 partner countries, provide insights into some of the factors that lie behind the differences in learning outcomes revealed by the OECD's Programme for International Student Assessment (PISA).

Overall, the aim of TALIS is to help countries review and develop policies to make the teaching profession more attractive and more effective. With a focus on lower secondary education in both the public and private sectors, TALIS examines important aspects of a number of key issues in teaching today:

- Professional development;
- teachers' beliefs, attitudes and practices;
- teacher appraisal and feedback ; and
- school leadership.

Major conclusions

Some of the findings from TALIS are discussed in a little more detail in the rest of this section, but some overall conclusions are worth examining first.

A profession facing major challenges: Results from TALIS have revealed major challenges for policy makers and for the teaching profession. More than one teacher in three works in a school whose principal thinks that the school suffers from a shortage of qualified teachers. Principals report lack of adequate equipment and instructional support and, in some countries, negative teacher behaviour such as absenteeism or lack of pedagogical preparation.

Teachers themselves don't always feel that they are getting enough help with professional development to meet the demands of their profession (see below). For teachers, major challenges include trying to teach increasingly heterogeneous groups of pupils, learning to make effective use of information and communication tools and managing student behaviour. These problems are underlined by the fact that one in four teachers report losing at least 30% of learning time because of disruptive student behaviour or administrative tasks.

A key role for professional development: TALIS highlights better and more targeted professional development as one avenue towards improvement. It shows that teachers participate least in the activities they believe to be the most effective, and are also more likely to pay towards the cost of such activities and invest more time in them. This suggests a need to review the amount of time and money made available to teachers for such professional development opportunities.

Although the great majority of teachers received some professional development over the previous 18 months, 55% on average reported that they would have liked more. More than two-fifths of teachers say there is no suitable professional development on offer, which indicates that a sound assessment of provision and support against development needs should be a priority in many countries. A sizeable proportion of teachers are underwriting the full cost for their professional development, which is evidence that many teachers are willing to contribute their share to advancing their career and profession. TALIS also shows that there is generally much greater scope for teachers to learn from other teachers.

But challenges can be met: TALIS also provides many encouraging insights. Not only do the positive outcomes in some countries signal that the challenges can be addressed, but there are patterns that suggest that teachers are embracing the challenges and actively seeking to advance their profession.

Intensifying challenges: The challenges for education systems are likely to intensify. Addressing them will require the creation of evidence-based education systems, in which school leaders and teachers act as a professional community and have the authority to act, the necessary information to do so wisely, and access to effective support systems to assist them in implementing change. However, the results from TALIS suggest that, in many countries, education is still far from becoming a knowledge industry – its own practices are still not being transformed by a real knowledge-based understanding of what works and what doesn't.

Feedback and evaluation: The generally positive reception by teachers of appraisal and feedback on their work shows it is possible to overcome concerns over such practices. The fact that the more feedback teachers receive on their work, the more they trust in their abilities to address teaching challenges suggests this is another approach to raising learning outcomes.

Points to remember

Three features of the TALIS survey need to be taken into account when interpreting the results:

Subjectivity: Responses from teachers and principals offer important insights, but they are subjective reports. Great care was taken in the design and instrumentation of the survey to ensure that the data are reliable and valid across countries and cultures. However, they need to be interpreted in the context of the perspectives of other stakeholders.

No cause and effect: TALIS identifies associations between various characteristics of teachers and schools, but cannot establish cause and effect.

Cultural influences: Cross-country comparisons must always take account of cultural influences on the meaning of responses. The TALIS results are discussed with these considerations in mind.

How TALIS was carried out

Around 200 schools were randomly selected in each country participating in the survey. In each school, one questionnaire was filled in by the school principal and another by 20 randomly selected teachers. The questionnaires each took about 45 minutes to complete and could be filled in on paper or on-line. In total, TALIS sampled around 75 000 teachers representing more than 2 million teachers in 23 participating countries. (TALIS was also conducted in the Netherlands, but the

findings have been excluded because the required sampling standards were not met.)

Definitions

All data in this section are from the first OECD-TALIS Survey and refer to the school year 2007-08. TALIS collected data from school principals and teachers. The focus of TALIS was lower secondary education as defined by level 2 of the International Standard Classification for Education (ISCED). References to “countries” refer only to the 23 countries whose results are reported in the TALIS survey.

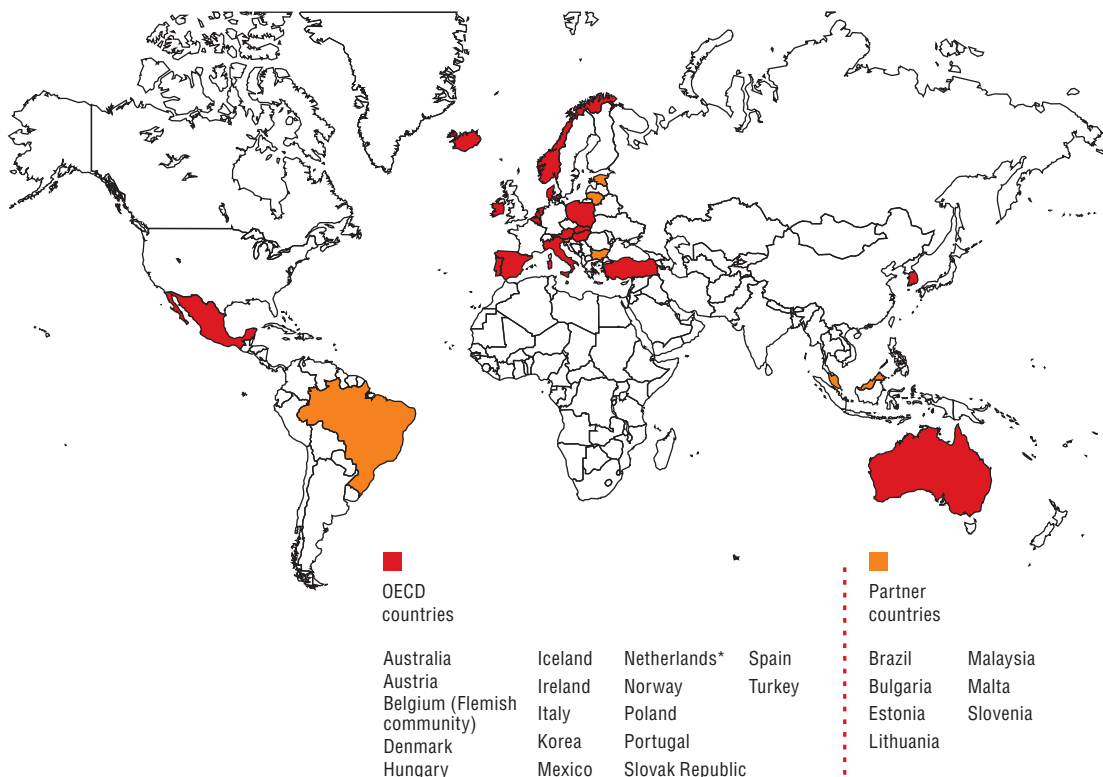
Going further

To find out more about TALIS, visit www.oecd.org/edu/talis.

Further reading from OECD

Creating Effective Teaching and Learning Environments: First Results from TALIS (2009).

A map of TALIS countries



* Findings excluded because sampling standards not met

How extensive is teacher appraisal and feedback?

- On an individual level, teachers report that receiving appraisal and feedback increases their job satisfaction, influences their teaching practices, and is useful for their development as teachers.
- Most teachers work in schools that do not penalise underperforming teachers. Almost three-quarters of teachers reported that, in their schools, teachers would not be dismissed because of sustained poor performance.

Significance

Evaluation can play a key role in school improvement and teacher development. Providing feedback can aid teachers in better understanding their respective strengths and weaknesses, which can be an important first step towards improving teaching.

Findings

A third or more of teachers in Austria, Ireland and Portugal worked in schools whose school principal reported no internal or external school evaluations in the previous five years. This was also the case for around a quarter of teachers in Denmark and Spain and around a fifth in Italy. By contrast, in 14 countries (Australia, Brazil, Bulgaria, Hungary, Italy, Korea, Lithuania, Malaysia, Malta, Mexico, Poland, the Slovak Republic, Slovenia and Turkey), at least half of teachers worked in schools whose school principal reported at least an annual school evaluation (either an external evaluation or a school self-evaluation).

Teachers' appraisal and feedback are rarely associated with material incentives, and in most countries they are not substantially linked either to financial benefits or career advancement. Across all countries, just 9% of teachers reported that appraisal or feedback had a moderate or large impact upon their salary and 11% reported that it had a moderate or large impact on a financial bonus or another kind of monetary reward.

Non-material incentives also appear to be relatively infrequent: Slightly more than a third of teachers said their appraisal and feedback had led to a moderate or large change in the recognition they received from their school principal and/or colleagues within the

school, while just under a quarter said it had led to a moderate or a large change in their opportunities for professional development.

Teachers who did receive appraisal and feedback had a positive view of the process. Overall, such teachers considered the appraisal and feedback they received to be a fair assessment of their work and to have had a positive impact upon their job satisfaction (see Table D5.4 in *Education at a Glance 2009*). This is an important finding given the negative connotations that may be associated with the introduction of a teacher appraisal system.

But while teachers may have found individual benefits from systems of appraisal and feedback, they felt that overall such systems did not recognise teachers' efforts and successes, reward effective teachers and effective teaching practices, or provide incentives to teachers. On the other hand, did teachers think that poor teaching was being punished? Again, the answer is broadly no: In most countries most teachers reported that sustained poor performance would not lead to dismissal, while more than three-quarters of teachers reported that their school principal did not take steps to alter the monetary rewards of a persistently underperforming teacher.

Definitions

See introduction to this section.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D5).

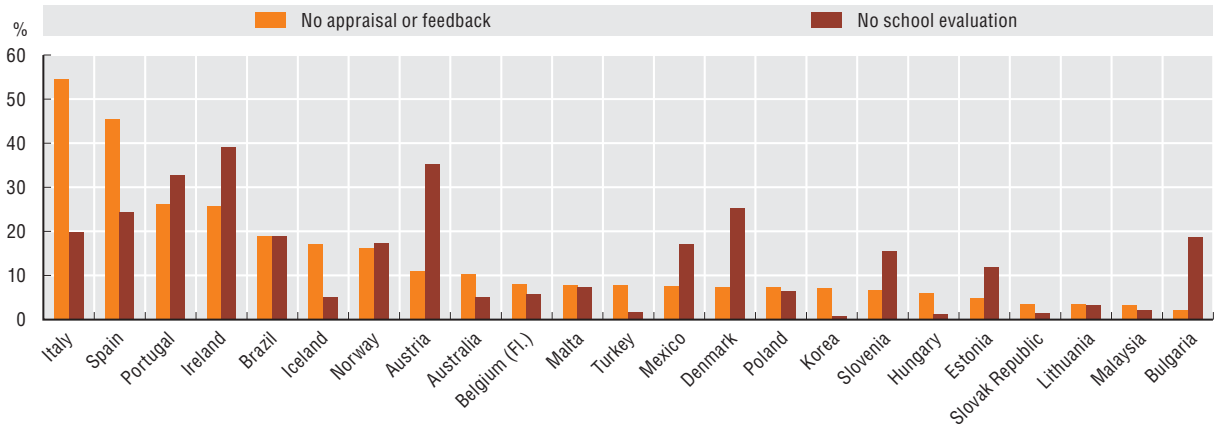
Further reading from OECD

Creating Effective Teaching and Learning Environments: First Results from TALIS (2009).

How extensive is teacher appraisal and feedback?

Figure S.1. **Teachers who received no appraisal or feedback and teachers in schools that had no school evaluation in the previous five years, 2007-08**

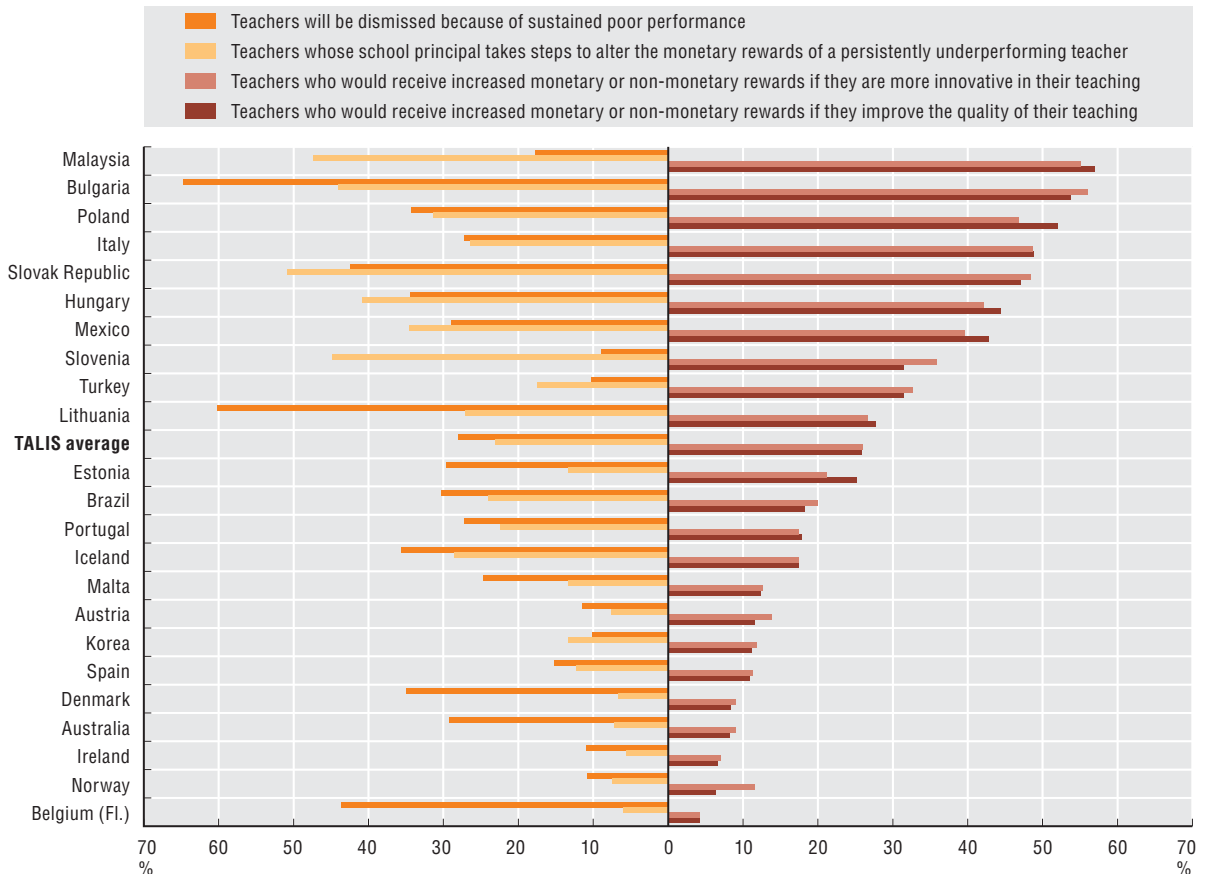
This figure shows the percentages of teachers who did not receive appraisal or feedback or evaluations and those who worked in schools that did not carry out or receive evaluations.



Source: OECD (2009), *Education at a Glance 2009*, Chart D5.1, available at <http://dx.doi.org/10.1787/665055402267>.

Figure S.2. **Perception of teachers of appraisal and feedback and its impact in their school, 2007-08**

This figure shows the percentages of teachers in each country who felt that their school rewarded effective teachers and took action against ineffective teachers.



Source: OECD (2009), *Education at a Glance 2009*, Chart D5.2, available at <http://dx.doi.org/10.1787/665055402267>.

How much class time is lost to indiscipline?

- Teachers in most participating countries spend almost 80% of their lesson time on teaching and learning.
- Teachers in most countries spend valuable lesson time restoring discipline or on administrative tasks.
- Teachers in Brazil, Malaysia and Mexico spend more time on administrative tasks on average than those in other countries.

Significance

Studies from around the world indicate that the classroom climate is one of the most important predictors of student achievement. TALIS focuses on the disciplinary climate because it has a strong impact on student learning in various subjects, and because it has been shown that – unlike other features of classroom climate – there is a high level of agreement about this indicator among teachers, students and observers.

Findings

To measure the classroom disciplinary climate, TALIS asked teachers whether they had to cope with a lot of noise and interruptions during lessons and whether they found the learning atmosphere pleasant. An additional measure of the classroom environment derived from TALIS data is an index for “time on task”. Teachers were asked about the percentage of time they typically spend on actual teaching and learning in the target class. Time on task is a central aspect of instructional effectiveness because it provides students with a maximum opportunity to learn.

Teachers in most participating countries spend almost 80% of their lesson time on teaching and learning. In most countries teachers lose at least 30% of their lesson time through disruptions and administrative tasks. Teachers in Bulgaria, Denmark, Estonia, Hungary, Ireland, Lithuania, Norway, Poland, the Slovak Republic and Slovenia make relatively effective use of lesson time. However in Brazil, Malaysia and Mexico a comparatively large proportion of time is spent on activities other than actual teaching and learning. For example, teachers in Brazil, Malaysia and Mexico spend more time on administrative tasks on average than teachers in other countries (13, 11 and 17%, respectively, compared to less than 9% in all other participating countries). Teachers in Brazil and Malaysia also spend on average 18% and 17%, respectively, of lesson time on maintaining order, compared to an international aver-

age of 13%. Time spent maintaining order in the classroom is also more than 14% in Australia, Iceland, Italy, Malta, Portugal and Spain. It is less than 10% in Bulgaria, Estonia, Lithuania, and Poland.

As might be expected, the better the classroom disciplinary climate, the more time is spent on actual teaching and learning. Countries in which teachers reported spending a comparatively small percentage of time on teaching and learning also had a low mean score for classroom disciplinary climate. This mainly concerns Brazil, Iceland, Korea, Malaysia, Malta, Portugal, Spain and Turkey. Likewise, countries with a high mean score for classroom disciplinary climate also had comparatively high mean scores for time on task. This is the case for Estonia and to a lesser extent for Austria, Bulgaria, Hungary, Ireland, Lithuania, Poland and Slovenia. Mexico is a notable exception in that teachers said they viewed the classroom disciplinary climate quite positively despite the low average score for time on task.

Overall, a majority of teachers in all participating countries reported using lesson time effectively. Nevertheless, a considerable percentage of teachers in each of the countries, and especially in Brazil, Malaysia and Mexico, were not able to provide their students with adequate time for learning. Generally, teachers said time loss was largely due to disciplinary problems, although administrative issues also distracted from actual teaching and learning, especially in Mexico.

Definitions

See introduction to this section.

Going further

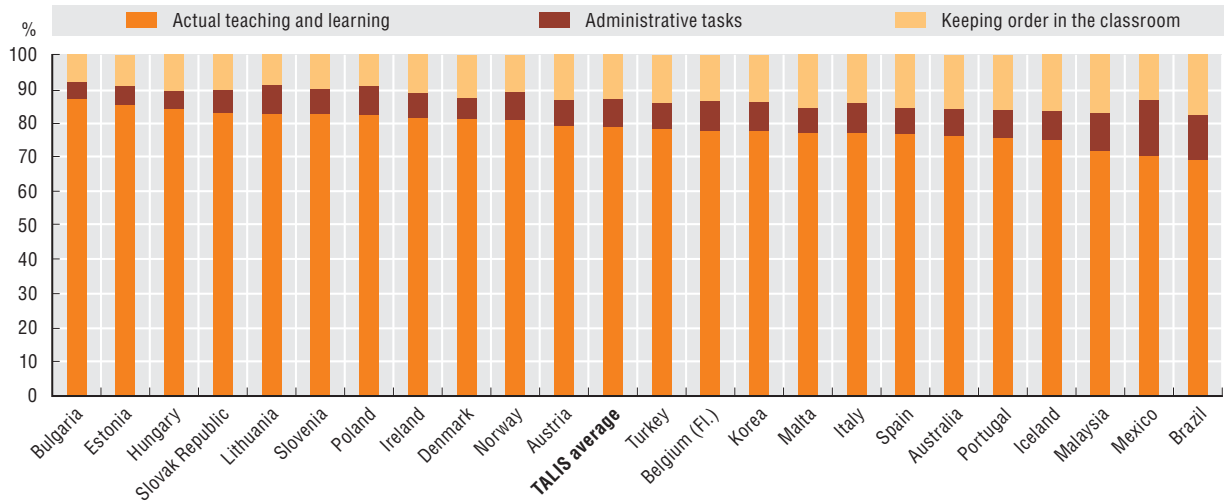
For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D6).

Further reading from OECD

Creating Effective Teaching and Learning Environments: First Results from TALIS (2009).

Figure S.3. How time is spent in the classroom during an average lesson, 2007-08

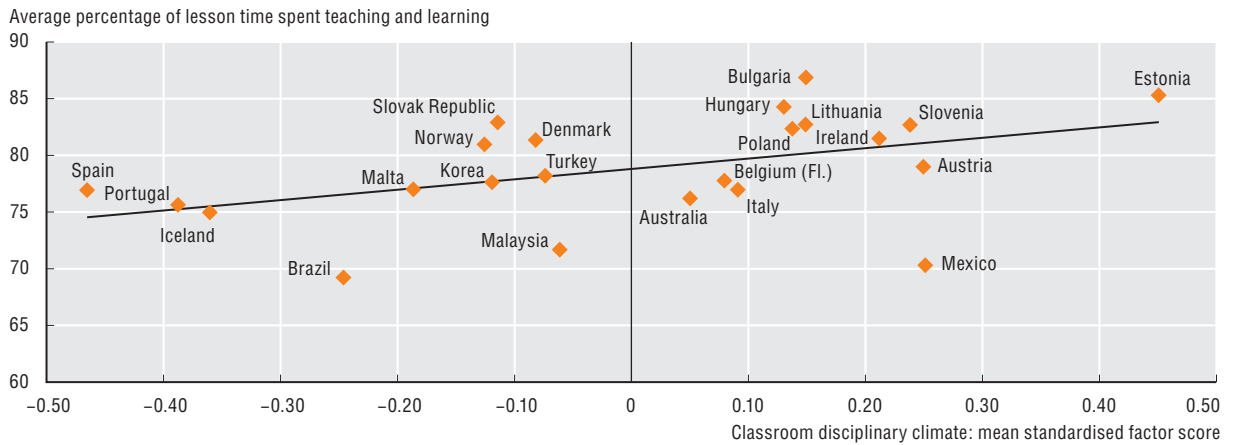
This figure shows how much of a teacher’s time is taken up with teaching during lessons and how much with ensuring discipline and doing administrative tasks.



Source: OECD (2009), Education at a Glance 2009, Chart D6.1, available at <http://dx.doi.org/10.1787/665115410485>.

Figure S.4. Quality of the classroom environment, 2007-08

This figure shows the country means for the quality of the classroom environment (time spent on task and classroom disciplinary climate). Broadly speaking, in countries that are closer to the top right hand corner of the chart, teachers report a more positive classroom climate.



Source: OECD (2009), Education at a Glance 2009, Chart D6.6, available at <http://dx.doi.org/10.1787/665115410485>.

What are teachers' beliefs and practices?

- More teachers see their role as encouraging students to play an active role in learning, rather than merely communicating knowledge to them.
- Teaching practices lean more towards a structured approach, with explicitly stated learning goals, rather than a more student-oriented approach, where students work in small groups and are given individually adopted tasks.

Significance

Quality of instruction is fundamental to student learning, but there is no single, well-defined best way of teaching. Indeed, how teachers teach and their professional knowledge can differ not only among countries but also among teachers within a country. This spread looks at what teachers said about their beliefs and approaches to teaching and their actual teaching practices.

Findings

Teacher beliefs about teaching: The TALIS study distinguishes between two main approaches:

- **Direct transmission view:** This sees the teacher's role as communicating knowledge in a clear and structured way, to explain correct solutions, to give students clear and resolvable problems, and to ensure calm and concentration in the classroom.
- **Constructivist view:** This sees the teacher's role as facilitating student inquiry, and emphasises encouraging students to develop solutions to problems on their own and to play an active role in instructional activities.

Support for the constructivist view was stronger in all countries, bar Italy, but there were variations in the strength of teachers' endorsement of each of the two approaches. The preference for a constructivist view was especially pronounced in Australia, Austria, Belgium (Fl.), Denmark, Estonia and Iceland. Differences in the strength of endorsement were small in Brazil, Bulgaria, Italy, Malaysia, Portugal and Spain. In general, then, teachers in Australia, Korea, north-western Europe and Scandinavia showed a stronger preference for a constructivist view than teachers in Malaysia, Mexico/South America and southern Europe. Teachers in eastern European countries were in between.

Classroom practices: Teachers' beliefs shape how they teach in the classroom. The TALIS study distinguishes between three main approaches to teaching practices:

- **Structuring practices:** Explicitly stating learning goals, summary of earlier lessons, and homework review.
- **Student-oriented practices:** Working in small groups, ability grouping, student self-evaluation and student participation in classroom planning.
- **Enhanced activities:** Working on projects that require at least one week to complete, making a product, writing an essay, and debating arguments.

Structuring practices were the most frequently employed across all participating countries, with a particular emphasis on them in Hungary, Ireland and Malta. Enhanced activities were less frequently used than student-oriented practices in all participating countries. Again, a general pattern of relative frequencies is observed but also cross-country differences. In Brazil, Korea, Malta and Mexico the relative average frequencies of enhanced activities and student-oriented practices were very similar. Hence, in these countries the relative frequency of enhanced activities was high compared with other countries. Relatively large differences between student-oriented and enhanced activities were found in Bulgaria and Slovenia. These data suggest that across all countries, greater use of enhanced activities and student oriented practices could be made in the classroom.

Definitions

See introduction to this section.

Going further

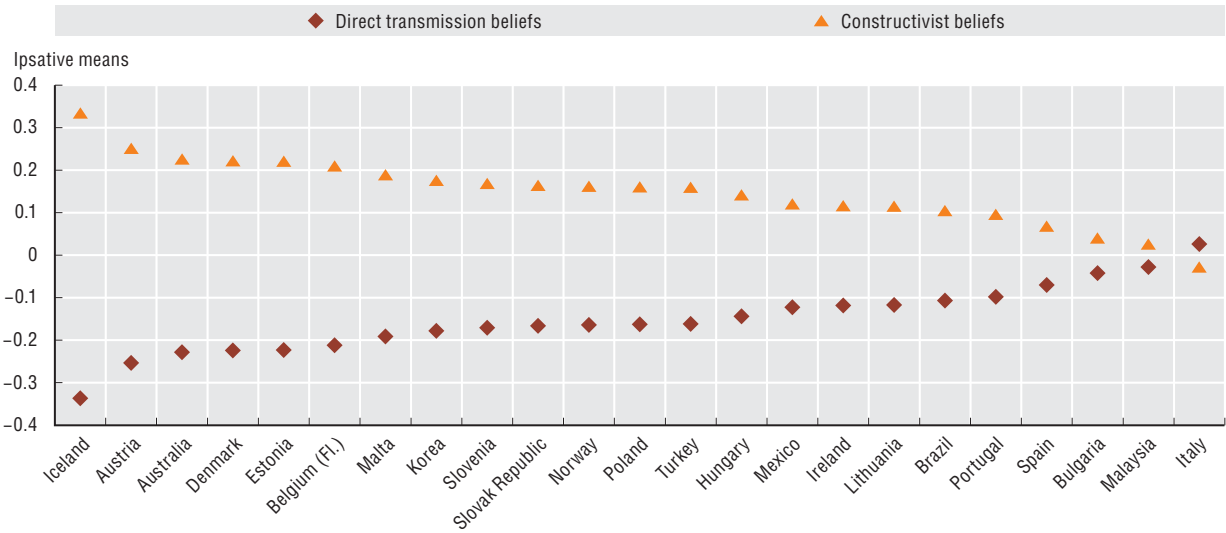
For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D6).

Further reading from OECD

Creating Effective Teaching and Learning Environments: First Results from TALIS (2009).

Figure S.5. **Country profiles of teachers' beliefs about the nature of teaching and learning, 2007-08**

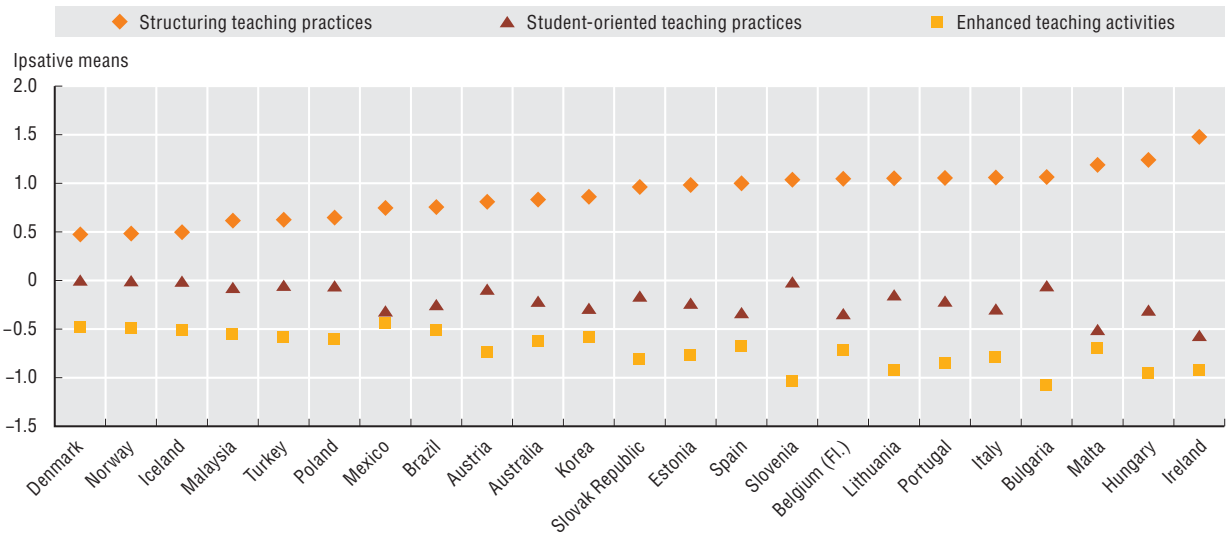
This figure shows the strength of preference among teachers in each country for the direct transmission view or the constructivist view of teaching.



Source: OECD (2009), Education at a Glance 2009, Chart D6.2, available at <http://dx.doi.org/10.1787/665115410485>.

Figure S.6. **Country profiles of classroom teaching practices, 2007-08**

This figure shows the strength of preference among teachers in each country for structuring, student-oriented or enhanced activities in their teaching practices.



Source: OECD (2009), Education at a Glance 2009, Chart D6.4, available at <http://dx.doi.org/10.1787/665115410485>.

Are teachers satisfied in their jobs?

- There are generally only small differences between countries in the degrees of self-efficacy and job satisfaction reported by teachers.
- Norway has an exceptionally high mean score for both self-efficacy and job satisfaction.

Significance

As well as examining pedagogical beliefs and attitudes, TALIS also looked at job-related attitudes, namely job satisfaction and teacher self-efficacy (or the extent to which a teacher feels that he or she has the capacity to achieve teaching goals). Job satisfaction is a central concept in organisational and work psychology. It is assumed that job satisfaction is both affected by the work situation and influences work-related behaviour, including performance, absenteeism and turnover. Strong self-efficacy beliefs can prevent stress and burnout, and teachers' self-efficacy beliefs and their job satisfaction are linked to instructional practices and student achievement.

Findings

The teacher self-efficacy index was constructed from four items of the teacher questionnaire that asked teachers to rate their responses to each of the following propositions:

- I feel that I am making a significant educational difference in the lives of my students.
- If I try really hard, I can make progress with even the most difficult and unmotivated students.
- I am successful with the students in my class.
- I usually know how to get through to students.

Teachers were also asked to answer a single question on their level of job satisfaction.

Generally there were only small differences between countries in self-efficacy and job satisfaction. Norway had an exceptionally high mean score for both self-efficacy and job satisfaction. Teachers in Austria and Belgium (Fl.) were also relatively satisfied with their job. For Hungary and the Slovak Republic, however,

average job satisfaction was low compared to that of the other participating countries. Comparatively weak self-efficacy beliefs were reported by teachers in Estonia, Hungary, Korea, and Spain.

However, the biggest variations in self-efficacy and job satisfaction were seen not between countries but between teachers – in other words, teachers within a school varied markedly in their levels of self-efficacy and job satisfaction, while differences between countries (and between schools) were rather small. For self-efficacy, 5% of the total variance was between schools, 8% between countries and 87% between teachers; for job satisfaction the variances were 6% between schools, 4% between countries and 90% between teachers.

These results emphasise the psychological nature of the constructs and the fact that across countries, teachers' self-efficacy and job satisfaction depend on and interact with their personality, personal experiences, competencies and attitudes. This should be considered in interventions aiming at enhancing teachers' self-efficacy, as these results suggest that individualised interventions may be more effective than school or system level policies.

Definitions

See introduction to this section.

Going further

For additional material, notes and a full explanation of sourcing and methodologies, see *Education at a Glance 2009* (Indicator D6).

Further reading from OECD

Creating Effective Teaching and Learning Environments: First Results from TALIS (2009).

Statistical Note

Sections 1-4

Coverage of statistics

Although a lack of data still limits the scope of the indicators in many countries, the coverage extends, in principle, to the entire national education system (within the national territory) regardless of the ownership or sponsorship of the institutions concerned and regardless of education delivery mechanisms. With one exception described below, all types of students and all age groups are meant to be included: children (including students with special needs), adults, nationals, foreigners, as well as students in open distance learning, in special education programmes or in educational programmes organised by ministries other than the Ministry of Education, provided the main aim of the programme is the educational development of the individual. However, vocational and technical training in the workplace, with the exception of combined school and work-based programmes that are explicitly deemed to be parts of the education system, is not included in the basic education expenditure and enrolment data.

Educational activities classified as “adult” or “non-regular” are covered, provided that the activities involve studies or have a subject matter content similar to “regular” education studies or that the underlying programmes lead to potential qualifications similar to corresponding regular educational programmes. Courses for adults that are primarily for general interest, personal enrichment, leisure or recreation are excluded.

Calculation of international means

For many indicators an OECD average is presented and for some an OECD total.

OECD average: This is calculated as the unweighted mean of the data values of all OECD countries for which data are available or can be estimated. The OECD average therefore refers to an average of data values at the level of the national systems and can be used to answer the question of how an indicator value for a given country compares with the value for a typical or average country. It does not take into account the absolute size of the education system in each country.

OECD total: This is calculated as a weighted mean of the data values of all OECD countries for which data are available or can be estimated. It reflects the value for a given indicator when the OECD area is considered as a whole. This approach is taken for the purpose of comparing, for example, expenditure charts for individual countries with those of the entire OECD area for which valid data are available, with this area considered as a single entity.

Note that both the OECD average and the OECD total can be significantly affected by missing data. Given the relatively small number of countries, no statistical methods are used to compensate for this. In cases where a category is not applicable (code “a”) in a country or

where the data value is negligible (code “n”) for the corresponding calculation, the value zero is imputed for the purpose of calculating OECD averages. In cases where both the numerator and the denominator of a ratio are not applicable (code “a”) for a certain country, this country is not included in the OECD average.

Results from PISA

Readers wishing to find out more about data presented under the PISA heading, and the statistical methods used to analyse it, should visit www.pisa.oecd.org or consult *PISA 2006: Volume 2: Data* (OECD, 2007).

Special Section: TALIS

To find out more about data presented in the Special Section on TALIS, please visit www.oecd.org/edu/talis or consult *Creating Effective Teaching and Learning Environments: First Results from TALIS* (OECD, 2009).

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Highlights from Education at a Glance 2009

Highlights from Education at a Glance 2009 is a companion publication to the OECD's flagship compendium of education statistics, *Education at a Glance*. It provides easily accessible data on key topics in education today, including:

- **Education levels and student numbers:** How far have adults studied, and what access do young people have to education?
- **Economic and social benefits of education:** How does education affect people's job prospects, and what is its impact on incomes?
- **Paying for education:** What share of public spending goes on education, and what is the role of private spending?
- **The school environment:** How many hours do teachers work, and how does class size vary?
- **TALIS:** A special section introduces findings from the OECD's new Teaching and Learning International Survey, which provides an internationally comparative perspective on some important issues in teaching and learning: Are teachers receiving appraisal and feedback? What are teachers' education philosophies and classroom practices? And are teachers happy in their jobs?

Each indicator is presented on a two-page spread. The left-hand page explains the significance of the indicator, discusses the main findings, examines key trends and provides readers with a roadmap for finding out more in the OECD education databases and in other OECD education publications. The right-hand page contains clearly presented charts and tables, accompanied by dynamic hyperlinks (StatLinks) that direct readers to the corresponding data in Excel™ format.

Highlights from Education at a Glance 2009 is an ideal introduction to the OECD's unrivalled collection of internationally comparable data on education and learning.

The full text of this book is available on line via this link:

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