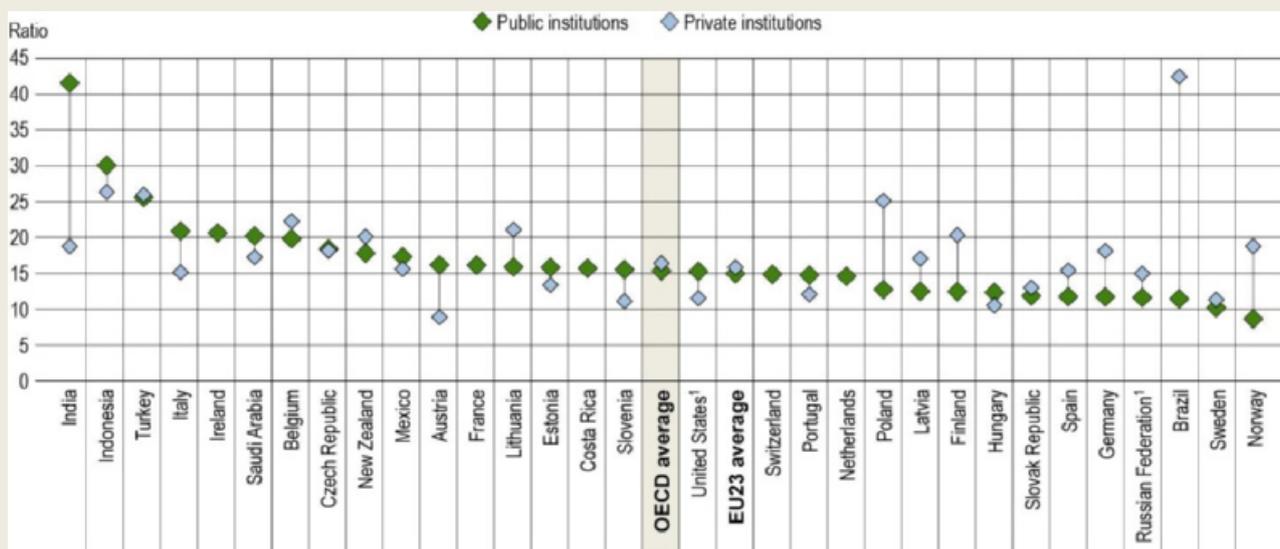


Indicator D2. What is the student-teacher ratio and how big are classes?

Highlights

- On average across OECD countries, there are 15 students for every teacher in primary education and 13 students per teacher in lower secondary education. The average school class has 21 students in primary education and 23 students in lower secondary education.
- At tertiary level, the student-teacher ratios in public and private institutions are similar on average across OECD countries, with about 15 students per teaching staff member in public institutions and 16 students per teaching staff member in private institutions. The difference in student-teacher ratios across public and private institutions is larger in partner countries.
- The average primary school class in OECD countries in 2017 had 21 students in public institutions and 20 students in private institutions. The difference in class size between public and private primary institutions varies substantially across OECD countries.

Figure D2.1. Ratio of students to teaching staff in tertiary education, by type of institution (2017)



1. Tertiary includes programmes outside tertiary level - see Annex 3 for further details.

Countries are ranked in descending order of the ratio of students to teaching staff in tertiary public institutions.

Source: OECD/UIS/Eurostat (2019), Education at a Glance Database, <http://stats.oecd.org/>. See Source section for more information and Annex 3 for notes (<https://doi.org/10.1787/f8d7880d-en>).

StatLink  <https://doi.org/10.1787/888933979804>

Context

Class sizes and student-teacher ratios are much-discussed aspects of education and are among the determinants of the demand for teachers, along with students' instruction time (see Indicator D1), and teachers' working time and the division of teachers' time between teaching and other duties (see Indicator D4). Together with teachers' salaries (see Indicator D3), age distribution (see Indicator D5) and instruction time (see Indicator C7), class size and student-teacher ratios also have a considerable impact on the level of current expenditure on education (see Indicators C6 and C7).

Smaller classes are often seen as beneficial, because they allow teachers to focus more on the needs of individual students and reduce the amount of class time needed to deal with disruptions. Yet, while there is some evidence that smaller classes may benefit specific groups of students, such as those from disadvantaged backgrounds (Piketty and M. Valdenaire, 2006^[1]), overall evidence of the effect of class size on student performance is mixed (Fredriksson, Öckert and Oosterbeek, 2013^[2]; OECD, 2016^[3]).

The ratio of students to teaching staff is an indicator of how resources for education are allocated. Smaller student-teacher ratios often have to be weighed against measures such as higher salaries for teachers, investing in their professional development, greater investment in teaching technology, or more widespread use of assistant teachers and other paraprofessionals, whose salaries are often considerably lower than those of teachers.

Other findings

- Across OECD countries, the numbers of teachers and students have grown at an average annual rate of 1% between 2005 and 2017.
- On average across OECD countries, the student-teacher ratio in lower secondary education is slightly lower in private institutions than in public institutions. The difference is most striking in Mexico, where at the lower secondary level there are more than twice as many students per teacher in public institutions as in private institutions.
- Class size in primary education varies significantly across countries, ranging from 15 students per class in Costa Rica to 31 students per class in Chile.

Analysis

Student-teacher ratios

The ratio of students to teaching staff compares the number of students (full-time equivalents) to the number of teachers (full-time equivalents) at a given level of education and in similar types of institutions. This ratio does not take into account the amount of instruction time students have compared to the length of a teacher's working day, or how much time teachers spend teaching. Therefore, it cannot be interpreted in terms of class size (Box D2.1).

On average across OECD countries, there are 15 students for every teacher at primary level. The student-teacher ratio ranges from 10 to 1 in Norway to 27 to 1 in Mexico. It is even higher in some partner countries, reaching 33 to 1 in India (Table D2.2).

On average, there are fewer students per teacher at secondary level (13 students per teacher) than at primary level. This reduction in the student-teacher ratio from primary to secondary level may result from differences in annual instruction time (as instruction hours tend to increase with the education level, so does the number of teachers) or from differences in teaching hours (teaching time decreases with the level of education as teacher specialisation increases). There are also wider variations across countries at secondary level than at primary level, from 8 students per teacher in Lithuania to 29 students per teacher in Mexico.

On average, the student-teacher ratio is about the same in lower secondary and upper secondary education (13 students per teacher). In some countries, however, it varies widely between these two levels. This is the case in Finland, where there are at least twice as many students per teacher at the upper secondary level than at the lower secondary level.

At the upper secondary level, the difference in student-teacher ratios between general and vocational programmes also varies across countries. On average, the ratio of students to teaching staff in upper secondary vocational and general programmes are similar (14 to 1 and 13 to 1). While the difference between the two is negligible in a few countries, there are in fact as many countries where the ratio is greater in vocational programmes as there are countries where it is lower. In Latvia, there are twice as many students per teacher in vocational programmes (17 to 1) as general programmes (8 to 1). In the United Kingdom, there are 25 students per teacher in vocational programmes and only 14 per teacher in general programmes. These large differences may be due to the fact that in some countries, vocational programmes are significantly work based, so vocational students spend considerable time outside the school. As a result, schools need fewer teachers, which may translate into higher student-teacher ratios (OECD, 2017^[4]). In other countries such as Brazil, which has the largest difference between programmes of all OECD and partner countries with available data, the difference is reversed: there are twice as many students per teacher in general programmes (26 to 1) as in vocational programmes (13 to 1). In this case, this may reflect the fact that students in vocational education typically need greater instructor attention, especially as they have access to more sophisticated equipment. Vocational students require more careful supervision as skill specificity rises. This may in turn have important implications for the cost of vocational instruction, as advanced vocational training requires both specialised machinery and a greater level of human resources (Klein, 2001^[5]).

At the tertiary level, there are on average 16 students per teaching staff member. The student-teacher ratio ranges from 9 to 1 in Norway to over 25 to 1 in Colombia, Indonesia and Turkey. The difference in student-teaching staff ratios across short-cycle tertiary and bachelor's, master's, doctoral or equivalent level varies across countries with available data. These results should be interpreted with caution, however, as the student-teacher ratio remains a limited measure of the level of teaching resources at tertiary level (Box D2.2). Moreover, the relatively low enrolment in short-cycle tertiary in some countries limits comparability across tertiary levels (see Indicator B1).

Box D2.1. What is the relationship between class size and the student-teacher ratio?

Class size, as presented in Table D2.1, is defined as the number of students who are following a common course of study, based on the highest number of common courses (usually compulsory studies), and excluding teaching in subgroups. The calculation is made by dividing the number of students by the number of classes. The student-teacher ratio, as presented in Tables D2.2 and D2.3, is calculated by dividing the number of full-time equivalent students by the number of full-time equivalent teachers at a given level of education and type of institution.

The two indicators therefore measure very different characteristics of the educational system. Student-teacher ratios provide information on the level of teaching resources available in a country, whereas class sizes measure the average number of students that are grouped together in classrooms.

Given the difference between student-teacher ratio and average class size, it is possible for countries with similar student-teacher ratios to have different class sizes. For example, at the primary level, Israel and the United States have similar ratios of students to teaching staff (15 students per teacher, Table D2.2), but the average class size differs substantially (21 students per class in the United States and 27 in Israel). This may be explained by the fact that teaching time in the United States is considerably higher than in Israel, meaning that American teachers can teach more classes during the day and thus students can be taught in smaller classes (see Indicator C7).

Student-teacher ratios in public and private institutions

On average across OECD countries with available data, the ratios of students to teaching staff are slightly higher in public institutions than in private institutions at the lower secondary level and about the same at upper secondary level (Table D2.3).

At lower secondary level, the largest difference between public and private institutions is found in Mexico, where there are more than twice as many students per teacher in public institutions as in private institutions. However, only 10% of lower secondary students are enrolled in private institutions in Mexico (Education at a Glance Database). In contrast, the student-teacher ratio is lower in public institutions than in private institutions in some countries. This difference is most pronounced in Chile, where the student-teacher ratio is 16 to 1 in public institutions, compared to 24 to 1 in private institutions (Table D2.3). In Chile, almost 60% of lower secondary students are enrolled in private institutions (Education at a Glance Database).

At the upper secondary level, the student-teacher ratio is larger in public institutions than in private institutions in 14 countries, smaller in public institutions in 15 countries, and similar for both sectors in 4 countries. Mexico is once more the country with the largest difference in student-teacher ratios at this level, with 25 students per teacher in public institutions and 16 students per teacher in private institutions. (Table D2.3). This mixed pattern in upper secondary education may, in part, reflect differences in the types of programmes offered in public and private institutions. For instance, in Norway, few private schools offer vocational programmes, in which the student-teacher ratio is slightly lower than the ratio in general programmes (Education at a Glance Database and Table D2.2).

At tertiary level, there is little difference between public and private institutions on average across OECD countries, with 15 students per teaching staff member in public institutions and 16 in private institutions (Figure D2.1). In a few OECD countries, such as Austria and Italy, there are over five more students per teacher in public institutions than in private institutions. In these countries, however, less than 20% of tertiary students are enrolled in private institutions (see Indicator B1). The difference between public and private institutions is larger in some partner countries: in India, there are over twice as many students per teachers in public institutions (42 to 1) as in private institutions (19 to 1). The largest difference in student-teacher ratio between public and private

institutions is in Brazil where, interestingly, the ratio is much higher in private institutions, which enrol 73% of tertiary students, than in public institutions, which are more selective. In Brazil, students thus face either a performance barrier to accessing free but highly selective public institutions, or a financial barrier to accessing private institutions, which could limit their opportunities and raises significant equity concerns (Figure D2.1).

Box D2.2. Calculating the student-teacher ratio in higher education

The student-teacher ratio measures the teaching resources that are available in a given country. When the student-teacher ratio is low, students are more likely to receive more support and attention. However, at tertiary level, the interpretation of this indicator is affected by the definition and function of academic staff. Some may have limited teaching responsibilities and could for example spend most of their time doing research. In such cases, the student-teacher ratio would not be representative of the level of support and attention students receive in the classroom.

Currently the available data do not allow hours spent teaching to be distinguished from hours spent doing research. Specifically, the UNESCO-UIS, OECD and Eurostat (UOE) manual defines academic staff as personnel employed at the tertiary level of education whose primary assignment is instruction or research, with no further distinction. Other authoritative sources on tertiary academic staff, including the Frascati Manual (OECD, 2016^[6]) and the European Tertiary Education Register (ETER^[7]) also lack such distinction.

Eurydice's 2017 report on academic staff at tertiary level across Europe (European Commission/EACEA/Eurydice, 2017^[8]) is one of the first attempts to map the different attributes of academic staff onto a harmonised segmentation. The report draws on several data sources. It is based mainly on qualitative data gathered from the Eurydice National Units and has been complemented by a range of research reports and databases from other international organisations. In line with the UOE definition of instructional staff, the data collection concentrated on tertiary staff primarily responsible for teaching and/or research, including both academic staff and teaching/research aides. While this data collection did not specifically consider the number of hours spent teaching and the number of hours spent doing research, it included information on staff's primary responsibilities, thus providing a first attempt to distinguish between teaching and research.

Outside European countries, other OECD countries also collect data on the function of staff: instruction, research, or a combination of both. However the definition of each differs across countries. For example, Australia defines instruction staff as "teaching only" based on their formal job requirements. For these types of staff, "work involves only teaching and associated activities [...], or the management and leadership of teaching staff and of staff who support teaching staff. There is no formal requirement that research be undertaken" (Australian Government^[9]). In contrast, the classification of instructional staff by function in the United States is broader. Instructional staff includes faculty whose role is either primarily instructional or instruction combined with research and/or public service (NCES National Center for Education Statistics, 2018^[10]). Neither Canada nor New Zealand separate out instruction staff from research staff. In Korea, instructors are only required for teaching, whereas professors usually have both teaching and research responsibilities.

Overall, these attempts remain limited. Further efforts are needed to more accurately collect data on the number of hours spent teaching and the number of hours spent doing research, in order to refine the calculation of the student-teacher ratio in tertiary education.

The number of students per teacher remains an important concern, even though tertiary education may involve more self-learning than primary and secondary education. Although student-teacher ratios are difficult to measure at tertiary level, they could still shed some light on the level of available resources in higher education. In fact,

the student-teacher ratio is considered to be a proxy of quality in higher education (McDonald, 2013_[11]), which warrants efforts to improve the calculation of this indicator (Box D2.2).

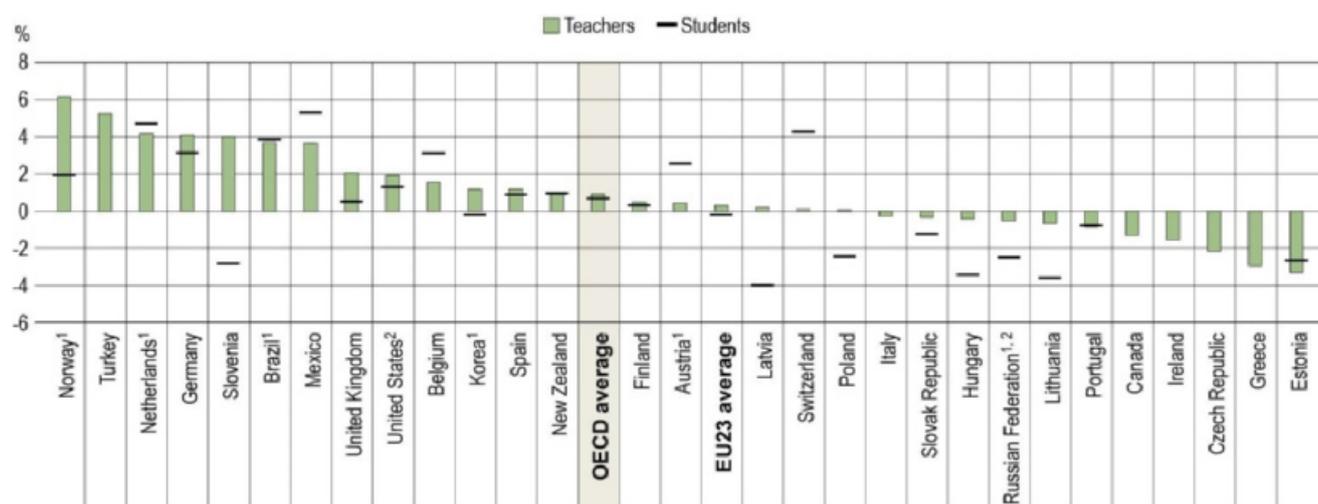
Trends in the number of students and academic staff in tertiary education

Comparing the average annual growth rates of the numbers of tertiary students to the average annual growth rates of the numbers of academic staff between 2005 and 2017 could shed light on the changes in human resources over this period.

On average across OECD countries, the number of academic staff and students grew at an average annual rate of 1% between 2005 and 2017. These averages, however, mask large disparities across countries. The largest changes in the number of academic staff are found in Norway and Estonia: Norway recorded the highest average annual growth rate in the number of teachers (+6%) and Estonia and Greece the lowest (-3%). The highest average annual growth rate in the number of students is found in Mexico and the Netherlands (+5%) and the lowest in Latvia (-4%; Figure D2.2).

In the majority of countries with available data, the number of academic staff and students have changed in a similar way: both either increased or decreased between 2005 and 2017. However, the pace of change varies widely. For example in Norway, the number of academic staff grew three times faster than the growth in the number of students. In contrast, in Hungary and Lithuania, the decline in the number of students was at least three times greater than the decline in the number of academic staff. In other countries, such as Finland and Portugal, the pace of change was similar for students and academic staff. In Latvia, Korea, Poland and Slovenia, however, the number of academic staff has on average increased every year, although the number of students fell over the same period (Figure D2.2). This may reflect the difficulties in reducing the number of teachers in academia following demographic shifts.

Figure D2.2. Average annual growth rates of the numbers of students and teaching staff in tertiary education (2005-17)



Note: This figure cannot be interpreted as student-teacher ratio. Enrolment data coverage is not adjusted to personnel by level of education, programme orientation, type of institution, and intensity of participation, as it is the case when calculating the student-teacher ratio (see *Methodology* section).

1. Year of reference is 2010 instead of 2005.

2. Tertiary includes programmes outside tertiary level - see Annex 3 for further details.

Countries are ranked in descending order of the average annual growth rate in the number of teachers in tertiary education, between 2005 and 2017.

Source: OECD/UISEurostat (2019), Education at a Glance Database, <http://stats.oecd.org>. See *Source* section for more information and Annex 3 for notes (<https://doi.org/10.1787/f8d7880d-en>).

Monitoring the number of students and academic staff at tertiary level could provide valuable insights into the way education systems are responding to the changing demand for tertiary education. On average across OECD and partner countries, tertiary attainment has been growing over the past 20 years, and it is expected to continue growing in the next decade (OECD, 2018^[12]). This increase reflects the rise in demand for skilled labour, in part driven by technological changes (OECD, 2017^[13]), and governments effort to promote access to tertiary education, including through a variety of financial support policies (OECD, 2017^[4]). In countries with the largest increase in demand (see Indicator A1), the challenge is to limit the impact of such growing demands on the quality of tertiary education systems and invest in human resources accordingly.

Class size

Average class size in primary and lower secondary education

The indicator on class size is limited to primary and lower secondary education. Class sizes are difficult to define and compare at higher levels, as students are often split into several different classes at these levels, depending on the subject area.

At the primary level, the average class in OECD countries has 21 pupils. There are fewer than 28 pupils per class in nearly all of the countries with available data, with the exception of Chile (31 pupils) (Table D2.1).

At the lower secondary level, the average class in OECD countries has 23 students. Among all countries with available data, the number varies from fewer than 20 students per class in Estonia, Finland, Latvia, Lithuania, Luxembourg, the Slovak Republic and the Russian Federation to more than 30 students per class in Costa Rica and Japan (Table D2.1).

The number of students per class tends to increase between primary and lower secondary education. In Costa Rica, this increase corresponds to almost 18 students. On the other hand, in the United Kingdom and, to a lesser extent, Australia, Chile, Estonia, Finland, Hungary and the Russian Federation, the number of students per class falls between these two levels of education (Table D2.1).

Class size in public and private institutions

Class size is one factor that parents may consider when deciding on a school for their children. Hence, the difference in average class size between public and private schools (and between different types of private institutions) could influence enrolment.

Differences in class sizes between public and private institutions are similar to those observed for student-teacher ratios. In most OECD countries, average class sizes do not differ between public and private institutions by more than two students per class in both primary and lower secondary education. However, in some countries (including Brazil, Colombia, the Czech Republic, Latvia, Poland and the Russian Federation), the average class in public primary schools has more than five additional students compared to the average class in private schools (Table D2.1). However, with the exception of Brazil and Colombia, the private sector is relatively small in all of these countries, representing at most 5% of students at the primary level (see Education at a Glance Database). In contrast, in Chile, Greece, Korea, Luxembourg and Spain, the average class in private institutions is larger than in public institutions by at least four students.

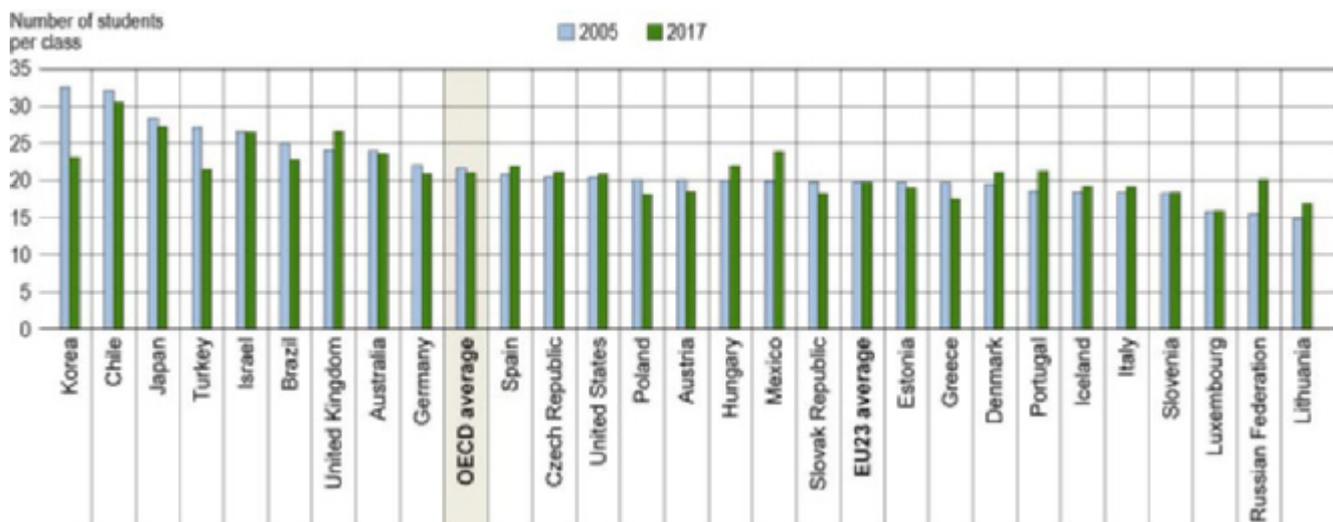
At the lower secondary level, where private institutions are more prevalent, the comparison of class size between public and private institutions shows a more mixed picture. The average class in private lower secondary institutions is larger than in public institutions in 9 countries, smaller in 16 countries and the same in 7 countries. The differences, however, tend to be smaller than in primary education.

Trends in average class size

Between 2005 and 2017, class size has remained about the same at primary level and fallen at lower secondary level on average across OECD countries (Table D2.1). While 19 out of 27 countries with available data at the lower secondary level experienced a decrease in average class size, this was the case for only 12 out of the 27 countries at the primary level (Figure D2.3).

At the lower secondary level, the average class size fell by 6% between 2005 and 2017. These averages mask considerably larger changes in individual countries. In Estonia and Korea, for example, the average class size in lower secondary education has decreased by about 20% over the past decade. In Korea, classes at the primary level are also, on average, 29% smaller than in 2005 – the largest decrease among OECD countries in the past decade. This could reflect the declining number of students. Other countries, however, saw an increase in average class sizes in primary schools: by 20% in Mexico, 14% in Portugal and 29% in the Russian Federation. At the lower secondary level, average class sizes increased by 8% in Denmark, the largest increase among OECD countries.

Figure D2.3. Average class size in primary education (2005 and 2017)



Countries are ranked in descending order of the average class size in primary education in 2005.

Source: OECD/UIS/Eurostat (2019), Table D2.1. See Source section for more information and Annex 3 for notes (<https://doi.org/10.1787/f8d7880d-en>).

StatLink  <https://doi.org/10.1787/888933979842>

Definitions

There are two categories of instructional personnel (teachers):

- **Teachers' aides and teaching/research assistants** include non-professional personnel or students who support teachers in providing instruction to students.
- **Teaching staff** refers to professional personnel directly involved in teaching to students. The classification includes classroom teachers, special-education teachers and other teachers who work with a whole class of students in a classroom, in small groups in a resource room, or in one-to-one teaching situations inside or outside a regular class. Teaching staff also include departmental chairs whose duties include some teaching, but exclude non-professional personnel who support teachers in providing instruction to students, such as teachers' aides and other paraprofessional personnel.

Academic staff include personnel at tertiary level whose primary assignment is instruction or research.

Methodology

Class size is calculated by dividing the number of students enrolled by the number of classes. In order to ensure comparability among countries, special-needs programmes are excluded. Data include only regular programmes at primary and lower secondary levels of education, and exclude teaching in subgroups outside the regular classroom setting.

The ratio of students to teaching staff is obtained by dividing the number of full-time equivalent students at a given level of education by the number of full-time equivalent teachers at that level and in similar types of institutions. At tertiary level, the student-teacher ratio is calculated using data on academic staff instead of teachers.

For the ratio of students to teachers to be meaningful, consistent coverage of personnel and enrolment data are needed. For instance, if teachers in religious schools are not reported in the personnel data, then students in those schools must also be excluded.

For more information, please see the *OECD Handbook for Internationally Comparative Education Statistics 2018: Concepts, Standards, Definitions and Classifications* (OECD, 2018^[14]) and Annex 3 for country-specific notes (<https://doi.org/10.1787/f8d7880d-en>).

Source

Data refer to the academic year 2016/17 and are based on the UNESCO-UIS/OECD/EUROSTAT data collection on education statistics administered by the OECD in 2018 (for details, see Annex 3 at <https://doi.org/10.1787/f8d7880d-en>).

Note regarding data from Israel

The statistical data for Israel are supplied by and are under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

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Indicator D2 Tables

Table D2.1 Average class size, by type of institution (2017) and index of change between 2005 and 2017

Table D2.2 Ratio of students to teaching staff in educational institutions, by level of education (2017)

Table D2.3 Ratio of students to teaching staff, by type of institution (2017)

Cut-off date for the data: 19 July 2019. Any updates on data can be found on line at <http://dx.doi.org/10.1787/eag-data-en>. More breakdowns can also be found at <http://stats.oecd.org/>, Education at a Glance Database.

StatLink: <https://doi.org/10.1787/888933981210>

Table D2.1. Average class size, by type of institution (2017) and index of change between 2005 and 2017

By level of education, calculations based on number of students and number of classes

	Primary										Lower secondary					Index of change between 2005 and 2017 (2005 = 100)					
	Public institutions	Private institutions				Total public and private institutions	Public institutions	Private institutions				Total public and private institutions	Primary			Lower secondary					
		Total private institutions	Government-dependent private institutions	Independent private institutions	Total private institutions			Government-dependent private institutions	Independent private institutions	Total private institutions	Public institutions		Total private institutions	Total public and private institutions	Public institutions	Total private institutions	Total public and private institutions				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)						
OECD																					
Countries																					
Australia	23	24	24	a	24	21	24	24	a	22	97	m	98	87	m	89					
Austria	18	19	x(2)	x(2)	18	21	21	x(7)	x(7)	21	92	92	92	88	85	87					
Belgium	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Canada	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Chile	28	32	33	25	31	29	31	33	25	30	85	102	95	82	95	89					
Colombia	25	19	a	19	23	31	24	a	24	30	m	m	m	m	m	m					
Czech Republic	21	15	15	a	21	22	18	18	a	22	103	m	103	93	m	93					
Denmark	22	19	19	a	21	22	20	20	a	21	109	m	108	109	m	108					
Estonia	19	16	a	16	19	19	14	a	14	18	97	m	96	81	m	81					
Finland	20	18	18	a	20	19	19	19	a	19	m	m	m	m	m	m					
France	23	25	25	a	24	25	26	27	12	25	m	m	m	104	104	104					
Germany	21	21	x(2)	x(2)	21	24	24	x(7)	x(7)	24	95	91	95	97	91	97					
Greece	17	21	a	21	18	21	22	a	22	21	88	m	89	85	m	85					
Hungary	22	21	22	17	22	21	21	22	16	21	110	110	110	96	96	96					
Iceland	19	15	15	a	19	20	13	13	a	20	104	111	104	101	107	101					
Ireland	25	m	a	m	m	m	m	a	m	m	101	m	m	m	m	m					
Israel	27	25	25	a	27	29	24	24	a	28	98	m	96	94	m	91					
Italy	19	19	a	19	19	21	21	a	21	21	104	m	104	101	m	101					
Japan	27	28	a	28	27	32	33	a	33	32	96	83	96	96	92	96					
Korea	23	27	a	27	23	28	27	27	a	27	71	84	71	77	77	77					
Latvia	17	9	a	9	16	16	13	a	13	16	m	m	m	m	m	m					
Lithuania	17	15	a	15	17	18	19	a	19	18	114	149	114	83	123	83					
Luxembourg	15	20	20	20	16	19	19	19	20	19	99	105	101	100	93	98					
Mexico	24	20	a	20	24	28	24	a	24	28	123	91	120	94	89	93					
Netherlands ¹	23 ⁴	m	m	m	m	m	m	m	m	m	105 ⁴	m	m	m	m	m					
New Zealand	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Norway	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Poland	19	12	11	12	18	22	17	22	15	22	92	100	90	92	101	91					
Portugal	21	21	23	20	21	22	24	25	23	22	117	96	114	98	101	98					
Slovak Republic	18	18	18	a	18	19	18	18	a	19	92	m	92	84	m	84					
Slovenia	18	21	21	a	18	20	20	20	a	20	101	m	101	97	m	97					
Spain	21	25	25	21	22	25	27	27	22	25	107	102	105	104	100	103					
Sweden	20	18	18	a	19	21	22	22	a	21	m	m	m	m	m	m					
Switzerland	19	m	m	m	m	19	m	m	m	m	m	m	m	m	m	m					
Turkey	22	18	a	18	21	26	19	a	19	25	79	m	79	m	m	m					
United Kingdom	28	a	28	12	27	24	a	25	12	23	108	m	110	100	m	104					
United States	21	18	a	18	21	27	20	a	20	26	102	99	102	101	95	100					
OECD average	21	20	m	m	21	23	21	m	m	23	100	m	99	94	m	94					
Average for countries with available data for both reference years	21	20	m	m	21	23	22	m	m	23	99	m	99	94	m	94					
EU23 average	20	19	m	m	20	21	20	m	m	21	m	m	m	m	m	m					
Partners																					
Argentina	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Brazil	24	18	a	18	23	28	24	a	24	27	94	m	91	84	m	85					
China	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Costa Rica	15	17	x(2)	x(2)	15	35	21	x(7)	x(7)	33	m	m	m	m	m	m					
India	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Indonesia	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
Russian Federation	20	13	a	13	20	20	12	a	12	19	130	m	129	103	m	103					
Saudi Arabia	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
South Africa	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					
G20 average	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m					

1. Primary education includes pre-primary programmes.

Source: OECD/UIS/Eurostat (2019). See Source section for more information and Annex 3 for notes (<https://doi.org/10.1787/f8d7880d-en>).

Please refer to the Reader's Guide for information concerning symbols for missing data and abbreviations.

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Table D2.2. Ratio of students to teaching staff in educational institutions, by level of education (2017)
Calculations based on full-time equivalents

	Primary	Lower secondary	Upper secondary			All secondary	Post-secondary non-tertiary	Tertiary		
			General programmes	Vocational programmes	All programmes			Short-cycle tertiary	Bachelor's, master's and doctoral or equivalent	All tertiary
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
OECD										
Countries										
Australia	15	x(3)	12 ^d	m	m	m	m	m	16	m
Austria	11	9	10	10	10	9	12	8	16	14
Belgium	13	9	11	9	10	9	15	x(10)	x(10)	21
Canada ¹	16 ^d	x(1)	x(5)	x(5)	13	m	m	m	m	m
Chile	20	20	21	21	21	21	a	m	m	m
Colombia	24	26	x(5)	x(5)	25	26	37	35	30	31
Czech Republic	19	12	11	11	11	12	41	11	18	18
Denmark	m	m	m	m	m	m	a	m	m	m
Estonia ²	13	10	14	18 ^d	16 ^d	13	x(4)	a	14	14
Finland	14	9	14	20	18	14	20	a	16	16
France ³	20	14	13	8	11	13	m	m	m	m
Germany	15	13	12	14	13	13	13	13	12	12
Greece	m	m	m	m	m	m	m	a	m	m
Hungary	11	10	11	12	11	11	9	x(10)	x(10)	12
Iceland	11	10	m	m	m	m	m	m	m	m
Ireland ⁵	16	x(3)	13 ^d	a	13 ^d	13	m	x(10)	x(10)	21
Israel ⁵	15	11	x(5)	x(5)	10	10	m	m	m	m
Italy ²	12	11	11	10 ^d	10 ^d	11 ^d	x(4)	a	20	20
Japan ^{2,4}	16	13	x(5)	x(5)	12 ^d	12 ^d	x(5, 10)	m	m	m
Korea	16	14	14	11	13	14	a	m	m	m
Latvia	12	8	8	17	10	9	25	13	19	17
Lithuania	11	7	8	9	8	8	16	a	16	16
Luxembourg	m	m	m	m	m	m	m	m	m	m
Mexico	27	34	x(5)	x(5)	23	29	a	22	17	17
Netherlands	17	16	17	19	18	17	a	15	15	15
New Zealand	17	17	12	20	13	15	24	19	18	18
Norway	10	9	11	10	10	10	12	11	9	9
Poland	11	10	12	9	10	10	14	9	14	14
Portugal ²	13	10	x(5)	x(5)	9 ^d	10 ^d	x(5)	x(10)	x(10)	14 ^d
Slovak Republic	17	12	14	13	14	13	14	8	12	12
Slovenia	14 ^d	x(1)	15	13	14	9	a	18	15	15
Spain	14	12	12	9	11	11	a	11	13	12
Sweden	13	12	x(5)	x(5)	14	13	11	8	10	10
Switzerland ^{2,3}	15	12	11	13 ^d	12 ^d	12 ^d	x(4)	a	m	m
Turkey	17	17	13	13	13	15	a	60	21	26
United Kingdom	17	15	14	25 ^d	17	16	a	x(4, 10)	x(10)	16
United States ⁴	15	15	15	a	15	15	x(10)	x(10)	x(10)	14 ^d
OECD average	15	13	13	14	13	13	m	m	m	16
EU23 average	14	11	m	m	12	12	m	m	m	m
Partners										
Argentina	m	m	m	m	m	m	a	m	m	m
Brazil	24	25	26	13	24	25	27	11	25	25
China	17	12	x(5)	x(5)	15	13	m	m	m	m
Costa Rica	12	14	15	11	13	14	a	m	m	m
India	33	26	x(5)	x(5)	29	27	m	a	24	24
Indonesia	16	15	x(5)	x(5)	15	15	a	17	m	28
Russian Federation ⁴	21	10 ^d	x(2)	x(8)	x(2, 8)	10	x(8)	13 ^d	11	12 ^d
Saudi Arabia	m	m	m	m	m	m	a	x(10)	x(10)	20
South Africa ⁵	30	x(5)	x(5)	x(5)	27 ^d	27	m	m	m	m
G20 average	19	16	m	m	16	17	m	m	18	19

1. Primary includes pre-primary education.

2. Upper secondary includes programmes outside upper secondary level - see Annex 3 for further details.

3. For France, public and government-dependent private institutions only for all levels. For Ireland and Switzerland, public institutions only for all levels. For Israel, public institutions only for upper secondary education and all secondary.

4. Tertiary includes programmes outside tertiary level - see Annex 3 for further details.

5. Year of reference is 2016 instead of 2017.

Source: OECD/UIS/Eurostat (2019). See Source section for more information and Annex 3 for notes (<https://doi.org/10.1787/f8d7880d-en>).

Please refer to the Reader's Guide for information concerning symbols for missing data and abbreviations.

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Table D2.3. Ratio of students to teaching staff, by type of institution (2017)

By level of education, calculations based on full-time equivalents

	Lower secondary				Upper secondary				All secondary programmes			
	Public institutions	Private institutions			Public institutions	Private institutions			Public institutions	Private institutions		
		Total private institutions	Government-dependent private institutions	Independent private institutions		Total private institutions	Government-dependent private institutions	Independent private institutions		Total private institutions	Government-dependent private institutions	Independent private institutions
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
OECD												
Countries												
Australia ¹	x(5)	x(6)	x(7)	a	12 ^d	11 ^d	11 ^d	a	m	m	m	m
Austria	8	10	x(2)	x(2)	10	10	x(6)	x(6)	9	10	x(10)	x(10)
Belgium	9	9	9	6	10	10	10	10	9	9	9	8
Canada	m	m	m	m	13	14	x(6)	x(6)	m	m	m	m
Chile	16	24	25	20	19	23	25	16	18	23	25	17
Colombia	28	21	a	21	26	23	a	23	27	22	a	22
Czech Republic	12	11	11	a	11	12	12	a	12	12	12	a
Denmark	m	m	m	a	m	m	m	m	m	m	m	m
Estonia ²	10	9	a	9	16	13	a	13	13	11	a	11
Finland	9	9	9	a	18	20	20	a	13	17	17	a
France	14	16	16	m	11	12	12	m	12	14	14	m
Germany	13	13	x(2)	x(2)	13	12	x(6)	x(6)	13	12	x(10)	x(10)
Greece	m	m	a	m	m	m	a	m	m	m	a	m
Hungary	10	12	12	10	11	12	11	13	11	12	12	12
Iceland	10	5	5	a	m	m	m	m	m	m	m	m
Ireland	x(5)	m	a	m	13 ^d	m	a	m	13	m	a	m
Israel	11	m	m	m	10	m	m	a	10	m	m	m
Italy ²	11	11	a	11	11	7	a	7	11	8	a	8
Japan ²	13	12	a	12	11 ^d	14 ^d	a	14 ^d	12 ^d	13 ^d	a	13 ^d
Korea	14	15	15	a	12	14	14	a	13	14	14	a
Latvia	8	6	a	6	10	10	a	10	9	8	a	8
Lithuania	7	9	a	9	8	8	a	8	7	9	a	9
Luxembourg	m	m	m	m	m	m	m	m	m	m	m	m
Mexico	38	18	a	18	25	16	a	16	32	17	a	17
Netherlands	16	16	a	16	18	19	a	19	17	18	a	18
New Zealand	17	m	m	13	13	12	13	11	15	m	m	12
Norway	9	8	8	8	10	11	11	a	10	10	10	8
Poland	10	9	11	8	10	11	11	11	10	10	11	10
Portugal ²	9	15	15	15	9 ^d	10 ^d	12 ^d	10 ^d	9 ^d	12 ^d	14 ^d	11 ^d
Slovak Republic	12	12	12	a	14	12	12	a	13	12	12	a
Slovenia	m	m	m	a	14	17	28	13	9	15	17	13
Spain	11	15	15	14	10	14	15	13	10	15	15	13
Sweden	12	17	17	a	14	14	14	a	13	15	15	a
Switzerland ²	12	m	m	m	12 ^d	m	m	m	12 ^d	m	m	m
Turkey	17	10	a	10	13	10	a	10	15	10	a	10
United Kingdom	16	15	16	8	14	18	20	8	15	17	19	8
United States	16	10	a	10	16	10	a	10	16	10	a	10
OECD average	13	12	m	m	13	13	m	m	13	13	m	m
EU23 average	11	m	m	m	12	13	m	m	11	m	m	m
Partners												
Argentina	m	m	m	m	m	m	m	m	m	m	m	m
Brazil	26	20	a	20	25	18	a	18	26	19	a	19
China	12	17	x(2)	x(2)	14	18	x(6)	x(6)	13	17	x(10)	x(10)
Costa Rica	14	9	x(2)	x(2)	14	9	x(6)	x(6)	14	9	x(10)	x(10)
India	26	26	x(2)	x(2)	m	m	m	m	m	m	m	m
Indonesia	16	14	x(2)	x(2)	15	16	x(6)	x(6)	16	15	x(10)	x(10)
Russian Federation	11 ^d	5 ^d	a	5 ^d	x(1)	x(2)	a	x(4)	11	5	a	5
Saudi Arabia	m	m	m	m	m	m	m	m	m	m	m	m
South Africa ³	x(5)	x(6)	x(7)	x(8)	28	14	x(6)	x(6)	28	14	x(10)	x(10)
G20 average	17	14	m	m	15	14	m	m	16	13	m	m

1. Includes only general programmes in lower and upper secondary education.

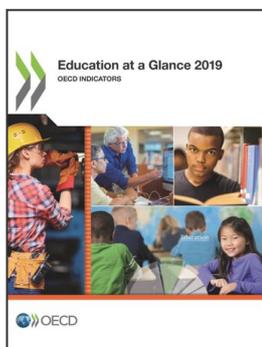
2. Upper secondary includes programmes outside upper secondary level - see Annex 3 for further details.

3. Year of reference is 2016 instead of 2017.

Source: OECD/UIS/Eurostat (2019). See Source section for more information and Annex 3 for notes (<https://doi.org/10.1787/f8d7880d-en>).

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