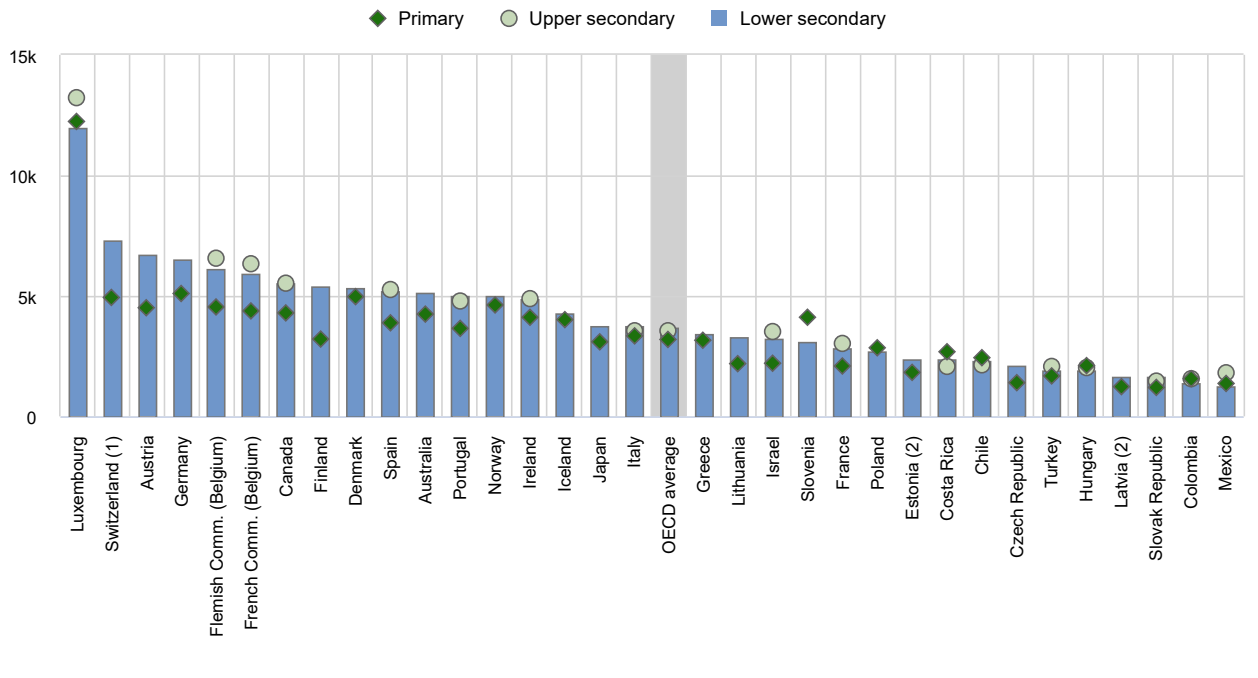
Indicator C7. Which factors influence teachers' salary cost?

Highlights

- This analysis calculates the salary cost of teachers per student using four factors: teachers' salaries, students' instruction time, teachers' teaching time and theoretical class size (see *Definitions* section). Different levels of salary cost of teachers per student result from various different combinations of these four factors.
- On average across OECD countries, the salary cost of teachers per student rises from USD 3 196 in primary education to USD 3 680 in lower secondary education.
- The two main factors influencing the level of teachers' salary costs are teachers' salaries and theoretical class sizes. Between 2005 and 2019, teachers' salaries in primary education increased in about two-thirds of OECD countries with data, and this additional cost was often compounded by a decline in average class size over this period.

Figure C7.1. Annual salary cost of teachers per student in public institutions, by level of education (2019)

USD converted using PPPs for private consumption



1. Teachers' statutory salaries after 10 years of experience instead of 15 years of experience.
2. Teachers' statutory salaries at the start of their career instead of after 15 years of experience for Latvia. Fixed minimum wage that applies to all teachers for Estonia.
Countries and economies are ranked in descending order of the annual salary cost of teachers per student in lower secondary education.
Source: OECD (2021), Table C7.1. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

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Context

Governments have become increasingly interested in the relationship between the amount of resources devoted to education and student learning outcomes. They seek to provide more and better education for their population, while ensuring that public funding is used efficiently, particularly when public budgets are tight. Teachers' compensation usually accounts for the largest share of expenditure on education and thus of expenditure per student. The salary cost of teachers per student, as calculated in this indicator, is a function of students' instruction time, teachers' teaching time, teachers' statutory salaries and theoretical class sizes (see *Methodology* section).

Differences among countries in these factors may explain differences in the level of expenditure per student. Similarly, a given level of expenditure may be associated with different combinations of these factors. This indicator examines the choices countries make when investing their resources in primary and secondary education and explores how different policy choices related to these factors affect the salary cost of teachers.

The salary cost of teachers per student can be affected by other variables not directly assessed in this indicator, such as demographic changes. For example, in countries where enrolments have been declining in recent years, class sizes would also shrink (assuming all other factors remain constant), unless there was also a simultaneous drop in the number of teachers. This indicator does not distinguish between a reduction in class size due to demographic changes and a deliberate policy decision to reduce class size.

Other findings

- Similar levels of expenditure among countries can mask a variety of contrasting policy choices. For example, France and Hungary have nearly the same salary cost of teachers per primary student, but teachers' statutory salaries in France are 83% higher than in Hungary, which is more than balanced out by classes in France having about seven more students on average (based on the theoretical class size).
- On average across OECD countries, the salary cost of teachers per student represents 6.8% of gross domestic product (GDP) per capita at primary level and 7.9% at lower secondary level.
- Given a fixed level of salary cost, a reduction in class size can be compensated for by a decrease in teachers' salaries, a decrease in instruction time or an increase in teaching time. For example, in Australia, in order to reduce theoretical class size by one student and keep the salary cost per student constant, annual teacher salaries would have to fall by USD 3 700, annual instruction time would have to be reduced by 58 hours or annual teaching time would have to increase by 54 hours.

Note

The salary cost of teachers per student is estimated based on values for teachers' gross statutory salaries after 15 years of experience and the most prevalent qualifications (see Indicator D3), the theoretical instruction time for students (see Indicator D1), and teachers' statutory teaching time (see Indicator D4). This measure may differ from the actual salary cost of teachers (see Box C7.1).

The use of statutory salaries means that this indicator does not take into account the actual level of qualifications and the seniority of the teaching workforce. The statutory salary also does not include the employer's contribution to social security and pension and therefore does not represent the full cost incurred by the employer (i.e. the government). As a result, this measure is not comparable to the indicator on expenditure on teacher compensation (see Indicator C6).

Analysis

Variation in the salary cost of teachers per student by level of education

On average across OECD countries and economies, the salary cost of teachers is USD 3 196 per primary student, USD 3 680 per lower secondary student and USD 3 552 per general upper secondary student (Figure C7.1). Each of these averages masks a wide range of salary costs across countries. For example, in primary education, the salary cost of teachers per student in Germany (USD 5 097) is over four times the cost in Latvia (USD 1 235). Higher salary costs are a result of higher teachers' salaries and/or a higher number of teachers per student, which in turn is driven by smaller classes, longer required instruction time for students or shorter teaching hours for teachers.

The higher teachers' salary cost at lower secondary compared to primary education is the result of higher teachers' salaries and students' instruction time at lower secondary level, as well as a reduction in teaching time, all of which push the cost up. In 2019, the OECD average annual statutory salary for teachers with 15 years of experience was USD 46 131 at lower secondary level, around USD 1 125 more than the average statutory salary at primary level. Moreover, the average annual instruction time in lower secondary education was 115 hours longer than in primary education, while average teaching time was 66 hours shorter, implying that more teachers were needed to teach a given number of pupils.

In contrast to the other factors, theoretical class size tends to increase from 15 students at primary to 17 at lower secondary education, which partially offsets the increase in cost between the two levels. However, in general, the effect of the larger class size is not enough to offset the increase in cost caused by the other three factors, although exceptions exist. Chile, Colombia, Costa Rica, Hungary, Luxembourg, Mexico, Poland and Slovenia are the eight OECD countries where the salary cost of teachers per student in lower secondary is less than that in primary education (Tables C7.5a and b, available on line). Except in Colombia, Costa Rica, Hungary and Luxembourg, this is mainly due to a significant increase in the theoretical class size at lower secondary level by at least 6 students compared to primary level.

Variation in the salary cost of teachers per student after accounting for countries' wealth

The level of the salary cost of teachers per student is positively correlated with countries' GDP per capita, so it is important to also take into account relative wealth when comparing countries. On average across OECD countries, the salary cost of teachers per student represents 6.8% of GDP per capita at primary level, 7.9% at lower secondary level and 7.8% in general programmes at upper secondary level (Table C7.1).

The interpretation of the salary cost of teachers per student shifts when viewed relative to national wealth. Some countries devote a higher share of GDP on teachers' salary cost, even though the absolute value may be low. For example, Poland's salary cost of teachers per student in primary education is below the OECD average, at USD 2 852. However, this amount represents 8.4% of the country's GDP per capita, above the OECD average of 6.8%. The opposite is true in Ireland, where the salary cost of teachers per student in primary education (USD 4 108) is considerably higher than the OECD average, but represents only 4.6% of the country's GDP per capita, well below the OECD average (Table C7.1).

Box C7.1. Methodological limitations and potential future developments

Teachers' salary cost per student, as presented in this indicator, is an estimated measure of how much is spent on teachers' salaries in each country. In addition to teachers' salaries themselves, the indicator takes into account three factors that influence the number of teachers a system requires: the number of required instruction hours, the number of hours teachers spend teaching and the theoretical class size. Please see the *Methodology* section for more information on how these factors relate to each other and are combined to calculate the salary cost.

It is important to consider the limitations of this indicator's methodology when interpreting the results. First, the indicator is calculated using the statutory values for teaching and instruction time and teachers' statutory salaries. Therefore, the results presented in this indicator are theoretical in nature, and do not reflect the actual time teachers spend teaching or how much they actually earn each year. Indeed, even the concept of teaching and instruction time have become increasingly theoretical in nature, as learning settings become more flexible, making it difficult to accurately measure the amount of time spent on these activities.

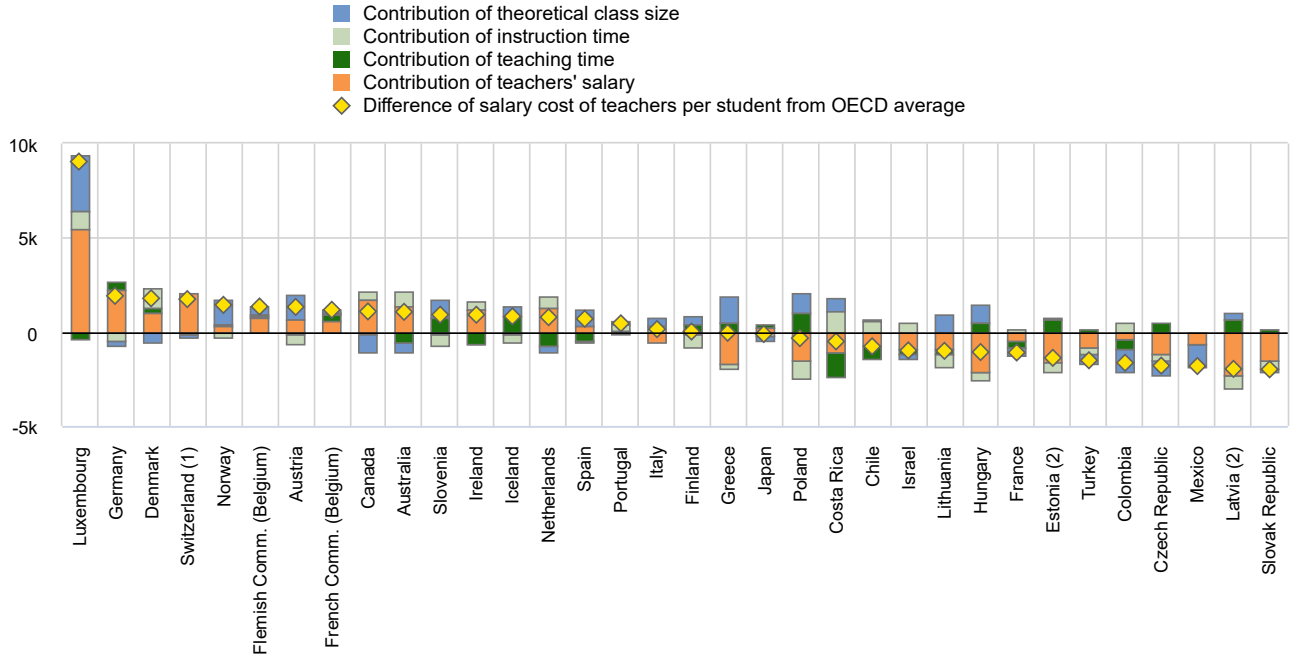
Second, by using national figures, the indicator misses the wide discrepancies that may exist within countries. The trade-off between teachers' salaries and class size, for example, may have very different effects depending on the socio-economic status of students and schools. Moreover, the trade-offs highlighted in this analysis are only a few of the many decisions countries must take when allocating their resources. Countries must also examine potential trade-offs with other investment areas, such as teacher training and school infrastructure, as well as trade-offs between different levels of education.

Although some of these limitations are difficult to address due to current data availability, there are several possible avenues that would expand the analytical potential of this indicator once more data become available. The first would be improving the measure used to estimate the cost of teachers. One way to achieve this might be to use teachers' average actual salaries, taking bonuses and allowances into account instead of statutory salaries. Another possibility would be to take into account the full cost to the government of teachers' salaries, including costs that do not go directly to teachers, such as employer's contributions and pensions.

Other avenues for potential future development include exploring the link between teachers' salary costs and school funding formulae, and how the trade-offs associated with teachers' salary costs may differ across subnational levels of decision making, such as schools, school districts and municipalities.

Figure C7.2. Contribution of various factors to salary cost of teachers per student in public institutions, primary education (2019)

USD converted using PPPs for private consumption



How to read this figure: This figure shows the contribution (in USD) of the factors influencing the difference between salary cost of teachers per student in the country and the OECD average. For example, in Poland, the salary cost of teachers per student is USD 344 lower than the OECD average. Poland has a smaller theoretical class size (+ USD 1 057) and less teaching time (+ USD 1 035) than the OECD average, both of which push the salary cost of teachers up. However, this is more than compensated for by below-average teachers' salaries (- USD 1 505) and below-average instruction time (- USD 931), which push the cost down.

1. Teachers' statutory salaries after 10 years of experience instead of 15 years of experience.

2. Teachers' statutory salaries at the start of their career instead of after 15 years of experience for Latvia. Fixed minimum wage that applies to all teachers for Estonia.

Countries and economies are ranked in descending order of the difference between the salary cost of teachers per student and the OECD average.

Source: OECD (2021), Table C7.2. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

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Contribution of each factor to the salary cost of teachers per student

The four factors which determine the salary cost of teachers per student affect it in different ways. The impact of the first factor, teachers' salaries, is direct: higher salaries lead to higher salary costs. The other three factors affect the salary cost by changing the number of teachers needed, assuming that the number of students enrolled is constant. If instruction time increases or teaching time decreases, more teachers must be hired to keep class sizes constant. Similarly, more teachers would need to be hired in order to reduce class sizes while keeping everything else constant.

By comparing a country's salary cost to the OECD average, it is possible to determine the contribution of each of the four factors to the difference from the average. In other words, it is possible to assess whether a given salary cost is above average because of higher salaries, longer instruction times, shorter teaching hours, smaller class sizes or a combination of these four factors. Changing one of these factors may require compensatory trade-offs among the other factors in order to keep the total salary cost constant (Box C7.2).

Figure C7.2 shows the wide variety of combinations of the four factors across countries and their different effects on the salary cost of teachers per student. The size of the contribution of each factor to the difference between a country's salary cost and the OECD average depends on the difference between the factor itself and the respective OECD average. The sum of each factor's contribution equals the difference in salary cost between that country and the OECD average. For example, the salary cost per student in primary education in Australia is USD 4 251, USD 1 055 higher than the OECD average. This difference is the result of the contributory effects of the four factors: above-average teachers' salary adds USD 1 368, above-average instruction time adds USD 787, above-average theoretical class size substracts USD 591 from the difference and above-average teaching time substracts USD 509 (Table C7.2).

Different policies in countries with similar spending

Higher levels of expenditure on education cannot automatically be equated with better performance by education systems (OECD, 2019[1]). In addition to the fact that structural changes cannot guarantee better learning outcomes, countries spending similar amounts on education do not necessarily have similar education policies and practices. The OECD countries and economies shown in Figure C7.2 can be divided into four groups of similar teachers' salary cost per student, to illustrate the range of policy choices made by countries with similarl spending amounts.

Group 1: High salary cost of teachers per student in primary education

This group, which has the highest salary cost of teachers per student in primary education, is composed of Australia, Austria, the Flemish and French Communities of Belgium, Canada, Denmark, Germany, Luxembourg, Norway, and Switzerland.

The salary cost of teachers per student ranges from USD 4 200 to USD 5 100 in this group, except for Luxembourg where it exceeds USD 12 000. With the exception of Switzerland, all of these countries have above-average GDP per capita, but the relationship between salary cost and GDP per capita is not one-to-one. Some countries allocate a larger share of their wealth to this type of expenditure than others (Table C7.1).

Compared to countries from the other groups, it may seem as though these high-spending countries do not face trade-offs between the four factors analysed in this indicator. Indeed, all of the countries in this group can afford above-average teacher salaries *and for half of them*, below-average theoretical class sizes. However, the magnitude of the difference between these factors and the respective OECD averages differs considerably across these countries. In Germany and Luxembourg, for example, the high salary cost of teachers is mostly a result of high teachers' salaries, whereas in Austria and Norway it is mostly the result of small theoretical class sizes.

Group 2: Moderately high salary cost of teachers per student in primary education

This group is composed of ten countries with average or above-average salary costs: Finland, Greece, Iceland, Ireland, Italy, Japan, the Netherlands, Portugal, Slovenia and Spain. The salary cost of teachers per student in this group ranges from USD 3 086 to USD 4 112 (Table C7.1). This group is highly heterogeneous in terms of GDP per capita and education expenditure, which sheds light on the many different choices countries with similar spending can make.

A potential trade-off observed in some countries is between students' required instruction time and teachers' teaching time. In Ireland, for example, students receive 94 hours more instruction time per year than the OECD average, but this is almost entirely

offset by teaching time that is 136 hours longer than the average. Requiring longer teaching hours reduces the number of teachers that need to be hired. This measure can therefore compensate for higher teachers' salaries. This is the case in the Netherlands, where the requirement for 161 teaching hours above the OECD average helps to partly offset for the additional USD 19 861 teachers receive each year (the statutory teachers' salary in the Netherlands is USD 64 864, compared to the OECD average of USD 45 006).

Group 3: Moderately low salary cost of teachers per student in primary education

This group is composed of seven countries with below-average salary cost of teachers per student: Chile, Costa Rica, France, Hungary, Israel, Lithuania and Poland. Teachers' salary cost in this group range from USD 2 092 per student to USD 2 852 (Table C7.1). With the exception of France, all of these countries have below-average GDP per capita.

All seven countries in this group have below-average teachers' salaries, which is one of the main drivers of the below-average salary cost in primary education. However, there are considerable differences between them. In Hungary and Poland, lower teachers' salaries are partially compensated by shorter teaching hours and smaller theoretical class sizes. This is not the case in the other five countries, where teaching hours are higher than the OECD average. Similarly, France and Hungary have nearly the same salary cost of teachers per student, but teachers' statutory salaries in France are 83% higher than in Hungary, which is more than compensated for by having about seven more students per class (based on the theoretical class size). Instructional time in Hungary is also low compared to the OECD average, as teachers' pedagogical work extends beyond the classroom.

Group 4: Low salary cost of teachers per student in primary education

This group is composed of the seven countries with the lowest salary cost of teachers per student in primary education: Colombia, the Czech Republic, Estonia, Latvia, Mexico, the Slovak Republic and Turkey. The salary cost of teachers per student in this group ranges from USD 1 208 to USD 1 818 (Table C7.1). These countries all have below-average GDP per capita.

These countries have certain characteristics in common: they all have lower than average teacher salaries, shorter instruction hours (except in Colombia) and higher than average theoretical class size (except in Estonia and Latvia). The combined effect of these three factors leads to a significant decrease (compared to the other countries) in the salary cost of teachers per student. In an overall cross-country comparison, Colombia and Mexico might be bundled together as having low salary costs due to below-average teacher salaries and significantly above-average theoretical class sizes.

Evolution of average class size and teachers' salaries

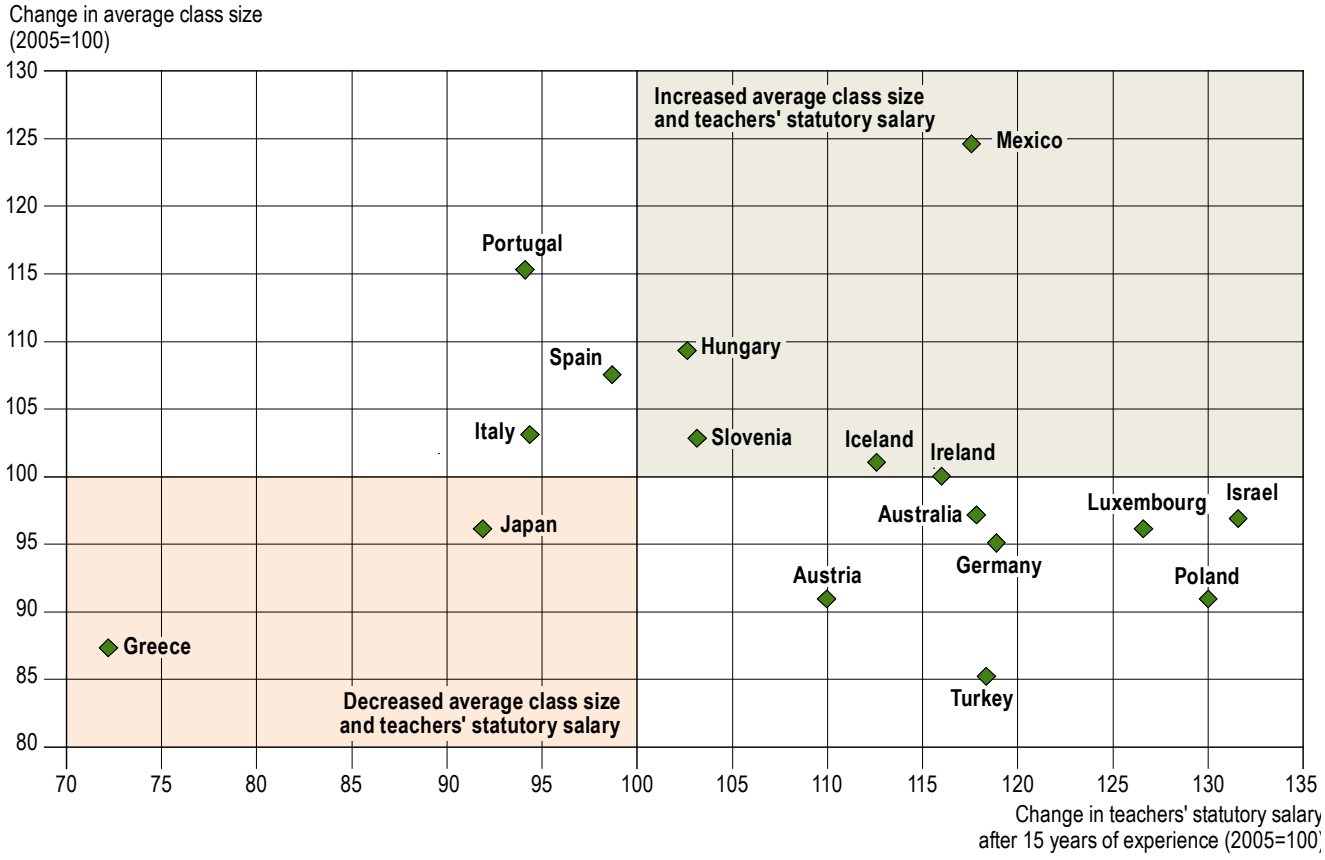
At each level of education, teachers' salaries generally have the greatest impact on the degree to which countries' salary cost of teachers per student diverges from the OECD average. The second most influential factor is the theoretical class size. The trade-off between these two variables, which are often the target of educational reforms and policies, reflects the choice countries have to make between increasing teachers' salaries and hiring more teachers. In fact, controlling for the total salary cost of teachers, countries with higher teachers' salaries tend to have bigger class sizes (OECD, 2018[2]).

Figure C7.3 plots the evolution of teachers' statutory salaries and average class sizes between 2005 and 2019. The average class size, unlike the theoretical class size discussed in the previous sections of this indicator, refers to the average actual class size obtained by dividing the number of students enrolled by the number of classes in each country (please see the *Definitions* section for more information on the difference between theoretical and average class size).

The figure groups countries into four different categories, each represented in a quadrant of the chart. Countries in the top-right and bottom-left quadrants exhibit a trade-off between average class size and teachers' salaries in this period. Countries in the top-right quadrant increased average class sizes (which brings the salary cost of teachers down) and increased teachers' salaries (which pushes the cost up). The most notable example among this group of countries is Mexico, where the average class size increased by 25% between 2015 and 2019, helping to offset the cost of increasing teachers' salaries by over 17%. Only two countries (Greece and Japan) faced the opposite trade-off, where average class sizes were reduced, but the additional cost was somewhat compensated for by lower teachers' salaries. It is important to note that although these changes have opposite effects on the salary cost, they are not necessarily taken in response to each other. In Japan, for example, the decrease in average class size was mainly due to a demographic change, whereas the decrease in teachers' salaries was mainly due to a revision of the salary system for all public officers, including teachers.

Figure C7.3. Index of change in teachers' salaries and in average class size in primary education between 2005 and 2019

Public institutions only



Note: The source for the average class size is the UNESCO/OECD/Eurostat data collection. The average class size does not correspond to the theoretical class size (see *Definitions* section).

Source: OECD (2021), *Education at a Glance Database*, http://stats.oecd.org. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

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No particular trade-off between these two variables seems to have taken place in this period in the countries and economies in the top-left and bottom-right quadrants. Those in the top-left quadrant increased average class sizes and reduced teachers' salaries over this period, both measures that push down the salary cost of teachers. In some countries and economies, the cost was mostly pushed down by larger average class sizes – in Portugal, for example, average class size increased by 15% in this period – and in others, the cost was mostly pushed down by lower teachers' salaries – in Italy, teachers' salaries decreased by 6%.

The opposite trend is found in countries in the bottom-right quadrant, which reduced average class sizes and increased teachers' salaries, both measures that increase the salary cost of teachers. Once again, the size of the change in each variable differs across countries. Between 2005 and 2019, teachers' salaries increased by over 30% in Israel, while average class sizes fell by nearly 15% in Turkey.

It is interesting to observe countries that had a similar evolution in one of the factors but followed a very different path for the other. For example, between 2005 and 2019, both Mexico and Turkey increased teachers' salaries by about 18%. However, during the same period, Mexico also increased average class sizes by 25%, thus offsetting some of the additional cost of higher salaries, while Turkey reduced average class sizes by about 15%, thus increasing the salary cost of teachers even more.

Relation between PISA performance in reading and average class size

Smaller class sizes are often seen as beneficial, but the evidence regarding their impact on student learning is mixed. Results from the latest Programme for International Student Assessment (PISA 2018) show that education systems with smaller language-of-instruction classes generally showed higher mean reading performance than systems with larger classes. There was a negative correlation between larger classes and mean performance in reading, even after accounting for GDP, across OECD countries and across all countries. As shown in the study, differences in class size accounted for about 12% of the differences in mean reading performance across all countries and economies, and 26% of the differences across OECD countries (OECD, 2020[3]).

In the same vein, other research has found that smaller class sizes may be beneficial in some cases, such as for students from disadvantaged backgrounds who may need more individualised attention (Dynarski, Hyman and Whitmore Schanzenbach, 2013[4]). However, caution is advised when interpreting this finding. For instance, among countries and economies whose mean reading score was higher than 500 points (high performers) in PISA 2018, a dichotomy was observed between western countries (i.e. European countries, Australia and Canada) and East Asian countries and economies with regard to class size (OECD, 2020[3]). While among the 11 highest-performing western countries the size of language-of-instruction classes ranges from 20 students (in Finland) to 27 students per class (in Canada), among the 7 highest-performing East Asian countries and economies, it ranges between 26 students (in Korea) and 42 students per class in Beijing, Shanghai, Jiangsu and Zhejiang (China).

These mixed findings regarding class size suggest that there are important differences in the way class size is implemented in various countries. Further research is required to better understand the relationship between class size and student performance. However, given that reducing class size is a costly measure (Box C7.2), it is important to compare its impact with other possible interventions. As observed in Figure C7.3, one alternative is to increase teacher salaries. Evidence from PISA points to the importance of high-quality teaching in improving student outcomes, and one way to help school systems attract the best candidates to the teaching profession is by offering higher salaries. However, attracting good candidates to the teaching profession and retaining the effective ones is not just a matter of increasing salaries. Other factors include the quality of training before and after entering the profession and the relationship between teachers and society (OECD, 2016[5]).

Box C7.2. What might be the trade-offs of decreasing class size by one student?

This indicator assesses the impact of four factors (teachers' salaries, instruction time, teaching time and theoretical class size) on countries' salary cost of teachers per student and the trade-offs that can exist between them. This analysis can be used to answer the following question: assuming that the number of students and the salary cost remain constant, what are the potential trade-offs among the other factors which would compensate for a smaller class size? More specifically, by how much would salaries or instruction time have to decrease, or teaching time have to increase, in order to maintain the same salary cost?

Table C7.a presents the simulation results for decreasing the theoretical class size by one student. For each factor, the value is calculated keeping everything else constant. For example, in primary education in Australia, in order to reduce the theoretical class size by one student and keep the salary cost per student constant, teachers' salaries would have to be cut by USD 3 700, annual instruction time would have to fall by 58 hours, or annual teaching time would have to increase by 54 hours. Any one of these trade-offs would compensate for the additional cost of the smaller class size, without any change to the total salary cost of teachers per student.

These results emphasise the fact that reducing class sizes, by as little as one student, comes with a price tag. Indeed, class sizes have been decreasing in several OECD countries over recent years (see Indicator D2), although often as a result of demographic changes rather than of active policy choices. Class sizes tend to decrease when student enrolment falls because of the political, economic and organisational challenges of simultaneously reducing the number of teachers. However, in the long term, not reducing the teaching workforce is in itself a policy choice that will keep classes smaller. Table C7.a shows that the price of smaller class sizes can either be reflected in higher salary costs or can be offset by changes to the other three factors.

It is important to assess the results presented in Table C7.a by taking into account the current values of each factor in the country. For example, Chile already has the longest teaching hours of all OECD countries, so further increases to compensate for smaller class size may not be feasible or desirable.

This simulation is not meant to assess the real cost of reforms. This simple model only takes into account four factors, and it only shows the trade-off for one factor at a time. In reality, trade-offs will often consist of changes in several factors at the same time. Moreover, important regional variations, not captured by this indicator, may require specific policies that would not necessarily be reflected in the national averages. Rather, this analysis is only meant to highlight the importance of trade-offs in policy decisions, and to provide some guidance as to the direction and size of the potential trade-offs across the four factors assessed in this indicator.

Table C7.a. Keeping salary cost constant, what might be the trade-offs of decreasing class size by one student? (2019)

Trade-offs of decreasing theoretical class size in primary education, public institutions only

	Countries	Teachers' statutory salaries (in equivalent USD per year) (1)	Instruction time (in hours per year) (2)	Teaching time (in hours per year) (3)
OECD	Australia	-3 700	-58	54
	Austria	-5 100	-66	82
	Flemish Comm. (Belgium)	-4 100	-62	61
	French Comm. (Belgium)	-3 800	-58	54
	Canada	-3 700	-48	44
	Chile	-2 400	-69	74
	Colombia	-1 500	-39	38
	Costa Rica	-2 700	-99	111
	Czech Republic	-1 300	-33	31
	Denmark	-3 400	-62	45
	Estonia[1]	-1 600	-45	43
	Finland	-3 300	-50	56
	France	-2 200	-49	54
	Germany	-4 900	-46	47
	Greece	-2 800	-78	76
	Hungary	-2 000	-66	69
	Iceland	-3 300	-56	50
	Ireland	-4 100	-60	64
	Israel	-1 900	-57	53
	Italy	-2 900	-68	63
	Japan	-3 000	-47	48
	Latvia [1]	-1 200	-47	49
	Lithuania	-3 000	-57	86
	Mexico	-1 300	-31	32
	Netherlands	-3 900	-57	60
	Norway	-4 600	-71	77
	Poland	-2 600	-57	58
	Portugal	-3 100	-64	57
	Slovak Republic	-1 300	-42	49
	Slovenia	-3 700	-59	59
	Spain	-4 300	-69	84
	Switzerland [2]	-4 900	-52	55
	Turkey	-1 700	-38	41

Note: Results for teachers' statutory salaries are rounded to the nearest hundred. Teachers' salaries used in the calculation of this indicator refer to the annual statutory teachers' salaries in public institutions for teachers with 15 years of experience and the most prevalent qualification (Indicator D3). Instruction time refers to the average number of hours per year of compulsory instruction time (Indicator D1) and teaching time refers to the statutory net teaching hours over the school year (Indicator D4). The reference year for these factors may differ by one year for some countries. See Table C7.5a, available on line, for notes on each factor.

1. Teachers' statutory salaries at the start of their career instead of after 15 years of experience for Latvia. Fixed minimum wage that applies to all teachers for Estonia.
2. Teachers' statutory salaries after 10 years of experience instead of 15 years of experience.

Source: OECD (2021), Table C7.5a, available on line. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

StatLink https://stat.link/ntd08p

Definitions

The data refer to public institutions only.

Average class size refers to number of students enrolled in a given education level divided by the number of classes. It measures the average number of students that are grouped together in classrooms (see Indicator D2).

Instruction time refers to the time a public school is expected to provide instruction to students on all the subjects integrated into the compulsory and non-compulsory curriculum, on school premises or in before or after-school activities that are formal parts of the compulsory programme (see Indicator D1).

Teachers' teaching time is the annual average number of hours that full-time teachers teach a group or class of students, including all extra hours, such as overtime (see Indicator D4).

Teachers' salary refers to the annual statutory salary of teachers after 15 years of experience, converted to USD using purchasing power parity (PPP) for private consumption (see Indicator D3).

Theoretical class size refers to the theoretical size of classes given the statutory – or theoretical – values of instruction and teaching time and the student-teacher ratio (see *Methodology* section). It does not reflect the actual average class size in countries.

Methodology

The salary cost of teachers per student (SCS) is calculated as:

$$SCS = Teacher\ salary * Instruction\ time * \frac{1}{Teaching\ time} * \frac{1}{Theoretical\ Class\ Size}$$

Where theoretical class size is calculated as:

$$Theoretical\ class\ size = \frac{Instruction\ time}{Teaching\ time} * \frac{Students}{Teachers}$$

The contribution of each factor to the level of the salary cost of teachers per student is analysed by comparing the salary cost of teachers per student in each country to the OECD average then calculating the contribution of these different factors to the variation from the OECD average. This exercise is based on a mathematical relationship between the various factors and follows the method presented in the Canadian publication *Education Statistics Bulletin* (Quebec Ministry of Education, Recreation and Sports, 2003[6]). Using this mathematical relationship and comparing a country's values for the four factors to the OECD averages makes it possible to measure both the direct and indirect contribution of each of these four factors to the variation in salary cost per student between that country and the OECD average.

Please see the *OECD Handbook for Internationally Comparative Education Statistics 2018* (OECD, 2018[7]) for more information and Annex 3 for country-specific notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

Source

Data referring to the 2019 school year are based on the UNESCO, OECD and Eurostat (UOE) data collection on education statistics and on the Survey on Teachers and the Curriculum, which were both administered by the OECD in 2020.

References

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Indicator C7 tables

Tables Indicator C7. Which factors influence teachers' salary cost?

Table C7.1	Salary cost of teachers per student, by level of education (2019)
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StatLink https://stat.link/m4twjn

Cut-off date for the data: 17 June 2021. 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.

Table C7.1. Salary cost of teachers per student, by level of education (2019)

Annual salary cost of teachers per student in public institutions, in equivalent USD, converted using PPPs for private consumption, and in percentage of GDP per capita

		Salary cost of teachers per student (in USD, 2019 constant prices)			Salary cost of teachers per student (in percentage of GDP per capita)		
		Primary	Lower secondary	Upper secondary, general programmes	Primary	Lower secondary	Upper secondary, general programmes
		(1)	(2)	(3)	(4)	(5)	(6)
OECD	**Countries**						
	Australia	4 251	5 131	m	8.1	9.7	m
	Austria	4 511	6 711	m	7.7	11.4	m
	Canada	4 285	5 523	5 523	8.7	11.2	11.2
	Chile	2 430	2 280	2 138	9.3	8.7	8.2
	Colombia	1 556	1 350	1 565	9.7	8.4	9.7
	Costa Rica	2 677	2 342	2 076	12.3	10.8	9.5
	Czech Republic	1 395	2 093	m	3.2	4.9	m
	Denmark	4 970	5 338	m	8.2	8.9	m
	Estonia [1]	1 818	2 351	m	4.7	6.0	m
	Finland	3 209	5 388	m	6.2	10.4	m
	France	2 092	2 843	3 020	4.2	5.8	6.1
	Germany	5 097	6 514	m	9.1	11.7	m
	Greece	3 150	3 389	m	10.2	11.0	m
	Hungary	2 113	1 893	2 021	6.2	5.6	6.0
	Iceland	4 019	4 288	m	6.7	7.2	m
	Ireland	4 108	4 891	4 891	4.6	5.5	5.5
	Israel	2 198	3 210	3 514	5.2	7.6	8.4
	Italy	3 343	3 762	3 549	7.5	8.5	8.0
	Japan	3 086	3 780	m	7.4	9.0	m
	Korea	m	m	m	m	m	m
	Latvia [1]	1 235	1 668	m	3.9	5.2	m
	Lithuania	2 194	3 320	m	5.7	8.6	m
	Luxembourg	12 229	11 999	13 230	10.1	9.9	11.0
	Mexico	1 371	1 217	1 812	6.6	5.9	8.7
	Netherlands	3 966	m	4 866	6.7	m	8.2
	New Zealand	m	m	m	m	m	m
	Norway	4 627	4 998	m	7.9	8.5	m
	Poland	2 852	2 690	m	8.4	8.0	m
	Portugal	3 651	5 016	4 794	9.9	13.6	13.0
	Slovak Republic	1 208	1 652	1 460	3.7	5.1	4.5
	Slovenia	4 112	3 106	m	10.0	7.5	m
	Spain	3 881	5 209	5 259	9.2	12.3	12.5
	Sweden	m	m	m	m	m	m
	Switzerland [2]	4 940	7 289	m	6.8	10.0	m
	Turkey	1 680	1 924	2 068	6.1	7.0	7.5
	United States	m	m	m	m	m	m
	Economies						
	Flemish Comm. (Belgium)	4 535	6 135	6 567	8.3	11.2	12.0
	French Comm. (Belgium)	4 377	5 921	6 338	8.0	10.8	11.6
	England (UK)	m	m	m	m	m	m
	Scotland (UK)	m	m	m	m	m	m
	OECD average [3]	3 196	3 680	3 552	6.8	7.9	7.8

Note:. Teachers' salaries used in the calculation of this indicator refer to the annual statutory teachers' salaries in public institutions for teachers with 15 years of experience and the most prevalent qualification (Indicator D3). Instruction time refers to the average number of hours per year of compulsory instruction time (Indicator D1) and teaching time refers to the statutory net teaching hours over the school year (Indicator D4). The reference year for these factors may differ by one year for some countries. See Tables C7.5a, b and c, available on line, for notes on each factor.

1. Teachers' statutory salaries at the start of their career instead of after 15 years of experience for Latvia. Fixed minimum wage that applies to all teachers for Estonia.
2. Teachers' statutory salaries after 10 years of experience instead of 15 years.
3. The OECD average only includes countries and economies with data for all factors used to calculate salary cost.

Source: OECD (2021). See Source section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

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

StatLink https://stat.link/lfv6x2

Table C7.2. Contribution of various factors to salary cost of teachers per student in primary education (2019)

Public institutions only, in equivalent USD, converted using PPPs for private consumption

		Salary cost of teachers per student (2019)	Difference (in USD) from the 2019 OECD average of USD 3 196	Contribution of the underlying factors to the difference from the OECD average			
				Effect (in USD) of teachers' salary below/above the 2019 OECD average of USD 45 006	Effect (in USD) of instruction time (for students) below/above the 2019 OECD average of 811 hours	Effect (in USD) of teaching time (for teachers) below/above the 2019 OECD average of 769 hours	Effect (in USD) of theoretical class size below/above the 2019 OECD average of 15 students per class
		(1)	(2) = (3) + (4) + (5) + (6)	(3)	(4)	(5)	(6)
OECD	**Countries**						
	Australia	4 251	**1 055**	1 368	**787**	- 509	**- 591**
	Austria	4 511	**1 315**	698	**- 542**	- 117	**1 277**
	Canada	4 285	**1 089**	1 698	**479**	- 137	**- 951**
	Chile	2 430	**- 765**	- 707	**621**	- 739	**59**
	Colombia	1 556	**-1 640**	- 351	**502**	- 517	**-1 273**
	Costa Rica	2 677	**- 518**	-1 052	**1 063**	-1 288	**759**
	Czech Republic	1 395	**-1 800**	-1 160	**- 370**	491	**- 761**
	Denmark	4 970	**1 775**	1 013	**1 049**	277	**- 565**
	Estonia [1]	1 818	**-1 377**	-1 581	**- 517**	691	**29**
	Finland	3 209	**13**	- 121	**- 708**	411	**431**
	France	2 092	**-1 104**	- 429	**168**	- 411	**- 431**
	Germany	5 097	**1 901**	2 233	**- 474**	399	**- 257**
	Greece	3 150	**- 46**	-1 713	**- 265**	504	**1 429**
	Hungary	2 113	**-1 083**	-2 084	**- 437**	463	**975**
	Iceland	4 019	**823**	- 154	**- 387**	874	**490**
	Ireland	4 108	**912**	1 180	**404**	- 602	**- 70**
	Israel	2 198	**- 998**	- 898	**455**	- 223	**- 332**
	Italy	3 343	**148**	- 579	**311**	13	**402**
	Japan	3 086	**- 109**	276	**- 161**	90	**- 314**
	Korea	m	**m**	m	**m**	m	**m**
	Latvia [1]	1 235	**-1 961**	-2 329	**- 681**	698	**352**
	Lithuania	2 194	**-1 002**	- 913	**- 757**	- 226	**894**
	Luxembourg	12 229	**9 034**	5 454	**933**	- 376	**3 022**
	Mexico	1 371	**-1 825**	- 606	**- 29**	- 32	**-1 158**
	Netherlands	3 966	**771**	1 318	**536**	- 693	**- 390**
	New Zealand	m	**m**	m	**m**	m	**m**
	Norway	4 627	**1 431**	290	**- 288**	143	**1 285**
	Poland	2 852	**- 344**	-1 505	**- 931**	1 035	**1 057**
	Portugal	3 651	**455**	- 102	**396**	37	**125**
	Slovak Republic	1 208	**-1 988**	-1 539	**- 404**	102	**- 147**
	Slovenia	4 112	**917**	- 132	**- 638**	785	**902**
	Spain	3 881	**685**	284	**- 83**	- 446	**930**
	Sweden	m	**m**	m	**m**	m	**m**
	Switzerland [2]	4 940	**1 744**	2 030	**- 69**	- 84	**- 132**
	Turkey	1 680	**-1 516**	- 849	**- 282**	164	**- 549**
	United States	m	**m**	m	**m**	m	**m**
	Economies						
	Flemish Comm. (Belgium)	4 535	**1 340**	759	41	115	424
	French Comm. (Belgium)	4 377	**1 181**	612	71	309	189
	England (UK)	m	**m**	m	m	m	m
	Scotland (UK)	m	**m**	m	m	m	m

Note:. Teachers' salaries used in the calculation of this indicator refer to the annual statutory teachers' salaries in public institutions for teachers with 15 years of experience and the most prevalent qualification (Indicator D3). Instruction time refers to the average number of hours per year of compulsory instruction time (Indicator D1) and teaching time refers to the statutory net teaching hours over the school year (Indicator D4). The reference year for these factors may differ by one year for some countries. See Table C7.5a, available on line, for notes on each factor.

1. Teachers' statutory salaries at the start of their career instead of after 15 years of experience for Latvia. Fixed minimum wage that applies to all teachers for Estonia.
2. Teachers' statutory salaries after 10 years of experience instead of 15 years.

Source: OECD (2021). See Source section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

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

StatLink https://stat.link/zm9kt1

Table C7.3. Contribution of various factors to salary cost of teachers per student in lower secondary education (2019)

Public institutions only, in equivalent USD, converted using PPPs for private consumption

		Salary cost of teachers per student (2019)	Difference (in USD) from the 2019 OECD average of	Contribution of the underlying factors to the difference from the OECD average			
			USD 3 680	Effect (in USD) of teachers' salary below/above the 2019 OECD average of USD 46 131	Effect (in USD) of instruction time (for students) below/above the 2019 OECD average of 925 hours	Effect (in USD) of teaching time (for teachers) below/above the 2019 OECD average of 702 hours	Effect (in USD) of theoretical class size below/above the 2019 OECD average of 17 students per class
		(1)	(2) = (3) + (4) + (5) + (6)	(3)	(4)	(5)	(6)
OECD	**Countries**						
	Australia	5 131	**1 450**	1 503	343	-687	290
	Austria	6 711	**3 030**	1 036	-141	659	1 476
	Canada	5 523	**1 842**	1 940	-7	-268	178
	Chile	2 280	**-1 400**	-810	383	-1 034	61
	Colombia	1 350	**-2 331**	-432	665	-456	-2 108
	Costa Rica	2 342	**-1 339**	-1 045	597	-1 762	870
	Czech Republic	2 093	**-1 587**	-1 570	-120	360	-258
	Denmark	5 338	**1 658**	1 057	1 164	-43	-520
	Estonia [1]	2 351	**-1 329**	-2 002	-362	461	574
	Finland	5 388	**1 707**	67	-620	770	1 491
	France	2 843	**-838**	-478	73	86	-518
	Germany	6 514	**2 834**	3 012	-117	383	-444
	Greece	3 389	**-292**	-2 006	-577	518	1 773
	Hungary	1 893	**-1 787**	-2 160	-407	214	566
	Iceland	4 288	**608**	-269	-393	607	662
	Ireland	4 891	**1 211**	1 313	-5	-11	-86
	Israel	3 210	**-470**	-897	214	41	172
	Italy	3 762	**81**	-432	253	426	-165
	Japan	3 780	**100**	236	-131	494	-499
	Korea	m	**m**	m	m	m	m
	Latvia [1]	1 668	**-2 013**	-2 978	-432	353	1 045
	Lithuania	3 320	**-361**	-1 333	-515	-943	2 431
	Luxembourg	11 999	**8 319**	6 126	-694	-392	3 278
	Mexico	1 217	**-2 463**	-136	571	-859	-2 039
	Netherlands	m	**m**	m	m	m	m
	New Zealand	m	**m**	m	m	m	m
	Norway	4 998	**1 318**	215	-246	248	1 101
	Poland	2 690	**-990**	-1 627	-356	1 291	-297
	Portugal	5 016	**1 336**	-237	-33	645	962
	Slovak Republic	1 652	**-2 028**	-1 990	-336	213	84
	Slovenia	3 106	**-575**	-206	-641	422	-150
	Spain	5 209	**1 529**	725	572	211	20
	Sweden	m	**m**	m	m	m	m
	Switzerland [2]	7 289	**3 609**	3 212	118	-345	624
	Turkey	1 924	**-1 757**	-1 069	-262	962	-1 387
	United States	m	**m**	m	m	m	m
	Economies						
	Flemish Comm. (Belgium)	6 135	**2 455**	837	104	266	1 248
	French Comm. (Belgium)	5 921	**2 240**	653	96	369	1 123
	England (UK)	m	**m**	m	m	m	m
	Scotland (UK)	m	**m**	m	m	m	m

Note:. Teachers' salaries used in the calculation of this indicator refer to the annual statutory teachers' salaries in public institutions for teachers with 15 years of experience and the most prevalent qualification (Indicator D3). Instruction time refers to the average number of hours per year of compulsory instruction time (Indicator D1) and teaching time refers to the statutory net teaching hours over the school year (Indicator D4). The reference year for these factors may differ by one year for some countries. See Table C7.5b, available on line, for notes on each factor.

1. Teachers' statutory salaries at the start of their career instead of after 15 years of experience for Latvia. Fixed minimum wage that applies to all teachers for Estonia.
2. Teachers' statutory salaries after 10 years of experience instead of 15 years.

Source: OECD (2021). See Source section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterC.pdf).

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

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