

Education at a Glance 2022

OECD Indicators



Germany

Highlights

- Across most of the OECD, tertiary attainment has increased substantially over the last two decades. In Germany, the share of 25-34 year-olds with tertiary attainment has increased by 14 percentage points between 2000 and 2021 (from 22% in 2000 to 36% in 2021, Figure 1). While this is a substantial increase, it is still well-below the average increase across OECD countries of 21 percentage points (from 27% to 48%).
- The comparatively slow growth in tertiary attainment has led to a widening in the tertiary attainment gap between Germany and most other OECD countries. Whereas in 2000, the share of 25-34 year olds with tertiary attainment in Germany was five percentage points below the OECD average, the gap has increased to 12 percentage points in 2021.
- Partly, low tertiary attainment in Germany is due to a strong VET system that opens up more career paths than it does in many other OECD countries. This contributes to an exceptionally low unemployment rate for workers with upper secondary or post-secondary non-tertiary attainment of just 3.0% (compared to an OECD average of 6.5%). The strong VET system might also be a reason for the earnings advantages of workers with upper secondary or post-secondary, non-tertiary attainment relative to workers with below upper secondary attainment, which are in Germany well above the OECD-average. However, there is still a considerable earning advantage for workers with tertiary attainment. Full-time, full-year workers with a bachelor's degree in Germany earn 67% more than workers with an upper secondary degree. This is a considerably larger wage gap than the OECD average of 44%.
- German spending on tertiary education is close to the OECD average. Germany spends 1.3% of its GDP on tertiary educational institutions compared to an OECD average of 1.5%. In absolute terms, spending per tertiary student is somewhat higher than the OECD average with USD 19 608 compared to USD 17 559 on average across the OECD.
- Average tuition fees charged by public tertiary institutions in Germany are close to zero. While this may facilitate access to tertiary education especially for students from low income households, it does not translate into high tertiary attainment rates compared to countries that charge high tuition fees.
- At tertiary level, gender ratios are nearly balanced in Germany with women making up 51% of first-time graduates compared to 55% on average across the OECD. However, with a share of 38% women are underrepresented among graduates of vocational upper-secondary programmes. Gender gaps are much larger within individual fields of study. For example, only 11% of graduates from upper secondary vocational programmes in engineering, manufacturing and construction are women, but 83% in the field of health and welfare.
- Many countries struggle to recruit and retain a sufficient number of well-qualified teachers. While the attractiveness of the teaching profession is influenced by many factors, salaries and required teaching hours are two important determinants. On both dimensions, Germany offers good conditions compared to many other OECD countries. Average salaries of lower secondary teachers

are among the highest in the OECD and are more than twice as high as the OECD average. While statutory working hours of teachers are high in Germany with 1 795 hours annually, the annual teaching load for lower secondary teachers is just 641 hours compared to an OECD average of 711. This gives German teachers more time to prepare lessons and interact with students outside of the classroom, thus also benefitting the quality of teaching.

- As in most other OECD countries, no full physical school closures due to the COVID-19 pandemic happened during the school year 2021/22. With a total of at most 85 days of full school closures in lower secondary education over the entire pandemic, Germany remains close to the average of OECD countries in terms of school closures.

The output of educational institutions and the impact of learning

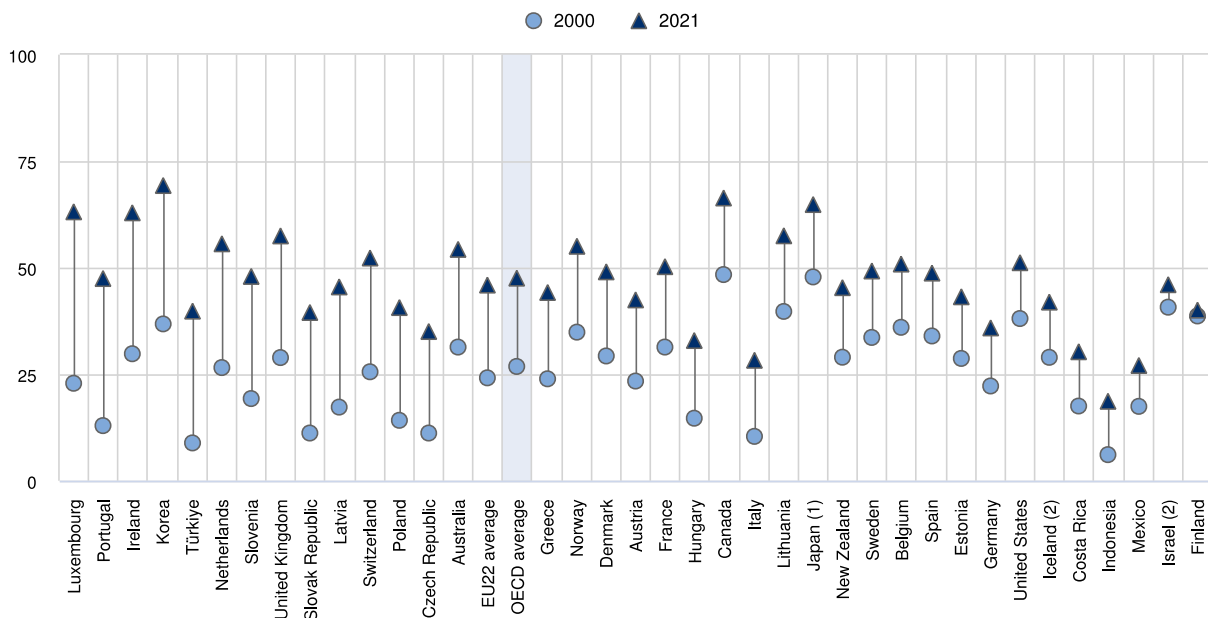
- Educational attainment has been increasing throughout the OECD, in particular at tertiary level. Between 2000 and 2021, the share of 25-34 year-olds with tertiary attainment increased on average by 21 percentage points. In Germany, the share also increased albeit at a slower pace, by 14 percentage points (from 22% in 2000 to 36% in 2021) (Figure 1). Germany remains one of the 12 OECD countries where tertiary education is still less common than upper secondary or post-secondary non-tertiary education as the highest level of attainment among 25-34 year-olds.
- Upper secondary attainment is often seen as a minimum qualification for successful labour market participation. In most countries, the general increase in educational attainment has resulted in a decline in the share of 25-34 year-olds without upper secondary attainment. However, this was not the case in Germany. In 2021, 14% of young adults in Germany did not have an upper secondary qualification compared to only 13% in 2011.
- Higher educational attainment is often associated with better employment prospects and Germany is no exception. In 2021 the employment rate among 25-34 year-olds with tertiary education in Germany was 29 percentage points higher than among those with below upper secondary attainment and 5 percentage points higher than among those with upper secondary or post-secondary non-tertiary attainment. On average across OECD countries, the employment rate among 25-34 year-olds with a tertiary qualification was 26 percentage points higher than among those with below upper secondary attainment and 8 percentage points higher than among those with upper secondary or post-secondary non-tertiary attainment. While the positive link between educational attainment and employment rates holds for both men and for women across the OECD, it is particularly strong for women. In Germany, 45% of women with below upper secondary attainment were employed in 2021, compared to 86% of those with tertiary attainment. In contrast, the figures were 70% and 91% for men.
- Across the OECD, the labour market benefits of tertiary attainment have proved especially strong during economic crises. However, Germany was one of the few countries where unemployment during the pandemic increased more strongly for highly educated workers, albeit at a low level. Between 2019 and 2020, unemployment for 25-34 year-old workers with below upper secondary attainment increased by 0.2 percentage points, by 0.7 percentage points for workers with upper secondary attainment and by 1 percentage point for workers with tertiary attainment. In 2021, unemployment for workers with below upper secondary attainment fell by 1.4 percentage points compared to 2020, by 0.1 percentage points for workers with upper secondary attainment and by 0.6 percentage points for workers with tertiary attainment. This trend notwithstanding, the unemployment rate for workers without upper secondary attainment remains approximately 7 percentage points higher than for workers with higher attainment levels.
- Educational attainment affects not just employment prospects, but also wage levels. On average across the OECD, 25-64 year-old workers with upper secondary or post-secondary non-tertiary attainment earn 29% more than workers with below upper secondary attainment, while those with

tertiary attainment earn about twice as much. In Germany, the earnings advantage of tertiary-educated workers was even greater than the OECD average. In 2020, workers with upper secondary or post-secondary non-tertiary attainment earned 43% more than those with below upper secondary attainment and those with tertiary attainment earned more than twice as much as workers with below upper secondary attainment.

- National averages provide only an incomplete picture of the situation in any given country. In most OECD countries, there are large differences in educational attainment across subnational regions. This is also the case in Germany. In 2021, the difference between the region with the highest share of 25-64 year-olds with tertiary attainment (Berlin, at 45%) and that with the lowest share (Saxony-Anhalt, at 24%) was 21 percentage points. These subnational variations do not only reflect differences in education opportunities. To a large degree, they are due to economic conditions and internal migration patterns.

Figure 1. Trends in the share of tertiary-educated 25-34 year-olds (2000 and 2021)

In per cent



1. Data for tertiary education include upper secondary or post-secondary non-tertiary programmes (less than 5% of adults are in this group).

2. Year of reference differs from 2000: 2002 for Israel and 2003 for Iceland.

Countries are ranked in descending order of the difference in the share of tertiary-educated 25-34 year-olds between 2000 and 2021.

Source: OECD (2022), 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/EAG2022_X3-A.pdf).

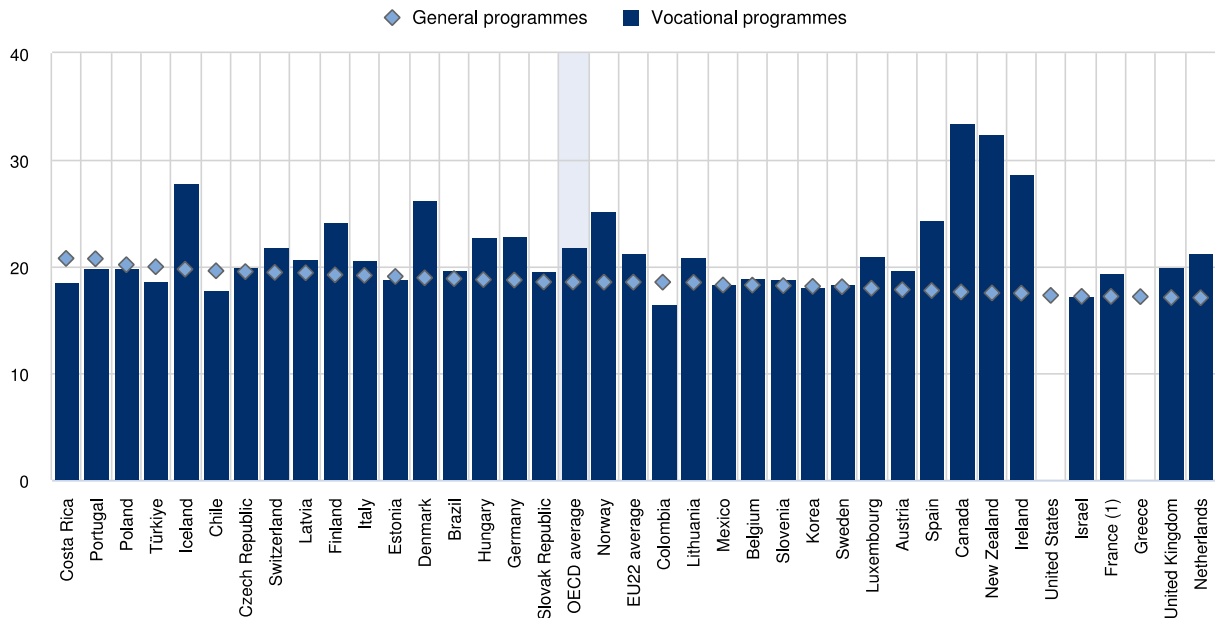
Access to education, participation and progress

- Compulsory education begins at the age of 6 and ends at the age of 18 in Germany. The range of ages for which at least 90% of the population are enrolled is longer than the period of compulsory education and goes from the age of 3 to the age of 17. This is similar to most other OECD countries, where more than 90% of the population are also enrolled for longer than the period of compulsory education.

- The age at which children enter early childhood education differs widely across countries. In Germany, early childhood education starts offering intentional education objectives for children younger than 1 and 39% of children under 3 are enrolled in early childhood education. Across OECD countries, the average enrolment rate among children below the age of 3 is 27%, but the rates range from less than 1% to 63%. The enrolment rate among 3-5 year-olds increases substantially in all OECD countries. In Germany, 94% of all children of this age are enrolled in early childhood education, which is above the OECD average.
- The average age of graduation from general upper secondary programmes varies from 17 to 21 years across OECD countries and is 19 years in Germany. Differences in the average age of graduation from vocational upper secondary education are much larger and vary from 16 to 34 years across the OECD. These differences largely depend on whether vocational upper secondary students usually enrol in these programmes towards the end of their compulsory education or in mid-career. In Germany, the average age of graduation from vocational upper secondary education is 23 years, which is slightly above the OECD average at 22 years (Figure 2).
- In almost all OECD countries, women make up the majority of those graduating from general upper secondary education. In Germany, the share is 54% (OECD average 55%). In contrast, men are overrepresented among graduates of vocational upper secondary programmes in most OECD countries, as is the case in Germany where they make up 62% of all vocational upper secondary graduates, above the OECD average (55%).
- In Germany, 62% of 18-24 year-olds are still in full- or part-time education or training at either upper secondary or tertiary level (above the OECD average of 54%). A subset of these students (32% of 18-24 year-olds) combine their education or training with some form of employment in Germany, compared to 17% on average across the OECD.
- One significant difference across countries' education systems is on whether or not vocational upper secondary programmes provide access to tertiary education. In 12 OECD countries and other participants, all vocational upper secondary graduates have direct access to tertiary education. In Germany 93% of graduates from vocational upper secondary programme have direct access to tertiary education, compared to on average 74% across the OECD.
- As is the case in all OECD countries, a majority of students enrolled at tertiary level in Germany are bachelor's students (61%). However, the next commonest enrolment level varies from country to country. In Germany, master's students make up the second largest group of tertiary students at 33%. This is also the case in 25 other OECD countries, while in the remaining 14 countries with available data, short-cycle tertiary students form the second largest group.
- At 25%, business, administration and law was the most popular field of study among new entrants into tertiary education in Germany, which is the case in most OECD countries. Despite the growing need for digital skills and the good employment prospects of students with degrees in information and communication technologies (ICT), only a small fraction of entrants into tertiary education chooses this field. In Germany, 91% of 25-64 year-olds with a tertiary ICT qualification are employed, but ICT students make up 7% of new entrants into tertiary education. However, this is above the OECD average of 6%. Moreover, the combined STEM (science, technology, engineering and mathematics) fields are an attractive study choice in Germany, where 38% of new entrants into tertiary education choose a STEM-field in 2020. This is the highest share among all OECD countries.

Figure 2. Average age of first-time upper secondary graduates, by programme orientation (2020)

In years



1. Average age is based on all graduates instead of first-time graduates.

Countries are ranked in descending order of the average age of first-time upper secondary graduates in general programmes.

Source: OECD/Eurostat/UIS (2022), Tables B3.1 and B3.2. See Source section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2022_X3-B.pdf).

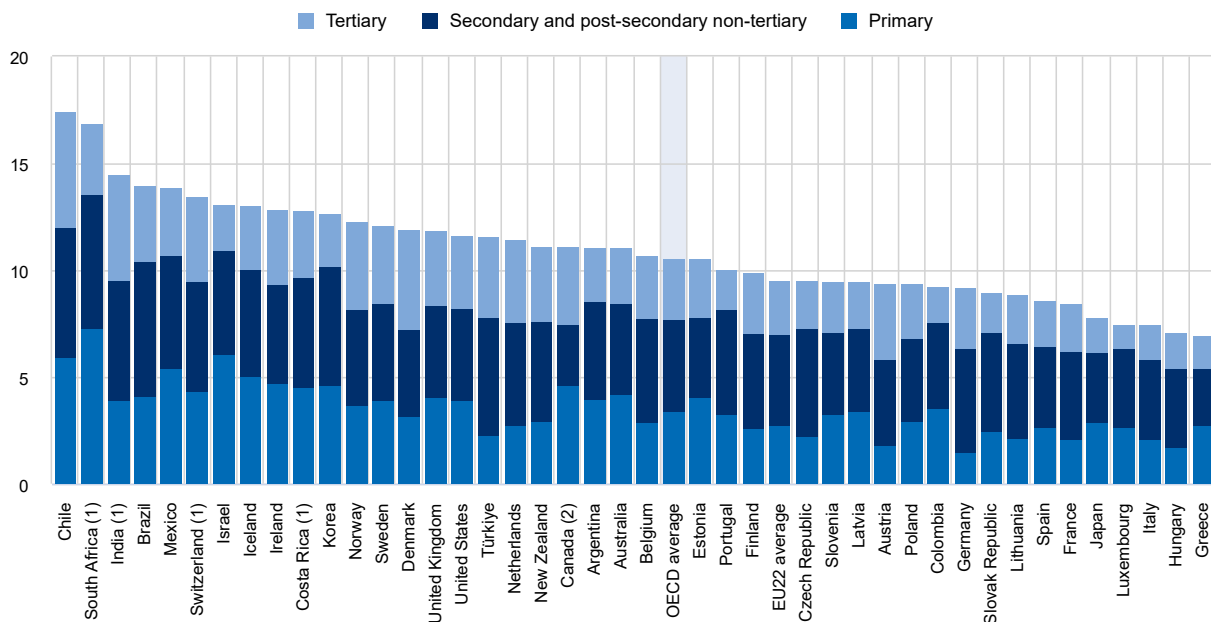
Financial resources invested in education

- All OECD countries devote a substantial share of national output to educational institutions. In 2019, OECD countries spent on average 4.9% of their gross domestic product (GDP) on primary to tertiary educational institutions. In Germany, the corresponding share was 4.3%. Between 2008 and 2019, funding for educational institutions from all sources grew by 19% in Germany, which was higher than the GDP growth of 15%. As a consequence, expenditure on educational institutions as a share of GDP grew by 0.1 percentage points over the same time period.
- Public spending on primary to tertiary education was 9.2% of total government expenditure in Germany (Figure 3), lower than the OECD average (10.6%). Public spending on primary to tertiary education as share of GDP (4.3%) is also lower than the OECD average (4.9%).
- Spending on educational institutions as share of GDP or public budgets are important measures of the importance that countries place on education in their budgeting decisions. However, they do not show the total amount of funding per student because GDP levels, public budgets and student numbers vary from country to country. Across primary to tertiary education, OECD countries spend an average of USD 11 990 per student (in equivalent USD converted using PPPs for GDP) on educational institutions each year. In comparison, Germany spent USD 14 632 per student in 2019. Its cumulative expenditure on educating a student from the age of 6 to 15 was USD 121 062, which was above the OECD average of USD 105 502.

- Across OECD countries, the provision of education at primary and secondary levels in terms of curricula, teaching styles and organisational management leads, on average, to similar patterns of expenditure per student from primary to post-secondary non-tertiary levels. OECD countries as a whole spend on average around USD 9 923 per student at primary and USD 11 400 per student at secondary level. In Germany, the values are USD 10 622 at primary and USD 14 390 per student at secondary level, which are among the highest across OECD countries.
- In contrast to lower levels of education, spending on tertiary education varies widely across OECD countries. Expenditure per student at tertiary level in Germany is higher than at other levels of education, as is the case in almost all other OECD countries. The average expenditure per student in Germany is USD 19 608 per year, which is about USD 9 000 higher than that of the primary level and USD 5 200 higher than that of the secondary level. At 43%, the share of research and development (R&D) expenditure makes up a larger fraction of expenditure on tertiary education in Germany than on average across OECD countries (29%).
- Public funding dominates non-tertiary education (primary, secondary, and post-secondary non-tertiary) in all OECD countries, even after transfers to the private sector. On average across the OECD, private funding accounts for 10% of expenditure at primary, secondary and post-secondary non-tertiary levels, while this share was 12% in Germany in 2019. In contrast, private expenditure at tertiary level was higher in all OECD countries. In Germany, the share of private expenditure at tertiary level reached 17%, which was below the OECD average of 31%.

Figure 3. Composition of total public expenditure on education as a percentage of total government expenditure (2019)

Primary to tertiary education (including R&D), in per cent



1. Year of reference differs from 2019. Refer to the source table for more details.

2. Primary education includes pre-primary programmes.

Countries are ranked in descending order of total public expenditure on education as a percentage of total government expenditure.

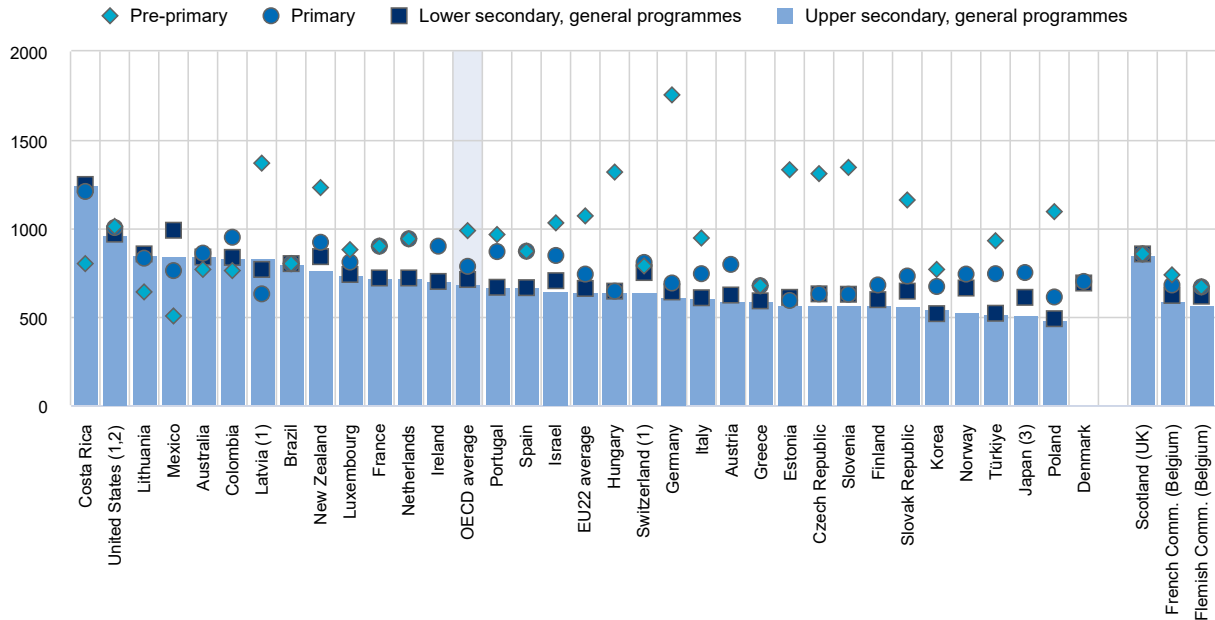
Source: OECD/UIS/Eurostat (2022), Table C4.1. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2022_X3-C.pdf).

Teachers, the learning environment and the organisation of schools

- The salaries of teachers and school heads are an important determinant of the attractiveness of the teaching profession, but they also represent the single largest expenditure item in formal education. In most OECD countries, the statutory salaries of teachers (and school heads) in public educational institutions increase with the level of education they teach, and also with experience. Actual salaries also increase with the level of education. On average across OECD countries, actual salaries range from USD 47 538 at the primary level to USD 53 682 at the upper secondary level. In Germany, actual salaries average USD 81 429 at primary level and USD 94 580 at upper secondary level.
- Between 2015 and 2021, on average across OECD countries, the statutory salaries of teachers at lower secondary level (general programmes) with 15 years of experience and the most prevalent qualifications increased by 6% in real terms. In Germany, salaries increased more than the OECD average, by 10%.
- Teachers' average actual salaries remain lower than earnings of tertiary-educated workers in almost all OECD countries, and at almost all levels of education. However, Germany is one of the few exceptions to this rule. Lower secondary (general programme) teachers in Germany earn almost exactly as much as the average of other tertiary-educated workers in Germany.
- The average number of teaching hours per year required from a typical teacher in public educational institutions in OECD countries tends to decrease as the level of education increases. This is also the case in Germany.
- Based on official regulations or agreements, annual teaching hours in Germany are 1 755 hours per year at pre-primary level, 691 hours at primary level, 641 hours at lower secondary level (general programmes) and 610 hours at upper secondary level (general programmes) (Figure 4).
- During their working hours, teachers also perform various non-teaching tasks such as lesson planning and preparation, marking students' work and communicating or co-operating with parents or guardians. At the upper secondary level, 66% of teachers' working time is formally dedicated to non-teaching activities in Germany, compared to an average of 56% across OECD countries.
- The duration of initial teacher education for primary and lower secondary teachers ranges from 2.5 years to 6.5 years across OECD countries. In Germany, initial teacher education typically lasts 7 years for prospective lower secondary teachers (general programmes). It is the same length for prospective primary teachers. As is the case in almost all OECD countries, a tertiary degree is awarded to prospective teachers of all levels of education upon completion of their initial teacher training.

Figure 4. Teaching time of teachers, by level of education (2021)

Net statutory teaching time in hours per year, in public institutions



1. Actual teaching time (in Latvia except for pre-primary level).
2. Reference year differs from 2021. Refer to the source table for details.
3. Average planned teaching time in each school at the beginning of the school year.

Countries and other participants are ranked in descending order of the number of teaching hours per year in general upper secondary education.

Source: OECD (2022), Table D4.1. See Source section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2022_X3-D.pdf).

Focus on tertiary education

- Among 25-64 year-olds in Germany, bachelor's degrees are the most common tertiary attainment at 18% of the population followed by master's degrees with 11% and short-cycle tertiary qualifications with 1%. This is similar to the OECD average, where bachelor's degrees are most common (19%), followed by master's degrees (14%) and short cycle tertiary qualifications (7%). As in all OECD countries and other participants, only a small fraction of the population holds a doctoral degree: the share is 1.7% in Germany, which is well above the OECD average of 1.3%.
- On average, tertiary attainment generates a wide range of labour-market benefits, including high employment rates. Yet, there are significant differences depending on the field of study. In 2021, employment rates in Germany were highest among tertiary-educated individuals who studied information and communication technologies with 91% and lowest among those who studied arts at 84%. However, these differences need to be put into perspective. The employment rate of those with tertiary attainment in the arts was still 3.6 percentage points higher than among those with upper secondary attainment (all fields combined).
- Wages also differ according to the field of study. In Germany, tertiary attainment in medical and dental fields generates the highest earnings. Full-time full-year workers aged 25-64 with a tertiary degree in this field earn on average more than twice as much as workers with upper secondary attainment (all fields combined). In contrast, tertiary attainment in arts leads to the lowest wages.

Yet, workers with this educational background still earn on average 20% more than the wage of workers with upper secondary attainment (all fields combined).

- In most OECD countries including in Germany, tertiary-educated adults have higher rates of participation in non-formal education and training than those with a lower level of educational attainment. In 2021, 8% of 25-64 year-olds with tertiary attainment in Germany had participated in non-formal education and training in the four weeks prior to being surveyed, compared to 2% of their peers with below upper secondary attainment.
- Enabling students to enrol on a part-time basis is an important way to facilitate access to tertiary education. Many part-time students would not be able to study full time, for example because they have child-care responsibilities or have to work to fund their studies. The share of part-time students at the tertiary level in Germany is 16%, below the OECD average (21%). Compared to 2013, it has increased by 1 percentage point.
- Staff at tertiary level tend to start their careers relatively late due to the length of the education they need to qualify. In Germany, 23% of academic staff are aged under 30, above the OECD average (8%). In contrast, the share of academic staff aged 50 or over is 29%, which is below the OECD average by 11 percentage points.

COVID-19: The second year of the pandemic

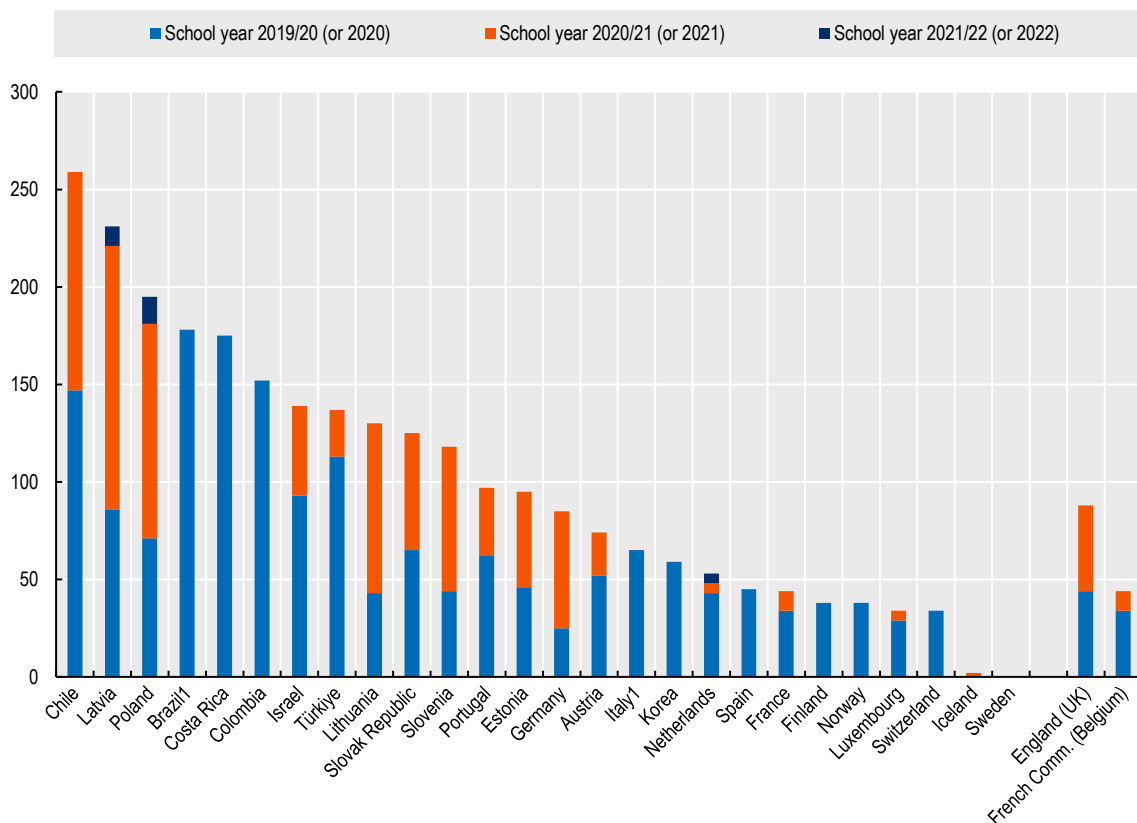
- The COVID-19 pandemic disrupted traditional schooling in 2020 and the first half of 2021, leading to school closures across all OECD countries. While most shut down their premises entirely in the wake of the pandemic in 2020, by 2021 the situation had improved and returned to normal in most countries in 2022. In Germany, primary and secondary schools were entirely closed for 20-25 days during the school year 2019/20, for 40-60 days in 2020/21 and stayed open in 2021/22 (Figure 5). Partial closures reached 65-70 days during the school year 2019/20 and 33-53 days in 2020/21.
- National examinations have also been affected by the pandemic. At general upper secondary level, 18 OECD countries postponed their national examinations during the school year 2019/20, while 10 countries even cancelled them entirely. In 2020/21, national examinations were postponed in 9 countries and cancelled in 6 countries. Germany rescheduled its national examinations in 2019/20 and in 2020/21.
- Most countries conducted assessments of the impact of school closures on learning outcomes at various levels of education and along several dimensions. Germany has conducted studies to evaluate the effects of the pandemic on primary, lower secondary, and upper secondary general education. The assessments covered mathematics, reading and science. Like many other countries, Germany also evaluated dimensions such as the effectiveness of distance-learning strategies during school closures as well as the mental health and well-being of students.
- In school year 2022, national programmes to support students affected by the pandemic were implemented in Germany at pre-primary, primary, lower secondary, upper secondary general and vocational level. At primary to upper secondary education, measures to address the effects of the COVID-19 pandemic included accelerated education or catch-up programmes for students who dropped out of school, adjustments to subject curricula. The government has already assessed the effectiveness of these programmes.
- The increased digitalisation of education has been a major consequence of the COVID-19 pandemic in many OECD countries. At lower secondary level, Germany has responded to the pandemic with an enhanced provision of digitalised assessments/exams, distance learning, hybrid learning, in-service and pre-service digital training to teachers and digital training to students.
- The challenges related to the COVID-19 pandemic have created additional costs for education systems. Preliminary budget estimates for 2021 suggest that, compared to 2020, the education

budget at pre-primary to tertiary level in Germany increased slightly (by between 1% and 5%, in nominal terms).

- The COVID-19 pandemic had a significant impact on adult learning in most OECD countries. In 2020, the share of adults who participated in a formal or non-formal education and training activity in the four weeks prior to being surveyed decreased by 2 percentage points on average across OECD countries compared with 2019. However, in 2021, participation in non-formal education and training returned to pre-pandemic levels in most countries. In Germany, participation in non-formal education and training decreased slightly from 5.0% in 2019 to 4.4% in 2020 and remained largely unchanged in 2021.
- Young adults who are not in employment, education or training (NEET) for prolonged periods are at risk of adverse economic and social outcomes in both the short and the long term. After increasing during the COVID-19 pandemic by 1.2 percentage points in 2020, the share of 18-24 year-olds who are NEET in Germany increased by another 0.3 percentage points in 2021 to close to 10%.

Figure 5. School closures due to COVID-19 (2020, 2021 and the first quarter of 2022)

Number of instruction days of full closure of lower secondary schools excluding school holidays, public holidays and weekends



Note: The data underlying this report were produced through the Survey on Joint National Responses to COVID 19, a collaborative effort conducted by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Children's Fund (UNICEF), the World Bank (WB), and the Organisation for Economic Co-operation and Development (OECD). Data for other levels of education are available at <https://www.oecd.org/education/Results-4th-wave-COVID-Survey-OECD-database.xlsx>.

1. Data for 2021 and 2022 are missing.

Countries and other participants are ranked in descending order of the total number of days lower secondary schools were fully closed during the school years 2019/20 (2020), 2020/21 (2021) and 2021/22 (2022).

Source: OECD/UIS/UNESCO/UNICEF/WB (2022).

References

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More information

For more information on Education at a Glance 2022 and to access the full set of Indicators, see: <https://doi.org/10.1787/3197152b-en>

For more information on the methodology used during the data collection for each indicator, the references to the sources and the specific notes for each country, See Annex 3 (https://www.oecd.org/education/education-at-a-glance/EAG2022_X3.pdf).

For general information on the methodology, please refer to the OECD Handbook for Internationally Comparative Education Statistics: Concepts, Standards, Definitions and Classifications (<https://doi.org/10.1787/9789264304444-en>).

Updated data can be found on line at <http://dx.doi.org/10.1787/eag-data-en> and by following the StatLinks  under the tables and charts in the publication.

Data on subnational regions for selected indicators are available in the *OECD Regional Statistics* (database) (OECD, 2022). When interpreting the results on subnational entities, readers should take into account that the population size of subnational entities can vary widely within countries. For example, regional variation in enrolment may be influenced by students attending school in a different region from their area of residence, particularly at higher levels of education. Also, regional disparities tend to be higher when more subnational entities are used in the analysis.

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The data on educational responses during COVID-19 were collected and processed by the OECD based on the Joint Survey on National Responses to COVID-19 School Closures, a collaborative effort conducted by the United Nations Educational, Scientific and Cultural Organization (UNESCO); the UNESCO Institute for Statistics (UIS); the United Nations Children's Fund (UNICEF); the World Bank; and the OECD.

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