



How are demographic changes affecting education systems?

EDUCATION INDICATORS IN FOCUS

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- From 2013 to 2022, the number of 0-4 year-olds declined in most countries, while the numbers of 5-14 year-olds continued to grow. In a few countries, however, high levels of migration contributed to increases in both of these age groups.
- Projections for 2022-31 suggest that the current growth over the last decade in the numbers of 5-14 year-olds is likely to reverse in most countries. This offers an opportunity to optimise education systems by reallocating resources more efficiently, focusing on quality rather than quantity.
- Between 2013 and 2022, teacher numbers often grew faster than student enrolment, resulting in falling student-teacher ratios in primary and lower secondary education in most countries.
- Demographic changes often conceal significant regional disparities, particularly in education. While urban areas face recruitment challenges for high-demand subjects and require extensive infrastructure, rural areas struggle to attract teachers and face school closures or consolidations due to declining enrolment. These contrasts raise complex questions about how to balance educational accessibility with the efficient allocation of resources.

The past decade has seen declining numbers of 0-4 year-olds while the number of 5-14 year-olds has continued to climb

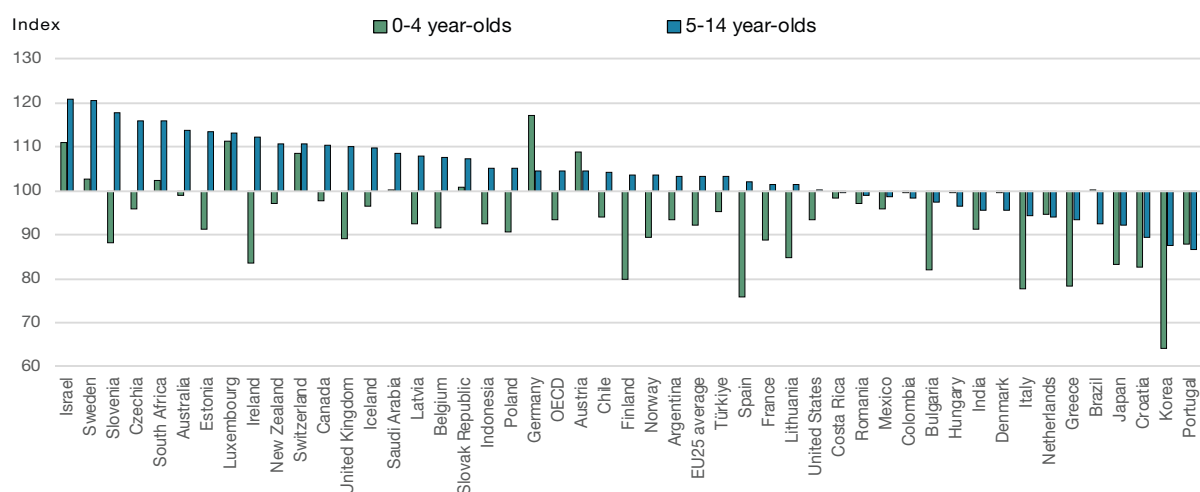
In order to understand what resources education systems will need, and plan how they should be allocated, it is essential to examine past and forecasted demographic changes. Past trends reveal how factors like birth rates, migration and urbanisation have shaped current enrolment and infrastructure needs, highlighting areas of growth or decline. Forecasts provide critical insights to help policy makers anticipate changes in student populations, enabling them to make proactive adjustments in resource allocation, school infrastructure and staffing.

Between 2013 and 2022, demographic changes have followed different trends in different age groups, significantly influencing public policies. In about 80% of OECD countries with data available, there has been a marked decline in the number of 0-4 year-olds (Figure 1). Some governments have adopted policies aimed at encouraging higher birth rates or adapting education systems in response to these demographic shifts. For instance, Italy, Japan and Korea, countries which are grappling with persistently low birth rates, have introduced financial incentives including monthly child allowances, childcare subsidies, expanded parental leave and initiatives to improve work-life balance, such as flexible working hours (see the OECD family database; www.oecd.org/en/data/datasets/oecd-family-database.html). Additionally, many governments have expanded access to early childhood education and care (ECEC) services over this period, despite the decline in the relevant age group, recognising the dual role of ECEC in supporting family well-being as well as promoting early learning and development (OECD, 2024^[1], Chapter B1).

The decline in the 0-4 age group is not yet mirrored among 5-14 year-olds, where the numbers reflect the higher birth rates of previous years. On average across OECD countries, the number of 5-14 year-olds grew by 4.5% between 2013 and 2022, with around two-thirds of countries recording growth in this age group (Figure 1). This growth in the number of children of the ages largely corresponding to enrolment in late ECEC, primary and lower secondary education partly explains why expenditure per student at these levels has increased in most countries over this period (OECD, 2024^[1], Chapter C1).

Figure 1. Changes in the child population by country between 2013 and 2022

Index of change between 2013 and 2022 (2013=100)



Note: The data refer to mid-year estimates of the population and include net migration.

Countries are ranked in descending order of the change in the population of 5-14 year-olds.

Source: OECD data collection on demography (see OECD Data Explorer, <https://data-explorer.oecd.org>).

Migration has contributed to the growth of both 5-14 year-olds and 0-4 year-olds in a few countries with low birth rates but steady inflows of young families and workers. For example, over the last decade, Austria, Germany and Switzerland have experienced significant migratory flows, leading to increased population growth and greater enrolments in early education (OECD, 2024^[2]). In the same vein, Canada, with its strong pro-immigration stance, has been particularly effective in supporting growth in the 0-14 age group by prioritising family-based immigration pathways and creating favourable conditions for young families. Its immigration policies are highly selective, emphasising skilled immigrants while maintaining more restrictive pathways for lower-skilled workers. However, these changes have sparked public debate. For instance, in 2024 Canada reduced its immigration targets to “pause” population growth, reflecting declining public support for immigration (France24, 2024^[3]).

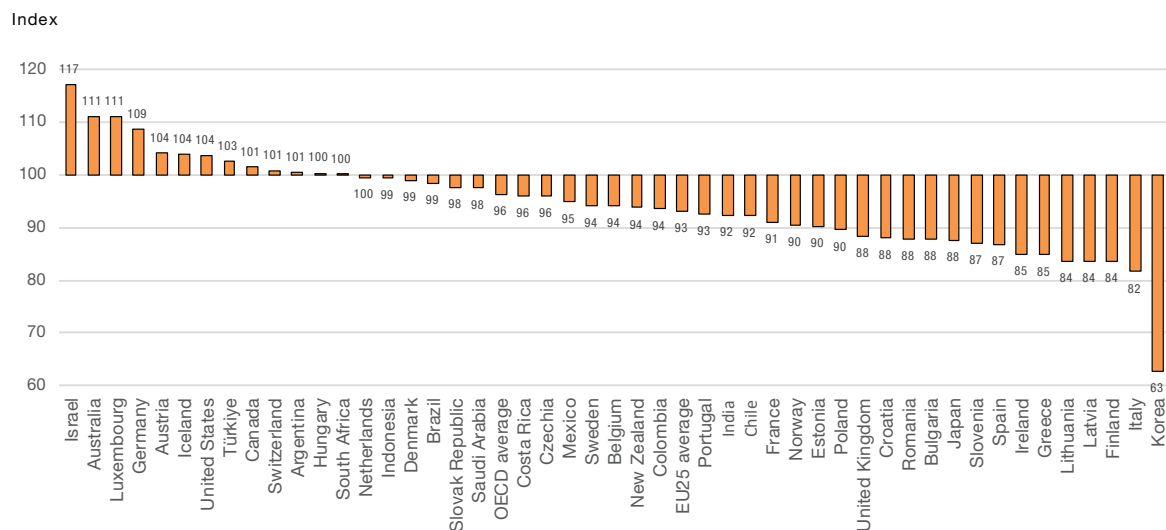
The growth in the number of 5-14 year-olds is likely to reverse in the next decade

Projections for 2022-31 indicate that the recent growth in the 5-14 age group is likely to reverse, with numbers declining in 37 out of 47 countries with data available (Figure 2). Finland, Greece, Ireland, Italy, Latvia and Lithuania are expected to see some of the greatest declines over the next decade, with the population of 5-14 year-olds projected to decline by 15-20%. Korea is expected to experience an even steeper decline, with a projected fall of 37%.

If education budgets remain stable, these projected declines in the age group generally eligible for late ECEC, primary and lower secondary education mean resources per student could increase in most countries over the next decade. This presents an opportunity to optimise education systems by reallocating resources more efficiently and focusing on quality over quantity. For instance, countries could direct additional resources toward measures such as enhancing teacher training, expanding access to digital learning tools, personalised learning or/and promoting inclusive education practices.

Figure 2. Projected changes in the population of 5-14 year-olds between 2022 and 2031

Index of change between 2022 and 2031 (2022=100)



Note: Demographic projections are based on assumptions about future trends in life expectancy, fertility rates and net migration. Often, a number of projections are produced, using different assumptions about these future trends. The estimates presented here correspond to the median or central variant of these projections.

Countries are ranked in descending order of the expected change in the population of 5-14 year-olds.

Source: OECD data collection on demography (see OECD Data Explorer, <https://data-explorer.oecd.org>).

Country-level figures can mask significant regional differences

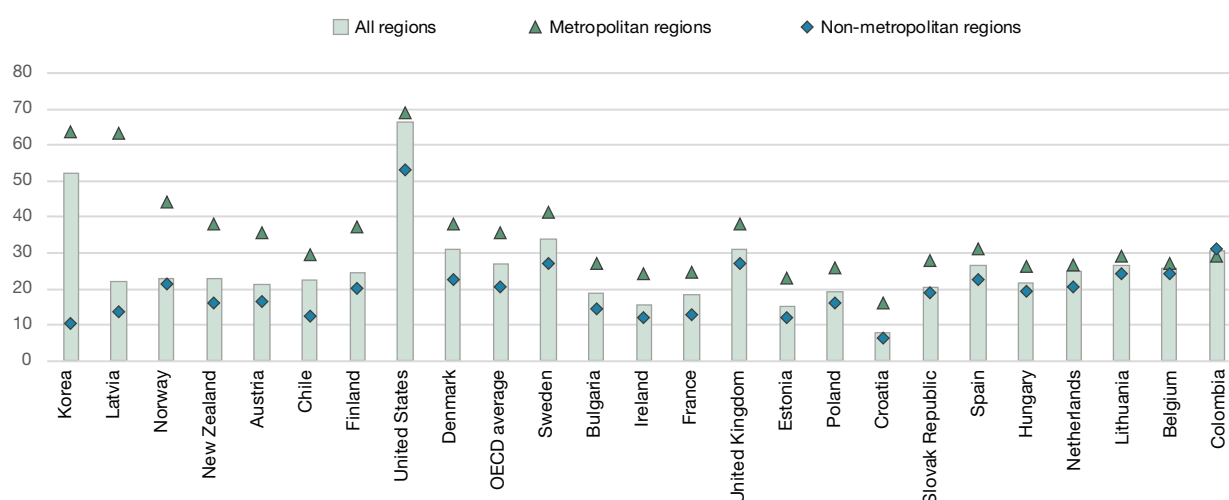
Rural areas often experience lower birth rates, population decline, and migration to cities, leading to sharper reductions in student numbers than in urban areas. This trend increases the risk of school closures, which can exacerbate educational inequality by reducing access to local schools, forcing students to travel long distances, or pushing families to relocate. Additionally, school closures often necessitate the redeployment of teachers, which can disrupt their professional stability and create gaps in teacher supply elsewhere, further complicating efforts to address rural-urban disparities in education.

Among OECD countries with available data, the median number of students per grade in primary schools in metropolitan regions are generally higher than those in non-metropolitan regions. On average, the median number of students per grade is 36 for primary schools in metropolitan areas, compared to only 21 for those in non-metropolitan areas. The differences are greatest in Austria, Chile, Finland, Korea, Latvia, New Zealand and Norway (Figure 3). This highlights the challenges posed by uneven population distribution.

These disparities in school size also result in smaller class sizes in rural schools, which can make it financially and logistically challenging to maintain a large number of small schools in rural areas. Some of the countries with the greatest differences in school size in Figure 3 have taken action to address these issues. For example, Finland and Latvia have opted to merge or close schools in rural regions, supported by expanded school transport systems to ensure students can still access education (Latvian Public Broadcasting, 2024^[4]; Agaci, 2024^[5]). Norway commonly uses multi-grade classrooms in rural schools to optimise resources and maintain school viability (Bjørn, 2023^[6]). Finally, Chile has developed digital learning programmes and increased investment in online education platforms to improve teachers' digital skills and also support students in remote areas, reducing the need for physical proximity to schools (UNESCO, 2023^[7]).

Figure 3. Distribution of primary school size (students per grade), by region type (2023)

Median number of students per grade in primary schools



Note: School size is calculated by dividing the number of enrolled students in primary level by the theoretical duration of primary education in each country. Regions are classified as “metropolitan” if more than half of their population lives in a functional urban area of at least 250 000 inhabitants and as “non-metropolitan” otherwise.

Countries are ranked in descending order of the difference between metropolitan and non-metropolitan regions in the number of students per grade in primary schools.

Source: (OECD, 2024^[1]), Table D2.4.

Few countries have managed to align the number of students with the number of teachers in primary and lower secondary education over the past decade

A closer analysis of education data between 2013 and 2022 also offers valuable insights into how demographic changes are reflected in educational resources. Generally, as expected, there is a correlation between changes in the number of teachers and the number of students at the primary and lower secondary levels. However, most countries displayed a notable trend over this period: where student enrolment has grown, it has done so more slowly than the number of teachers. Or, where student numbers have fallen, the decline has been more pronounced than the reduction in teacher numbers (Figure 4). In other words, in most countries, teacher numbers have outstripped student numbers as educational resources available in primary and lower secondary education have increased over the last decade. This is consistent with recently published financial data showing that between 2015 and 2021, spending per full-time equivalent student increased by an average of 2.4% per year for primary education and 2.0% per year for lower secondary education (OECD, 2024^[8]).

Student-teacher ratios have fallen the most in Bulgaria, Chile, Ireland, Slovenia and Türkiye, leaving them with significantly more teachers per student in 2022 than in 2013. In contrast, Latvia and Lithuania are the only two countries reporting a significant decline in the number of teachers per student over the period (Figure 4). This trend has partly been driven by an aging teacher population. In Latvia, the share of teachers aged 50 or older rose from 36% in 2013 to 50% in 2022, while in Lithuania it increased from 39% to 56%, compared to the OECD average of 32% in 2013 and 34% in 2022. There have been similar trends in both countries in lower secondary education ((OECD, 2024^[11]), Chapter D5).

Despite falling student-teacher ratios, teacher shortages remain a problem in a number of countries

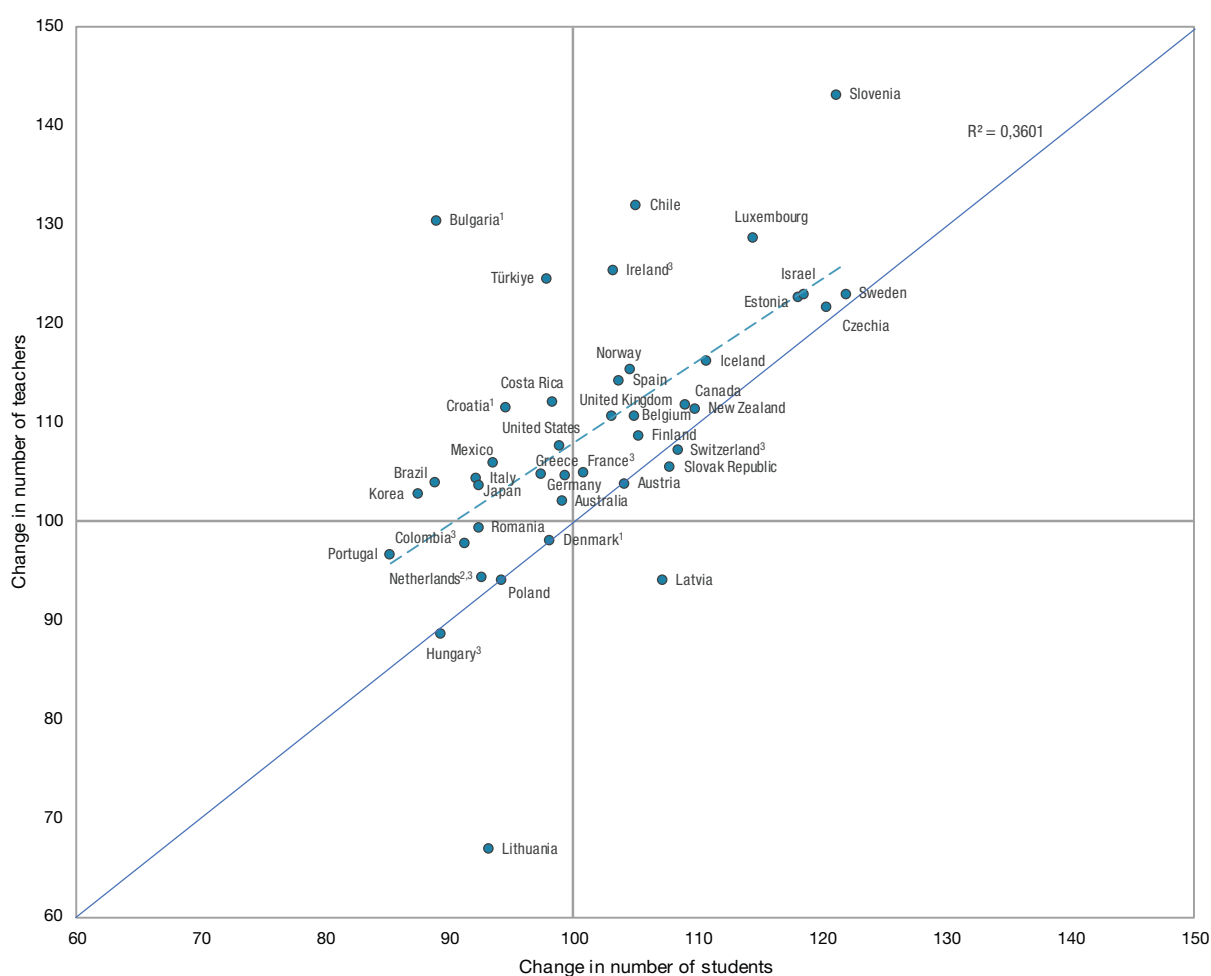
The fact that student-teacher ratios have fallen over the last decade in a majority of countries might initially seem surprising, given widespread reports of teacher shortages around the world. For instance, Education at a Glance found that 18 out of 21 countries with data available faced a shortage of fully qualified secondary school teachers at the start of the 2022/23 school year ((OECD, 2024^[11]), Chapter D5).

At first glance, this appears contradictory: if there are more teachers per student in 2022 than there were a decade ago, why have shortages persisted? However, this trend may not apply uniformly across all regions. Teacher shortages are often subject-specific and shaped by contextual factors. In urban areas, high population density and growing student numbers create pressure to recruit sufficient teachers, particularly in high-demand subjects such as science, technology, engineering and mathematics (STEM) fields. These areas also face pressure to expand and modernise educational infrastructure to accommodate increased demand.

In contrast, some rural areas frequently grapple with teacher shortages due to their geographical isolation and lower attractiveness for professionals. These difficulties are further compounded by declining student populations, which increase the risk of school closures or the consolidation of schools. Such shifts not only disrupt local communities but also raise complex questions about how to balance accessibility to education with the efficient allocation of resources. Moreover, the redeployment of surplus teachers from closed or consolidated schools must be carefully managed to ensure that teacher supply aligns with the needs of students while minimising disruptions for their families. These interconnected issues demand nuanced policies that consider both short-term impacts and long-term sustainability.

Figure 4. Changes in student and teacher numbers in primary and lower secondary education between 2013 and 2022

Public and private institutions



Notes:

1. Reference year 2014 instead of 2013.

2. Reference year 2021 instead of 2022.

3. Public institutions only.

Source: Data refer to the reference year 2022 (school year 2021/22) and are based on the UNESCO-UIS/OECD/Eurostat data collection on education statistics administered by the OECD in 2024. Data and more breakdowns are available on the OECD Data Explorer (<http://data-explorer.oecd.org/s/5q>).

The bottom line

The past decade has seen declining numbers of 0-4 year-olds while the number of 5-14 year-olds has continued to rise. During this period, most countries increased their financial investment in primary and lower secondary education, improving student-teacher ratios. However, the distribution of teachers remains uneven, with urban areas often facing recruitment challenges for specific subjects due to high demand, while rural regions contend with both persistent teacher shortages and the risk of school closures or consolidations linked to declining student populations. The demographic decline among 5-14 year-olds expected over the next decade presents both an opportunity to prioritise educational quality and a challenge to balance accessibility with resource efficiency, requiring strategic adjustments in teacher deployment and infrastructure.

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CONTACT:

Eric CHARBONNIER (Eric.CHARBONNIER@oecd.org)

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