Wittgenstein Centre
FOR DEMOGRAPHY AND GLOBAL HUMAN CAPITAL

IIASA ÖAW universität wien

European Demographic Data Sheet 2022

Regional overview: key indicators

Definition of regions in the regional overview takes into account geographical, historical and geopolitical divisions, as well as similarity in demographic trends. Countries are grouped into regions as follows:

- Nordic countries (Denmark, Finland, Iceland, Norway, Sweden)
- Western Europe (Belgium, France, Ireland, Luxembourg, Netherlands, United Kingdom)
- Germany, Austria, Switzerland
- Southern Europe (Cyprus, Greece, Italy, Malta, Portugal, Spain)
- Central-Eastern Europe (Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia)
- South-Eastern Europe (Albania, Bosnia and Herzegovina, Bulgaria, Kosovo, North Macedonia, Montenegro, Romania, Serbia)
- Eastern Europe (Belarus, Moldova, Russia, Ukraine)
- Caucasus (Armenia, Azerbaijan, Georgia)

Turkey is not included in any region.

Indicators for regions are computed as population weighted averages.

European Union refers to the current territory of 27 member states.

Country	Population (millions)	Population (millions)	Total population change (%)	Proportion of foreign-born population (%)	Projected population SSP2 (millions)	Total fertility rate (TFR)	Mean age at first birth (years)	Completed cohort fertility	Life expectancy at birth (years), 2020		Change in number of deaths (%)	Natural population change (per thousand)
	1.1.2021	1.1.2000	2000 to 2021	1.1.2021	2060	2020	2020	Women born 1980	Women	Men	2019 to 2021	2021
Nordic countries	27.5	24.2	14	15	31.7	1.58	29.7	1.91	84.4	80.4	6	1.4
Western Europe	169.4	149.6	13	14	193.7	1.66	29.1	1.98	83.6	78.9	9	0.9
Germany, Austria, Switzerland	100.8	97.4	4	19	99.4	1.52	30.2	1.62	83.7	78.9	8	-2.2
Southern Europe	129.0	119.5	8	13	120.4	1.24	31.1	1.44	84.7	79.7	10	-4.0
Central-Eastern Europe	75.9	78.0	-2	5	64.7	1.49	27.9	1.56	80.7	73.1	26	-4.9
South-Eastern Europe	43.1	49.7	-12	4	–	1.68	27.1	–	78.0	71.0	32	-7.2
Eastern Europe	199.5	209.6	–	9	176.2	1.44	25.8	1.64	76.4	66.6	33	-7.9
Caucasus	16.8	15.6	18	3	–	1.74	24.5	1.96	77.1	69.6	–	–
European Union	446.7	428.6	5	12	433.0	1.50	29.6	1.66	83.4	77.8	13	-2.5

Tempo effect and adjusted indicators of total fertility

In Europe, the mean age at first birth has been rising since the 1970s. This turns out problematic for the use of the most common measure of period fertility, the *Total Fertility Rate* (TFR). As births shift to later ages, they are both postponed into the future and spread over a longer period of time. This "stretching" of reproduction depresses period TFR, even if the number of children that women have over their reproductive lives does not change. A possible correction of this 'tempo effect' is offered by the Tempo- and Parity-adjusted Total Fertility (TFRp*), an indicator based on age- and parity-specific fertility rates, as well as changes in mean ages at birth (Bongaarts and Sobotka 2012) . It provides a more accurate measure of the period mean number of children per woman, and quite often differs substantially from the TFR.

One of the best examples of how much the TFR can be distorted by the rising age at first birth are fertility trends in post-socialist countries in Central and Eastern Europe, represented here by Czechia. The massive childbearing postponement experienced during the 1990s resulted in a huge gap between conventional and tempo-adjusted fertility. Within a decade, the TFR plummeted from 1.9 to below 1.2, while the TFRp* stayed above 1.8. In the past 20 years, childbearing postponement has slowed down and the TFR has largely recovered, reaching 1.8 in 2021—one of the highest levels in Europe.

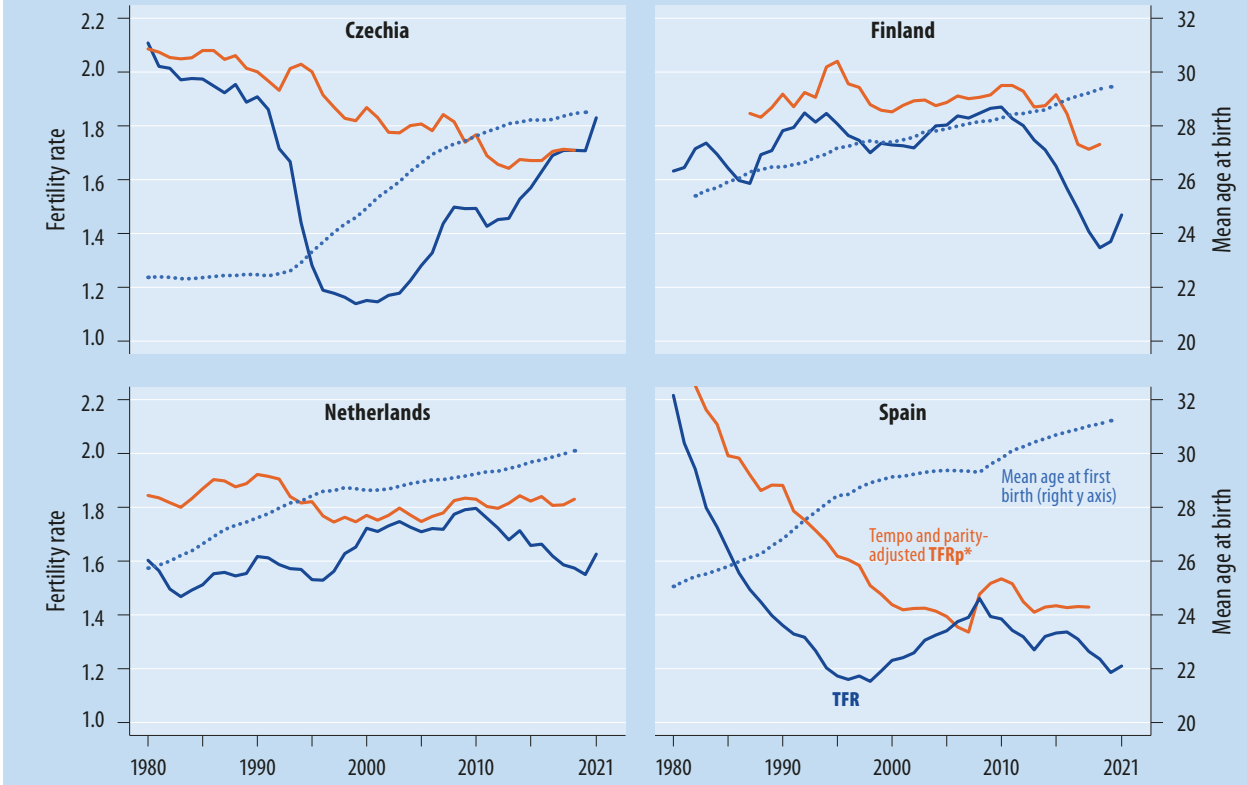
Even if less spectacular, tempo-effects in fertility have been observed in all parts of Europe. For instance, Finland, like other Nordic countries, experienced a sharp downturn in fertility during the 2010s, with TFR falling between 2010 and 2019 from 1.87 to a record low of 1.35. Meanwhile, the TFRp* fell from 1.9 to 1.7, suggesting that most of the observed drop in the TFR was due to delayed family formation. The Netherlands, on the other hand, has enjoyed a remarkably stable TFRp* around 1.8 over the last three decades despite substantial ups and downs in the TFR in that period. By contrast, Southern European countries have seen largely continuous declines in both TFR and TFRp* in the last four decades, accompanied by a steady shift to later first births. In 2020, TFR in Spain dropped to 1.2. Even after adjusting for the tempo effect, Spain has one of the lowest fertility levels in Europe, with the TFRp* stabilising at just above 1.4.

References

Bongaarts, J. and G. Feeney 1998. *On the quantum and tempo of fertility.* Population and Development Review 24(2): 271–291.

Bongaarts, J. and T. Sobotka 2012. A demographic explanation for the recent rise in European fertility. *Population and Development Review* 38(1): 83–120.

Fertility trends, 1980–2021



Corona babies: ups and downs in birth trends during the pandemic

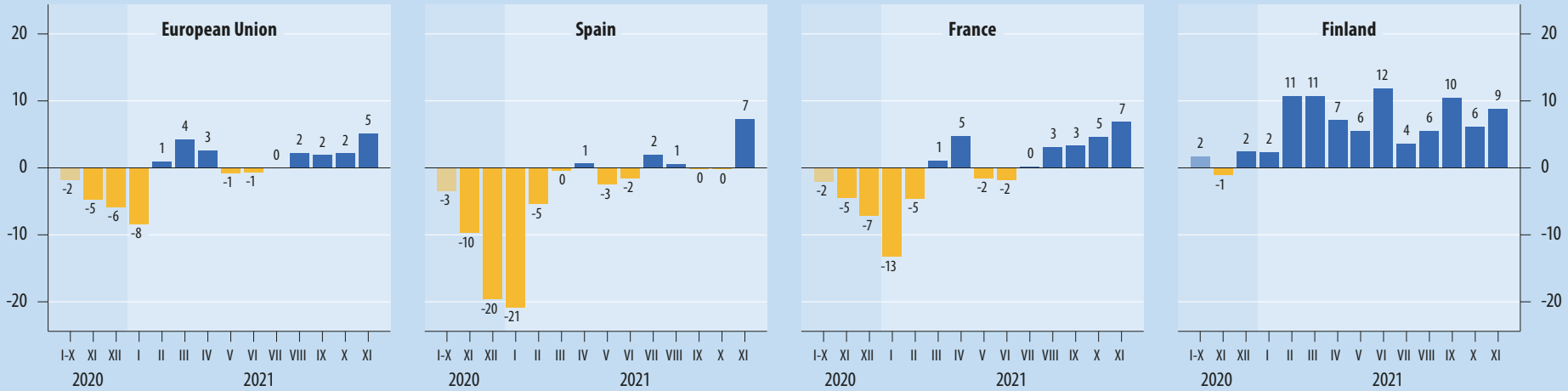
How has the coronavirus pandemic affected birth trends? Initially, the media speculated about a possible "baby boom" triggered by couples spending more time together during lockdowns. Yet, early-pandemic survey results suggested instead a "baby bust" as a response to the unstable labour market, uncertainty about the future, and concerns and stress associated with the infections and lockdowns.

The map and data on the front page ("Change in number of births 2020 to 2021") illustrate the impact of the pandemic on birth trends in Europe. We compare the number of births in 2021 to those in 2020. Note that children born in 2020 were mostly conceived before the COVID-19 outbreak in March 2020, whereas children born in 2021 represent the "pandemic babies", conceived between Spring 2020 and early Spring 2021. The effect of the pandemic on birth trends varied greatly across the continent. In Eastern, Southern, and South-Eastern Europe, as well as a few countries in Central-Eastern Europe (Poland and the Baltic states) the number of births declined. The decline was particularly notable in Romania (by 11%), Poland (by 7%), and Ukraine (by 7%). By contrast, it remained stable in most of Central-Eastern Europe and France, and actually increased in Nordic-countries, Western Europe, and German-speaking countries. In fact, Finland, Norway, and the Netherlands saw their births rising by as much as 6–7%.

However, the aggregated period trend hides a striking variation in birth dynamics during the pandemic. The figure below compares the number of births to the same month one year earlier across the European Union and highlights three countries with contrasting trends – Spain, France, and Finland.

With a few exceptions, the first wave of the pandemic was associated with a downturn in the number of births in December 2020 and January 2021. These declines were especially sharp in Southern Europe; Spain reported a year-to-year drop in the number of births by 21% in January 2021. The corresponding decrease for the EU was 8%. In March 2021, births modestly recovered across Europe, which was closely linked with the end of the first wave of the pandemic. Thereafter, the trends became diverse across countries, often displaying slight rises between July and November 2021 (e.g. France). A relatively strong and sustained increase, which can be described as a modest baby boom, was observed only in the Nordic countries (e.g. Finland) and the Netherlands.

Relative change in the number of births, compared to the same period one year earlier



Life expectancy declines during the COVID-19 pandemic

In the four years preceding the COVID-19 pandemic, higher-income countries had stable trajectories of life expectancy at birth, experiencing gradual improvement or stagnation. The COVID-19 outbreak disrupted this pattern, leading to an increase in mortality for most countries. However, the magnitude and duration of life expectancy declines as well as their gender differences varied greatly across countries, as the preliminary data for 2020–2021 show.

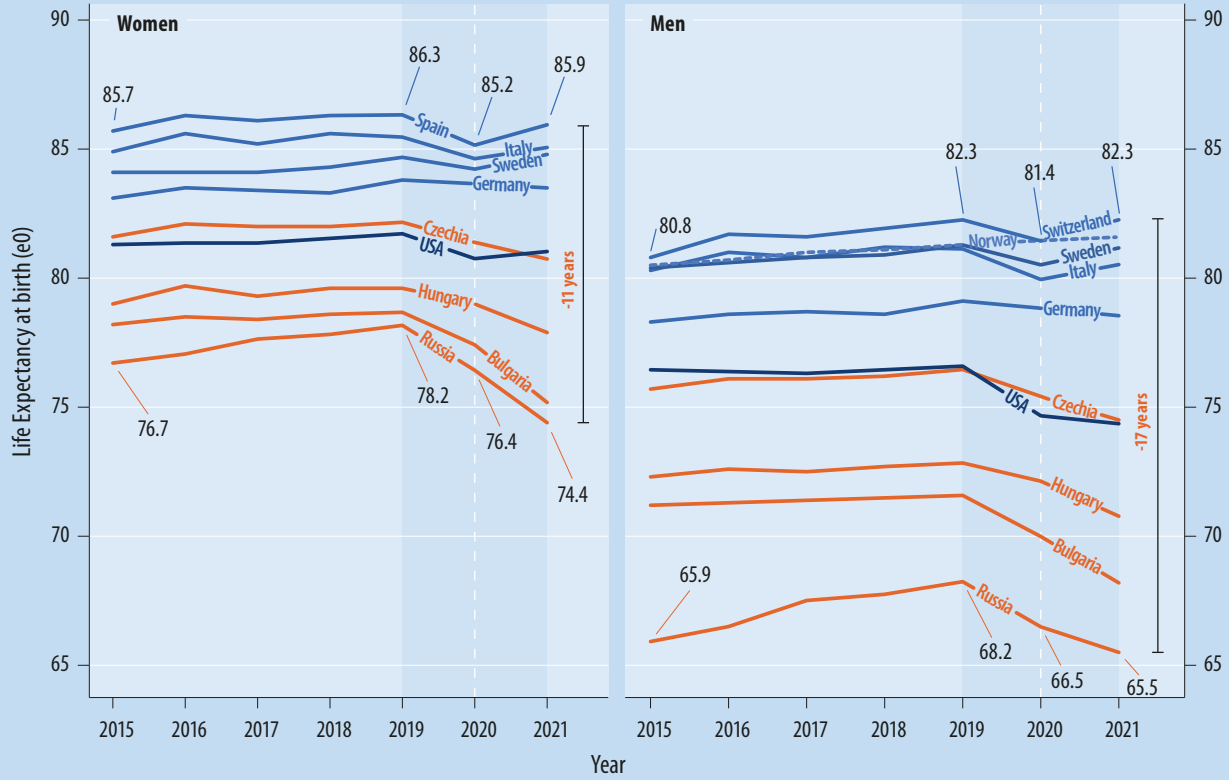
Overall, cross-country differences in life expectancy have widened as the pandemic had a much more detrimental effect in countries with comparatively low life expectancy (especially in Eastern and South-Eastern Europe) than in countries with higher life expectancy. In Bulgaria, life expectancy at birth dropped by 3.4 years among men and 3.6 years among women between 2019 and 2021, erasing gains over the previous two decades. Russian women saw their life expectancy drop even more, by 3.7 years. The gap in life expectancy between men from Russia and Switzerland reached a staggering 17 years and the gap between Spanish and Russian women increased to 11 years. Considerable life expectancy losses were also recorded in Central European countries, including Czechia and Hungary, where male life expectancy fell by more than two years since 2019. Outside Europe, the United States experienced a sharp decline between 2019 and 2020 which largely levelled off in 2021.

By contrast, most countries with high life expectancy in pre-pandemic years experienced relatively minor declines during the pandemic (e.g., Germany) or saw life expectancy fall in 2020 and then partly recover in 2021 (e.g., Spain among women, Switzerland among men, and Sweden for both sexes). Finland and Norway were mostly unaffected throughout both periods (only data for Norwegian men shown due to lack of space).

Life expectancy dropped more among men than among women, indicating that men were more negatively affected by the pandemic, with the exceptions of Bulgaria and Russia.

The fact that countries with higher life expectancy in pre-pandemic times saw more modest increases in mortality during the pandemic than countries with lower life expectancy may indicate that factors associated with high life expectancy like better healthcare systems and better overall health go hand in hand with factors that also make populations more resilient to crisis, such as adherence to non-pharmaceutical interventions, vaccine acceptance and better shielding of the elderly. However, because the presented data are preliminary and some countries also saw an increase in mortality in 2022, the observed patterns should be interpreted with caution.

Trends in life expectancy by sex, 2015–2021



Natural population change during the COVID-19 pandemic

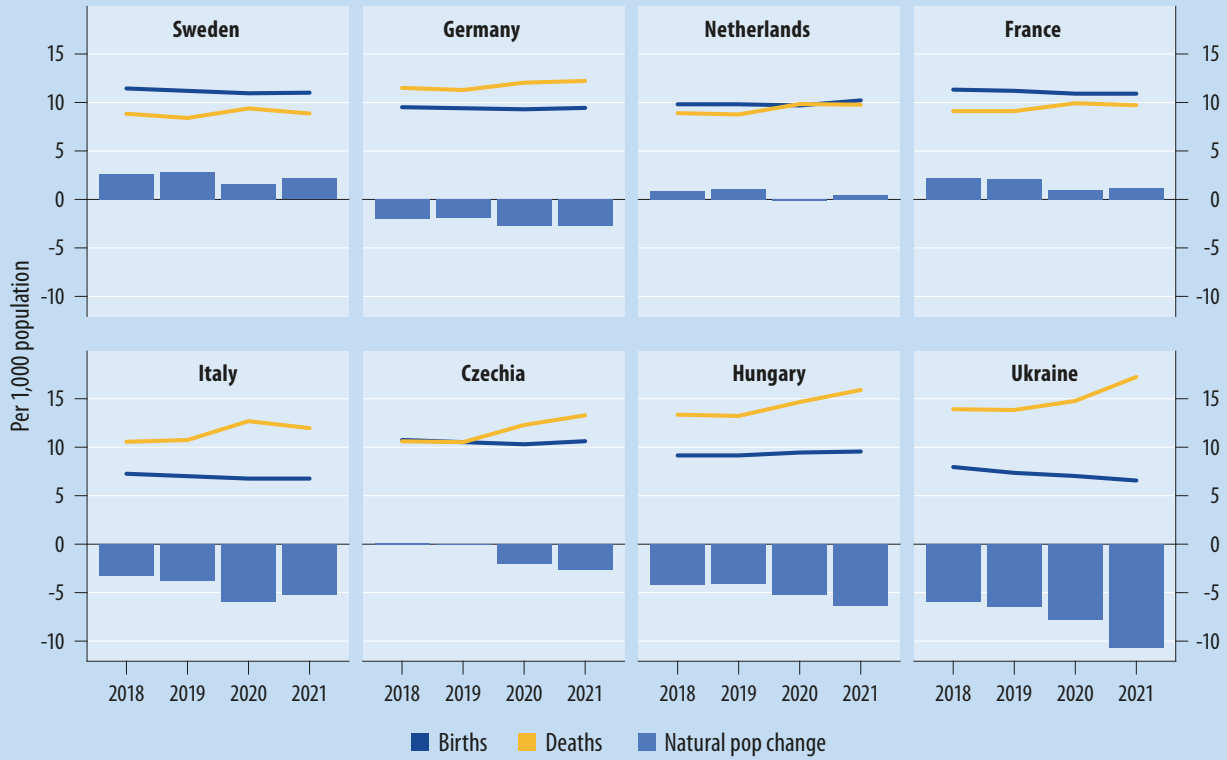
In Europe, the COVID-19 pandemic universally resulted in higher number of deaths. However, the degree to which mortality exceeded the expected level varied widely across countries and over time. While the number of excess deaths in the first pandemic year, 2020, was very small in all Nordic countries except for Sweden and only moderate in most of Western Europe (e.g., in France, the Netherlands, and Germany) and in Sweden, it was rather substantial in Southern, Central-Eastern, and Eastern Europe (e.g., in Italy, Czechia, Hungary, and Ukraine). At the same time, the number of births either did not change much or more often, decreased (with some notable exceptions) when compared with the pre-pandemic period. In fact, it was only possible for the pandemic to impact the number of births in the last two months of 2020, corresponding to a fall in births in most European countries. The increased mortality combined with stable or decreasing fertility in 2020 led to a drop in natural population growth in almost all countries compared to the two years prior the pandemic.

In 2021, the picture became more diverse. The trends in mortality show a clear East-West divide. Compared to 2020, the number of deaths continued to rise in the former state-socialist countries, whereas it declined or levelled off elsewhere (see box on Life expectancy declines during the COVID-19 pandemic). On the other hand, fertility increased in most countries in Northern and Western Europe as well as in some Central-Eastern European countries, including Czechia, Slovakia, and Hungary (see box on Corona babies). In other countries fertility continued to decline. These developments resulted, again, in a strong East-West pattern. The West (including Southern Europe) enjoyed an improvement in the balance between births and deaths but in the East the balance worsened, typically resulting in even deeper declines of the population than in 2020.

Taking the two pandemic years together, most countries in Europe – with the main exception of the Nordic countries – experienced a decline in their natural population growth. The positive balance between births and deaths seen before the pandemic in countries like France and the Netherlands vanished, whereas in countries with population change around zero, like Czechia, the balance turned negative.

Countries which saw natural population decline already before the pandemic mostly experienced further declines in 2020–2021. The magnitude of the drop ranged in size from mild (Germany) through to rather rapid (Southern European countries) and to sharp (Russia and Ukraine).

Crude birth rate, crude death rate, and natural population change, 2018–2021



How migration impacts projected working-age population

The European Union's working-age population (defined here as population aged 20–64) has peaked in recent years. The projection scenarios published by the Centre for Expertise on Population and Migration (CEPAM) show that in most EU countries the working- age population will decline in the next decades. The "Medium" scenario projects working-age population under the assumption that demographic and international migration trends continue as in pre-pandemic years. In this scenario, the Nordic countries and the United Kingdom are exceptions with projected increases in the working-age population.

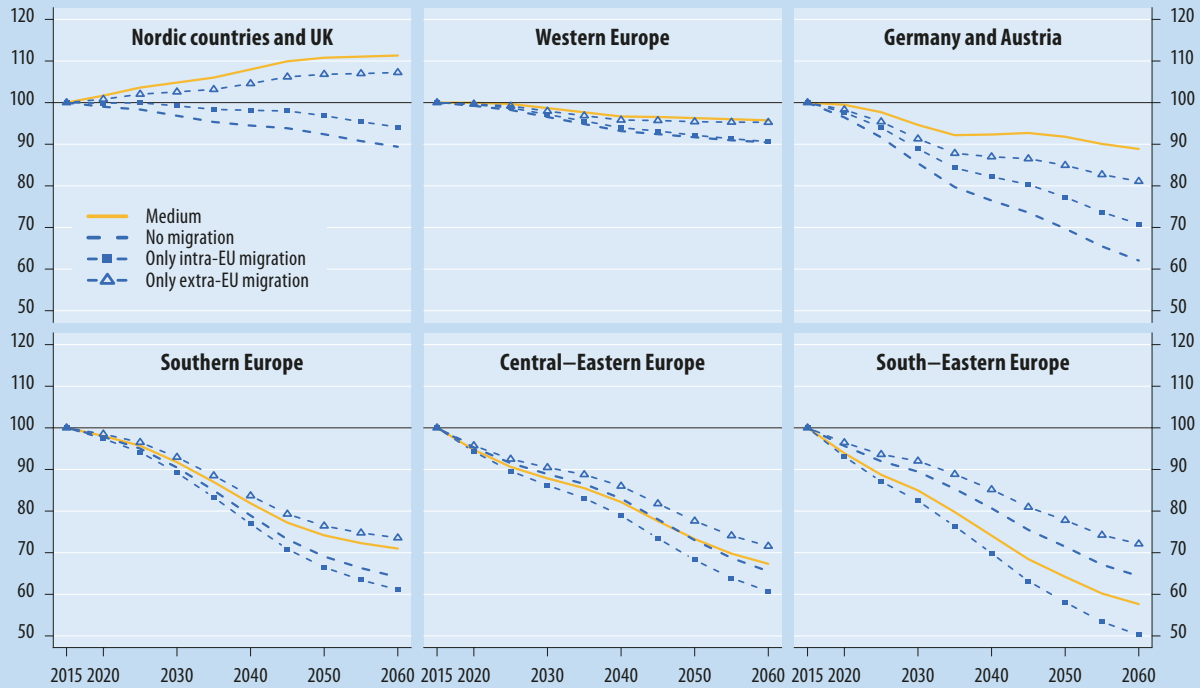
How would the situation change if the international migration was (partly) absent? The "No migration" scenario shows the projected working-age population with zero international migration, whereas the "only extra-EU migration" considers only migration to and from non-EU countries and "only intra-EU migration" allows only migration between the 28 (pre-Brexit) EU member states. All projected trends are relative to the 2015 working-age population.

Unsurprisingly, the absence of international migration would lead to the most rapidly shrinking working-age population in the three regions that benefit from both extra- and intra-EU migration (depicted in the top row). The United Kingdom and the Nordic countries would witness working-age population declines, in contrast to the gains projected in the "Medium" scenario. Western Europe's working-age population would follow a moderate decline, with the largest projected reduction being 10% by 2060 under the "No migration" scenario. Germany and Austria would see their working-age population drop by almost 40% without migration, by 30% if only migration with other EU countries continued, and by 20% if only migration from non-EU countries continued.

Southern, South-Eastern, and Central-Eastern Europe, depicted in the bottom row, display different patterns due to their negative migration balance with other EU countries and the UK. Working-age population decline would be most pronounced if extra-EU migration stopped and only the intra-EU migration continued as before the pandemic. The decline would be particularly severe in South-Eastern Europe (Romania and Bulgaria), which could lose by up to a half of its 2015 working-age population size by 2060. The decline would be smallest if there was no intra-EU-migration and the extra-EU migration would continue as in pre-pandemic times.

Migration trends are hard to predict. Thus, it is well possible that Southern and Central-Eastern Europe will see a migration reversal, shifting from being net sending to becoming net receiving countries through reduced emigration to other EU countries and increased immigration from other world regions. However, this reversal would only slow down the expected fall in working-age population, not prevent it.

Relative change in working-age population, 2015–2060



Income disparities between young and old Europeans: The role of employment, wages, and pensions

Income trends differ considerably across age groups in Europe. While income of the population aged 60+ increased between 2008 and 2017, young adults were left behind in most countries. The COVID-19 pandemic is expected to put further pressure on younger generations. It is thus important to understand the drivers of these income disparities, and their relation to social, economic, and demographic developments. In a recent study, Hammer et al. (2021) explore age-specific income trends for nine European countries that represent different welfare regimes and economic developments. In particular, they analysed individual net income, i.e. primary after-tax income plus cash benefits.

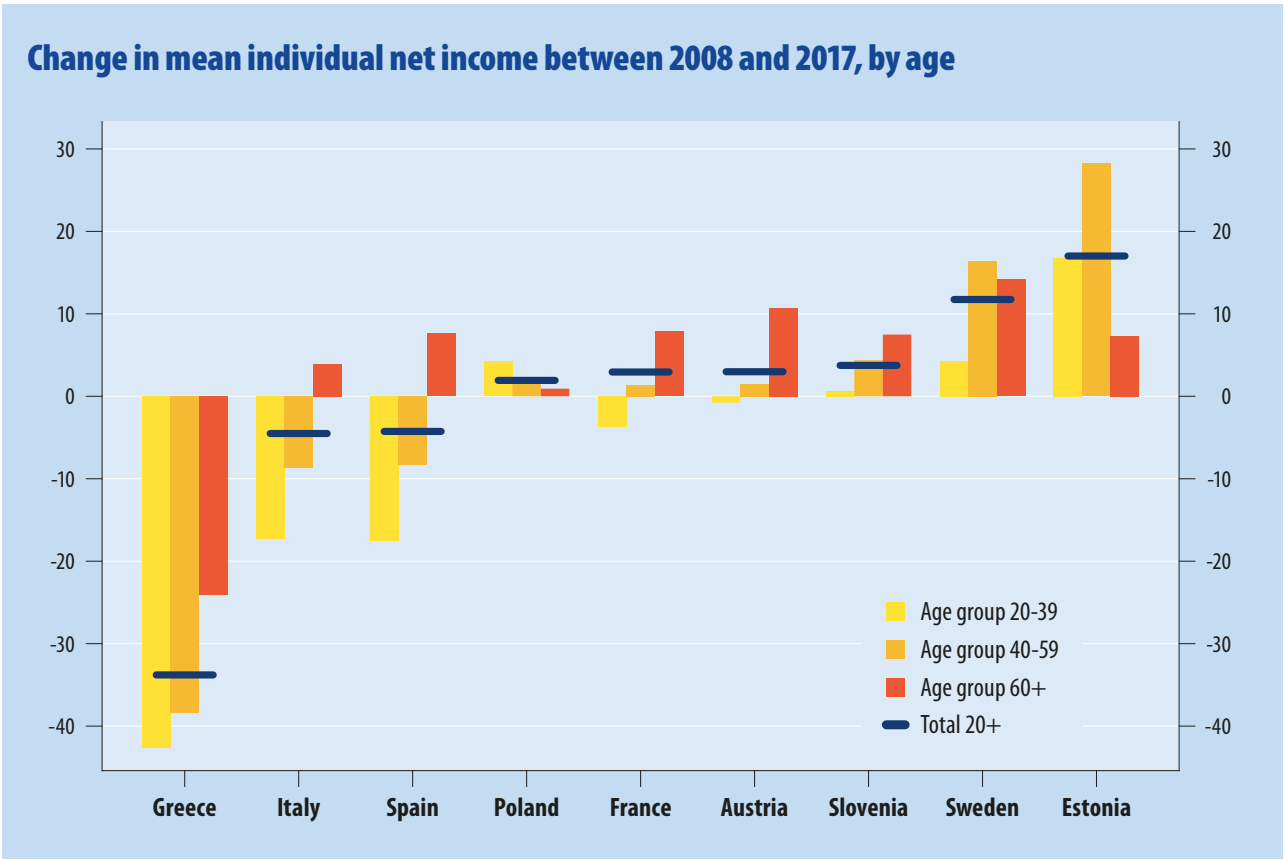
Disparities between the young and the old are particularly high in Southern Europe, which was hit hardest by the 2008 financial crisis. Overall, this region provides deteriorating employment opportunities for younger adults. In Italy, for example, mean individual net income declined by 17% for those aged 20 to 39, and by 9% for those aged 40 to 59. In stark contrast, mean income increased by 4% for the population aged 60 and older. Trends are similar for Western European countries like France and Austria, but less pronounced. In Sweden and Slovenia, income increased for all age groups, yet the improvement was much stronger for the older population than for the young. The only countries analysed in which the young gained income relative to the old are Poland and Estonia – both countries experienced favourable economic developments in the past two decades.

The main drivers of these diverging trends across age groups are the higher employment among the older population and a strong increase in public pensions. In particular, employment rates – and thus income – declined or stagnated for the 20 to 39-year-old, while they improved for those aged 40 and older. Simultaneously, benefits strongly increased for the population 60+. The increase in employment and income for the older population is mostly driven by improvements in labour force participation and related increases in pensions for women.

References

B. Hammer, S. Spitzer, and A. Prskawetz 2021. *Age-Specific Income Trends in Europe: The Role of Employment, Wages, and Social Transfers.* Social Indicators Research

Change in mean individual net income between 2008 and 2017, by age



Can education and health investments compensate for the negative effects of low fertility in Europe?

By reducing the size of the future workforce, falling fertility has a negative impact on the human capital in a country, i.e., the size of the workforce in combination with workers' education and health. On the other hand, human capital increases when parents with fewer children invest more in the health and education of each child. At the aggregate level, smaller families imply that public expenditures per child on education and health will likely increase over time, especially if governments keep the total level of education and health spending stable. When the healthier and better-educated children enter the labour market as adults, productivity should rise as a result.

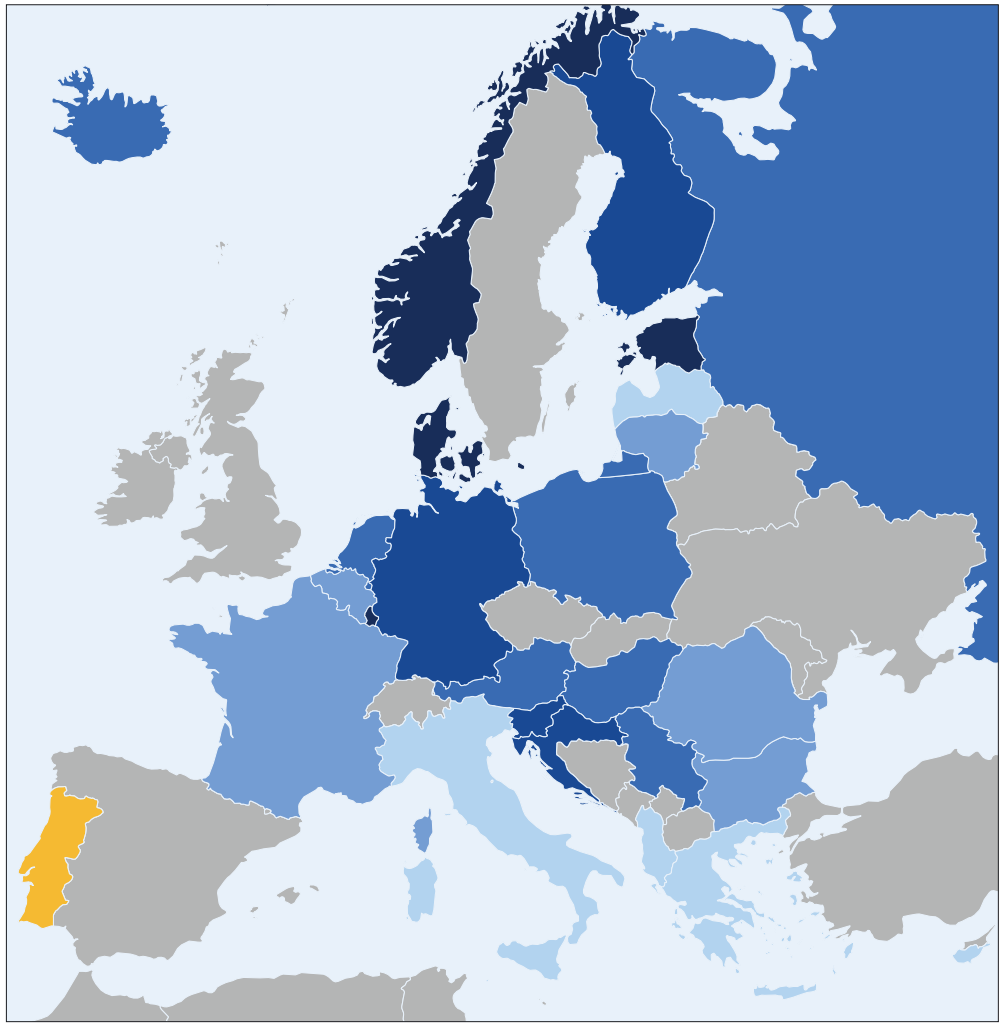
This begs the question whether a state can compensate for falling fertility by increasing education and health investments? In Siskova et al. (2022) we find the compensation effect to be small, compensating only for about 10% of the human capital losses due to declining fertility. For countries in which the population shrank between 2000 and 2015, the effect is even weaker.

In this figure we show how well the European countries fare in offsetting the effect of declining fertility through health and education investments compared to the global average. Most European countries are above the global level. This means they are better able to compensate falling fertility by education and health investments than countries in other regions of the world. Particularly successful countries are Luxembourg, Norway, Estonia, Denmark, and Germany. The European countries with the lowest compensatory effect are Portugal, Greece, Cyprus, Albania, and Italy. Within Europe, countries experiencing population decline have a weaker compensatory effect than countries with population growth.

References

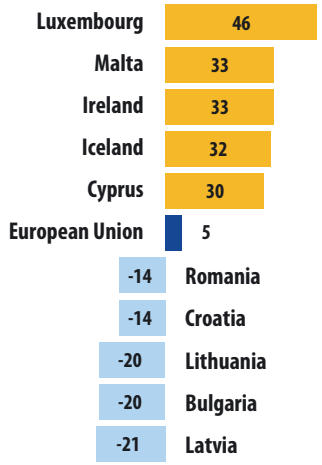
M. Siskova, M. Kuhn, K. Prettner, and A. Prskawetz 2022. *Does human capital compensate for depopulation?* Mimeo.

Human capital compensation relative to global average, 2015

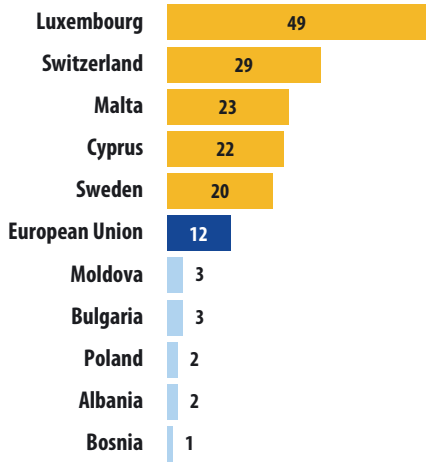


Country rankings of selected indicators (top five and bottom five)

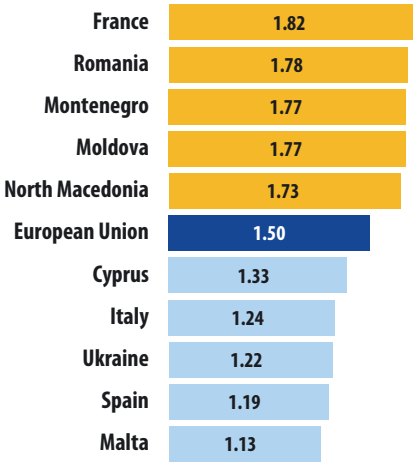
Total population change (%)
2000 to 2021



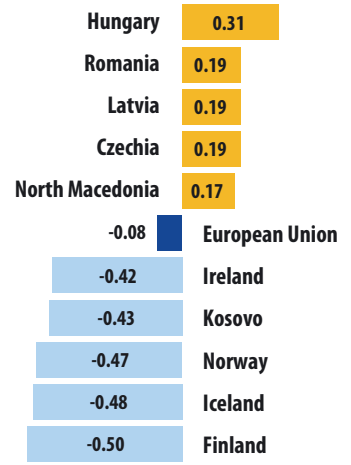
Proportion of foreign-born population (%)
1.1.2021



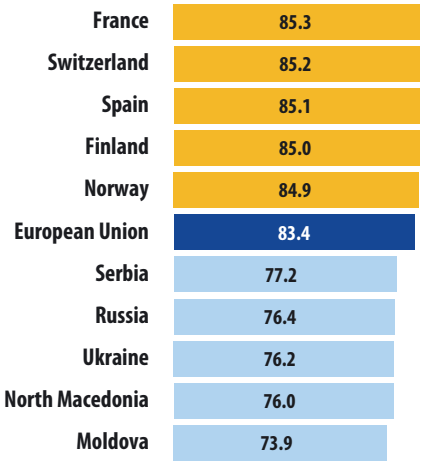
Total fertility rate (TFR)
2020



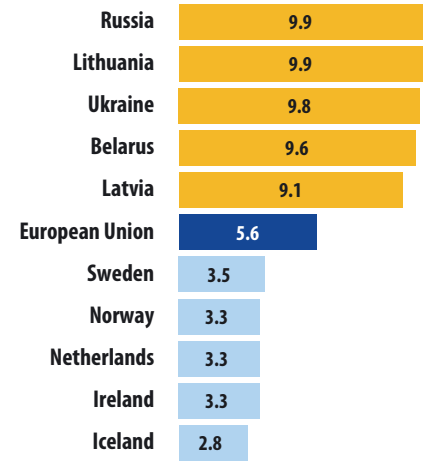
Change in TFR
2010 to 2020



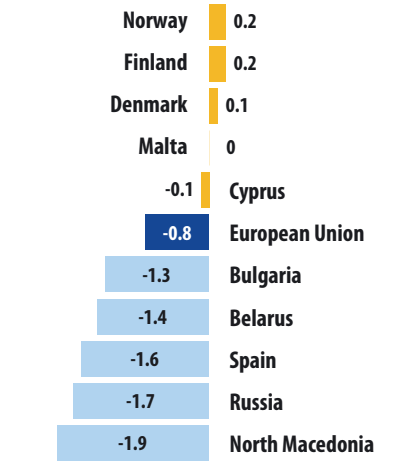
Life expectancy at birth (years), Women
2020



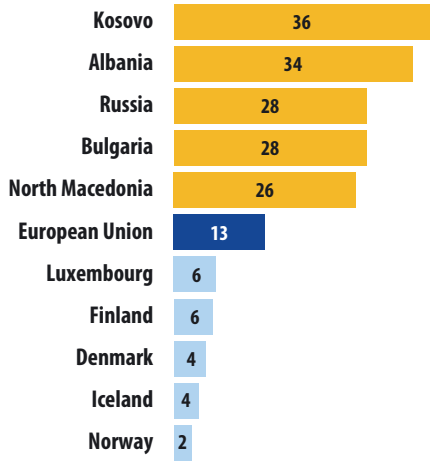
Gender gap in life expectancy (years)
2020, Women - Men



Change in life expectancy (years), Women
2019 to 2020

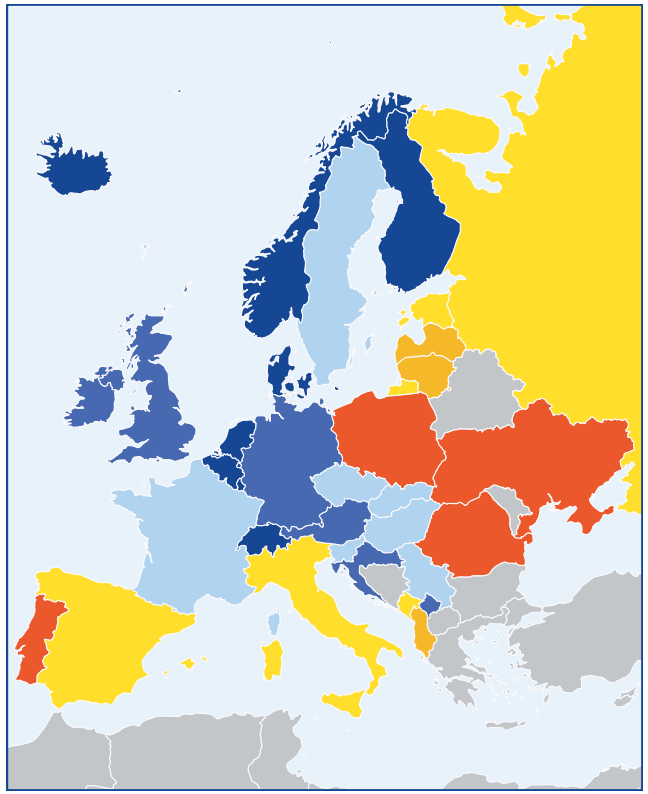


Change in number of deaths (%)
2019 to 2020 and 2021

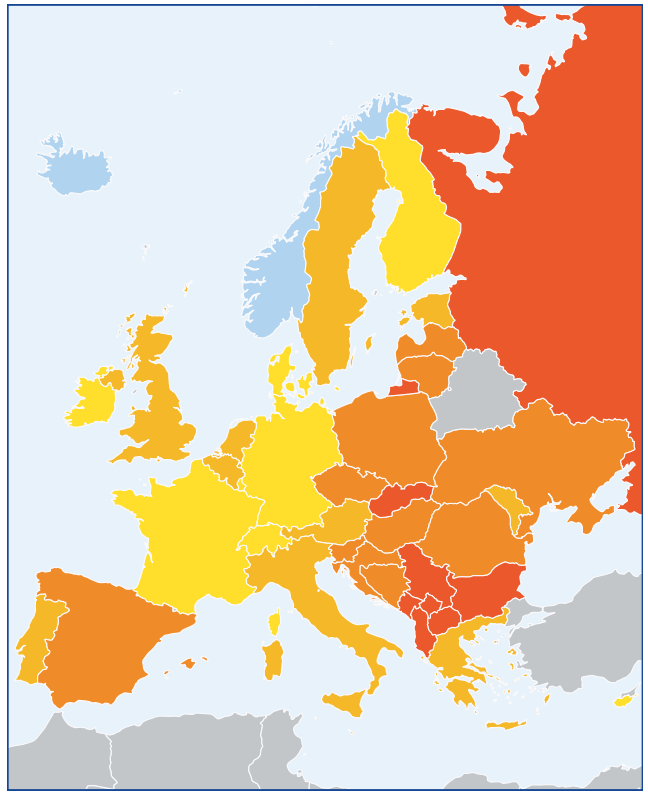


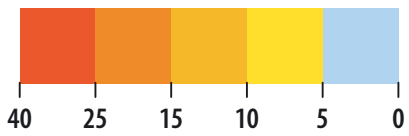
Trends in births, deaths, and natural population change during the pandemic

Change in number of births (%), 2020 to 2021

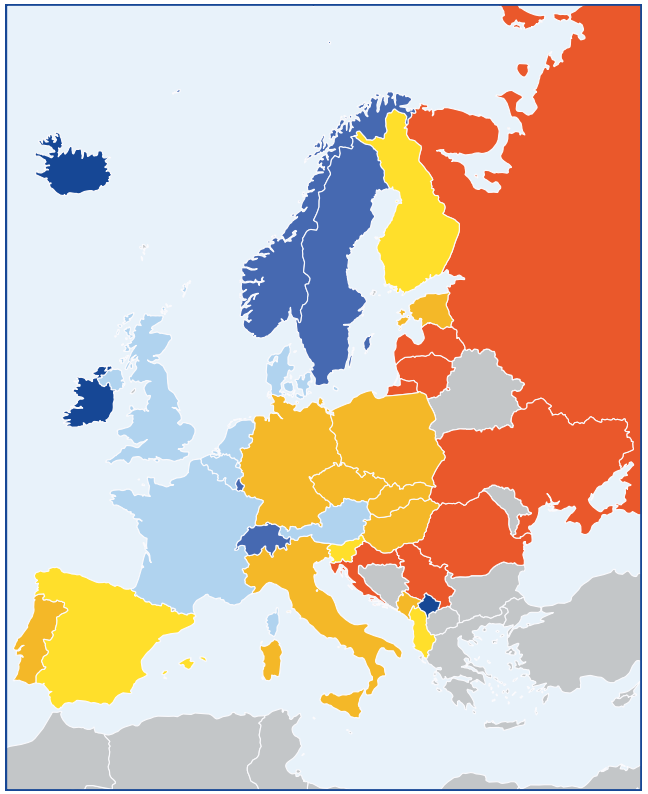


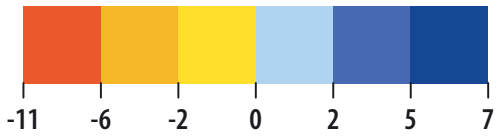
Change in number of deaths (%), 2019 to 2020 and 2021





Natural population change (per thousand), 2021





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European Demographic Data Sheet 2022

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Suggested citation:
Vienna Institute of Demography (VID) 2022. European Demographic Datasheet 2022. Wittgenstein Centre (IIASA, VID/OEAW, University of Vienna), Vienna.
Available at www.populationeurope.org

Notes:

The Datasheet does not cover European countries with population below 100 thousand (Andorra, Liechtenstein, Monaco, San Marino, and Vatican).

Data for Azerbaijan, Cyprus, Georgia, Moldova, and Ukraine exclude territories that are not under government control.