SF2.1. Fertility rates

Definitions and methodology

This indicator presents information on levels and trends in fertility rates and the distribution of births by birth order. Fertility rates are captured through two measures:

- **The Total Fertility Rate (TFR)**, or the average number of children born per woman over a lifetime given current age-specific fertility rates and assuming no female mortality during reproductive years. TFRs are computed as the sum of age-specific fertility rates defined over five-year intervals. Data on the TFR come mostly from national statistical offices and other international organisations (e.g. Eurostat and the World Bank). Assuming no migration and that mortality rates remain unchanged, a TFR of 2.1 children per woman is generally sufficient to generate a stable size of the population within a given country. A TFR above or below this 'population replacement rate' is likely to produce population growth and population decline, respectively.
- **Completed Cohort Fertility (CCF)**, or the average number of children born to women belonging to certain cohort over the whole of their reproductive lives. Data on completed cohort fertility come from the Human Fertility Database (HFD), which calculates completed cohort fertility for a given cohort if data are available for that cohort at age 44 or above and by using data for the highest available age up to age 50.

The distribution of births by birth order is measured through the distribution of births by the rank of the birth from the perspective of the biological mother. Three rank groups are used here – first births, second births, and third or higher births.

Key findings

Across almost all of the OECD, current fertility rates are well below those needed for population replacement (Chart SF2.1.A). In most OECD countries, the total fertility rate sits at somewhere between 1.3 and 1.9 children per woman, with rates as low as 1.23 in Spain, and just below 1.0 in Korea. Only two OECD countries (Israel and Mexico) have a current TFR at or above the 2.1 children per woman needed for population replacement. At 3.0, Israel has the highest TFR in the OECD.

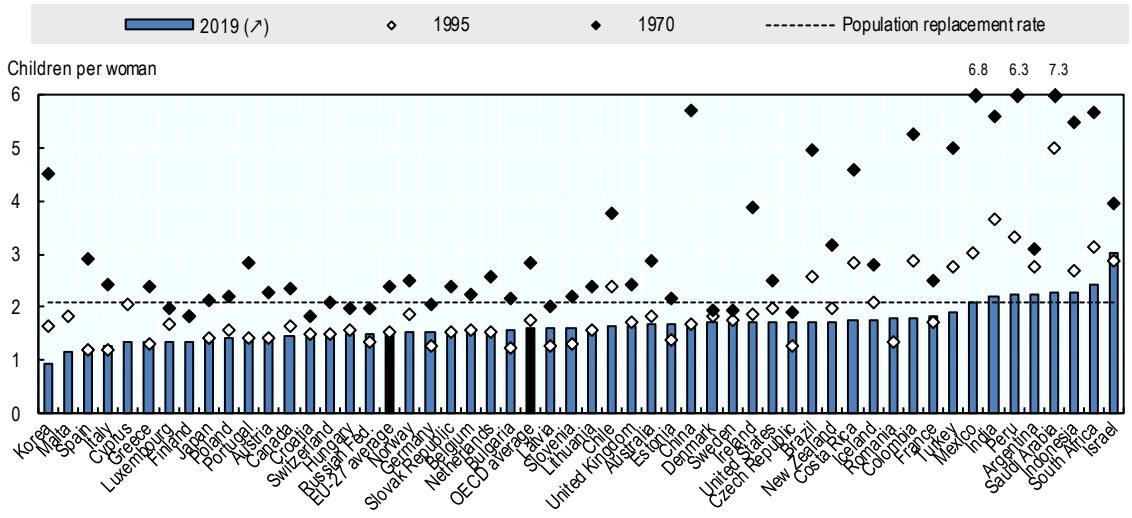
Over the past decades, fertility declined markedly across OECD countries, falling on average from 2.8 children per woman of childbearing age in 1970 to 1.6 in 2019. The decline was particularly pronounced – by at least three children per woman on average – in Colombia, Korea, Mexico and Turkey. There was a moderate recovery in average fertility rates between 2000 and 2008, but this rebound stalled in many OECD countries in 2009, probably as a consequence of the global financial crisis. 2020 fertility rates being available only for a few countries, it is still too early to measure the full impact of the current COVID-19 crisis on fertility.

Chart SF2.1.A also shows that by 1995, most countries had fertility rates well below replacement level. In many OECD countries TFRs actually increased slightly since the mid-1990s. In Germany, for example, the current total fertility rate is about 0.3 points higher than in 1995; in the Czech Republic, it is over 0.4 points higher than the 1995 rate. Nonetheless, in most cases, any such increases were relatively small and are far from what is required in order to raise fertility to the 2.1 children per woman needed for a stable size of the population.

Other relevant indicators: Family size and composition (SF1.1); Age of mothers at childbirth (SF2.3); Share of births outside marriage (SF2.4); Childlessness (SF2.5); and, Marriage and divorce rates (SF3.1).

Chart SF2.1.A. Total fertility rate, 1970, 1995 and 2019

Average number of children born per woman over a lifetime given current age-specific fertility rates and assuming no female mortality during reproductive years



Source: Eurostat Database, https://ec.europa.eu/eurostat/data/database; World Bank World Development Indicators, https://databank.worldbank.org/ ; and national statistical offices. See the accompanying data file (here) for detailed sources.

Data on *completed* fertility paint a largely similar picture. Chart SF2.1.B shows CCF for women born in 1950, in 1960, and in 1970. For all three birth cohorts, completed fertility is in most countries well below the 2.1 children per woman needed for population replacement. For the 1950 cohort, only the Czech Republic, France, Iceland, the Slovak Republic and Spain have CCF levels above 2.1. For the 1970 cohort, this group falls to just Iceland and the Slovak Republic. CCF also appears to be falling over time – only Denmark, Finland and the United States see CCF increase between the 1950 cohort and the 1970 cohort, with all other countries seeing completed fertility fall between women born in 1950 and those born in 1970. The decreases in Japan (0.5 children per woman) and Spain (0.7 children per woman) are particularly large.

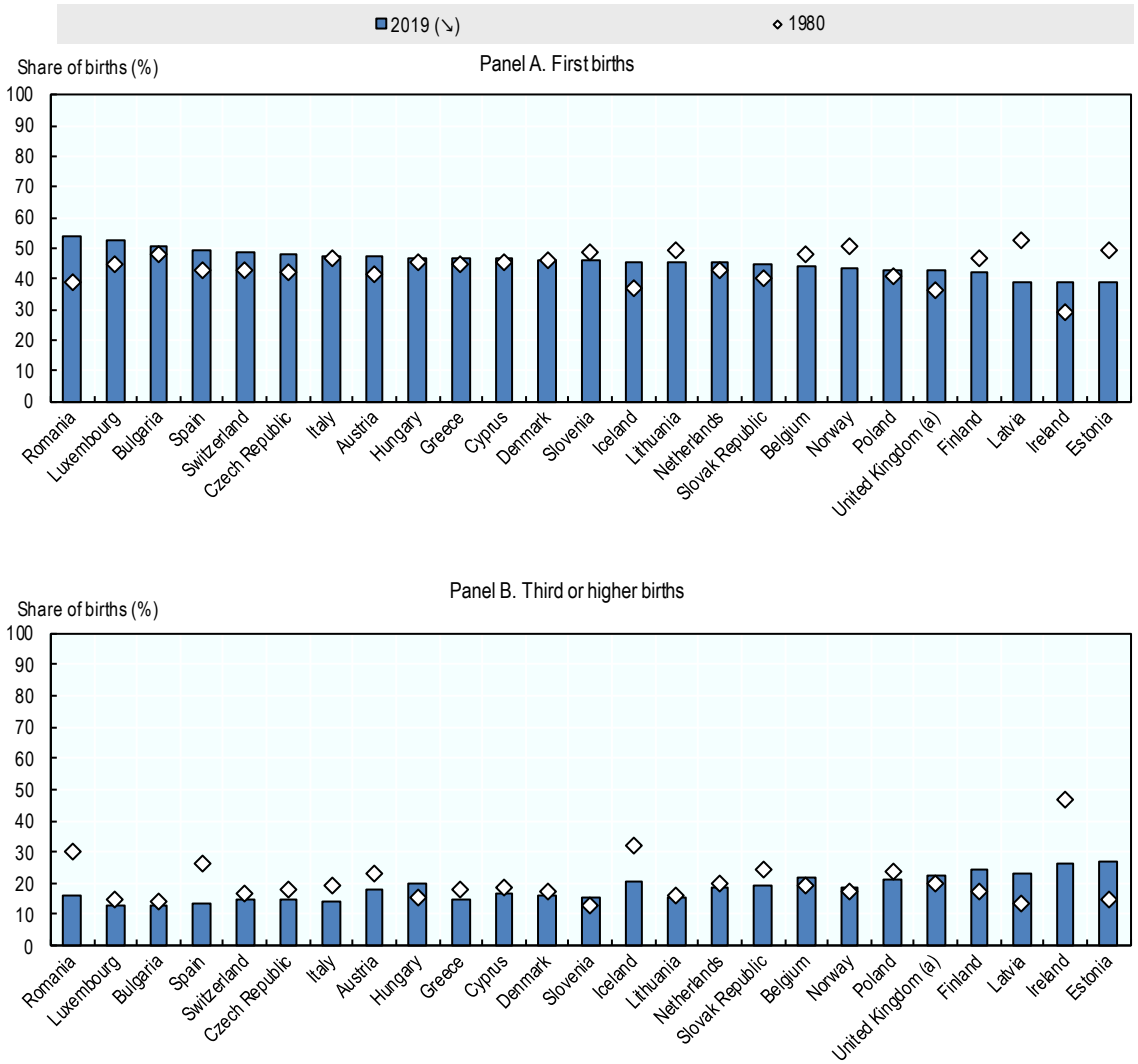
Chart SF2.1.B. Completed cohort fertility for women born in 1950, 1960 and 1970 or latest available

Note: Completed cohort fertility is defined as the average number of children born to women belonging to certain cohort over the whole of their reproductive lives. The Human Fertility Database calculates completed cohort fertility for a given cohort if data are available for that cohort at age 44 or above, and by using data for the highest available age up to age 50. See the Human Fertility Database webpage (www.humanfertility.org) for more detail. Data for Bulgaria and the Slovak Republic refer to 1965, for Canada to 1967, for Iceland and Italy to 1968, and for France, Germany, and the United Kingdom (England and Wales, Northern Ireland and Scotland) to 1969.
Source: The Human Fertility Database, http://www.humanfertility.org

Fertility declines are reflected in a fall in the proportion of births that are third or higher births and an increase in the share of births that are first births. Chart CF2.1.C shows the share of births that are the mother's first birth (panel A) and third or higher birth (panel B) in 1980 and 2019. In most of the covered countries, the proportion of births that are the mother's first birth has increased since 1980, while the share of births that are a third or higher birth has fallen. There are some exceptions – in both Estonia and Latvia, for example, the proportion of births that are first births has fallen by over ten percentage points since 1980, while the third or higher share has increased by more than eleven and nine percentage points, respectively. For most countries though, third or higher order births are relatively less common today than in 1980, pointing towards a decrease in the frequency of large families.

Chart SF2.1.C. Distribution of births by birth order, 1980 and 2019

Proportion (%) of births that are first and third or higher births

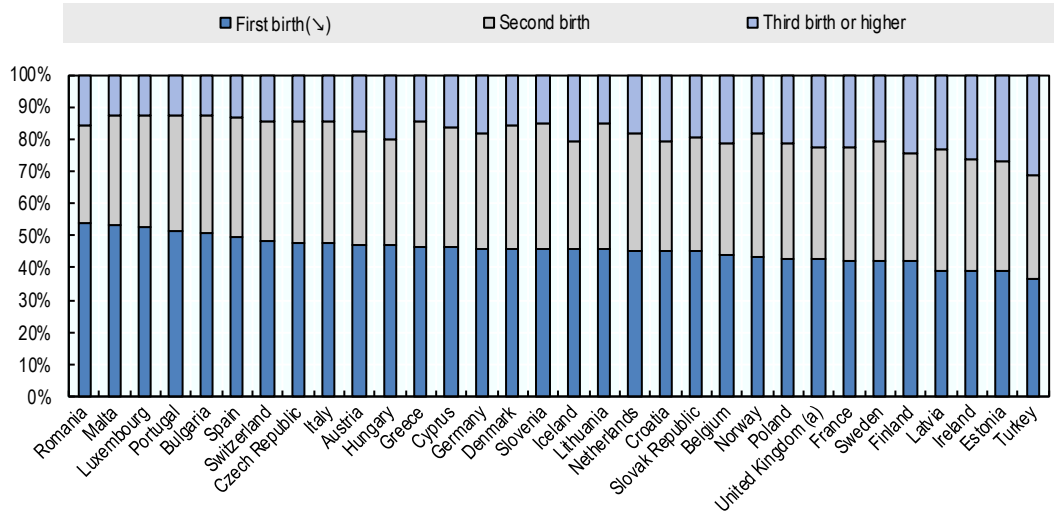


a. 2018 instead of 2019.
Source: Eurostat Database, https://ec.europa.eu/eurostat/data/database

Still, in most countries, first births continue to represent a minority of births (Chart CF2.1.D). First births account for half or more of all of births in only two OECD countries (Luxembourg and Portugal). In all others, the proportion of births that are first births is less than 50%, with the share falling to as low as 39% in Estonia, Ireland and Latvia, and 37% in Turkey. Most remaining births are second births, with third or higher births in most countries making up less than one-in-five births.

Chart SF2.1.D. Distribution of births by birth order, 2019

Proportion (%) of births by the rank of the birth



a. 2018 instead of 2019.
Source: Eurostat Database, https://ec.europa.eu/eurostat/data/database

Comparability and data issues

There are drawbacks to using the TFR to compare trends in fertility as changes in the aggregate can relate to either a change in family size and/or a change in the timing of births. Completed fertility rates can be used to measure the final number of children per women but only when women have reached the end their reproductive life. Changes in the distribution of births by rank of children also illustrate the changes in fertility patterns, since a reduction of family size is associated with a decrease in the share of higher order births. The distribution of births is, however, also sensitive to timing effects. A closer look at the timing of births is needed to obtain a more comprehensive view of fertility behaviour and changes over time (SF2.3).

Sources and further reading:

Eurostat Demographic Statistics, http://ec.europa.eu/eurostat/web/population-demography-migration-projections/births-fertitily-data;

The Human Fertility Database: http://www.humanfertility.org/cgi-bin/main.php;

D'Addio, A.C and Mira d'Ercole, M. (2005), "Trends and Determinants of Fertility Rates in OECD Countries: the Role of Policies", OECD Social, Employment and Migration Working Paper, No. 27, Paris;

Jasilioniene, A. et al. (2015), Methods Protocol for the Human Fertility Database, http://www.humanfertility.org/Docs/methods.pdf

Thévenon, O. (2015), "Decreasing Fertility in Europe: Is it a Policy Issue?" in Koenraad et al. (eds) Population Change in Europe, the Middle-East and North Africa: Beyound the Demographic Divide, Publisher: Ashgate;

Sobotka, T. (2017) "Childlessness in Europe: Reconstructing Long-Term Trends Among Women Born in 1900–1972", in Kreyenfeld, M. and D. Konietzka (eds.), Childlessness in Europe: Contexts, Causes, and Consequences, Springer Demographic Research Monographs, pp. 17-50;

Jasilioniene, A. et al. (2016), "Data Resource Profile: The Human Fertility Database", International Journal of Epidemiology, Online first 23 August 2016;