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. Assuming no migration and that mortality rates remain unchanged, a TFR of 2.1 children per woman is generally sufficient to generate a stable 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.

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

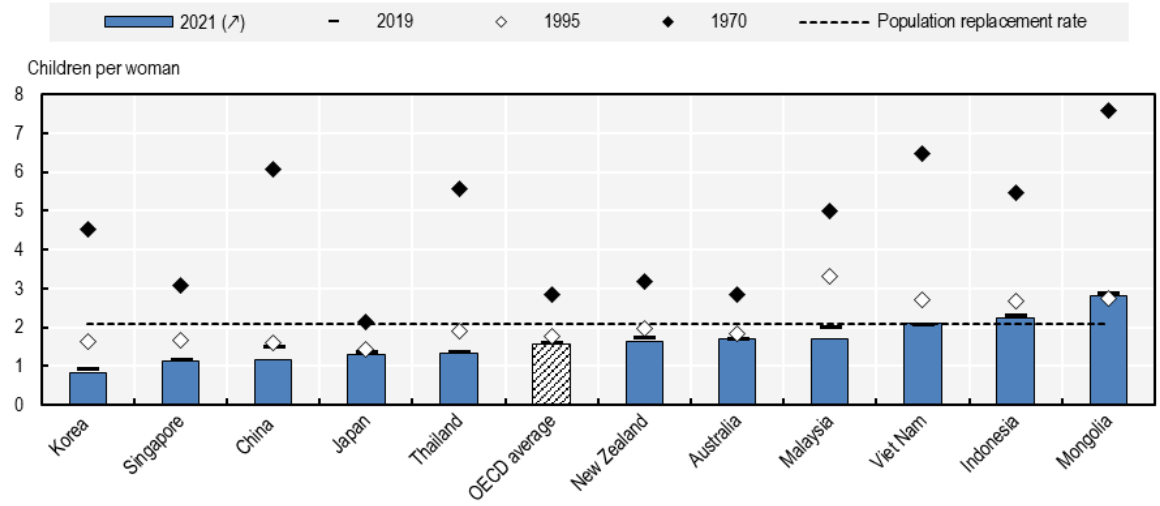
Total fertility rates vary across the Asia/Pacific region (Chart SF2.1.A). In some countries, fertility rates are low. For example, in Japan and Thailand and Japan total fertility rates stood at 1.3 children per woman, while the TFR was as low as 1.1 children per woman in Singapore and just below to 0.8 in Korea. In Malaysia, the total fertility rate stood at 1.7 children per woman in 2021, while in Viet Nam, Indonesia and Mongolia TFRs were 2.1, 2.2 and 2.8 children per woman, respectively. In these three countries the TFR was equal to or higher than the population replacement rate of 2.1 children per woman.

Below-replacement-rate levels of fertility are not new in the Asia/Pacific region, nor among OECD countries (Chart SF2.1.A). While all of the Asia/Pacific countries included here had TFRs above the population replacement level in 1970, by 1995 all except Indonesia, Malaysia, Mongolia and Viet Nam had rates below 2.1 children per woman. In all countries, TFRs have fallen further since. An analysis of a potential first impact of the COVID-19 pandemic on fertility rates shows that, from 2019 to 2021, all Asia/Pacific countries but Viet Nam, experienced a further reduction of their TFRs.

Data on completed fertility paint a largely similar picture. Chart SF2.1.B shows CCF for women born in 1950, 1960 and 1970 (or the nearest years available). For the 1950 cohort, completed fertility rates were generally around or above the 2.1 children per woman needed for population replacement, especially in China, Indonesia, Malaysia, and Mongolia, where the CCF for the 1950 cohort was above 3 children per woman. For the 1960 cohort, however, completed fertility rates are below 2.1 children per woman across all countries except Indonesia, Malaysia, and Mongolia.

Other relevant indicators: SF1.4 Population by age of children and youth dependency ratio; SF2.3 Age of mothers at childbirth and age-specific fertility; SF2.4 Share of births outside of marriage

Chart SF2.1.A. **Total fertility rate, 1970, 1995, 2019 and 2021**
Average number of children born per woman over a lifetime given current age-specific fertility rates and assuming no female mortality during reproductive years

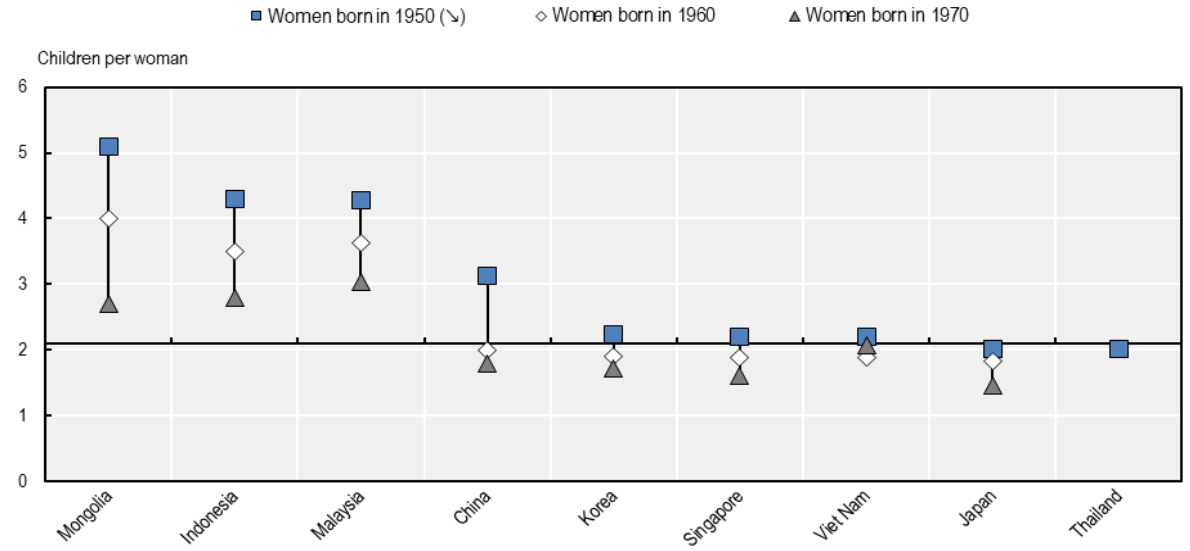


Note: The OECD average refers to the unweighted average across the 38 OECD member countries. See OECD Family Database Indicator SF2.1 (http://www.oecd.org/els/family/database.htm) for more detail.
Sources: Australia: Australian Bureau of Statistics; China, Indonesia, Malaysia, Thailand, Singapore, and Viet Nam: World Bank World Development Indicators; Japan: Ministry of Health, Labour and Welfare, Vital Statistics of Japan; Korea: Statistics Korea, Vital Statistics; New Zealand: Statistics New Zealand; OECD average: OECD Family Database Indicator SF2.1.

For the cohort of women born in 1970, the CCFs are equal to or above 2.1 children per woman in Mongolia, Indonesia, Malaysia, and Viet Nam. The largest declines in completed fertility between the 1950 and the 1970 cohorts were recorded for Mongolia (down 2.4 children per woman), Indonesia (down 1.5 children per woman) and China (down 1.3 children per woman), while Japan has the lowest completed fertility rate for the 1970 cohort (1.5 children per woman), closely followed by Singapore and Korea, with 1.6 and 1.7 children per woman respectively.

Falling fertility rates in Asia/Pacific countries are reflected in declines in the proportion of third or higher ranked births and increases 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 2021 (or nearest available). This is particularly the case in China and Korea, where the share of births that are third or higher births has fallen by more than 16 percentage points from 1980 until 2021 and are also the countries with the lowest share in this regard.

Chart SF2.1.B. **Completed cohort fertility for women born in 1950[a] and 1960[b] and 1970**
Average number of children born to women belonging to the given cohort over the whole of their reproductive lives

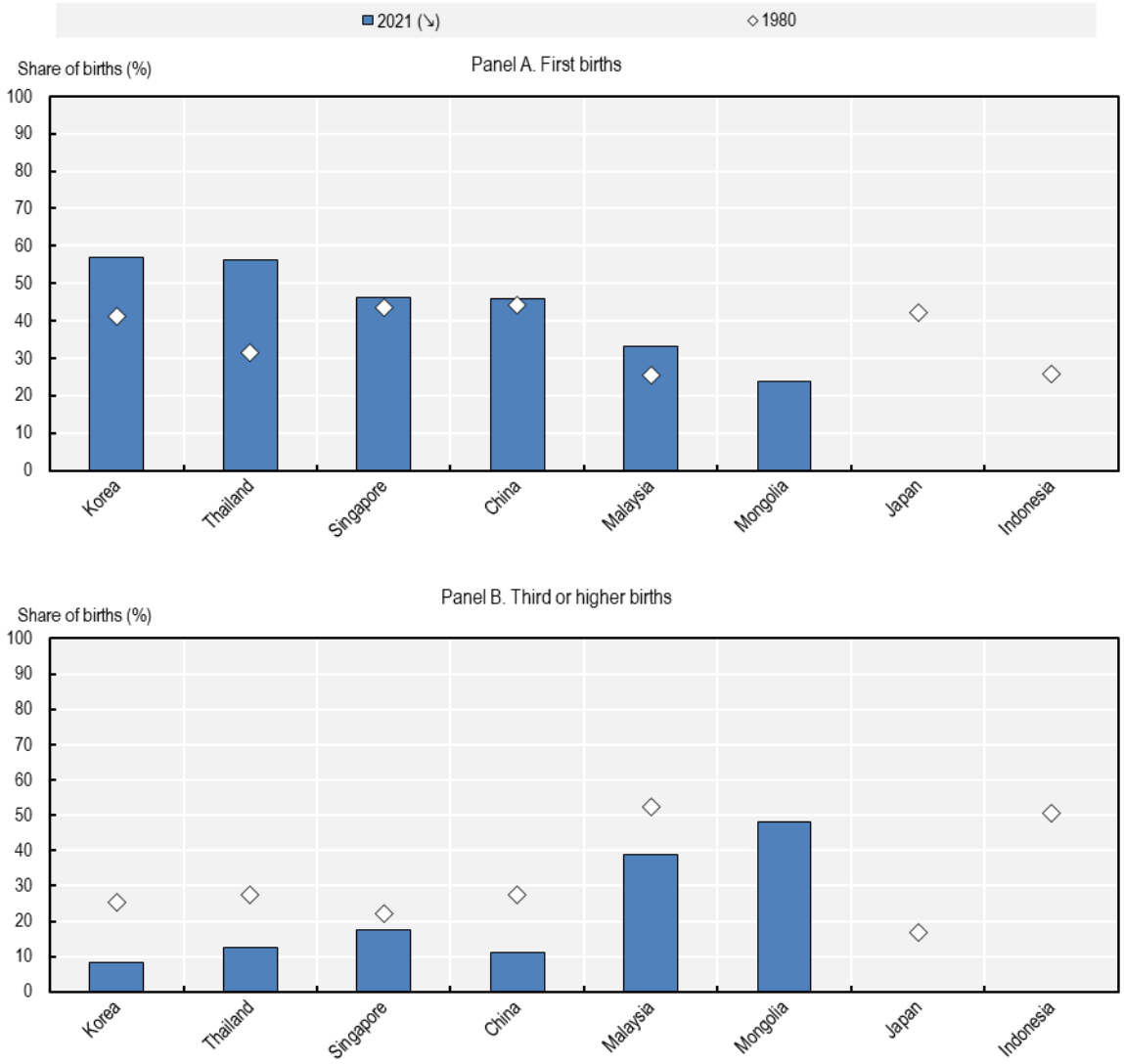


Notes: a) For Thailand, only data available for women born in 1950; b) Women born in 1962 in Japan; the horizontal line at value 2.1 represents the population replacement rate. Mongolia and Malaysia, Tabulated from Age Specific Fertility Rates; Indonesia, completed fertility of women aged 45-49.

Sources: China: Zhong and Wang (2015); Indonesia: Indonesia Demographic and Health Survey; Japan: The Human Fertility Database; Korea: Statistics Korea, Population and Housing Census 2015; Malaysia: 2015 Malaysia Economic Statistics, Time Series, DOSM, 2015 and Vital Statistics Malaysia 2021; Mongolia: World population prospects database; Singapore: Myrskyla et al. (2012); Thailand: National Statistical Office, 2010 Population and Housing Census.

In some Asia/Pacific countries, the number of second, third or higher order births has declined to such an extent that first births now make up most of all births (Chart SF2.1.D). More than 50% of all births are first births in Korea and Thailand (57 and 56% respectively). First births are still a minority of births in Malaysia and Indonesia, where only 33% of births are first births, and even a lower minority in Mongolia, where first births only represent 24% of all births.

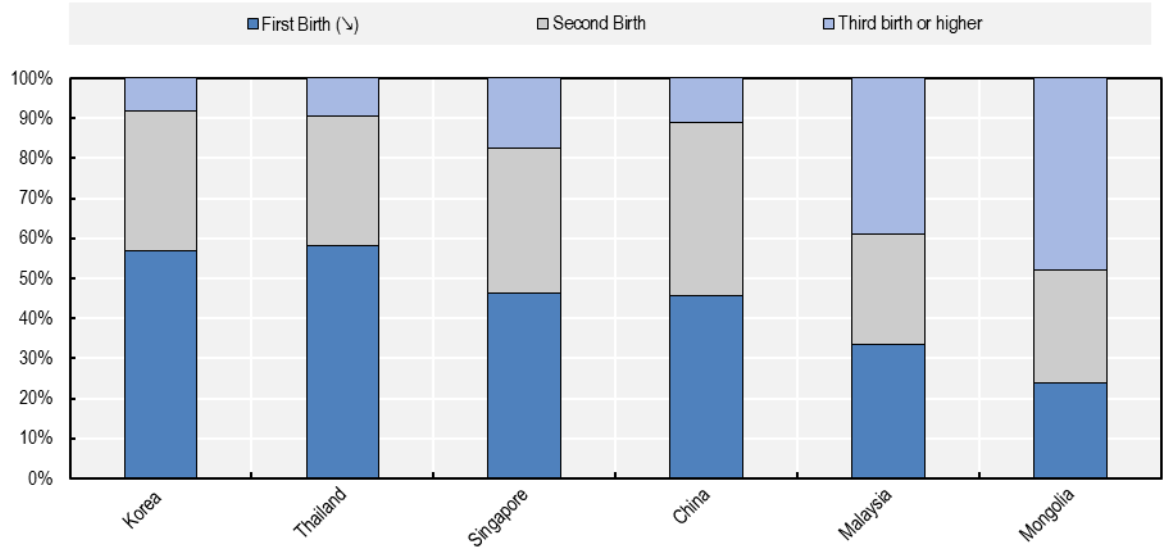
Chart SF2.1.C. **Distribution of births by birth order, 1980[a] and 2021[b]**
Proportion (%) of births that are first and third or higher births



Notes: a) Data for Korea refer to 1981 and for Malaysia to 1991. No data for Mongolia; b) Data for China and Thailand refer to 2020. No updated data available for Japan and Indonesia.

Sources: China: China Population Statistical Yearbook 1989, P.133 and China Population and Employment Statistical Yearbook 2020, China Population Census Yearbook 2020, Table 6-1, and China Population Census Yearbook 2020, Table 6-1, table 2-40; Indonesia: Indonesia Demographic and Health Survey; Japan: Ministry of Health, Labour and Welfare, Vital Statistics of Japan; Korea: Statistics Korea, Vital Statistics; Malaysia : Vital Statistics, Malaysia, Department of Statistics Malaysia (various years); Singapore: Registry of Births and Deaths, Singapore Department of Statistics 2022; Mongolia: MOH, Public Health Statistics 2021; Thailand: Public Health Statistics, Ministry of Public Health.

Chart SF2.1.D. **Distribution of births by birth order, 2021[a]**
Proportion (%) of births by the rank of the birth



Note: Data for Indonesia refer to 2017 and for China and Thailand to 2020. For Japan and Viet Nam there are no updated data.

Sources: China: China Population and Employment Statistics Yearbook 2020 by NBS, Table 2-40; Indonesia: Indonesia Demographic and Health Survey; Japan: Ministry of Health, Labour and Welfare, Vital Statistics of Japan; Korea: Statistics Korea, Vital Statistics; Malaysia: Vital Statistics, Department of Statistics Malaysia; Mongolia: MOH, Public Health Statistics 2021; Singapore: Singapore Department of Statistics, Live-Births By Births Order, Annual 2022; Thailand: Public Health Statistics, Ministry of Public Health (2020).

Comparability and data issues

There are drawbacks to using TFRs 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:

Myrskyla et al. (2012). *New Cohort Fertility Forecasts for the Developed World*. Germany: Max Plank Institute for Demographic Research, http://www.demogr.mpg.de/papers/working/wp-2012-014.pdf

OECD (2019), Rejuvenating Korea: Policies for a Changing Society, Gender Equality at Work, OECD Publishing, Paris, https://doi.org/10.1787/c5eed747-en.

Zhong, F. and Y. Wang (2015), "A Study of Intrinsic Population Growth in China in the Perspective of Cohort: Based on the Comparison of Two Approaches Estimating CFR", *Population and Economics*, 2015, No.2;