How will the COVID-19 pandemic affect births?

Technical Brief

21 December 2021

Key Messages

- Based on available reported data from UNFPA and the Short Term Fertility Fluctuation (STFF) study to date, there are no signs of dramatic increases or decreases in fertility due to the COVID-19 pandemic.
- Short term effects were observed in a range of highly developed countries but these reverted to pre-pandemic levels and trends shortly after.
- Data from low and middle income countries suggest similarities to those of many developed countries, with short term declines in births and subsequent recoveries.
- Birth registry data from the least developed countries remain so incomplete that no clear conclusions can be drawn of how COVID-19 affected births. In four countries, Benin, Bhutan, Kosovo and to a lesser extent Bangladesh, births increased temporarily during the pandemic, and then reverted to pre-pandemic trends. In Bangladesh, the temporary rise in births was consistent with evidence that family planning services were acutely disrupted at the height of the pandemic.
- The short-term decline in births observed in many countries is consistent with other historical crises, such as the Great Depression or the 2008 economic crisis, when widespread economic insecurity, and uncertainty about the future, led to temporary declines in fertility¹.
- In the case of COVID-19, these declines have been more short-lived than in former crises.
- However, there is a need for more follow up to determine long-term impacts as the pandemic evolves and new mitigation measures are rolled out.
- The paucity of civil registration data across the Least Developed Countries, especially in Africa, means that these governments lack sound subnational population projections, and limited means to plan for development at local level.
- Among the many other inequalities exposed by COVID-19, these analyses underscore the need for deep investments in civil registration and related data systems in the Least Developed Countries (LDCs). Across Africa, for example, there have been numerous reports of family planning service disruptions due to COVID-19, but the national data on birth (or death) registrations remain so incomplete that any potential impacts remain undocumented.

¹ Sobotka, T., Skirbekk, V., and Philipov, D. (2011). Economic Recession and fertility in the developed world. Population and Development Review. 37(2): 267–306.

1.The long history of fertility decline in crisis

Public health crises and economic shocks have long been recognized as conditions that alter reproductive behaviour. The Spanish flu (1918-1920) caused fertility rates to plunge, reaching a low point 6 to 9 months after the pandemic's peak morbidity and mortality. The fertility consequences of economic hardship and uncertainty were evident for years after the Great Depression. In the USA, the Total Fertility Rate (TFR) fell from around 2.5 in 1929 to approximately 2.2 births per woman in 1939, more than five years after the crisis². This postponement in births resulted in an extraordinarily small cohort of "children of the Great Depression". But by the late 1940's, following WWII and an economic recovery, fertility increased dramatically, peaking in 1957 at 3.8 births per woman at the height of the 'baby boom'. More recently, fertility declined after the economic recession of 2008 in North America and Europe, and the economic and fertility recoveries were uneven across different population groups, varying by sex, age, education and other factors³. For example, less-educated women were more likely to maintain or increase their fertility under economic uncertainty, while highly educated women reacted to employment uncertainty by postponing pregnancy, especially if they were childless. For males, those with low levels of education and low skills showed the largest decline in first child birth rates.

2. The COVID-19 pandemic and fertility behaviours

Since its inception in late 2019, the COVID-19 pandemic has created a global public health crisis, economic depression, and social disruptions either directly or indirectly. As of 8 December 2021, nearly 266 million COVID-19 cases and 5.27 million deaths⁴ have been reported worldwide; estimates of excess all-cause mortality across the world suggest that the toll of the pandemic is far greater, and has thus far contributed to excess deaths approaching three times that number, i.e. 15 million deaths. The impact of the pandemic on fertility outcomes has been of immediate and serious interest, due to the historic experiences noted above, and because evidence of disrupted supply chains and health sector lockdowns raised urgent concerns about the potential inaccessibility of family planning products and services, resulting in more unplanned births. A pan-UNFPA webinar was offered to gauge interest in tracking how the pandemic will affect fertility decision making and behavior. A common approach was elaborated, with inclusion criteria. UNFPA Country Offices facilitated close discussion with governments about data sharing, and in some eventual cases, shared in-depth discussion about the interpretation of observed trends.

² COMOLLI, C. L. 2017. The fertility response to the Great Recession in Europe and the United States: Structural economic conditions and perceived economic uncertainty. Demographic research, 36, 1549-1600.

³ Sobotka, T., Skirbekk, V., and Philipov, D. (2011). Economic Recession and fertility in the developed world. Population and Development Review. 37(2): 267–306.

During the course of the pandemic, many countries went into partial or complete lockdowns at some point of 2020 in order to control the spread of the virus. With the rollout of vaccines and considering the impact of lockdowns on economies and livelihoods, many countries have resisted implementing further hard lockdowns, but these dynamics are changing week to week.

Changes in human fertility are never obvious in the short-run given 9 months of pregnancy, but COVID-19 related short-term declines in birth rates have become increasingly clear in a number of countries. The pandemic has hit countries across the globe at different periods and with a range of intensities, and the impacts of the pandemic on fertility are likely to differ according to a number of factors such as the intensity and duration of how the pandemic manifests in each country, a country's socioeconomic level and its policy responses. While some countries illustrate evidence of fertility declines during the pandemic and a rebound thereafter, several countries in our analysis have seen a short-term increase in fertility. There was also considerable evidence of disruptions in health and contraceptive services in African countries in the early months of the pandemic - data to be updated.

3.COVID-19 impact on contraception and sexual and reproductive health services

Public health crises can severely disrupt the availability and use of sexual and reproductive health (SRH) services and family planning. During the 2014 peak of the Ebola epidemic in West Africa, family planning distribution declined by 65% in Liberia, 51% in Guinea and 23% in Sierra Leone, and a post-Ebola baby boom in Liberia in January 2016 was attributed to a rise in unintended pregnancies⁵. UNFPA experts in East and Southern Africa (ESA) reported significant disruption to health services and contraceptive uptake during the first peak of the COVID-19 pandemic (in May-July 2020 in comparison to May-July 2019)⁶, including: 1) outpatient visits declined in 10 of 12 ESA countries, ranging from a 5% decline in Zambia to 48% in Zimbabwe; 2) use of family planning services fell in 6 of 12 ESA countries, with the drop in visits for injectable contraceptives ranging from 10% in Tanzania to 87% in Angola; 3) the number of antenatal care (ANC) visits decreased in 5 of 13 countries, ranging from a 3% decrease in Ethiopia to a 44% in Zimbabwe.

Evidence has also emerged on how the pandemic is affecting access to SRH information and services for adolescents and young women. In Malawi, closure of schools, coupled with limited household economic resources during COVID-19, contributed to an 11% increase in teenage pregnancies from January to August 2020 compared to the same period in 2019⁷. The implications of these changes are extremely difficult to track, as these are among the countries with the most limited birth registration coverage, which is the data sources required for tracking short-term impacts on fertility.

⁵ McBain et al, 2016 https://www.thelancet.com/action/showPdf?pii=S0140-6736%2816%2931895-5

⁶ WHO-UNFPA-UNICEF, 2gether 4SRHR (2020) Data on Disruption of services (comparison between February and April 2019 and February to April 2020).

⁷ WHO-UNFPA-UNICEF, 2gether 4SRHR (2020) Data on Disruption of services (comparison between February and April 2019 and February to April 2020).

4. Impact of the COVID-19 pandemic on fertility in wealthy, data-rich countries

As early as December 2020, data from developed countries of Europe, Asia and the Americas suggested pandemic-related dips in birth counts. The Short-Term Fertility Fluctuations (STFF)⁸ data series were the first to identify impacts of the COVID-19 pandemic on births. The STFF records monthly trends in the number of births and fertility rates across highly developed countries with good quality birth registration data. In a cluster of countries, the COVID-19 pandemic led to a temporary reduction in fertility over several months, with subsequent recoveries to prior trends. The short-term decline in births was associated with the first wave of the COVID-19 pandemic, with a notable downturn in the number of monthly births from November 2020 to January 2021 compared to pre-COVID years (corresponding to pregnancies that would have been conceived in the early months of the pandemic). Not all European countries displayed such short-term depression of births aligned with the early months of the COVID-19 pandemic; in fact, there was no clear negative impact of the COVID-19 pandemic on births in the Nordic countries (e.g. Denmark, Norway, Sweden, Finland), nor in Germany, the Netherlands, or Slovenia.

The Western European countries of France, Belgium and Austria showed decreases in monthly births through January or February 2021 - these were more dramatic in France and Belgium. These were followed by increases of varying degrees thereafter.



Figures obtained from: Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [15 December 2021]).

⁸ Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [15 December 2021]).

The Southern European countries of Italy, Portugal and Spain were some of the worst-affected by the first wave of the pandemic. The three countries show a similar pattern of huge declines in births as early as September to October 2020. Unlike Italy and Spain, Portugal has not yet recovered from the decline in births. ⁹



Figures obtained from: Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [15 December 2021]).

In the Central European countries of Croatia, Hungary and Slovenia births declined only marginally after October 2020. The trend reversal is somewhat more prominent in Hungary, where the number of births has been on the rise again since April 2021.



Figures obtained from: Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [15 December 2021]).

⁹ Data source: Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [15 December 2021]).

The trend for the USA suggests a pre-pandemic decline in births that dipped further by November 2020, was sustained through February 2021, with a recovery in births thereafter, albeit at a lower level.¹⁰



Figures obtained from: Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [15 December 2021]).

In summary, changes in birth trends were short-lived and there appears to be a compensatory effect between birth increases and decreases, and in some cases the rebounds surpass initial drops.

5. Observations from developing countries

Collecting timely and high-quality birth data in developing countries is far more challenging due to inadequate coverage and operations of the birth registration system¹¹. However, developing countries contribute a significant portion to the global number of births, and it is essential to collect and track birth data in developing countries to understand the short and long term impact of the COVID-19 pandemic on fertility, as well as future population dynamics.

To complement the observations from developed countries, UNFPA has been tracking births across several UNFPA programme countries to gain a cross sectional understanding of the immediate impact of COVID-19 pandemic on fertility, and to establish protocols in the UNFPA Country Offices that will enable UNFPA to track the longer-term impact of the pandemic on births, as long as the pandemic continues. From the outset, this work has also provided important information about the quality and coverage of current birth registration systems in UNFPA programme countries, and the capacity of governments to use such data in times of emergency.

¹⁰ Data source: Human Fertility Database. Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria). Available at www.humanfertility.org (data downloaded on [15 December 2021]).

¹¹ AbouZahr, Carla, et al. "The COVID-19 Pandemic: Effects on Civil Registration of Births and Deaths and on Availability and Utility of Vital Events Data." American Journal of Public Health 111.6 (2021): 1123-1131..

5.a. Data and methods

From the first quarter of 2021, UNFPA headquarters (HQ) provided a webinar and an open invitation to UNFPA Country Offices (COs) and corresponding partner governments to engage in a shared project to track birth responses to the pandemic. After the overall approach and selection criteria were agreed, tools were distributed to participating countries from five UNFPA regions (Arab States ; Asia and the Pacific; East and Southern Africa; West and Central Africa; and Latin America and the Caribbean), for capturing monthly birth data, including the total number of population by year and the status of birth registration delays during the pandemic.

Data collection

The project collects monthly birth counts recorded in the civil registration and vital statistics systems (CRVS) or other routine data systems such as the expanded program on immunization (EPI). Typically, these data were collected from 2018 in order to provide a reference period of 24 months prior to the onset of the pandemic, with data collected until the most recent month or quarter. COs working with government partners provided updates as new data became available. To participate in the study, a target country was required to have at least 90% coverage of births in their vital statistics, as reported to the UN SDGs. Data from several countries was provided as "preliminary", and later updated with officially "confirmed" data published at fixed intervals throughout the year.

Fifty-three UNFPA programme countries were initially targeted based on a birth registration completeness threshold of 90%¹². This threshold is just above the 85% completeness used as a reference, e.g. by the United Nations demographic yearbook¹³, and others (e.g. Rao et al. 2020)¹⁴ as an appropriate threshold to adjust bias or errors from incomplete birth registration data when estimating fertility indicators.

This report presents incoming birth data from countries for which the most recent (pre, and during the pandemic) were available: five Asian countries (Bangladesh, Bhutan, Iran, Mongolia, and Thailand), five Latin American countries (Bolivia, Brazil, Columbia, Cuba, and Peru), four European countries (Georgia, Moldova, Kosovo, and Ukraine), and one African country (Benin). With the exception of Bhutan, data included both home and institutional births. The number of births used for Bhutan represents only institutional deliveries and does not include home delivery, which are available in ODVO and the Diverse the place in health facilities with an extincted

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