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**Population Division
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United Nations expert group meeting on the impact of the COVID-19 pandemic on fertility

New York, 10 and 11 May 2021

(Virtual meeting)

Report of the meeting

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EXPLANATORY NOTES

Symbols of United Nations documents are composed of capital letters combined with figures.

The following abbreviations are used in the report:

| | |
|----------|---|
| ASFR | Age-specific fertility rate |
| COVID-19 | Coronavirus disease |
| FP2020 | Family Planning 2020 |
| HMIS | Health Management Information System |
| LARC | Long-acting reversible contraceptive |
| PMA | Performance Monitoring for Action |
| SDG | Sustainable Development Goal |
| SAR | Special Administrative Region |
| SARS | Severe acute respiratory syndrome |
| SSA | Sub-Saharan Africa |
| STFF | Short-term fertility fluctuations |
| TFR | Total fertility rate |
| UN DESA | Department of Economic and Social Affairs (DESA) of the United Nations |
| UN ECLAC | Economic Commission for Latin America and the Caribbean of the United Nations |
| UNFPA | United Nations Population Fund |
| WHO | World Health Organization |
| WPP | World Population Prospects |

1. BACKGROUND AND SCOPE OF THE MEETING

Since early 2020, the coronavirus disease 2019 (COVID-19) pandemic has caused great economic disruptions, with major impacts on people's health and livelihoods. From a demographic perspective, COVID-19 affects all three components of population change, namely fertility, mortality and migration. The COVID-19 pandemic has hit countries across the world at different times and with a range of intensities and durations. The effects on fertility are likely to differ as a function of the severity and duration of the epidemic, the country's socio-economic level and its policy responses. While some countries may experience a baby bust during the pandemic and perhaps a fertility rebound thereafter, other countries may see a short-term increase in fertility from unintended pregnancies due to disruptions in access to family planning services, which could pose challenges especially in sub-Saharan Africa and Latin America and the Caribbean.

Understanding the impact of the COVID-19 pandemic on fertility is critical when making projections of future population levels and trends. For example, in the case of high- and upper-middle-income countries with generally low levels of fertility, a further fertility decline would accelerate the pace of population ageing and could lead also to population decline. In low- and lower-middle-income countries with intermediate or high levels of fertility, an interruption of fertility decline would result in faster population growth, at least in the short term.

The Population Division of the United Nations Department of Economic and Social Affairs (UN DESA) organized an expert group meeting on the impact of the COVID-19 pandemic on fertility on 10 and 11 May 2021. The meeting was organized in response to the request by the Commission on Population and Development, at its fifty-fourth session in April 2021,¹ to the Secretary-General to continue his substantive work on population and development.

The expert group meeting, which was held virtually, convened more than 100 experts from the United Nations system, universities and research institutions, including 25 invited panelists. The meeting comprised seven sessions covering all major regions of the world. Each session was organized as a series of interactive panel discussions around selected themes, including historical experiences, analytical approaches, and fertility levels and trends in low-, intermediate- and high-fertility countries. The last panel discussion focused on recommendations for fertility projections in the short and medium term in light of the COVID-19 pandemic.

The deliberations of this meeting are expected to inform the work of the Population Division on fertility estimates for 2020 and 2021 as well as short-term fertility projections in preparation for the forthcoming release of the twenty-seventh revision of the World Population Prospects 2022 (forthcoming). More information about the meeting can be found at: www.un.org/development/desa/pd/event/egm-impact-covid-19-fertility.

¹ Resolution [E/CN.9/2021/L.5](#)

2. SUMMARY OF SESSIONS

A. OPENING OF THE MEETING

Opening the meeting, Mr. John Wilmoth, Director of the Population Division, highlighted that the ongoing global public health crisis caused by the COVID-19 pandemic, compounded by an economic crisis and social disruptions, had and would have considerable impacts on the three demographic variables, namely, fertility, mortality and migration. Given the prominent role of fertility for population growth and for the age structure of a population, it would be important to understand how the pandemic had affected and would continue to affect fertility in different parts of the world.

He outlined the three objectives of the meeting: a) to review experiences from past public health crises and associated economic disruptions to identify mechanisms through which the COVID-19 pandemic may affect fertility levels and trends in various parts of the world; b) to assess recent data on marriage and union formation, fertility preferences, use of family planning, and reported numbers of births from selected countries with a view to assess the pandemic's impact on fertility levels and trends so far in 2020 and 2021; and c) to provide recommendations on assumptions concerning the pandemic's impact on fertility levels and trends over the short or medium term that could help guide the preparation of the twenty-seventh revision of the *World Population Prospects 2022 (forthcoming)*, expected to be published during the first half of 2022.

Mr. Wilmoth welcomed the experts from across the world and expressed appreciation for their flexibility to join the meeting from various time zones.

B. SETTING THE STAGE

Setting the stage for this expert group meeting, the first session, moderated by Ms. Karoline Schmid, Population Division, featured three presentations.

Mr. Guangyu Zhang, Population Division, provided an overview of pre-pandemic fertility levels and trends for the world and major regions, presented an overview of the current world economic trends and shared the most recent global COVID-19 morbidity and mortality data to illustrate the impact of the pandemic globally. His presentation concluded with an overview of the organization of work of the meeting.

Mr. Patrick Gerland, Population Division, introduced plans for the twenty-seventh revision of the *World Population Prospects*, scheduled for release in March 2022. The dataset would be upgraded using a single year and single age model and adding age-specific fertility rates (ASFRs) for age groups 10-14 and 50-54 years. In addition, improved documentation of data sources including explanations of the various methods used to derive demographic estimates for each demographic component and their reconciliation with population estimates, would be made publicly available.

Mr. Witness Chirinda, United Nations Population Fund (UNFPA), presented a project proposal on assessing the impact of COVID-19 on fertility levels and trends. UNFPA planned to collect monthly birth data in a select number of its programme countries to assess the impact of COVID-19 on fertility from the national registration system in lower- and middle-income countries with fully functioning registration systems (over 90 per cent coverage), mainly in Latin America and the Caribbean, Arab States, and Eastern Europe and Central Asia.

During the discussion, participants expressed concern about the substantial disruption of vital registration, census operations and household surveys due to the COVID-19 pandemic. Participants suggested that the UNFPA project should analyse pre-pandemic trends for comparison and include a review of regional and country-specific variations of fertility data and trends.

C. FERTILITY RESPONSE TO PUBLIC HEALTH AND ECONOMIC CRISES: LEARNING FROM THE PAST

This session, moderated by Ms. Vladimíra Kantorová, Population Division, focused on lessons from past pandemics and epidemics, including the 1918 influenza pandemic, and discussed theoretical concepts for assessing the potential impact of the COVID-19 pandemic on fertility.

Mr. Ronald Lee, University of California at Berkeley, presented a historical perspective on the response of fertility to economic and mortality crises. Historically, the fertility response to crises showed a similar pattern in both ‘natural fertility’ populations (without a fertility target) and ‘contracepting populations’ that aimed for a target completed fertility. He highlighted the fact that for the current ongoing pandemic, two crises coincided: a) health/mortality; and b) economy/unemployment crisis. He predicted that a shock to fertility and births would give rise to diminishing cycles in fertility and births. The cycle period would be close to the length of the interbirth interval (around three years). He suggested that the fertility trajectory would follow the following pattern: a) drop below normal in year 1 in 2021; b) rebound to above pre-COVID-19 levels in year 2 in 2022; c) drop slightly below normal in year 3 in 2023 and d) approach normal in year 4 in 2024. Drawing on the expected fertility trajectories, Mr. Lee emphasized that any fertility fluctuations from 2021 to 2023 were unlikely to affect the longer-term fertility forecasts. He concluded his presentation with a recommendation to ignore the impact of the COVID-19 crisis in longer term fertility projections, but rather to use average fertility trends from a few years before the pandemic as a starting point for these forecasts unless other evidence suggested otherwise.

Mr. Sverre-Erik Mamelund, Oslo Metropolitan University, drew lessons from the 1918 influenza pandemic. His research showed that no baby boom had occurred in 1919, following the end of World War I, in either belligerent nations, such as France, Germany, Italy or the United States of America, or neutral countries, such as Netherlands, Norway or Sweden. Instead, all these countries first experienced a drop in births and fertility in 1919 that was followed by a modest baby boom only in 1920. He argued that both biological factors as well as social and behavioural factors linked to 1918 influenza pandemic, including deaths of pregnant women and husbands, fetal losses, a reduction of sexual activity and postponement of conceptions, contributed to these changes.

He pointed out that, compared to the 1918 influenza pandemic, biological mechanisms would be less important during the COVID-19 pandemic, as young fertile people and pregnant women were not at a high risk for severe COVID-19 infection or death. Instead, insecurity, the general pandemic disease burden, lockdowns, unemployment and COVID-19 regulations and restrictions would lead to postponed conceptions and marriages that could trigger a continuation of the fertility decline experienced between November 2020 and March 2021 well into 2022. However, fertility levels and trends would very much depend on vaccine rollout, the spread of coronavirus variants, disease progression as well as the time needed to transition toward normalcy.

Ms. Letizia Mencarini, Bocconi University, provided a global perspective on COVID-19 and human fertility with some theoretical considerations. She noted that according to Thomas Malthus, fertility would decline within 9 to 12 months in response to a mortality crisis, a phenomenon also observed following recent natural disasters. She highlighted however that the COVID-19 pandemic caused rather low levels of morbidity and mortality of potential parents and children and therefore a replacement effect of “lost children”

was not to be expected. The presenter also reviewed three recent examples of differential fertility responses to epidemics: the 2003 severe acute respiratory syndrome (SARS) outbreak in China, Hong Kong Special Administrative Region (SAR), the 2015 Zika virus outbreak in Brazil, and the 2016 Ebola outbreak in West Africa. Ms. Mencarini pointed out that the related post-pandemic fertility trajectories would vary according to the prevailing socio-economic conditions. In high-income countries with very low fertility levels, pandemic-related economic downturns and associated uncertainty with worsening work-life balance would probably contribute to continued fertility decline. In contrast, pandemic-related economic slowdown and disruptions of access to family planning services in low-income countries could contribute to a slowdown of the fertility decline, especially in rural areas. The direction of the impact on fertility levels and trends in middle-income countries and urban areas in low-income countries was more uncertain. Lastly, based on a preliminary assessment of the impact of COVID-19 on births in 11 high-income countries, she had found a considerable decline in fertility in all countries studied.

During discussions, participants pointed out that the gender aspects of the impact of the crisis, particularly as it related to caring for children or sick family members, could impact negatively on fertility preferences. Further, lockdowns and social distancing measures also affected partnership formation and social interaction at younger ages, possibly resulting in a decline in teenage pregnancy.

Family policies that could support the reconciliation of work and family life after the pandemic were not expected to be able to reverse the current downward trend of fertility, particularly in low-fertility countries.

The experts agreed that the current pandemic should not be considered as an isolated health crisis, but should be seen as a “syndemic”, since its impact was either compounded by other ongoing crises, including environmental crises and the impact of the 2008 economic crisis, or would lead to additional crises, such as economic or social crises that could impact fertility decisions.

The panelists expressed different views about the impact of the crisis. Mr. Lee suggested to ignore the short-term ups and downs and “average through these ups and downs”. Other presenters, particularly Ms. Mencarini, suggested to take a closer look at countries with below replacement level fertility and to adjust the estimates and projections accordingly.

D. POTENTIAL IMPACT OF COVID-19 ON FERTILITY LEVELS AND TRENDS IN SUB-SAHARAN AFRICA

This session was aimed at assessing the potential impact of COVID-19 on fertility levels and trends in sub-Saharan Africa. It was moderated by Mr. Romesh Silva from UNFPA.

Ms. Kristin Bietsch, Avenir Health, used service statistics from the Track20 project² to assess the impact of COVID-19 on the availability of family planning commodities in sub-Saharan Africa. She described several advantages of using the service statistics from Health Management Information Systems (HMIS) to examine impacts of COVID-19, including being able to a) examine inter-survey periods; b) examine short time periods of disruption of services; c) monitor current situations; and d) analyze at lower geographic levels than surveys. Annual and monthly data from six sub-Saharan African countries showed that in only two countries, the estimated number of users of modern contraception in 2020 was lower than expected. Also, the decline in the use of long-term methods was not as large as expected. As a consequence, service interruptions for users in 2021 were likely to be minimal. The data also showed a continued growth in the use of implants and injectable contraception.

² <http://www.track20.org/>

Mr. Jacques Emina, University of Kinshasa, gave an overview of the impact of COVID-19 on fertility in sub-Saharan Africa. He reported that the large majority of the population in sub-Saharan Africa was able to access health care facilities despite early disruptions during the COVID-19 pandemic, and suggested that the relationship between the COVID-19 pandemic and fertility was complex and depended on the circumstances in a given country, the place of residence and individual characteristics. He concluded that the data that was available at the time) did not show any significant changes in fertility and related indicators. He cautioned however that these findings were preliminary, given precisely the limited evidence available so far due to postponed censuses and delayed registration of vital events.

Mr. Philip Anglewicz, Johns Hopkins University, presented results from longitudinal studies of the Performance Monitoring for Action (PMA) project³ on the impact of COVID-19 on fertility intentions and contraceptive use. Using telephone interviews, a baseline survey and a follow-up survey were conducted in Burkina Faso, the Democratic Republic of the Congo, Kenya and Nigeria before and early into the pandemic. The purpose of the surveys was to assess changes in fertility desires from late 2019/early 2020 to June/July 2020 among the same sample of respondents. Mr. Anglewicz found that women's fertility intentions were stable or increased modestly under COVID-19 restrictions in the countries studied. Contraceptive use increased among women in-need and women were more likely to start using contraception and switch to more effective methods than to discontinue their use during the pandemic. The study also found an increase in the need for contraception among childless women. The presenter emphasized that the impact of COVID-19 on fertility desires may change with longer duration of the pandemic. Further, there was not just one pattern that could explain the impact of the pandemic on family planning-related outcomes. Additional factors, such as strikes among health personnel, availability of backup family planning methods, timing and duration of COVID-19 restrictions, and changes in sexual activity and partnership could also impact the use of contraception. Also, the survey methodology and related selection biases (phone interview instead of face-to-face interview) could have influenced survey results.

Ms. Beth Kangwana, Population Council Kenya Office, presented findings on contraceptive use by adolescent girls and boys from longitudinal surveys across five informal settlements in Nairobi between 2018 and 2021. Adolescent girls living in informal settlements were particularly vulnerable, because they had earlier sexual debut and childbearing, significantly higher rates of unprotected sex, greater exposure to gender-based violence, and poorer access to health-care services than those living elsewhere.

The study reported minimal to no changes in fertility intentions or outcomes but found a significant increase in reporting of sexual abstinence between 2018 and 2021. The most common reason cited for not using any method of family planning was infrequent or no sex. The presenter also highlighted some limitations of the survey, including selection bias due to the limited selection of participants with access to mobile phones, different modes of data collection, and attrition during survey.

During the discussions, Mr. Lee stated that, based on the presentation by Ms. Bietsch, he did not expect an increase in fertility resulting from changes in access to and/or use of contraception. Participants concluded that this detailed review of disaggregated data had shown considerable variation in family planning behaviors and practices in various geographical and socio-economic settings. A close look at the available data also did not show any impact of internal migration, and in particular urban to rural movements, on fertility nor could any empirical evidence be found that COVID-19 led to a rise in adolescent fertility or child marriage. However, all panelists advised to handle the available and rather preliminary evidence with caution and to wait for more empirical evidence before drawing final conclusions.

³ <https://www.pmadata.org/>

E. POTENTIAL IMPACT OF COVID-19 ON FERTILITY LEVELS AND TRENDS IN EASTERN AND SOUTH-EASTERN ASIA, AUSTRALIA AND OCEANIA

This session, moderated by Mr. Guangyu Zhang, Population Division, focused on the potential fertility impact of COVID-19 in Asia and the Pacific region, in particular Eastern and South-Eastern Asia and Oceania.

Mr. Peter McDonald, University of Melbourne, made a presentation on the potential effects of COVID-19 on fertility trends in Australia. He first provided a brief overview of fertility trends in high-income English-speaking and Northern and Western European countries that had experienced continued fertility declines and then focused on the fertility decline in Australia over the past three decades.

So far, Australia had very few cases of COVID-19 and the economic impact was less severe than expected. Nevertheless, Mr. McDonald assumed that the uncertainty about the impact of COVID-19 on the economy had caused a small decline in fertility and that any impact of the pandemic on fertility was expected to follow a four-year pattern: normal fertility in year zero (the year of the pandemic); fertility decrease in year one, a rebound in the second year before leveling-off in year four as seen in presentations on historic trends earlier in the meeting. He proposed to consider two scenarios: (a) the “likely COVID-19” scenario, in which the total fertility rate was assumed to be 0.15 births per woman lower than in 2021, and around 80 per cent of the deferred births were assumed to be recuperated within 10 years and (b) the “severe COVID-19” scenario, where the total fertility rate was assumed to be 0.25 birth per woman lower in 2021, and around 70 per cent of the births were assumed to be recuperated within 10 years. Both scenarios would converge to 1.62 births per woman just after 2030, the same outcome with the no-COVID-19 scenario for projections made before the pandemic.

Ms. Cuiling Zhang and Ms. Yue Li, China Population and Development Research Center, described how the outbreak of COVID-19 had a negative impact on the level of fertility in China in 2020. Prior to the pandemic, fertility had already declined to less than 1.5 births per woman. Although China had suffered a small number of infections and deaths related to COVID-19, the economic slowdown had led to temporary lower employment expectations and increased urban unemployment, reduced incomes, widespread uncertainty and psychological stress. Women were more negatively affected than men in terms of suffering from unemployment and shouldering household responsibilities. Many young people delayed their marriage as evidenced by fewer couples registering for marriage in 2020 than in 2019. All these factors would contribute to fewer births and lower fertility in 2020.

Ms. Zhang compared monthly births for 2020 with the average number of births over the previous five years that showed evident disruptions in the seasonality of births in November and December 2020, with fewer births compared to previous years. The data also demonstrated that the decline of first births occurred earlier and was more pronounced than for higher-order births. Using the annual number of births in 2015 as the base for comparison, she showed that the number of births in 2020 declined by 27.2 per cent, while births in 2018 and 2019 only declined by 8.0 and 11.5 per cent, respectively. Also, the decline in 2020 occurred mostly in first births and among women aged below 30 years. The number of second births also started to decline in 2020, but at a slower pace. She also presented some evidence of changes in the proximate determinants for fertility decline, such as an increase in the proportion of women never married and of those cohabiting, a decline in the desired number of children among younger cohorts and the continued rise in the mean age at first marriage and in the mean age at first birth. Taken together all this indicated that fertility in 2021 would be even lower than the estimated (very low) fertility of 1.3 births per woman in 2020. Ms. Zhang also highlighted that the Chinese Government had started to take measures to address the very low level of fertility with more social and family support policies, including the provision

of child-care and secure jobs to combat psychological fears and social anxiety associated to the COVID-19 epidemic.

Mr. Stuart Gietel-Basten, Hong Kong University of Science and Technology, discussed the potential impact of COVID-19 on fertility in selected Eastern and South-Eastern Asian countries. He noted that for high-income countries in this region, very low fertility had been “baked in” and in middle- and low-income countries, there was no evidence of a stall of the ongoing downward trends. He also noted that this region had, with some exceptions, so far experienced no severe outbreaks of COVID-19. He presented preliminary evidence of reductions in the numbers of births in China, Hong Kong SAR, the Republic of Korea and Thailand. While mortality and economic fallouts resulting from the COVID-19 pandemic could affect fertility, other factors, such as family policies, social movements and civil unrest as well as long-term fertility trends and related tempo effects (postponing or advancing births), played also a role in determining fertility levels. Such factors could not be isolated from the possible implications of the COVID-19 pandemic. He strongly advised that researchers should not jump to conclusions based on the analysis of a few data points, and recommended to wait until more data, including longer time-series, and more research would become available. The speaker concluded with a call to recognize differences among countries and cautioned against applying ‘one-size-fits-all’ approaches.

The ensuing discussion addressed the possible impact of the economic downturn and lockdown measures on fertility in Australia. Mr. McDonald explained that delaying births in Australia was a reaction to the public perception of possible future economic deprivation, in particular expected unemployment. The speaker stated that, so far, these fears had not materialized due to early interventions by the Government. It was also possible that births would be just postponed rather than avoided altogether. Historically, there were no large differences in fertility between ethnic groups in Australia. It was unlikely that such differences would arise because of COVID-19.

In response to questions about the quality of data on births, Ms. Zhang explained that China’s current birth registration system, established in 2014, was based on hospital delivery data, with generally complete coverage. Ms. Li stated that women aged 20-34 years were responsible for almost 90 per cent of the births in China. The size of this age group was projected to decrease significantly, contributing to the decline in the number of births. She also highlighted that the tempo effect, (postponement of births) was very strong in China, suggesting a possible recuperation in the future. Further, lower fertility levels in 2020, due to the fact that couples avoided giving birth in the Chinese Year of the Rat, could be recuperated in the following year.

Regarding unintended pregnancies and possible restricted access to family planning in Africa and other parts of the world, Mr. Gietel-Basten recommended distinguishing between primary, secondary and tertiary causes of how COVID-19 could impact access to family planning: women’s health status (a primary cause), physical access to family planning (a secondary cause), and economic distress and raising female unemployment (a tertiary cause) could all negatively impact on women’s empowerment and thus reduce women’s access to family planning, even if it was available, and lead to unintended pregnancies.

Mr. McDonald recommended that the Population Division focus on the long-term fertility trends for projections, given that the overall impact of the COVID-19 pandemic would be negligible. Ms. Zhang stated that an increase in fertility in China was less likely in the short term, but that the implementation of government policies to stimulate fertility could increase fertility levels in the medium term. Mr. Gietel-Basten acknowledged the uncertainty of the consequences of COVID-19 for any economy, given the lack of information about which aspects of the economy would be most severely affected (employment and type of employment or the stock-market) in different parts of the world and how this could impact fertility decisions. He acknowledged the challenges of making assumptions on the impact on fertility in the short

and medium term and suggested to also include qualitative information and review and revise projections as more data become available.

F. POTENTIAL IMPACT OF COVID-19 ON FERTILITY LEVELS AND TRENDS IN LATIN AMERICA AND THE CARIBBEAN, CENTRAL AND SOUTHERN ASIA, NORTHERN AFRICA AND WESTERN ASIA

This session, moderated by Ms. Guiomar Bay, UN ECLAC, discussed the potential fertility effect of COVID-19 in Latin America and the Caribbean, Central and Southern Asia, and Northern Africa and Western Asia.

Mr. Marcos Rangel, Duke University, presented experiences in Brazil with the Zika virus epidemic and its impact on fertility behaviour. He stressed differences between the Zika epidemic and the COVID-19 pandemic, cautioning against comparing the two health crises directly due to considerably different morbidity and mortality profiles as well as differences in the economic consequences of the measures to contain its spread. He argued that in the current COVID-19 pandemic, the economic impact and the health crisis were closely connected, with complimentary and possibly compounding effects on fertility decisions. The Zika epidemic had only limited economic consequences and little impact on mortality across all ages, although it had severely affected pregnant women or women planning to have a child due to the possible harm to fetal development.

Mr. Rangel further reported that the number of births had increased at the time of the Zika virus arrival in late 2013 and that this upward trend continued until the ZIKA epidemic reached its peak in early 2015. The number of births started to decline at the peak of the number of infections and declined sharply following the declaration of a health emergency by the Government in the northeast of Brazil in late 2015, reaching a trough in late 2016. He also pointed to other factors that might have had a negative impact on fertility, such as the rising cost of living and increasing unemployment around the height of the Zika virus epidemic. The crude birth rates at the national level showed a similar decline. Despite a small rebound during 2017-2018, the birth rate continued to decline after the Zika epidemic and fall further after the beginning of the COVID-19 pandemic in 2020.

Mr. Rangel argued that his research the Zika epidemic suggested that the human behavioral response to epidemics could be large, fast and possibly long lasting. Such epidemics could possibly reinforce the broader trend of the recognition of rising costs of raising children in the developing world, particularly among those who have children already. A health crisis such as that of Zika could have implications on the reduction of births, and also reveal inequalities in the ability to respond to risk of infection. Regarding the current COVID-19 pandemic he suggested that the economic impact and the health crisis were more closely interconnected than in the case of the Zika epidemic. He that the impact of COVID-19 on human behavior would follow a similar pattern than the Zika epidemic: large, fast, and heterogenous.

Ms. Suzana Cavenaghi, independent researcher from Brazil, drawing on past experiences in Latin American countries, presented three possible scenarios of the likely impact of COVID-19 on fertility for Latin American countries: baby boom, baby bust, or no effect. Drawing on experiences from past public health and economic crises in the region, she noted that an immediate birth postponement could generally be observed as a reaction to crises. That short-term effect was often followed by a partial recovery in the years following the shock. The impact of the COVID-19 pandemic on fertility depended on its severity, the number of waves and the overall duration of the epidemic in a given country. Early data showed slight fertility declines in some countries. Ms. Cavenaghi did not foresee a sizeable baby boom, but also considered a baby bust unlikely. Overall, she expected fertility in the region to continue to follow historic

trends. She underlined that more evidence was needed to draw firm conclusions about the impact of the COVID-19 pandemic on fertility.

Ms. Cavenaghi noted that there was some evidence of a decrease in fertility available for countries severely affected by the first wave. Preliminary data pointed to a postponement of childbearing in Brazil and to an accelerated drop in adolescent fertility in Chile. She concluded by recommending a thorough review of the fertility estimates when more CRVS and census data become available for the region. On a more general note, Ms. Cavenaghi proposed that the Division review its current fertility estimates for the region and suggested a revision of the fertility patterns for Brazil to reflect the slow decline in adolescent fertility. She further recommended to reflect possible impacts of the climate crisis on fertility in the Division's probabilistic population scenarios.

Mr. Henry V. Doctor, World Health Organization (WHO) Eastern Mediterranean Regional Office, made a presentation on the impact of COVID-19 and civil unrest on fertility-related behaviour and service delivery in the Middle East and North Africa. He noted that the COVID-19 pandemic was posing a significant challenge for the implementation of WHO's regional plan "Vision 2023". He alluded to the general drivers of lower fertility in the region which were long birth intervals, postponement of births as well as women's preferences for fewer children, in addition to economic hardship, insecurity, and ill health. Egypt, the Islamic Republic of Iran and Lebanon had recently experienced rapid declines in total fertility. The Islamic Republic of Iran, Lebanon and Tunisia had already reached below-replacement fertility levels.

Mr. Doctor then reported findings from the WHO Global Pulse Survey on the continuity of essential health services during the COVID-19 pandemic that was carried out in 135 countries and territories. The study showed that nearly 40 per cent of the countries surveyed reported disruptions in access to family planning services, including contraception. He stressed that significant disruptions in family planning services could affect fertility in the region. Humanitarian crises had already affected the delivery of health services before the onset of the pandemic. Mitigation strategies, such as the provision of access to health care facilities, had been made available, but their actual use by the population depended on people's confidence in safety measures (protection from COVID-19 infection) at the facility.

In Libya, for example, half of the country's health care facilities had closed between 2019 and 2020 mainly due to security threats and lack of funding.

Ms. Nahla Abdel-Tawab, Population Council Egypt Office, discussed the effects of the COVID-19 pandemic on fertility in Egypt. She reported that the fertility rate had been declining steadily since 2014, reaching an estimated 3.3 births per woman in 2020. About 57 per cent of ever-married women used modern contraception in 2014 and that unintended pregnancies still accounted for 15 per cent of all last births. A study of the effects of COVID-19 on women's access to family planning services among 30 married women aged 18-35 years conducted by her Office between 15 March and 15 July 2020 in the Port Said and Souhag governorates indicated that more than half of the interviewed women reported challenges in accessing family planning services caused by fear of infection, by stockouts in public and private facilities, and due to a repurposing of services towards the treatment of patients with COVID-19. The study found that limited access to family planning services resulted in method switching or method discontinuation due to increased cost and delay in service delivery, with the consequence of an increased risk of unintended pregnancies. Poorer women and women in remote rural areas were more likely to be affected by limited access to family planning services and were therefore possibly exposed to a higher risk of unintended pregnancies. So far, no empirical data were available to assess the impact of the COVID-19 pandemic on fertility in Egypt.

Ms. Pranita Achyut, International Center for Research on Women in Asia, made a presentation on early indications of a gendered impact of COVID-19 with implications for fertility in India. Fertility trends at the

national and sub-national levels showed a steady downward trend, with several states reporting below replacement fertility levels. She noted that, early in the pandemic, family planning services were disrupted and had resumed only slowly. Although there was some evidence of contraceptive method switching during the first months of the pandemic, with condom use increasing and sterilization declining, the use of methods had reverted to pre-pandemic levels at the end of 2020 and early 2021. There were also indications that contraceptive uptake among young couples had declined during the pandemic. The fact that sexual and reproductive health services were not declared essential services might have prolonged negative consequences for fertility. High levels of unmet need for family planning due to restricted access to contraception was likely to increase unplanned pregnancies and abortions, and could contribute to rising maternal mortality, particularly among marginalized populations. Ms. Achyut argued that the COVID-19 pandemic had reinforced traditional gender roles and diminished women's ability to assert their bodily autonomy and have safe sex. In closing, she called for qualitative studies to get a more nuanced and contextual understanding of the gender aspects of the impact of the COVID-19 pandemic on fertility.

During the ensuing discussion, panelists stressed the importance of understanding contextual factors, such as vaccination campaigns and responses to the public health and economic crises, that may affect fertility decisions.

G. POTENTIAL IMPACT OF COVID-19 ON FERTILITY LEVELS AND TRENDS IN EUROPE AND NORTHERN AMERICA

This session, moderated by Mr. Stephen Kisambira, Population Division, focused on potential fertility effect of COVID-19 in Europe and Northern America.

Mr. Tomáš Sobotka, Vienna Institute of Demography, presented the first results from the most recent Short-Term Fertility Fluctuations (STFF) data series that is embedded in the Human Fertility Database. The STFF collect the monthly number of births from January 2000 to the most recent month available from high income countries with data of high quality. He reported that the first wave of the COVID-19 pandemic showed a baby bust in most countries, but with significant regional differences. The strongest impact was observed in Southern Europe, while no negative impact was reported in Nordic countries. Large fluctuations were observed in Baltic countries especially Latvia and Lithuania and in Eastern Europe. Early data for February/March 2021 point towards a slight reversal of trends with weaker downturns and some unexpected upturns.

Mr. Sobotka proposed that in the short term, births might move in cycles of busts and recoveries, similar to the cycles of the COVID-19 pandemic and lockdowns, with widening cross-country differences in the fertility response. An overall decline in fertility in 2021 seemed likely in most countries. Downturns beyond 2021 were more likely if COVID-19 left long-lasting scars in the economy, particularly in the labour market. Social and family policies could moderate such impacts.

Mr. Francesco Billari, Bocconi University, examined the relationship between development, “internetization” and fertility in Europe and Northern America. A crucial issue was whether fertility would be positively linked with economic development. He noted that research on the Great Recession in Europe had confirmed a positive link between fertility and the overall state of the economy (i.e., a pro-cyclical relationship). The depressive effect of COVID-19 on fertility confirmed the positive relationship with the macroeconomic downturn. Additionally, it was possible that other aspects of development such as human capital, health, uncertainty and gender equality, might also play a role. He predicted that for Europe and Northern America, fertility was “bound to re-bound”, although there could be no rebound if the crisis

persisted. He emphasized that fertility projections should intrinsically include economic development forecasts.

He then considered the relationship between the digital revolution, which was accelerated during the COVID-19 pandemic, and fertility. New “big data” and “digital breadcrumbs”, could point towards short-term fertility intentions, and potentially, subsequent fertility behaviour. He provided several examples of the impact of the digital revolution, such as mobile phones linked to higher contraceptive prevalence in low-income countries, and broadband diffusion linked to higher fertility for highly educated women in Germany. He argued that digital data were useful for real-time monitoring, nowcasting and, potentially, for early detection of changing trends, though probably not for medium- and long-term projections.

Ms. Michaela Kreyenfeld, Hertie School Berlin, discussed the consequences of COVID-19 for fertility and family behaviour in Germany. She noted the negative correlation between unemployment and fertility in most European countries since 2000. She then highlighted two family-friendly policies implemented in Germany well before the pandemic (in 2005 the ‘Child-care reform’, in 2007 the ‘Parental leave benefit reform’) that had a slightly positive effect on fertility there. She also noted the constant increase in the mean age at first birth, in both former East Germany and West Germany since 1970. The cohort fertility at age 40 years had been declining for German women born before 1970, with patterns similar to Spain and Italy, but not for those born afterwards.

She argued that the COVID-19 crisis could result in a re-traditionalization of gender roles and care patterns and lead to an even more unequal gendered division of care while, on the other hand, more men than women were affected by short-work⁴ and therefore men would have now more time to engage with their children. Nonetheless, Ms. Kreyenfeld considered that there would be no overall “role reversal” of gendered division of care in Germany. Given the strong correlation between unemployment and fertility in European countries, the fertility effect of COVID-19 would mainly depend on the timing and pace of the economic recovery after the pandemic.

Ms. Alison Gemmill, Johns Hopkins University, discussed the recent fertility trends in the United States of America in light of the COVID-19 pandemic. An overview of recent fertility trends for the United States of America showed a continued decline in the annual number of births and in the total fertility rate (TFR). This could be explained by the ongoing postponement of first births, changing migration patterns, a decline in Hispanic and immigrant fertility, as well as by declining fertility in younger age-groups and reductions in unintended pregnancies. She expected that in the short term, the United States of America would continue to observe declines in both the number of births and total fertility.

Mr. Nathan Seltzer, University of California at Berkeley, described possible scenarios for post-pandemic fertility in the United States of America. Drawing on lessons from the Great Recession, his research found that structural changes to the United States of America’s labour market, and not cyclical economic changes, would provide a better explanation for the ongoing fertility decline. He concluded that fertility rates would continue to decline if deindustrialization continued, and the quality of new service sector jobs would not improve.

Mr. Seltzer proposed three hypothetical fertility scenarios in the context of COVID-19 in the short and medium term: (1) swift recovery, (2) slow recovery, (3) swift recovery aided by policy interventions. These scenarios were based on different forecasts of the pace and character of economic recovery and on potential government interventions put in place to stabilize the economy. His analysis was based only on economic considerations and assessed the possible medium-term impact of the COVID-19 pandemic on fertility rates.

⁴ “Short work” is a special approach taken by the German government to avoid unemployment: working hours are reduced for all, but everybody keeps their job, but works less and has less income.

In the first scenario with a swift reduction in the unemployment rate and the creation of new jobs and a continued decline in goods-production industries, fertility rates would continue to decline as they did prior to November 2020. In the second scenario, under which economic recovery would have the same pace as the Great Recession recovery, fertility rates would decline at a faster rate than in the first scenario. In the third scenario, with a swift recovery aided by policy interventions with family- and worker-focused policies and an increase in manufacturing and construction jobs as proposed in American Jobs Plan, fertility rates would increase as a result of altered structural conditions of the United States of America's labour market.

Lastly, Mr. Seltzer noted that a return to "normal" in the United States of America would represent a return to the ongoing fertility decline. Government policy interventions, both worker- and family-focused, had the potential to increase fertility by altering structural economic conditions in the labour market.

The concluding discussion addressed two questions. In the case of Germany, could the increased time that fathers spent with their children have a positive impact on fertility or, could experiencing the daily challenges of raising children impact negatively on the desire to have more children? In this regard it was considered important that targeted family policies would have to be accompanied by a cultural change to have a positive impact on fertility levels. In response to the question of the impact of declining cohort sizes on total births in Europe, it was noted that the sizes of cohorts of reproductive age in Europe, particularly in Western as well as Southern European countries, had been affected by the immigration of younger people from Eastern European countries. As a consequence, Eastern European countries had experienced a considerable decline of reproductive age cohorts, leading to further declines in the number of births in these countries. The final point made during the discussion referred to the impact of the digital divide on fertility, since people in certain occupations would be able to continue to work remotely and thus be more able to combine work and family lives than others who would need to be physically present in their place of work and would face more challenges managing family responsibilities and work.

H. INTERACTIVE DISCUSSION: RECOMMENDATIONS FOR DEVELOPMENT OF ASSUMPTIONS ON THE IMPACT OF COVID-19 ON FERTILITY PROJECTIONS

The final session, moderated by Mr. Patrick Gerland from the Population Division, was dedicated to a discussion of the expectations of the impact of the COVID-19 pandemic on fertility levels and trends, particularly over the short term.

Mr. Gerland opened the session with a presentation of the results of an online survey of panelists and participants that had been carried out prior to the meeting, asking to describe their expectations of fertility trends in the short-term (next one to two years) and the medium-term (next three to five years). Results showed that the panelists expected the pandemic to only have a short-term impact on fertility. Views were more mixed among other participants.

Survey results of the expectation of fertility trends for different regions were also mixed. For most regions, respondents tended to expect short-term declines in fertility relative to pre-pandemic levels.

In the case of sub-Saharan Africa, Oceania (excluding Australia and New Zealand) and for Northern Africa and Western Asia, most survey respondents were too uncertain to express an opinion regarding possible trends. Experts were divided in term of the magnitude and direction of the potential impact and recommended to recognize the differences among the countries and to avoid applying 'one-size-fits-all' approaches. With respect to an expected recovery towards pre-pandemic fertility levels, the response patterns were also mixed, with the majority of respondents expecting fertility to return to pre-pandemic levels between 2023 and 2025. Almost all participants expected that the post-pandemic fertility trends would likely differ among countries with low and high fertility as well as among regions.

To start the interactive discussion, Mr. Gerland posed several questions for participants to consider. He asked whether they were surprised by the survey results he had just shown. Additionally, he asked whether participants expected that a fertility recovery phase would include any rebound to above pre-pandemic levels before eventually resuming long-term trends. He further wondered whether countries like China and perhaps India or other countries in Southern Asia were expected to display different fertility effects compared to other countries and regions. Lastly, he requested participants' advice on the use of monthly birth registration data, specifically whether the information therein could be used to guide extrapolations of fertility impacts into 2021.

In general, participants expressed that they were not surprised by the survey results. On the contrary, the results were consistent with the vast uncertainty around not only the impact of the COVID-19 pandemic on fertility, but also about the future course of the pandemic itself. Participants noted that recent vaccination efforts meant that some countries could now expect the pandemic to wind down within their borders, whereas in other countries, especially in some parts of Asia and sub-Saharan Africa, vaccination drives could take years to complete, portending future waves of infection, new virus variants and potentially a different or more prolonged fertility impact. Moreover, uncertainty remained around whether vaccines would remain effective against new variants. The examples of both Brazil and India were cited, where new COVID variants posed enhanced risks to women of reproductive age and thus the impact on fertility in 2021 in these countries could differ markedly from that observed in 2020.

Participants cautioned the Population Division against overstating possible fertility rebounds, which would possibly be only months long rather than years, in the annual time series of WPP estimates. Furthermore, rebounds were not guaranteed, as exemplified by the more developed countries of Northern Europe and Northern America that experienced even lower fertility rates after the Great Recession. Participants also advised the Population Division to reflect the uncertainty around both current and future fertility levels in the next revision of the WPP.

Participants noted that short-term changes in fertility over the coming months would reflect both quantum and tempo effects, challenging efforts to extrapolate trends over the coming years. They advised that changing fertility preferences might offer better guidance about short-term trends than fertility rates themselves. In Japan, pregnancy registration data could shed light on short-term fertility trends. Participants also suggested taking into account regional economic projections when developing the fertility assumptions to be applied in the WPP.

Participants discussed some of the implications of the COVID-19 pandemic for long-term fertility trends. Some argued that the long-term impact was expected to be negligible. Others noted that these medium- and long-term impacts would depend on economic and policy responses, notably in Latin America. Participants suggested that it may take years for most people to be vaccinated in Asia and sub-Saharan Africa, which may experience more severe waves of the pandemic and long-lasting impact on fertility. Participants also noted that the pandemic had facilitated the digitalization of the labour market, which could, for example, exert a positive impact on fertility levels in high-income countries.

Mr. Gerland noted that even if the medium- to long-term impacts on fertility trends were negligible, WPP users increasingly demanded precise and detailed demographic now-casts, increasing pressure on the Population Division to reflect even small, short-term changes.

Participants reminded that the pandemic would increase uncertainty of fertility estimates and projections in the short term. For this reason, participants suggested that the Population Division continue to gather evidence over the coming months in order to better assess the impact of the pandemic on fertility. Mr. Gerland emphasized that many of the sources of fertility information, such as classic demographic surveys,

had been disrupted due to the pandemic, so there would be a significant lag before such information would become available.

Mr. Gerland reiterated that in the context of the preparations of the upcoming revision of WPP, the Division needed to make assumptions regarding possible fertility trajectories. He suggested to incorporate a wider potential range of possible fertility values to establish the baseline for these projections.

Mr. Gerland thanked the participants for their contributions and encouraged them to continue to share their assessments with the Population Division.

I. CLOSING OF THE MEETING

Mr. Wilmoth reiterated the Division's appreciation for the participants' active discussion in what had been a very interesting and informative expert group meeting. He surmised that the overarching message was one of uncertainty about the COVID-19 pandemic and fertility situations over both the short and long terms. He said that he was struck by the repeated mentions of fear as a driver of fertility behaviour during the pandemic, noting that fear could produce unpredictable outcomes. Mr. Wilmoth also emphasized the possible long-term impact of social support programmes initiated by governments in response to the pandemic on fertility levels and trends. He underscored that the contributions from participants, as well as additional information that would come to light over the next six months or so, would inform the fertility estimates of the next revision of the WPP.

Mr. Wilmoth explained that the release of the new revision of WPP had been delayed to March 2022 in large part to allow for better accounting of the impact of the pandemic. The Division was working with WHO to estimate the mortality impacts of COVID-19. He expressed appreciation for the technology that enabled this meeting to take place despite the challenging circumstances and looked forward to the day in-person meetings could be held once again.

ANNEX 1: ORGANIZATION OF WORK

10 and 11 May 2021

UNITED NATIONS EXPERT GROUP MEETING ON THE IMPACT OF THE COVID-19 PANDEMIC ON FERTILITY

Population Division
Department of Economic and Social Affairs
United Nations Secretariat
New York

ORGANIZATION OF WORK

Day 1: Monday, 10 May 2021

- 9:00 - 9:15 am **Opening of the meeting**
- John Wilmoth, Director, Population Division, UN DESA
- 9:15 - 9:45 am **Session I. Setting the stage**
- **Moderator:** Karoline Schmid, Population Division, UN DESA
 - Guangyu Zhang, Population Division, UN DESA. Overview of the expert group meeting on the fertility impact of COVID-19
 - Patrick Gerland, Population Division, UN DESA. Introduction to the 27th revision of World Population Prospects
 - Witness Chirinda, UNFPA. Assessing the impact of COVID-19 on fertility levels and trends: A proposal
- 9:50 - 11:15 am **Session II. Fertility response to public health and economic crises: Learning from the past**
- **Moderator:** Vladimíra Kantorová, Population Division, UN DESA
 - Ronald Lee, University of California, Berkeley. A historical perspective on the response of fertility to economic and mortality crises
 - Sverre-Erik Mamelund, Oslo Metropolitan University. Lessons from the 1918 influenza pandemic
 - Letizia Mencarini, Bocconi University. COVID-19 and human fertility: A global perspective

11:25 am - 12:45 pm **Session III. Potential impact of COVID-19 on fertility levels and trends in sub-Saharan Africa**

- **Moderator:** Romesh Silva, UNFPA
- Kristin Bietsch, Avenir Health. Impact of COVID-19 on sub-Saharan African family planning programs: Current and future implications
- Jacques Emina, University of Kinshasa. Impact of COVID-19 on fertility in sub-Saharan Africa: What do we know and what can we expect?
- Philip Anglewicz, Johns Hopkins University. The impact of COVID-19 on fertility intentions and contraceptive use: Results from longitudinal studies in four African contexts
- Beth Kangwana, Population Council Kenya Office. Impact of COVID-19 on adolescent fertility in Nairobi's urban informal settlements

7:30 - 9:30 pm **IV. Potential impact of COVID-19 on fertility levels and trends in Eastern and South-Eastern Asia and Oceania**

- **Moderator:** Guangyu Zhang, Population Division, UN DESA
- Peter McDonald, University of Melbourne. Australian fertility trends: The potential effects of COVID-19
- Cuiling Zhang and Yue Li China Population and Development Research Center. The outbreak of COVID-19 further depresses the fertility of China: A preliminary analysis of changes in newborn population in 2020
- Stuart Gietel-Basten, Hong Kong University of Science and Technology. Potential impact of COVID-19 on fertility in selected Eastern and South-Eastern Asian territories

Adjourn

Day 2: Tuesday, 11 May 2021

9:00 - 10:30 am **Session V: Potential impact of COVID-19 on fertility levels and trends in Latin America and the Caribbean, Central and Southern Asia, Northern Africa and Western Asia**

- **Moderator:** Guiomar Bay, UN ECLAC
- Marcos A. Rangel, Duke University. Pandemics and Fertility: Lessons from the Brazilian Zika virus epidemics
- Suzana Cavenaghi, Independent Researcher. COVID-19 and fertility in Latin America: Boom, bust, neither
- Henry V. Doctor, WHO EMRO. Impact of COVID-19 and civil unrest on fertility-related behavior and service delivery in the Middle East and North Africa

- Nahla Abdel-Tawab, Population Council Egypt Office. Effects of COVID-19 pandemic on fertility in Egypt
- Ravi Verma, International Center for Research on Women. Gendered Impact of COVID with implication on fertility: Early Indications

10:35 am -12:00 pm

Session VI. Potential impact of COVID-19 on fertility levels and trends in Europe and Northern America

- **Moderator:** Stephen M Kisambira, Population Division/DESA
- Tomáš Sobotka, Vienna Institute of Demography. Baby bust in the wake of the COVID-19 pandemic in Europe? First results from the new STFF data series
- Francesco Billari, Bocconi University. Development, internetization and fertility in Europe and Northern America
- Michaela Kreyenfeld, Hertie School. The consequences of COVID for fertility and family behaviour in Germany
- Alison Gemmill, Johns Hopkins University. COVID-19 and fertility: What can we learn from recent trends in the US?
- Nathan Seltzer, University of California, Berkeley. Post-pandemic fertility: Lessons from the Great Recession

12:10 -1:00 pm

Session VII: Interactive discussion: Recommendations for development of assumptions on COVID-19 impact for fertility projections

- **Moderator:** Patrick Gerland, Population Division, UN DESA

1:00 pm

Closing of the meeting

- John Wilmoth, Director, Population Division, UN DESA

ANNEX 2: LIST OF PARTICIPANTS

10 and 11 May 2021

UNITED NATIONS EXPERT GROUP MEETING ON THE IMPACT OF THE COVID-19 PANDEMIC ON FERTILITY

Population Division
Department of Economic and Social Affairs
United Nations Secretariat
New York

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