Life expectancy declines in Russia during the COVID-19 pandemic in 2020

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SHORT REPORT

Our recent study of 29 countries in IJE highlights the devastating impact of the COVID-19 pandemic on mortality across high-income countries (Aburto et al., 2021). Period life expectancy witnessed declines in 2020 at a scale that is unprecedented in recent history. With the recent availability of data from Russia (Jdanov et al., 2021), we show that Russia is no exception. Data from death registrations indicate that life expectancy between 2019 and 2020 in Russia fell by -1.68 (95% Confidence interval (CI): -1.72,-1.63) years among males (from 68.4 to 66.7 years) and -1.80 (95% CI: -1.85,-1.76) years for females (from 78.4 to 76.6 years). Comparisons of these losses to those among the 29 countries we previously reported reveal that life expectancy losses among females were the largest in Russia, while losses among males stand only behind the USA (2.2 years) and Lithuania (1.7 years).

Figure 1: Life expectancy at birth by sex for Russia from 2015 to 2020. The inset shows the age specific contributions to the change in life expectancy from 2019 to 2020 by sex. 95% prediction intervals via Poisson sampling of age-specific death counts. Note: Estimates for females (red), males (blue). An interactive version of this visualisation is available at <https://covid19.demographicsscience.ox.ac.uk/lifeexpectancy>.

Two features of the pandemic's impact on Russian mortality stand out. First, similar to what we found for the USA, increased mortality in working, midlife-ages (20 to 60) accounted for 26% of the total life expectancy decline for women and 33% for men. Since at least 1960, Russia has been the country with the lowest male life expectancy and highest lifespan inequality in Europe due to a continued burden of mid-life mortality (Aburto and van Raalte, 2018). Failure to reduce cardiovascular diseases combined with high levels of alcohol consumption and violence led to these patterns (Grigoriev et al., 2014). However, healthier behaviours, better health care and socioeconomic development have led to sizable improvements in mortality in recent years preceding the COVID-19 pandemic (Grigoriev et al., 2014). In this context of significant progress, the more than 300 thousand estimated excess deaths in 2020 (Kobak, 2021; Karlinsky and Kobak,

2021) and the life expectancy declines triggered by excess mortality in mid-life and older-age groups highlight the catastrophic toll of the pandemic in Russia. To put this into an international perspective, Russia's level of excess deaths is among the highest observed worldwide, both in absolute numbers and in excess deaths per 100,000 population (Karlinsky and Kobak, 2021).

Second, sex differences in mortality observed in Russia are striking. While in most of the 29 countries we found life expectancy losses to be larger among males than females (Aburto et al., 2021), in Russia females experienced larger losses. A potential explanation for the Russian pattern may lie in the heightened exposure to COVID-19 infection experienced by healthcare workers during the pandemic, who are predominantly women (World Health Organization, 2020), but a deeper assessment of these sex differences is needed.

Figure 2: Sex differences in the life-expectancy change from 2019 to 2020 across countries experiencing life expectancy losses. 95% prediction intervals via Poisson sampling of age-specific death counts.

Life expectancy losses in Russia in 2020 reveal that they were at a scale comparable to those observed in another similarly large and heterogeneous country, the USA. The lack of a streamlined, national response coupled with persistent regional disparities in the implementation and uptake of non-pharmaceutical interventions, and significant ethno-racial inequalities, are likely to have been factors underlying the significant mortality impacts in both countries (Kobak, 2021; Andrasfay and Goldman, 2021). In Russia, non-pharmaceutical interventions were not implemented timely because plebiscite was prioritized in spring 2020 (Åslund, 2020), and belated efforts to increase vaccination uptake in response to the summer spread of “delta” variant were subsequently loosened in preparation for parliamentary elections in September 2021. While national figures are important and informative, they conceal variation at the subnational level and by socio-economic and ethno-racial groups. Evidence from other, large and heterogeneous countries such as Brazil (Castro et al., 2021) suggests that life expectancy losses may be more severe in certain regions, and larger for disadvantaged groups (Andrasfay and Goldman, 2021). Further disaggregated analyses are needed

to understand this in the Russian context. The prospects for 2021 do not look very promising. Emerging evidence up to August 2021 shows that excess deaths have surpassed 690,000 since April 2020, (Karlinsky and Kobak, 2021) which suggest that life expectancy continues its drastic decrease. Moreover, continued poor levels of vaccine uptake in Russia and among Russian-speaking communities across other post-soviet states in the Baltics and Eastern Europe (Our World in Data, 2021) indicate that the mortality impacts of the pandemic in these countries in 2021 may yet be worse than 2020.

Data and materials availability: The replication files for this paper include customised functionality written in the R statistical programming language (R. Core Team, 2013). The code, and all harmonized input and output data pertaining to our analysis, is hosted both on Zenodo (a general-purpose open-access repository developed under the European OpenAIRE program and operated by CERN) at <https://zenodo.org/record/4556982>, and on GitHub (<https://github.com/OxfordDemSci/ex2020/tree/add-russia/out>).

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