Unexpected and Unprecedented:
Fertility Trends by Birth Order through the Pandemic

Introduction

As the covid-19 pandemic spread in the second quarter of 2020, and lockdowns, furlough and working-from-home became the usual policy interventions, there was an expectation in the popular press that these would have a positive impact on fertility rates. For example, the Daily Mail online had this headline: "Coronavirus baby boom: Relationship expert predicts a ***surge in births*** in Britain in 2021 as quarantined couples seek intimacy during pandemic". Demographers, by contrast, were more ambivalent, extrapolating from previous crises which demonstrated that uncertainty inhibits plans to have a child. For instance, Berrington et al (2021) wrote: "...we expect that the COVID-19 pandemic will ***depress fertility***...".

What actually happened? For the year 2020 there was little impact on TFRs from the pandemic: any change in conception rates would only be felt in 2021, at least nine months after the start of widespread lockdowns. TFRs had been declining across most low-fertility countries for a decade or more (Eastern European countries and Portugal being the exception to the rule), and this pattern continued with ongoing declines in 2020 compared to 2019. Then, when the data started to be compiled for 2021 there was a surprise (for some!): the TFR for that year, the one most impacted by pandemic measures, spiked. Across 21 countries the TFR rose by an average of 0.03: not a huge uptick but widespread. In addition to the 14 countries for which we have birth order data, the following countries also saw a marked rise in fertility in 2021, confirming the generalized nature of phenomenon: France, Germany, the Netherlands, England & Wales, Canada, Australia, New Zealand. This was followed by a renewed sharp fall in 2022 across all the countries for which we currently have data.

The question this study addresses is whether there were differentials in the TFR rise by birth order.

Data source

We use the data published in the Human Fertility Database. The TFR by birth order table is tfrRRbo.txt. Births by birth order are in table totbirthsRRbo.txt. The data reported in this abstract were the latest available on 3 September 2024. More recent data will be incorporated when released.

TFR year-on-year changes by birth order

Figures 1, 2 and 3 plot the changes in TFR decomposed by birth order comparing each successive year with the previous year's data from 2019 through to 2022. Apart from very modest rises in TFR in Finland and Czechia, the usual trend from 2019-2020 was a decline in overall TFR, driven particularly by declines in birth orders TFR2 and higher (Figure 1).

The sudden reversal of this trend in 2021 is seen in Figure 2. Notably, the change is not driven by a rise in first birth rates (TFR1) but in higher order births. In four of the 14 countries that had an increase in overall TFR, the change in TFR1 was negative. Even in countries that had a small rise in the TFR1, the increase in higher order births was greater.

Figure 1: Changes in TFR1, TFR2 and TFR3+ from 2019-2020

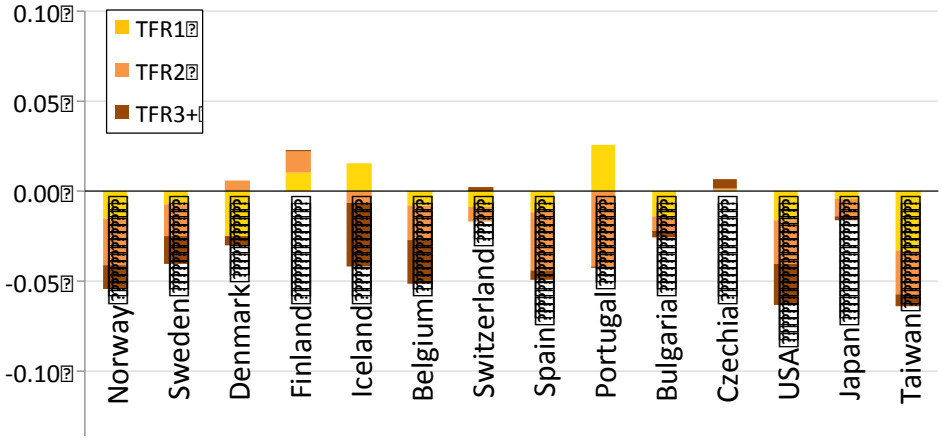


Figure 2: Changes in TFR1, TFR2 and TFR3+ from 2020-2021

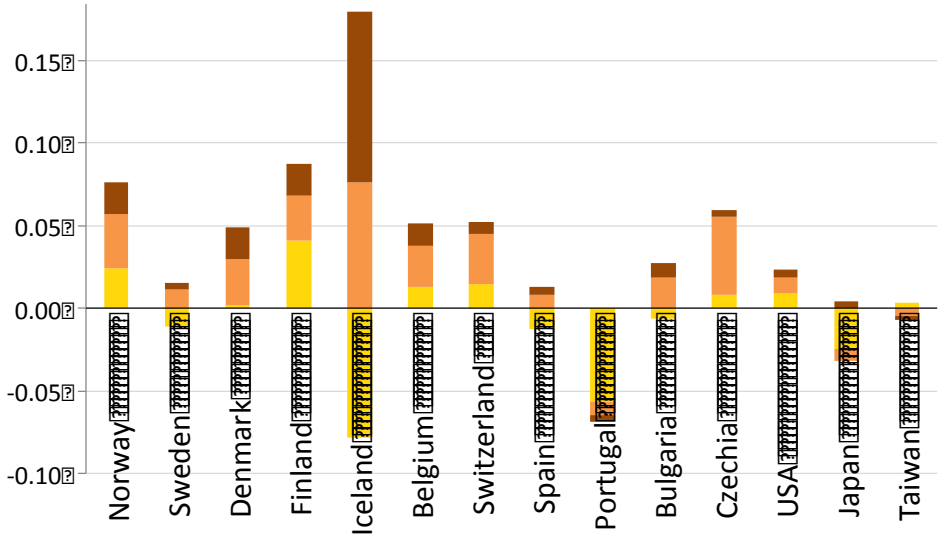
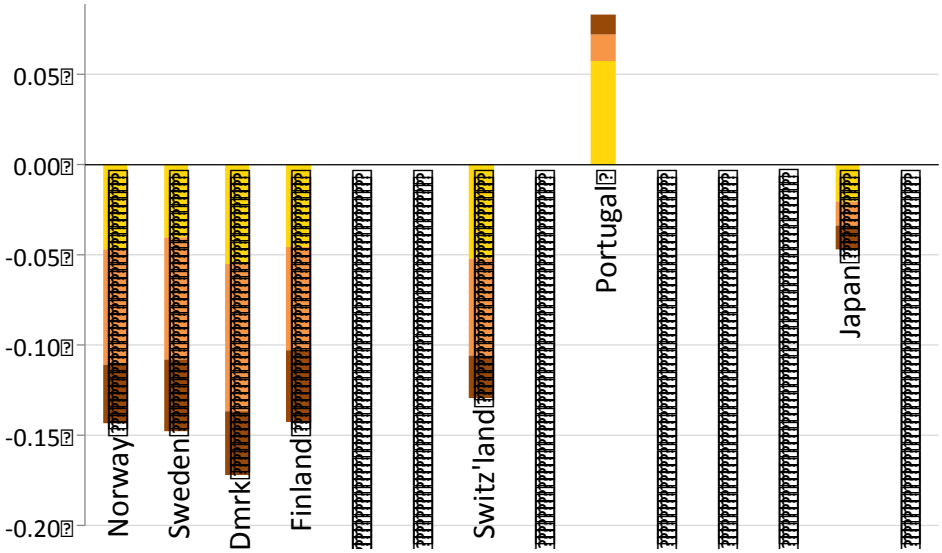


Figure 3: Changes in TFR1, TFR2 and TFR3+ from 2021-2022

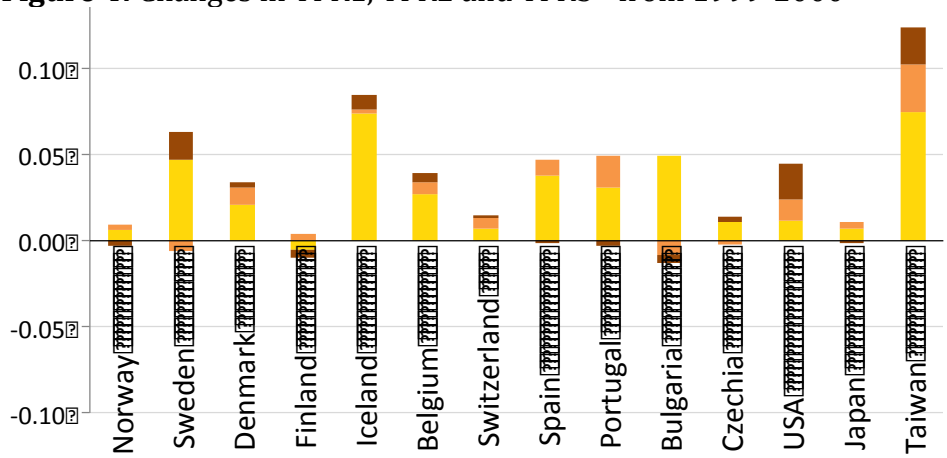


In 2022 the decline in TFRs was sharp and spread across all birth orders (to be confirmed with data yet to be released). Only Portugal, that has bucked most of the fertility trends since 2000, saw a rise in its TFR (see Figure 3).

Comparison with the millennium uptick

Brief but widespread upticks in the TFR are rare. However, there was one recent example and it is enlightening to compare the 2021 uptick with that seen in the year 2000, which averaged a comparable +0.04. Again it was a single year blip, prompted by some couples who fancied the idea of a baby for the new millennium. However, if we look at the birth order changes between 1999 and 2000 for the same 14 countries, we find that 76% of the rise came from an increase in the TFR1, 14% from TFR2 and 10% from TFR3+ (see Figure 4). To summarise, the millennium uptick was driven by a very different demographic to that seen in 2021: the first by childless couples; the second by couples who had already started a family.

Figure 4: Changes in TFR1, TFR2 and TFR3+ from 1999-2000



Changes in proportion of total births by birth order

One of the concerns about demographic data relating to the pandemic years is whether there could be any distortion of the indices because of migration. If the denominator (female population by age) is erroneous because of in- or out-migration, then the TFR could be too high or too low. We sought a lower level measure, not dependent on population numbers. An alternative way of assessing whether there really was a change in first, second or higher order births is by looking at the change in proportion of births of each birth order. Each country has it own pattern of the balance of births by birth order, but year-on-year changes are invariably modest. In 1999 the proportion of first births to all births varied between 40% (Norway, Finland and the USA) to 56% (Bulgaria). The proportion of second order births was less variable, from 33% to 38%. There was more variability for 3rd and higher order births, from 11% (Spain) to 27% (USA). By 2019 the inter-country ranges had converged and were 38-51% for first births; 32-38% for second; and 13-30% for higher order births. The changes seen for the uptick years of 2000 and 2021 are not large but do reflect a real change in the balance of births by birth order (see Table). In the majority of cases, the rise in 2000 was driven by first births; by contrast the rise in 2021 was driven by second and higher order births.

Table: Changes in % of births by birth order: 1999-2000 & 2020-2021

	1st 1999-2000	2nd 1999-2000	3rd+ 1999-2000	1st 2020-2021	2nd 2020-2021	3rd+ 2020-2021
Norway	-0.02%	0.05%	-0.03%	-0.71%	0.32%	0.38%
Sweden	1.53%	-1.43%	-0.11%	-0.94%	0.65%	0.29%
Denmark	0.24%	-0.14%	-0.10%	-1.26%	0.60%	0.66%
Finland	0.04%	0.29%	-0.33%	0.26%	-0.19%	-0.07%
Iceland	2.09%	-1.24%	-0.85%	-7.17%	2.59%	4.58%
Belgium	0.56%	-0.35%	-0.21%	-0.66%	0.49%	0.17%
Switzerland	0.03%	-0.01%	-0.02%	-0.76%	0.75%	0.01%
Spain	0.97%	-0.59%	-0.39%	-0.87%	0.49%	0.38%
Portugal	0.21%	0.27%	-0.48%	-1.13%	0.84%	0.29%
Bulgaria	1.98%	-1.44%	-0.54%	-1.15%	0.81%	0.34%
Czechia	0.16%	-0.30%	0.14%	-1.14%	1.42%	-0.29%
USA	-0.17%	-0.14%	0.30%	-0.06%	0.16%	-0.10%
Japan	-0.19%	0.24%	-0.05%	-0.77%	0.11%	0.65%
Taiwan	1.17%	-1.22%	0.04%	0.67%	-0.44%	-0.24%

Conclusions and policy implications

The sharp uptick in the TFR in 2021 as by-product of the pandemic was a surprise to many. The fact that it was driven by second and higher order births is unprecedented and surely could not have been forecast? 2020-2022 was a period of widespread government interventions aimed at slowing the spread of covid-19 and shielding the vulnerable. We may draw tentative conclusions that at least some of those interventions stimulated fertility: these included furloughs, the expansion of flexible working (working from home, flexible hours, etc.) and financial support. But which of those was most supportive of couples thinking of having another child? The Generations and Gender surveys carried out in some countries at that time may illuminate the decision making process.

The contrast between the 2000 and 2021 upticks in TFR is significant and has important policy implications: there are different decision-making processes at work for couples planning a first child compared to those wanting a second or higher order child. The preconditions for the childless to start a family are (we postulate): stability (in employment) and the ability to plan ahead; suitable housing; and finding (and having the possibility to live with) the right partner: these all became complicated during the pandemic. Without addressing those challenges then governments will not see any sustained rise in fertility rates. Short-term upticks can happen with extra financial support, childcare availability and policies to improve the work-life balance, especially helping couples who have at least one child, but without couples starting a family then sustained fertility rate rises cannot happen. A new millennium and its temporary incentive for starting a family happens rather rarely!

Reference

Berrington, Ann, Joanne Ellison, Bernice Kuang, Sindhu Vasireddy, and Hill Kulu. 2021. “Recent Trends in UK Fertility and Potential Impacts of COVID-19.” CPC Working Paper 95, ESRC Centre for Population Change.