

Booms, busts and trend reversals. Shifts in births and fertility rates across the highly developed countries during the COVID-19 pandemic

Tomáš Sobotka, Vienna Institute of Demography
(with the assistance of Krystof Zeman (Wittgenstein Centre) and colleagues from the Max Planck Institute for Demographic Research)

Väestöliitto, Generations and Gender Survey Finland launch event,
Helsinki, 14 September 2021

Past evidence: the impact of shocks on fertility

- Uncertainty
- Economic shocks and recessions: mostly negative impact, including the Great Recession around 2008-12 (e.g., Sobotka et al. 2011; Goldstein et al. 2013); severity of the recession and welfare setting matter
- Spanish flu: fertility reduction & some later rebound (Boberg-Fazlic et al. 2017; Wagner et al. 2020)
- Disruptions to everyday life: Blackouts and disasters: US: *urban legend* of a blackout baby boom, but positive evidence in developing countries (Fetzer 2013 for Colombia; Burlando 2014 for Zanzibar)
- Zika epidemic in Brazil and other parts of Latin America in 2015-16: strong negative effect on pregnancies and births (Rangel et al. 2020; Marteleto et al. 2020)

Graphic detail

Daily chart

Will the coronavirus lockdown lead to a baby boom?

Deadly epidemics seem to depress birth rates in the short term

Pregnant pause

Birth rate, change from seasonal average, %



Source: Institute for Family Studies

The Economist

Apr 3rd 2020



FRANCE 24 COVID-19 FRANCE AFRICA CULTURE SHOWS FIGHT THE FLAKE

France

The baby boom that never was: France sees sharp decline in 'lockdown babies'

331 shares

Issued on: 22/01/2021 - 15:30

Coronavirus U.S. map World map Vaccine tracker Vaccine FAQ Variants FAQ A pandemic year Coronavirus Living

World

Coronavirus baby boom or bust? How the pandemic is affecting birthrates worldwide.



Local Sport Politics Finance World Entertainment Lifestyle Weather Contact Us

LIFESTYLE

Coronavirus baby boom: Will global lockdown see massive jump in Australia's birth rate?

Kelly Burke NEWS Published: Tuesday, 23 June 2020 2:47 pm AEST

MARKETS | HEARD ON THE STREET

The Covid Baby Bust Could Reverberate for Decades

The sudden drop in global fertility during the pandemic will have far-reaching consequences for businesses and economies



NEWS CORONAVIRUS POLITICS OPINION PERSONAL ENTERTAINMENT LIFE PARENTS VIDEO

LIFE

Baby Boom – Or Bust? How Covid Will Impact Birth Rates In 2021

For all the nudge nudge about lockdown baby making, the data tells a different story.

By Rachel Moss

07/01/2021 11:25am GMT

DEMOGRAPHICS >

The coronavirus effect: Spain sees sharp decline in births

There was a 23% fall in registered newborns in the December-January period compared with the previous year, mirroring similar trends in neighboring countries

Opinion

We Expect 300,000 Fewer Births Than Usual This Year

Signs are pointing to a sizable pandemic baby bust in the United States, with implications that will be with us for years to come.

By Melissa S. Kearney and Phillip B. Levine

Dr. Kearney is an economics professor at the University of Maryland. Dr. Levine is an economics professor at Wellesley College. In a report for the Brookings Institution last summer and an update in December, they predicted that the Covid pandemic would lead to a decline in U.S. births.

March 4, 2021

COVID-19 and fertility: effects, mechanisms

Negative impact expected especially in the highly developed countries with widespread use of and access to modern contraception (e.g., Aassve et al. 2020; Cohen 2021)

Selected mechanisms: negative impact (Berrington et al. 2021)

- Uncertainty about the future, especially the initial “shock” period
- Fear of infection and of getting pregnant during the pandemic
- Economic (income) and labour market impact
- Lockdown effects: higher stress, disruption to everyday life, loss of grandparental care and extra workload for parents; disruption to social contact and dating for the childless (Settersen et al. 2020)
- Disruption in the provision of assisted reproduction

Selected mechanisms: positive impact

- More “family time” spent together, more time for intimate relations and for family life among some couples
- Disruption in the supply of contraception in some countries

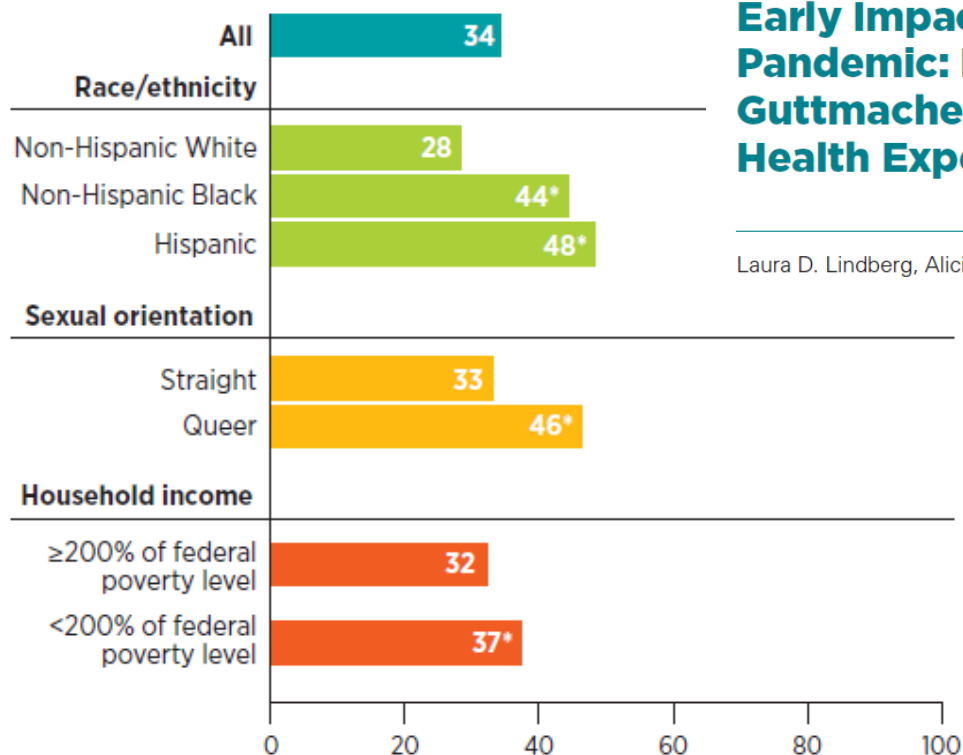
COVID-19 and fertility in Europe and the US: early evidence

Decline in short-term fertility preferences reported in the US and Europe:

- Luppi et al. (2020): survey of fertility plans among young adults (18-34) in 5 European countries; late March and early April (N=6,000)
- Arpino et al. (follow-up survey in Italy in Oct 2020): couples experiencing income shock and with negative expectations about the future abandoning their fertility intentions
- Lindberg et al: Internet Survey of US women aged 18-44 (N=2,009) on 30 April-6 May 2020, Guttmacher Institute
- Emery et al. (2021): couples in Moldova initially had reduced access to contraceptive use, but also less likely trying to conceive. Intentions unchanged in medium-term
- Malicka et al. (2021): lower sense of financial security and worse mental well-being led some couples in Poland to decide to postpone or foregone childbearing

FIGURE 1. Many women report that their fertility preferences have shifted in response to the COVID-19 pandemic.

% of women reporting wanting to delay childbearing or have fewer children



Early Impacts of the COVID-19 Pandemic: Findings from the 2020 Guttmacher Survey of Reproductive Health Experiences

Laura D. Lindberg, Alicia VandeVusse, Jennifer Mueller and Marielle Kirstein



*Difference is statistically significant at $p < .05$. Note: Queer category includes responses of "gay or lesbian," "bisexual" and "other."

Source: Internet Survey of US women aged 18-44 (N=2,009) on 30 April-6 May 2020, Guttmacher Institute

COVID-19 and fertility: early evidence

Evidence on short-term fertility intentions

Early evidence from online searches:

- Wilde et al. (2020): expected sharp downturn in births in the US from November 2020 to February 2021 based on fertility and pregnancy-related Google searches

Initial work on birth trends

- Decline in births and fertility rates in Europe, Latin America, US, especially in December 2020 – January 2021 (Sobotka et al. 2021; Aassve et al. 2021; Lima et al. 2021)

Save 40% on Digital Subscriptions

Subscribe

SOCIOLOGY

The Pandemic Caused a Baby Bust, Not a Boom

Birth rates in many high-income countries declined in the months following the first wave, possibly because of economic uncertainty

By Tanya Lewis on August 30, 2021 [أعرض هذا باللغة العربية](#)

Institution: AUSTRIAN
SCIENCES

Keyword, Author, or I

[Home](#)[Articles](#)[Front Matter](#)[News](#)[Podcasts](#)[Authors](#)[S](#)

BRIEF REPORT



Early assessment of the relationship between the COVID-19 pandemic and births in high-income countries

[ID](#) Arnstein Aassve, [ID](#) Nicolò Cavalli, [ID](#) Letizia Mencarini, [ID](#) Samuel Plach, and [ID](#) Seth Sanders

[+ See all authors and affiliations](#)

PNAS September 7, 2021 118 (36) e2105709118; <https://doi.org/10.1073/pnas.2105709118>

Edited by Mary C. Waters, Harvard University, Cambridge, MA, and approved June 29, 2021 (received for review March 26, 2021)

[Article](#)[Figures & SI](#)[Info & Metrics](#)[PDF](#)

Baby bust in the wake of the COVID-19 pandemic?

Findings: trends by country and region

Most of this research based on the following report:

Sobotka, Tomas, Aiva Jasilioniene, Ainhoa A. Galarza, Kryštof Zeman, Laszlo Nemeth, and Dmitri Jdanov. 2021. "Baby Bust in the Wake of the COVID-19 Pandemic? First Results from the New STFF Data Series." SocArXiv. March 24. doi:10.31235/osf.io/mvy62

What is the latest evidence?
Does the baby bust story hold?

Analytical focus, data issues

Key question:

- *How did birth (fertility) dynamic change in the wake of the covid-19 pandemic?*

Analytical focus: monthly births by countries and broader regions

Expectations:

- A downward trend associated with the pandemic
- Stronger in more affected countries (and in countries with weaker welfare system?) (especially in Southern Europe)
- Ups and downs in births associated with the waves of the covid outbreak? (Possible short-term recovery; Goldstein 2020)

Data: The STFF (short-term fertility fluctuations) Data Series under the Human Fertility Database

REGISTRATION

Login
New User
Change Password
User Agreement

METHODS

Methods Protocol
Explanatory Notes
Data Formats

DATA

Main page
Data Availability
Zipped Data Files
What's New
STFF

ABOUT THE PROJECT

Citation Guidelines
FAQ
History
Overview

PEOPLE

Research Teams
Advisory Board
Acknowledgements

LINKS

Human Fertility Collection
Max Planck Institute for Demographic Research
Vienna Institute of Demography

EVENTS & PUBLICATIONS

Events
HFD Reports
Publications

The Human Fertility Database

Short-Term Fertility Fluctuations

In response to the COVID-19 pandemic, the HFD team established a new data resource: Short-Term Fertility Fluctuations (STFF) data series. The STFF series complements the HFD by providing up-to-date data on live births by month for selected countries and by facilitating thereby scientific analysis of short-term fertility fluctuations. This project thus contributes to timely data availability, which is key for monitoring and examining the consequences of the ongoing pandemic for the population-level fertility trends.

Before using the data, please consult the [STFF Methodological Note](#), which provides a more comprehensive description of this data project, including important aspects related to data collection and data processing. We also recommend that you read the [STFF Metadata](#). This document includes country-specific information about data availability, completeness, data sources, as well as specific features of included data.

Data will be frequently updated and new countries will be added. Data are published under [CC BY 4.0 license](#).

For citing STFF data, please follow the [HFD data citation guidelines](#).

We invite you to explore these data using our online [STFF visualization toolkit](#).

Here you can download the following data and documentations:

- [STFF Metadata](#): concise description of country-specific data and data sources.
- [STFF Methodological Note](#): description of input and output data formats and methodology.
- **STFF output file** ([xlsx](#) or pooled [csv](#)): monthly counts of live births for selected countries.
- [Original data](#) (country-specific csv files in one zip file): original birth counts in standardized format.

Last data update: 30-08-2021

Data availability

| Country | First month | Last month |
|---------------------------|--------------|---------------|
| Austria | January 2000 | June 2021 |
| Belgium | January 2000 | June 2021 |
| Bulgaria | January 2000 | December 2020 |
| Chile | January 2000 | March 2021 |
| Croatia | January 2000 | June 2021 |
| Czechia | January 2000 | March 2021 |
| Denmark | January 2000 | June 2021 |
| Estonia | January 2000 | July 2021 |
| Finland | January 2000 | July 2021 |
| France | January 2000 | June 2021 |
| Germany | January 2000 | May 2021 |
| Greenland | January 2000 | June 2021 |
| Hungary | January 2000 | July 2021 |
| Iceland | January 2000 | December 2020 |
| Israel | January 2000 | June 2021 |
| Italy | January 2000 | May 2021 |

STFF Data series

The Short-Term Fertility Fluctuations (STFF) Data Series

- Joint project of the Max Planck Institute for Dem Res. (Rostock) and the Wittgenstein Centre (Vienna)
- Monthly number of births, from Jan 2000 to most recent (July 2021) (TFRs to be added)
- Highly developed countries with good quality data
- Regularly updated (38 countries/areas at present, 25 until June or July 2021)
- Metadata: 47-page document with all information about the data, sources, coverage, notes, warnings
- Methodological Note
- STFF visualization toolkit in Shiny
- Working Paper / Report on first trends at SocArXiv:

<https://osf.io/preprints/socarxiv/mvy62>

<https://www.humanfertility.org/cgi-bin/stff.php>

STFF Visualisation Toolkit (Shiny)



Human Fertility Database

HFD Twitter: User's Guide:

Country or area

Finland

Target year

2021

Reference period

2000

2019

Reference level

Monthly-birth Averages

Y-axis scale

[0,Max] [Min,Max]

Relative to reference

Show other years

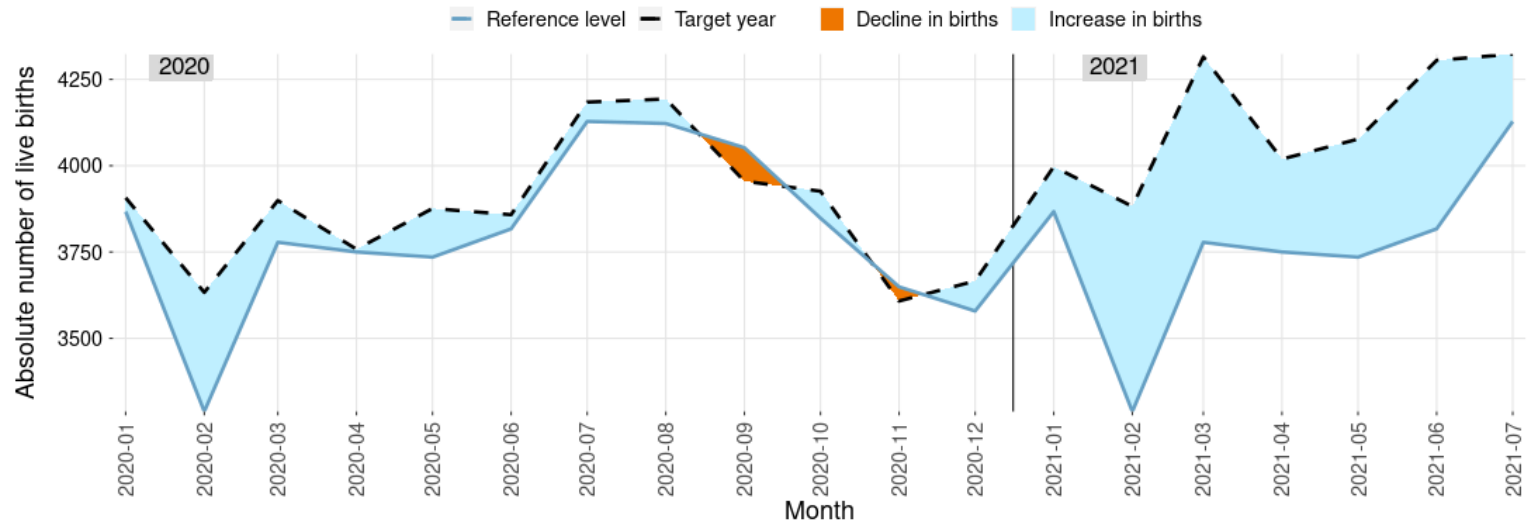
Short-term Fertility Fluctuations

The project's website: Human Fertility Database www.humanfertility.org info@humanfertility.org

UX/UI by László Németh

Data for 2020 and for the most recent months are preliminary and may be incomplete. Please see the Metadata for details.

Finland



Summary statistics

Clicked point information

<https://mpidr.shinyapps.io/stfertility/>

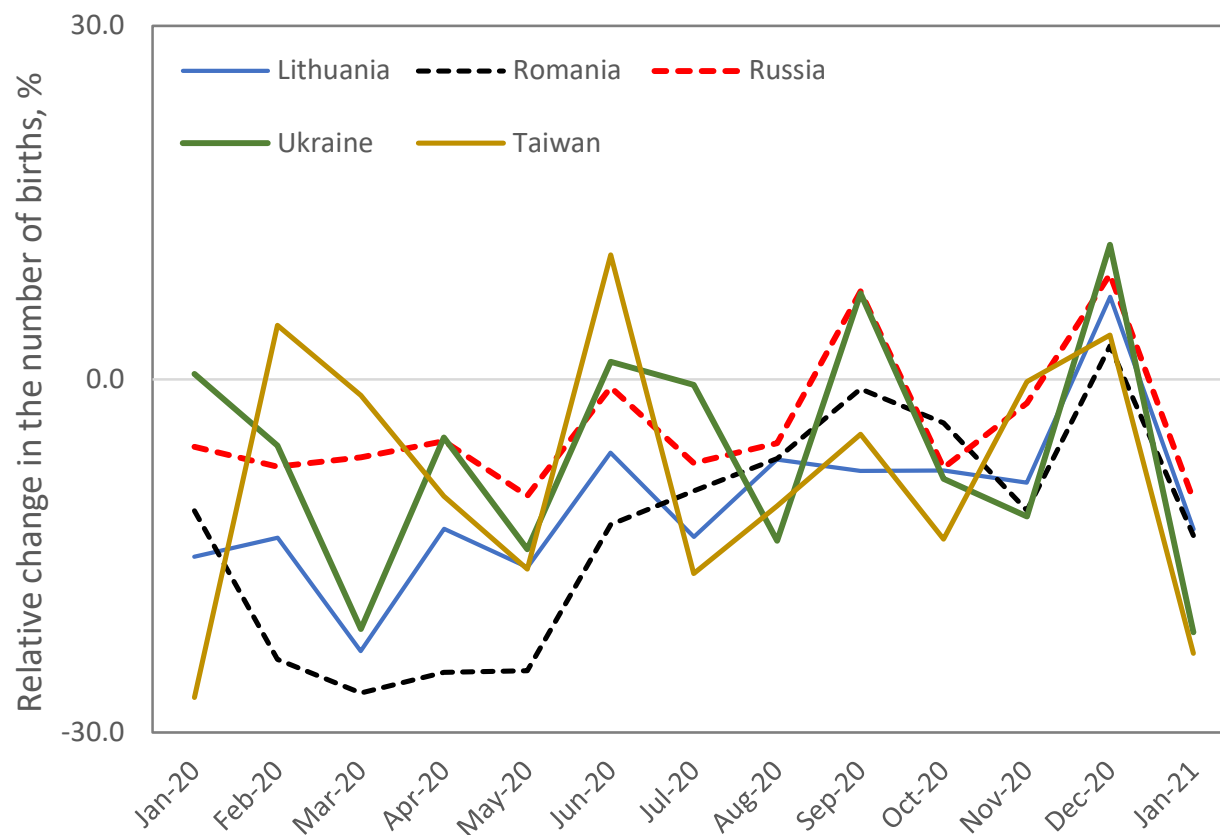
STFF visualisation toolkit created by Laszlo Nemeth, MPIDR

Data issues & adjustments

- Data by month of occurrence vs. registration (e.g. South Korea, Russia)
- Preliminary vs. final data (also incomplete data; e.g. Switzerland)
- Fluctuations, irregularities (also due to small numbers in some countries)
- Monthly data: impact of seasonality
- Main comparison: birth dynamic compared to the same month in the previous year (with an adjustment for 29 days in February 2020)
- Expected impact of the COVID-19: from November 2020 onwards (pregnancies started in early March, based on average pregnancy duration of 266 days or 8.7 months from ovulation to delivery; Jukic et al. 2013)

Data issues: fluctuations in some countries and areas

Relative change in the number of births compared with the same month in the previous year: 5 countries and areas with unstable data



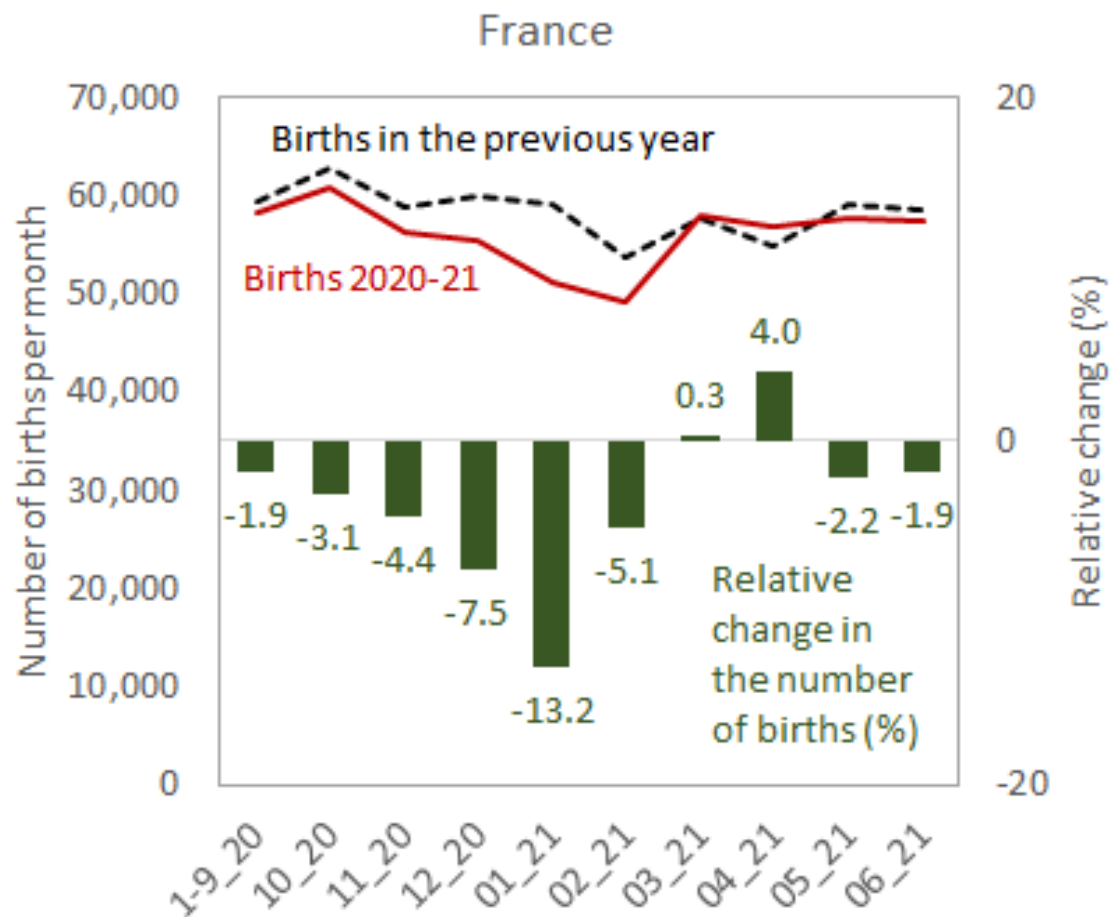
Baby bust in the wake of the COVID-19 pandemic?

Findings: trends by country and region

An update of the research based on the STFF data series and the following report:

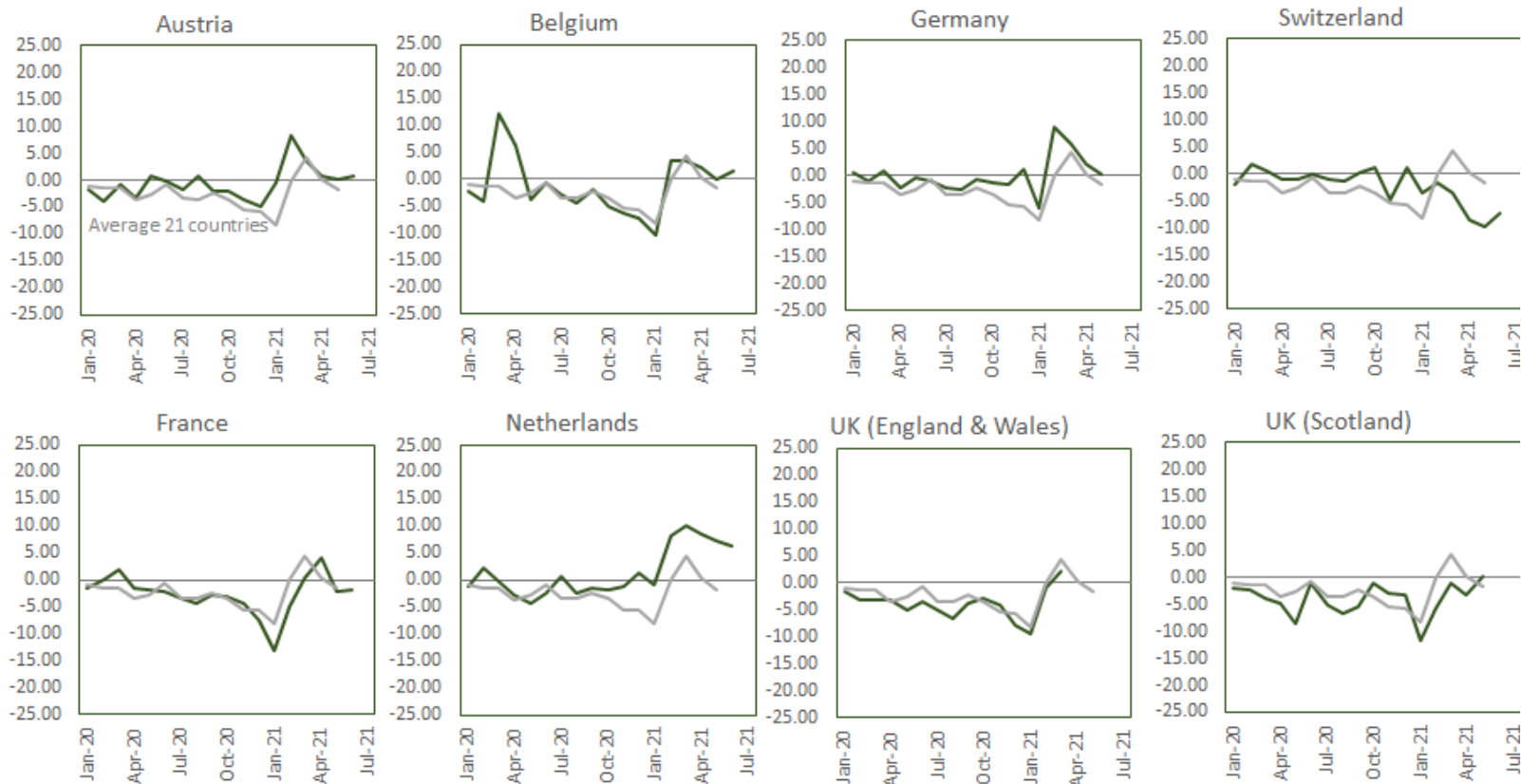
Sobotka, Tomas, Aiva Jasilioniene, Ainhoa A. Galarza, Kryštof Zeman, Laszlo Nemeth, and Dmitri Jdanov. 2021. "Baby Bust in the Wake of the COVID-19 Pandemic? First Results from the New STFF Data Series." SocArXiv. March 24. doi:10.31235/osf.io/mvy62

Western Europe: France



Relative year-on-year change in the number of births (%):
France,
Jan 2020-June 2021

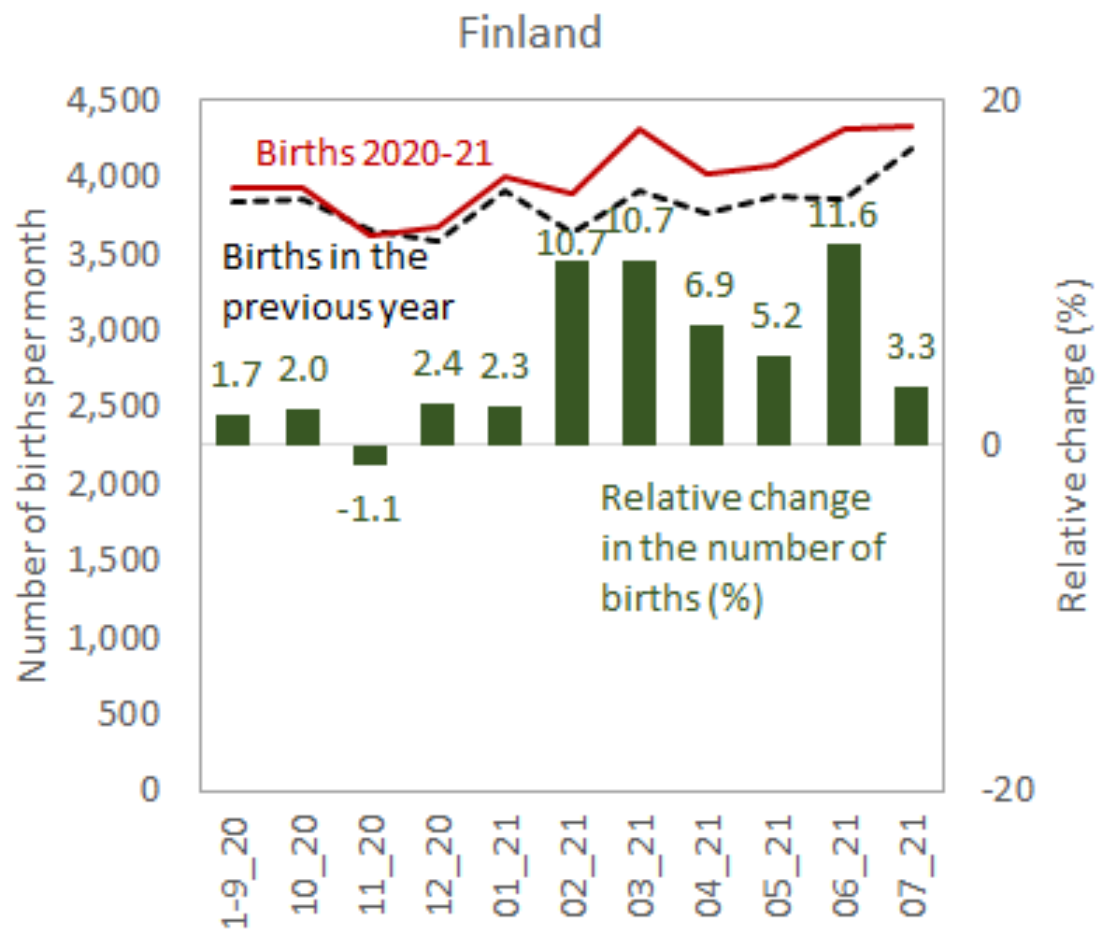
Western Europe (summary)



Relative year-on-year change in the number of births (%), Jan 2020 – July 2021

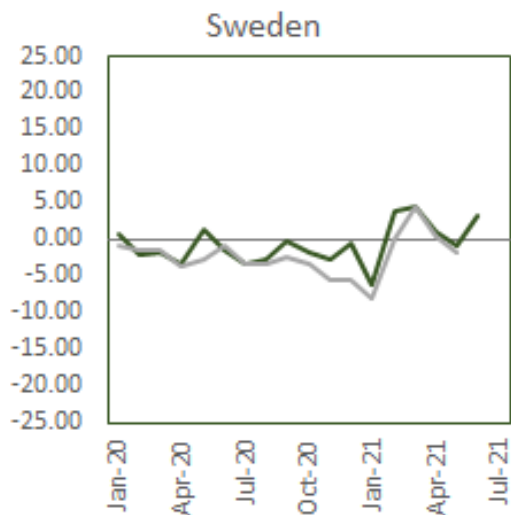
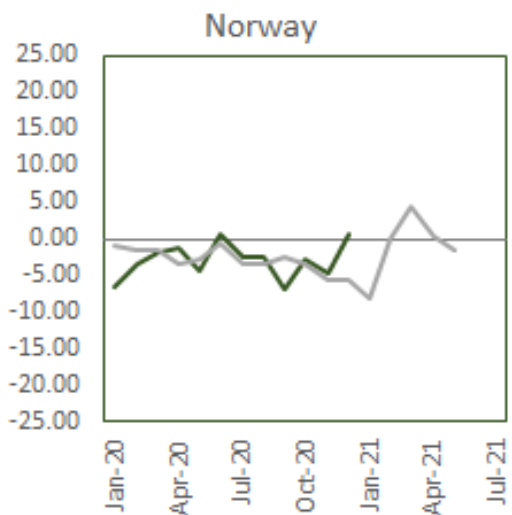
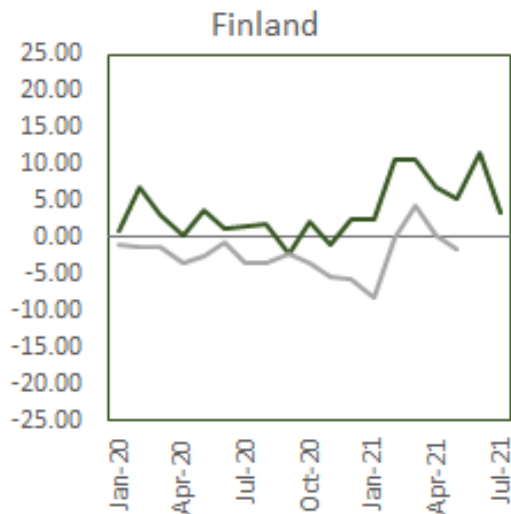
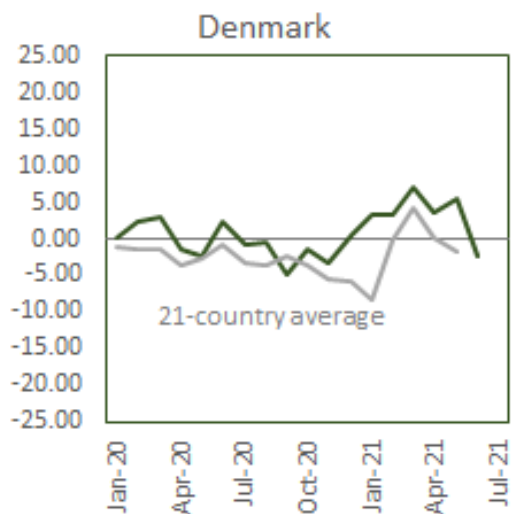
An initial fall in France, Belgium, UK; less intensive decline in Austria; no decline in Germany, “baby boom” in the Netherlands

Nordic countries: Finland



Relative year-on-year change in the number of births (%):
Finland,
Jan 2020- July 2021

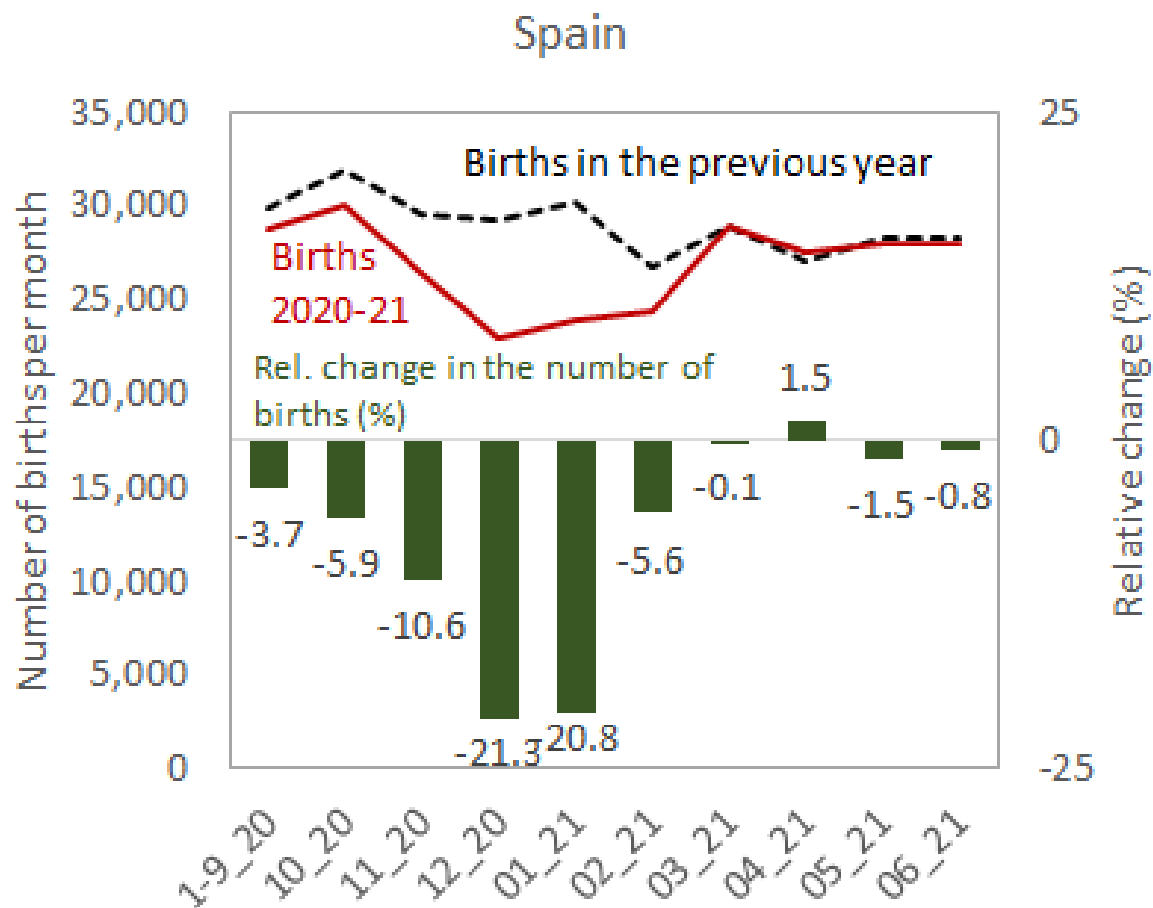
Nordic countries (summary)



Relative year-on-year change in the number of births (%)

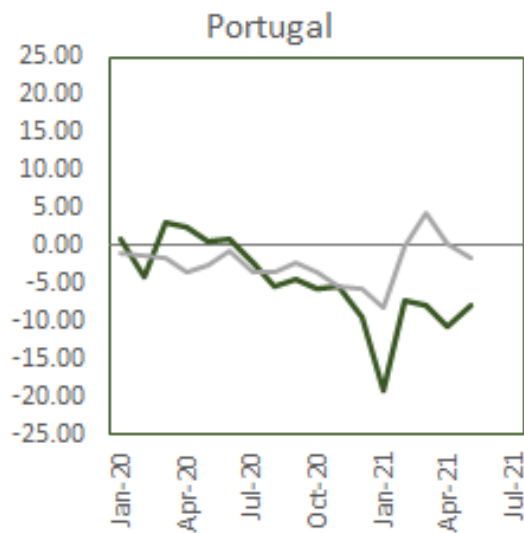
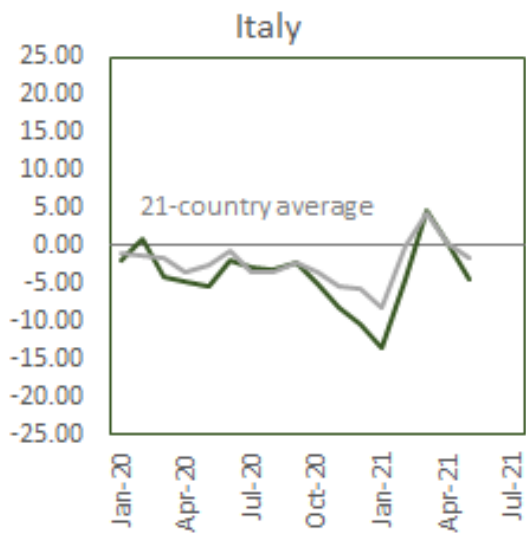
Very limited initial negative impact of covid-19, but a clear subsequent recovery around March-April 2021

Southern Europe: Spain

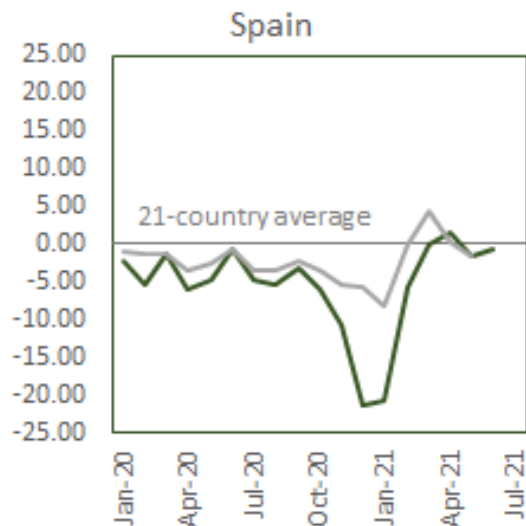


Relative year-on-year change in the number of births (%):
Spain,
Jan 2020-June 2021

Southern Europe (summary)

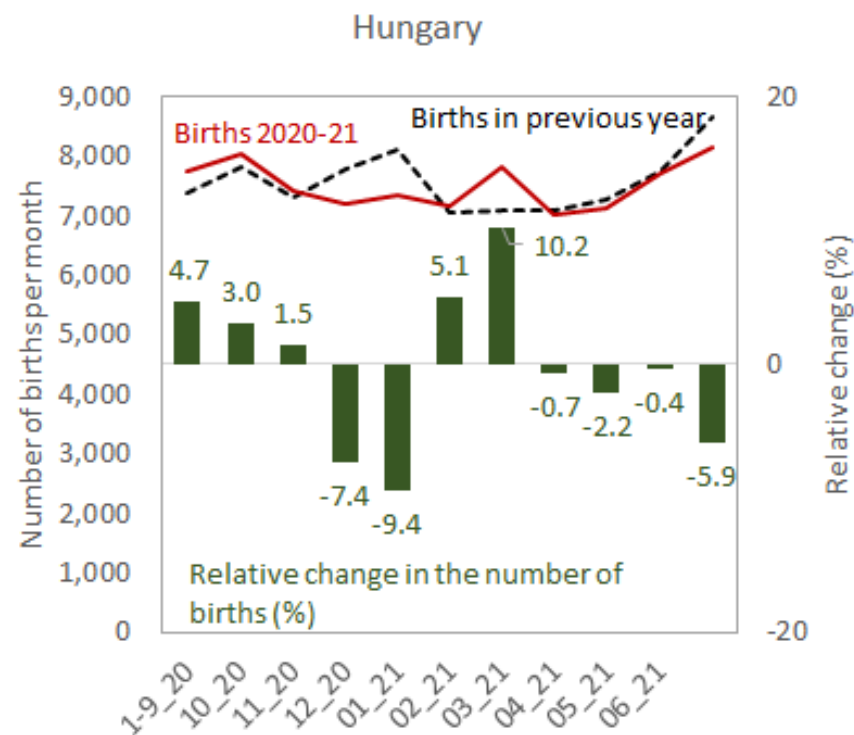
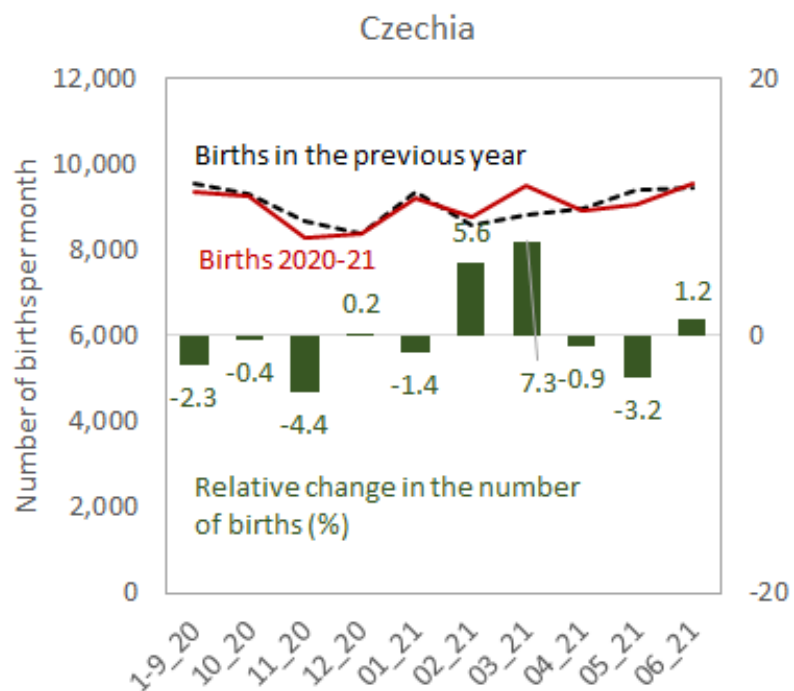


Relative year-on-year change in the number of births (%)



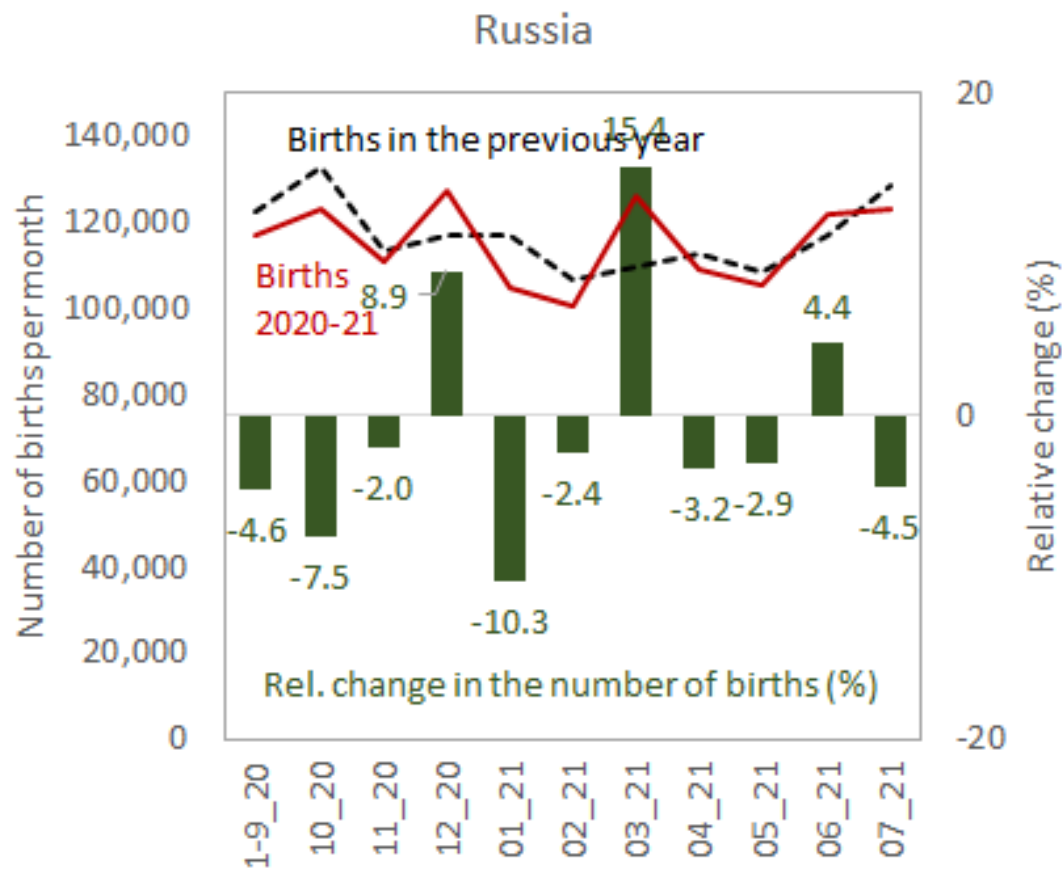
A sharp initial downturn in Italy, Portugal and Spain, small or limited recovery since March 2021

Central Europe: Czechia and Hungary



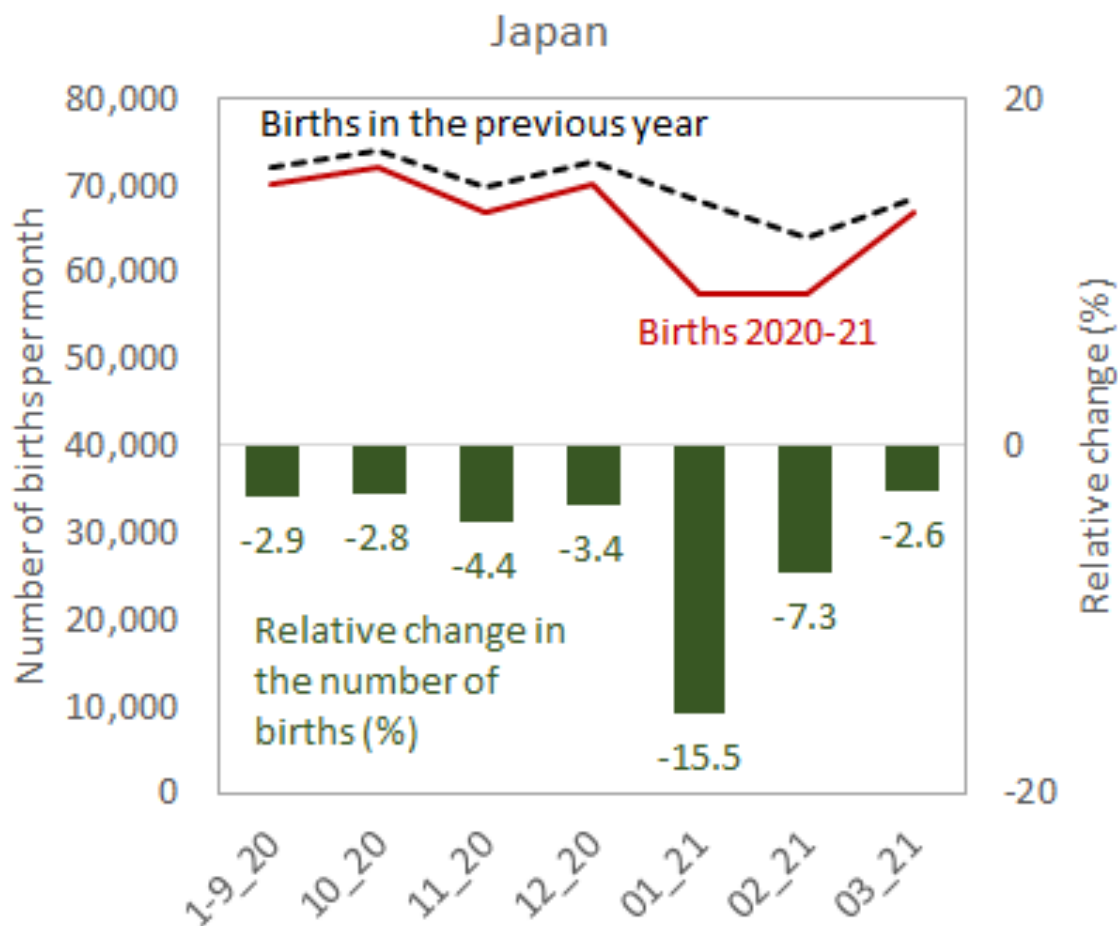
Relative year-on-year change in the number of births (%): Jan 2020-July 2021

Eastern Europe: Russia



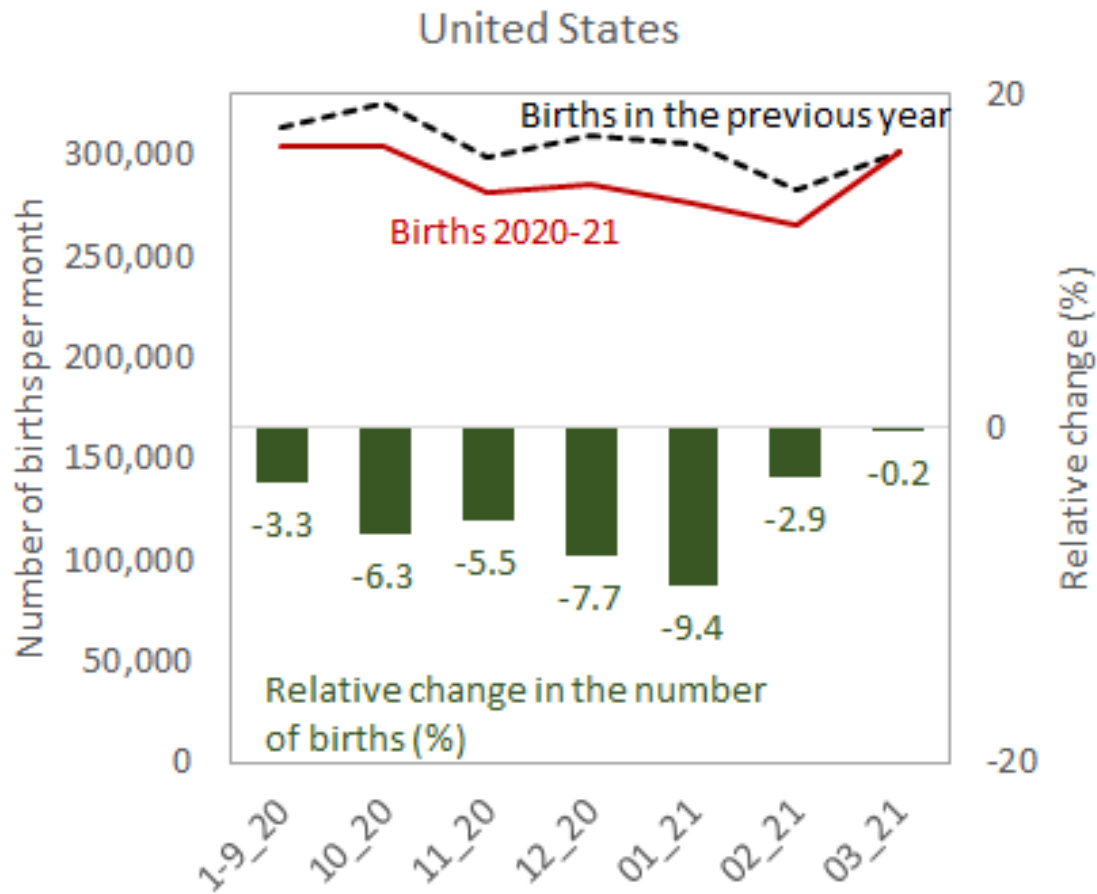
Relative year-on-year change in the number of births (%):
 Russia,
 Jan 2020-July 2021

East Asia: Japan



Relative year-on-year change in the number of births (%):
Japan,
Jan 2020-Mar 2021

United States



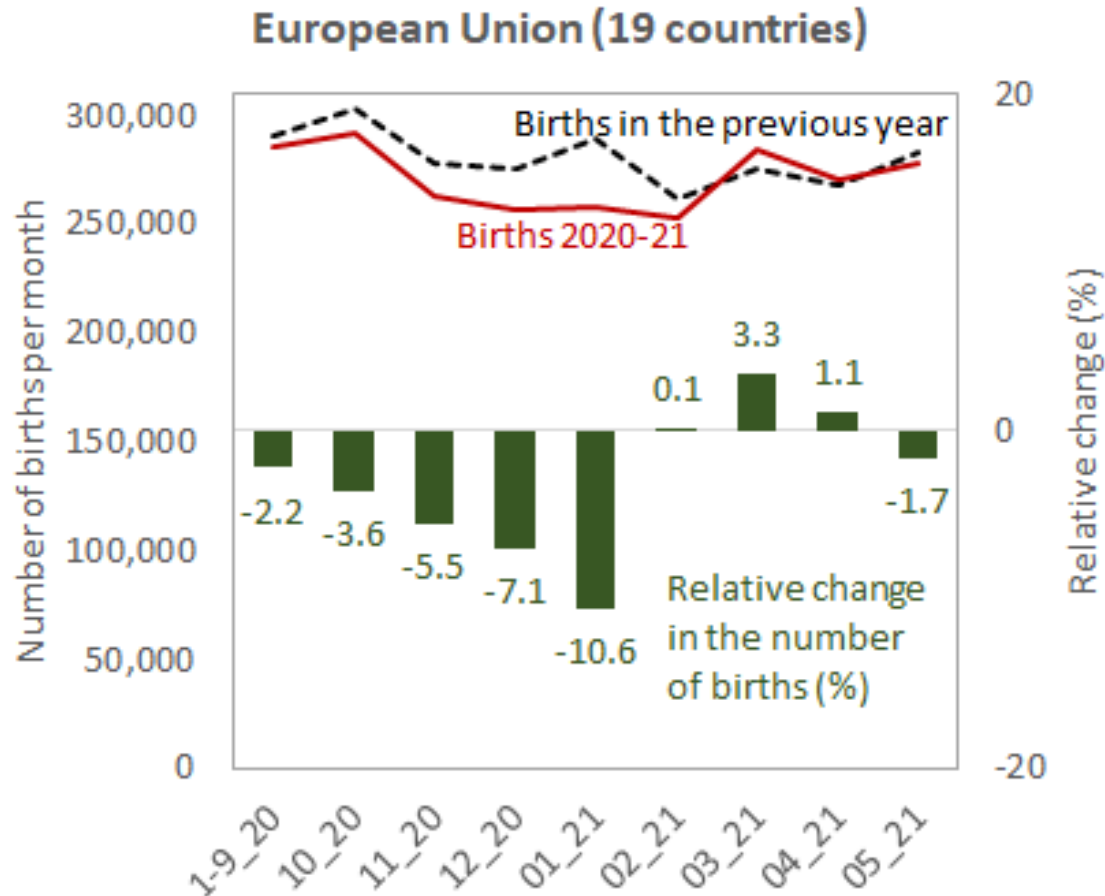
Relative year-on-year change in the number of births (%):
USA,
Jan 2020-Mar 2021

Baby bust in the wake of the COVID-19 pandemic?

Findings: summary

European Union

19 countries with data until May 2021



Relative year-on-year change in the number of births (%):
European Union (19 countries),
Jan 2020-May 2021

Countries covered: Austria, Belgium, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Italy, Hungary, Latvia, Lithuania, Netherlands, Portugal, Romania, Slovenia, Spain, Sweden

Monthly trends across analysed countries

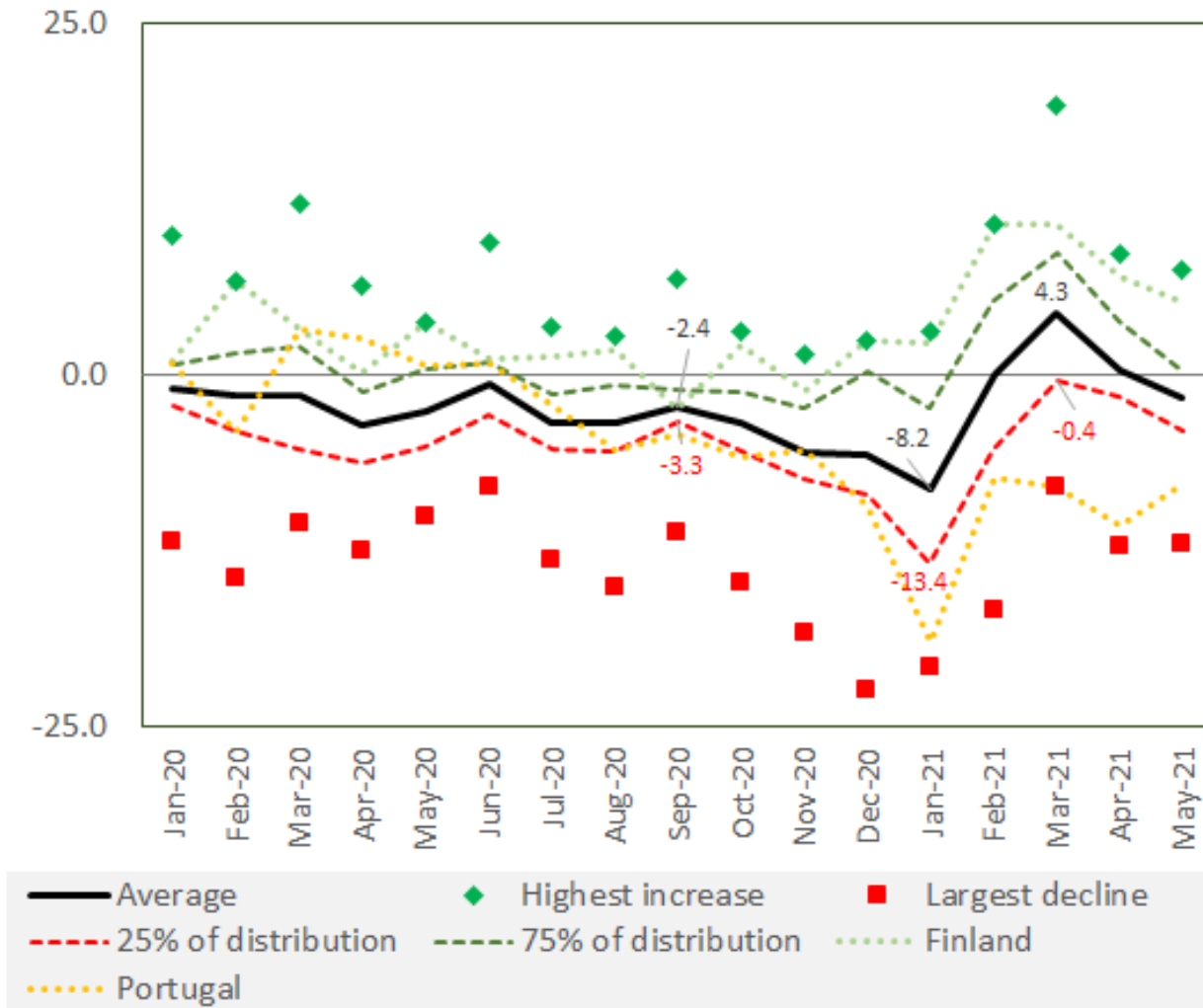
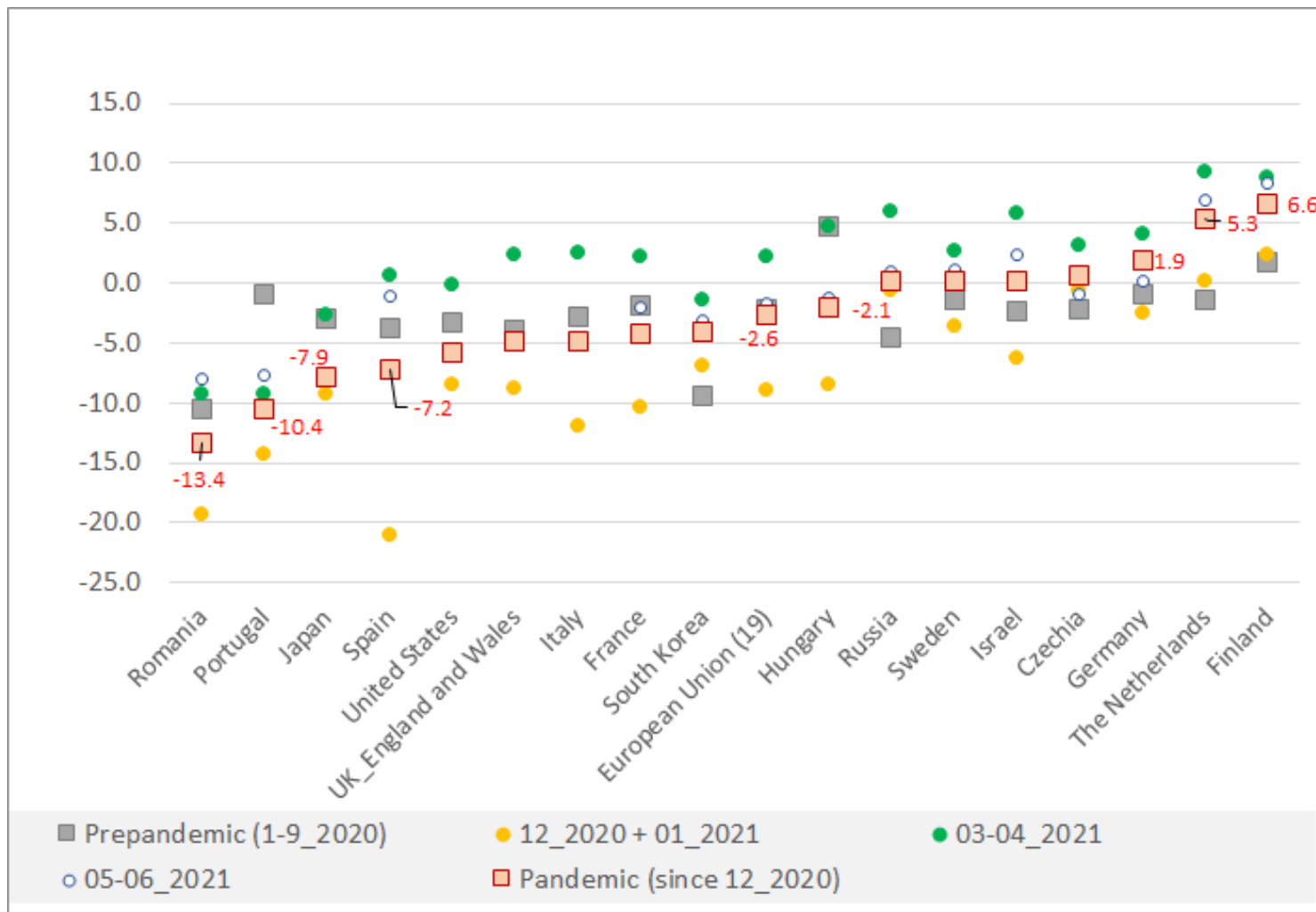


Figure excludes countries with large fluctuations in data or incomplete data: Lithuania, Latvia, Russia, Ukraine, Chile; Croatia, Taiwan

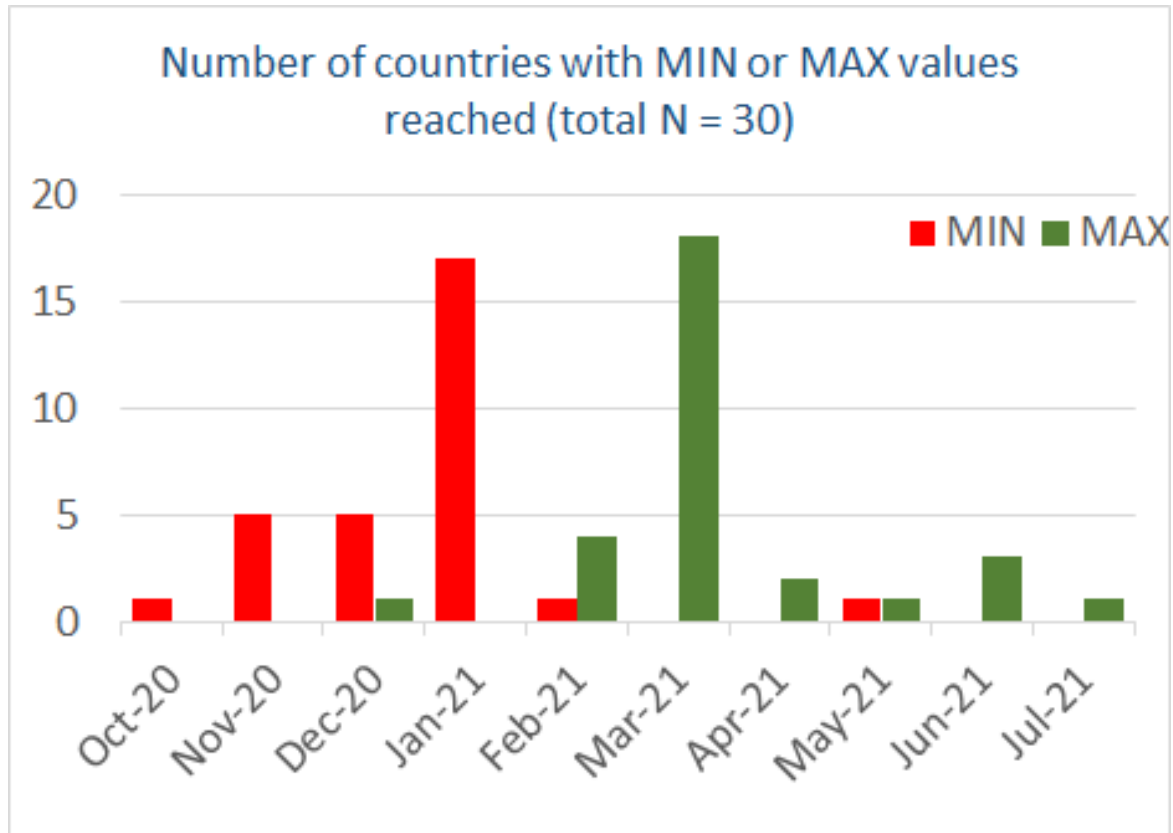
Average relative year-on-year change in the number of births (%): 21 countries with data until at least May 2021

Baby bust in January 21 followed by a boom in March-April 2021: cross-country differences



Average relative year-on-year change in the number of births during the pandemic (since December 2020) (%): selected periods and countries

Baby bust in January 21 followed by a boom in March-April 2021: cross-country differences



Number of countries reaching minimum and maximum relative year-on-year change in the number of births during the pandemic, by month since October 2020 until most recent data

Baby bust in the wake of the COVID-19
pandemic?

Concluding discussion

Key findings: trends and cross-country differences

- 1st wave of the COVID-19 pandemic associated with baby bust in most countries: accelerated downturn in the year-on-year number of births from Nov 2020 to Jan 2021
- Mostly in line with the expectations
- Average year-on-year decline by -8% in January

Regional differences

- Strongest impact: Southern Europe, also Belgium, France, Estonia, Hungary; probably Ukraine, Latvia
- No clear negative impact in some countries: Nordic countries, Germany, the Netherlands, Slovenia

Period trends: birth recovery after the baby bust

Downturn in the number of births already starting since Oct 2020

- Preterm births? Induced abortions?
- January 2021 births: pregnancies mostly started in April and (early) May → peak of the 1st COVID-19 wave & lockdowns

The biggest surprise:

Trend reversal in Feb-Mar 2021: consistent across countries, regions and contexts

- Peak in March 2021: huge upturn compared with Jan. 2021 in all countries ex. Portugal, but also a jump compared with Mar. 2020
 - In most countries largely balancing or even surpassing the previous downturn
- ➔ An unexpected baby boom associated with ending of the 1st wave
- ➔ Short-lived: Fading out after April 2021

Future trends

Short-term trends

- Birth trends might move in cycles of busts and recoveries, similar to the cycles of the COVID-19 pandemic and lockdowns
- Likely less volatile than early this year
- Widening cross-country differences in fertility response?

Longer-term trends

- Overall, a decline in fertility in 2021 likely in most countries
- Downturns past 2021 more likely if COVID-19 leaves long-lasting scars in economy, labour market and if it affects government spending
- Different “starting” position: fertility in some countries record low in 2019
- Moderating impact of social and family policies

Pregnancy

Lockdown baby boom may be on the way as NHS antenatal bookings rebound

Appointments in third quarter of 2020 at five-year high despite dip earlier in pandemic

- [Coronavirus - latest updates](#)
- [See all our coronavirus coverage](#)

Neil Puffett and Rachel Hall
@rachel_hall
Tue 20 Apr 2021 13:35 BST



▲ Antenatal appointments in the final three months of 2020 were 11.1% higher than the same period in 2019, NHS

The Guardian, 20 April 2021

More research needed into the causes of birth fluctuations

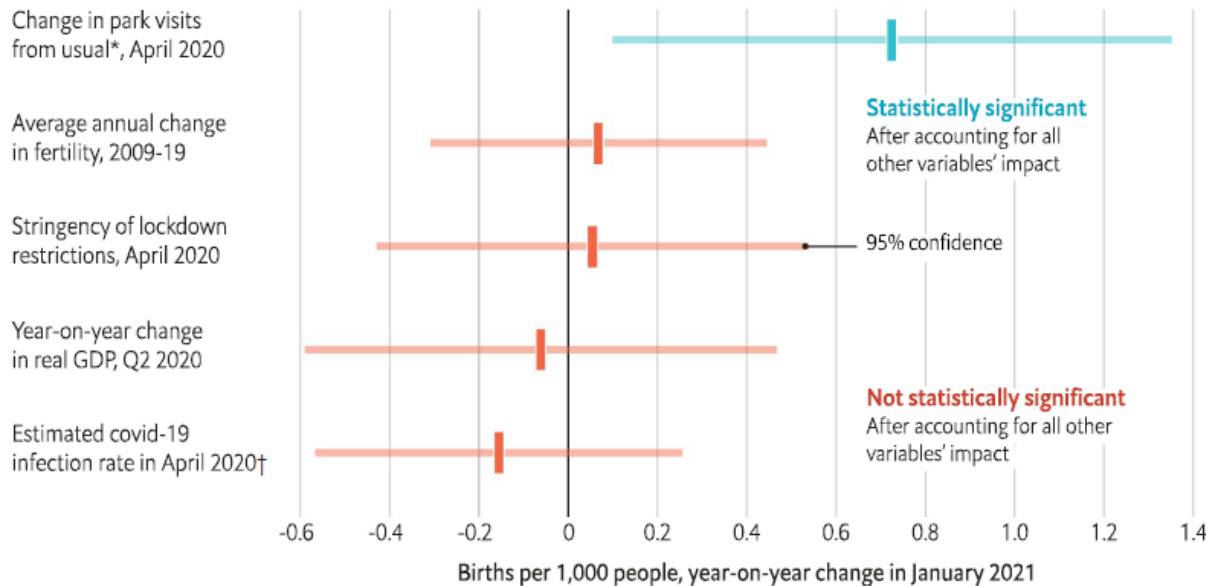
Parks and procreation

Park visits predict changes in birth rates during the pandemic

The number of births prevented by the pandemic may exceed the death toll from covid-19

→ Visits to parks predicted changes in birth rates remarkably well

Impact of one-standard-deviation increase in variable on year-on-year change in births per 1,000 people in January 2021, 21 countries



*Median by day of week from January 3rd-February 6th 2020 †Using statistical model based on serosurveys

The Economist,
15 May 2021

Why is Finland different?

- *Very low initial fertility level in 2020*
- *The low impact of the 2020 pandemic*
- *Family and social support policies?*

We need *Generations and Gender Survey Data* for Finland and other countries to find out more!

Thank you!

→ also to the fantastic HFD team at the MPIDR!

STFF (Short-Term Fertility Fluctuations) dataset:

<https://www.humanfertility.org/cgi-bin/stff.php>

STFF Visualisation Toolkit:

<https://mpidr.shinyapps.io/stfertility/>



Report on monthly birth trends (to be updated soon, 😊)

<https://osf.io/preprints/socarxiv/mvy62>

(Sobotka, Tomas, Aiva Jasilioniene, Ainhoa A. Galarza, Kryštof Zeman, Laszlo Nemeth, and Dmitri Jdanov. 2021. “Baby Bust in the Wake of the COVID-19 Pandemic? First Results from the New STFF Data Series.” SocArXiv. March 24. doi:10.31235/osf.io/mvy62)

Contact:

Kryštof Zeman (krystof.zeman@oeaw.ac.at)

Tomáš Sobotka (tomas.Sobotka@oeaw.ac.at)