



Wittgenstein Centre

FOR DEMOGRAPHY AND  
GLOBAL HUMAN CAPITAL



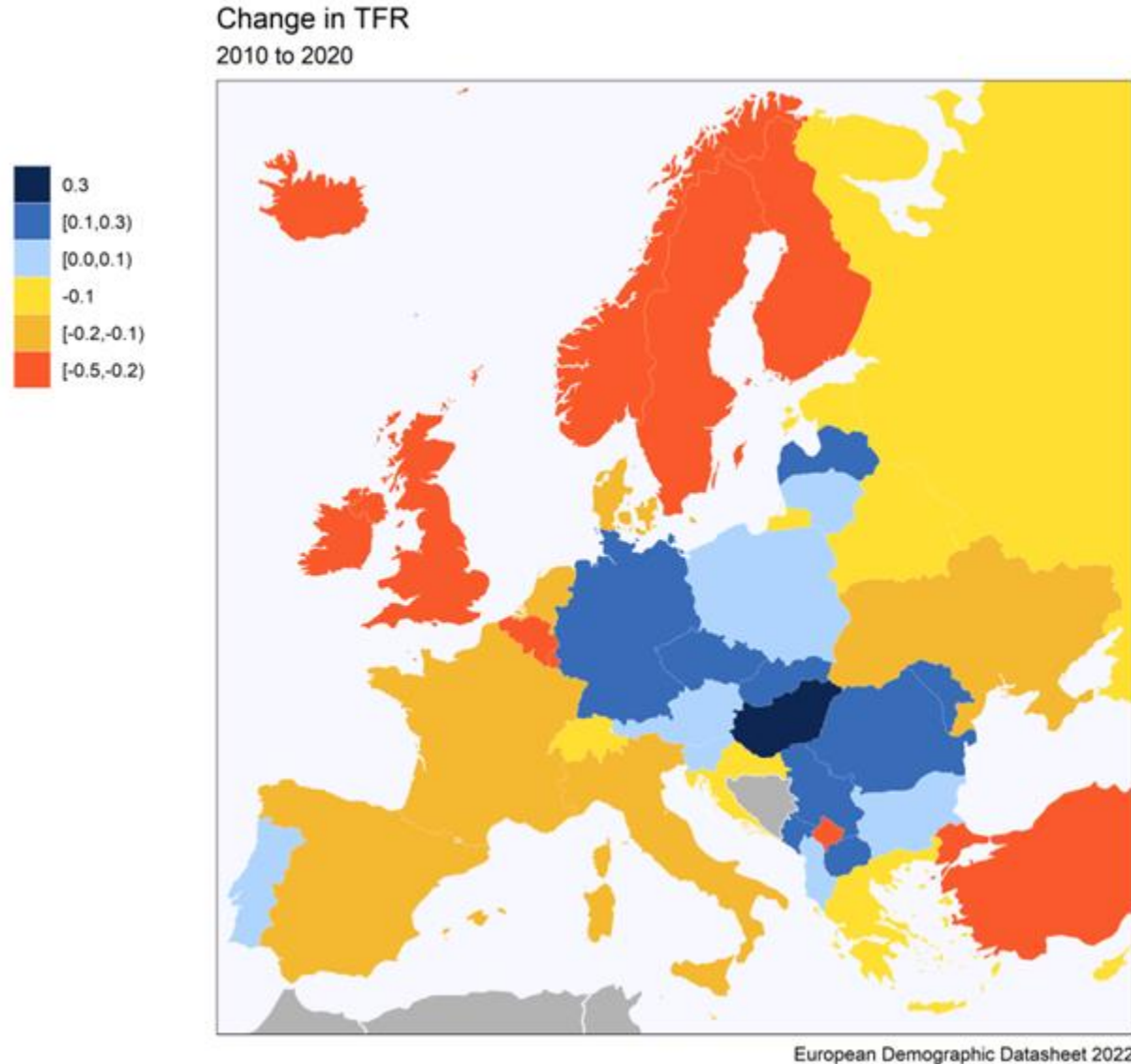
# COVID-19 a plodnost: mezinárodní srovnání

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Vienna Institute of Demography (Austrian Academy of Sciences), Wittgenstein Centre for Demography and Global Human Capital

Kulatý stůl České demografické společnosti, *COVID-19 a plodnost*  
Praha, Český statistický úřad, 28. listopadu 2022

# Period fertility change in Europe, 2010-2020



Change in Period Total Fertility Rate in European countries between 2010 and 2020

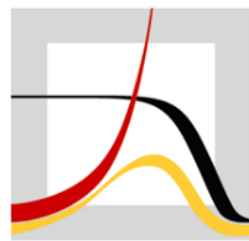
Source: European Demographic Datasheet 2022; [www.populationeurope.org](http://www.populationeurope.org)

# COVID and fertility: pandemic birth trends in Europe

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Joint research of the Vienna Institute of Demography / Wittgenstein Centre and the Max Planck Institute for Demographic Research (Rostock)

Special thanks to Krystof Zeman, Aiva Jasilioniene, and Maria Winkler-Dworak



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# Data, indicators

- The Short-Term Fluctuations Data Series (STFF) under the Human Fertility Database (<https://www.humanfertility.org/cgi-bin/stff.php> )
- Monthly birth data for the period until April 2022 (or latest available)
- We cover 36 highly developed countries and regions from Europe, East Asia, North America and Israel, Chile, New Zealand, also grouped by larger regions
- Pandemic set to start in November-December 2020 (pregnancies conceived in March 2020)

## Key indicators

- Relative change in the number of births (%) compared with the same month in pre-pandemic period (until October 2020)
- Estimated monthly Total Fertility Rates: crude estimates based on projected population, monthly Gross Fertility Rates (GFR) and GFR/TFR relationship



# Key resources

## Overview paper

Sobotka, Tomas, Aiva Jasilioniene, Kryštof Zeman, Maria Winkler-Dworak, Zuzanna Brzozowska, Ainhoa A. Galarza, Laszlo Nemeth, Dmitri Jdanov. 2022. "From Bust to Boom? Birth and Fertility Responses to the COVID-19 Pandemic." *SocArXiv*, August 22, 2022. doi:10.31235/osf.io/87acb.

<https://osf.io/preprints/socarxiv/87acb/>

## Database

Human Fertility Database / Short-Term Fertility Fluctuations (STFF)

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



## 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.

STFF data are published under [CC BY 4.0 license](#).

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

STFF data can also be explored using our online [STFF visualization toolkit](#).

### Here you can download the following data and documentations:

- [STFF Metadata](#): information about country-specific data and data sources.
- [STFF Methodological Note](#): description of this data project, including data collection, data processing, and methodology.
- **Crude birth counts and TFR** ([xlsx](#) or pooled [csv](#)): monthly counts of live births and monthly and annual TFRs.

Crude indicators do not allow direct comparison across countries and over time as they are affected by seasonality in childbearing. To provide comparable indicators, we publish seasonally and calendar adjusted data.

- **Seasonally- and calendar-adjusted data** ([xlsx](#) or pooled [csv](#)): monthly counts of live births and monthly TFRs for selected countries.
- [Original data](#) (country-specific csv files in one zip file): original birth counts in standardized format.

*Note: Data on monthly TFR are preliminary. We are still working on the methodology and may revise it soon.*

### Data availability

Last update: 21-10-2022

Country	Crude data	Seasonally- and calendar-adjusted data
Austria	<a href="#">01/2000–06/2022</a>	<a href="#">01/2012–06/2022</a>
Belgium	<a href="#">01/2000–06/2022</a>	<a href="#">01/2012–06/2022</a>
Bulgaria	<a href="#">01/2000–12/2021</a>	<a href="#">01/2012–12/2021</a>

## 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, %



The Economist

Apr 3rd 2020



LIVE

A 1 Dance

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

331

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World

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



7 NEWS .com.au

Thursday, 8 April 2021

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

Kelly Burke • 7 NEWS • Published: Tuesday, 23 June 2020 3:47 pm AEST

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## 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



HUFFPOST

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U.S. edition

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

UPDATED 11:28am GMT



EL PAÍS

SOCIETY

DEMOGRAPHICS &gt;

## 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

The New York Times

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.

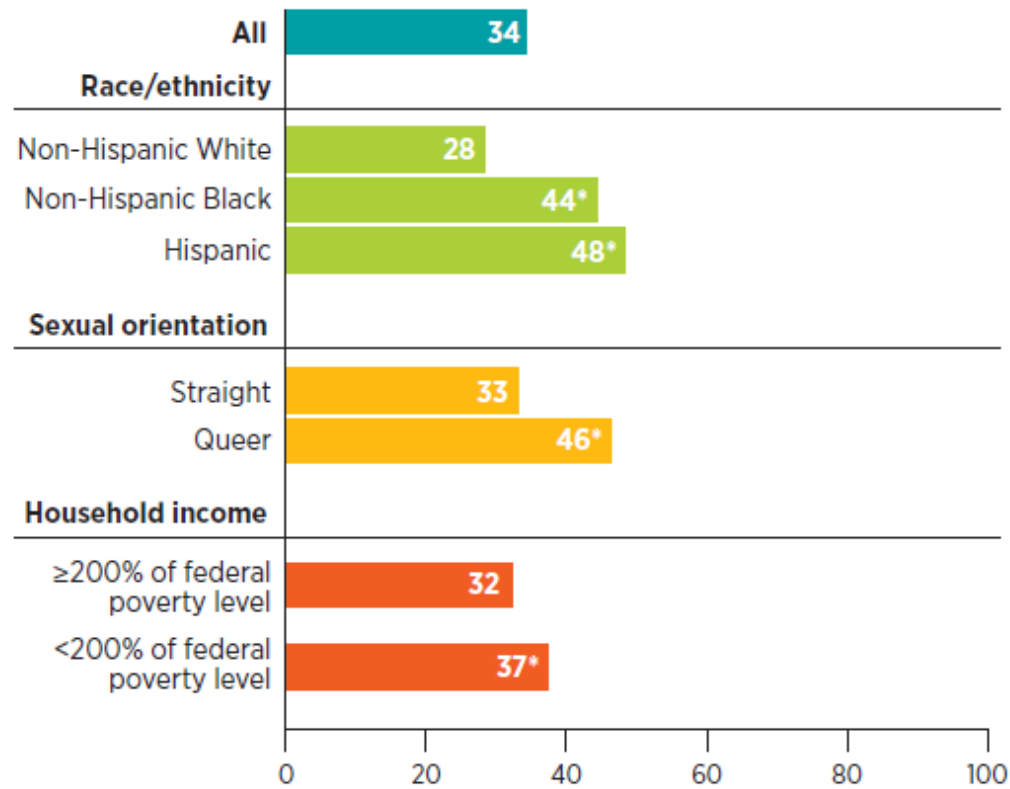
March 4, 2021



# Intentions: early surveys suggested negative impact

**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



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

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

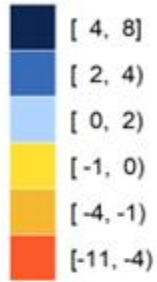


Laura D. Lindberg, Alicia VandeVusse, Jennifer Mueller and Marielle Kirstein

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



Change in number of births (%)  
2020 to 2021



European Demographic Datasheet 2022

# Pandemic birth trends in Europe

Relative change in the number of births (%) over the first year (2021)

Source: European Demographic Datasheet 2022, [www.populationeurope.org](http://www.populationeurope.org)

# Monthly trends in absolute number of births

## 2012-2022, adjusted for calendar and seasonality

Observed and seasonally-adjusted monthly number of births, Spain,  
Jan 2012 to Jul 2022

Observed series (thin line) and adjusted series (thick line)

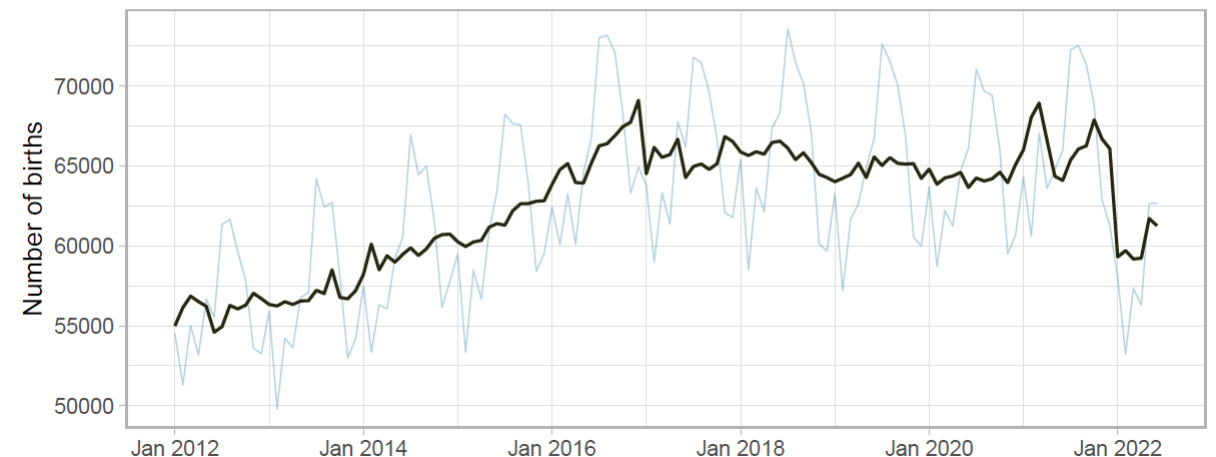


X-11 Arima model, computed by  
Maria Winkler Dworak

**Spain:**  
**initial pandemic shock (Dec 20-Jan 21)**

Observed and seasonally-adjusted monthly number of births, Germany,  
Jan 2012 to Jun 2022

Observed series (thin line) and adjusted series (thick line)

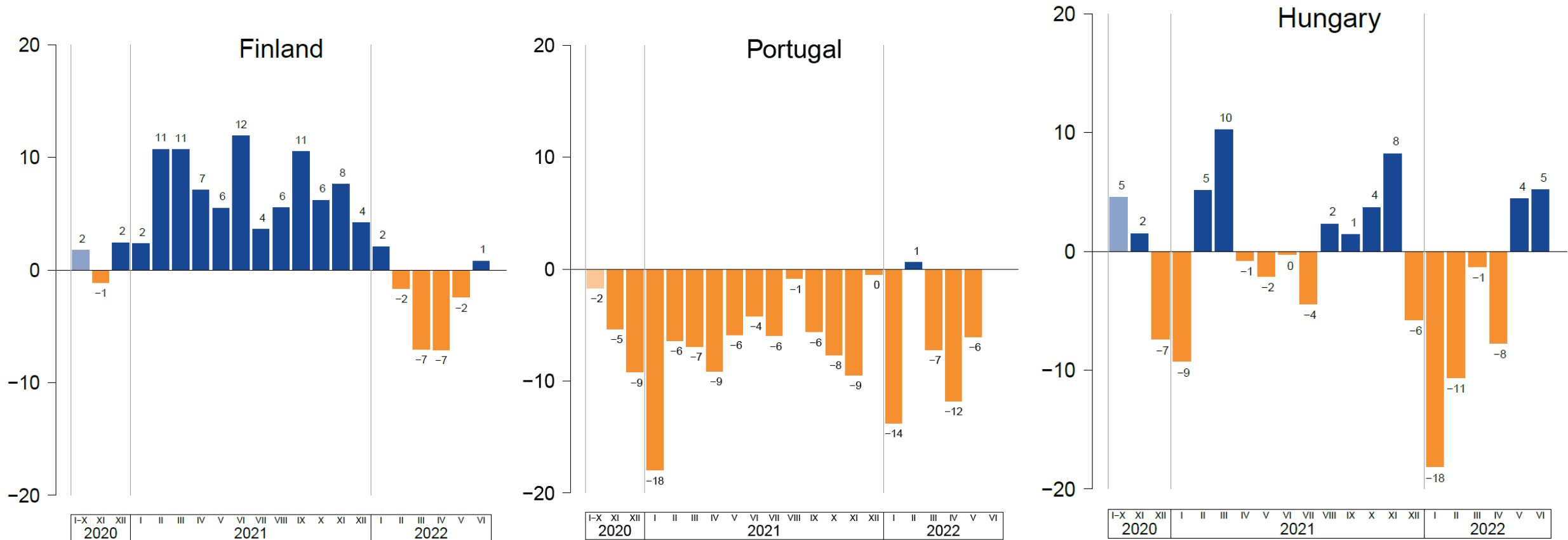


**Germany**  
**baby bust in early 2022**



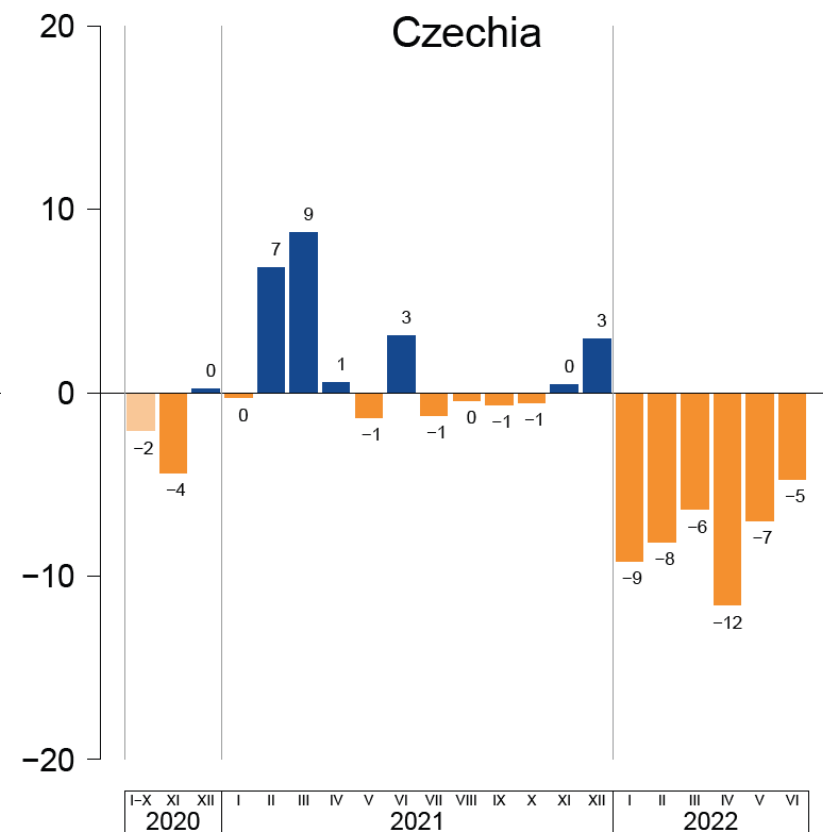
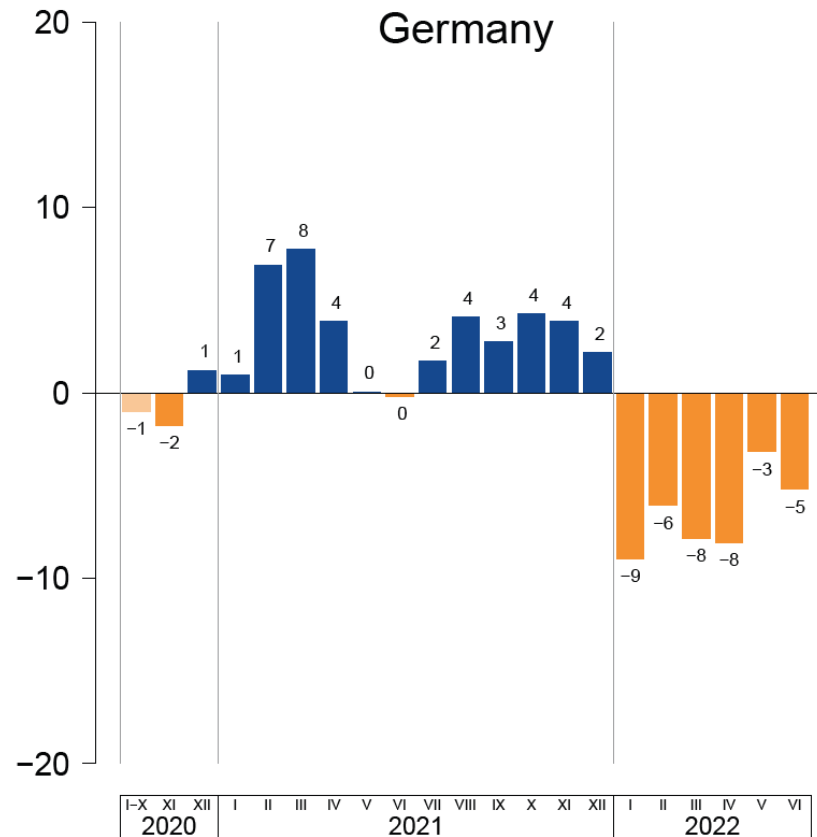
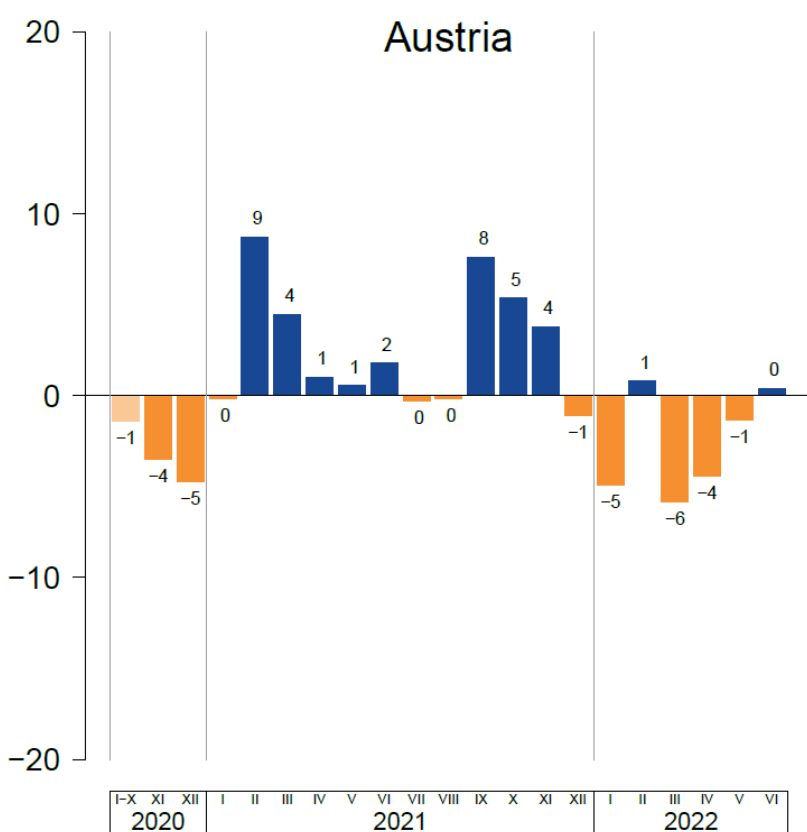
# Pandemic birth trends: relative changes

## diversity across countries and during the pandemic



Relative change in the number of births by month compared to the same month in the pre-pandemic period (Nov 2019 to Oct 2020)

# Pandemic birth trends: steep falls in early 2022



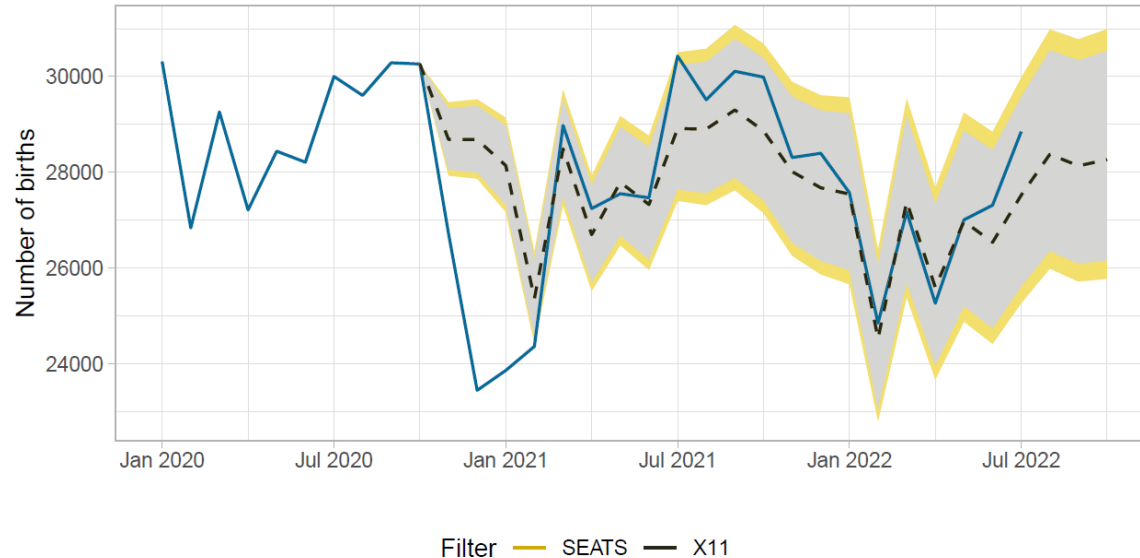
Relative change in the number of births by month compared to the same month in the pre-pandemic period (Nov 2019 to Oct 2020)

# Was the change in birth trend significant?

Checking the difference between the observed and projected birth trend based on the data until October 2020 (using seasonal ARIMA model with 90% CI)

Monthly number of births, Spain, Jan 2020 to Oct 2022

Observed series (solid line) and forecast (dashed line) with 90% resp. 95% confidence limits

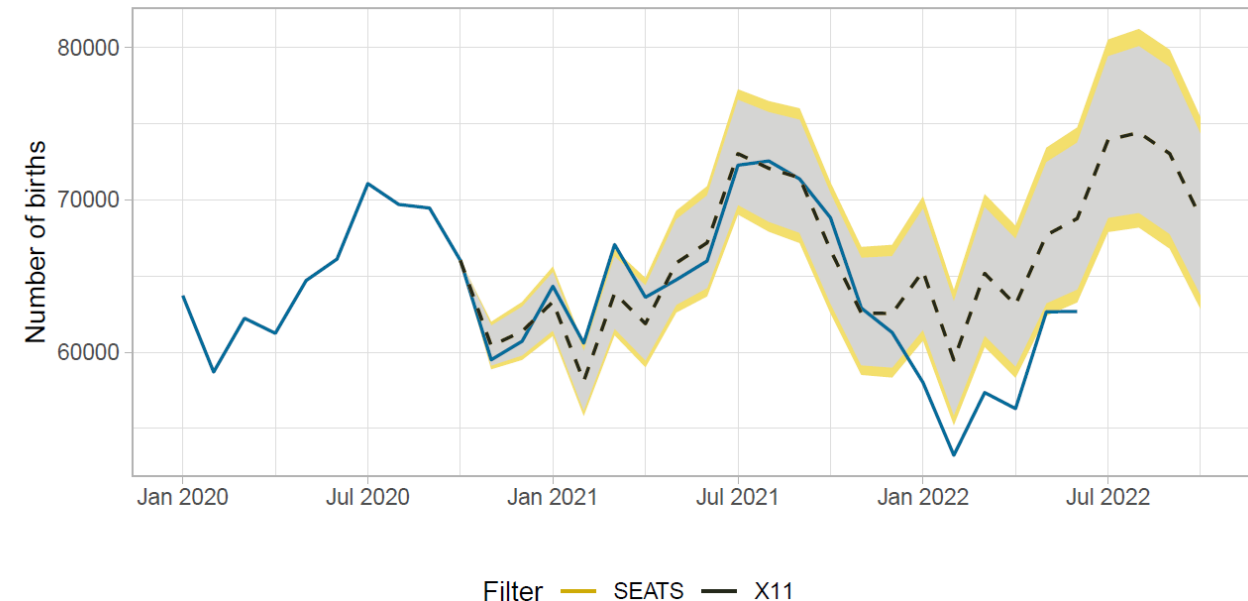


X-11 Arima model, computed by  
Maria Winkler Dworak

## Spain

Monthly number of births, Germany, Jan 2020 to Oct 2022

Observed series (solid line) and forecast (dashed line) with 90% resp. 95% confidence limits



## Germany

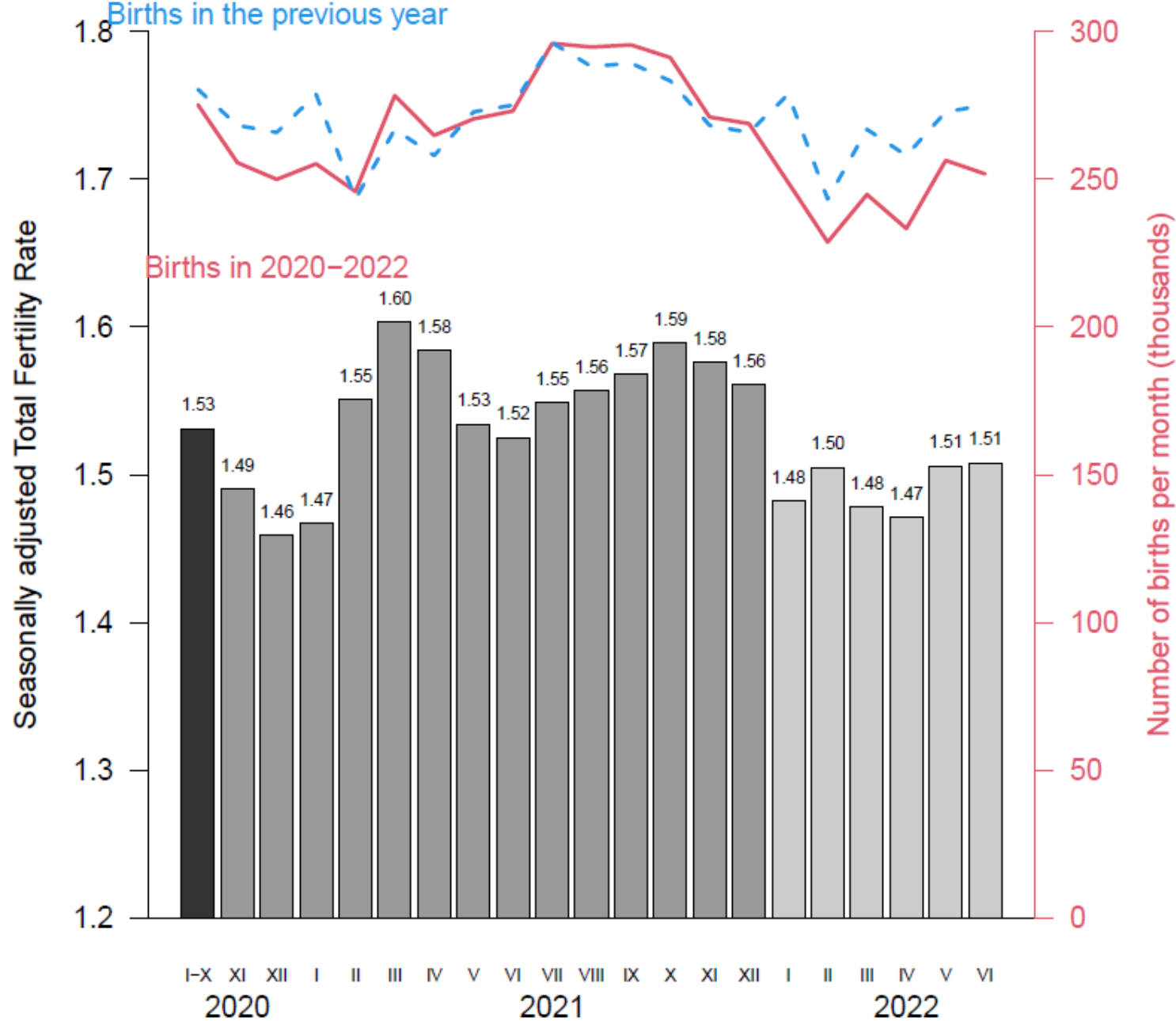


# Was the change in birth trend significant?

Checking the difference between the observed and projected birth trend based on the data until October 2020 (using seasonal ARIMA model with 90% CI)

		11_20	12_20	01_21	02_21	03_21	04_21	05_21	06_21	07_21	08_21	09_21	10_21	11_21	12_21	01_22	02_22	03_22
East Asia	Japan																	
	Korea																	
North America	United States																	
	Belgium																	
Western Europe	France																	
	Ireland																	
	Netherlands																	
	UK (England and Wales)																	
	UK (Scotland)																	
German-speaking countries	Austria																	
	Germany																	
	Switzerland																	
Nordic countries	Denmark																	
	Finland																	
	Norway																	
	Sweden																	
	Italy																	
Southern Europe	Portugal																	
	Spain																	
	Czechia																	
Eastern & South-eastern Europe	Hungary																	
	Slovenia																	
	Latvia																	
	Lithuania																	
	Bulgaria																	
Other countries	Russia																	
	Israel																	

## European Union (18 available countries)

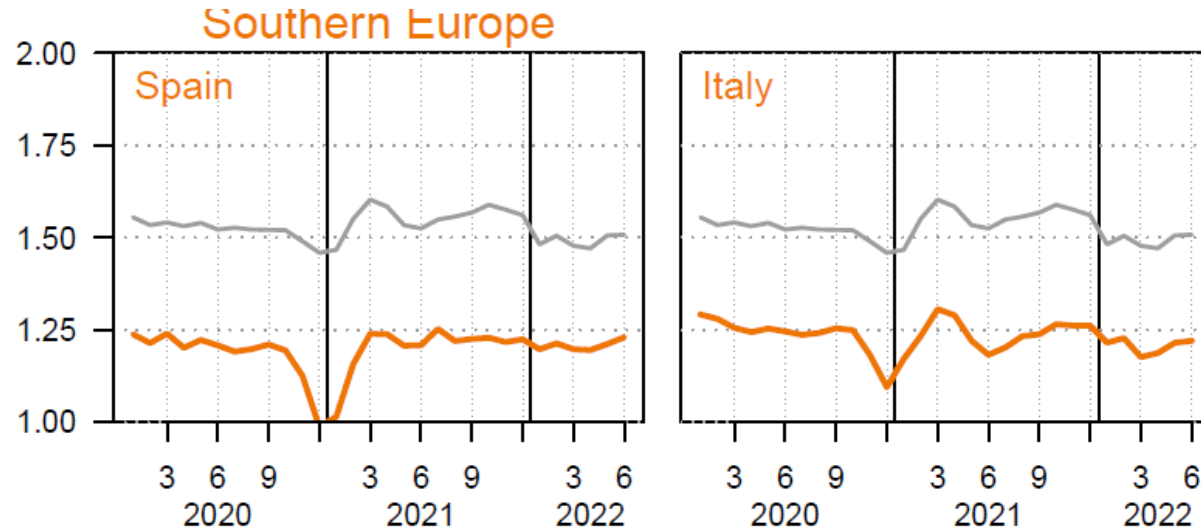


Estimated monthly trends in the TFR (estimates)

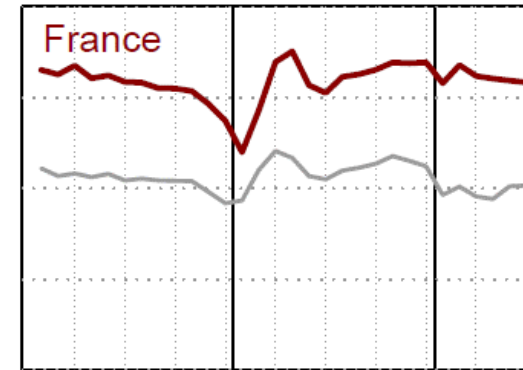


# Monthly trends in the TFR (estimates)

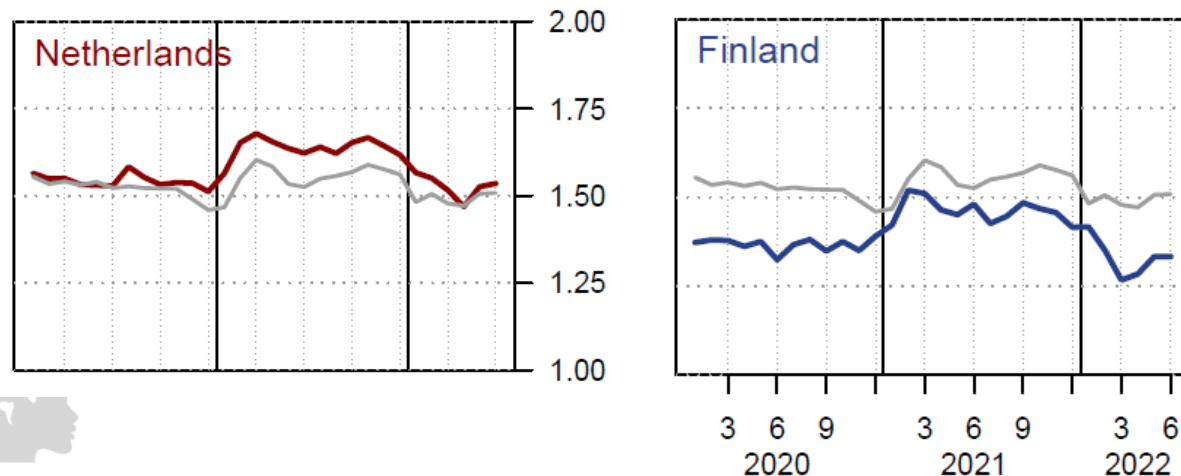
Initial baby bust around Jan 2021, then stabilisation



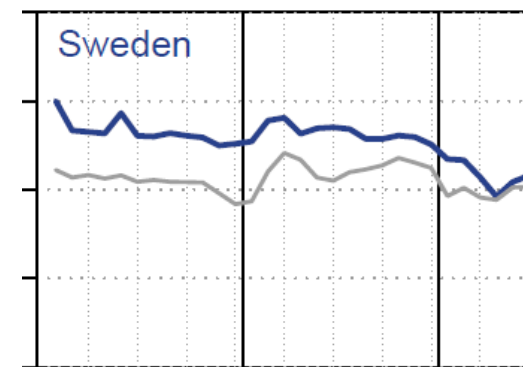
Baby bust, then robust recovery



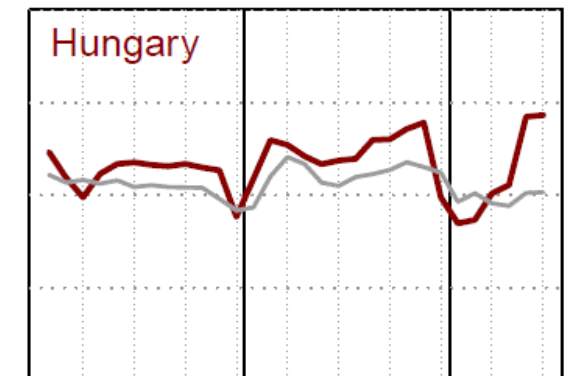
Baby boom since Mar 21, then baby bust in 2022



Baby bust in 2022

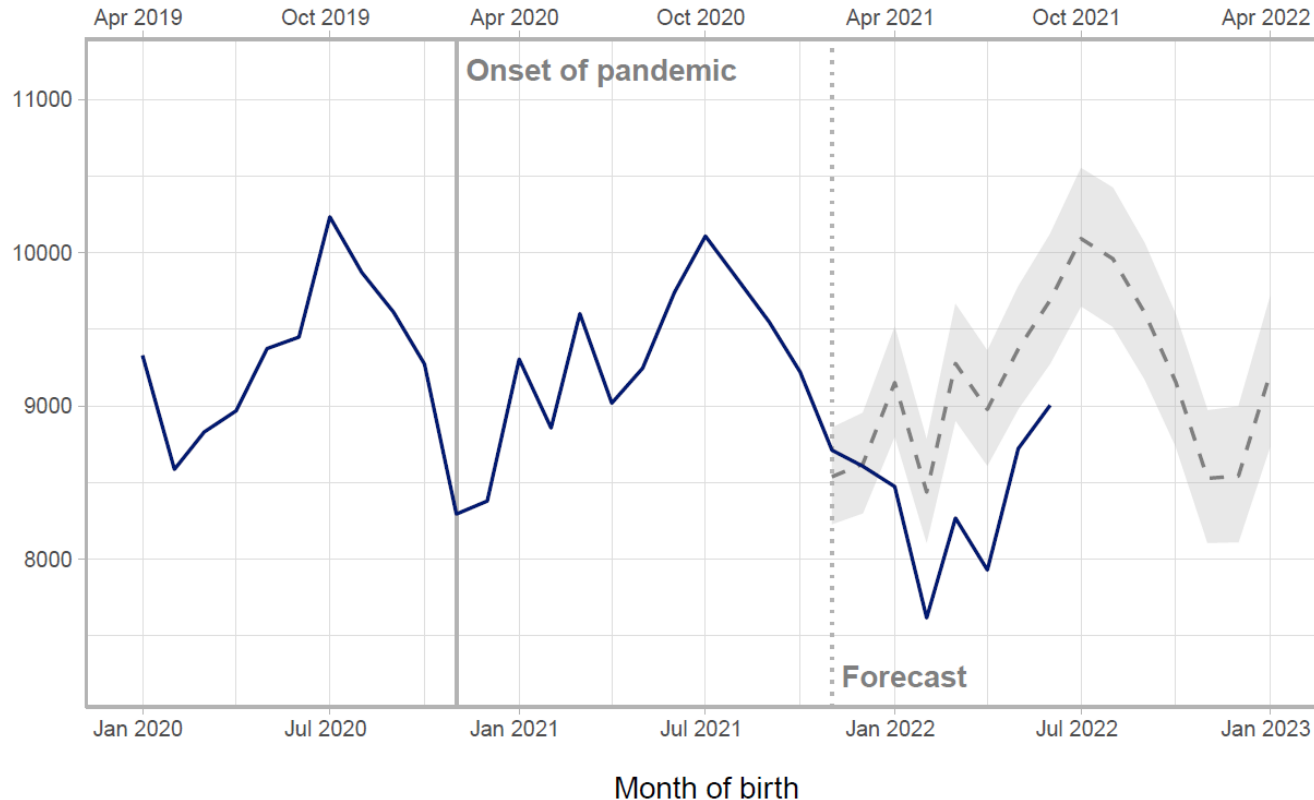


Pandemic rollercoaster

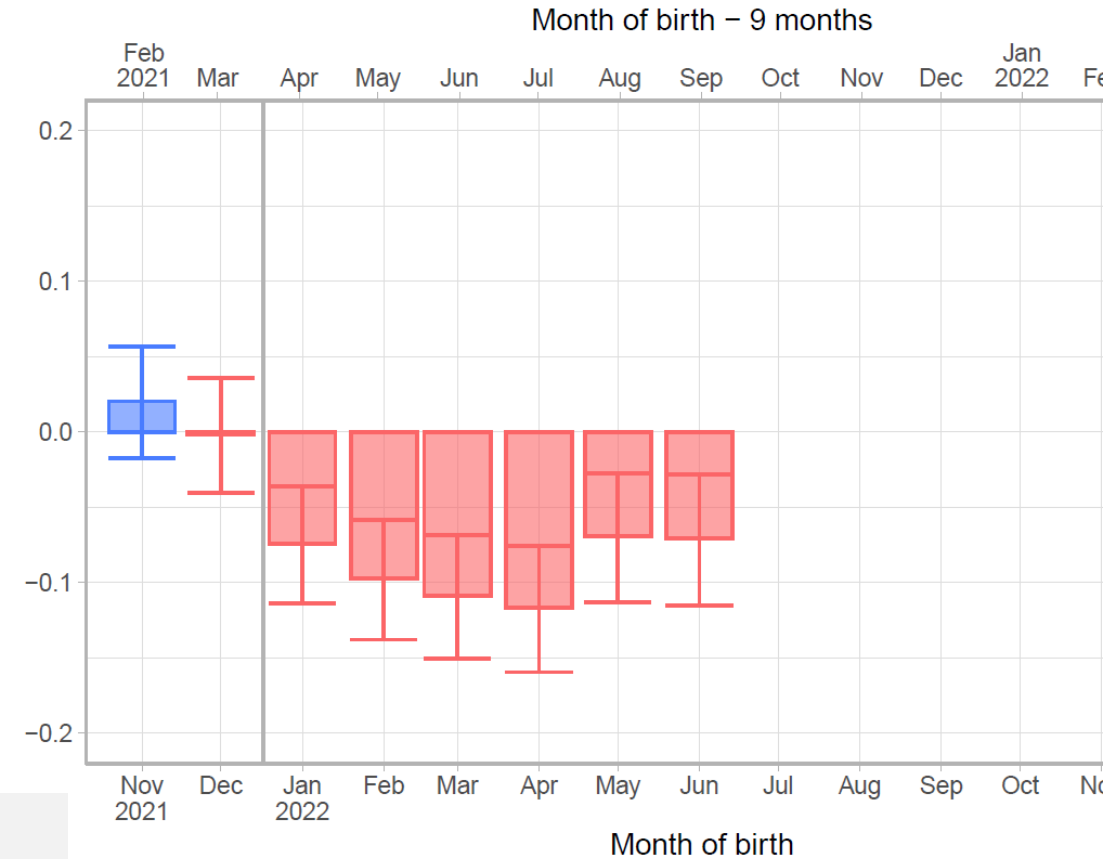


# Unexpected fertility drop in early 2022 (Czechia)

Observed and forecasted monthly number of births with 90 % CI  
Month of birth – 9 months

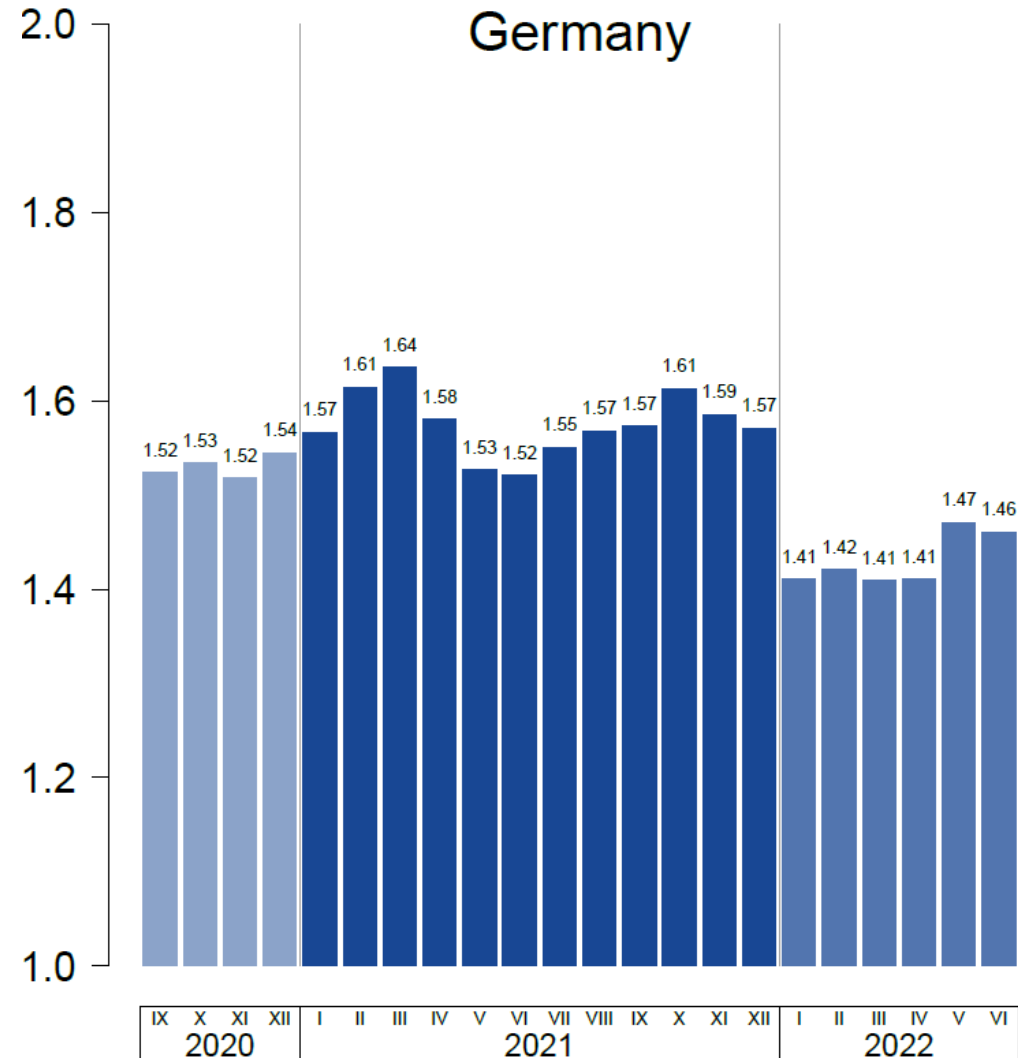
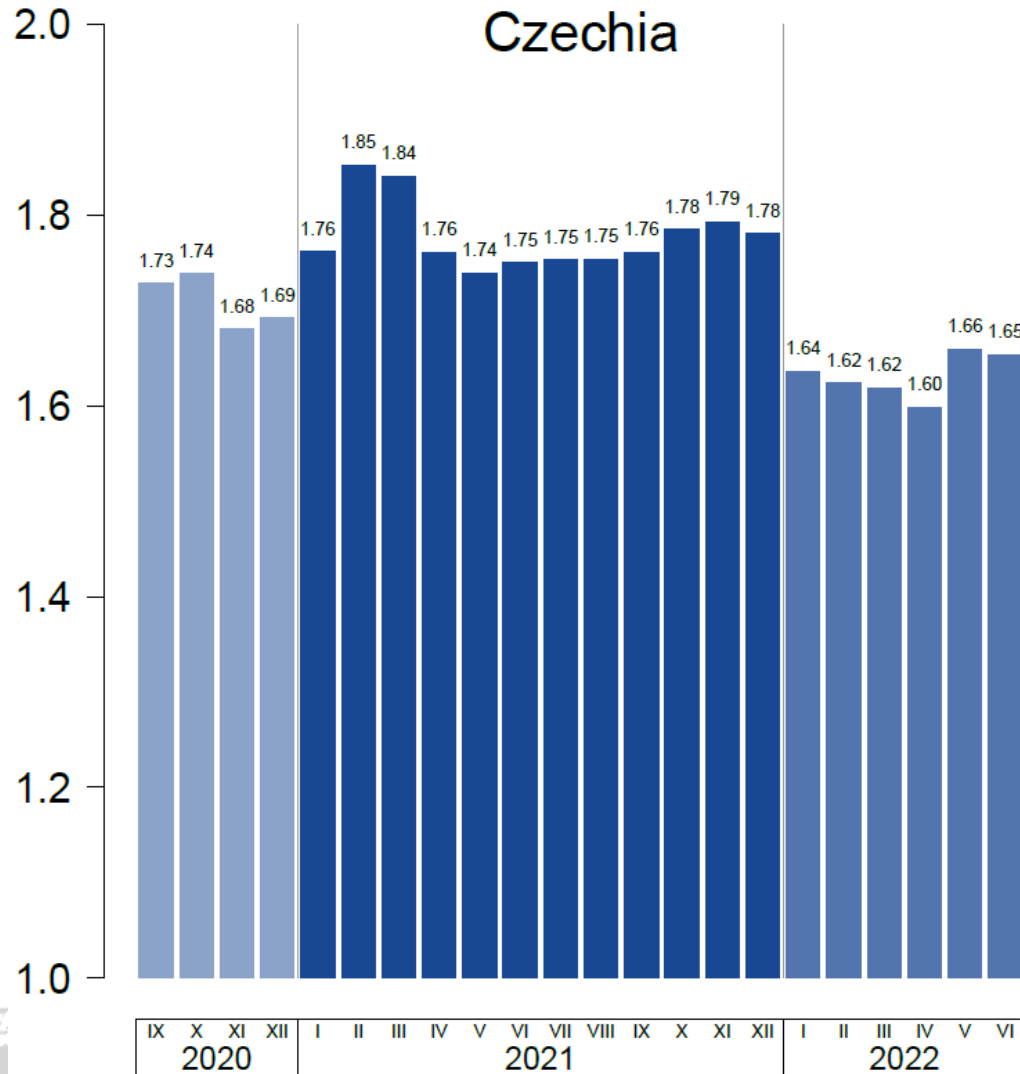


Relative difference of observed to forecasted number of births with 90 % CI



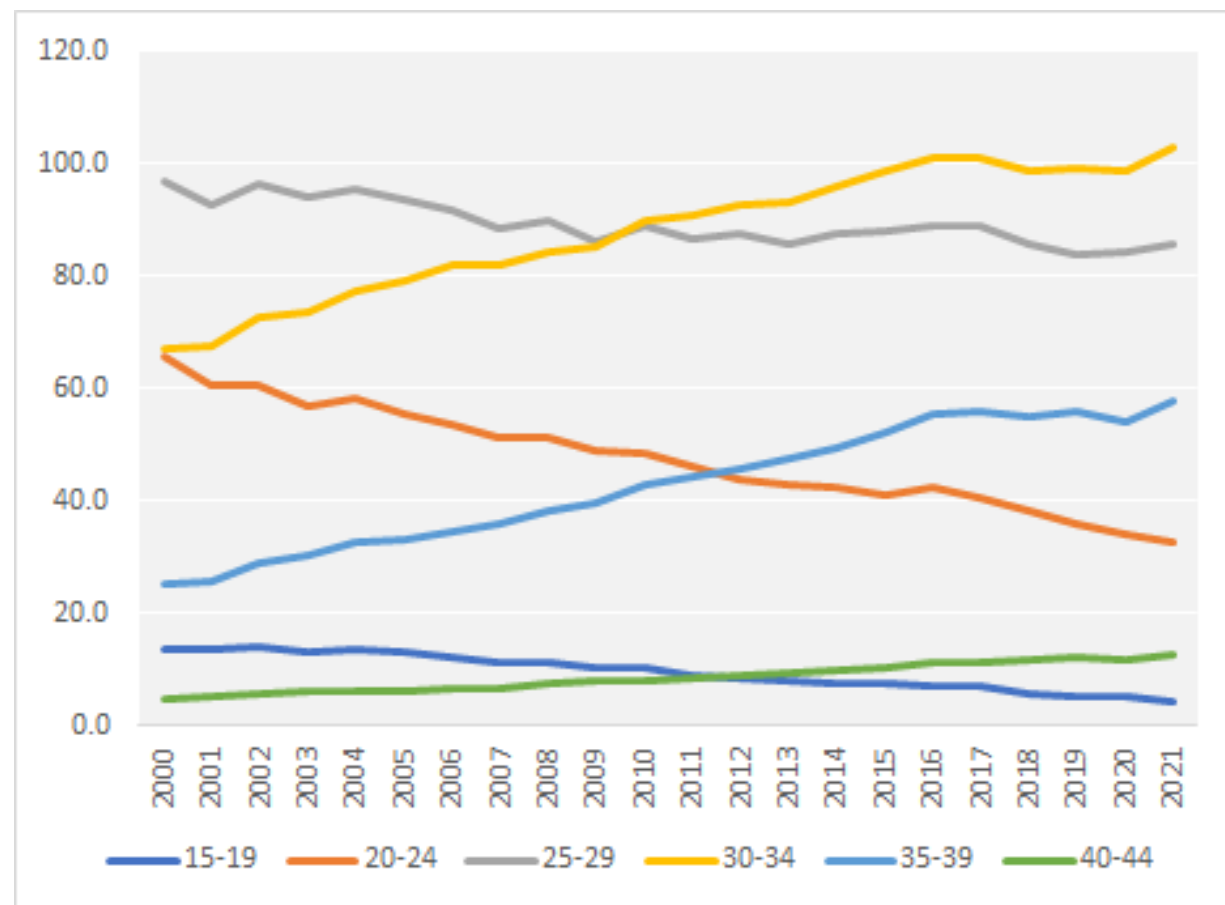
# Monthly trends in the TFR (estimates)

TFR in first half of 2022 by up to 0.25 lower than in 2021



# Pandemic birth trends:

Changes in age-specific fertility in Austria: recovery in 2021 concentrated in 30s



## Age-specific fertility rates, Austria, 2000-2021

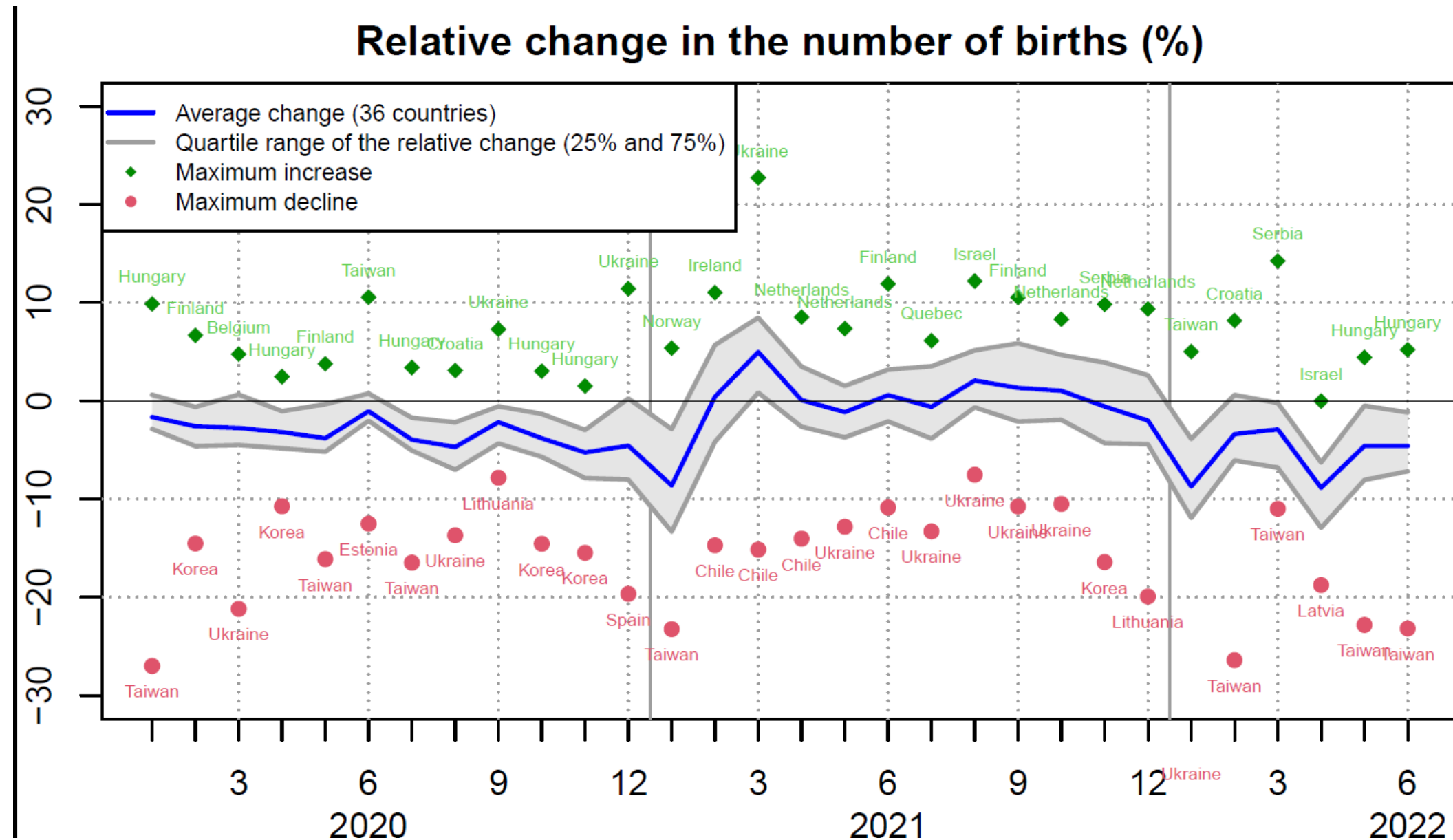
### Source:

Birth Barometer Austria 2022 (forthcoming, computations by Krystof Zeman)

Zeman, K., T. Sobotka, R. Gisser, and M. Winkler-Dworak. 2019. Birth Barometer: Monitoring Fertility in Austria. Vienna Institute of Demography. Available at [www.birthbarometer.at](http://www.birthbarometer.at)

Rel change (%)	15-19	20-24	25-29	30-34	35-39	40-44
2020/19	-3.6	-5.3	0.6	-0.8	-3.6	-3.6
2021/20	-17.4	-4.0	1.8	4.2	7.4	7.3

# Pandemic birth trends: summary and different stages









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# European Demographic Data Sheet 2022

## Trends in births, deaths, and natural population change during the pandemic

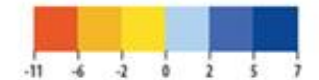
Change in number of births (%), 2020 to 2021



Change in number of deaths (%), 2019 to 2020 and 2021



Natural population change (per thousand), 2021



Data, graphs and featured boxes available at  
[www.populationeurope.org](http://www.populationeurope.org)

