

# COVID-19 Lockdowns and Demographically-Relevant Google Trends: A Cross-National Analysis

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# Background

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- The spread of COVID-19 and resulting local and national **lockdowns** have potential consequences for demographic trends.
- Impacts on **mortality** and, to some extent, **short-term migration** (IOM, 2020) flows are beginning to be documented,
- But it is too early to measure actual consequences for other **demographic events or behaviours** : in areas such as contraception, fertility, marriage, separation, and divorce,
- Except particular surveys performed during lockdown these trends are linked to **longer-term** processes: biological, legal, and financial processes.

# Hypothesis (1)

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- A priori **direction of the effects of the lockdown** on future family demographic trends events is **ambiguous** in many domains
  - Example 1 : **Couple relationship quality**
    - + : More common time, solidarity
    - : More stress and anxiety, No time & space to decompress from one another,
  - Example 2 : **Fertility**
    - + : previous LAT couples decide to live together, more sexual activity
    - : economic crisis make plan for future uncertain

# Hypothesis (2)

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Possible heterogeneity of response to lockdown by country depending on

- the degree to which individuals and families experience economic uncertainty and hardship
- the magnitude of State financial safety net
- country cultural specificities

We expect US consequences to be larger than European

# Aim

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We use cross-national Google Trends search data to explore whether **trends in search interests for demographic-related words** changed compared to average, pre-lockdown levels in Europe and the United States.

# Data

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**Data :** Google Trends data, extraction with API using R

**List of search terms:**

sexual behavior, contraceptive use, pregnancy termination & fertility

dating and couple relationships, marriage

separation and divorce

**List of countries:** Austria, France, Germany, Italy, Spain, and the United Kingdom (as a whole), and all US states

**The time period:** 234 weeks January 2016 to June 2020

# Caution

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Google does not give the number of searches for a given search term, but an **index of search activity**, the relative change in the fraction of queries including the word within the total number of Google queries in a chosen geographic area and time window.

Moreover, Google transforms it to give a value between 0 and 100.

We transform the series to make it comparable from one country/state to another

## ➤ Event study analyses

$$\tilde{R}_{cwyt} = \alpha + \delta_{yc} + \gamma_w + \sum_{\tau=-5}^{13} \beta_{\tau} 1\{t = \tau\} + \phi' x_{cwy} + \varepsilon_{cwyt}$$

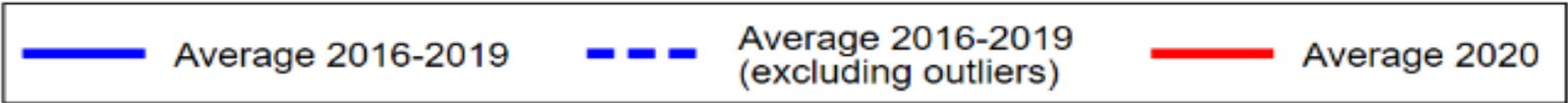
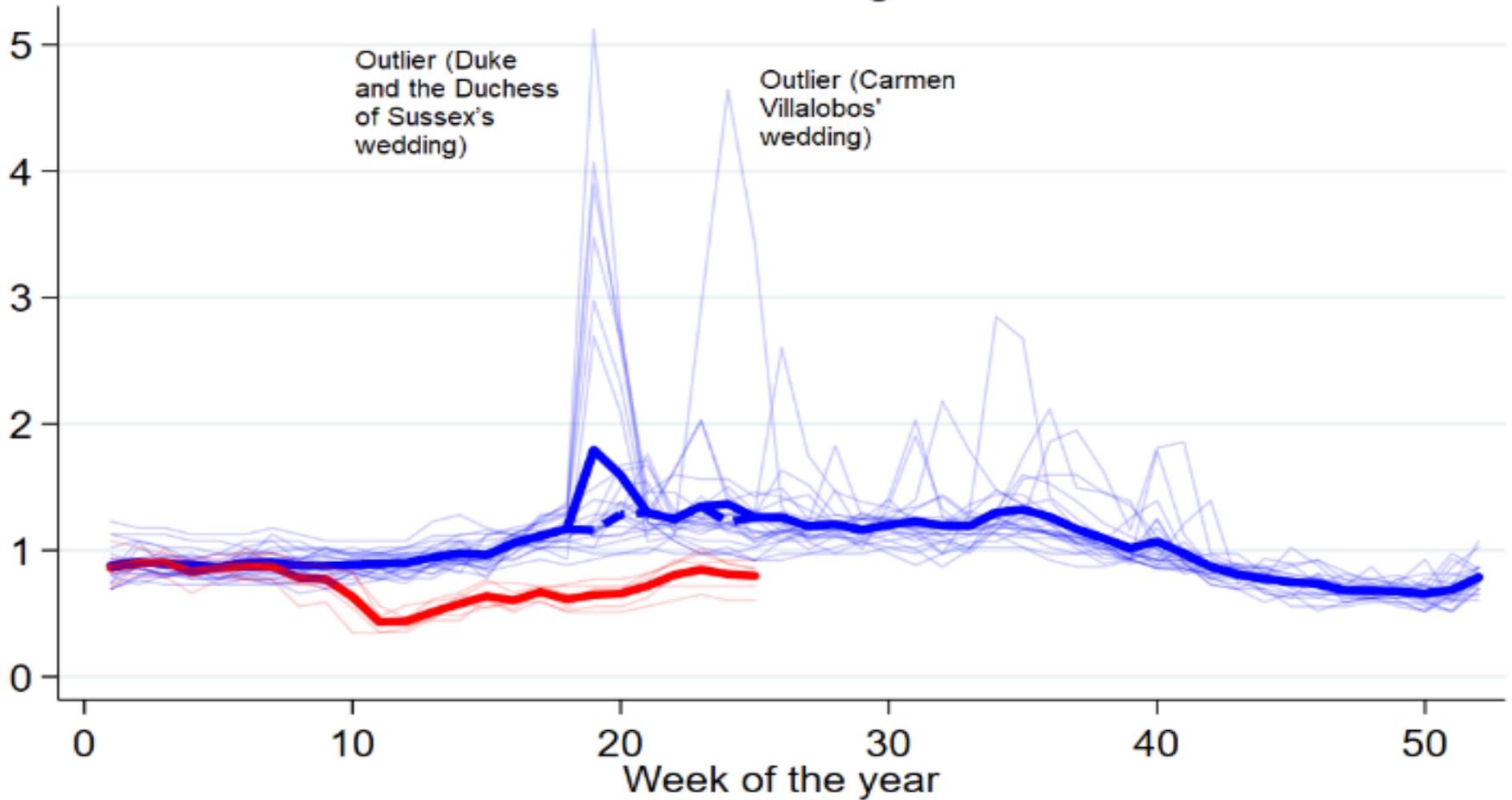
## ➤ Difference-in-Difference

$$\tilde{R}_{cwyt} = \alpha + \delta_{yc} + \gamma_w + \beta * 1\{t \geq 0\} + \phi' x_{cwy} + \varepsilon_{cwyt}$$

Separate analysis for US and Europe

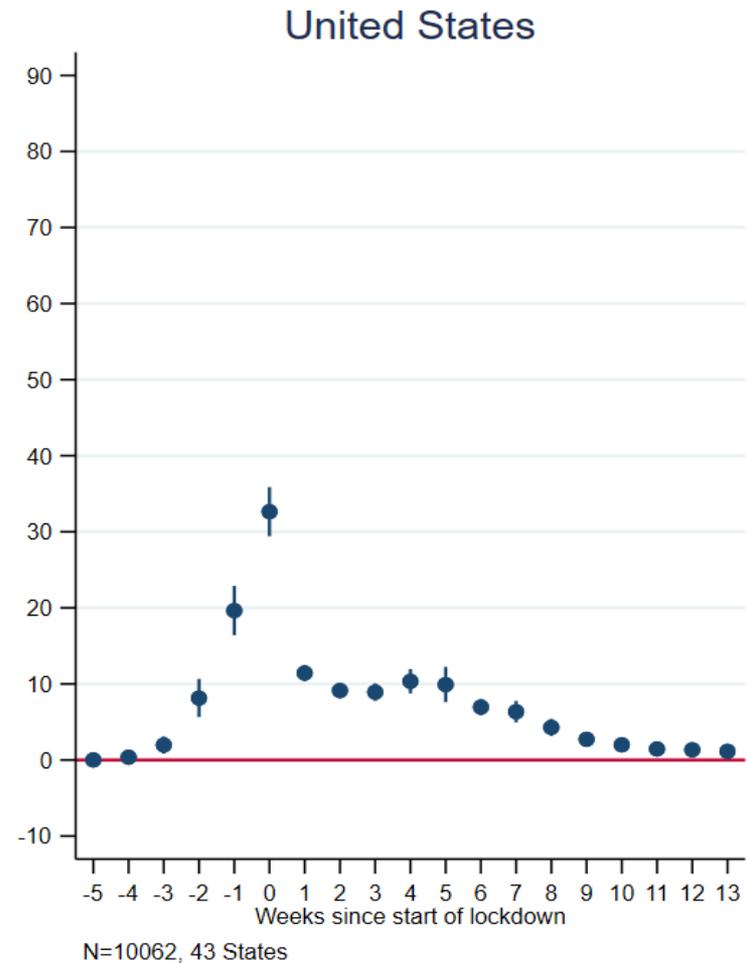
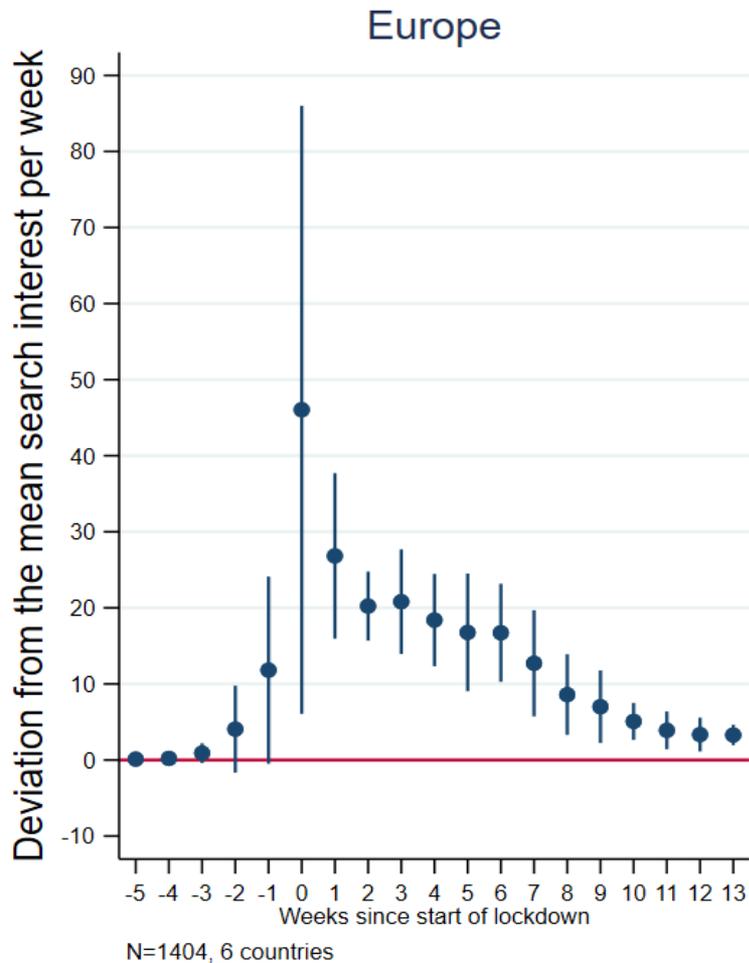
Specific attention to outliers

# Wedding



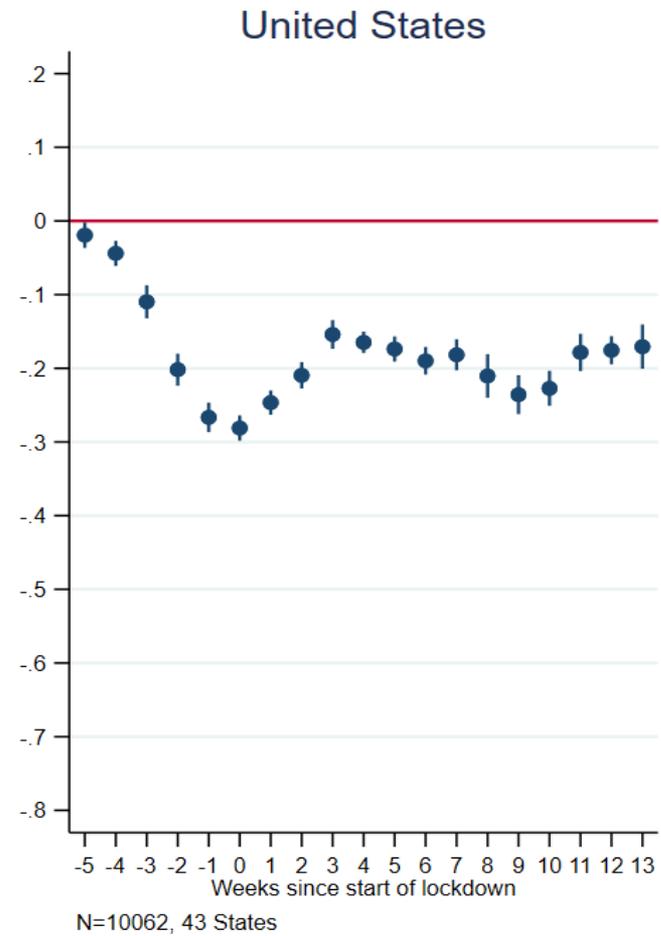
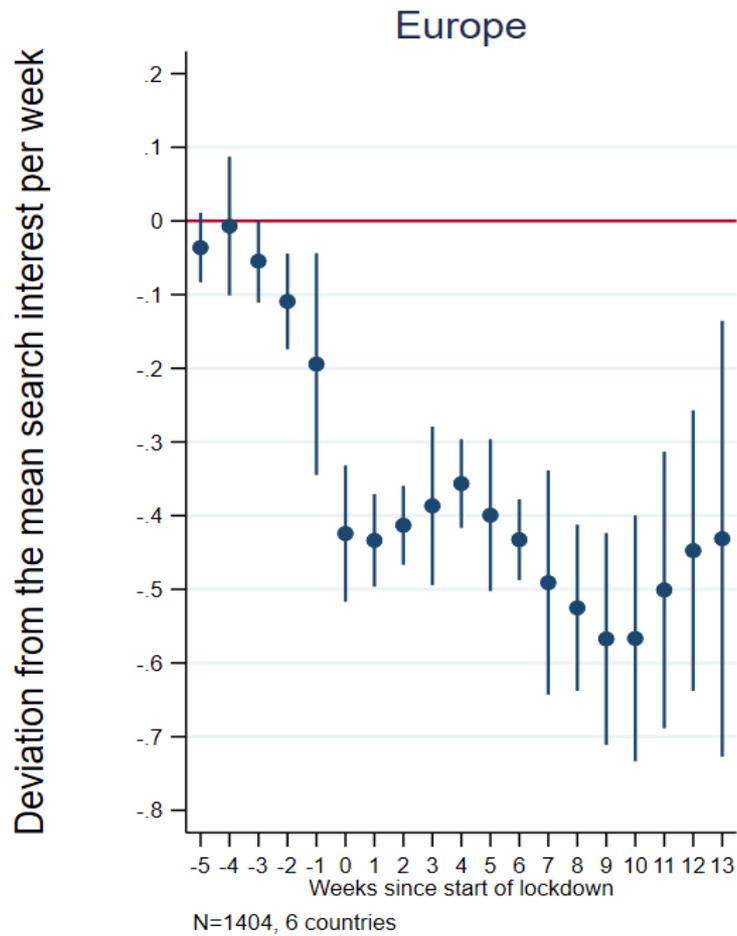
# Check for the word “lockdown” searches

## Lockdown



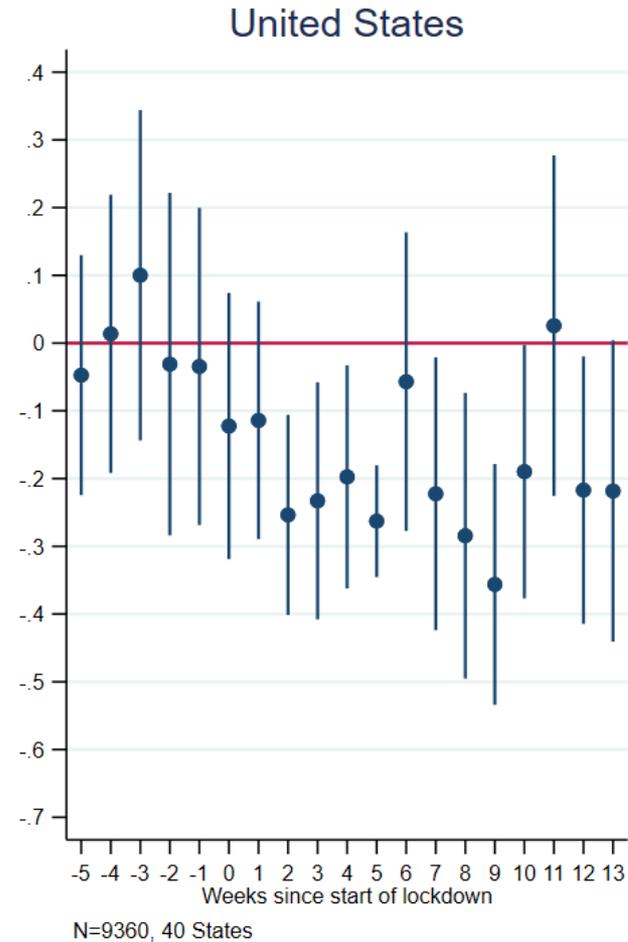
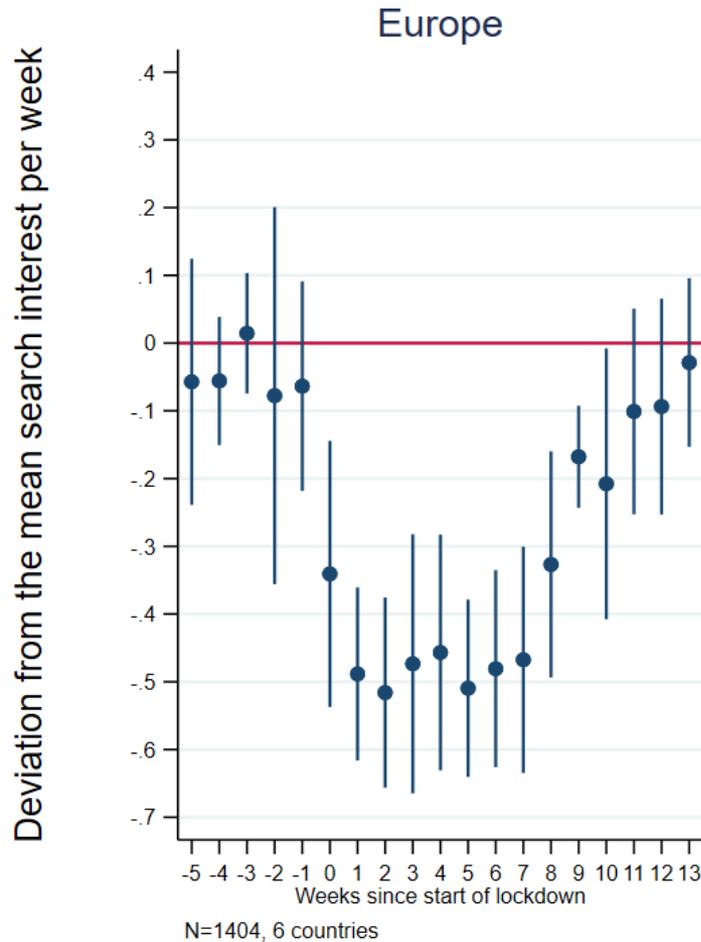
# Wedding

## Wedding



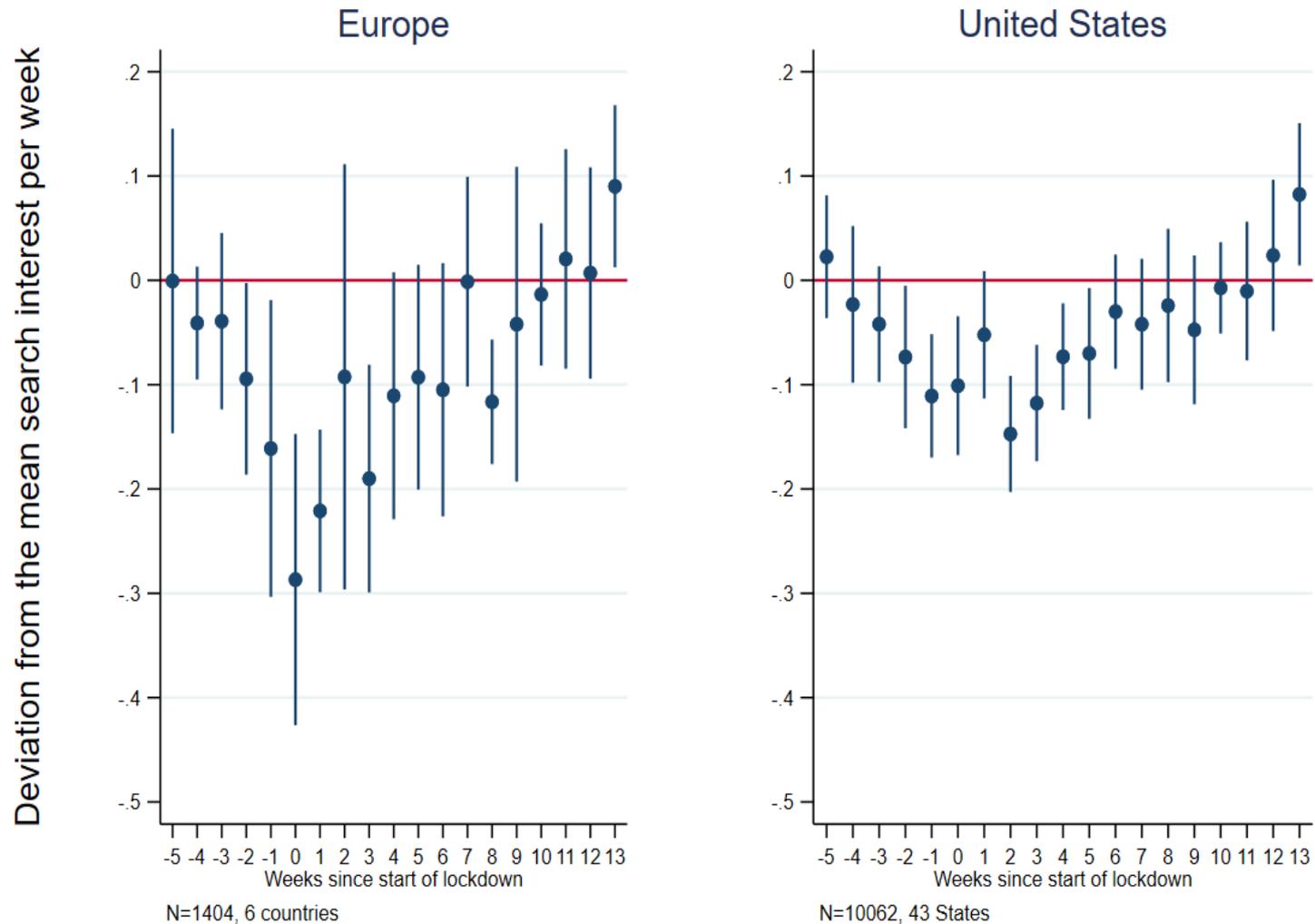
# Emergency pill

## Emergency pill



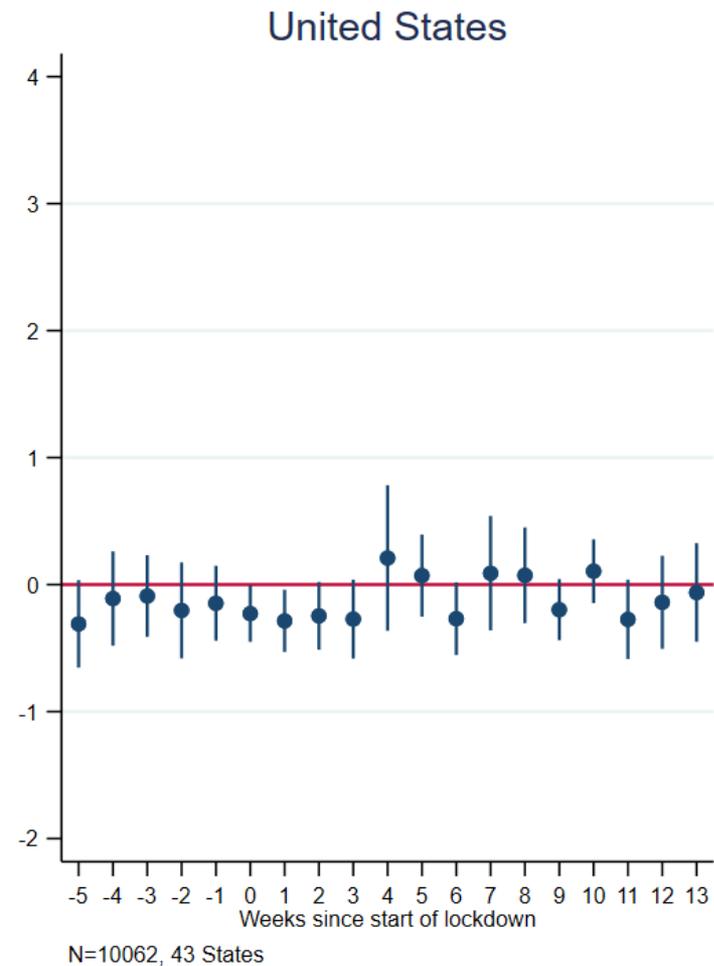
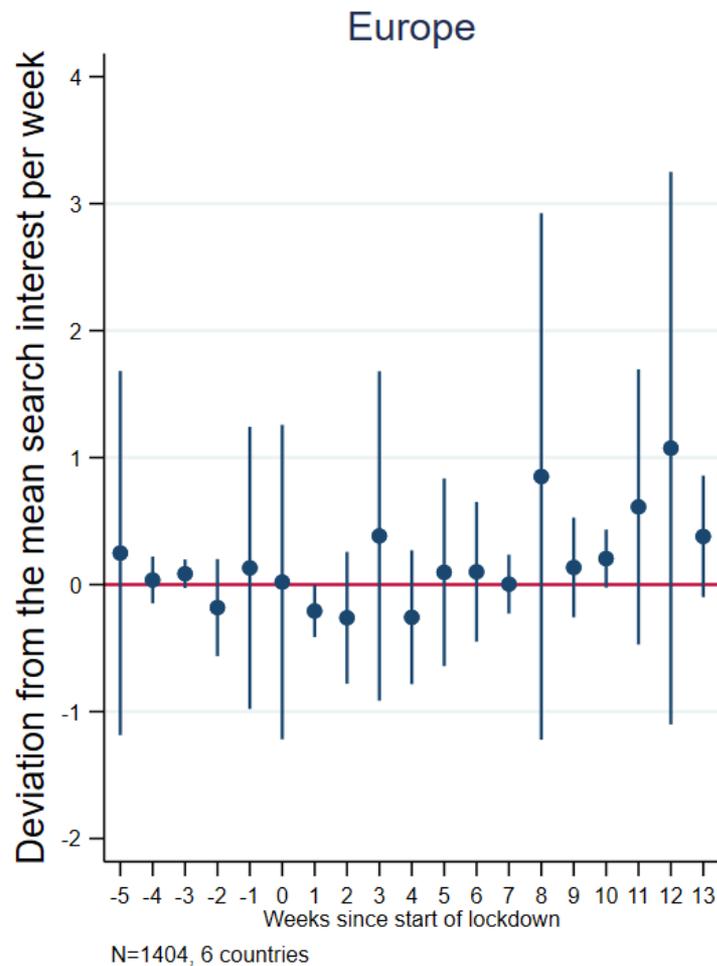
# Pregnancy test

## Pregnancy test



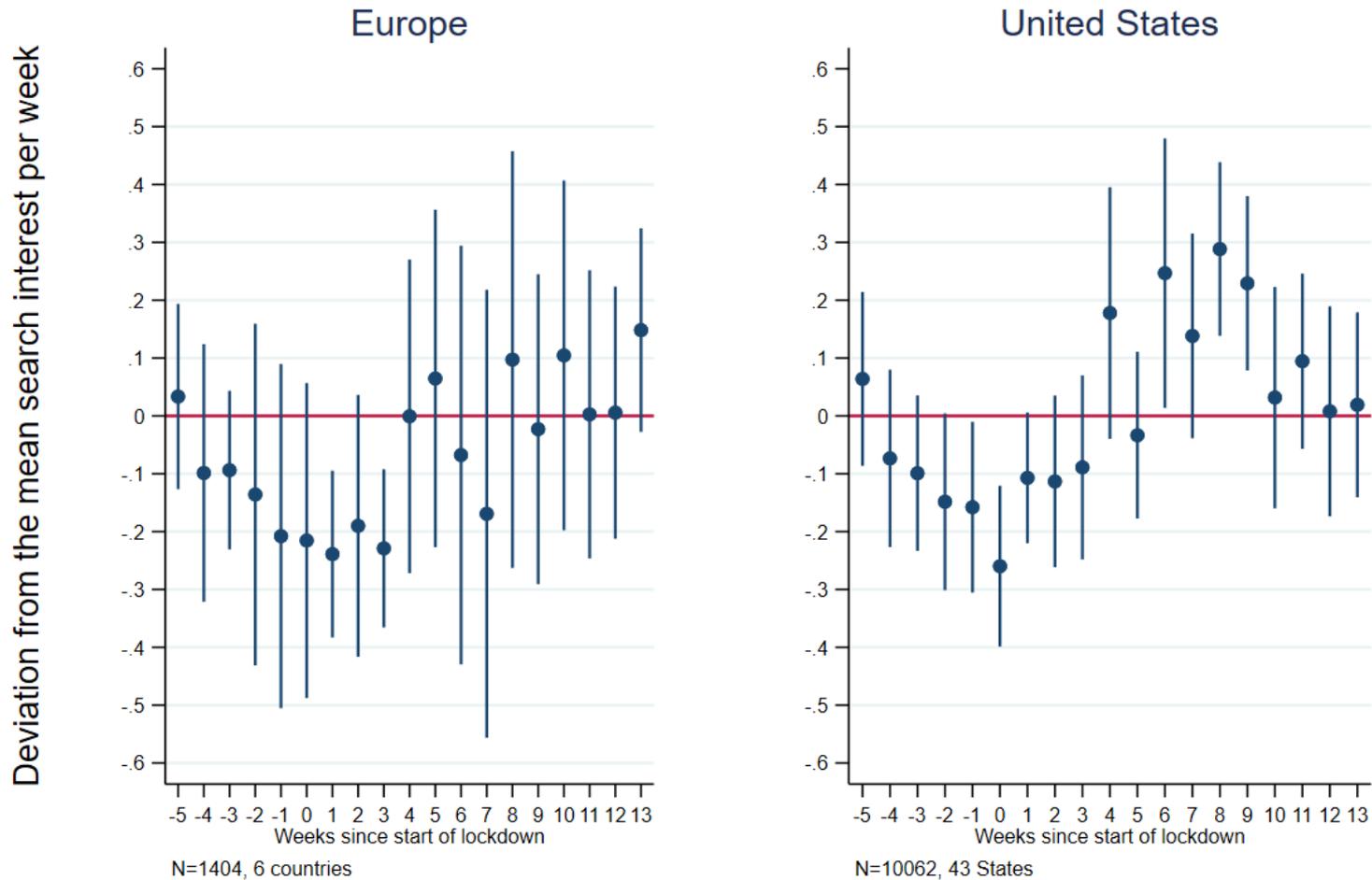
# Fertility « Plan child »

## Plan child



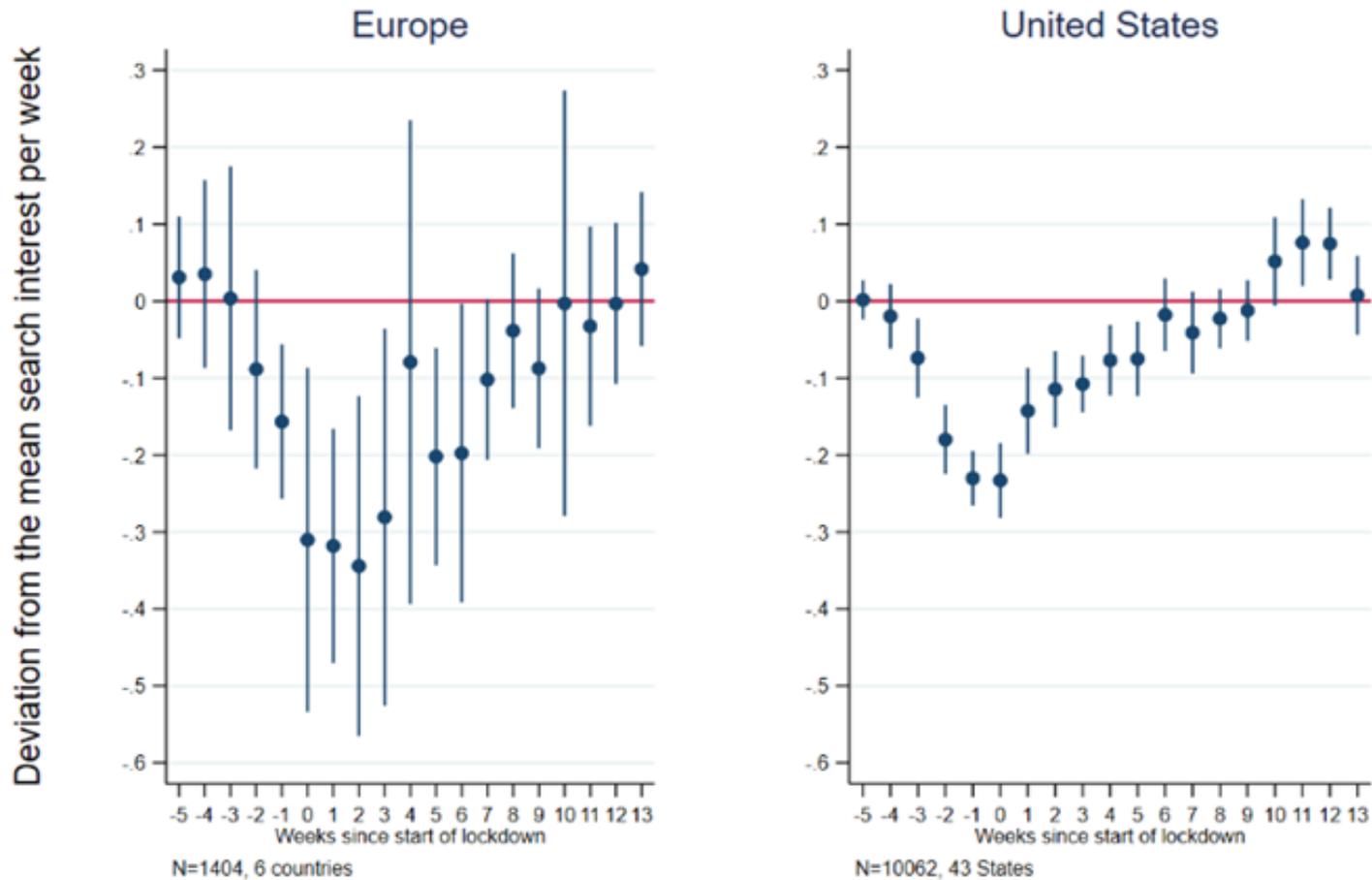
# Fertility « Plan other child »

## Plan other child



# Divorce

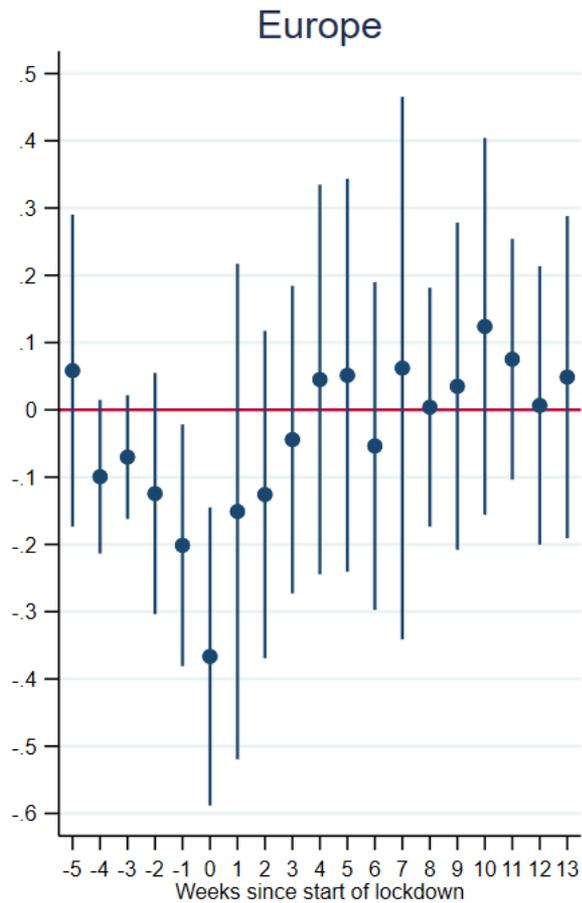
## Divorce



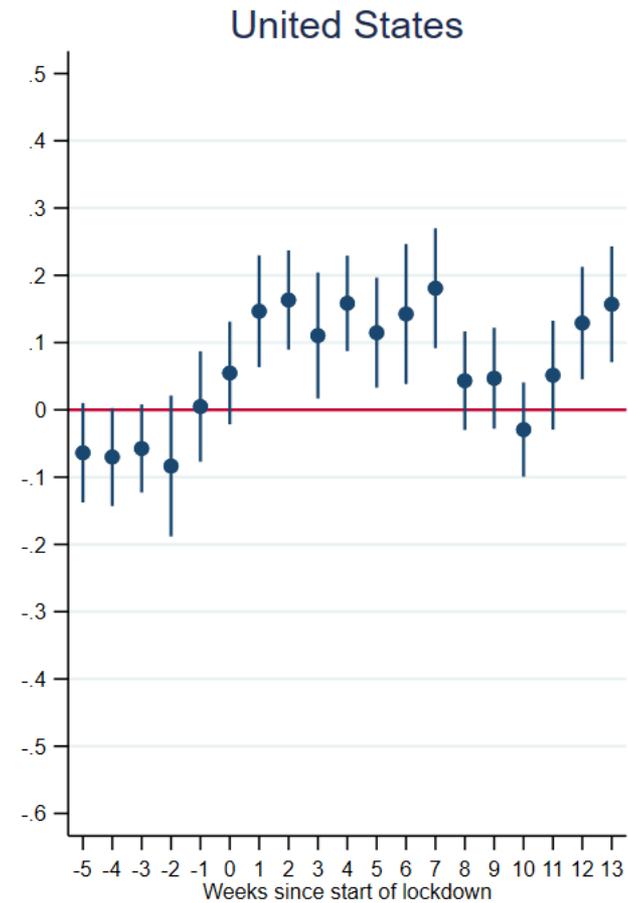
# Break-up

## Break up

Deviation from the mean search interest per week



N=1404, 6 countries



N=10062, 43 States

# Robustness checks

- Control for # of confirmed COVID cases or # of COVID related-deaths in the state/country

*Reduce magnitude but same direction effects*

- Year FE and Country FE instead of (Year\*country FE)
- Log transformation
- Change of reference group years (dropping 1 year from 2016-2019) period

*Same*

- Placebo test by excluding 2020 year and take 2019 as treatment year.

*No effect of placebo-lockdown searches*

# Conclusions

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- Decline in emergency contraception, use (condom), sign of a possible decline of sexual activity but return to average level at the end of lockdown.
- Fertility : mixed results, no effect at all for child plan, but a possible effect for high order child plan and pregnancy tests higher than usual by the 13<sup>th</sup> week after the lockdown in US.
- Couple dissolution: less divorce searches at the beginning, but more break-up ones, quicker response of unmarried couple or heterogeneity.

# Discussion

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Are our results a sign of inequality between most committed couples and others ?

Increased polarization in family formation and dissolution

Europe and US comparison:

Very similar trends in many aspects

Sometimes stronger and long-lasting in US than in Europe

Strength of the economic crisis and job losses

## Limitations and next steps

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- Google trends, part of the story. Very popular but not the only the search engine
- Relative term, search interests relative to other interests
- Not a measure of behaviors
- Binary measure of the lockdown (different intensity)

Thank you  
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Language	English	French	Spanish	Italian	German	German	English	Spanish (Mex)
Country	UK	FR	SP	IT	AU	GE	US	US
Condom	condom	preservatif préservatif capote	condon condón preservativo	preservativo profilattico preservativi profilattici goldone goldoni	kondom präservativ gummi	kondom präservativ gummi	condom	condón preservativo
Emergency pill	morning after pill emergency pill emergency contracep tion	pilule lendemain pillule lendemain	pildora dia despues pildora dia siguiente	pillola giorno dopo	pille danach	pille danach	morning after pill emergency pill emergency contracept ion	pildora dia siguiente anticonceptivo de emergencia
Pregnancy test	pregnancy test	test grossesse test de grossesse	prueba embarazo test embarazo	test gravidanzaa	schwanger schaftstest	schwangersch aftstest	pregnancy test	prueba embarazo test embarazo
Abortion	Abortion	avortement avorter ivg	aborto pastilla abortiva	aborto abortire pillola abortiva	abtreibung schwanger schaftsabb ruch abtreiben	abtreibung schwangersch aftsabbruch abtreiben	abortion	aborto pastilla abortive