When Traditional Data Fall Short:
Google Searches and Domestic Violence in the Pandemic

Gabriel Facchini
Royal Holloway

WomEmpower Workshop

May 16, 2025

Motivation: Violence against women & measuring DV

▶ **Violence against women is a serious health concern all around the world**

   ▶ 1 in 3 of women worldwide have experienced some form of physical and/or sexual violence by their intimate partner in their lifetime (WHO).

Motivation: Violence against women & measuring DV

- **Violence against women is a serious health concern all around the world**
  - 1 in 3 of women worldwide have experienced some form of physical and/or sexual violence by their intimate partner in their lifetime (WHO).

- **Data challenges:** To reduce and respond to DV, we need to better understand the problem, but the lack of reliable and systematic statistics is a key barrier.
  1. **Under-reporting** both in police reports and in surveys,
  2. **Lack of comparable data** to make cross-country comparisons,
  3. **Delay** in access (when data exists)

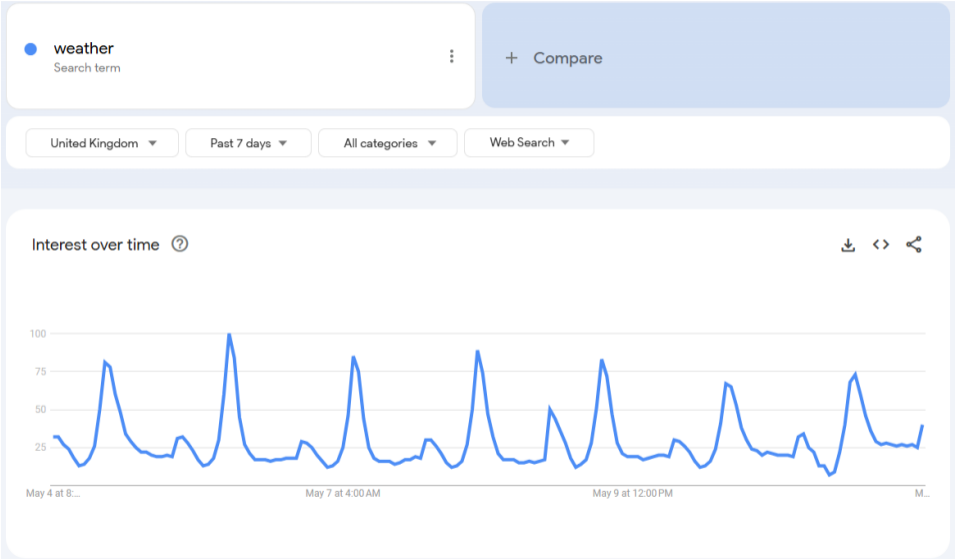# Motivation: Violence against women & measuring DV

- **Violence against women is a serious health concern all around the world**

    - 1 in 3 of women worldwide have experienced some form of physical and/or sexual violence by their intimate partner in their lifetime (WHO).

- **Data challenges:** To reduce and respond to DV, we need to better understand the problem, but the lack of reliable and systematic statistics is a key barrier.

    1. **Under-reporting** both in police reports and in surveys,
    2. **Lack of comparable data** to make cross-country comparisons,
    3. **Delay** in access (when data exists)

- **New events:** Critical for a timely and thorough response in unknown situations (e.g. COVID-19 pandemic).

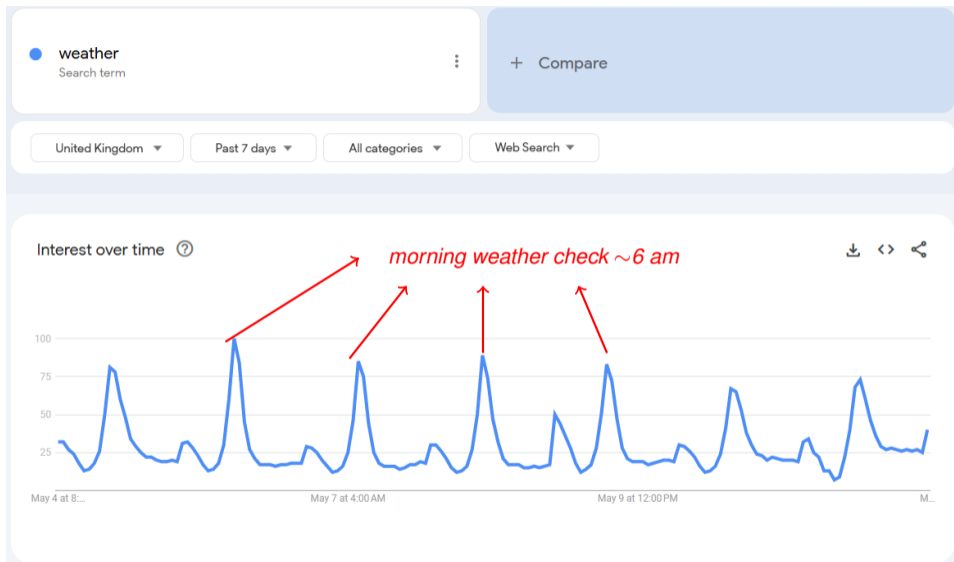# Google Trends: A Novel Tool for Tracking DV

What is Google Trends?

▶ Tracks how often people search for specific terms on Google over time

▶ Provides **anonymized**, **relative search volume** on a scale from 0 to 100

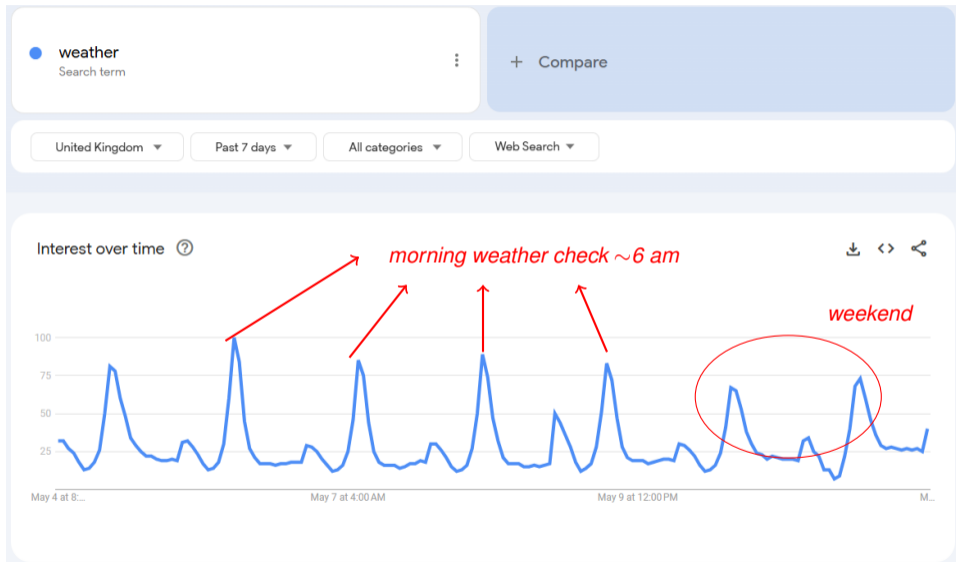▶ Data available **by country, region, and time period**

Google Trends: A Novel Tool for Tracking DV

Google Trends: A Novel Tool for Tracking DV

Google Trends: A Novel Tool for Tracking DV

Google Trends: A Novel Tool for Tracking DV

- **How we can use it:**
  - Track DV-related **keywords** (e.g., "abuse help," "domestic violence shelter") or **Topic** (black box, whatever Google thinks correlates with DV)
  - Monitor trends across time and countries
  - Detect **spikes in search activity** as early-warning signals

Google Trends: A Novel Tool for Tracking DV

- **How we can use it:**
  - Track DV-related **keywords** (e.g., "abuse help," "domestic violence shelter") or **Topic** (black box, whatever Google thinks correlates with DV)
  - Monitor trends across time and countries
  - Detect **spikes in search activity** as early-warning signals

- **Importantly**, it overcomes many of the mentioned issues of traditional data sources:
  1. **No delay**: Publicly available data with a real-time (by the minute) frequency.
  2. **Lower under-reporting**: Data collection poses no(lower?) risk to victims or their families.
  3. **Comparable data** available for all* countries and many regions.

Paper I: Insights into Domestic Violence: Google Search Data versus Traditional Indicators
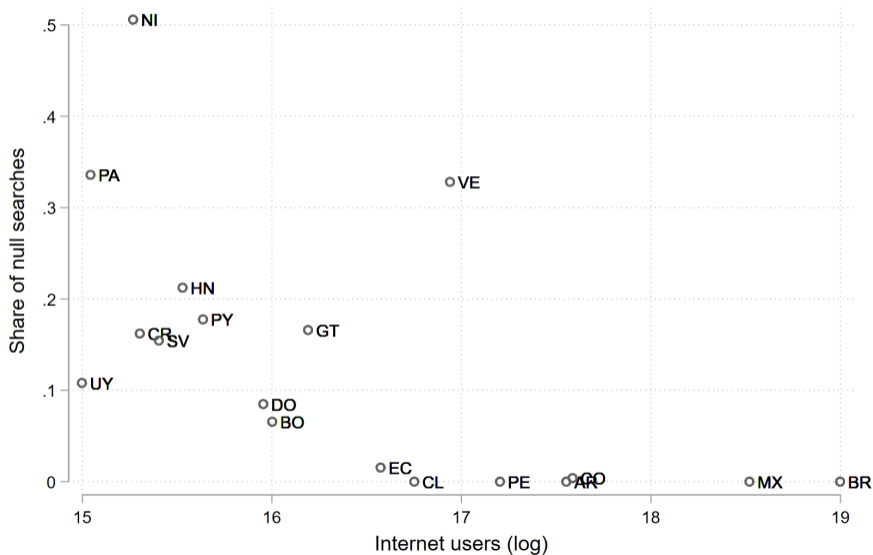
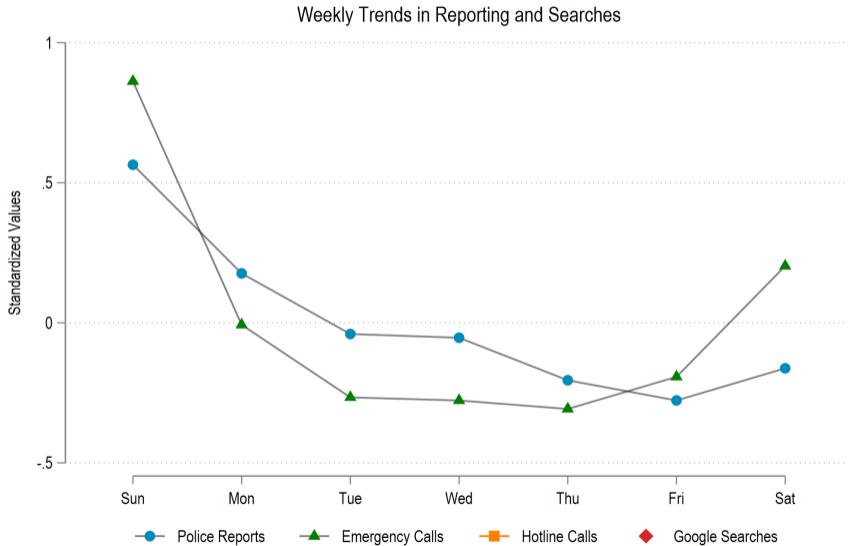with Inés Berniell and Santiago Perez-Vincent

- ▶ **Data**:
  - ▶ Google Trends index of search intensity for **TOPIC** "domestic violence" for 18 LAC countries for 2017-2021 (*GtrendsR*)
  - ▶ Administrative data from 8 LA countries (Argentina, Brazil, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay):
    - ▶ Police reports of DV
    - ▶ DV helpline calls
    - ▶ Calls to emergency lines for DV episodes

- ▶ **Exercise**: We compare the indicator of DV incidence, based on Google searches, with traditional data sources.
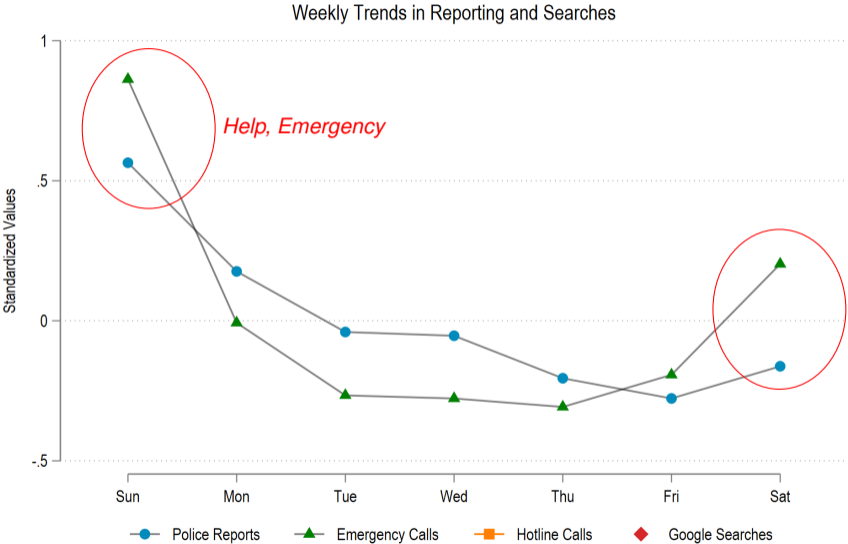
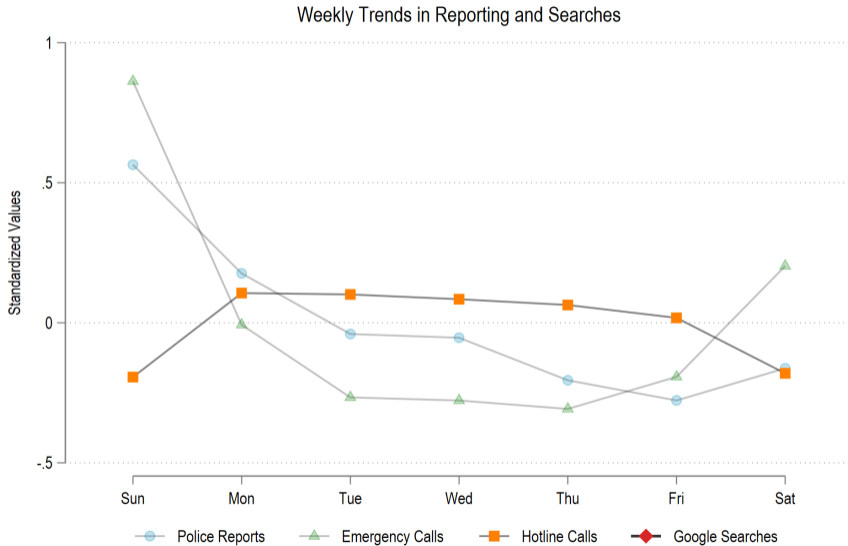# Google Trends is only useful in locations with high internet usage.
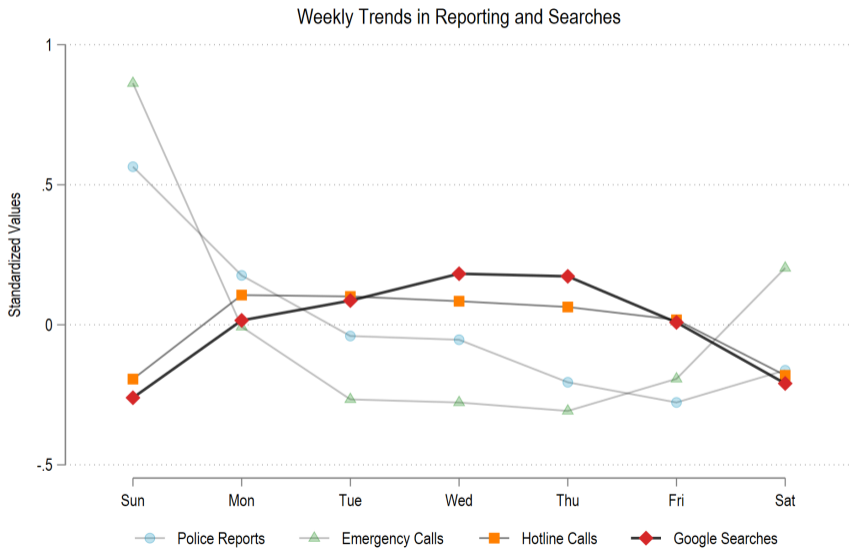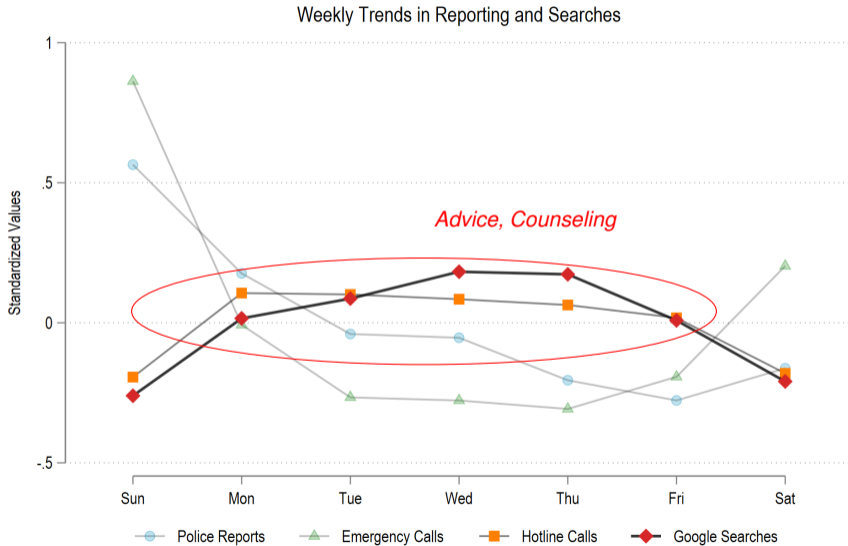
Seasonality - Days

Weekly Trends in Reporting and Searches

Seasonality - Days

Weekly Trends in Reporting and Searches

Help, Emergency

Police Reports ● Emergency Calls ▲ Hotline Calls ■ Google Searches ◆

Seasonality - Days

Weekly Trends in Reporting and Searches

Seasonality - Days

Weekly Trends in Reporting and Searches

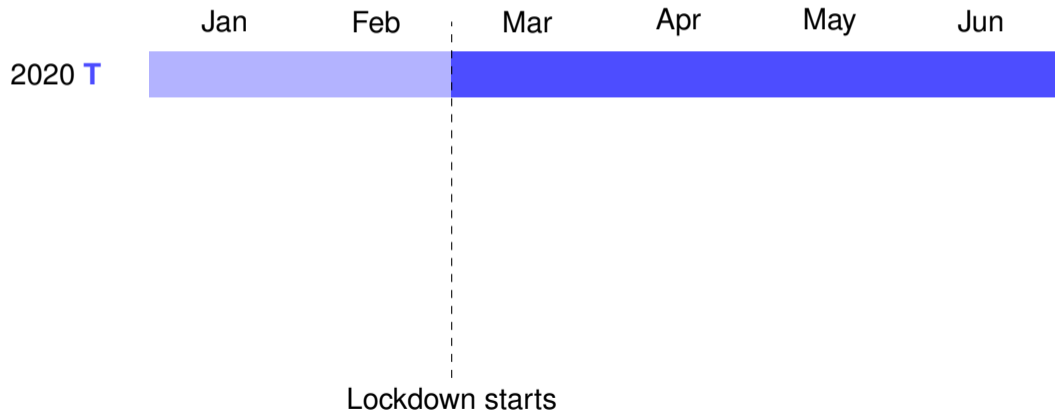# Seasonality - Days

Weekly Trends in Reporting and Searches

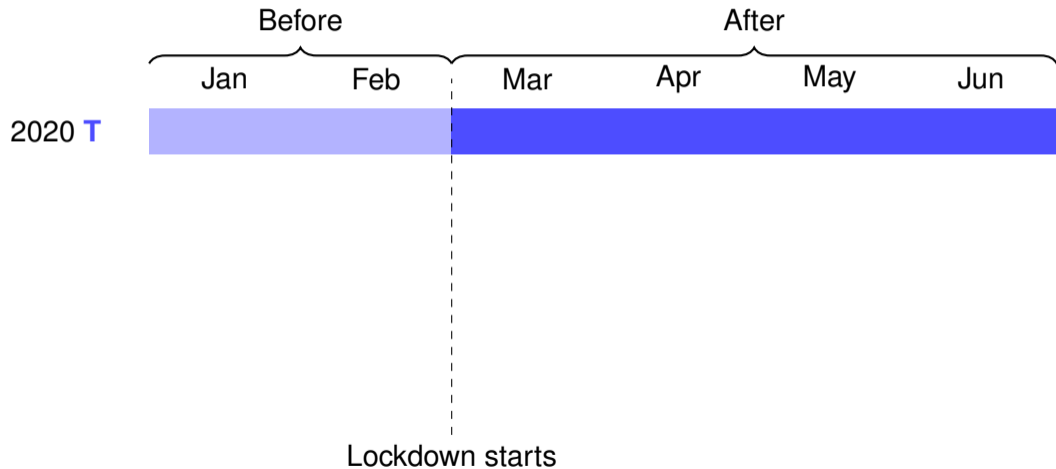**Paper II:** COVID-19 Lockdown and Domestic Violence: Evidence from Internet-Search Behavior in 11 Countries

with Inés Berniell

- **Data**:
  - Google Trends index of search intensity for **TOPIC** "domestic violence" for 2016-2020 for 11 countries (US, UK, France, Germany, Italy, Spain, Argentina, Brazil, Chile, Colombia, Mexico)
  - Administrative data on calls to the DV-hotline (016) in Spain for 2016-2020.

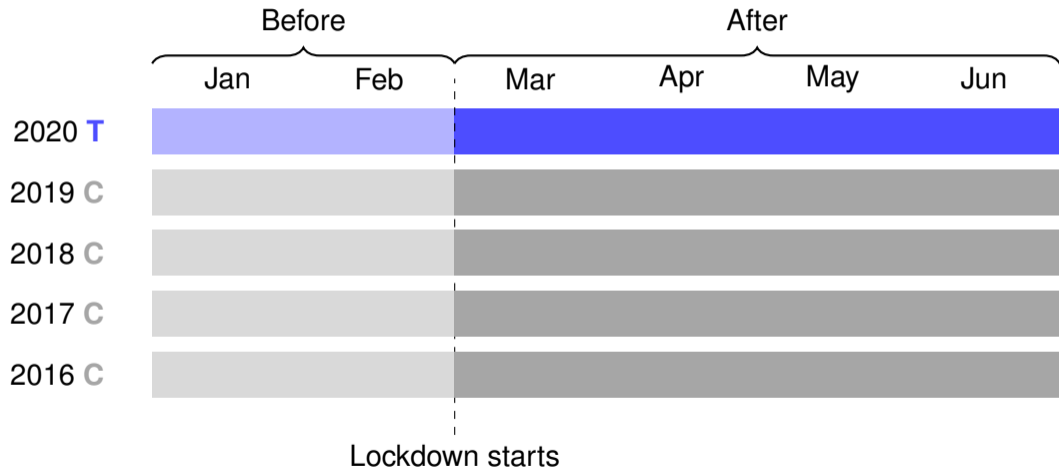- **Exercise**: Assess the impact of COVID-19 Lockdowns on DV.
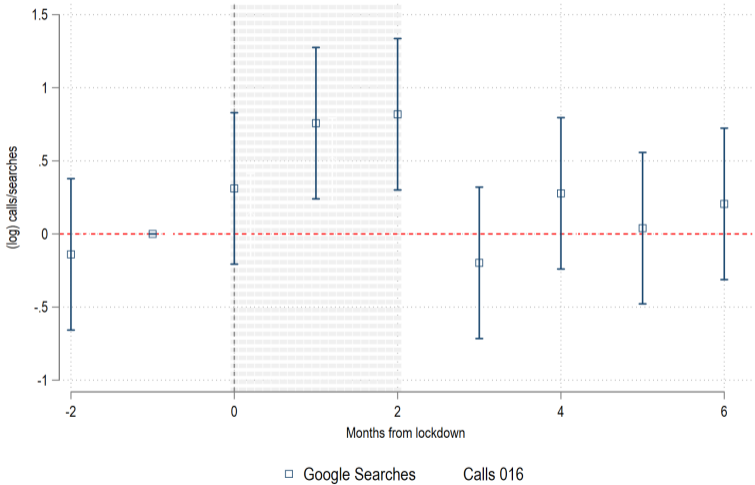
How to obtain a causal estimate?
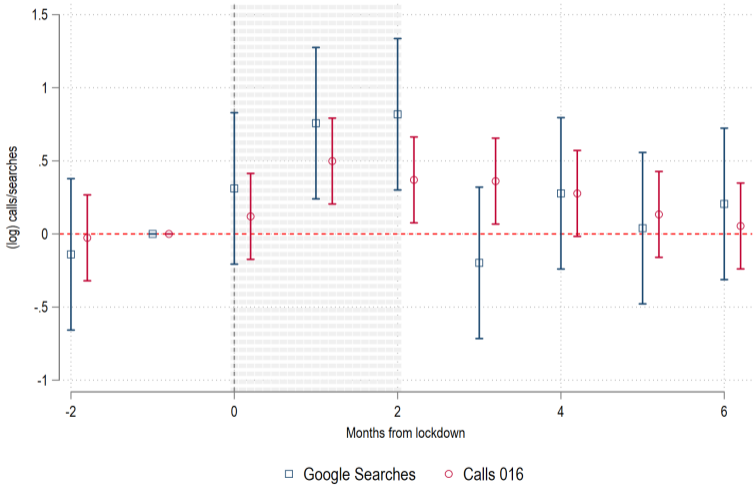
How to obtain a causal estimate?

How to obtain a causal estimate?

Spain: Online-search Intensity vs Helpline Calls

Spain: Online-search Intensity vs Helpline Calls

Discussion

- ▶ We collected novel data to track the incidence of DV.
  - ▶ Google searches
  - ▶ Police reports, emergency line DV calls, DV-hotline calls

- ▶ Our results show that Google searches have a weekly seasonality that resembles that of DV hotline calls (different from police reports and emergency calls).
  - ▶ Advice? use when abuser is not present? not extreme cases of DV?

- ▶ Online searches can help **complement** existing DV data.
  - ▶ Especially in space and times where other information sources are not readily available.
  - ▶ We estimate a 30-40% increase in our online index during lockdown.

Thank you for listening!

Gabriel Facchini
gabriel.facchini@rhul.ac.uk
@gafap
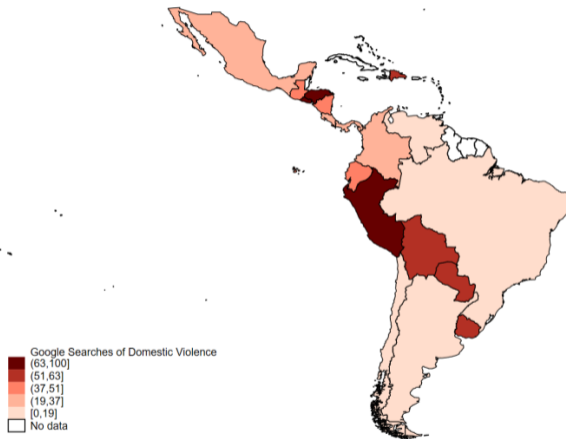
Limitations of Google Trends Data

- ▶ **Search Bias:** Reflects search behavior, not actual DV cases; stigma may reduce searches.

- ▶ **Demographic Skew:** Overrepresents young, tech-savvy users; excludes low-access groups.

- ▶ **Search Ambiguity:** Hard to interpret intent or capture all relevant queries.

- ▶ **Geographic Limits:** Lacks fine-grained data; usage varies across regions.

Table 1: Administrative data on domestic violence

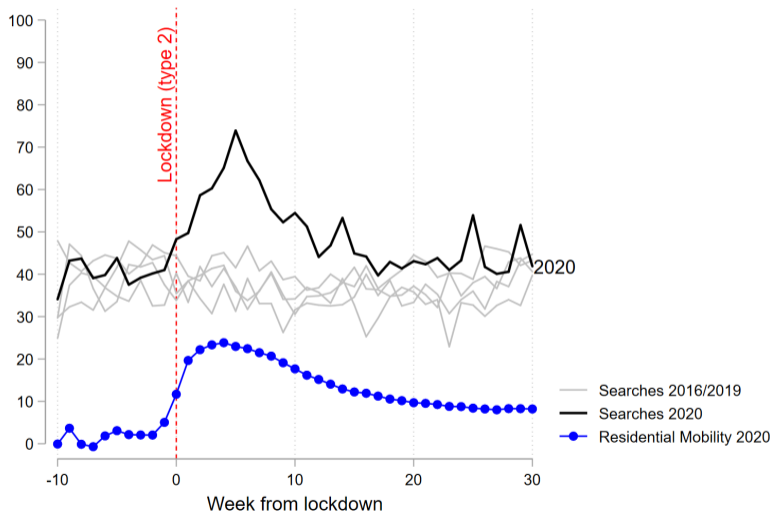| Country	Period	Frequency	Data source	
Argentina	1/2017 - 8/2022	Daily	DV Hotline	Línea 144
Argentina	1/2020 - 6/2022	Daily	DV Hotline	Línea 137
Brazil	1/2014 - 12/2019‡	Daily	DV Hotline	Ligue 180
Colombia	1/2018 - 8/2020	Daily	DV Hotline	Línea 155
Colombia	1/2018 - 06/2020	Daily	Police reports	
Costa Rica	1/2018 - 06/2020	Daily	Emergency line	Calls to 911
Ecuador	1/2018 - 10/2020	Daily	Police reports	
Ecuador	1/2018 - 06/2020	Daily	Emergency line	Calls to 911
Mexico city	9/2016 - 12/2022	Daily	DV Hotline	Línea mujeres
Peru	1/2017 - 12/2021	Daily	Emergency line	Línea 100
Uruguay	1/2018 - 06/2020	Daily	Police reports	

Note: ‡Data for the 180 "Ligue" (the DV-Hotline in Brazil) is available until June 2022. However, the data until 2019 only includes complaints of violence against women received by the 180 line while the following years add complaints through other channels like the 100 line and the Brazilian human rights application. For comparability reasons we only use the data until 2019.

Figure 6: Google searches of terms related to the DV topic

Google Searches of Domestic Violence
- (63,100]
- (51,63]
- (37,51]
- (19,37]
- [0,19]
- No data

Notes: The colors represented the average intensity of the Google Trends index on the DV topic for the period 2017-2019 (we excluded the pandemic years). The index for each country was normalized with respect to Argentina, and then compress to lay between 0 and 100.

Figure: Trends in online searches and residential mobility

Results: Event-study

Figure: Event study - All countries