Social Repercussions of Pandemics

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The issue

Overarching question:

> *What is the relationship between epidemics and social unrest?*

More specific/intermediate questions:

- What is social unrest? And how do we measure it?
- What happened during COIVD-19?
- What is the dynamic relationship?
- Are epidemics special? If so, how?

Approach

Data

- Natural disasters: EM-DAT
- Social Unrest: Reported Social Unrest Index
  Barrett, Appendino, Nguyen, Miranda (2020)
  "Measuring Social Unrest Using Media Reports"

Analysis

- Using data during COVID-19
  - Diff-in-diffs using daily variation in onset of crisis
- Using monthly data 1990-2019
  - Impulse responses for unrest probabilities via local projection
  - Instrumenting for local epidemics using regional waves
  - Can compare to other natural disasters

Results

Key findings:

- Countries with more natural disasters have more unrest
- Surprisingly, unrest goes *down* following the start of an epidemic.
  - Robust to different identification strategies.
  - Effect is large, unrest falls around one fifth.
  - Effect seems very persistent (multiple years).
- Appears unique to epidemics among natural disasters
- COVID-19:
  - Aggregate time series: Unrest fell, similar to other epidemics.
  - Diff-in-diff gives similar results.
  - Some evidence that lockdowns amplify the decline in unrest.

Interpretation: the decline in unrest is driven by reduced social gatherings.

Related literature

Determinants of violent conflicts: Collier and Hoeffler (1998, 2001, 2002), Fearon and Laitin (2003), Miguel et al. (2004), Collier, Hoeffler, and Rohner (2009), Blattman and Miguel (2010)

Impact of disease on violent conflicts: Cervellati, et al. (2017), Berman et al. (2020), Ide (2021)

Determinants of social unrest: Ponticelli and Voth (2020), Enikolopov et al. (2020), Hlatshwayo & Redl (2021)

Impact of disease on social unrest: This paper

Measuring unrest

Barrett et al. (2020) create an index from media reports of unrest

- Counts use of key terms ("protest", "riot", "civil/social unrest" etc.)
- In 18 major English language news sources (in US, Canada, UK).
- Reported relative to each country's average coverage
- 130 countries, monthly from 1986-present (key advantage vs. ACLED)

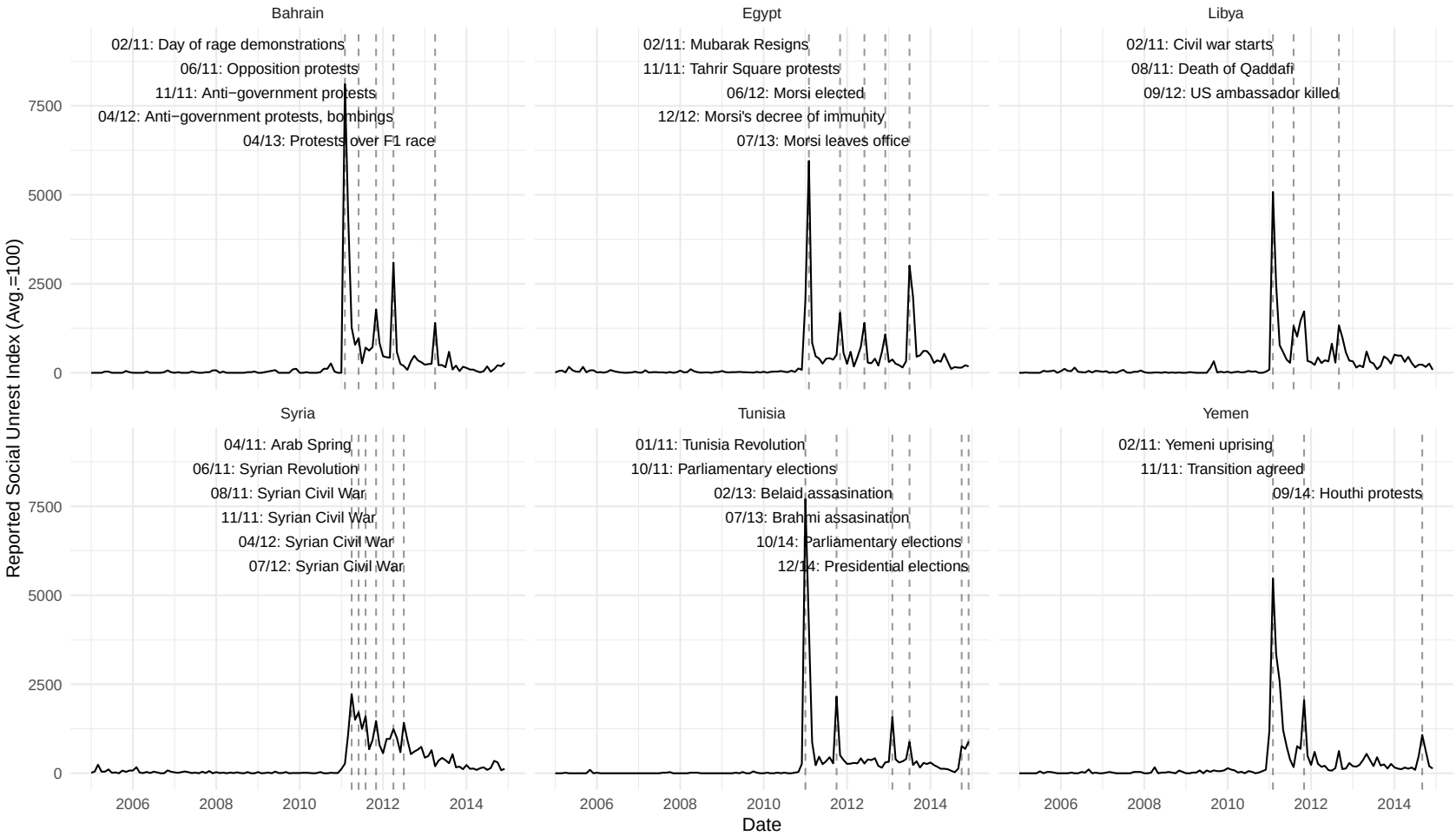
Code large spikes in the index as events

- Check every one of ∼700 events and keep ∼600 (mis-usage of words)
- Almost all labeled with a name

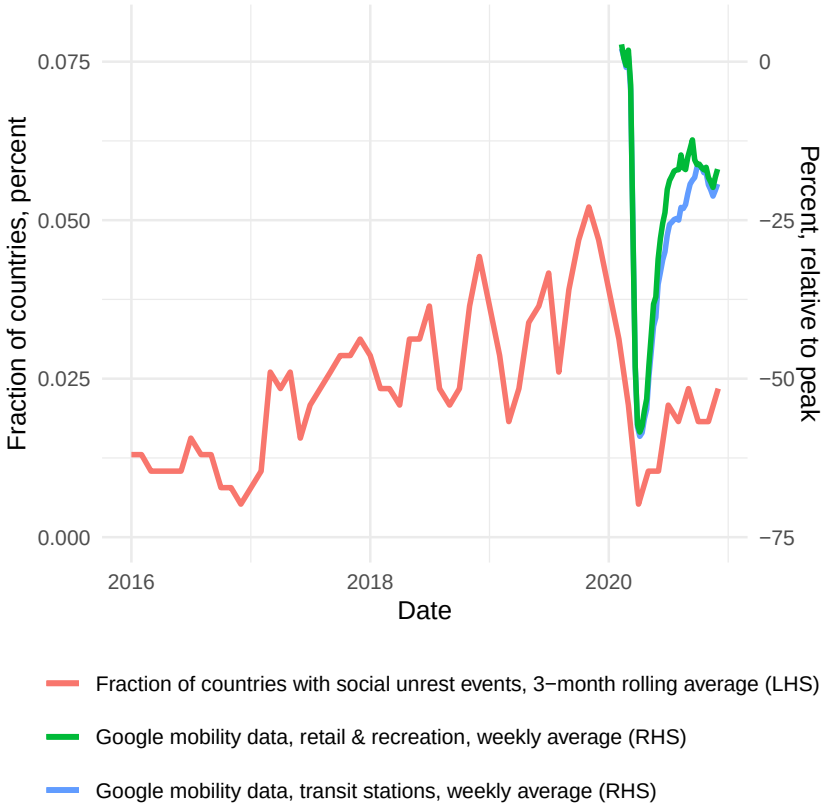
Immediate questions:

- What do we mean by unrest? ⇒ Consensus definition
- Is it any good? ⇒ Test vs. external narratives in ∼20 case studies

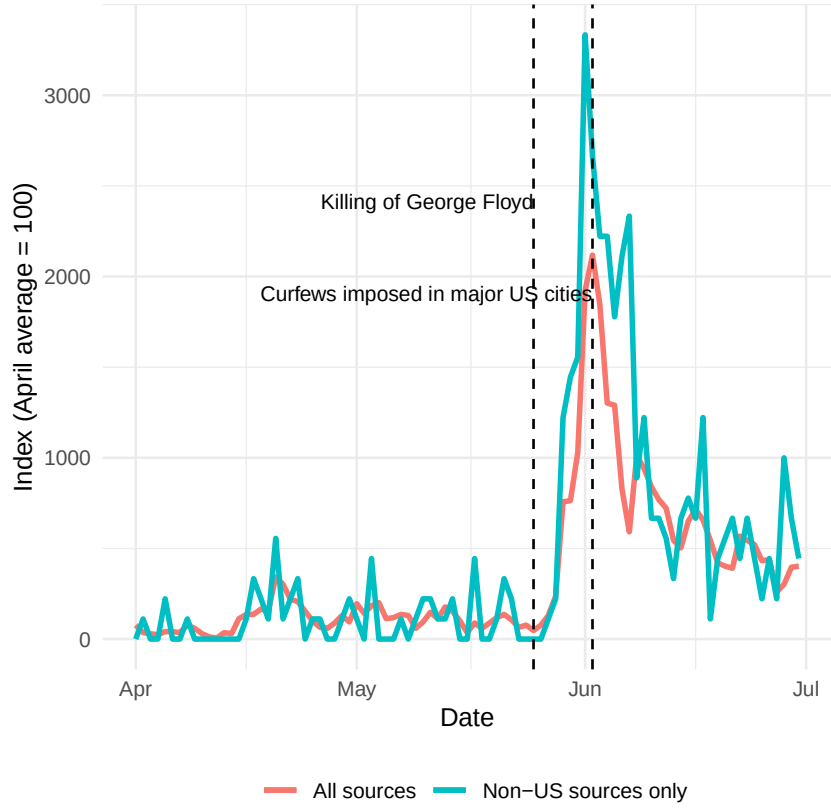
Measuring unrest: Arab Spring



Measuring unrest during COVID



Global unrest during COVID



Daily unrest in the US

Measuring natural disasters

EM-DAT, data on multiple

- Focus on natural disasters: Droughts, Earthquakes, Epidemics, Floods, (Landslides), Storms
- Global, country-specific data starting in 1900
- Fields include: date, fatalities, measures of costs

COVID-19

Idea: exact timing of COVID-19 "arrival" not correlated with drivers of unrest. Thus, exploit cross-country variation in timing.

First step: identify *daily* dates of unrest from media coverage within unrest months.

Specifications:

$$y_{i,t} = \alpha_i + \delta_t + \beta X_{i,t} + \epsilon_{i,t}$$

$$y_{i,t} = \alpha_i + \delta_t + \sum_{k=1}^{K} b^k x_{i,t}^k + v_{i,t}$$

Where

$y_{i,t}$ is a daily indicator for a social unrest event
$X_{i,t}$ is an indicator which is one after the first in-country COVID death
$x_{i,t}^k$ are buckets for time since the first in-country COVID case

Results

	(1)	(2)	(3)	(4)	(5)
	Likelihood of unrest (%)				
COVID (first case)	-0.0151*		-0.0197*	-0.0196*	-0.0181*
	(0.009)		(0.010)	(0.010)	(0.010)
COVID (1-7 days after first case)	-0.0112*		-0.0150	-0.0150	-0.0138
	(0.007)		(0.009)	(0.009)	(0.009)
COVID (8-30 days after first case)	-0.0129		-0.0143	-0.0144	-0.0140
	(0.008)		(0.010)	(0.010)	(0.010)
COVID (1-7 days before first case)	-0.0272*		-0.0278**	-0.0274*	-0.0266*
	(0.014)		(0.014)	(0.016)	(0.014)
Lockdown (during)		-0.0510***	-0.0513***	-0.0515***	-0.0539***
		(0.017)	(0.018)	(0.020)	(0.018)
Lockdown (1-7 days after lockdown)		-0.0448**	-0.0450**	-0.0452**	-0.0463**
		(0.018)	(0.018)	(0.020)	(0.019)
Lockdown (8-30 days after lockdown)		0.0311	0.0310	0.0307	0.0301
		(0.048)	(0.048)	(0.048)	(0.048)
Lockdown (1-7 days before lockdown)		0.1006	0.1028	0.1027	0.1023
		(0.135)	(0.136)	(0.136)	(0.136)
Log of confirmed COVID cases				0.0001	
				(0.001)	
Mobility					-0.0002
					(0.000)
Observations	155,169	155,169	155,169	155,169	155,169
R-squared	0.007	0.007	0.007	0.007	0.007
Country FE	Yes	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes	Yes

Interpreting the results

- Likelihood of unrest is unambiguously lower after onset of disease ($\sim$ 55 percent less).
- Anticipation effects seem limited
- Colinearity means it is hard to distinguish between effects of disease and policy response.
- no large increase in unrest after lockdown ends (speaks to reverse causality)

Local Projection

Standard approach:

$$y_{i,t+h} - y_{i,t-1} = \alpha_i^h + \beta^h x_{i,t} + \Gamma^{h\prime} q_{i,t} + \epsilon_{i,t}$$

Problem: unrest events are very rare, so power rather low.

Alternative specification:

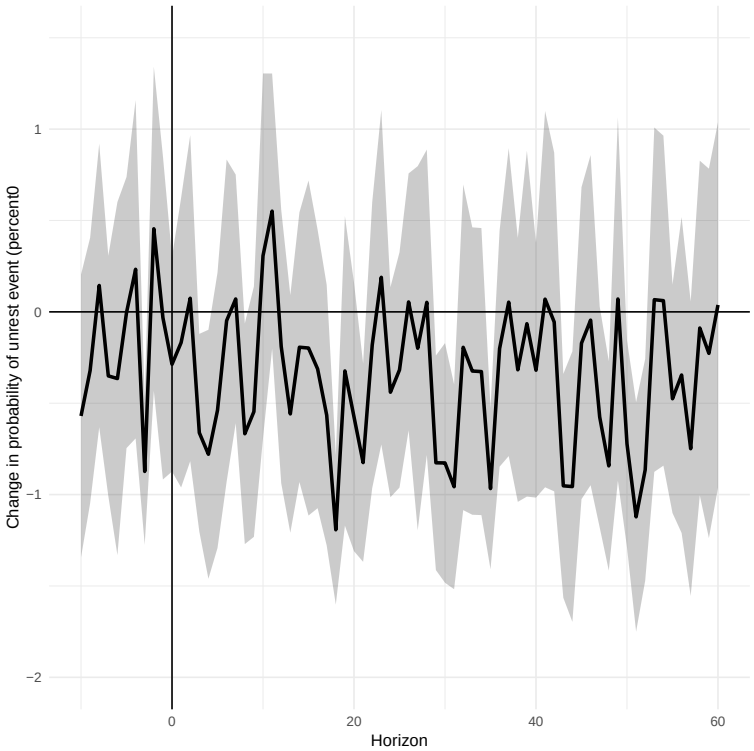
$$\frac{1}{h+1}\left(Y_{i,t+h} - Y_{i,t-1}\right) = \alpha_i^h + \beta^h x_{i,t} + \Gamma^{h\prime} q_{i,t} + \epsilon_{i,t}$$

Where

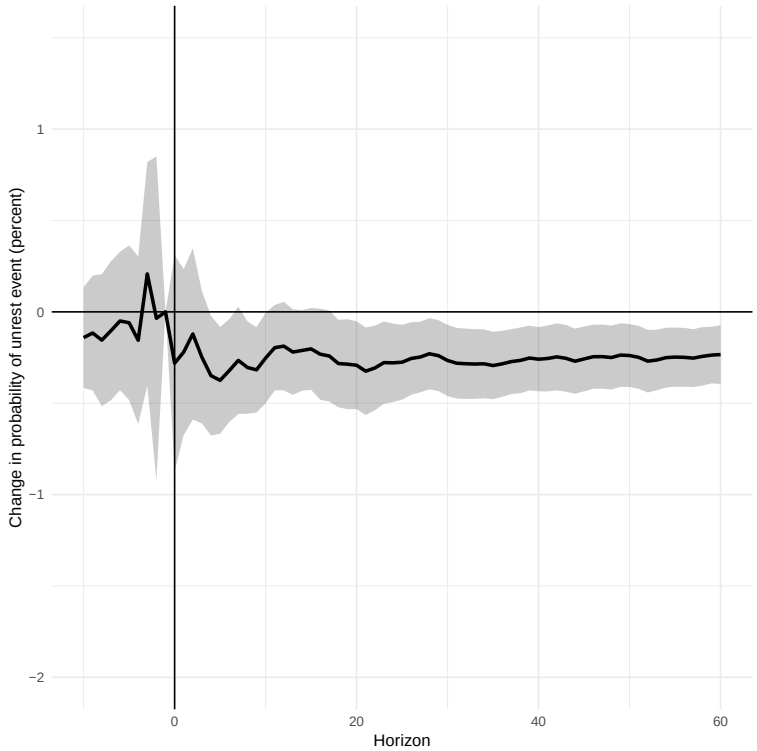
$$Y_{i,t} = \sum_{s=0}^{t} y_{i,s}$$

Interpretation: coefficient is the *average* rate of social unrest during $[t, t+h]$ conditional on an epidemic.

Local Projection

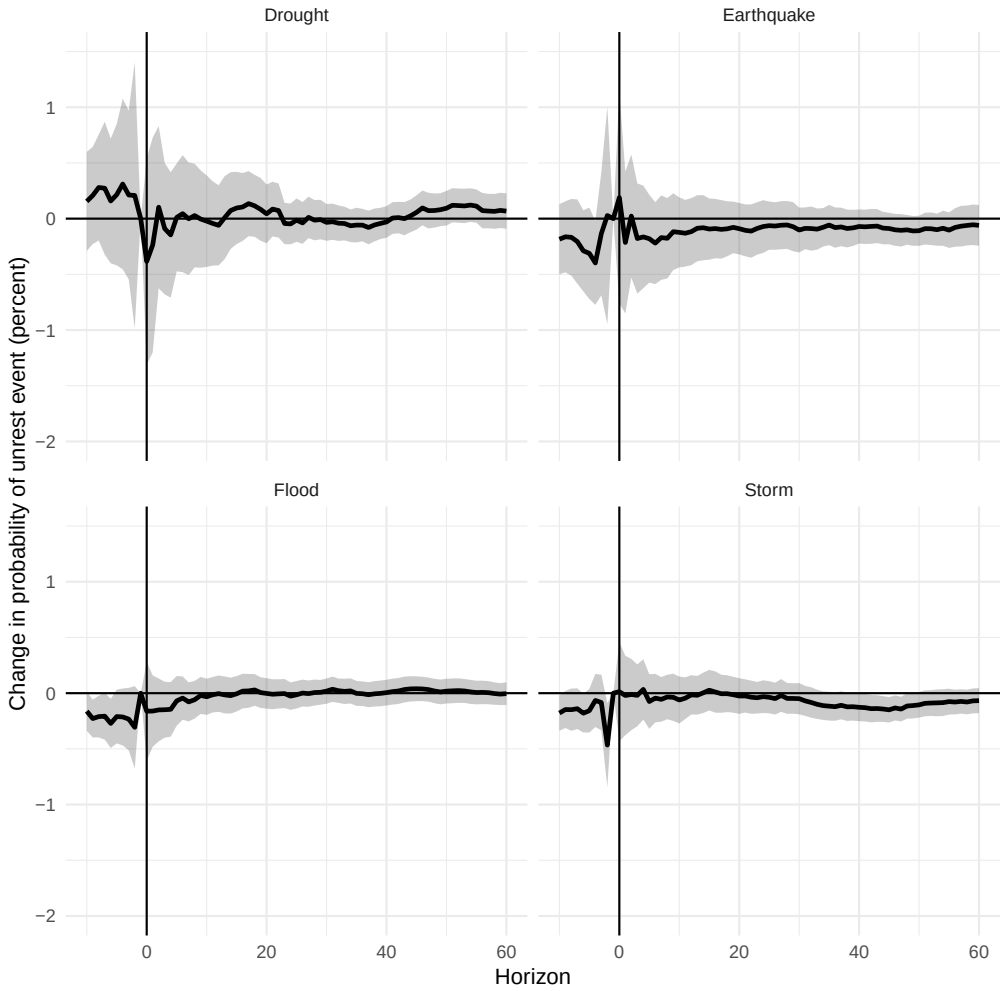


Contemporaneous effect



Average effect

Local Projection: Averages



Instrumental variables

Idea: use regional waves of epidemics

$$z_{i,t} = \begin{cases} 1 & \text{At least 25\% of neighboring countries have an epidemic} \\ 0 & \text{Otherwise} \end{cases}$$

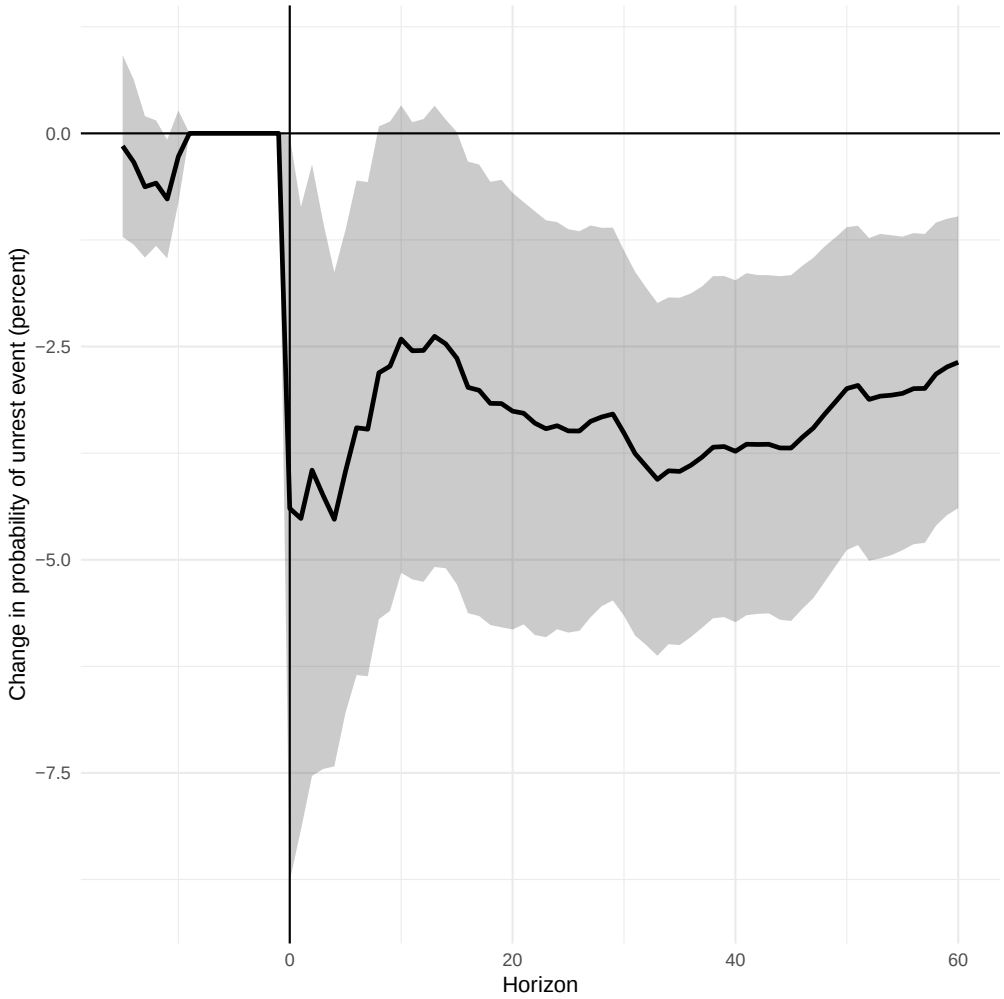
Intuition: want to prevent just selecting countries with lots of neighbors.

Instrumental variables

Conditions for a valid instrument

- Strength
  - Not really a problem, first stage F-stats > 30.
- Exclusion restriction
  - Foreign epidemics could affect domestic unrest directly
  - Identifying assumption: this channel is correlated with foreign unrest
  - So, always control for foreign unrest in IV

Instrumental variables



Conclusions

Epidemics seem to have a negative and persistent effect on social unrest

- Diff-in-diff evidence from COVID and longer panel are consistent.
- Larger in IV (LATE?)
- Seems very persistent.

Interpret this as the deterrent effect of transmissible diseases. Evidence:

- Epidemics look different from other disasters.
- Hard to distinguish "pure" epidemic effect from impact of policy.