The Rhythm of History

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Is there a temporal structure of civil strife events leading up to a major conflict?

We explore the temporal structure of conflict using a unique dataset

University of illinois' Social Political Economic Event Database (SPEED) three-country dataset contains:

- Nearly **10,000 events** across 3 countries:

  Liberia, **The Philippines**, **Sierra Leone**

- Up to 142 variables encoded for each event

  e.g., number of initiators, type of event, type of weapon, number of victims, etc.

- Data collected from **news sources and government agencies from 1979-2008**

  (BBC, SWB and CIA)

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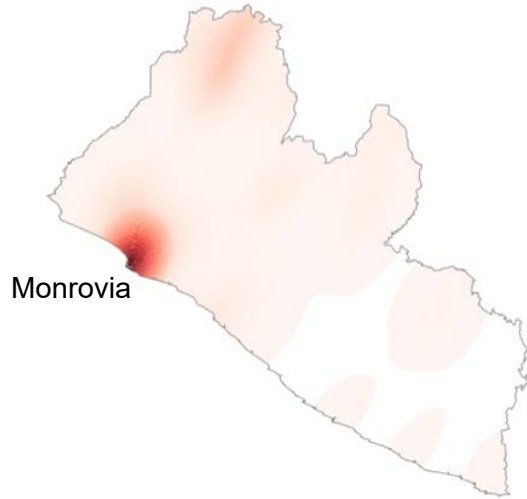**Social Political Economic Event Dataset (SPEED): Liberia, Philippines, and Sierra Leone (1979-2008) Codebook**

(v.1.0.0)

Peter F. Nardulli, Ajay Singh, Michael Martin, Dan Shalmon, Buddy Peyton, and Scott Althaus
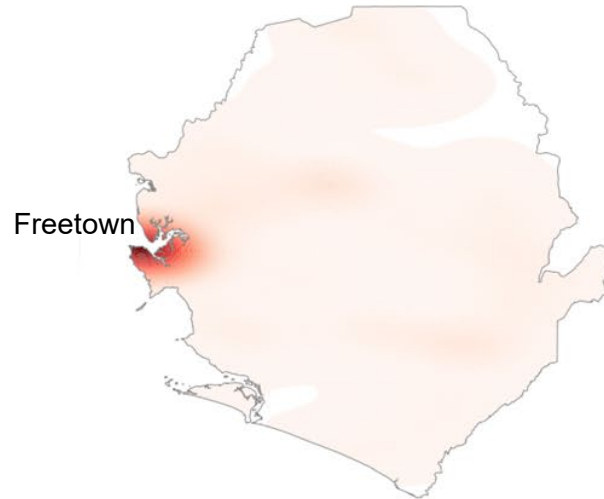
August 29, 2019

https://databank.illinois.edu/datasets/IDB-7407320
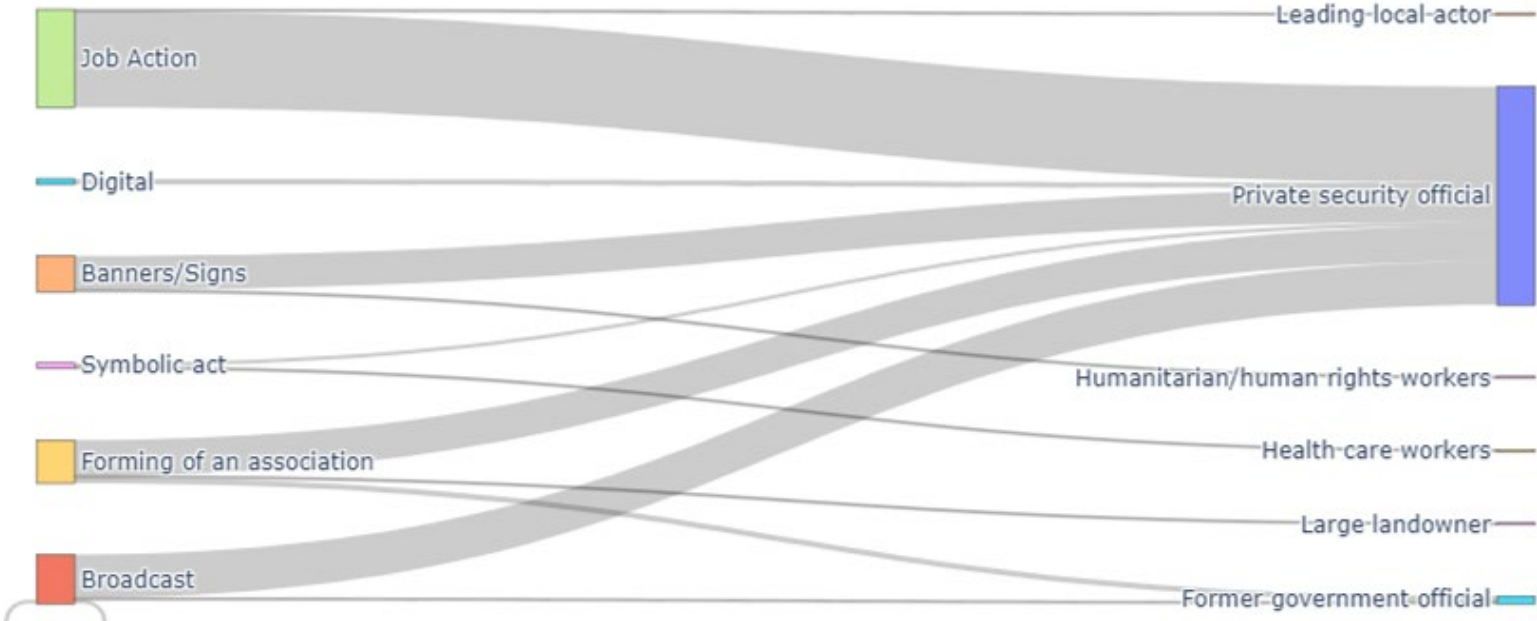
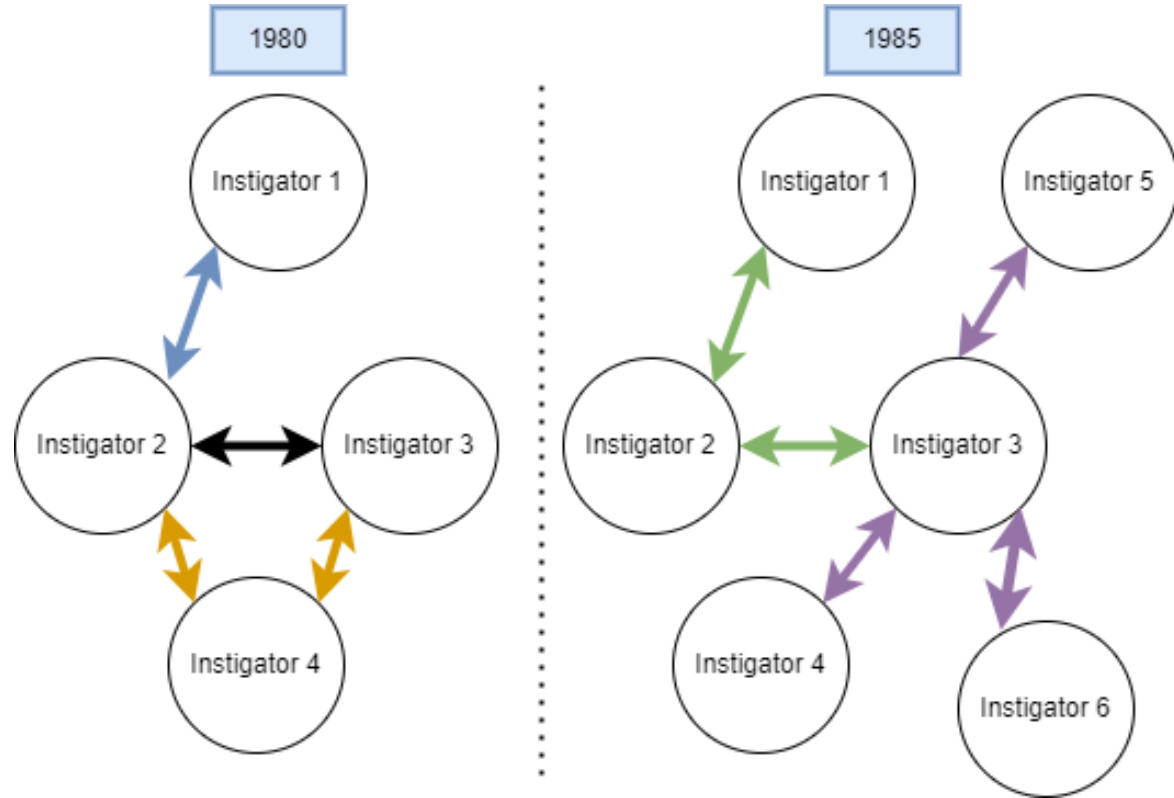# Civil strife events are much more prevalent near cities

Establish interaction between indicators


Flows from ER0003 to TE0001

Evolution of networks

- How do networks of instigators, targets or methods of political protest evolve over time?

- Can we identify breakdown in cooperation between individuals or groups?
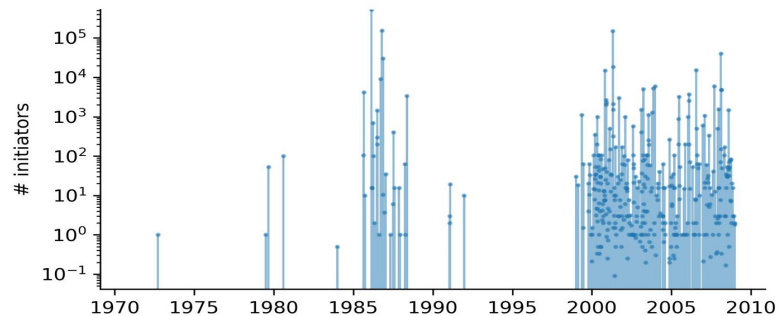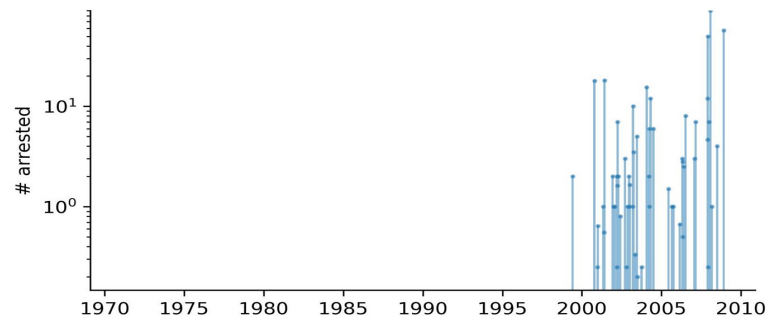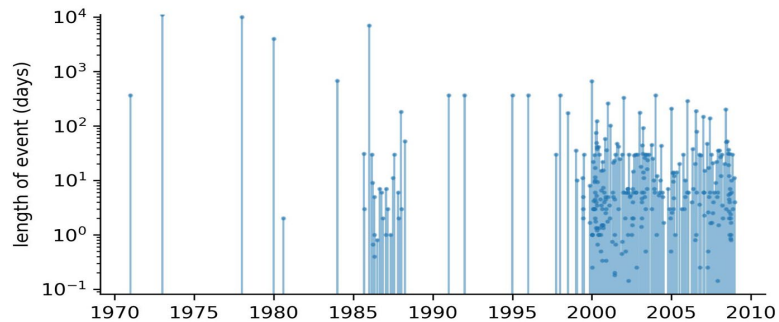

Colours of links are events

The number of strife events peaks at times of known major conflict in each country.

2001 Misuari rebellion

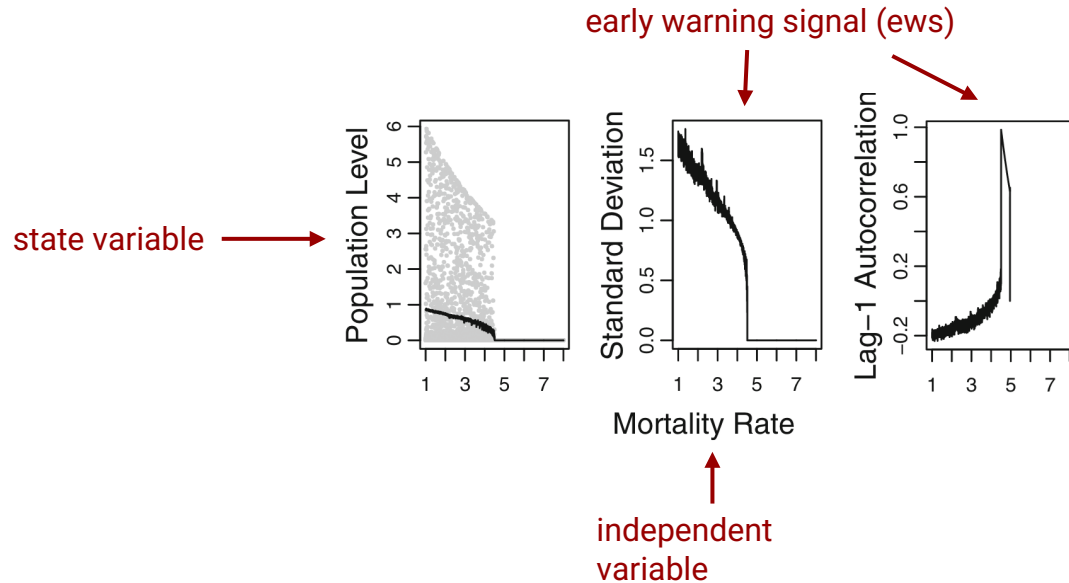Event counts in 90 day sliding window for the Philippines
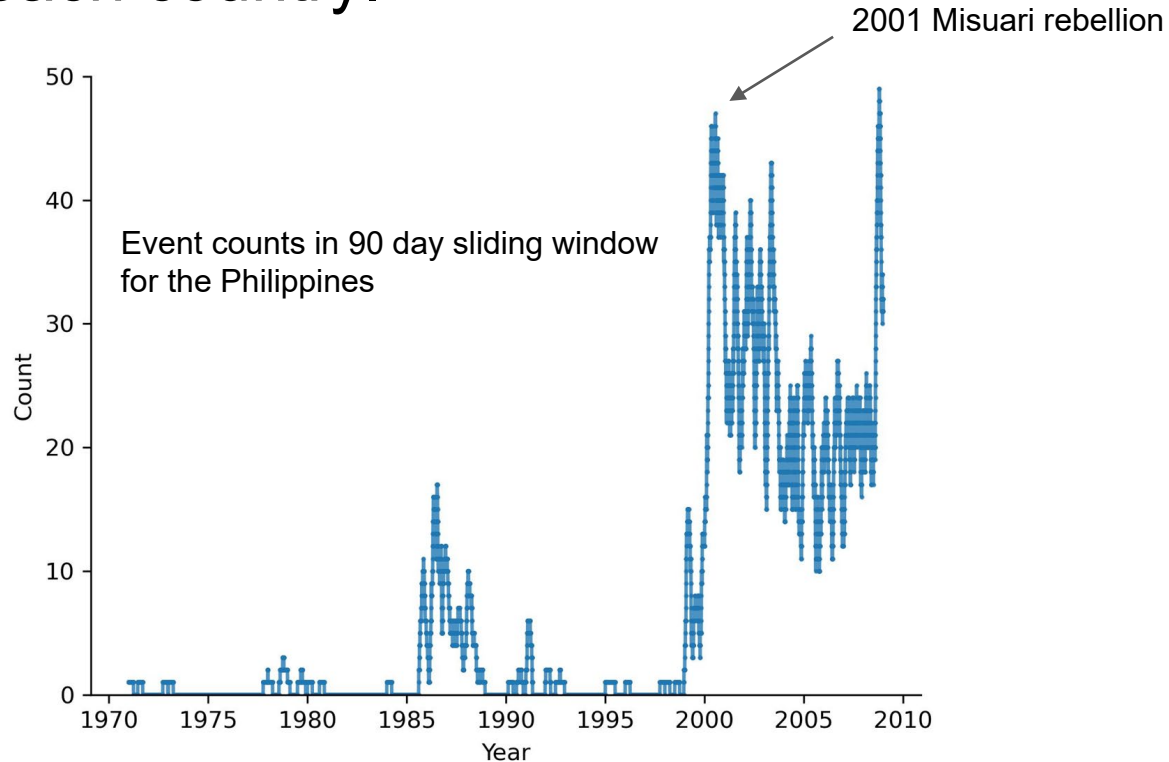
We plan to examine temporal patterns and structure in event intensity variables.

3 example intensity variables for the Philippines
Show sustained increase in intensity after 2000

We also plan to search for early warning signals of transitions.

early warning signal (ews)

state variable

independent variable

C Boettiger, N Ross, A Hastings. "Early warning signals: the charted and uncharted territories." Theor Ecol (2013) 6:255–264.
SJ Schreiber. "Allee effects, extinctions, and chaotic transients in simple population models." Theor Popul Biol (2003) 64:201–209

Data-driven Causal Inference

★ **Compression-complexity causality**

Considering two variables X and Y, does the present state of X require information from the past of Y?

➢ Uniform sampling is very challenging in the context of social datasets

➔ Bivariate **interventional** causality estimation (based on pairs of variables)
➔ **Dynamical complexities** of blocks of time-series computed based on **Effort-to-Compress**
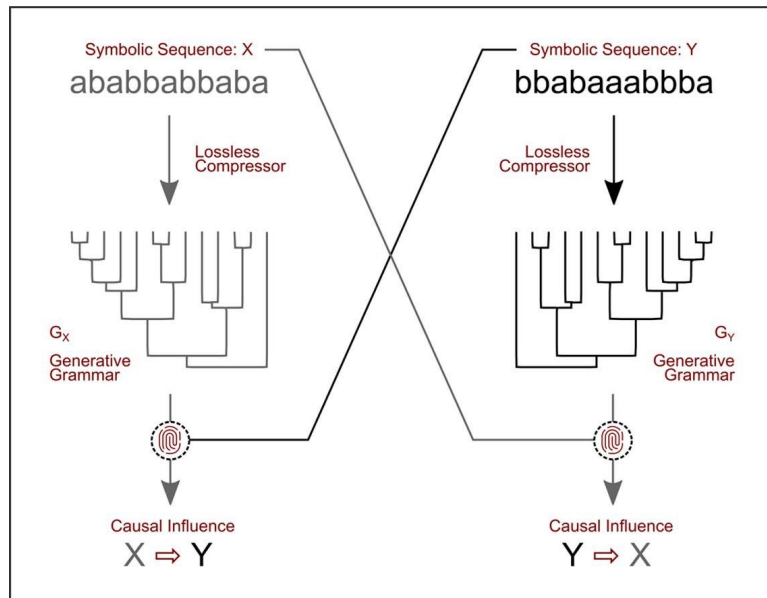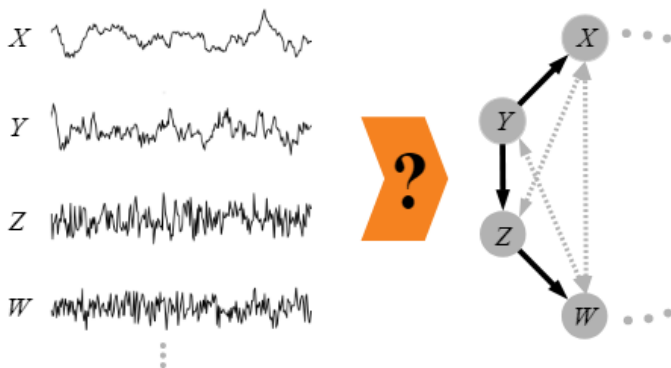
Next steps

➤ Investigate combinations of indicators to better grasp the **intensity / causal power** of events

➤ Thorough **causal inference** analysis

➤ Comparative analysis between time-series and **early warning signals**

➤ Construct **time-dependent networks** of indicators and events

➤ Make music out of the putative oscillatory forcing!