

Forecasting Sub-national Civil Unrest Throughout the World

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Focus of Proposed Work

- Objectives

- Generate real-time, sub-national forecasts of the probability (in confidence intervals) of
 - The emergence of sustained episodes of civil unrest
 - The impact of interventions and pivotal events on episodic trajectories

- Distinctiveness

- Focus on a comprehensive set of small-bore destabilizing events (protests, political violence, state repression, etc.) that:
 - Are temporally and spatially referenced to the city-day
 - Include variables measuring such things as
 - » Event intensity (weapons, # protesting/killed/injured, threats, etc.)
 - » <http://www.clinecenter.illinois.edu/research/publications/SPEED-Gauging-Intensity-of-Civil-Unrest.pdf>
 - » Event origins (anti-government sentiments, socio-cultural animosities, class concerns, political rights, eco-scarcities, etc.)
 - » <http://www.clinecenter.illinois.edu/research/publications/SPEED-Origins-of-Destabilizing-Events.pdf>
- Integration of “leading indicators” derived from sub-national event data into forecasts

- Approach

- Develop an array of predictive models from historical data
- Apply models to real-time data

Source of Civil Unrest Data: SPEED Project's Societal Stability Protocol (SSP)

(<http://www.clinecenter.illinois.edu/research/publications/SPEED-SSP.pdf>)

- **The Societal Stability Protocol**
 - Is based on an encompassing ontology of destabilizing events
 - Extensively pretested and iteratively fine-tuned over 5-year period
 - Draws from a unique, digitized global news archive
 - Historical archive, 1946 – 2005
 - Tens of millions of reports from FBIS, SWB, NYT
 - Contemporary news archive 2006 – present (updated several times a day)
 - 100,000 articles a day scraped from over 5,000 news feeds in more than 150 countries
 - **Hybrid technological approach**
 - Advanced information technologies and NLP tools to identify articles with relevant content (BIN; <http://www.clinecenter.illinois.edu/research/publications/SPEED-BIN.pdf>), annotate text with key pieces of information (EAT), and separate articles based on country of origin (GEOCODER)
 - Advanced approaches to information extraction & event relatedness
 - Technologically enabled human coders extract information on a range of variables (What where, when, who, how, why)

Approach to Forecasting

- **Develop models for**
 - Different time frames
 - Countries with different institutional designs (political regime, legal structures) and contextual characteristics (wealth, education levels)
 - Episodes rooted in different discontents (autonomy, socio-cultural, class-based, etc.)
- **Use ROC-based techniques to specify parsimonious models that have useful predictive value**
 - Develop confidence levels around predictions
 - Apply to out of sample data to enhance stability
- **Develop procedures to identify level shifts/phase switching**

Potential Predictors in Model

- **Triggers (rare events)**
 - Coups, assassinations, elections, natural disasters, economic shocks, external attacks
- **Leading indicators (dynamic; sub-national)**
 - Examples: proportion of destabilizing events involving violence; average number of protesters in mass demonstration events; threats of violence by private actors; deployment of soldiers by state; time since last episode of unrest; rate of spatial diffusion; intensity of citizen unrest in neighboring regions and countries;
- **Baseline hazards (relatively static; sub-national and national)**
 - State norms governing relations with civil society
 - Propensity to use violence against citizens, propensity to suppress political expression events
 - Regional hot spots
 - Defined by: levels of prior instability; intensity and nature of socio-cultural animosities; hotbeds of secessionism; deposits of lootable natural resources; isolated/peripheral regions; extreme poverty; disaster proneness; density
 - Institutional features
 - Regime type, commitment to law-based order
 - Socio-economic context
 - Wealth, education, integration into global economy