Dynamic Networks of Conflictual Events
The Evolution of the Mexican Criminal Conflict

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Many theories: government + rebels

Problem: Multiple groups
Multiple interactions

Roughly a third of all intrastate conflicts between 1989 and 2003 have been fought with multiple warring parties (UCDP/PRIO 2007).
Networks

Independencies
(i.e. more interesting, more accurate)

Binary, Counts, Ordinal

Doable!
What exactly?

**Canonical way**

<table>
<thead>
<tr>
<th>Conflict event</th>
<th>Target actor</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actor i</td>
<td>1</td>
<td>Actor j</td>
</tr>
<tr>
<td>Actor j</td>
<td>3</td>
<td>Actor k</td>
</tr>
<tr>
<td>Actor k</td>
<td>2</td>
<td>Actor i</td>
</tr>
<tr>
<td>Actor l</td>
<td>1</td>
<td>Actor i</td>
</tr>
</tbody>
</table>

**Network way**

```
\begin{bmatrix}
  actor_i & actor_j & actor_k & actor_l & actor_m \\
  actor_i & 0 & 2 & 0 & 0 & 0 \\
  actor_j & 2 & 0 & 0 & 2 & 1 \\
  actor_k & 0 & 0 & 0 & 0 & 4 \\
  actor_l & 0 & 2 & 0 & 0 & 4 \\
  actor_m & 0 & 1 & 4 & 4 & 0 \\
\end{bmatrix}
```
Current Study

Create dynamic networks of the Mexican Criminal Conflict

Utilizing machine-coded + human coded event data (new data!)

To test the determinants of conflict between Drug Trafficking Organizations (DTOs) and the Mexican Government via Latent Network Approach
The Case for Mexico

Nature & scale of violence
Afghanistan: 2001-2014
   26,000 civilian deaths
Mexico: 2006-2014
   164,000+ civilian deaths

Ongoing
(not post-war analysis)

Data quality
Increasing data quality, increasing cases of civilian agency
ICEWS DATA - Database with 19.8 million+ events from 1991 to July 2014

Feed of news reports that give us stories (text)

Machine coded news reports using CAMEO ontology, managed by Lockheed Martin on behalf of US Government

Machine coding: stories are processed to identify actors, actions, date, location
MEXICO CITY (AP) - Armed assailants opened fire on a sport utility vehicle the governor of Oaxaca state was driving Thursday, slightly injuring him and wounding two bodyguards. Gov. Jose Murat was released from a state-run hospital after being treated for minor injuries, but received a second threat while he was being attended by doctors, he said. "They called to say that this time I survived, but next time they are going to kill me," Murat told a news conference in Oaxaca City, 220 miles (350 kms) southeast of Mexico City.....
Design: Dynamic Networks

DV: Network of DTOs and Government actors 2006-2013
Timeline

- 2005
- 2009
- 2012
Design: Independent Variables

Network Measures ("major players")
Centrality lagged, dynamic
Betweenness lagged, dynamic

Political Measures:
Group Indicator static
Protest lagged, dynamic
Protests

Source: The Mexican Protest Against Crime (MPC) Database
Sandra Ley Gutiérrez

My measure: protest count → DTO region of operation
Model: GBME

\[ y_{ij} = \beta' x_{i,j} + \epsilon_{i,j} \]

\[ z_{i,j,t} = \beta_d^T x_{i,j} + \beta_n^T (x_i + x_j) + a_i + a_j + u_i^T \Lambda u_j + \epsilon_{i,j} \]

Network, time \( t \)  

- dyadic covariates  
- nodal covariates  
- actor fixed effects  
- 3rd order dependencies  
- error (2nd order effects)
## Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\hat{\beta}$</th>
<th>Sd. error</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centrality</td>
<td>0.040</td>
<td>0.023</td>
<td>0.086</td>
</tr>
<tr>
<td>Government Actor</td>
<td>0.508</td>
<td>0.428</td>
<td>0.236</td>
</tr>
<tr>
<td>Betweenness</td>
<td>0.004</td>
<td>0.003</td>
<td>0.802</td>
</tr>
<tr>
<td>Protests</td>
<td>0.006</td>
<td>0.003</td>
<td>0.022</td>
</tr>
</tbody>
</table>

(all variables lagged t-1)
Discussion
(Your brain power is welcomed)

(1) **methods** paper measuring conflict as network DV using this approach & across different conflict cases

(2) non-methods **article** focused on the relationship between **protest & conflict**.
Include more actor-related variables
(i.e. DTO size, age, resources, competition with self-defense militias)
Hey thanks!
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Names

- Juarez Cartel
- Gulf Cartel
- Sinaloa Cartel
- Tijuana Cartel
- Los Zetas
- Beltran Leyva Cartel
- Federal Forces
- Knights Templar
- 2008