Legal Institutions, Climate Change, and Human Trafficking

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What is the relationship between the adoption of legal institutions and human trafficking patterns, and how that is impacted by shocks that shift the relative costs of operations for states and traffickers?

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What is the relationship between the adoption of legal institutions and human trafficking patterns, and how that is impacted by shocks that shift the relative costs of operations for states and traffickers?

- Trafficking is a complex phenomenon that involves not just origins and destinations, but also routes and intermediaries
- Network Analysis that pays attention to interdependencies between intermediaries

Research Questions

- What has been the impact of anti-trafficking law diffusion on the divergence of trafficking routes?
- How has climate change shaped the impact of these anti-trafficking laws?

Legal Institutions and Trafficking Route Divergence

Legal institutions diffuse internationally because of negative externalities (Simmons, Lloyd, Stewart 2018)

What are the downstream implications of this on human trafficking patterns?

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H1a: For intermediary states that have adopted anti-trafficking laws, there will be greater divergence of trafficking paths through multiple intermediaries.

H1b: For intermediary states that have not adopted anti-trafficking laws, trafficking paths are more likely to converge on a smaller number of intermediaries.

Natural Shocks Confound Legal Institutions

Natural shocks impose costs on both states' legal institutions and traffickers' operations, changing the balance between states and traffickers

- *if more costly to traffickers:* decrease in exposed areas and remain the same in unexposed areas
- *if more costly to states:* converge on exposed areas and decrease in unexposed areas

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H2: Natural shocks will confound the path diverging effect of anti-trafficking laws on adopting intermediaries.

RQ: Which types of states will the confounding effects of natural shocks incentivize traffickers to converge on?

Empirical Approach: Analyzing the Human Trafficking Network

- Existing research tend to be at the node- or dyad-level, ignoring network effects
- We study trafficking patterns as a network:
  1. Annual edgelists (2009–2016)
  2. Statistical inference using ERGM

Data: Trafficking Networks

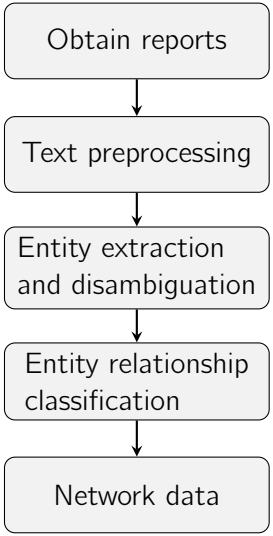
Trafficking in Persons Report (US State Dept.):
Men and women from **China**, **the Philippines**, **Vietnam**, **Indonesia**, *... are subjected to forced labor in* **South Korea**.

Identifying trafficking patterns

- Entity extraction approach by Goist et al. (2019)
- Trafficking in Person reports by the US State Dept. (2009–2016)

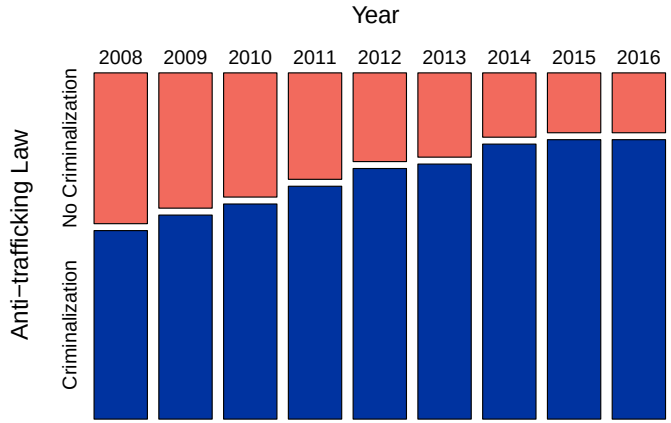
Trafficking Network Construction

- 154 Correlates of War countries with populations greater than one million
- **Annual directed networks** of human trafficking



Data: Legal Institutions

- Criminalization of human trafficking in domestic law from the data set collected by Simmons et al. (2018). (Binarized from 2008–2015)



Data: Natural Shocks

Natural shock exposure

- EM-DAT: The International Disaster Database (2008–2015)
- Categories: geophysical, meteorological, hydrological, climatological
- Binary measure of shock or not

Inferential Network Analysis: Exponential Random Graph Model

The ERGM is a statistical model for inference on the generative features of a network.

In the ERGM framework, the network (i.e. collection of all observed dyads) is treated as a single realization of a multivariate distribution.

What factors contribute to tie formation on the network?

- Node level
- Dyad level
- Network effects

Inferential Network Analysis: Capturing Path Divergence

How do we model network effects using "local network configurations"?

Question: How important is divergence of paths through intermediaries when ties on the network are formed?

Inferential Network Analysis: Capturing Path Divergence

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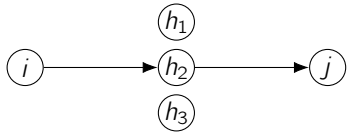

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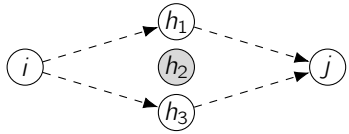

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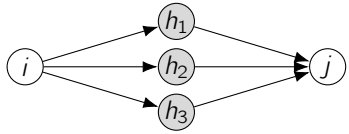

Inferential Network Analysis: Capturing Path Divergence

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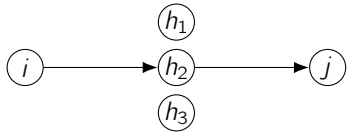

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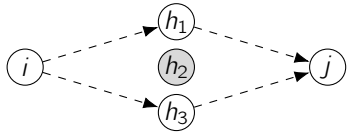

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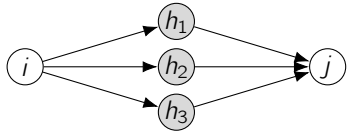

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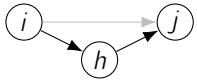

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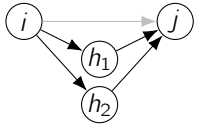

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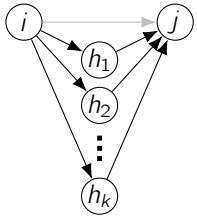
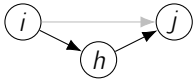


Inferential Network Analysis: Capturing Path Divergence (GWDSP)

(d)



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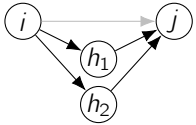

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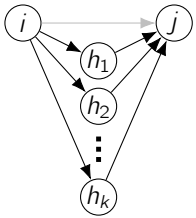
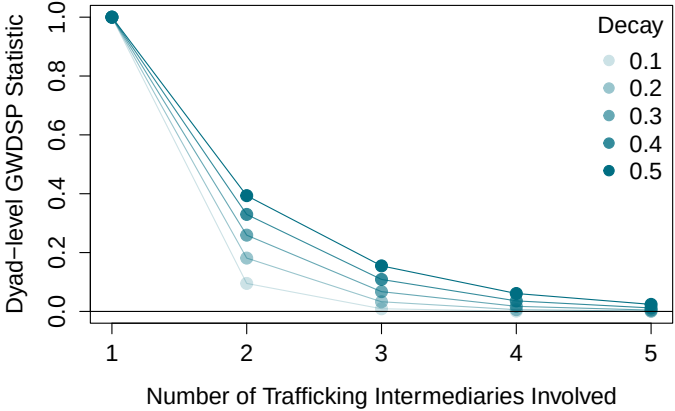
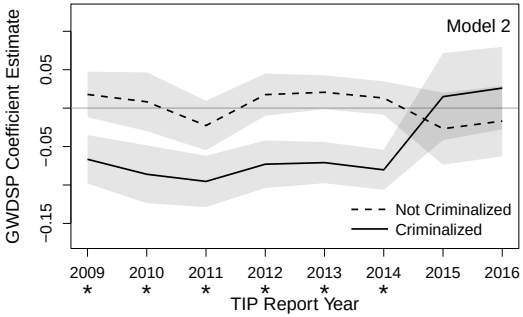




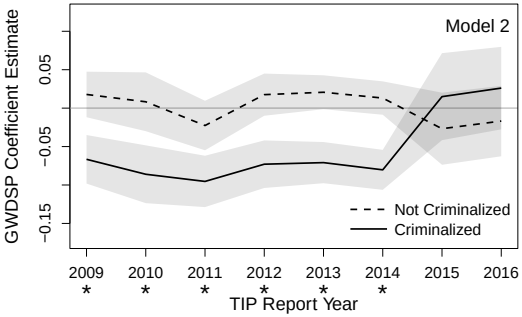
Models and Tests

Model Term	Data Source	M0	M1	M2	M3	M4
Node and Dyad Covariates	-	●	●	●	●	●
Trafficking Criminalization	Simmons et al.	●	●	●	●	●
Natural Shock Exposure	EM-DAT	●	●	●	●	●
Network Terms	-		●	●	●	●
GWDSP (all)	-		●			
GWDSP (w/ Law)	-			●		●
GWDSP (w/o Law)	-			●	●	
GWDSP (w/ Law, w/o Disaster)	-				●	
GWDSP (w/ Law, w/ Disaster)	-				●	
GWDSP (w/o Law, w/o Disaster)	-					●
GWDSP (w/o Law, w/ Disaster)	-					●

Results


Model 2
GWDSP Coefficient Estimate
0.05
−0.05
−0.15
Not Criminalized
Criminalized
2009
2010
2011
2012
2013
2014
2015
2016
*
*
*
*
*
*
TIP Report Year

Results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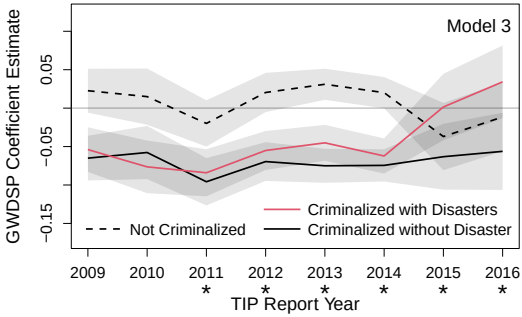
Model 3
GWDSP Coefficient Estimate
0.05
−0.05
−0.15
Criminalized with Disasters
Not Criminalized
Criminalized without Disaster
2009
2010
2011
2012
2013
2014
2015
2016
TIP Report Year

Summary

- Network modeling matters for human trafficking patterns
- Legal institution diffusion diverges trafficking paths
- Climate shocks confound the impact of legal institutions

Paper draft:
`https://tedhchen.com/presentations/cwk_trafficking_isa2024.pdf`

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