

The Role of Information in the Logic of Power

Anton Sobolev 

Information in the Logic of Power

Research Agenda & Historical Context

■ What does explain power dynamics?

- Geography
- Institutions
- World Economy
- Prod. Technology

Diamond (1997)
Ross (2001)
Sachs (2003)

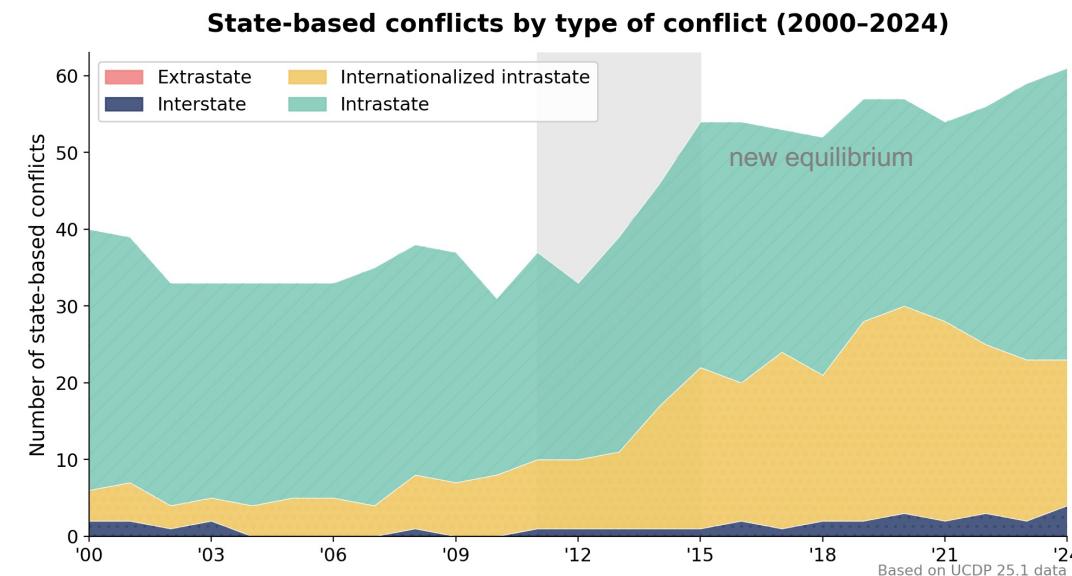
North (1995)
Acemoglu
et al (2001)

Rogowski (1989)
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Boix (2003)
Ben &
Samuels (2014)

■ Yet we observe Starting 2010x

- Not a spike, but a transition to a new equilibrium
- Other things being equal?



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■ Emerging Field Information & Communication in Politics

- Independent Role of ICT [\neq Propaganda]

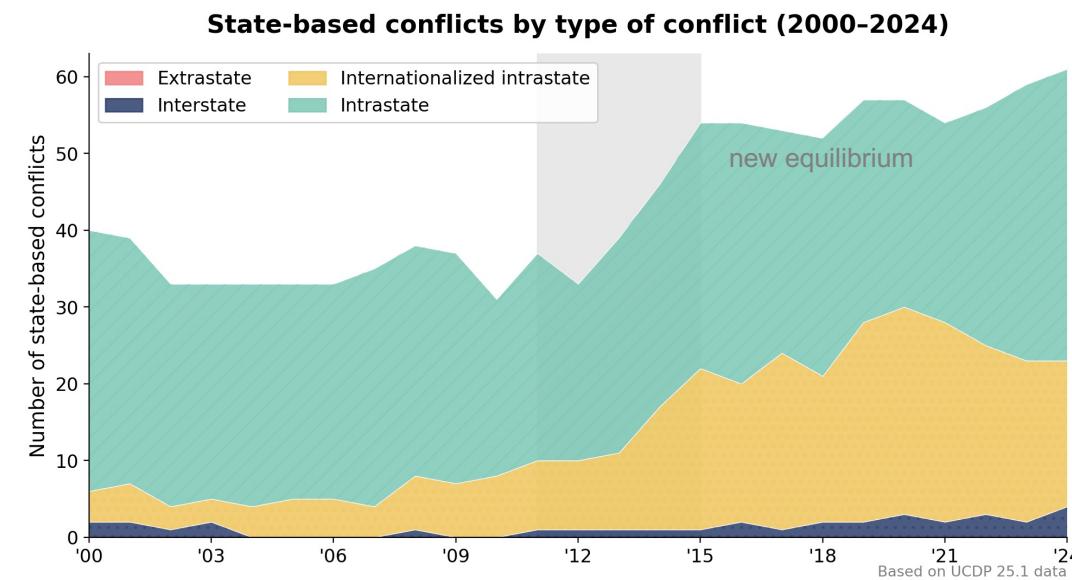


- Global Re-emergence (and Re-invention) of Censorship

- New types of Political Actors: Platforms, Pirate Parties, Influencers

Policy

- Agents: Bots (and Viruses), Trolls, Scams, APT groups



Information in the Logic of Power

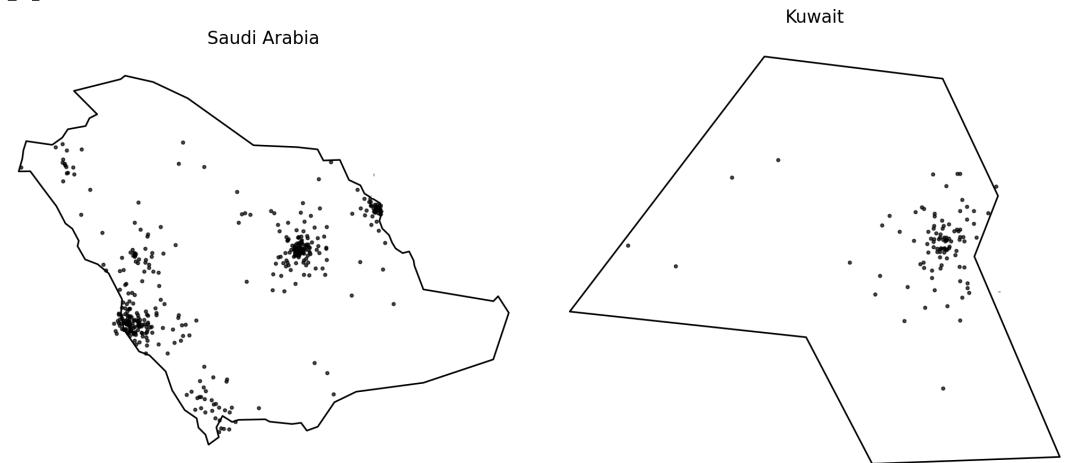
Research Agenda & Historical Context

■ Starting Point

Geography

Diamond (1997)
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Campante & Do (2009),
Campante (2012),
Campante & Do (2014)



■ Case of Mass Actions 2011-12, Russia, Regions

Information in the Logic of Power

Research Agenda & Historical Context

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■ Case of Mass Actions 2011-12, Russia, Regions, Sobolev (2014)

Expectations:

- Contentious Dynamics is determined by geographic factors

- Population Allocation
- Climate
- Rough Terrain

Compare with:

- Economic Growth
- Unemployment
- per capita* Growth

Findings:

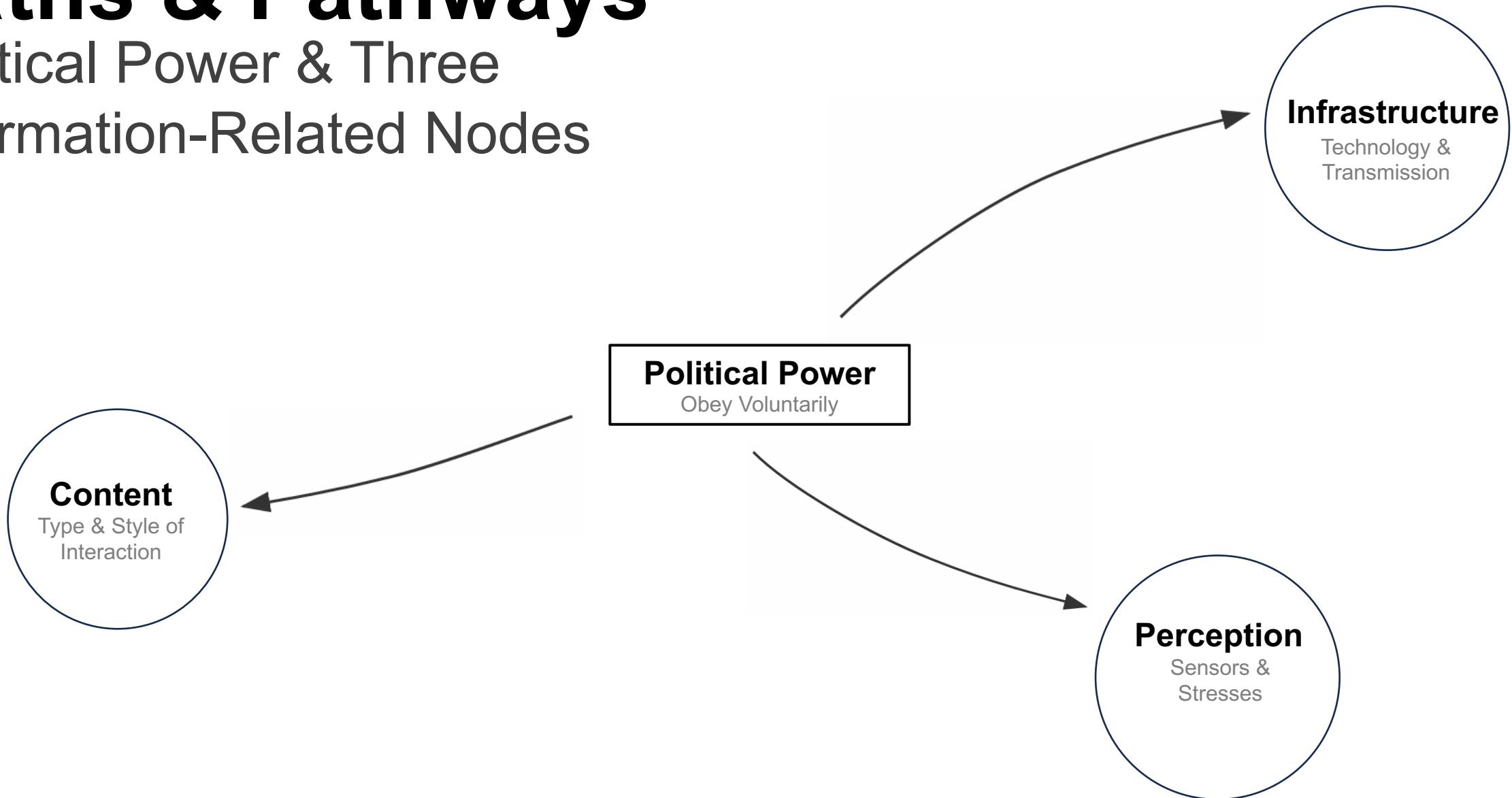
- Comparable Effects with Economic Factors

- ICT indicators (networks, computers, cellphones, information accessibility, internet traffic) **mattered even more!**



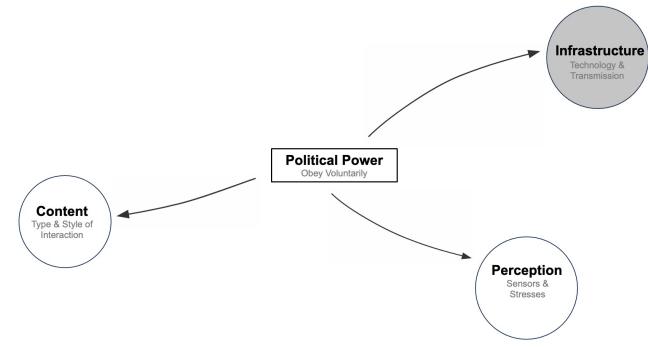
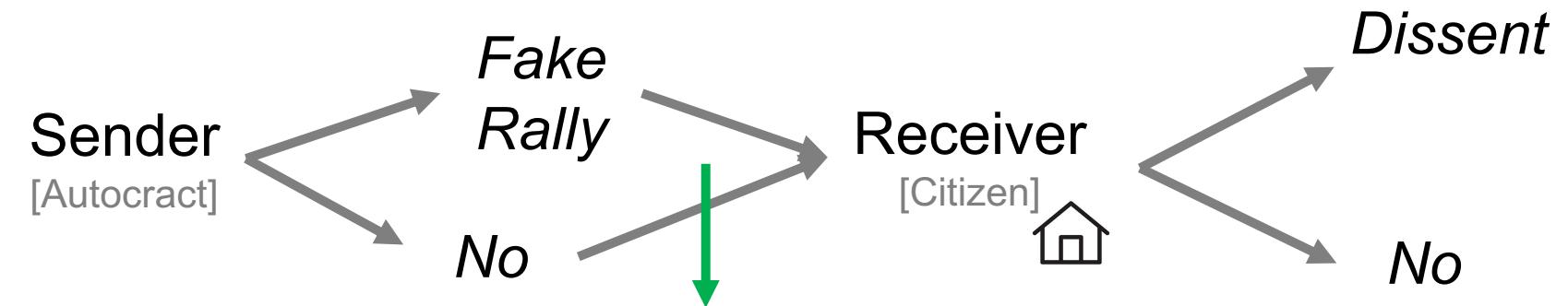
Paths & Pathways

Political Power & Three
Information-Related Nodes



Information Infrastructure

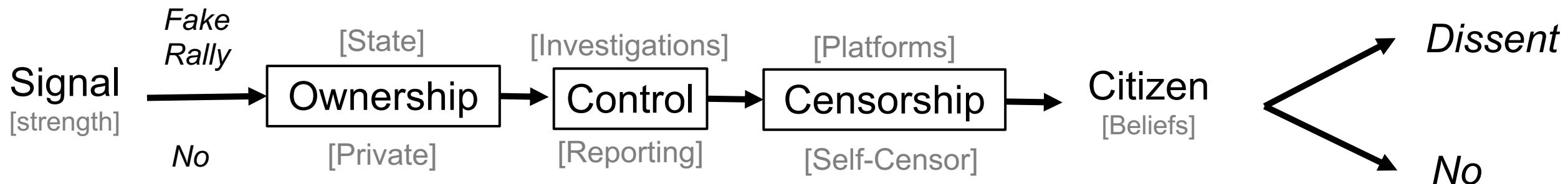
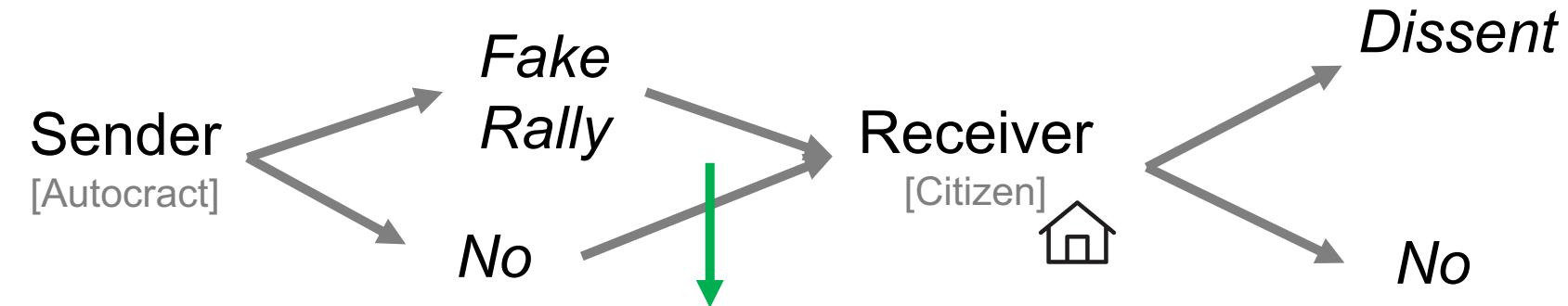
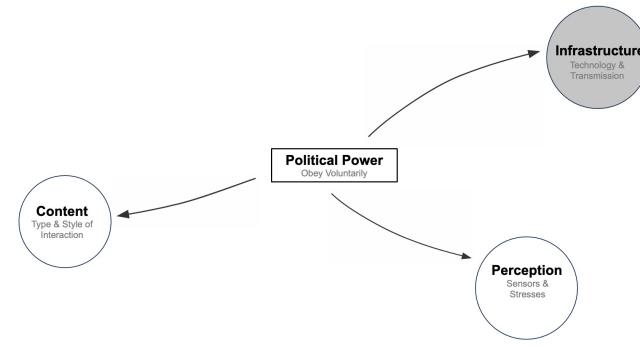
Echo of Freedom: How Independent Media Contain Dissent



More Nuances

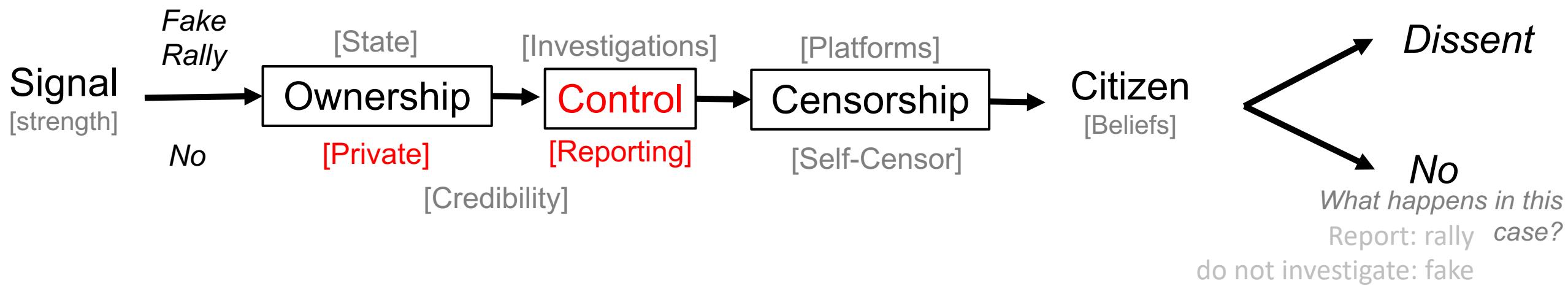
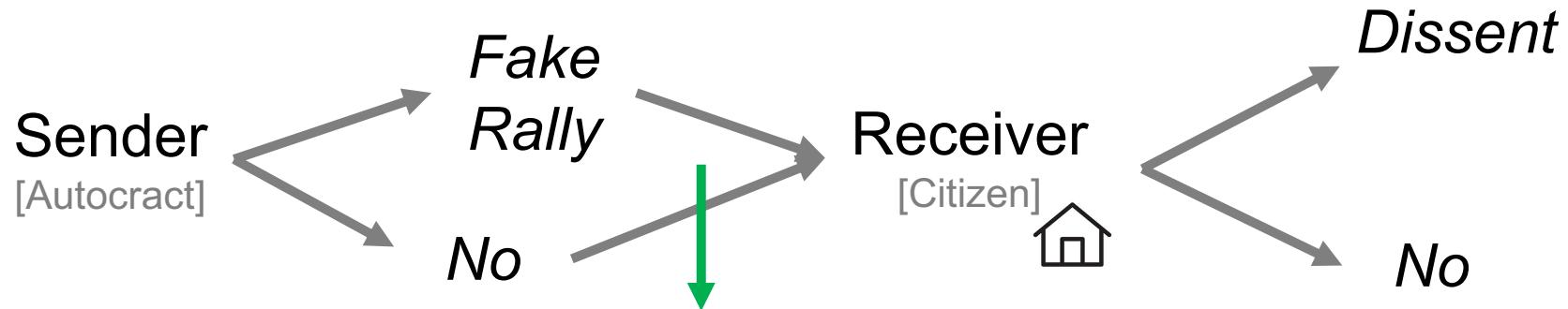
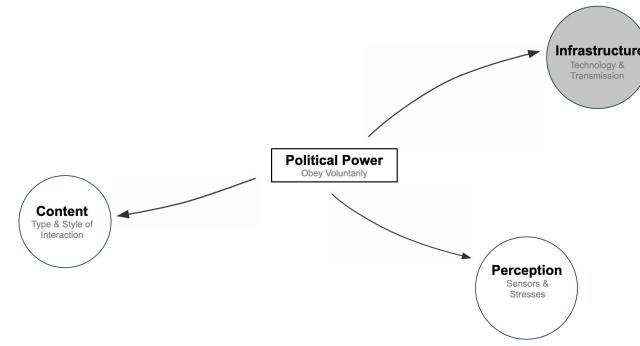
Information Infrastructure

Echo of Freedom: How Independent Media Contain Dissent



Information Infrastructure

Echo of Freedom: How Independent Media Contain Dissent



Students: What is the challenge with mf?

Wintrobe (1998), Egorov, Guriev, Sonin (2009), Edmond (2008, 2013), Kricheli, Livne & Magaloni (2011), Ho (2020), King, Pan, Roberts (2013, 2016), Roberts (2018), Xu (2022)

Information Infrastructure

Echo of Freedom: How Independent Media Contain Dissent

■ **Unique setting:** Political Media with Economic Model

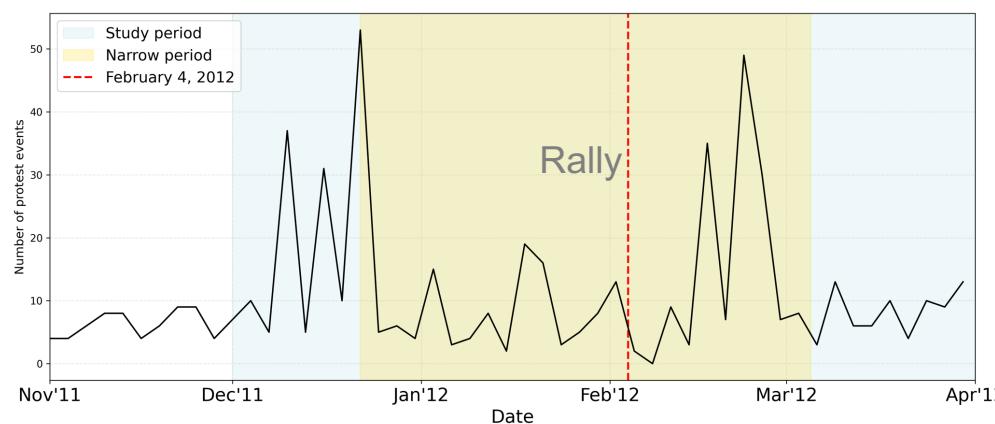
□ Local franchises of radio station “Echo of Moscow”

□ “Can you hear this radio?”

■ **Outcomes:** mass anti-government actions 2011-12, Russia, Cities

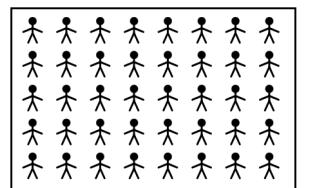
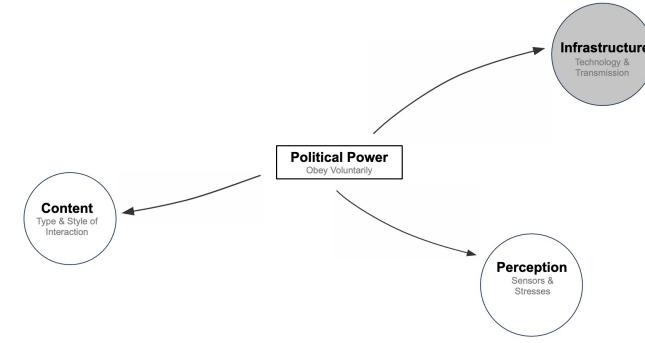
■ **Treatment:** pro-government rallies

□ A local pro-government rally? (Feb 4, '12) ↗ Mass Actions ↑ ↓

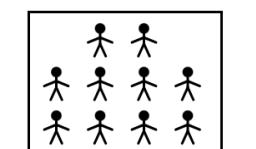


With radio
No

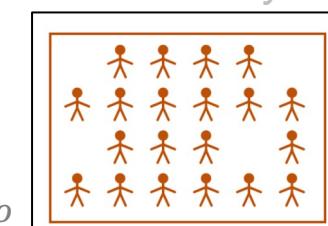
Citizen
Fake Rally



Up



Down



$$DiD: Y = \alpha + \beta_1 rally_{gov}^{pro} + \beta_2 rally_{cow}^{mos} + \beta_3 rally_{cow}^{mos} rally_{gov}^{pro}$$

Information Infrastructure

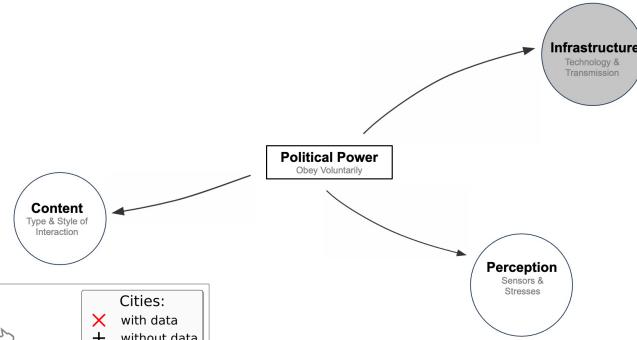
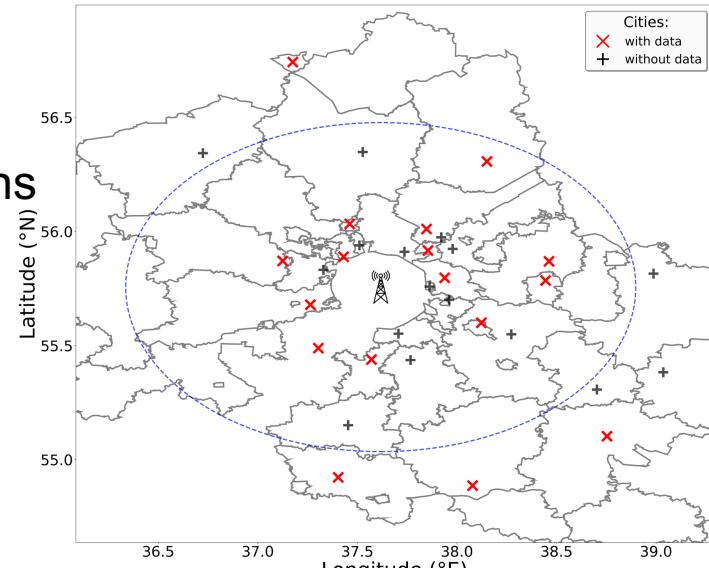
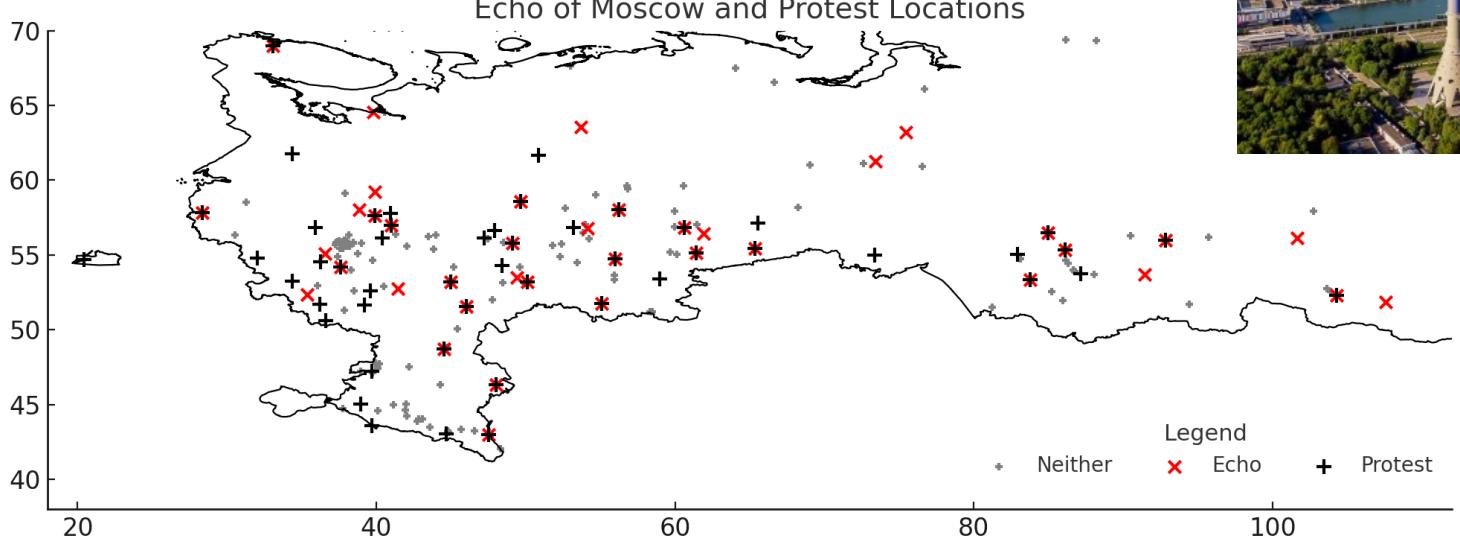
Echo of Freedom: How Independent Media Contain Dissent

- Unique setting: Political Media with Economic Model
- Two types of locations with radio signal

Ads on an independent radio station

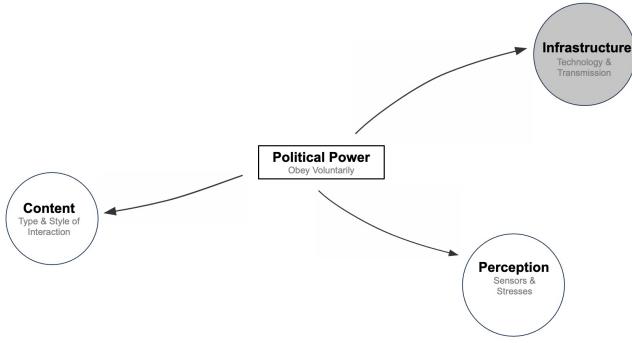


■ 273 cities / 72 stations



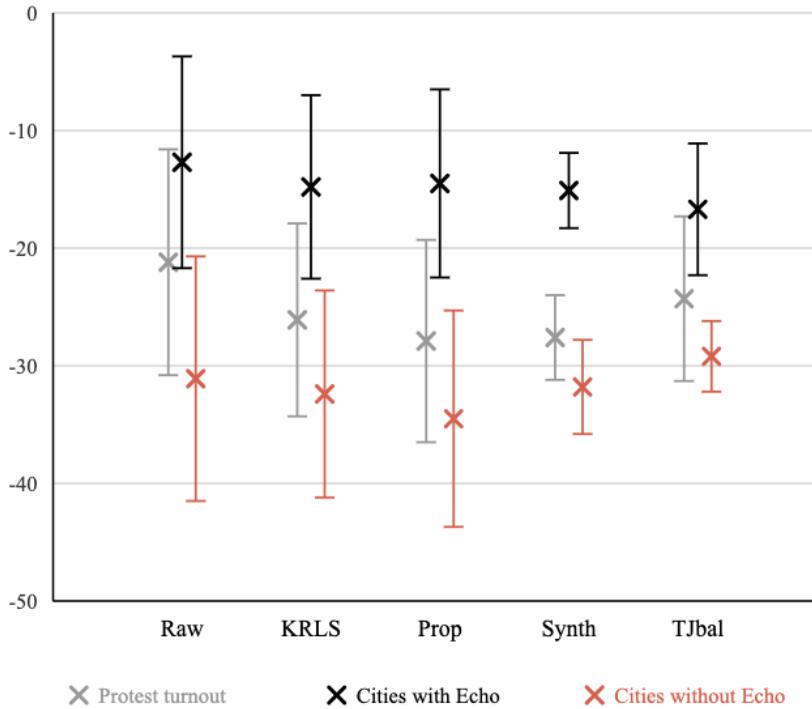
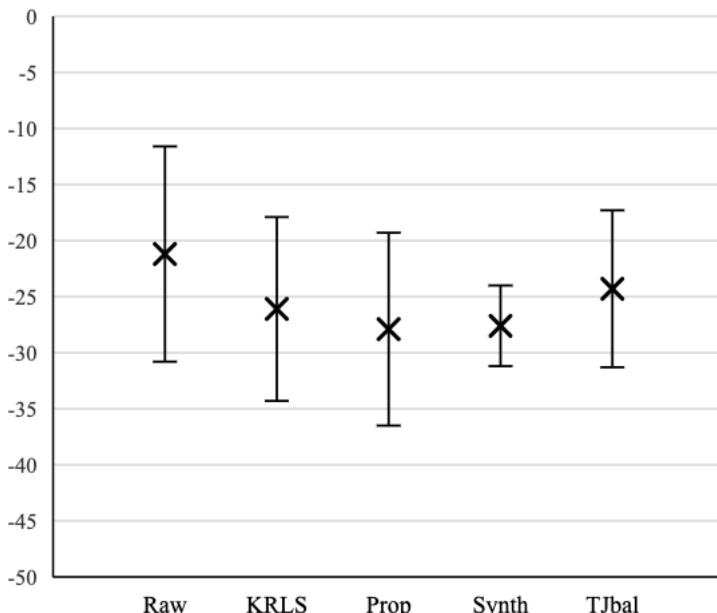
Information Infrastructure

Echo of Freedom: How Independent Media Contain Dissent



■ Effect of a pro-government rally

■ Conditional on the exposure to the radio signal

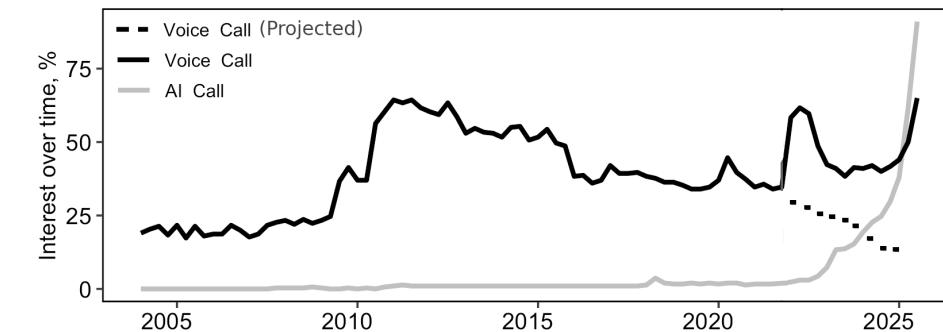
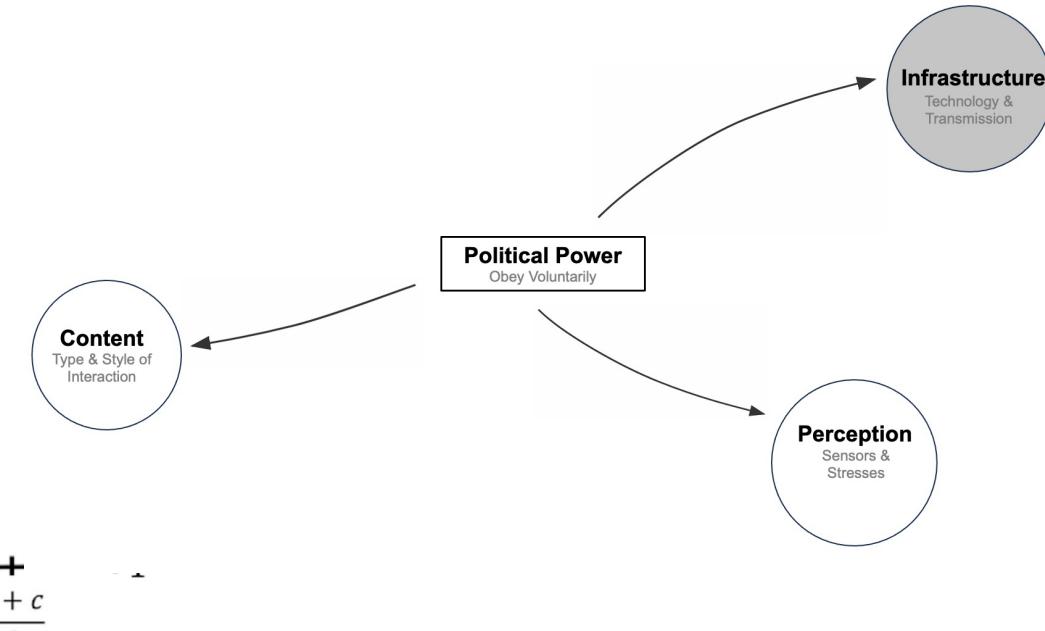
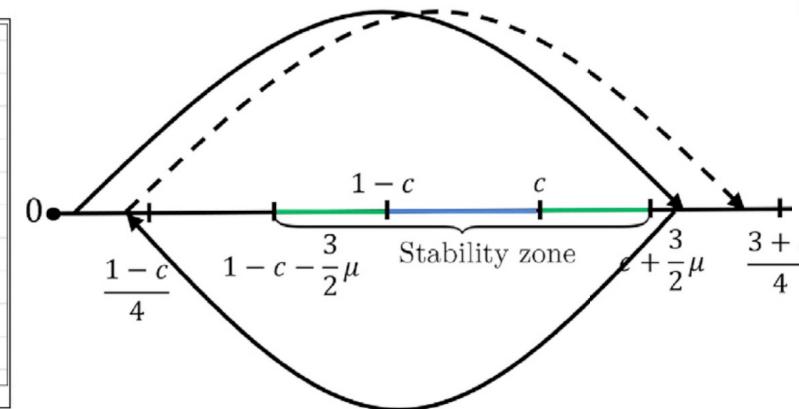
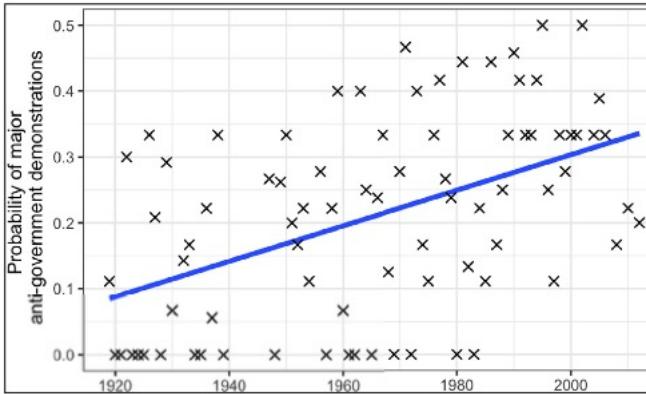


- Propensity Score Matching
- Kernel Balancing
- Synthetic Control
- Trajectory Balancing

Paths & Pathways

Information Infrastructure

■ Information Availability via ICT & Newly Established Governments (EJPE, 2019)



■ The Last Call for Authenticity: AI Voice Scams (JCP, 2025)

- Underestimated growing threat of voice synthesis
- Combo of qualitative and quantitative evidence for:

The increasing asymmetry between the low cost of launching voice-based attacks and the high cost of preventing them undermines trust in voice as a credible communication channel.

- Human voice no longer functions as a reliable medium of authentication
- One of general interfaces mainly used by AI agents

1 Trolls as a Cyber Weapon

Levels

- Macro: Manipulate platform algorithms
- Micro: Threaten users

Targets

- Content-makers, commentators, readers
- Politicians, activists, dissidents, supporters

Easy to Switch Tactics

- Flooding, Threats, Distraction, Persuasion
- Mix & Match

Flexibility &
Customization

Masked Engagement

- Hide Troll Identity
- Mimic Regular Users

2 Evidence \rightsquigarrow Theory \rightsquigarrow Policy ?



Data

Troll Factory Data Leak

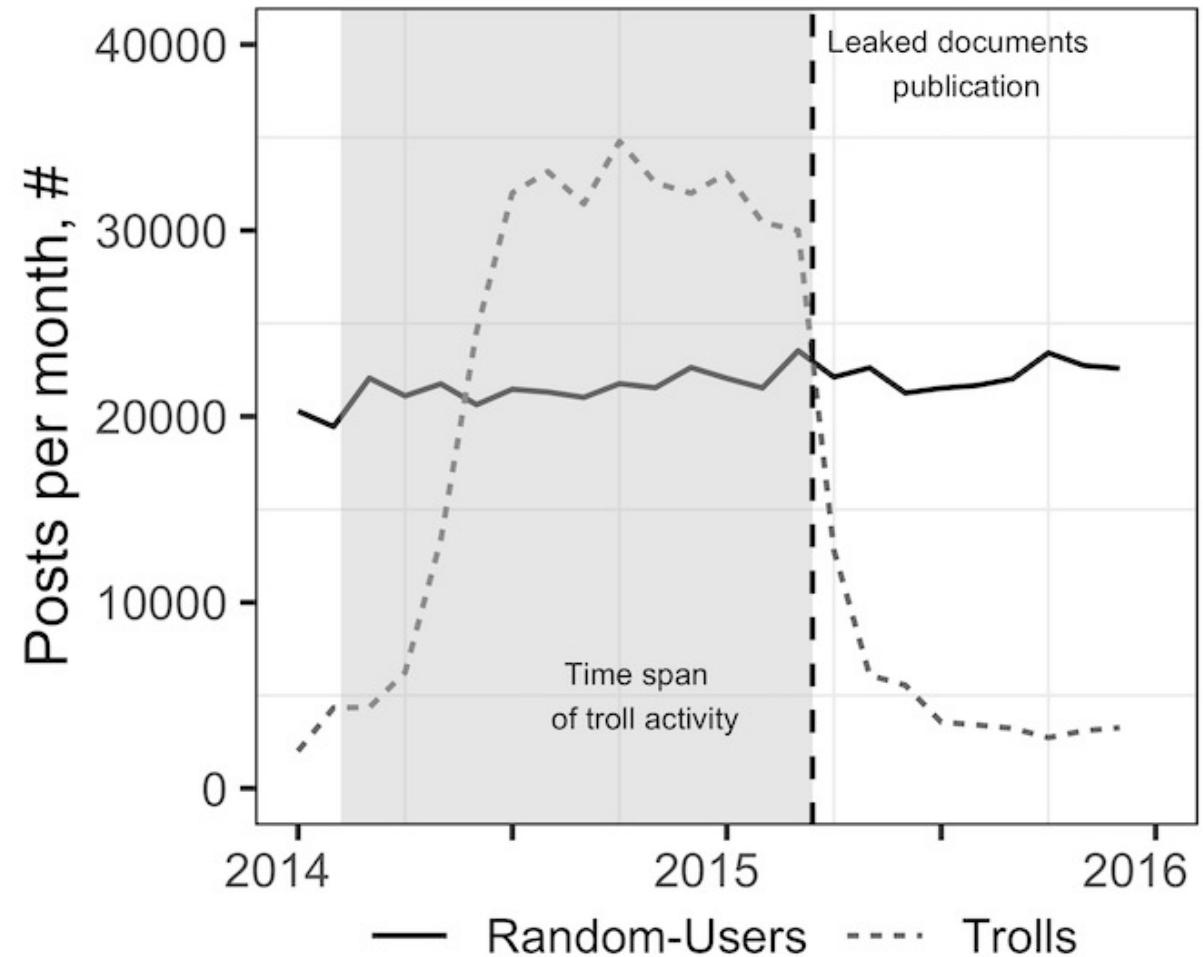
- 700 Leaked Accounts on *LJ*
- 2014-15
- 130k troll-infiltrated discussions

Random *LJ* Users

- 4M Random Posts & Discussions

Trolls' Target

- Russia's Domestic Audience



A

Activist A



LIVEJOURNAL

Putin annexed Crimea: What should we do?

Apr 10, 2014 21:01

Russian President annexed Crimea out of a long-standing desire to resuscitate the Soviet empire, and he may eventually go after the rest of Ukraine, as well as other countries in eastern Europe ([Read more...](#))

#Putin #Politics

[LEAVE A COMMENT](#)

Comments 142

kinofriend 20:49:23 UTC

His ambitions are too dangerous for Russia. What is next, **war**?

nep-glad 21:01:24 UTC

Agree. He'll get Russia into the new **war**

daslight 21:16:15 UTC

Probably he needs a **war** to distract the population

deputat 22:29:10 UTC

Looks like he sends **military** weapons to East Ukraine

ilyapetrov 22:30:10 UTC

You all are traitors!

ilyapetrov 22:31:11 UTC

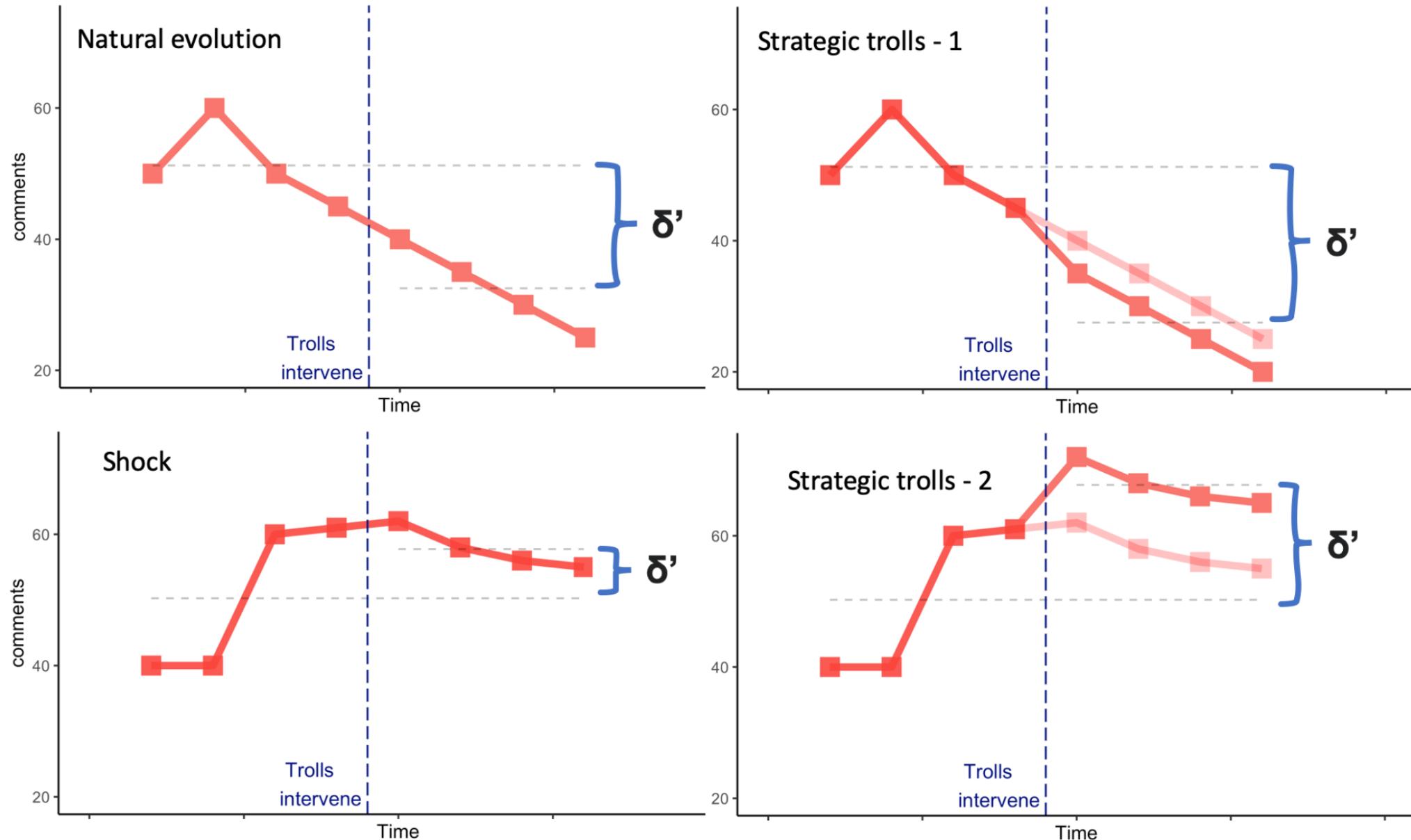
Only Putin can save Russia

yehu 22:32:10 UTC

Probably he wants a civil **war** in East Ukraine

Discussion ends here

Causal Inference Challenge



Empirical Strategy

Observational Setting

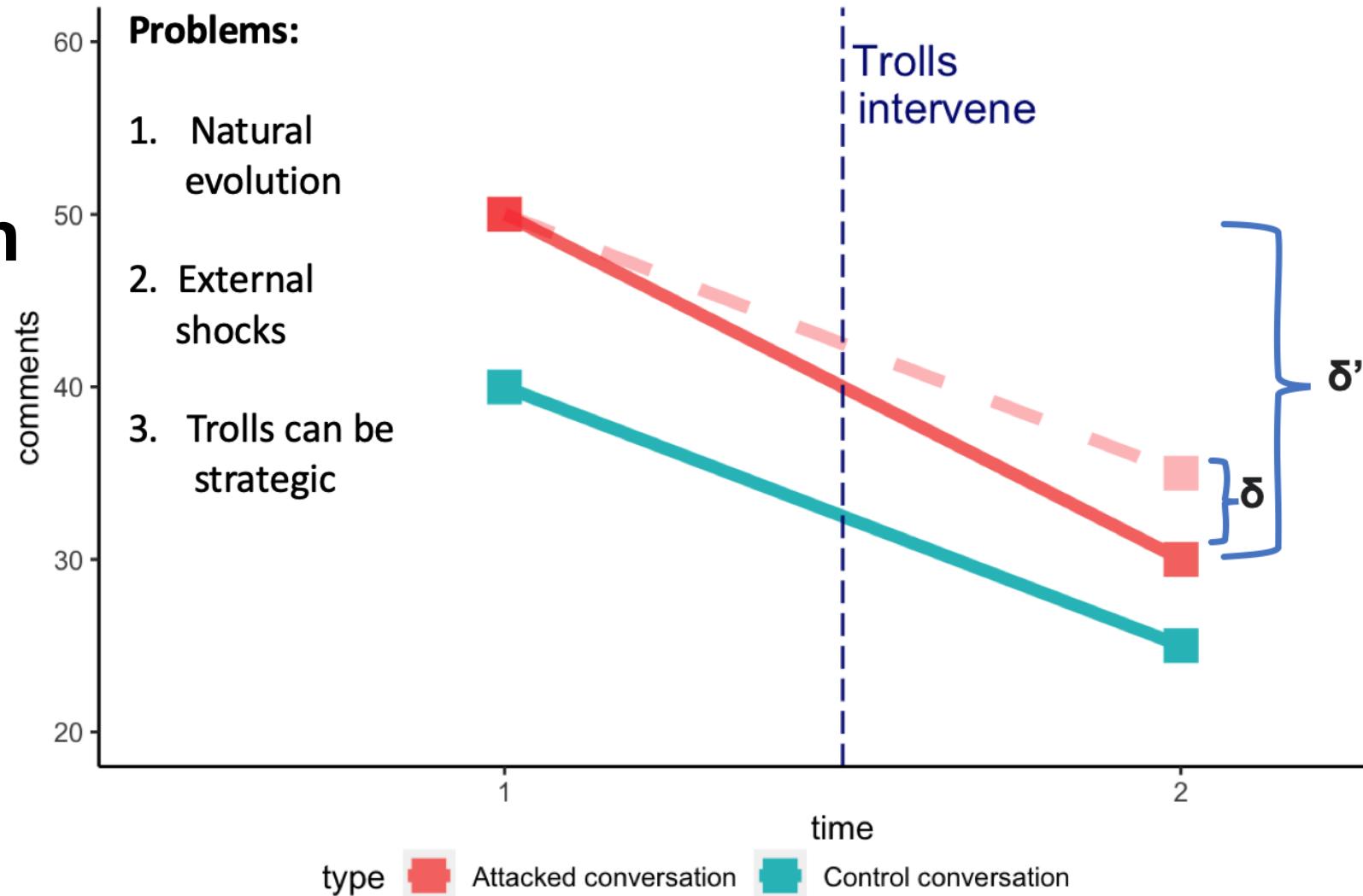
- DiD
- Matching

Control Conversation

- Discuss the same topic
- High chance of attack
- Time overlap

How?

- Approximate DGP
- Simplicity of LJ Platform





FIND MORE ▾

SHOP

LOGIN

JOIN



(EN) ▾



Balance

nemtsov murder



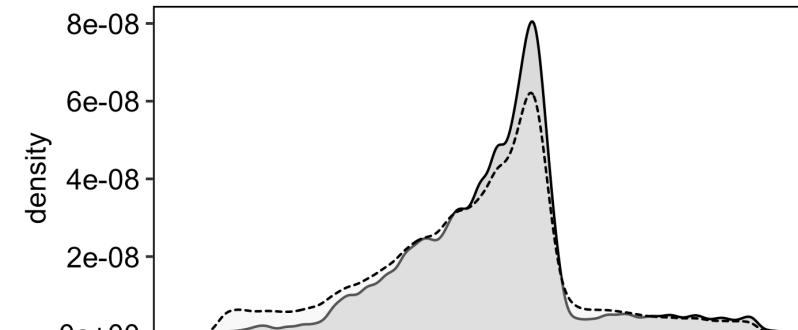
About 143 results (0.15 seconds)

Sort by: Relevance ▾

[On Murder of Boris Nemtsov: saradzhyan — LiveJournal](#)

<https://saradzhyan.livejournal.com/50721.html>

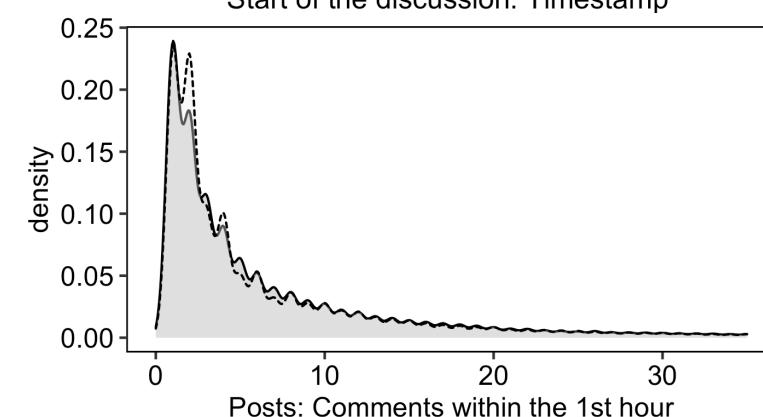
Feb 27, 2015 ... Any murder is a crime and a tragedy, but if it turns out that Boris **Nemtsov** has been killed for his political views, then it is also a very serious ...

Attacked

[The fear/hatred that kills: talk_politics — LiveJournal](#)

https://talk_politics.livejournal.com/1960499.html

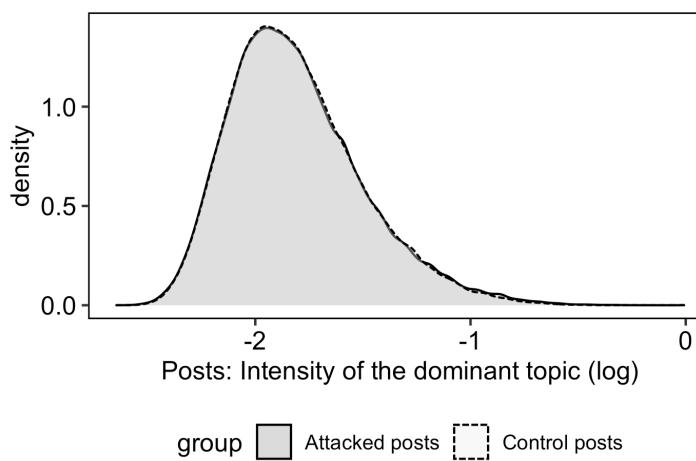
Feb 27, 2015... If you're an opposition politician whose open agenda is to remove Putin from power, after **Nemtsov's murder** you should be extremely careful, ...

Control

[Putinumer?: psychohist — LiveJournal](#)

<https://psychohist.livejournal.com/76845.html>

Feb 27, 2015 ... If the hardliners had murdered Nemtsov and Putin in preparation for a ... Putin being assassinated in retaliation for the **Nemtsov murder** would ...

group Attacked posts Control posts

Outcomes of Interest

Structural Outcomes

- Intensity: Comments & Threads
- Engagement: Users & Replies

Content Outcomes

- Sensitive Topics
 - Political Opposition, Economy in Crisis, War in Ukraine
- Agenda Promotion
 - NATO Aggression
 - Putin's Foreign Policy Success

Initial post			Matched control post		
User 1	1:12	Comment 1	User A	1:01	Comment 1
User 2	1:14	+ Comment 2	User B	1:19	+ Comment 2
User 1	1:18	Comment 3	User A	1:21	Comment 3
User 3	1:19	Comment 4	User C	1:30	Comment 4
<i>Troll 1</i>	<i>1:25</i>	<i>Comment 5</i>	User A	1:32	+ Comment 5
User 2	1:30	Comment 6	User B	1:42	Comment 6
<i>Troll 2</i>	<i>1:37</i>	<i>Comment 7</i>	User C	1:55	+ Comment 7
User 1	1:39	Comment 8			
User 3	1:41	+ Comment 9			
User 2	1:43	++ Comment 10			
User 4	1:45	++++ Comment 11			

$$Y_{it} = \alpha + \beta Attacked_i + \gamma Period_t + \delta Attacked_i \cdot Period_t + \epsilon_{it}$$

Results–1: Structural Outcomes

	(1)	(2) Comments	(3)	(4) Unique users	(5)	(6) Replies	(7)	(8) Threads
Attacked discussions×Time	-26.01*** (0.61)	-21.89*** (2.19)	-6.57*** (0.15)	-4.95*** (0.70)	-20.15*** (0.42)	-17.64*** (1.58)	-12.90*** (0.37)	-11.73*** (1.10)
Time: Post-Treatment	-5.71*** (0.44)	-10.72*** (1.50)	-3.95*** (0.11)	-5.85*** (0.47)	-0.67** (0.30)	-3.77*** (0.98)	-0.29 (0.27)	-1.83*** (0.64)
Attacked discussions	-2.53*** (0.411)	-5.262*** (1.47)	-4.32*** (0.10)	-4.37*** (0.54)	2.50*** (0.28)	-1.17 (1.00)	4.51*** (0.25)	-0.13 (0.75)
Constant	39.57*** (0.29)		17.45*** (0.07)		21.91*** (0.20)		10.68*** (0.18)	
Author Fixed Effects		✓		✓		✓		✓
Clustered Standard Errors		✓		✓		✓		✓
Observations	510,935	510,935	510,395	510,935	510,395	510,935	510,395	510,935
R ²	0.02	0.15	0.04	0.28	0.01	0.14	0.01	0.08

Note: In models (2), (4), (6), (8) standard errors are clustered by authors of the initial posts. ***p < .01, **p < .05, *p < .1.

Results–2: Content Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Politically sensitive topics						Pro-government topics			
	Ukraine		History		Opposition		National economy		Putin's politics	
Attacked discussions×Time	-0.12*** (0.01)	-0.11*** (0.01)	-0.21*** (0.00)	-0.18*** (0.01)	-0.10*** (0.00)	-0.09*** (0.01)	-0.10*** (0.00)	-0.09*** (0.01)	0.02*** (0.00)	0.01 (0.01)
Time: Post-Treatment	-0.01** (0.00)	-0.02*** (0.00)	-0.06*** (0.00)	-0.09** (0.01)	-0.03*** (0.00)	-0.04*** (0.01)	-0.01** (0.00)	-0.02*** (0.00)	0.04*** (0.00)	0.05*** (0.01)
Attacked discussions	0.08*** (0.00)	0.09*** (0.01)	0.12*** (0.00)	0.2*** (0.01)	0.01* (0.00)	-0.03** (0.01)	0.07*** (0.00)	0.05* (0.02)	-0.02*** (0.00)	0.00 (0.01)
Constant	-3.62*** (0.00)		-2.72*** (0.00)		-3.01*** (0.00)		-3.347*** (0.00)		-3.40*** (0.00)	
Author Fixed Effects	✓		✓		✓		✓		✓	✓
Clustered Standard Errors	✓		✓		✓		✓		✓	✓
Observations	510,935	510,935	510,395	510,935	510,395	510,935	510,395	510,935	510,935	510,935
R ²	0.02	0.15	0.04	0.28	0.01	0.14	0.01	0.08	0.01	0.06

Note: In models (2),(4),(6),(8),(10) standard errors are clustered by authors of the initial posts. ***p < .01, **p < .05, *p < .1.

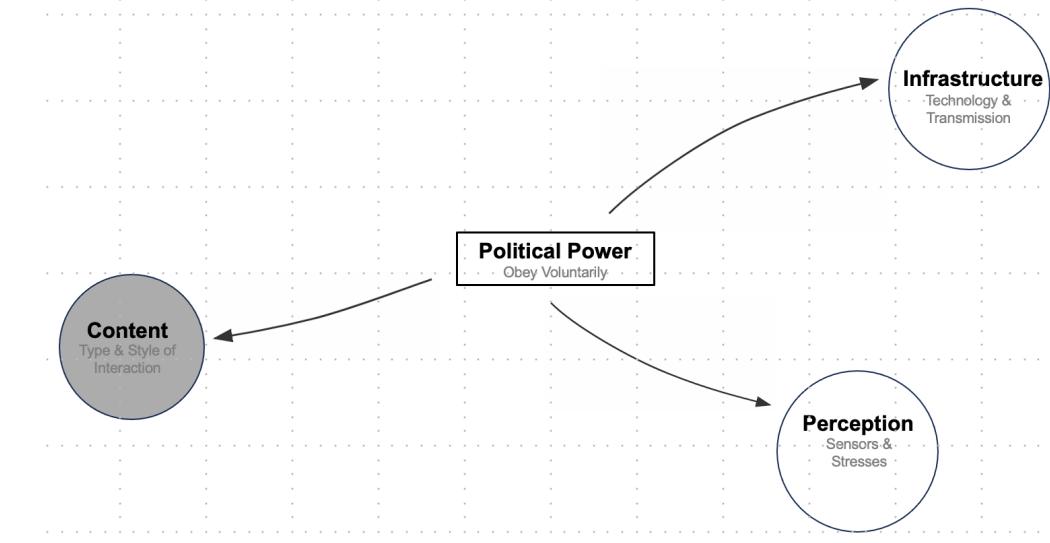
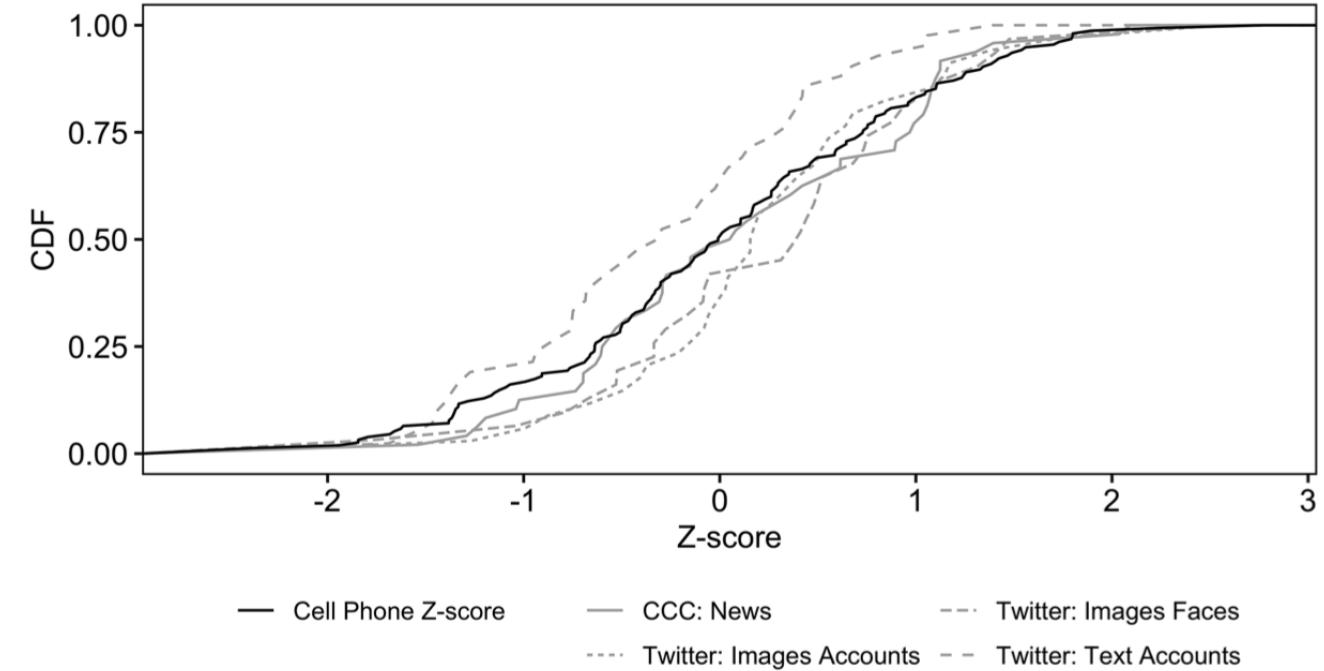
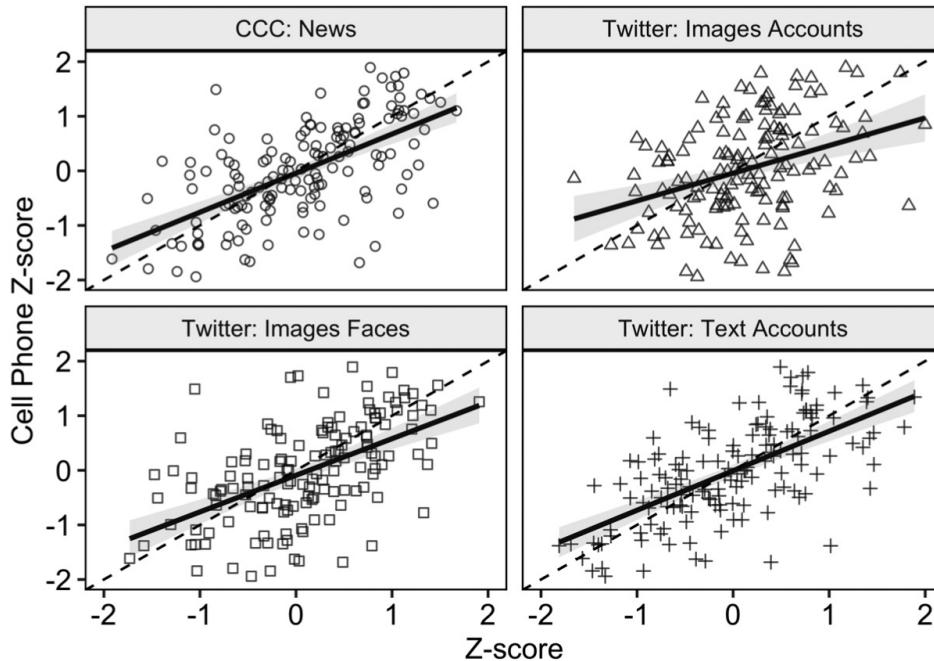
Paths & Pathways

Content Generation

■ How Reliable is Protest Data in Solving Collective Problem? (APSR, 2020)

□ Information Cascades Lohmann, 1994, Kuran, 1995, Chwe. 2001

□ US Women's Marches 2017
protest size variation from news and social media is trustworthy
when validated against location data



Paths & Pathways

Perception of Information

■ Stress as a political factor

■ Trial By Fire: WP (2014) Stress Amplifies Electoral Gratitude for the Authorities

■ Stress & Political Order in Afghanistan PLoS Mental Health (2025) Gender, Stress, & Political Order in Afghanistan Societies (2025)

Men ~ State Women ~ Men + State

Can systematic stresses be used as a mean inside power relations?

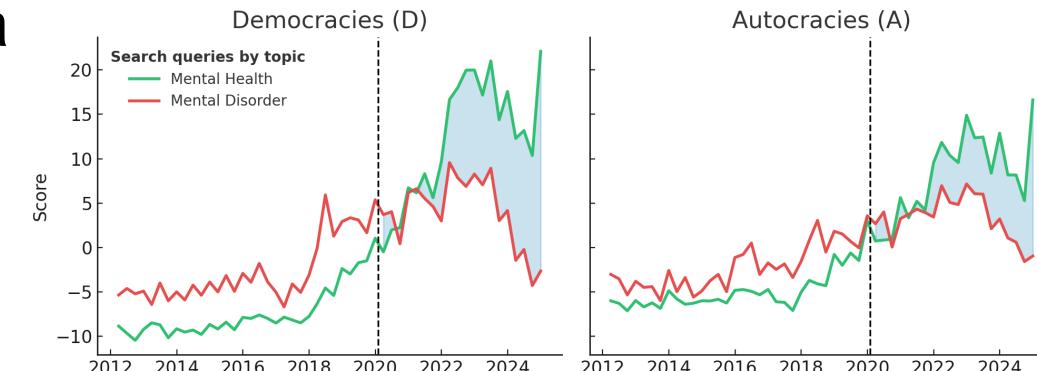
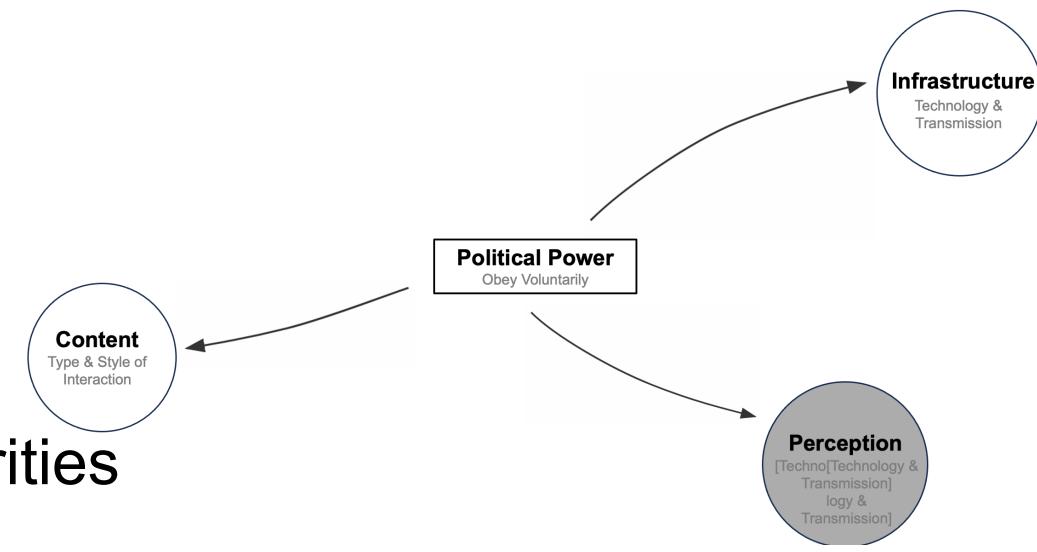
Can we check it cross-nationally? (mental health statistics)

Challenge: Underreporting Google Trends Data

Intermediate findings:

1 Covid-19 shifted the global attention from severe mental health disorders to milder diagnoses

2 Democracies VS Autocracies



Research Agenda

■ *Legitimacy in Recognition* Hypotheses

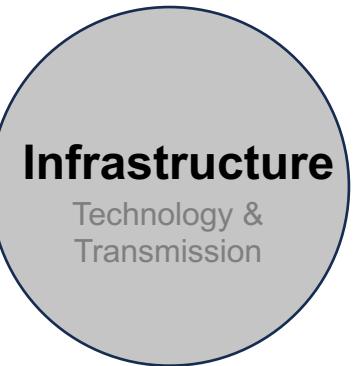
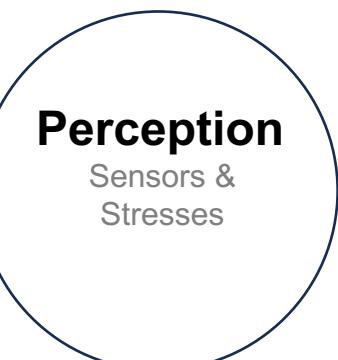
- Informational environments constitute a separate source of authority
- Cannot be reduced to Weber's Triad Weber 1919



- Online Trolls (UR)
- US Women's Marches ('20)

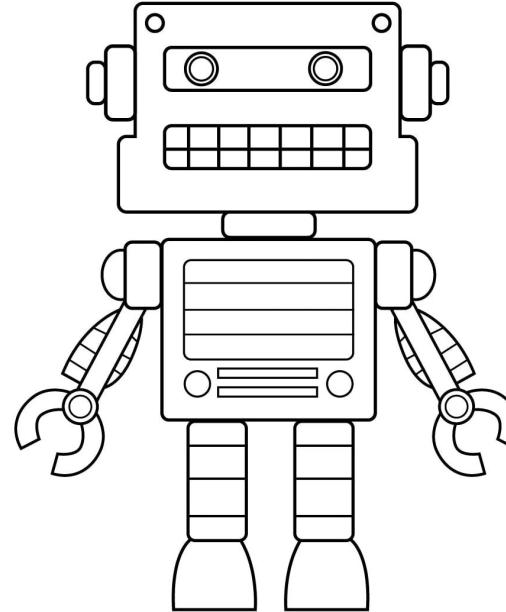


- AI-Voice Scams ('25)
- Independent Radio Stations (UR)
- Political Instability & Information Technology ('19)
- Trial By Fire ('14)
- Stress and Political Order in Afghanistan ('25)
- Gender, Stress and Political Order ('25)
- Covid-19 & Behavioral Disorders (early)

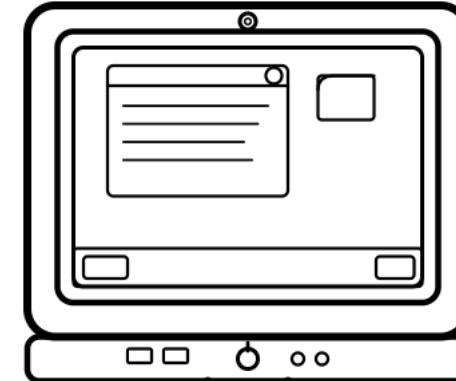


Implications

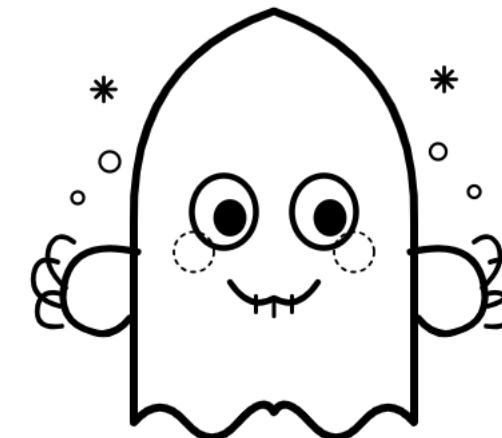
Cybersecurity & Labor Markets



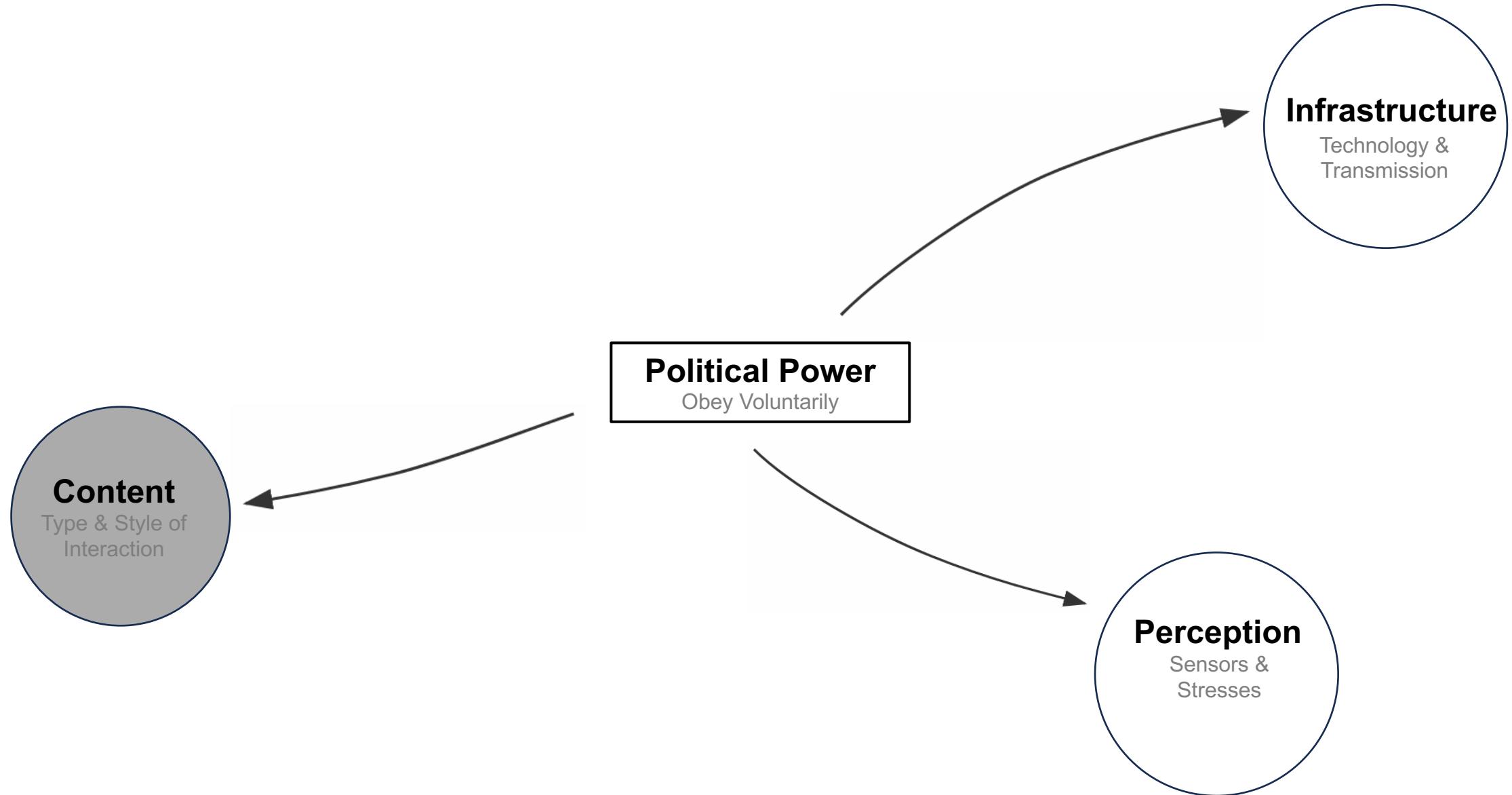
**Labor-Intensive
Worker**



**Compute-Intensive
Worker**

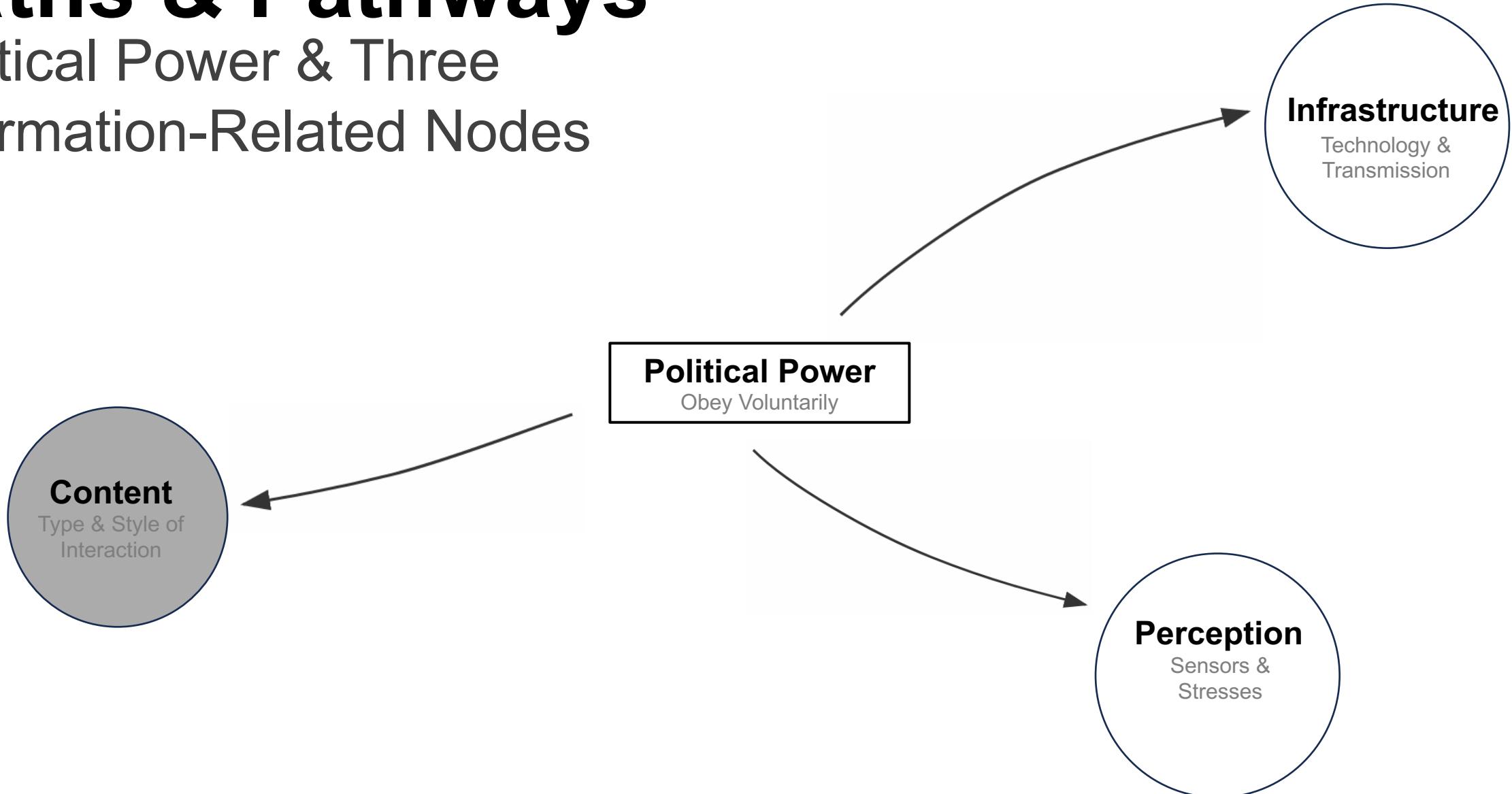


**Communication-Intensive
Worker**

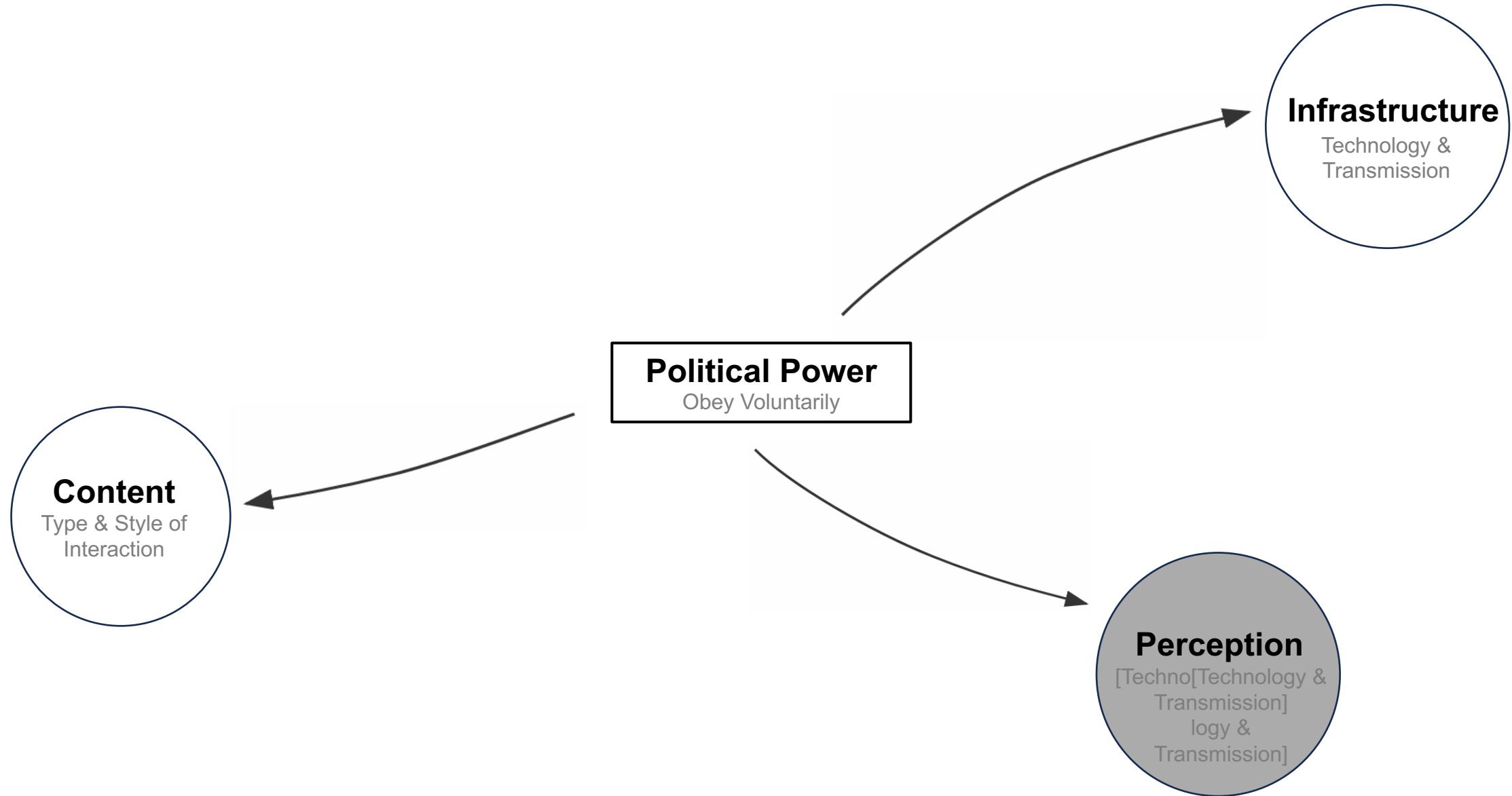


Paths & Pathways

Political Power & Three
Information-Related Nodes

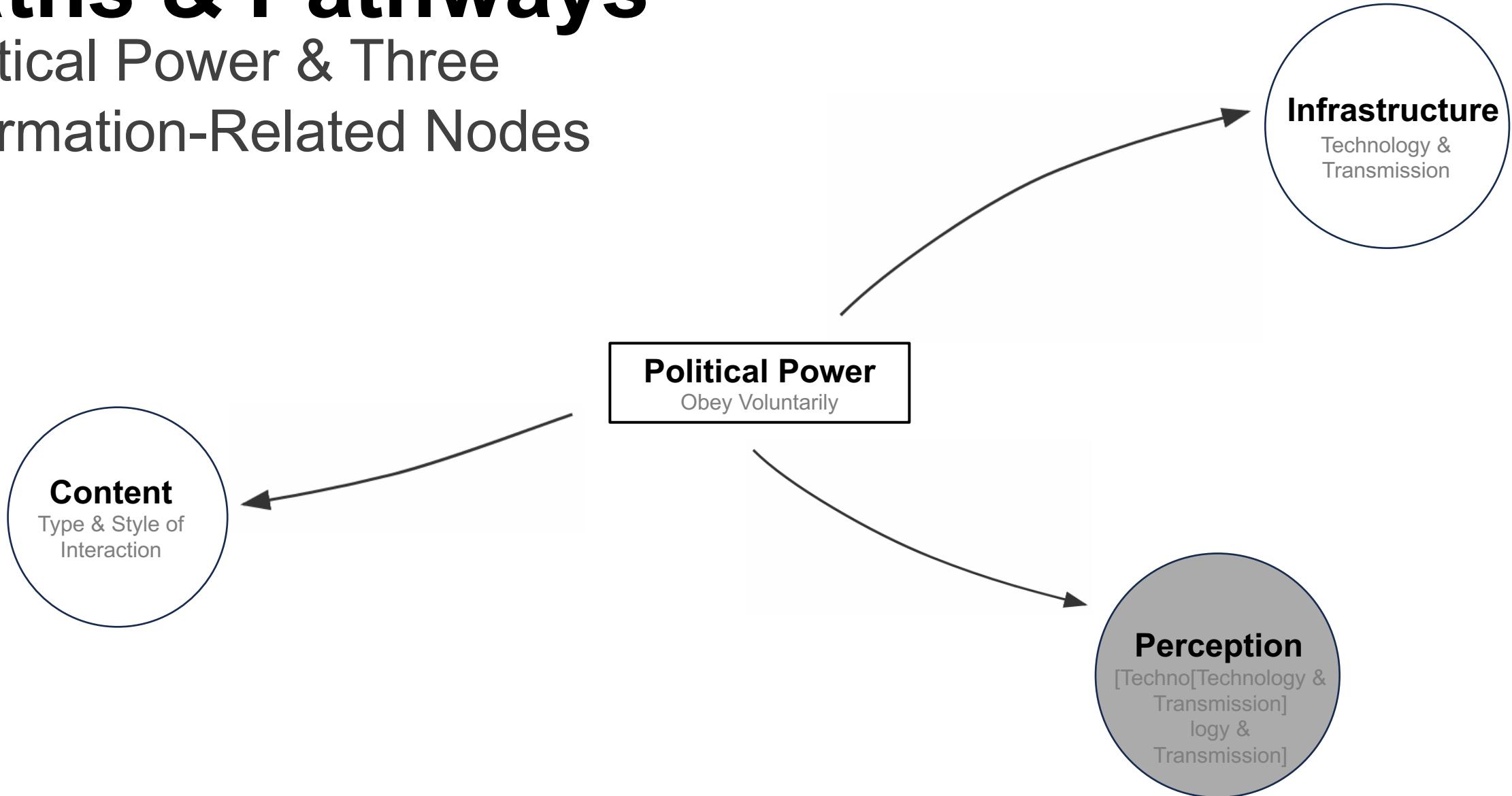


Compare
with:



Paths & Pathways

Political Power & Three
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Compare
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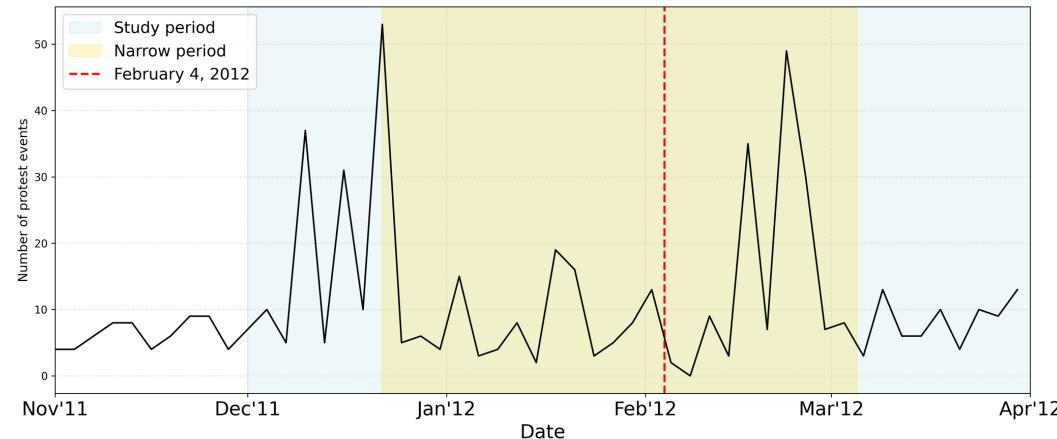
Information in the logic of power

Research Agenda & Historical Context

■ Starting Point

Geography

Diamond (1997)
Ross (2001)
Sachs (2003)



■ Case of Mass Actions 2010-11, Russia, Regions, Sobolev (2014)

Expectation: Contentious Dynamics is determined by geographic factors

- Population Allocation Climate Rough Terrain

Compare with: Correlates of Economic Growth & Development

- Unemployment *per capita* Growth rate

Findings: Expectation Comparable Effects with Economic Factors

- ICT indicators (networks, computers, cellphones, information accessibility, internet traffic) mattered even more!

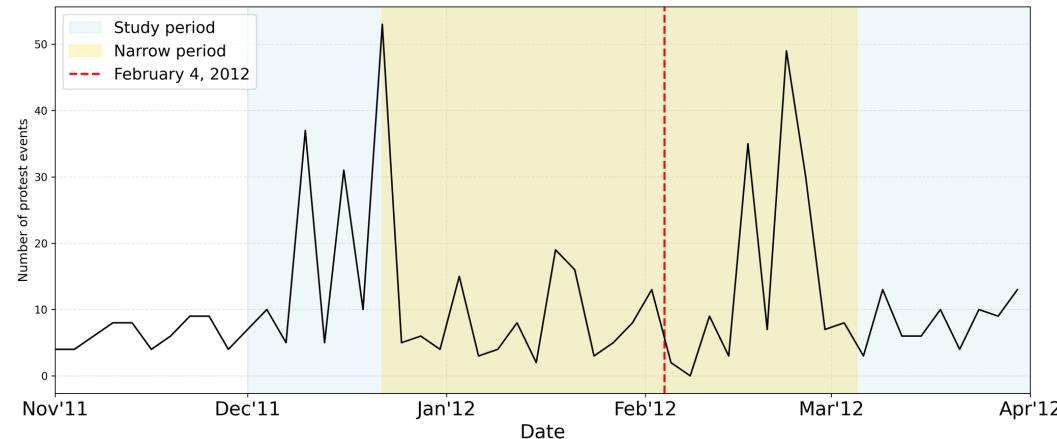
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■ What does explain power dynamics?

- Geography
- Institutions
- World Economy
- Prod. Technology

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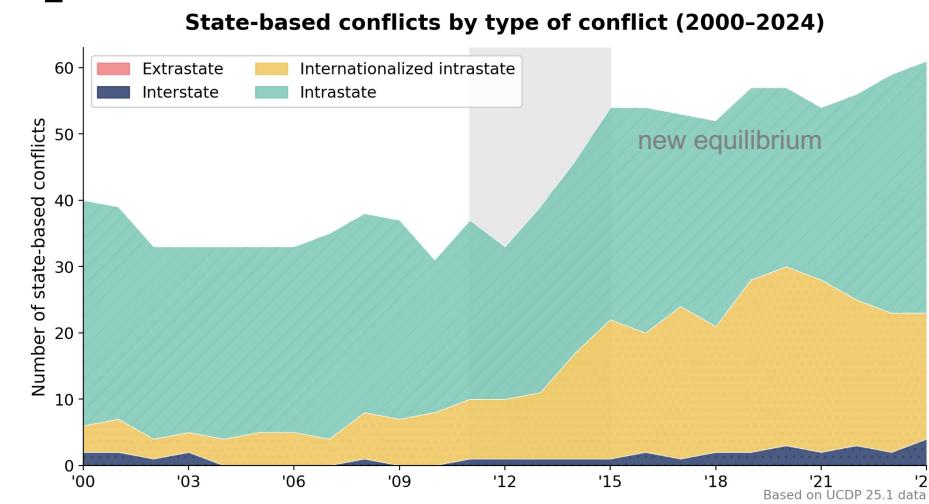
conflict

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■ Yet we observe Starting 2010x

- Not a spike, but a transition to a new equilibrium
- Other things being equal?



■ Emerging Field Information & Communication in Politics

- Independent Role of ICT [\neq Propaganda]
- Global Re-emergence (and Re-invention) of Censorship
- New types of Political Policy Actors: Platforms, Pirate Parties, Influencers
- Agents: Bots (and Viruses), Trolls, Scams, APT groups

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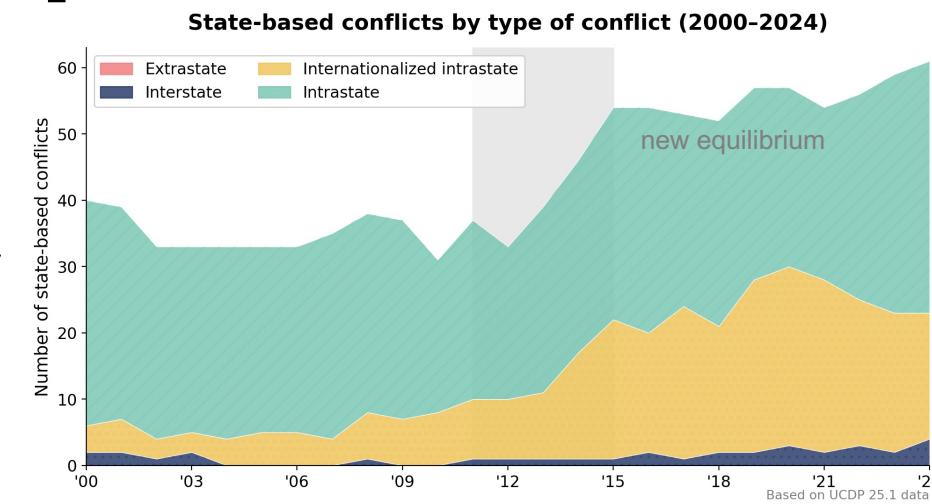
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Plan Example: Universities under Attack

Research Question: Do the quality of education and school' prestige affect the chance of a ransomware attack?

W1 Motivation for RQ

─ Why is this question important?

─ Review of previous studies

Sources: [Link-1](#) | [Link-2](#)

W2 Data Collection

─ Attacks data: [Link-1](#) | [Link-2](#)

─ College data: [Link-1](#) | [Link-2](#)

Final dataset compilation

W3 Machine Learning

─ Train ML models

─ Assess accuracy

─ Identify important predictors

W4 Results & Summary

─ What did I learn?

─ What is my answer to the RQ?

─ Prepare presentation

W5 Shiny App

─ Is my university vulnerable to attacks?

─ Is my county vulnerable?

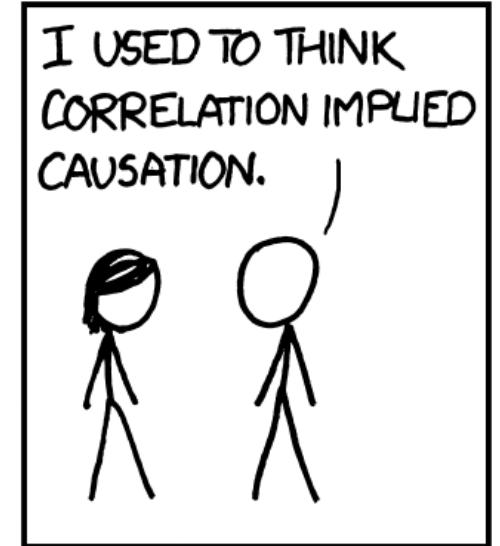
─ Deploy Application: [Link](#)

Social Inquiry Challenges: Causality & Data

How do we know: $X \rightsquigarrow Y$, not $Y \rightsquigarrow X$?

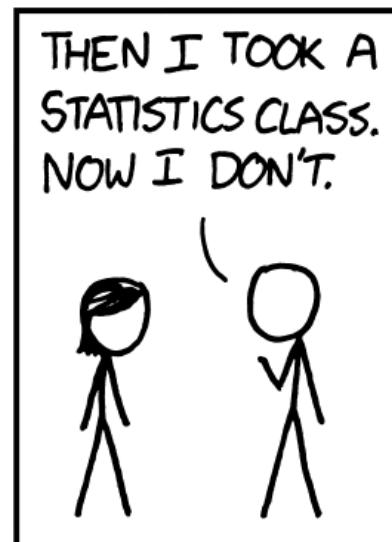
Causality

- Ice-Cream \rightsquigarrow Shark Attacks?
- Economic Growth \rightsquigarrow Democracy?



Huge Progress

- Quasi-Experiments
- Causal Graphs:
Account for Alternatives
- Causality as Missing Data



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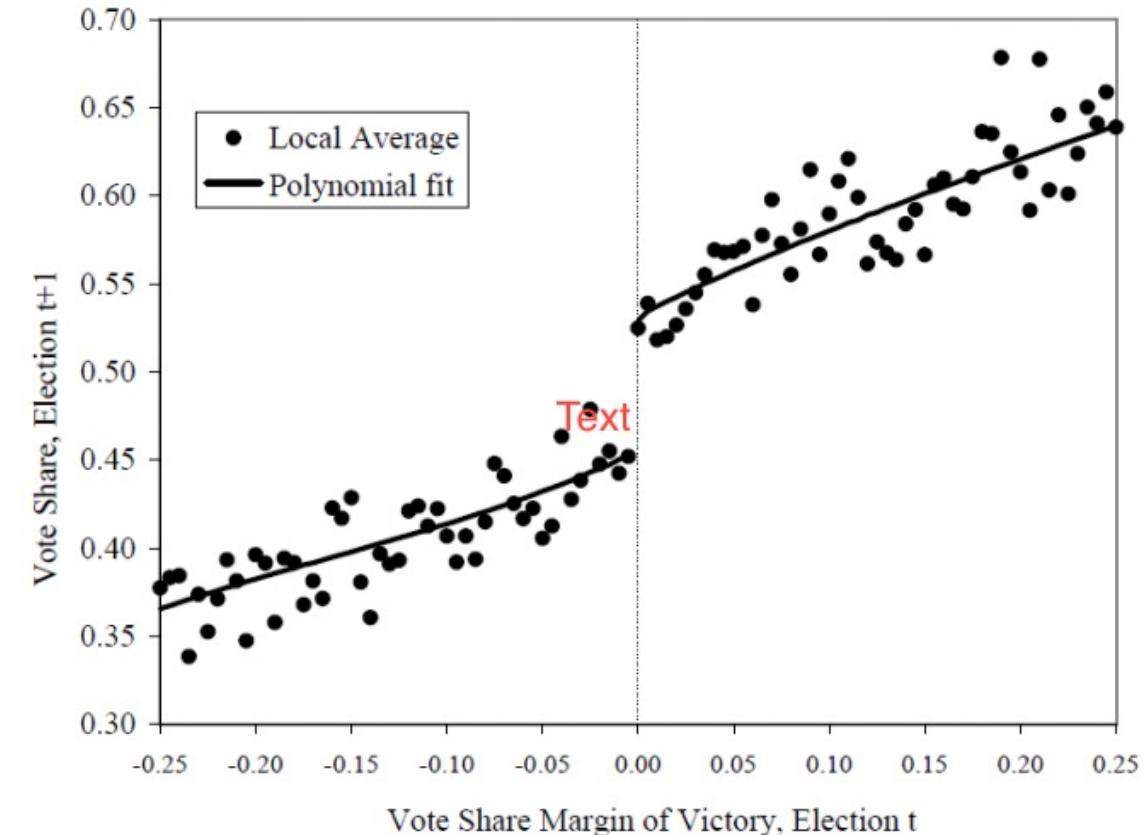
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Main Factor of CI success

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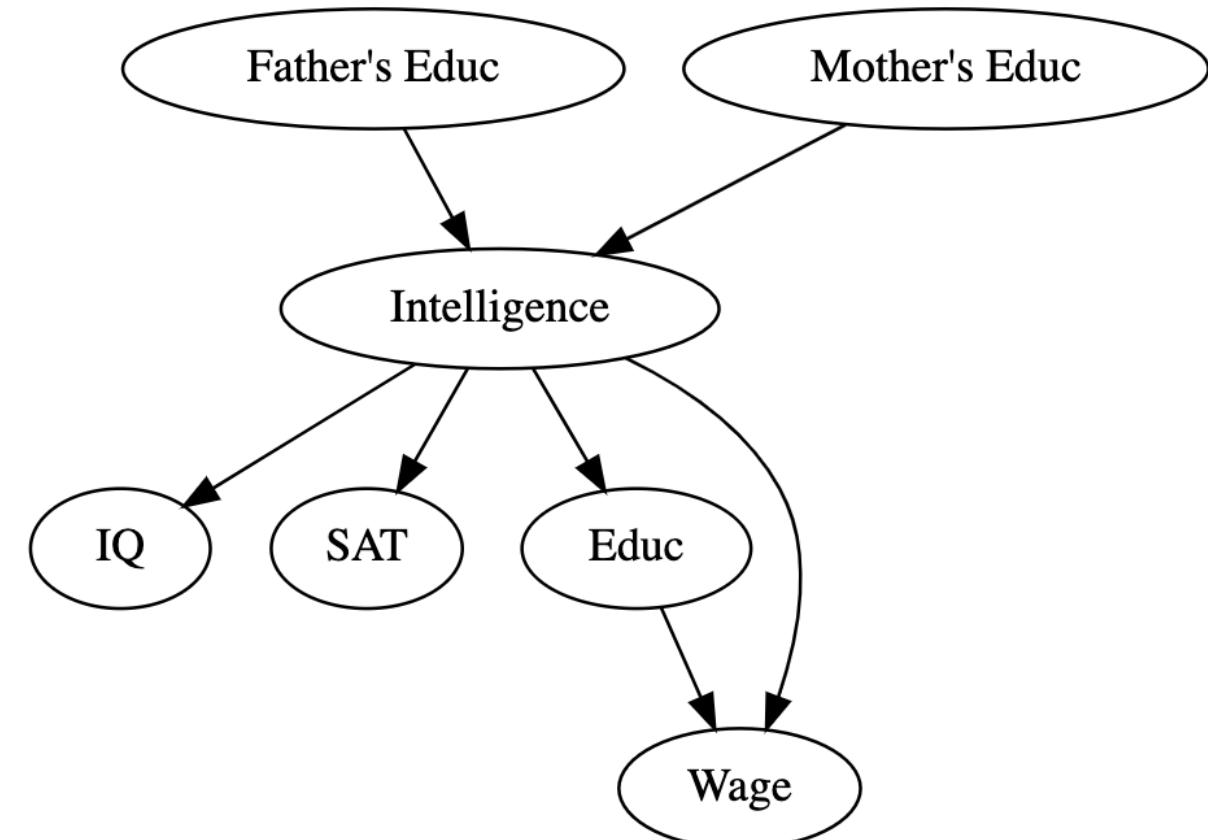
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Person	T	$Y_{T=1}$	$Y_{T=0}$
P1	1	0.4	0.3
P2	0	0.8	0.6
P3	1	0.3	0.2
P4	0	0.3	0.1
P5	1	0.5	0.5
P6	0	0.6	0.5
P7	0	0.3	0.1

Social Inquiry Challenges: Causality & Data

How the heck do we get data?

Issue #1: Measurement

- Political Ideology
- Racism & Job Discrimination
- Media Bias
- Kid's Trauma
- Anti-Dictator Attitudes

New School is a part of of OSINT

Issue #2: Get Data

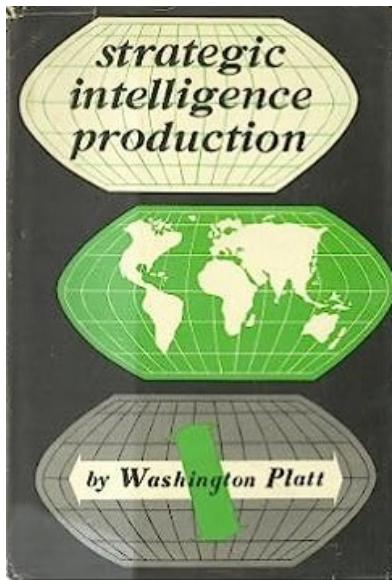
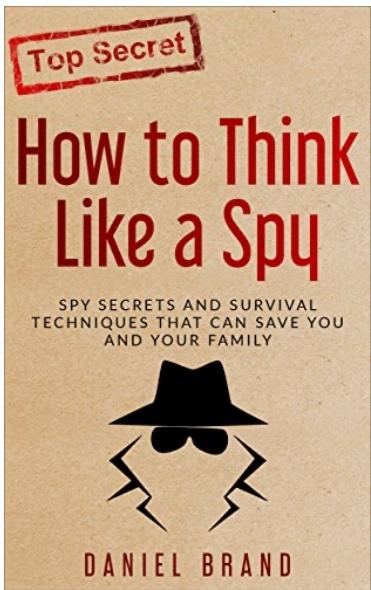
Old School

- Collected by someone: Public Statistics
- Created by yourself: Surveys

New School

- Auto-Generated: Social Media,
CCTV, Cellphones

OSINT: Very-Very New Phenomena [well, almost]

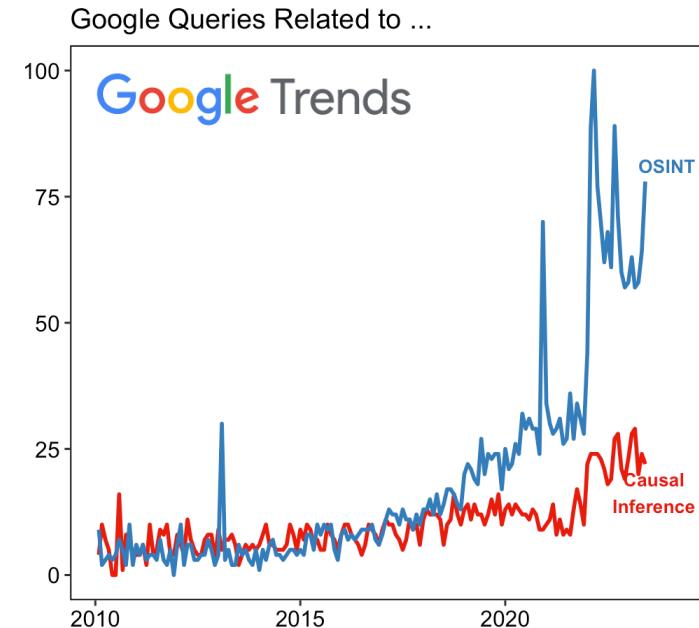
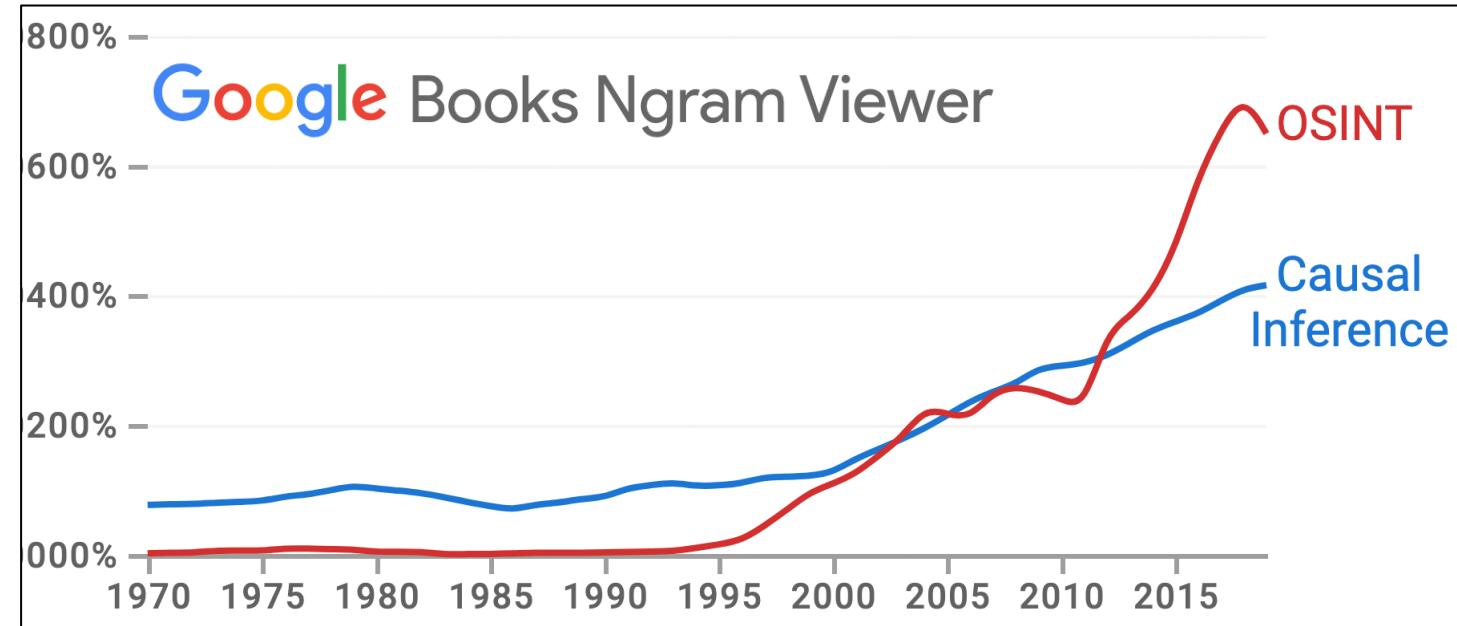
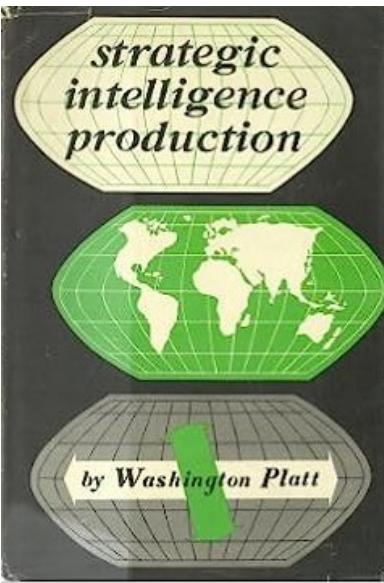
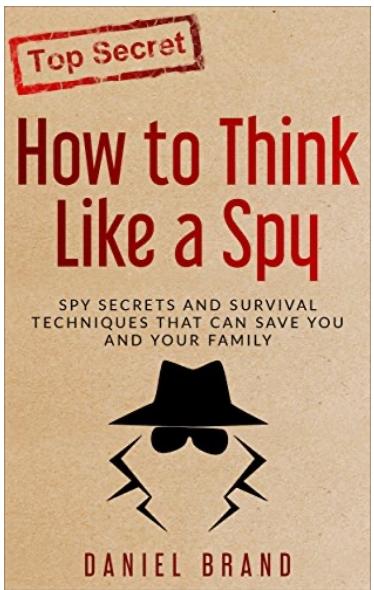


104406942

- Kremlinology**
- Soviet Statistics Lies
(China today?)

- Total Control: Spying is hard
[in contrast to soviet spies in the US]

OSINT: Very-Very New Phenomena [well, almost]



OSINT Applications

- International Relations**
 - Open-Dat “Espionage”
 - Military operations
 - Anti-terrorism
- Corporate Sector:**
 - Competitive Intelligence (Uber)
 - Market strategy
 - Military operations
- Public Policy:**
 - Sensitive Issues (teenage pregnancy / racism / bullying)
- Criminal Investigations**
 - Crypto-investigations
 - good guys: “money laundering”
 - bad guys: “Repress donors of political opposition”

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*And Social
Sciences!*

Get Data Example: Protest Behavior

- Old School
 - Resources

- New school
 - Understanding the case
 - Data Generated around

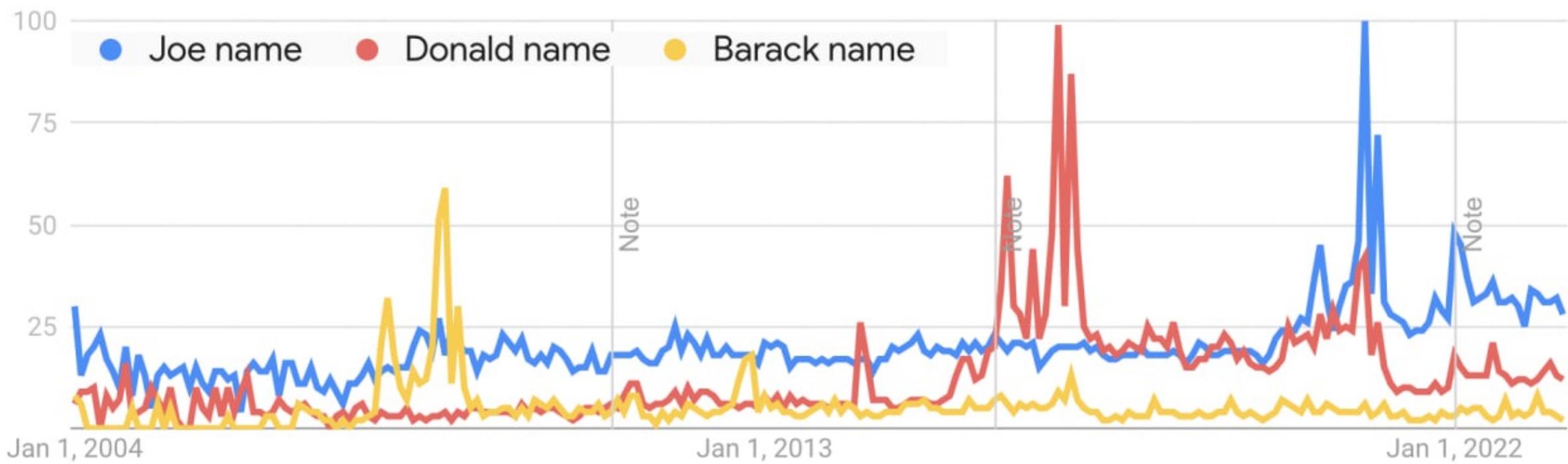


Get Data Example: Protest Behavior

- Old School
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How the heck we get the data?

- In location x_i , individuals who look for protest campaign information also search:
 - “revolution”
 - “anti-corruption reform”

- Proposed Approach**
 - Identify the largest cluster [robust to outliers]
 - Calculate cluster's centroid [n -dimensional space]
 - Fragmentation Score:** average distance to the centroid [Manhattan distance]



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Theory

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 - “revolution”
 - “anti-corruption reform”



Useful Tools by BellingCat



This Paper

- Initial Research Questions** Not this paper!
 - Does lack of unified agenda among protesters reduce chances of campaign's success? *[Protest Fragmentation Hypothesis]*
 - Do scholars mistakenly categorize de-facto separate campaigns as a single entity? *[“Under The Same Flag” Hypothesis]*
- Current Goal:** Method to estimate **campaign fragmentation***
- Desired Properties**
 - Behavior-based measure:** media reports, surveys, expert opinions
 - Explicit interpretation:** Likert scale, composite measures *[Polity IV]*
 - Comparability:** cross-country / cross-campaign comparison

* **Campaign Fragmentation** – variation in the goals of a protest campaign among protesters

Focus

- **Sub-national differences in the demand for information related to a protest campaign**

Assumption: High variation ↗ High protest fragmentation

- **Correlated behaviors**

Key idea: Individuals who look for the same information related to a protest campaign share similar views regarding the goals of this campaign

- **Implementation**

Input data: Search queries (Google Trends)

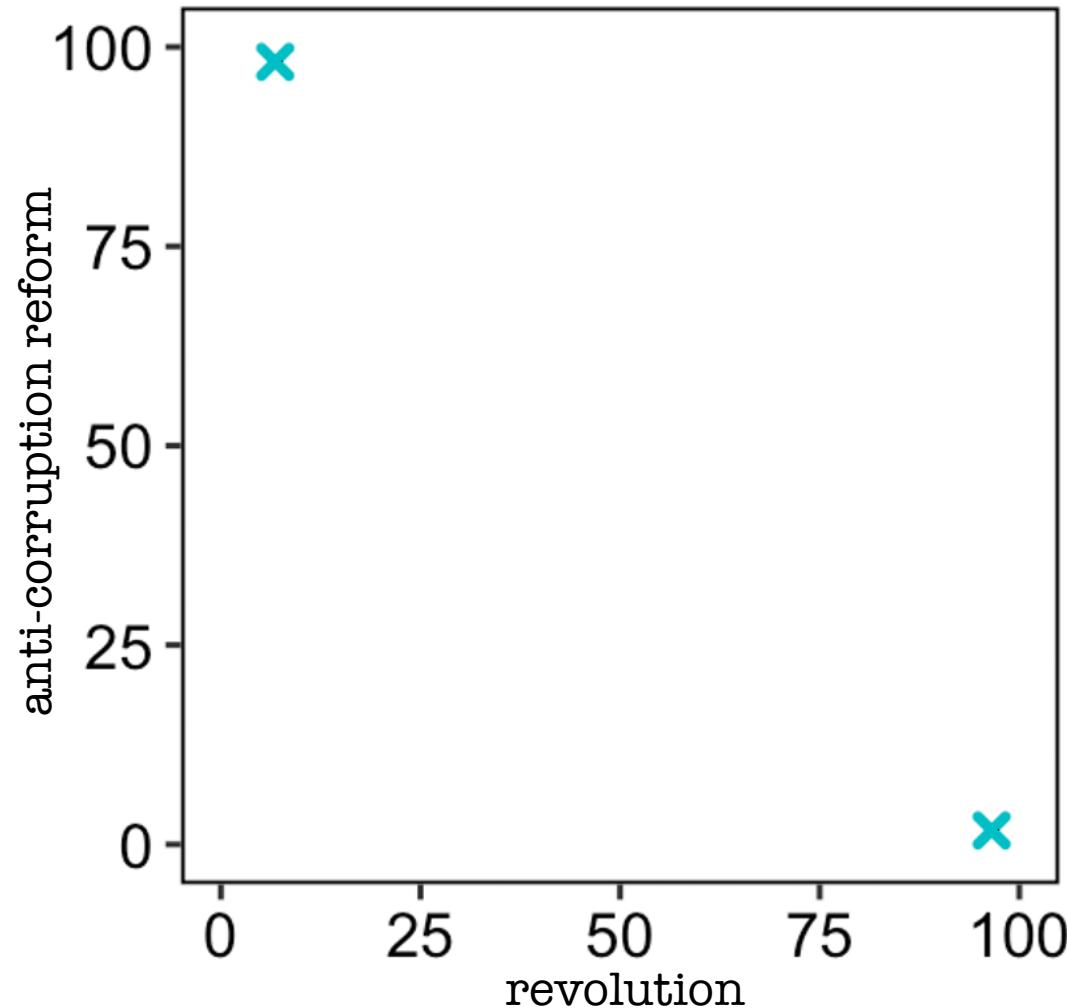
Key feature: Ability to identify *other* search queries individuals conduct when they seek for protest-campaign information

Theory

- In location x_i , individuals who look for protest campaign information also search:
 - “revolution”
 - “anti-corruption reform”

Dissimilar interest in topics
⇒ High protest campaign fragmentation

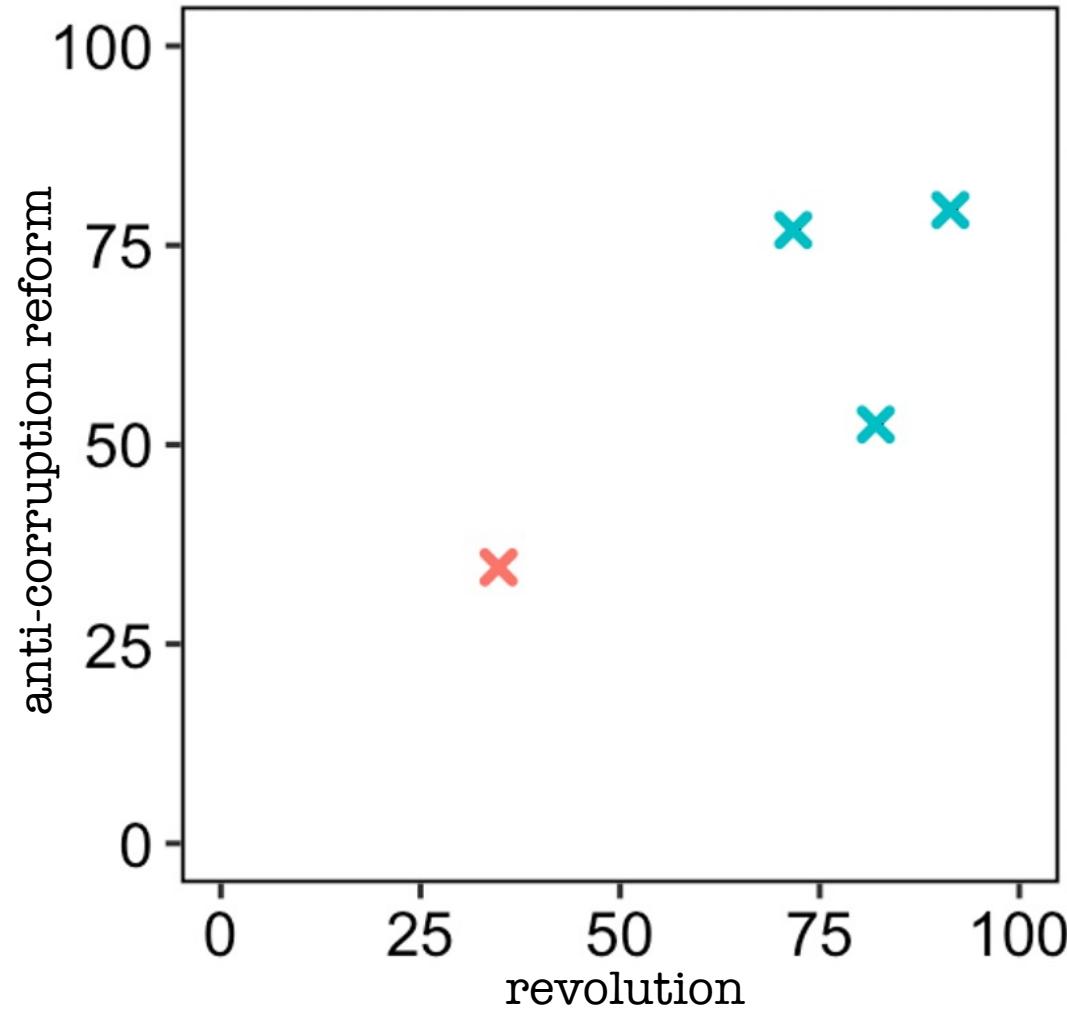
Case 2: High Fragmentation



Theory

- In location x_i , individuals who look for protest campaign information also search:
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Case 3: Multiple Locations

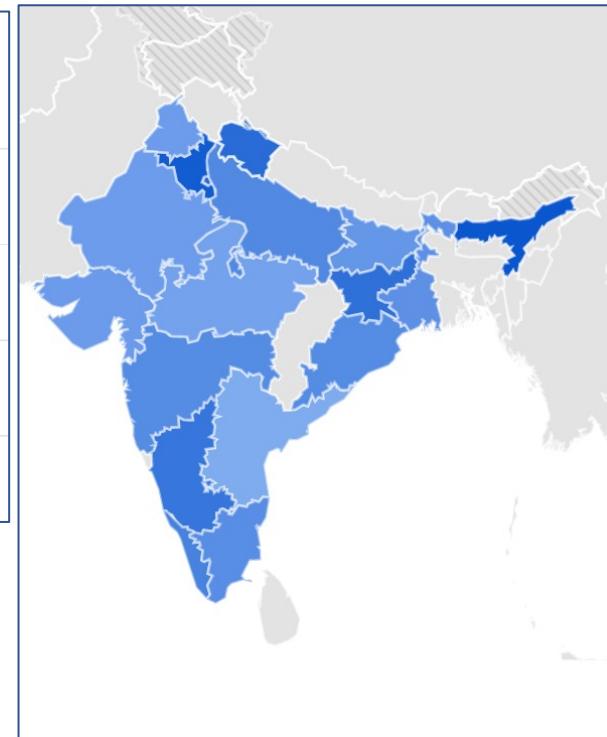
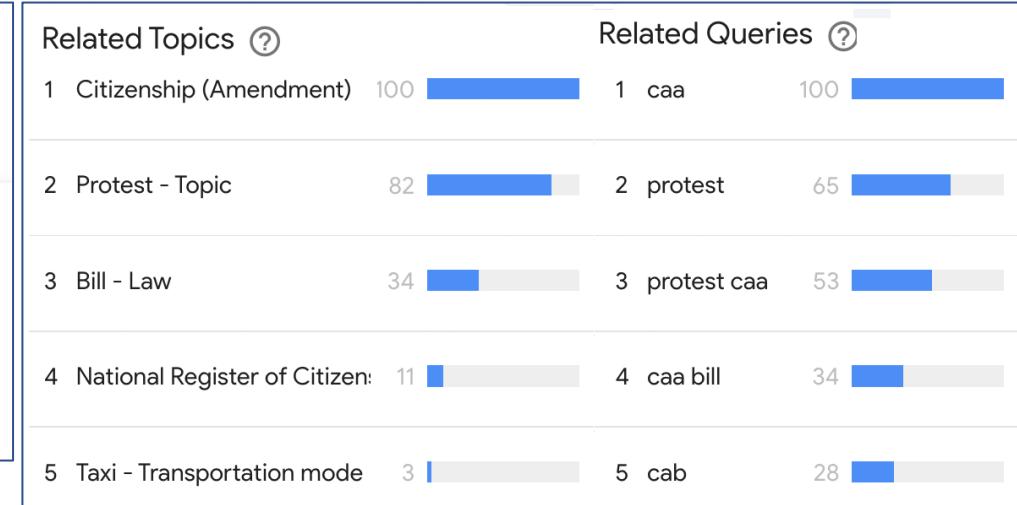
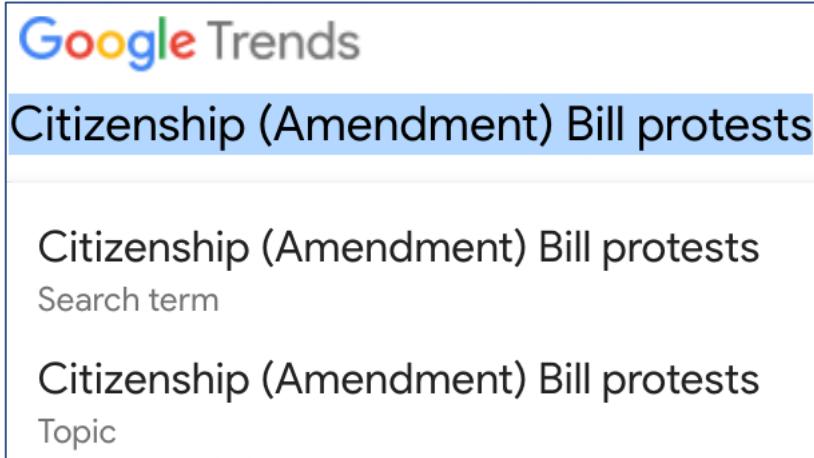


Implementation with G-Trends

Example: Citizenship Amendment Act protests (India, 2019)

Google trends

- Score [0-100] based on the volume of search queries
- Provides data for separate queries and queries aggregated into topics
- Identifies queries / topics correlated with the initial query / topic
- Subnational level data

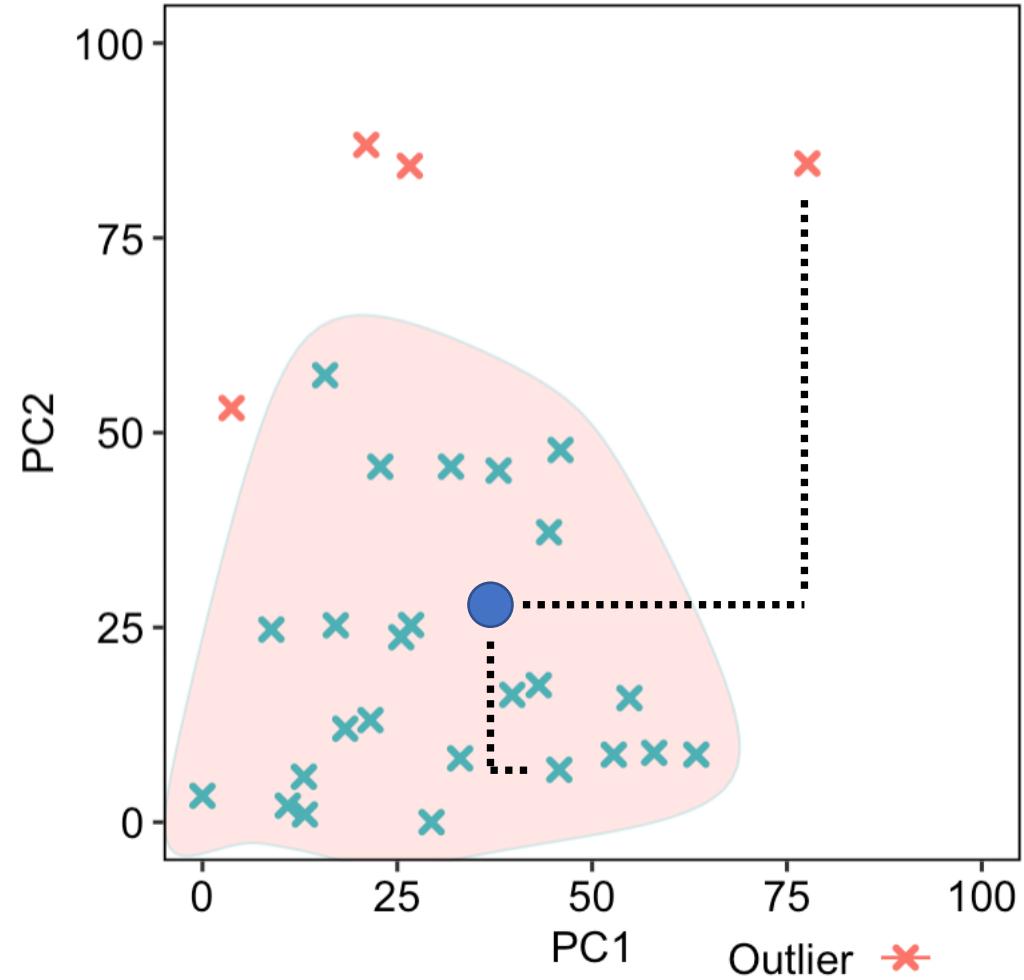


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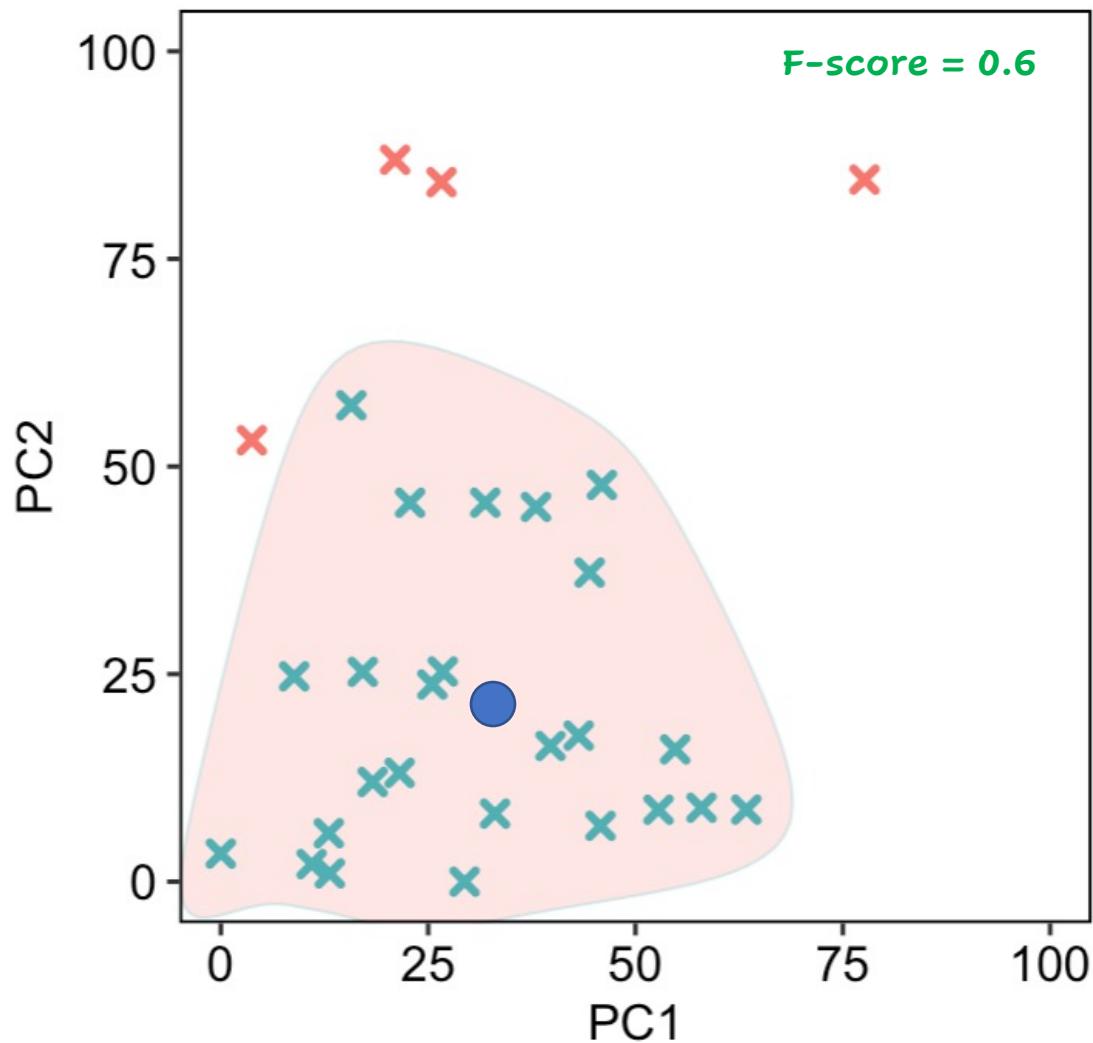
- Citizenship Amendment Act protests (India, 2019)
 - Identify the protest movement topic
 - Identify first 10 correlated topics
 - Identify largest cluster [via DBSCAN]
 - Calculate centroid
 - Calculate mean distance D [Manhattan]
 - Adjust $(100 - \frac{D}{2})/100$

Fragmentation Score = 0.6

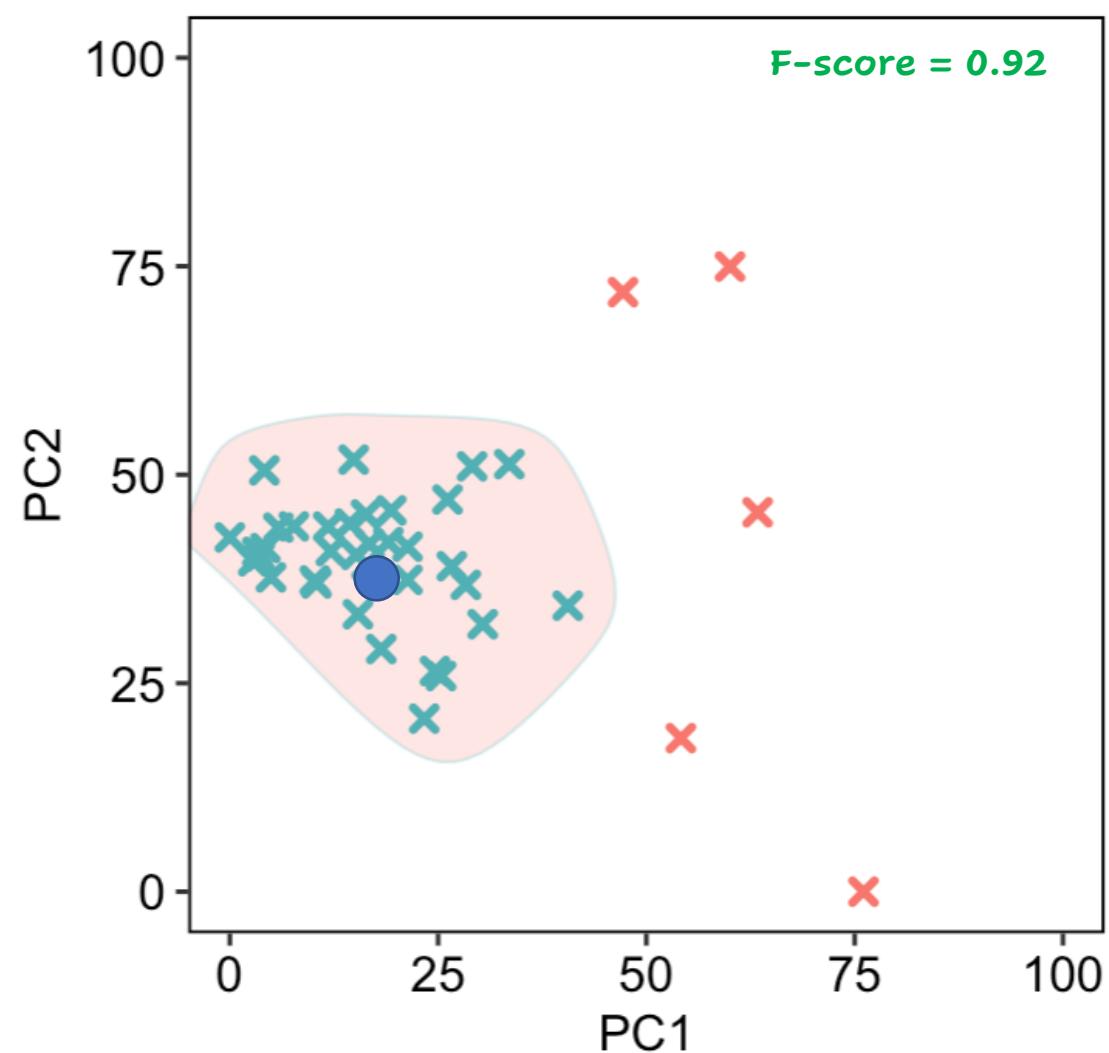


* Principal Components are used for illustration purposes

Comparison India-2019 VS US-2017

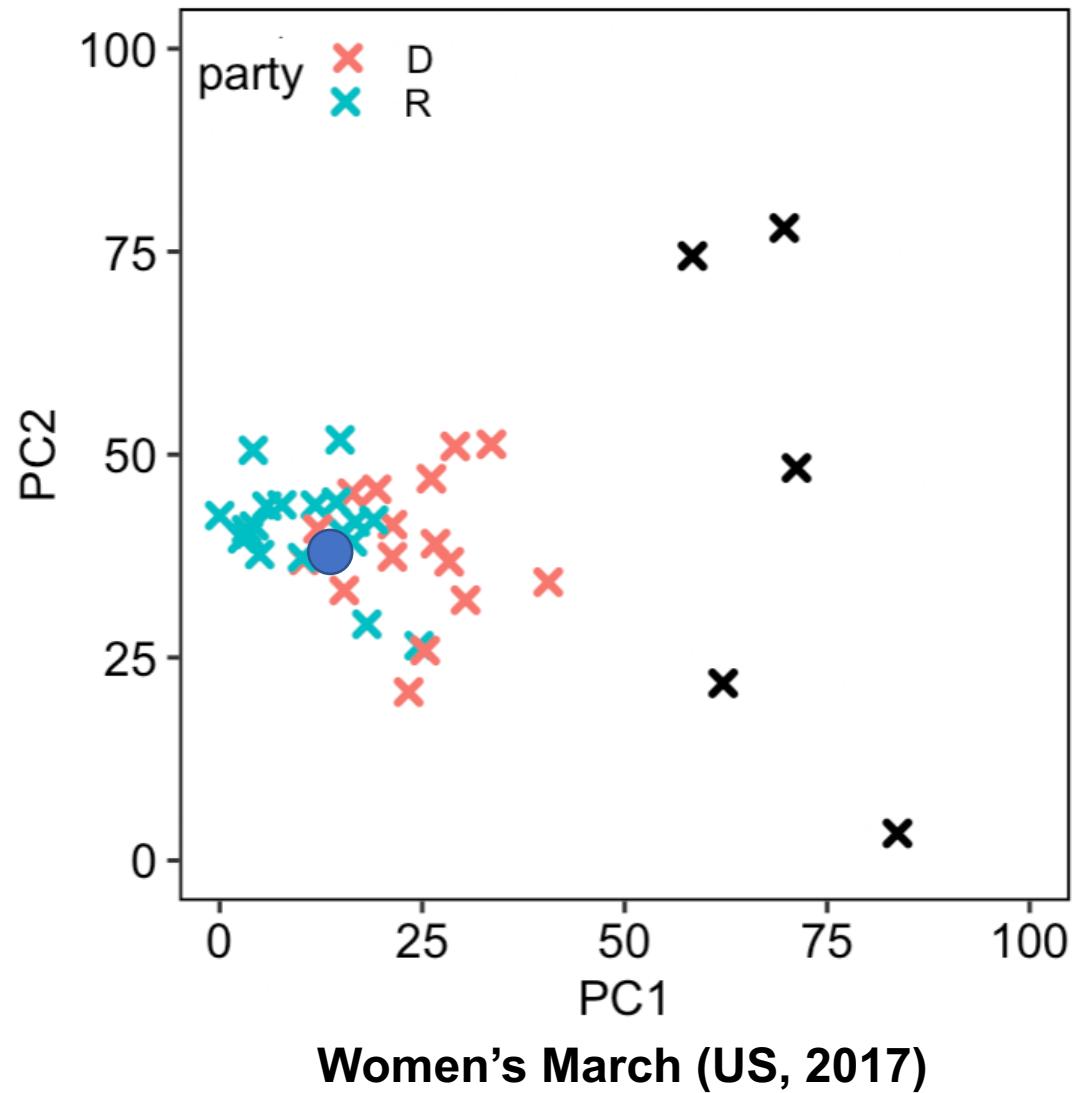
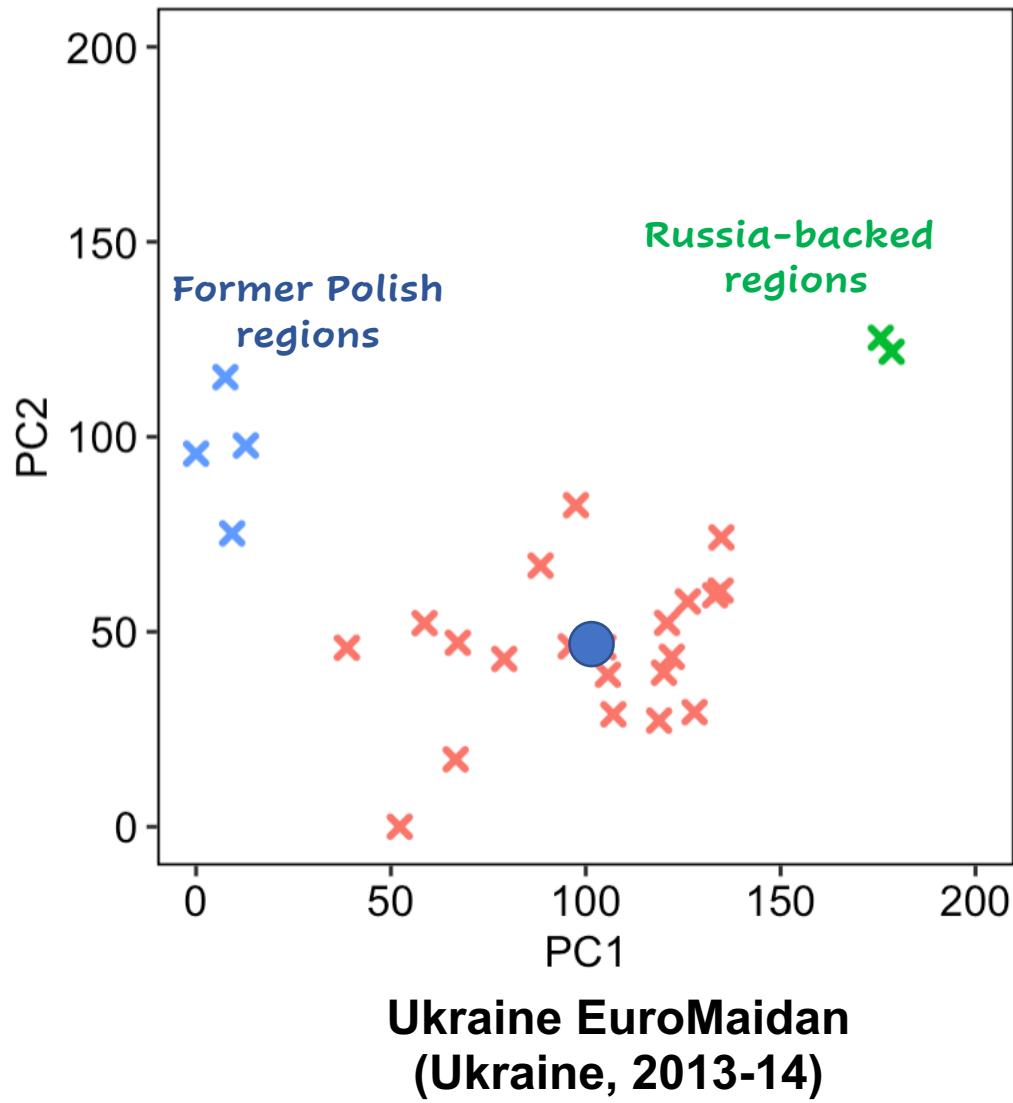


Citizenship Amendment Act
protests (India, 2019)



Women's March (US, 2017)

Validity Check Potentially Important Variables



Feedback, please



Thank
you!

Next steps

- Robustness:** How does the F-score change depending on the number of included correlated queries?
 Alternative clustering

Correlation with closely-related measures: NAVCO [# of organizations, vertical/horizontal communication]

Does it make sense to ...

- Adjustment:** Adjust for the region population / internet users?
- Multiple clusters:** should we calculate F-score separately for each?