Detecting influential beliefs in large-scale surveys

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Overview

1. **Motivation** - Belief systems in large surveys

2. **Analytical strategy** - Belief networks

3. **Results** - Influence of beliefs

4. **Future directions**

Large-scale surveys

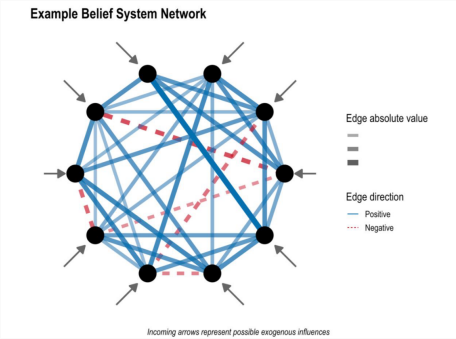
*Cross-sectional **Omnibus** Social Surveys Focusing on Social Behavior, Attitudes, and Values*

Large-scale surveys

*Cross-sectional **Omnibus** Social Surveys Focusing on Social Behavior, Attitudes, and Values*

- No single research goal
- Variety of topics and modules

Belief systems



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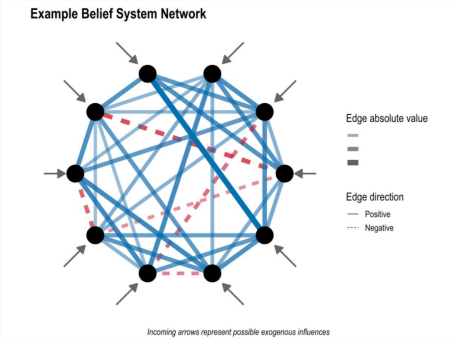
Beliefs = **evaluations** or **cognitive** aspects of attitudes

Belief systems



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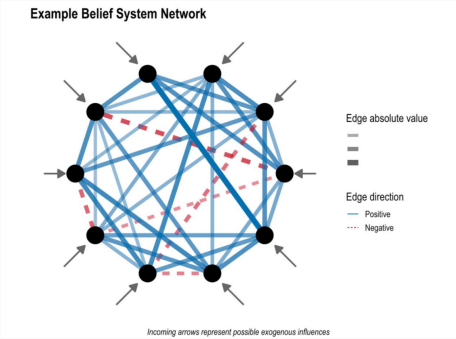

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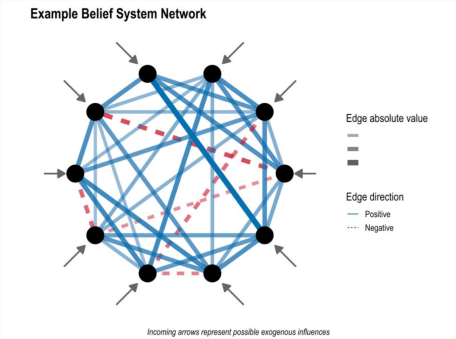
Connectionist framework

Belief systems



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Connectionist framework
Network Flow

Motivating example - European Social Survey

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- Round 9, 2018/2019
- 30 European countries
- **Attitude towards national government**

Motivating example

Govermental Performance

Satisfaction with **Economy**
Satisfaction with **Democracy**
State of **Healthcare**
State of **Education**

Political Trust

Parliament
Legal system
Police
Politicians
Political parties

Representation & Fairness

Systems allows people to have **a say**
Systems allows people to have **influence**
Gov. decisions are **transparent**
Gov. takes into account **interests of all**
System gives a **fair chance** to all

Analytical strategy

Unique Variable Analysis (Christensen, Garrido & Golino, 2020)

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Weighted topological overlap (wTO, Zhang & Horvath, 2005)
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Split the sample & test network differences.

Integrated Value of Influence (IVI)
(Salvaty, Ramialson & Currie, 2020)

UVA - Redundancy analysis

Govermental Performance

Satisfaction with **Economy**
Satisfaction with **Democracy**
State of **Healthcare**
State of **Education**

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Parliament
~~**Legal system**~~
~~**Police**~~
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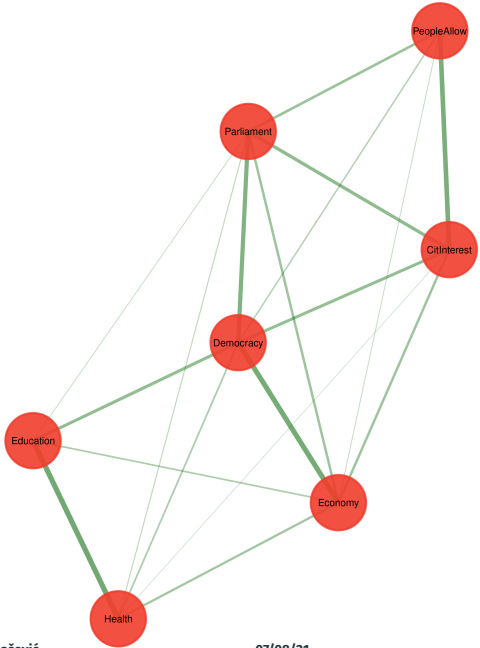
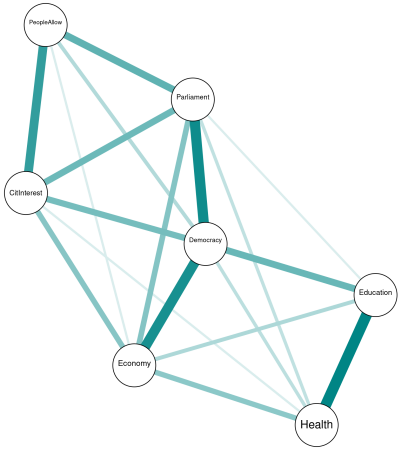

PeopleAllow
Parliament
CitInterest
Democracy
Education
Economy
Health

Electoral autocracies VS Liberal Democracies



IVI (Salvaty, Ramialson & Currie, 2020)

$$IVI_i = (Hub_i)(Spread_i)$$

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$$Spread_i = \left(NC_i^{'} + CR_i^{'}\right)\left(BC_i^{'} + Cl_i^{'}\right)$$

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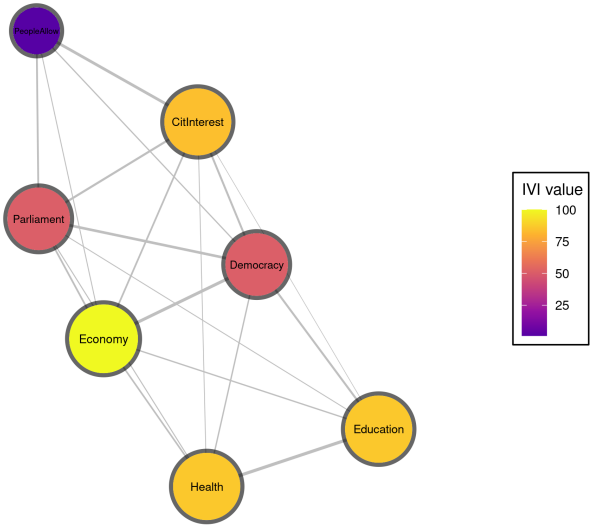
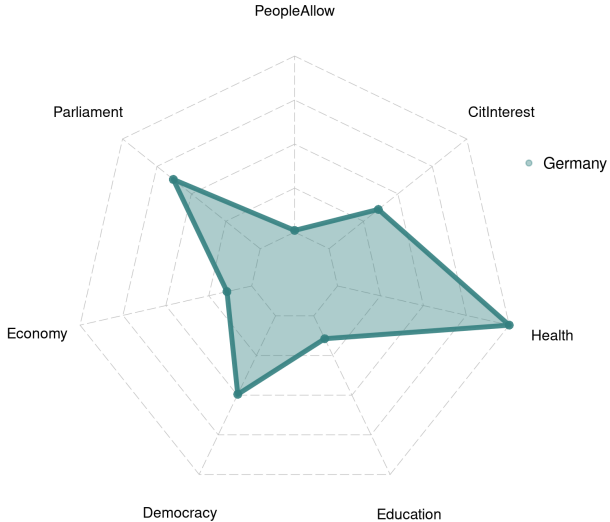
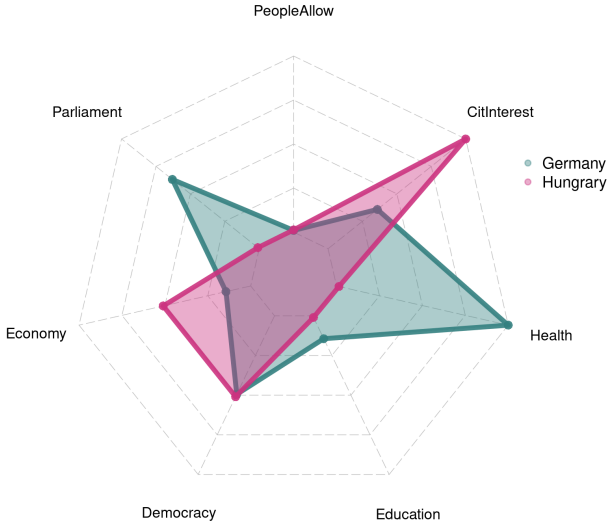
Belief Network IVI - Complete ESS R9 dataset




PeopleAllow
CitInterest
Germany
Health
Education
Democracy
Economy
Parliament


PeopleAllow
CitInterest
Health
Education
Democracy
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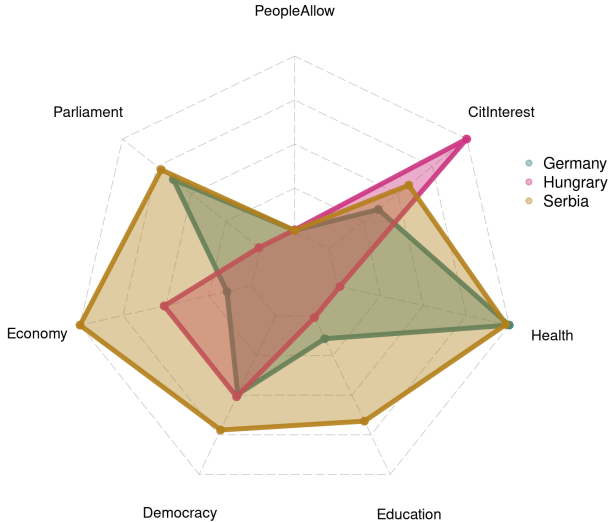
Parliament
Germany
Hungrary


PeopleAllow
CitInterest
Health
Education
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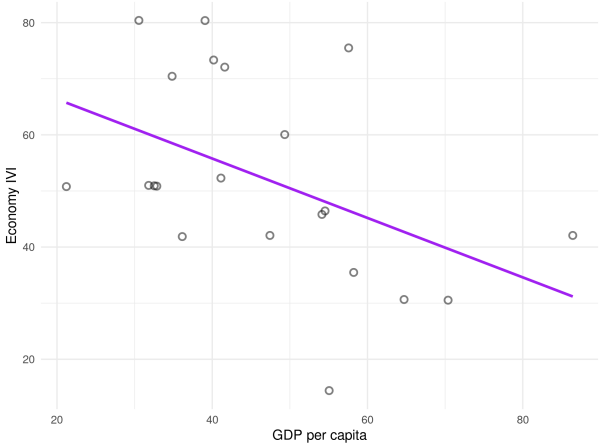
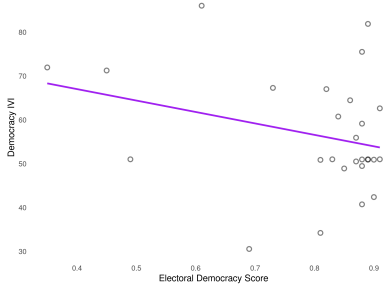
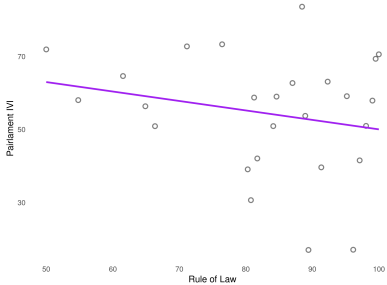
Economy
Parliament
Germany
Hungrary
Serbia

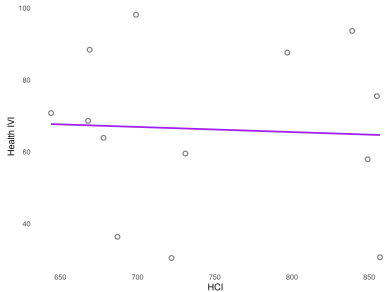
GDP per capita vs Economy IVI



$r = -0.429 \quad p = 0.02$


Democracy IVI
Electoral Democracy Score
80
70
60
50
40
30
0.4
0.5
0.6
0.7
0.8
0.9


Parliament IVI
Rule of Law
70
50
30
50
60
70
80
90
100


Health IVI
HCI
100
80
60
40
650
700
750
800
850

Summary

- After removing redundancies we have fully-connected, simple belief network

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- Network structure differences between subgroups (regime type)

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- After removing redundancies we have fully-connected, simple belief network
- Network structure differences between subgroups (regime type)
- High Influence of beliefs related to problematic domains for a given society

Future Directions

- Differences between ruling and opposition parties voters
- Pairwise Ising model (binary beliefs)
- Compare with other influence/centrality metrics
- Investigate dynamics in panel surveys

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github.com/atomashevic/essnet

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Thank You!