Detecting influential beliefs in large-scale surveys

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University of Novi Sad

Overview

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

2. **Analytical strategy** - Belief networks

3. **Results** - Influence of beliefs

Large-scale surveys

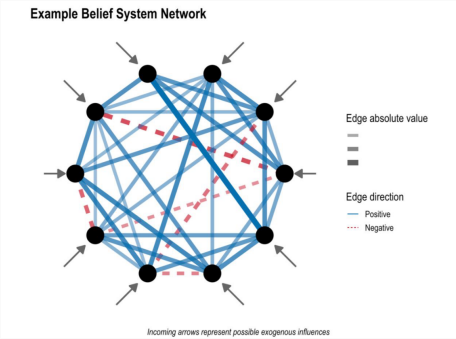
*Cross-sectional **Omnibus** Social Surveys Focusing on Social Behavior, Attitudes, and Values*

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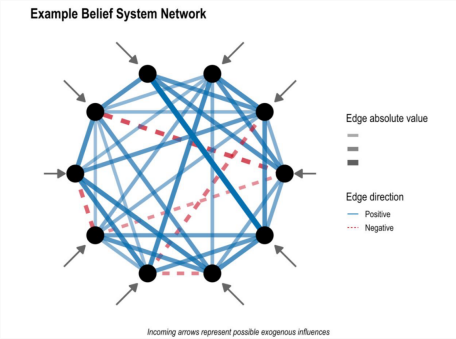
Beliefs = **evaluations** or **cognitive** aspects of attitudes

Belief systems



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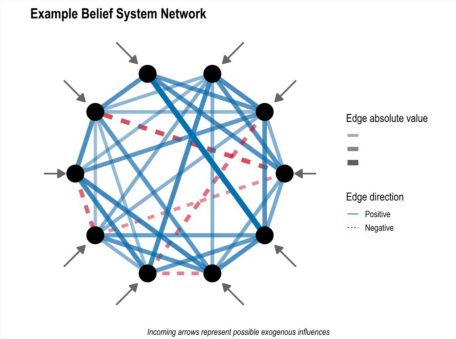

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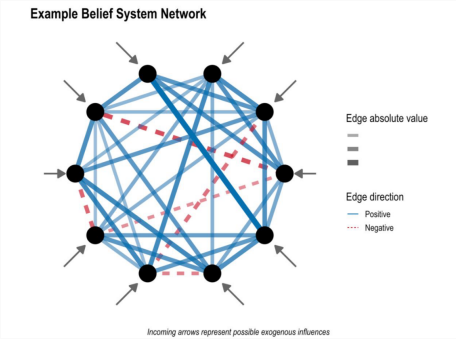
Connectionist framework

Belief systems



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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)
on partial correlation matrix

Estimate Gaussian Graphical Model

graphical LASSO regularization, extended BIC for model selection

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Estimate Gaussian Graphical Model

graphical LASSO regularization, extended BIC for model selection

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**

Political Trust

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~~**Legal system**~~
~~**Police**~~
~~**Politicians**~~
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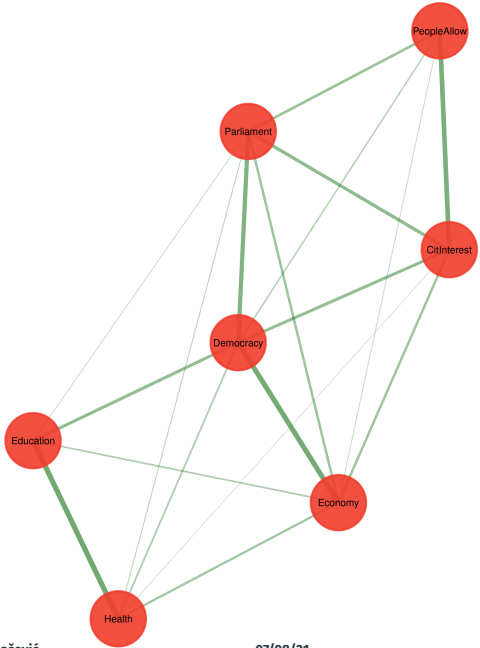
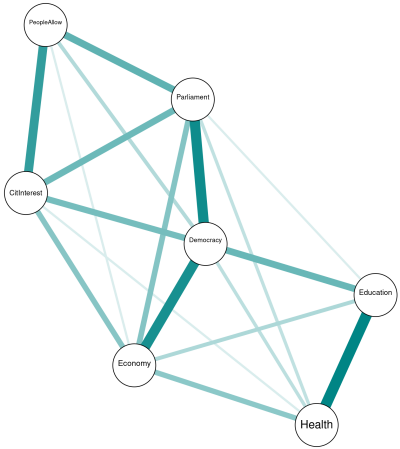

PeopleAllow
Parliament
CitInterest
Democracy
Education
Economy
Health

Electoral autocracies VS Liberal Democracies



IVI (Salvaty, Ramialson & Currie, 2020)

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

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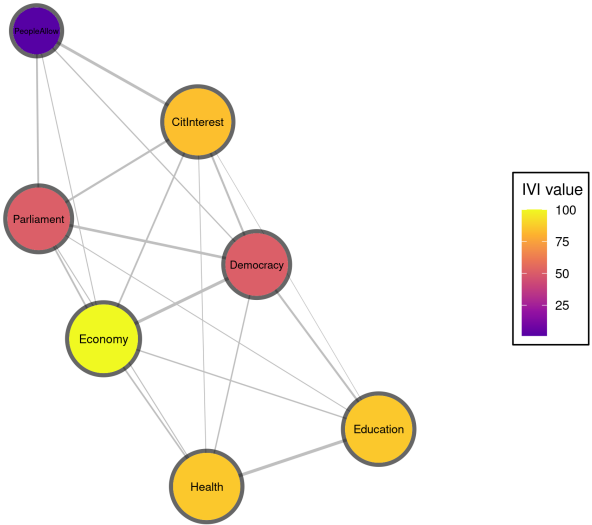
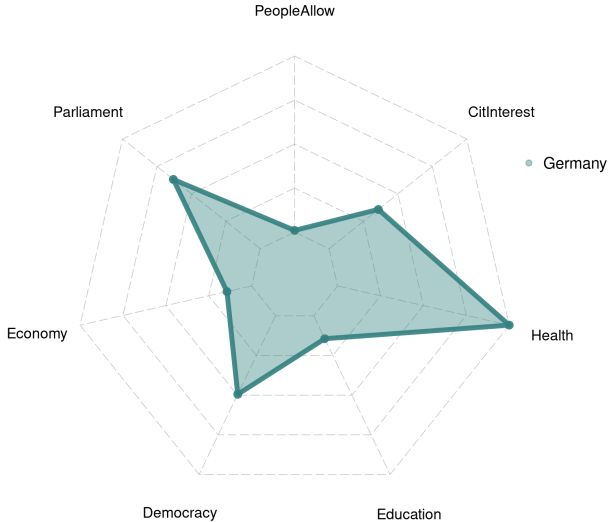
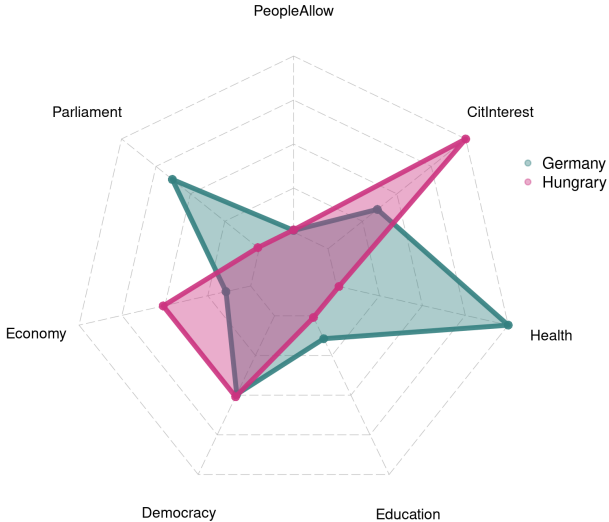
Belief Network IVI - Complete ESS R9 dataset




PeopleAllow
CitInterest
Germany
Health
Education
Democracy
Economy
Parliament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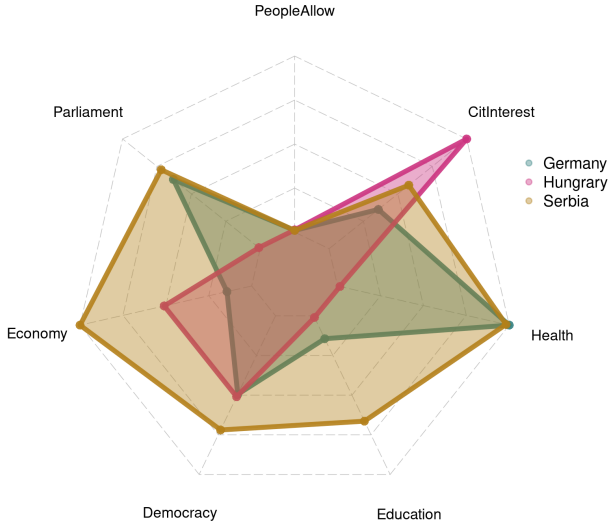
Hungrary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Germany
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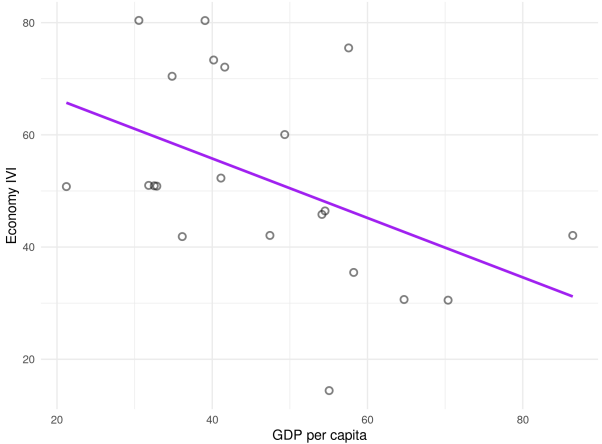
Serbia

GDP per capita vs Economy IVI



$r = -0.429 \quad p = 0.02$

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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

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Thank You!