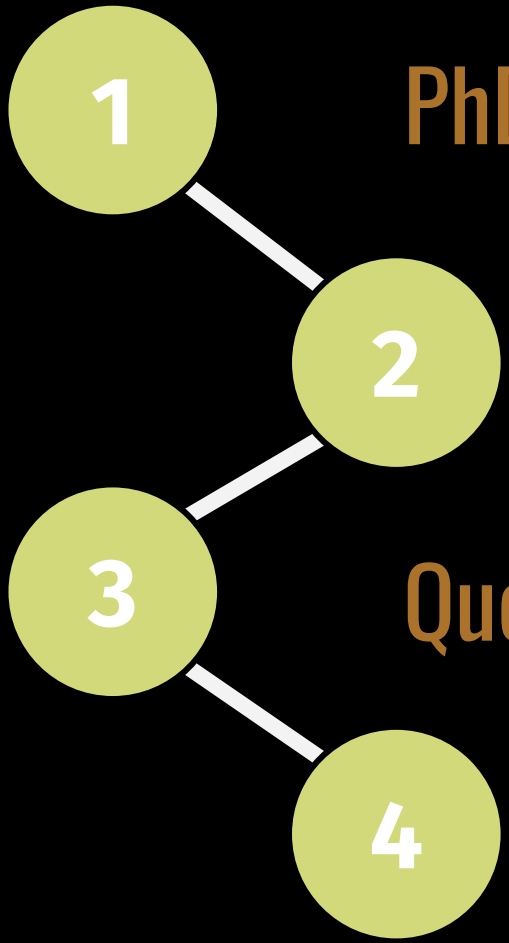

UNIVERSITY OF TROMSØ
HALFWAY POINT
PLEASE STAY ON TRAIL
RAFAEL NOZAL CAÑADAS
PhD Halfway evaluation 2021.11.30



PhD motivation

Dataset introduction

Questions and methodology

Progress and development

CHAPTER 0:
Introduction

Lars Ailo Bongo

Professor
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PhD Student
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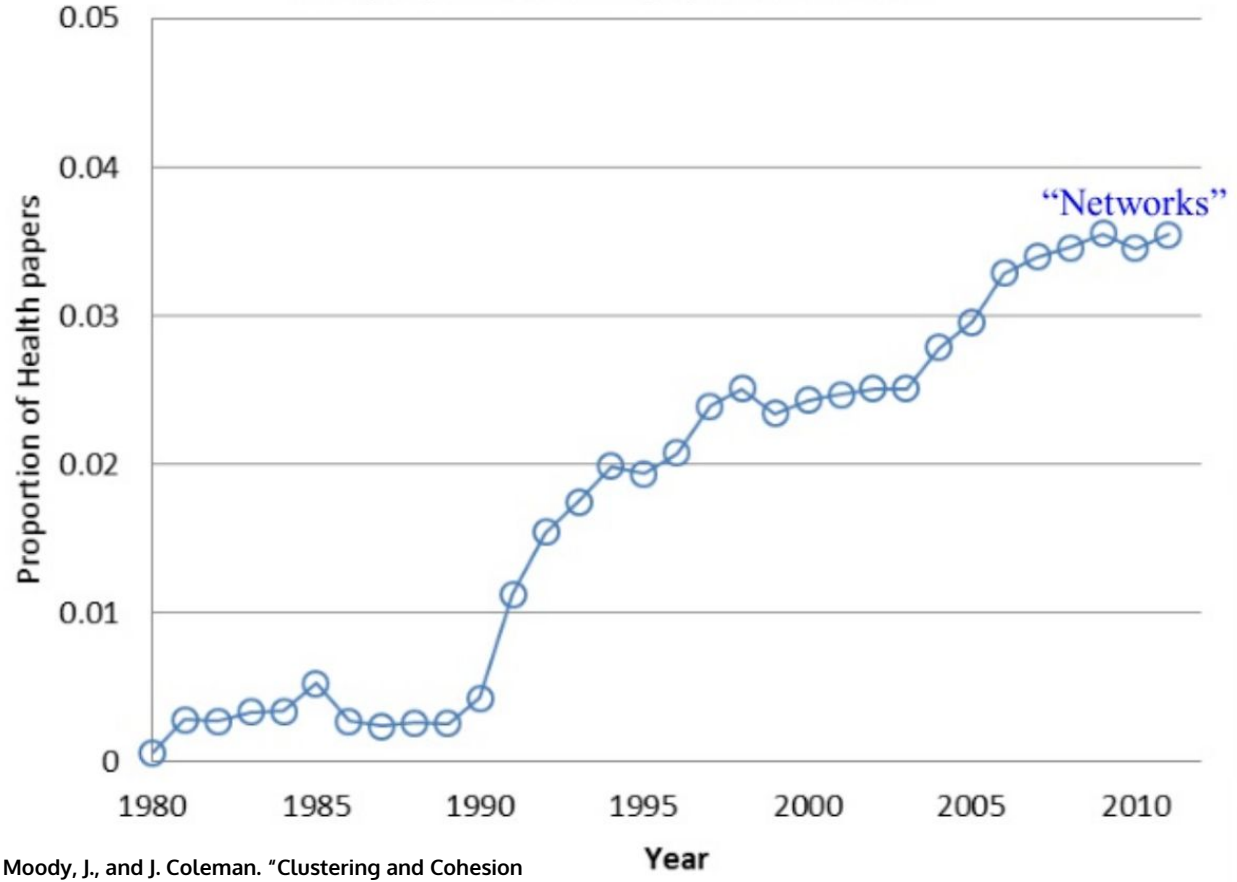
CHAPTER 1:
Networks in Health

Papers on Networks and Health

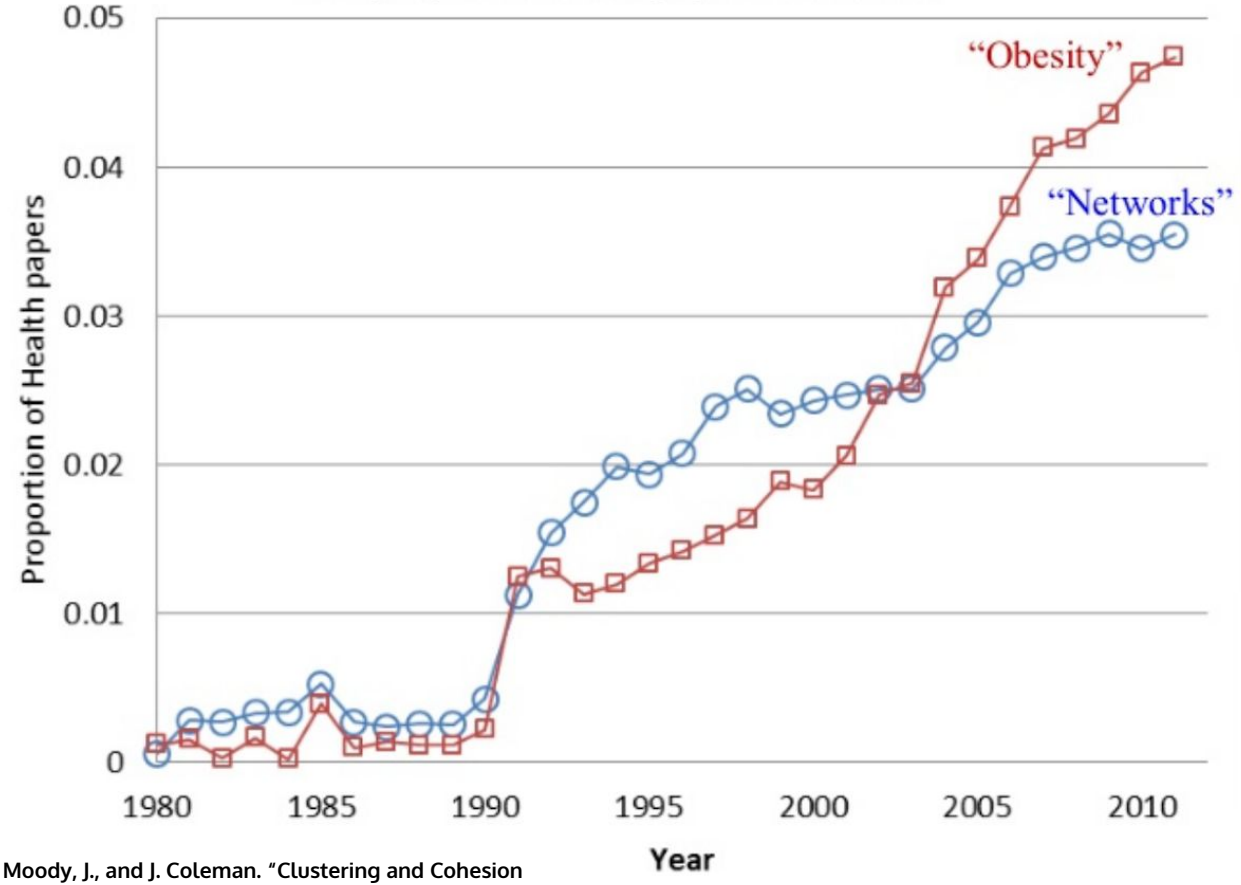
as a proportion of all papers on health



Moody, J., and J. Coleman. "Clustering and Cohesion in Networks: Concepts and Measures." 2015.

Papers on Networks and Health

as a proportion of all papers on health



Moody, J., and J. Coleman. "Clustering and Cohesion in Networks: Concepts and Measures." 2015.

EXHIBIT 1

Relative Contributions of Health Determinants to Health Outcomes

		Determinants of health					
Source	**Metric**	**Behaviors**	**Social circumstances**	**Environment**	**Genetics**	**Medical care**	**Stress**
DHHS, Public Health Service, "Ten Leading Causes of Death in the United States," Atlanta (GA): Bureau of State Services, July 1980[a]	Percentage of total deaths in 1977 (US)	50%	—	20%	20%	10%	—
J. M. McGinnis and W. H. Foege, "Actual Causes of Death in the United States," *JAMA* 270, no. 18 (1993):2207–12	Percentage of total deaths in 1990 (US)	Tobacco: 19% Diet/activity patterns: 14% Alcohol: 5% **Total = 38%**	—	Microbial agents: 4% Toxic agents: 3%	—	—	—
P. Lantz et al., "Socioeconomic Factors, Health Behaviors, and Mortality: Results from a Nationally Representative Prospective Study of US Adults," *JAMA* 279, no. 21 (1998):1703–8	Mortality hazard rate ratio (HRR) attributable to income (controlling for sociodemographic variables and 4 health behaviors)	Controlled for: Cigarette smoking Alcohol drinking Sedentary lifestyle Relative body weight	Mortality HRR for middle-income group: 2.14 Mortality HRR for low-income group: 2.77	—	—	—	—
J.M. McGinnis et al., "The Case for More Active Policy Attention to Health Promotion," *Health Affairs* 21, no. 2 (2002):78–93	Percentage of "early deaths" (undefined)	40%	15%	5%	30%	10%	—
A. Mokdad et al., "Actual Causes of Death in the United States, 2000," *JAMA* 291, no. 10 (2004):1238–45	Percentage of total deaths in 2000 (US)	Tobacco: 18% Poor diet/physical inactivity: 17% Alcohol: 3.5% **Total = 39%**	—	Microbial agents: 3.1% Toxic agents: 2.3%	—	—	—
G. Danaei et al., "The Preventable Causes of Death in the United States: Comparative Risk Assessment of Dietary, Lifestyle, and Metabolic Risk Factors," *PLoS Medicine* 6, no. 4 (2009):e1000058[b]	Percentage of total death (US) (various years, depending on variable)	Tobacco: 19% Overweight/obesity: 9% Physical inactivity: 8% **Total = 36%**	—	—	—	—	—
World Health Organization, Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks, Geneva: WHO, 2009[c]	Percentage of total deaths in 2004, in high-income countries	Diet and physical inactivity (high blood pressure, high blood glucose, physical inactivity, overweight and obesity, high cholesterol, low fruit and vegetable intake): 25% Alcohol and drug use: 2% Tobacco use: 18% **Total = 45%**	—	3% (urban outdoor air pollution, unsafe water/sanitation, and lead exposure)	—	—	—
B. Booske et al., "Different Perspectives for Assigning Weights to Determinants of Health," County Health Rankings Working Paper. Madison (WI): University of Wisconsin Population Health Institute, 2010[d]	Estimates derived to assign weights to determinants for County Health Rankings, drawing on a number of different perspectives	30%	40%	10%	—	20%	—
S. Stringhini et al., "Association of Socioeconomic Position with Health Behaviors and Mortality," *JAMA* 303, no. 12 (2010):1159–66	SES differences (gradient) in all-cause mortality, 1985–2009 (civil service population in London, England)	Health behaviors (smoking, diet, alcohol consumption, and physical activity): 42% (when assessed at baseline) 72% (assessed 4 times over 24 years of follow-up)	—	—	—	—	—
P. Thoits, "Stress and Health: Major Findings and Policy Implications," *Journal of Health and Social Behavior* 51 Suppl (2010): S41–53[e]	Percentage of the variance in psychological distress and depressive symptoms	—	—	—	—	—	25–40%

"Health Policy Brief: The Relative Contribution of Multiple Determinants to Health Outcomes," Health Affairs, August 21, 2014

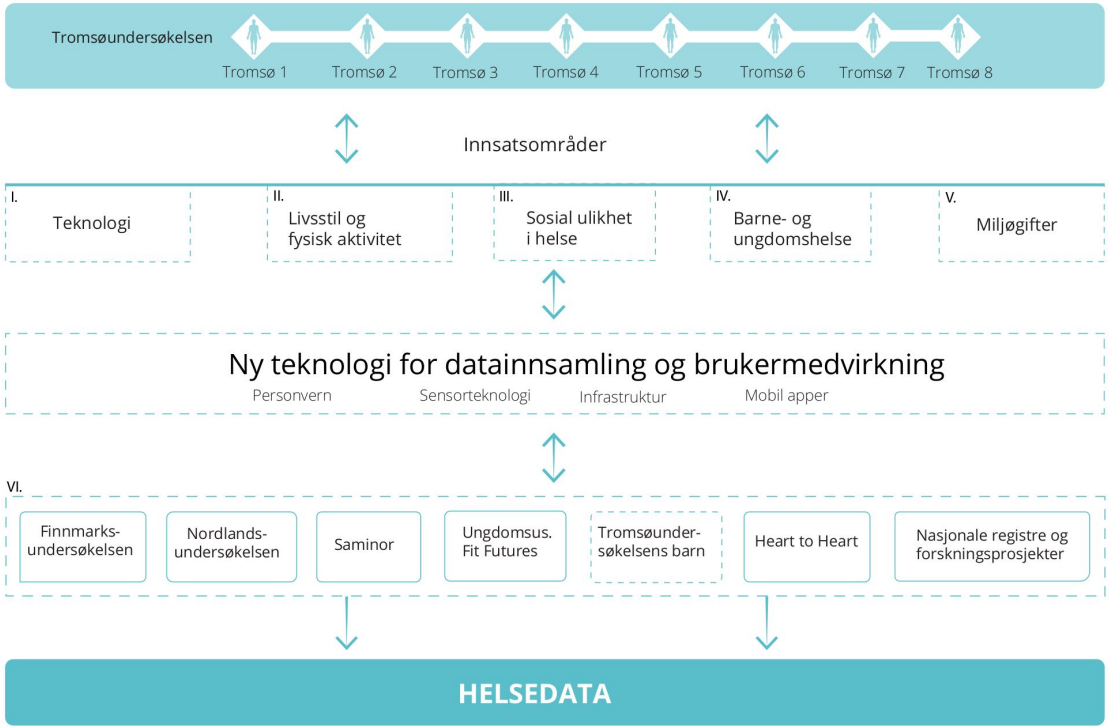
15% to 40% due to your network

CHAPTER 2:
Fit Futures dataset

The Tromsø Study

Befolkningsundersøkelser i nord

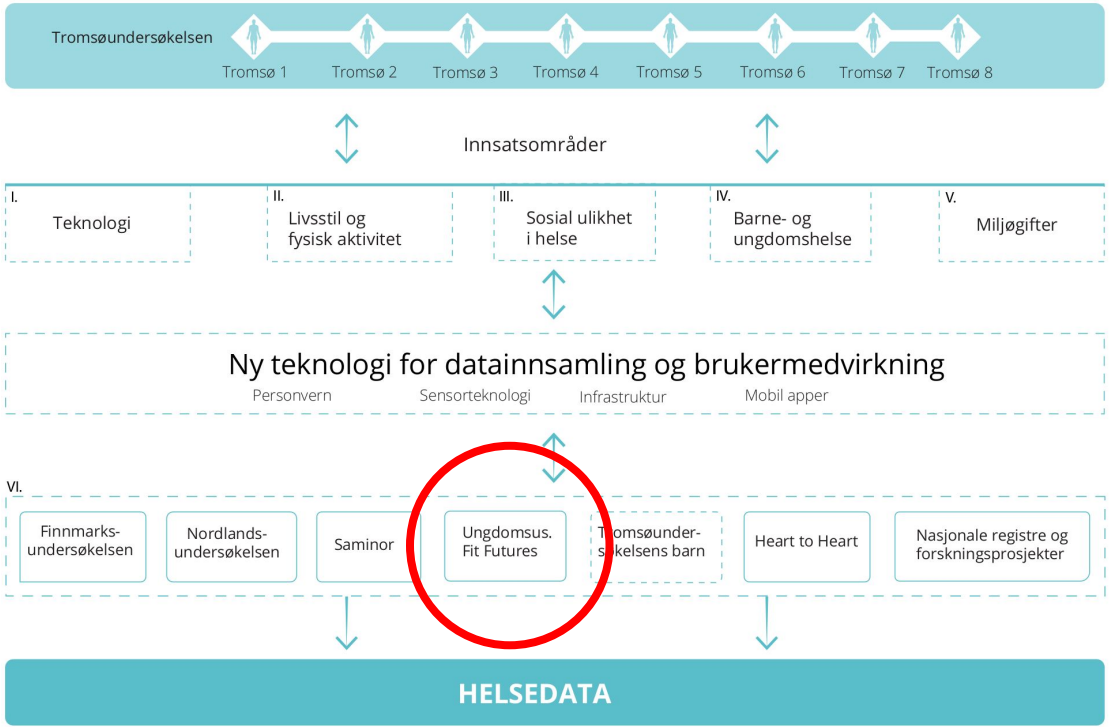
En tverrfakultær satsing ved UiT Norges arktiske universitet



The Tromsø Study

Befolkningsundersøkelser i nord

En tverrfakultær satsing ved UiT Norges arktiske universitet



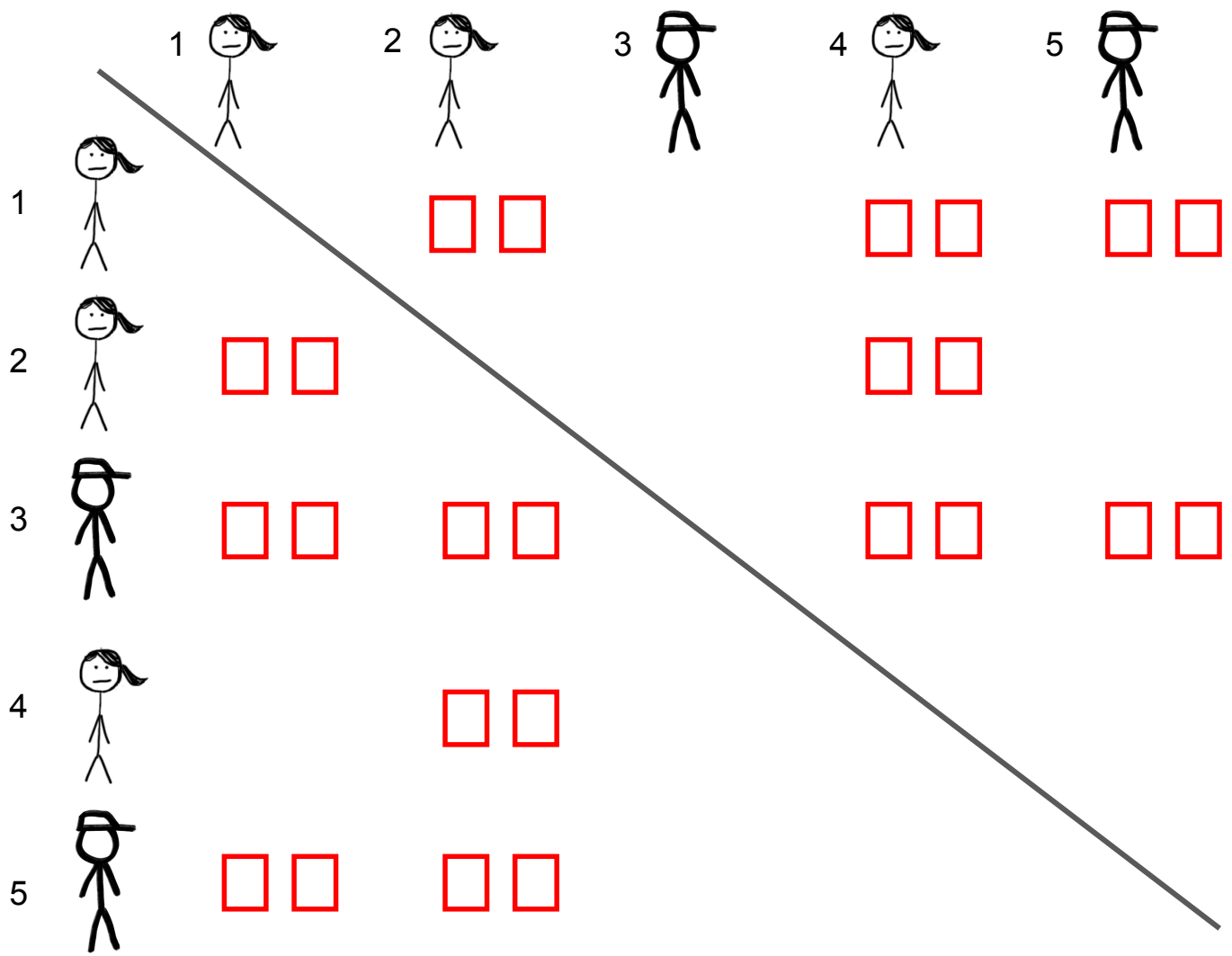
1 

2 

3 

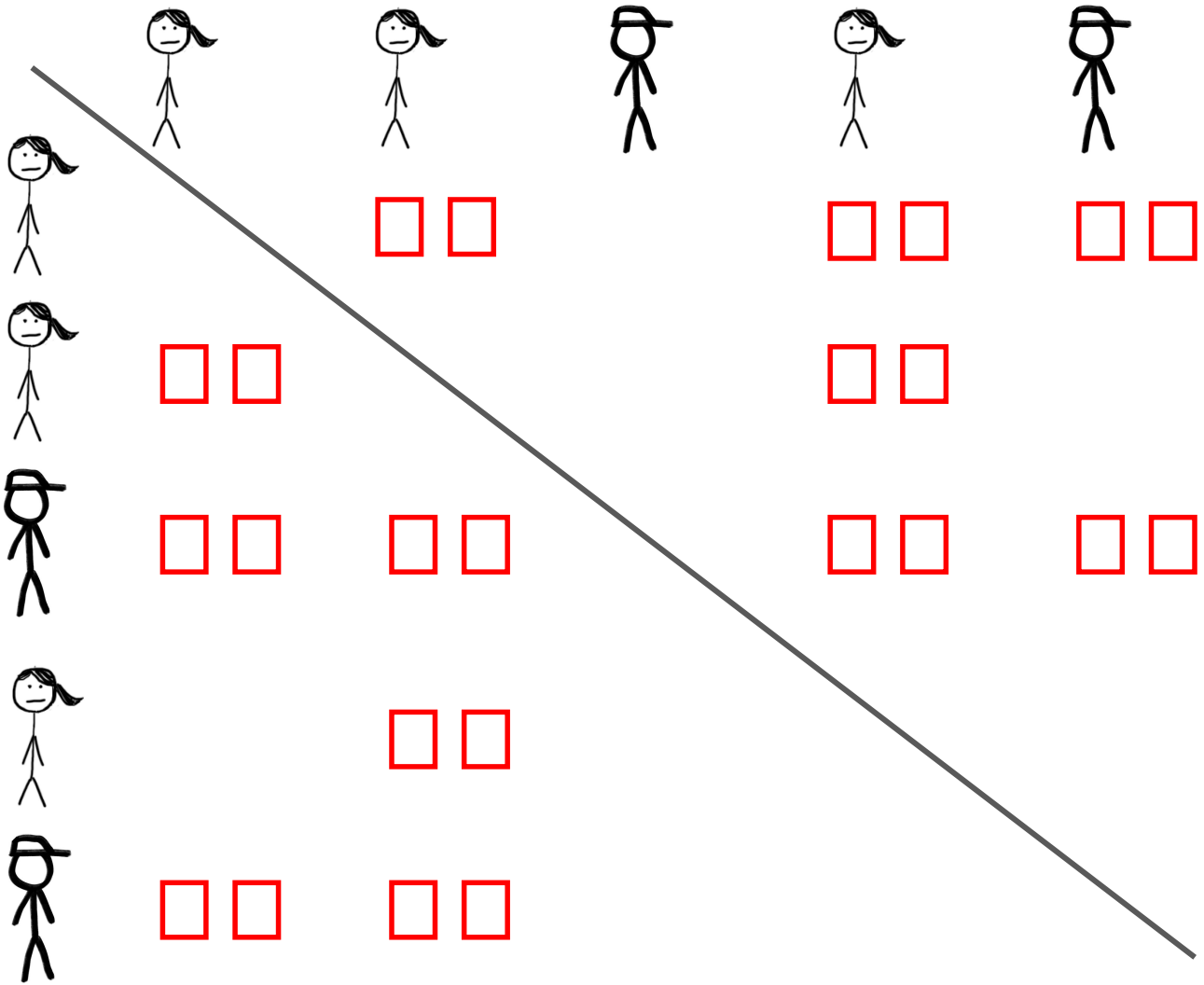
4 

5 


1
2
3
4
5
1
2
3
4
5

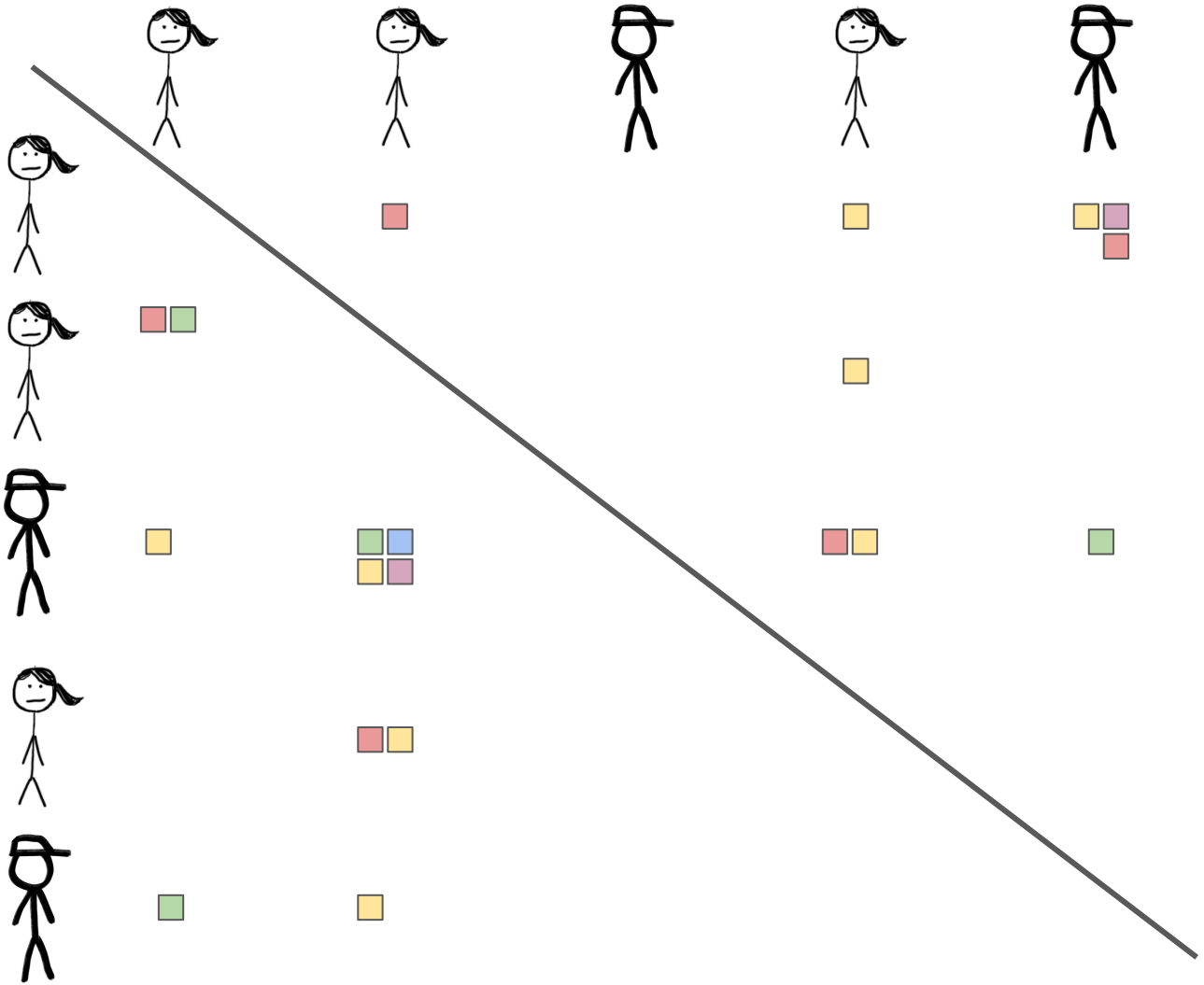
Are you together...

- Physically
- School
- Sports
- Home
- Other

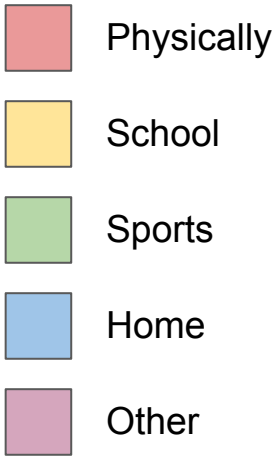


Are you together...

- Physically
- School
- Sports
- Home
- Other

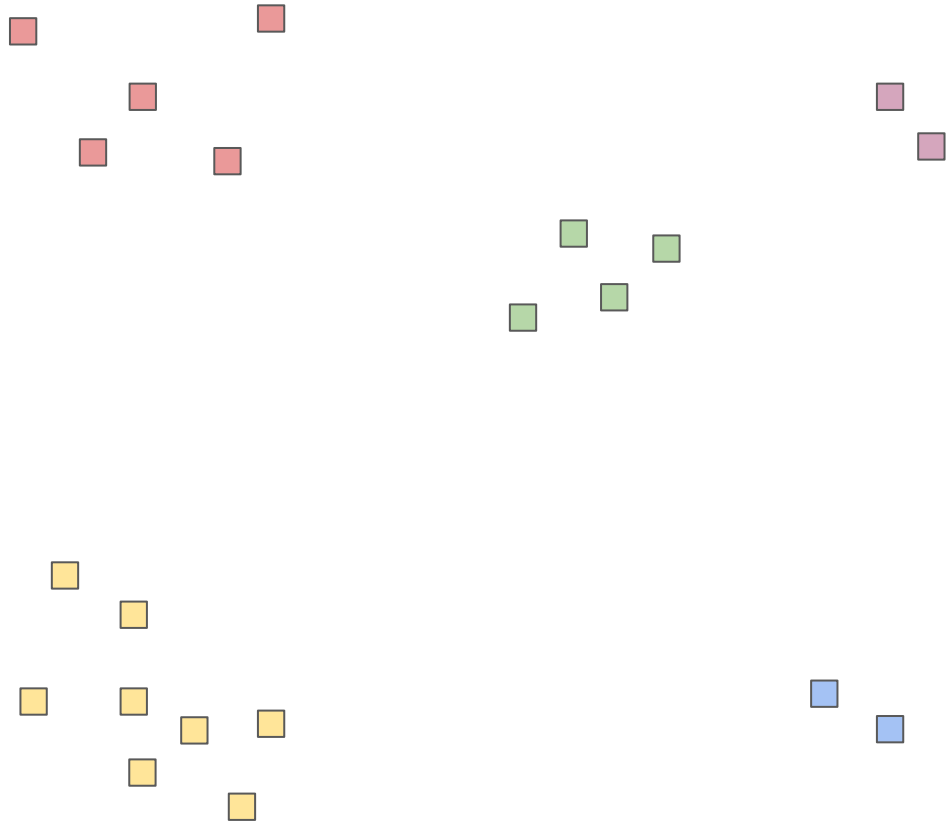


Are you together...



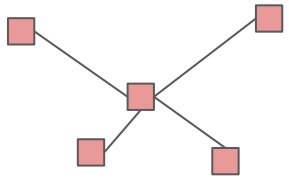
Are you together...

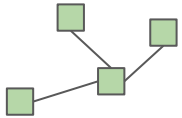
- Physically
- School
- Sports
- Home
- Other

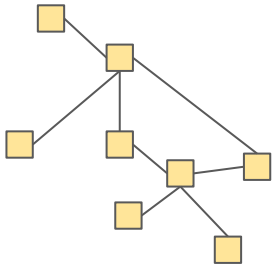


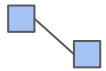
Are you together...

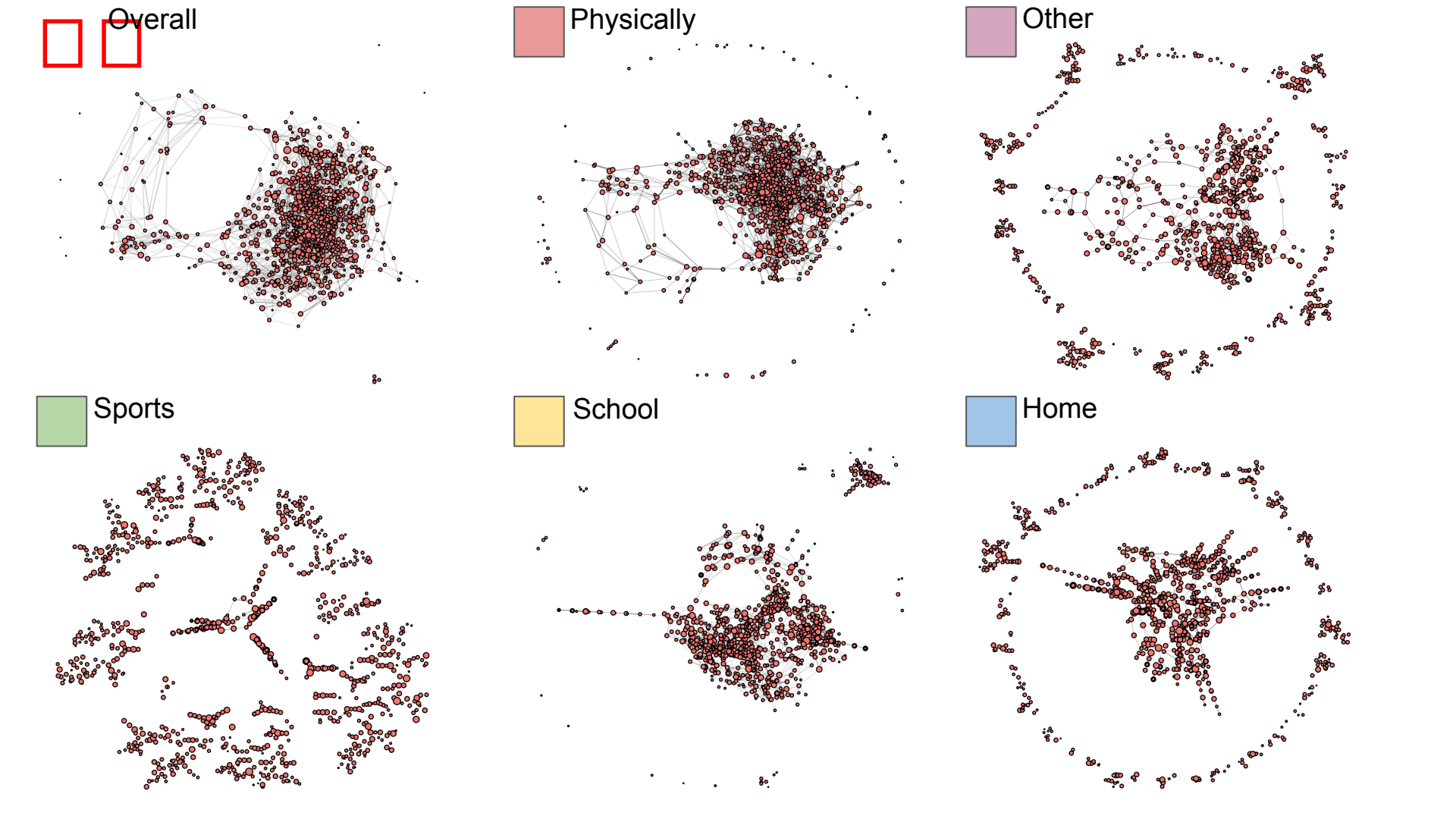
- Physically
- School
- Sports
- Home
- Other



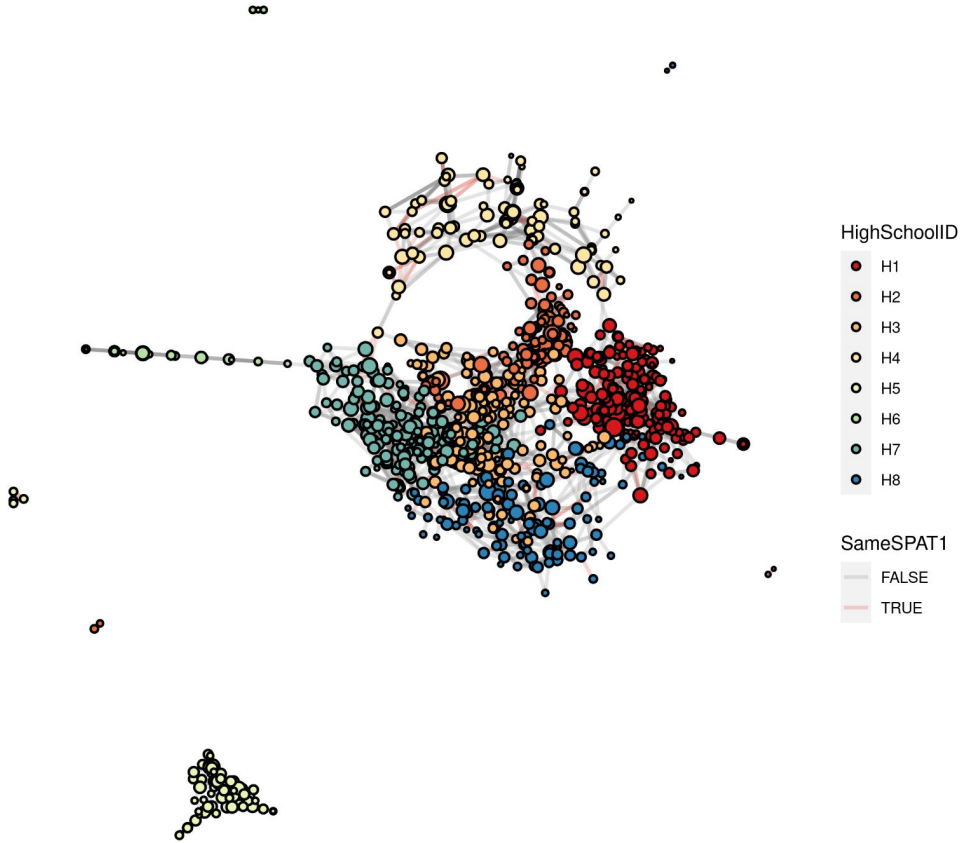







Overall
Physically
Other
Sports
School
Home

School relathionships highlighting highchool in nodes and same SPAT1 in edges.
Isolated nodes are hidden (21)



School relathionships highlighting highchool in nodes and same SPAT1 in edges.

Isolated nodes are hidden (21)

HighSchoolID
H1
H2
H3
H4
H5
H6
H7
H8

SameSPAT1
FALSE
TRUE

1 

2 

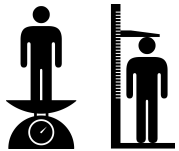
3 

4 

5 

Women

Men

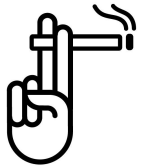


Under-weight

Normal Weight

Over-weight

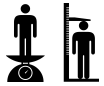
Obese

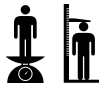


None

Sometimes

Daily

			
1		Women	Normal Weight	Some-times
2		Women	Over-weight	None
3		Men	Obese	None
4		Women	Normal Weight	None
5		Men	Under-weight	Daily



1

Women

Normal Weight

Some-times

2

Women

Over-weight

None

3

Men

Obese

None

4

Women

Normal Weight

None

5

Men

Under-weight

Daily

x 2964!!!

Blood Preasure
Anthtropometry
Multiple DEXA scans data
Blood samples
Swab cultures
Swab cultures follow up
Hair samples
Diseases
Medication
Use of hormonal contraceptives
Pain sensibility
Pain profile
Activity data
Demographics
GMO Exposure
Mental health
Recreational drugs use
Diet and nutrion
Sleep patters
Dental health
...

Blood Preasure
Anthtropometry
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Blood samples
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Blood Preasure
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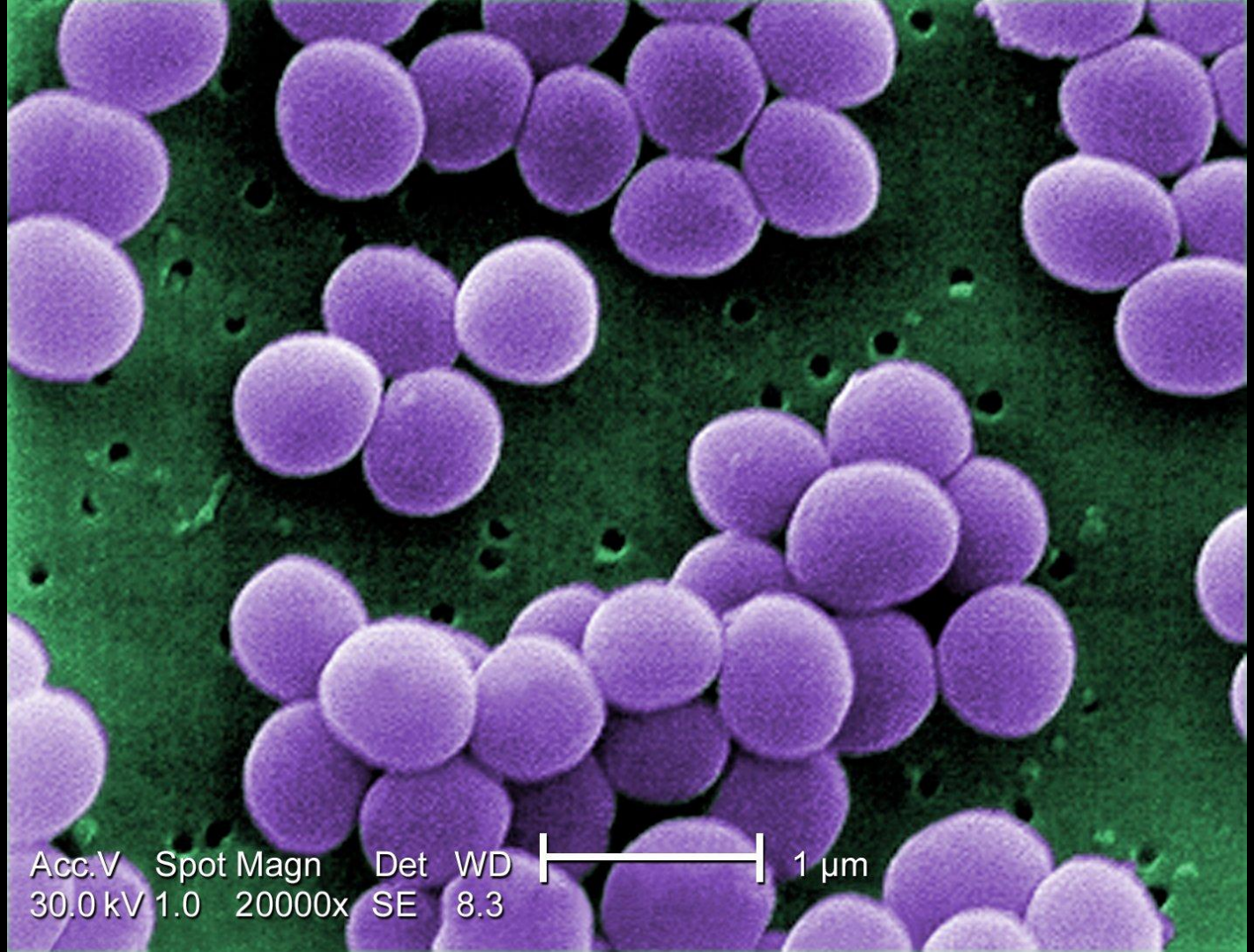
Demographics
GMO Exposure
Mental health
Recreational drugs use
Diet and nutrion
Sleep patters
Dental health
...

+ Network data, + Time series

CHAPTER 3:
Main research questions and methodology


Acc.V Spot Magn Det WD
30.0 kV 1.0 20000x SE 8.3
1 µm

Induce a wide range of diseases, including, but not limited to:

Induce a wide range of diseases, including, but not limited to:

- Pneumonia

Induce a wide range of diseases, including, but not limited to:

- Pneumonia
- Meningitis

Induce a wide range of diseases, including, but not limited to:

- Pneumonia
- Meningitis
- Flesh eating disease.

Induce a wide range of diseases, including, but not limited to:

- Pneumonia
- Meningitis
- Flesh eating disease.

About 30% of the population has it.

Induce a wide range of diseases, including, but not limited to:

- Pneumonia
- Meningitis
- Flesh eating disease.

About 30% of the population has it.

Immunoevasion; it difficult for your immune system to find it, catch it, or even mount a proper immune response against other pathogens.

Induce a wide range of diseases, including, but not limited to:

- Pneumonia
- Meningitis
- Flesh eating disease.

About 30% of the population has it.

Immunoevasion; it difficult for your immune system to find it, catch it, or even mount a proper immune response against other pathogens.

Many strains that are β-lactam antibiotic resistance. No vaccine.

Induce a wide range of diseases, including, but not limited to:

- Pneumonia
- Meningitis
- Flesh eating disease.

About 30% of the population has it.

Immunoevasion; it difficult for your immune system to find it, catch it, or even mount a proper immune response against other pathogens.

Many strains that are β-lactam antibiotic resistance. No vaccine.

Responsable for many thousand of intrahospitalary infections related deaths.

Does the social network facilitate the spread of *S.aureus*?

If so, which social factors increases the risk of being a *S. aureus* carrier?

How large is the risk from social influence compared to the biological risk?

Does the social network facilitate the spread of *S.aureus*?

Yes, mostly at school.

If so, which social factors increases the risk of being a *S. aureus* carrier?

Men by biology. Women by social contact.

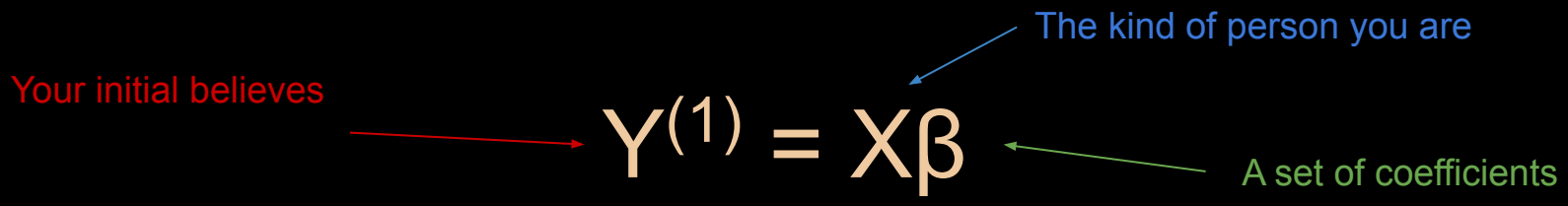
How large is the risk from social influence compared to the biological risk?

About 5% risk increase for each additional infected friend.

$$Y^{(1)} = X\beta$$

$$Y^{(1)} = X\beta$$

$Y^{(1)}$ = N x M matrix of initial opinions on M issues for N actors
X = N x K matrix of K exogenous variables that affect Y
β = K x M matrix of coefficients relating X to Y



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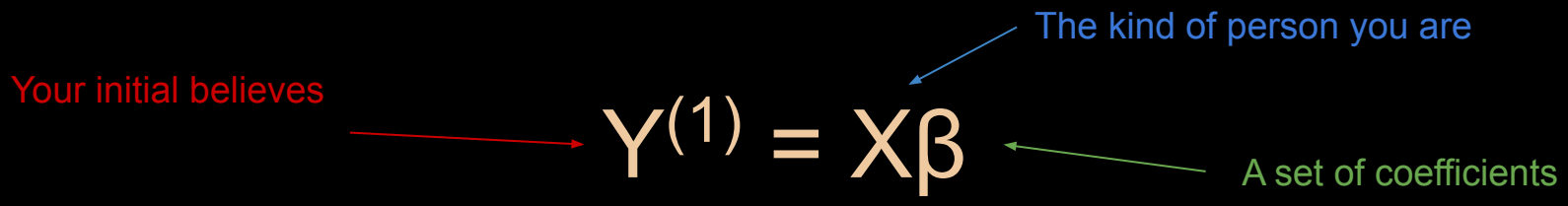
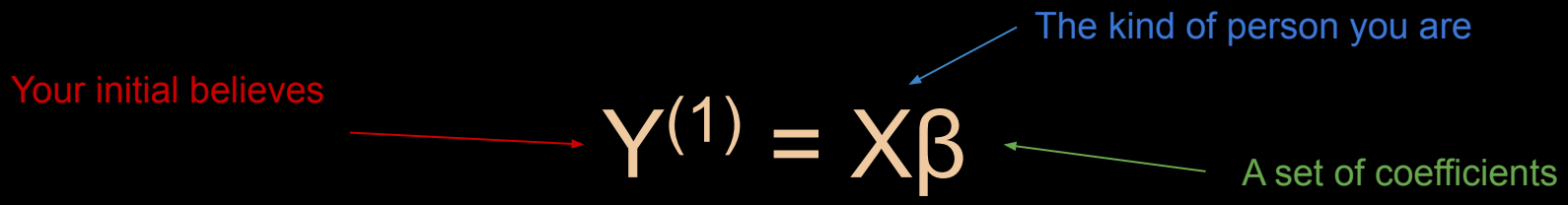


$Y^{(1)}$ = N x M matrix of initial opinions on M issues for N actors
X = N x K matrix of K exogenous variables that affect Y
β = K x M matrix of coefficients relating X to Y

$$Y^{(t)} = \alpha W Y^{(t-1)} + (1 - \alpha) Y^{(1)}$$



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β = K x M matrix of coefficients relating X to Y

$$Y^{(t)} = \alpha W Y^{(t-1)} + (1 - \alpha) Y^{(1)}$$

$Y^{(t)}$ = N x M matrix of current opinions on M issues for N actors
W = N x N matrix of interpersonal influences
α = a weight of the strenght of endogenous interpersonal influences

The kind of person you are

Your initial believes

$$Y^{(1)} = X\beta$$

A set of coefficients

$Y^{(1)}$ = N x M matrix of initial opinions on M issues for N actors
X = N x K matrix of K exogenous variables that affect Y
β = K x M matrix of coefficients relating X to Y

Your initial believes

$$Y^{(t)} = \alpha W Y^{(t-1)} + (1 - \alpha) Y^{(1)}$$

The opinions of others

Your opinions

$Y^{(t)}$ = N x M matrix of current opinions on M issues for N actors
W = N x N matrix of interpersonal influences
α = a weight of the strenght of endogenous interpersonal influences

The kind of person you are

Your initial believes

$$Y^{(1)} = X\beta$$

A set of coefficients

$Y^{(1)}$ = N x M matrix of initial opinions on M issues for N actors
X = N x K matrix of K exogenous variables that affect Y
β = K x M matrix of coefficients relating X to Y

How sturborn / naive you are

Your initial believes

$$Y^{(t)} = \alpha W Y^{(t-1)} + (1 - \alpha) Y^{(1)}$$

The opinions of others

Your opinions

$Y^{(t)}$ = N x M matrix of current opinions on M issues for N actors
W = N x N matrix of interpersonal influences
α = a weight of the strenght of endogenous interpersonal influences

Your initial believes

The kind of person you are

$$Y^{(1)} = X\beta$$

A set of coefficients

$Y^{(1)}$ = N x M matrix of initial opinions on M issues for N actors
X = N x K matrix of K exogenous variables that affect Y
β = K x M matrix of coefficients relating X to Y

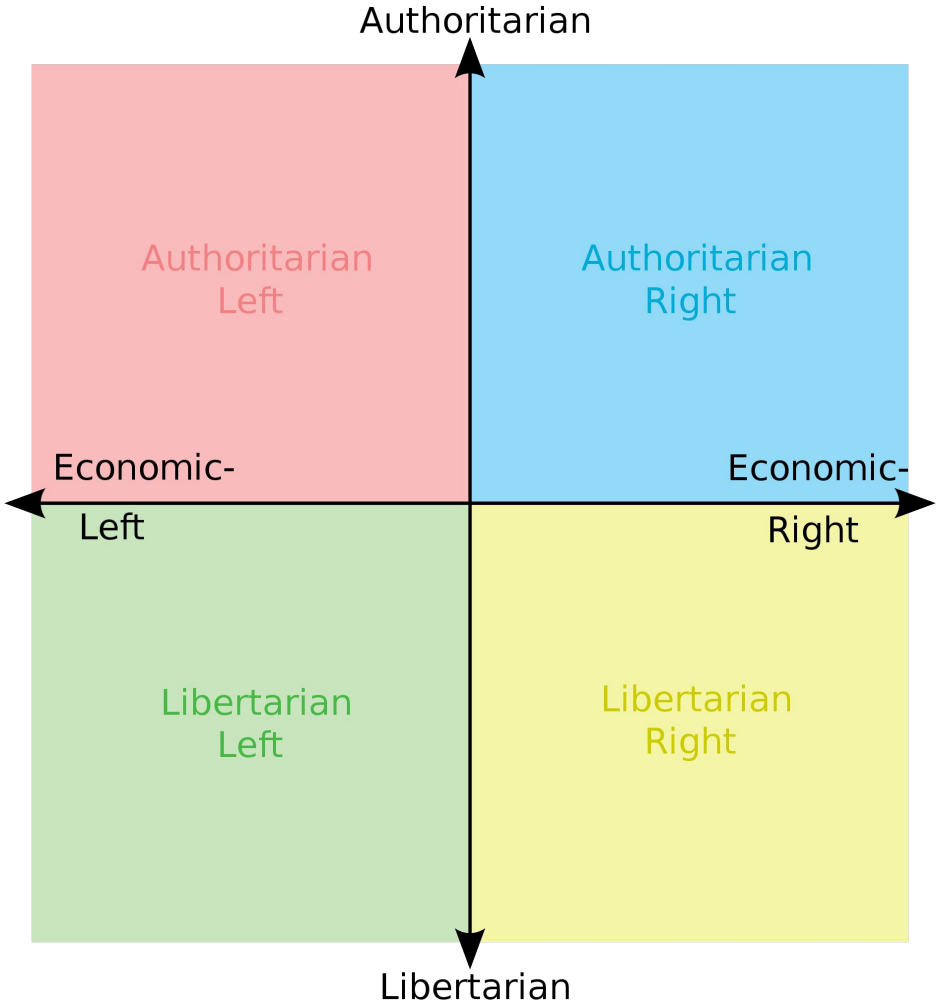
How sturborn / naive you are

Your initial believes

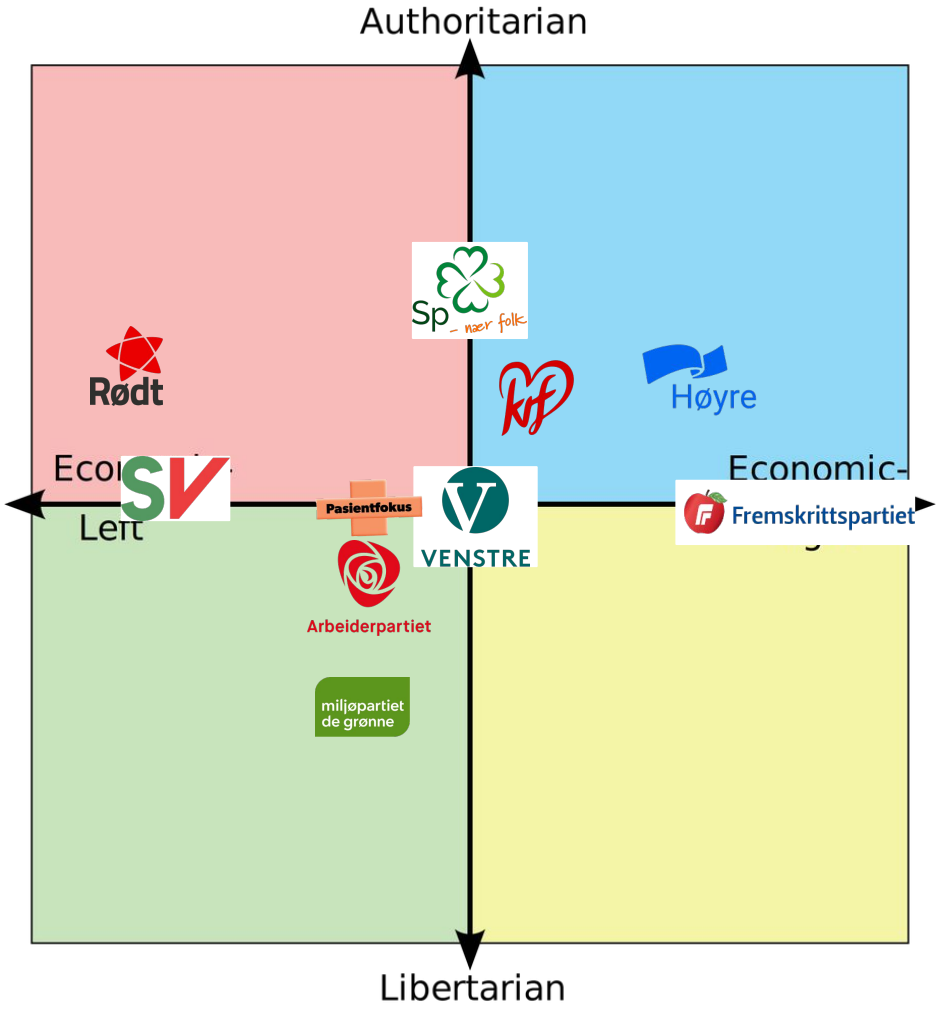
$$Y^{(t)} = \alpha W Y^{(t-1)} + (1 - \alpha) Y^{(1)}$$

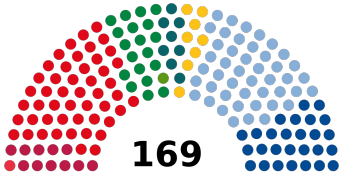
How much do you value the opinion of each friend

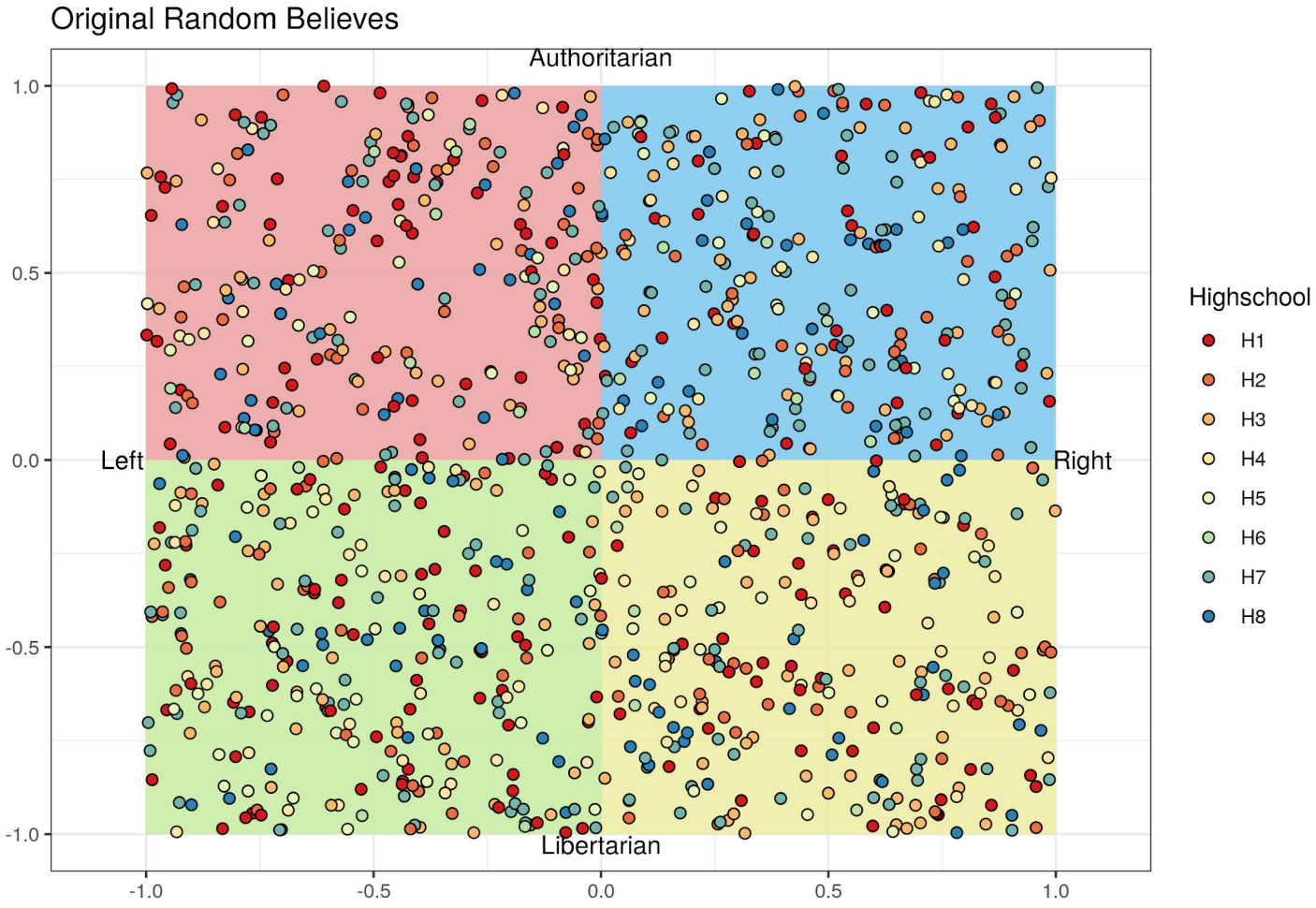
$Y^{(t)}$ = N x M matrix of current opinions on M issues for N actors
W = N x N matrix of interpersonal influences
α = a weight of the strenght of endogenous interpersonal influences

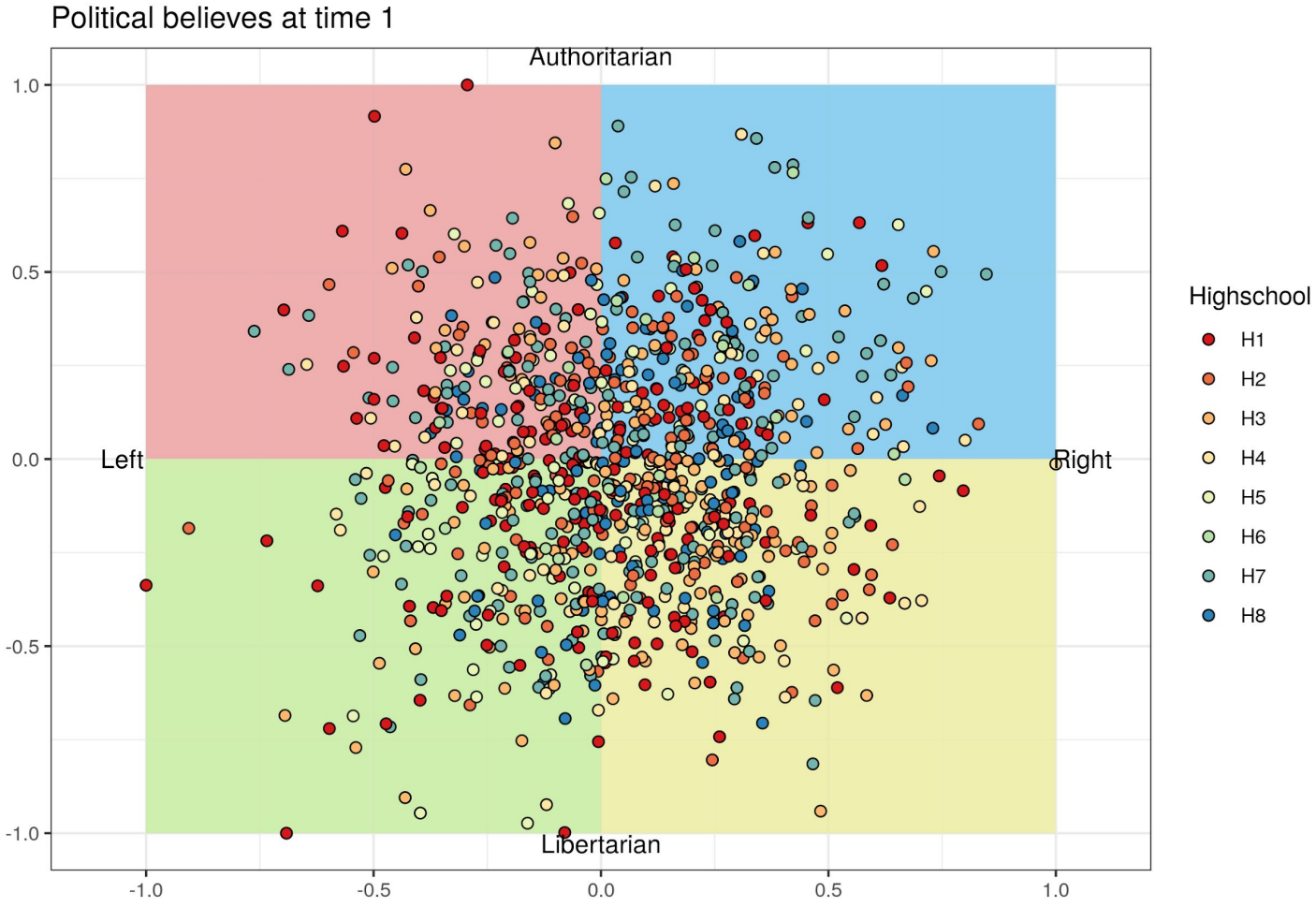

Authoritarian
Authoritarian Left
Authoritarian Right
Economic-Left
Economic-Right
Libertarian Left
Libertarian Right
Libertarian

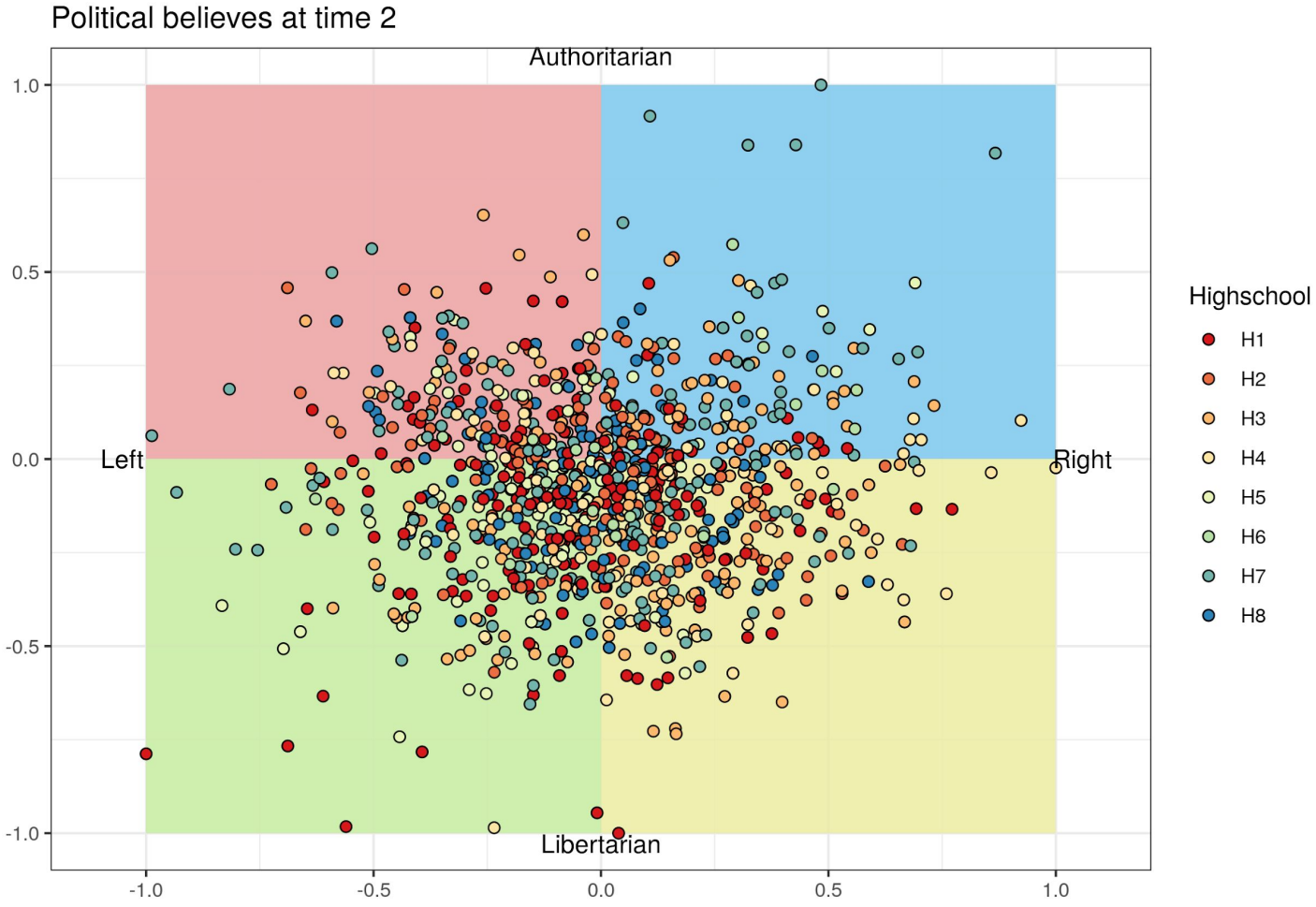
STORTINGET


Authoritarian
Rødt
Sp
nær folk
KrF
Høyre
SV
Pasientfokus
VENSTRE
Fremskrittspartiet
Arbeiderpartiet
miljøpartiet de grønne
Libertarian


169


Original Random Believes
Authoritarian
Libertarian
Left
Right
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 1
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 2
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
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Highschool
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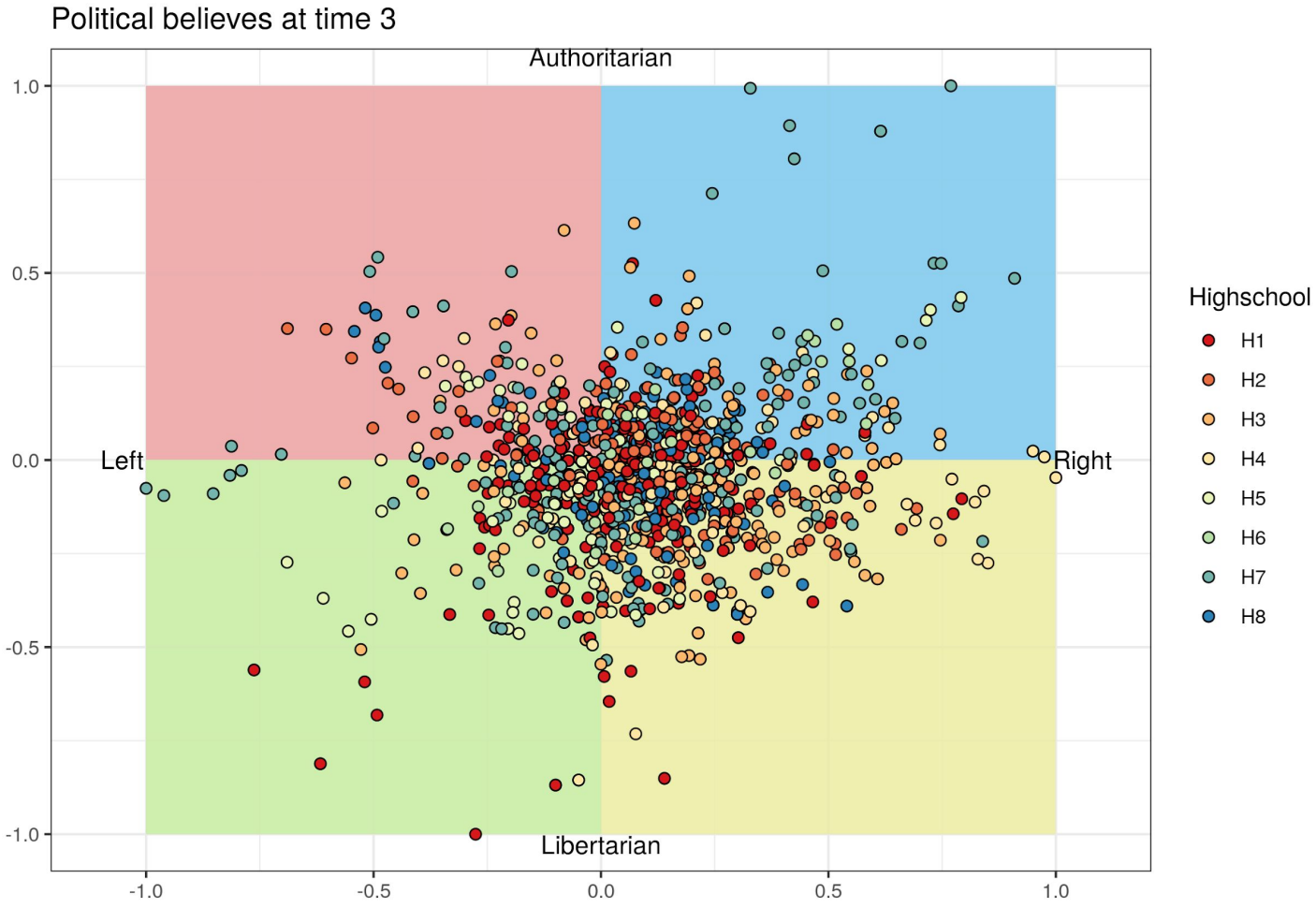
Political believes at time 3
Authoritarian
Libertarian
Left
Right
1.0
0.5
0.0
-0.5
-1.0
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Highschool
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H3
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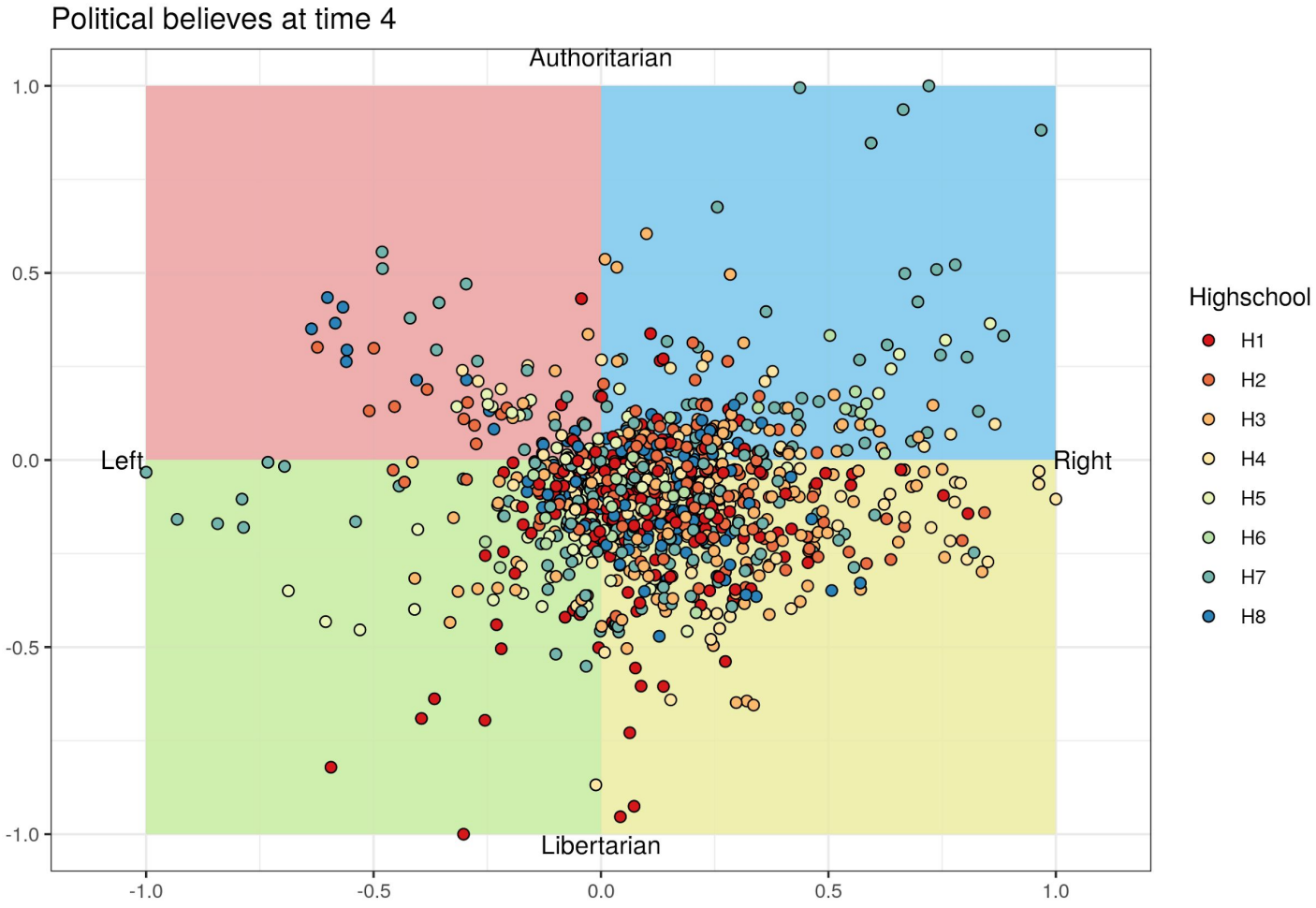
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Libertarian
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-0.5
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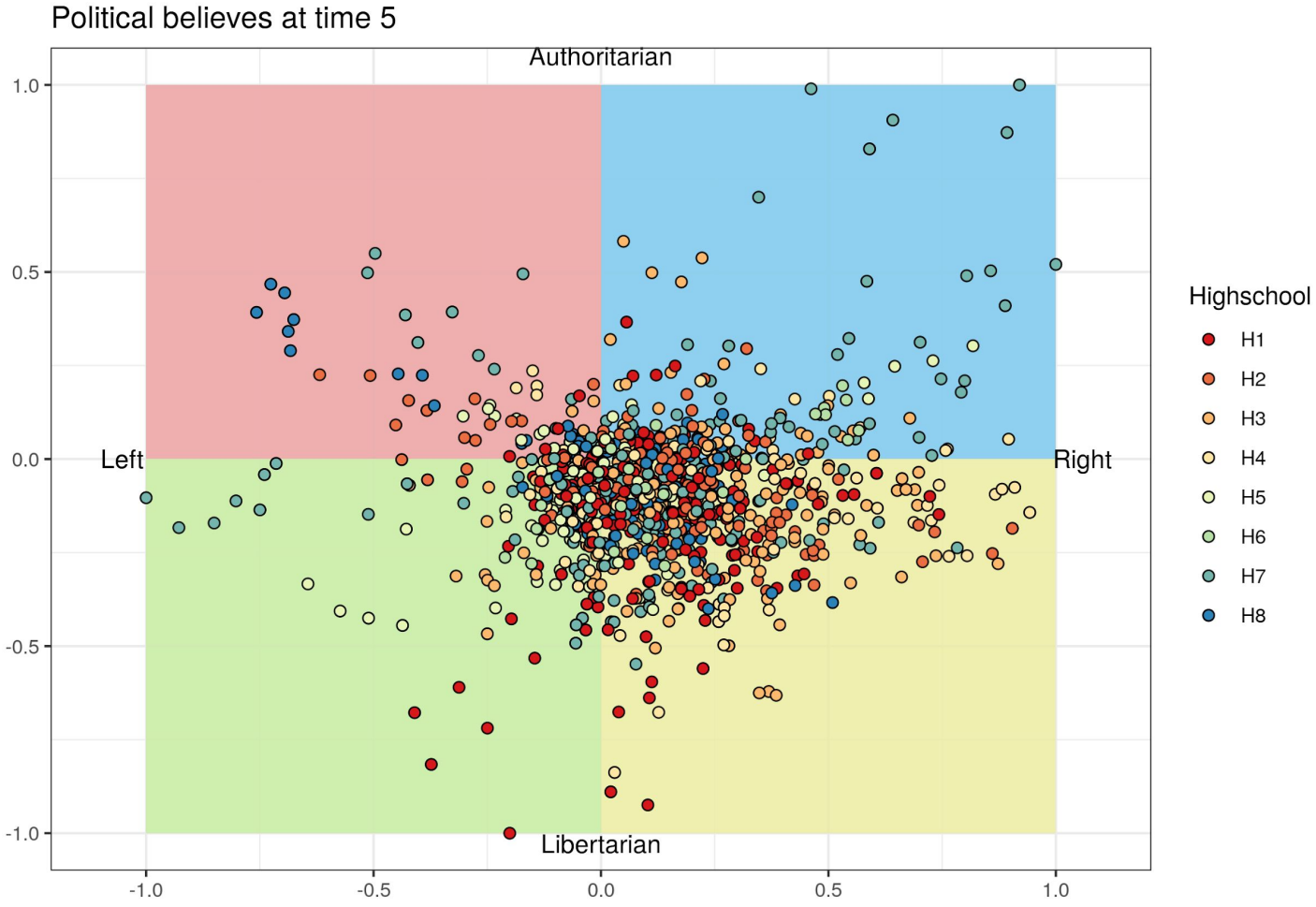
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 5
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Left
Right
Libertarian
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0.5
0.0
-0.5
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-1.0
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0.0
0.5
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 6
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
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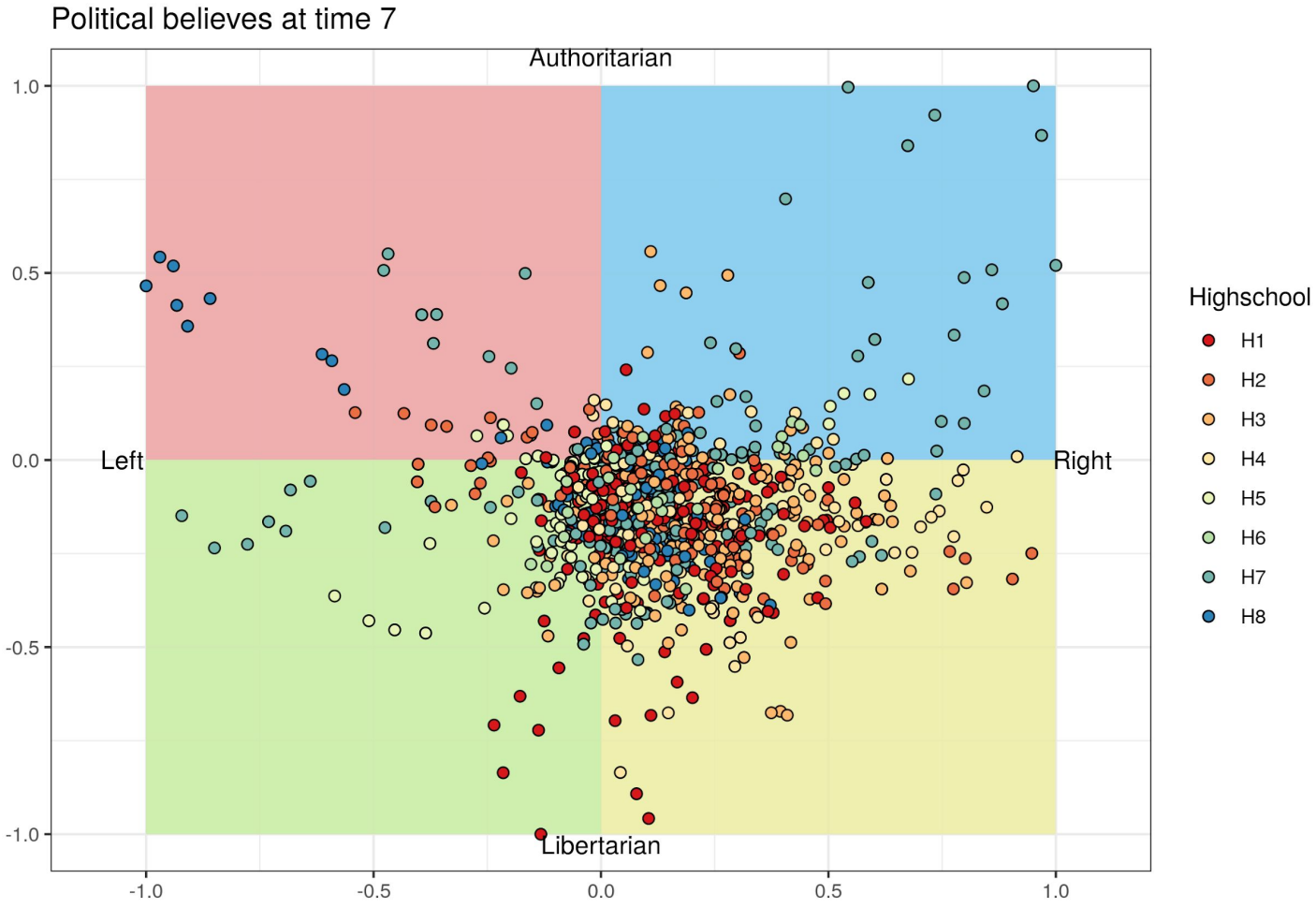
0.5
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 7
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Left
Right
Libertarian
1.0
0.5
0.0
-0.5
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Highschool
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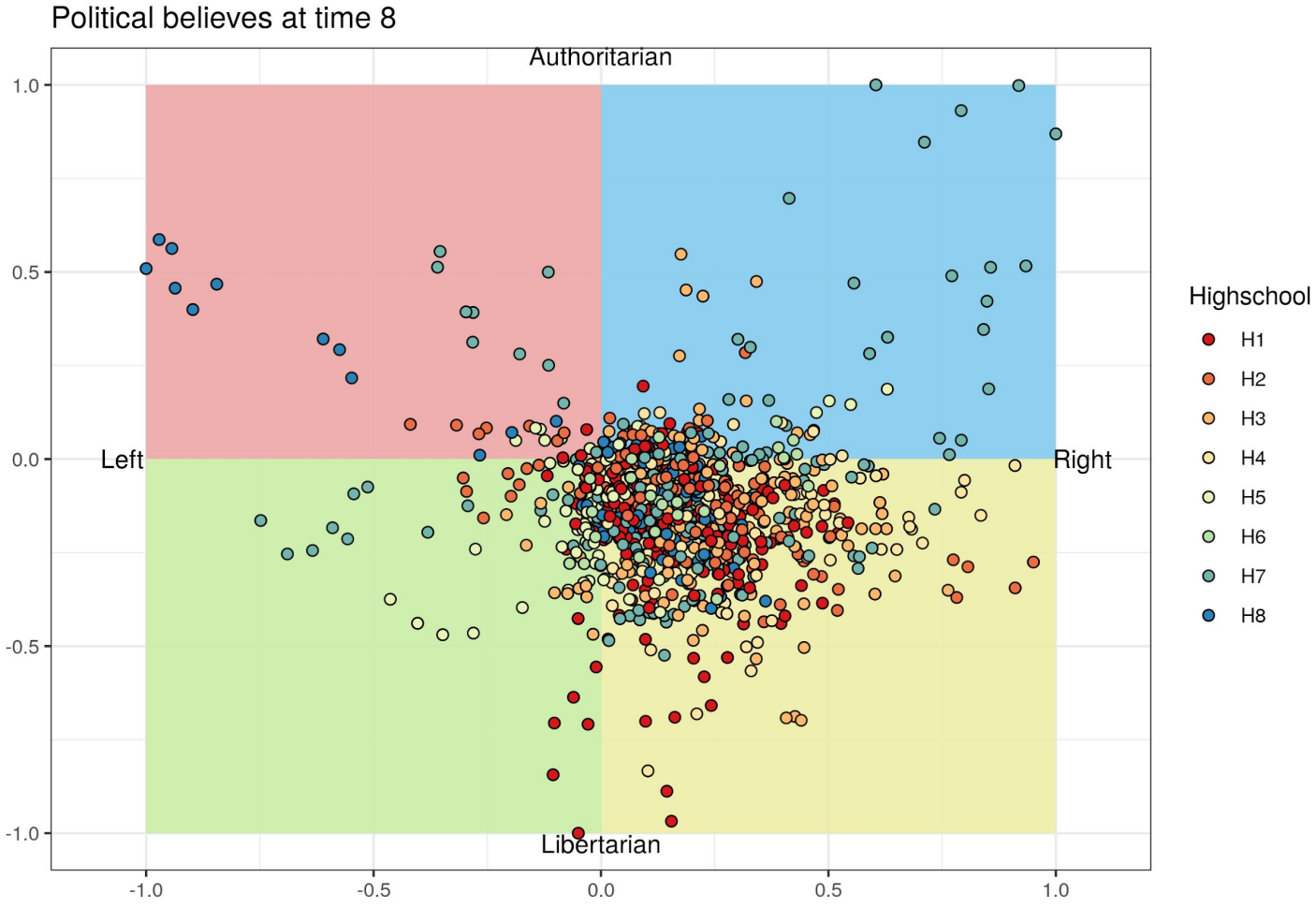
H8


Political believes at time 8
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Left
Right
Libertarian
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0.0
-0.5
-1.0
-1.0
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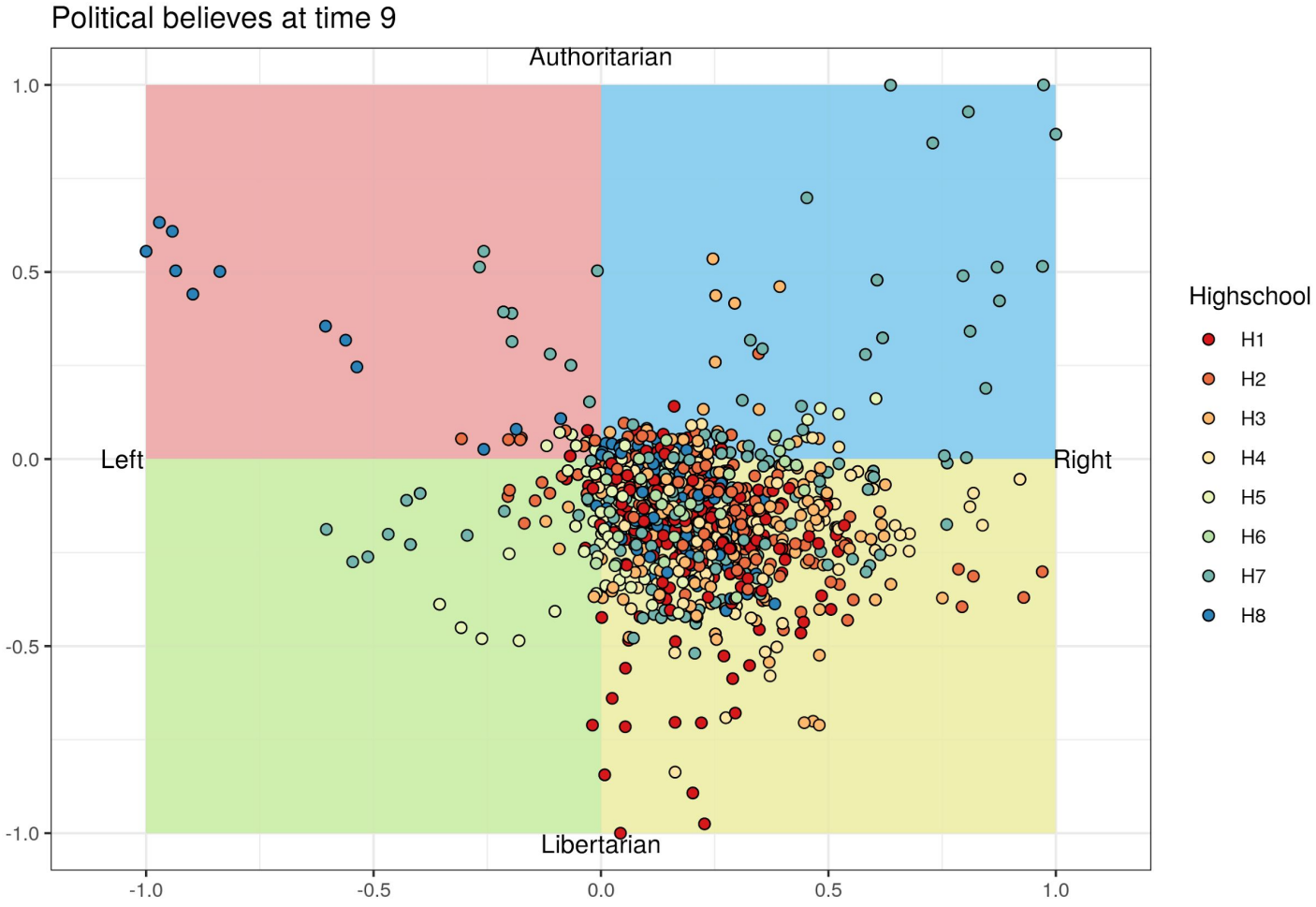
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 9
Authoritarian
Left
Right
Libertarian
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0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
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Highschool
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H4
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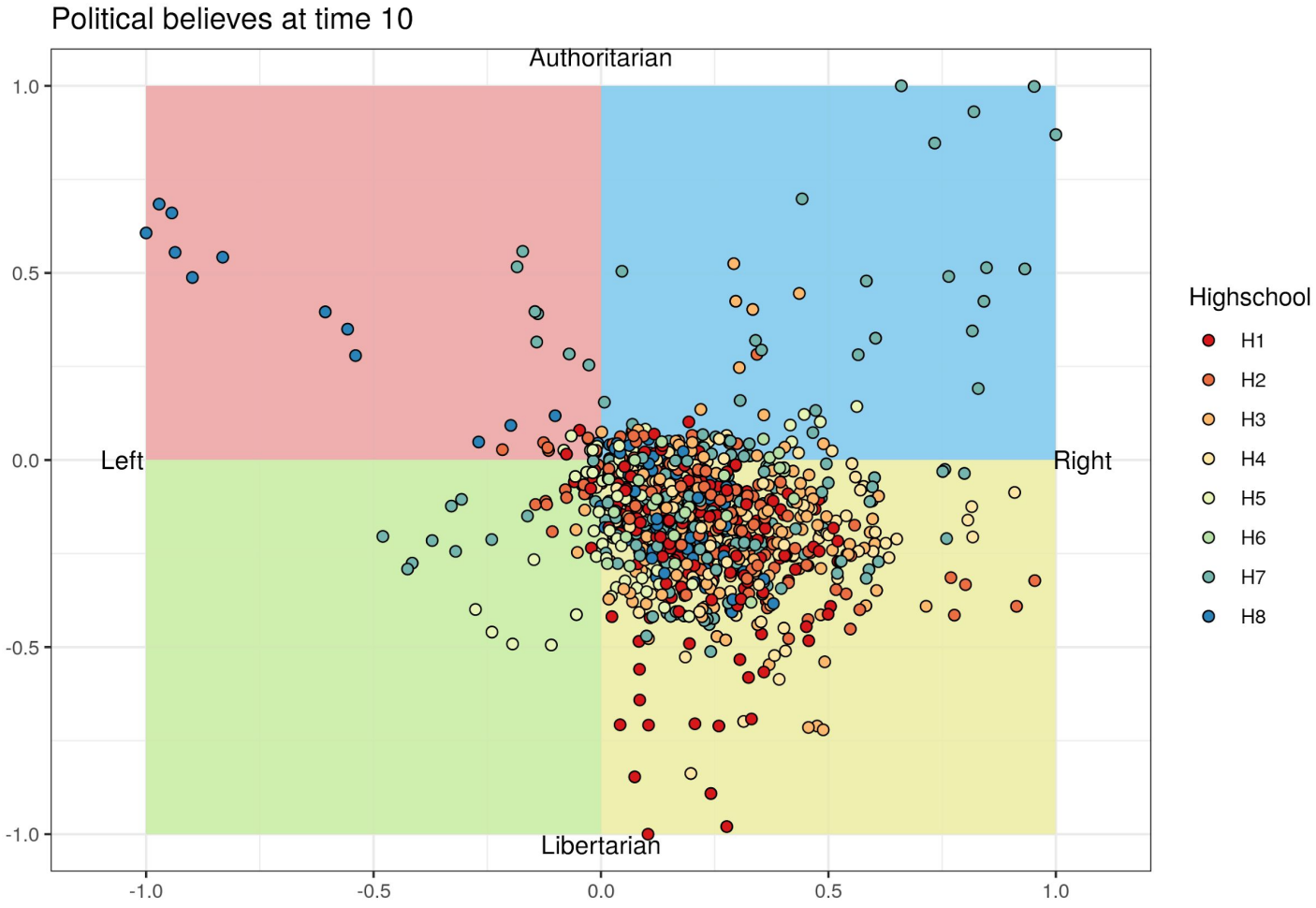
H6
H7
H8


Political believes at time 10
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Left
Right
Libertarian
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0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
Highschool
H1
H2
H3
H4
H5
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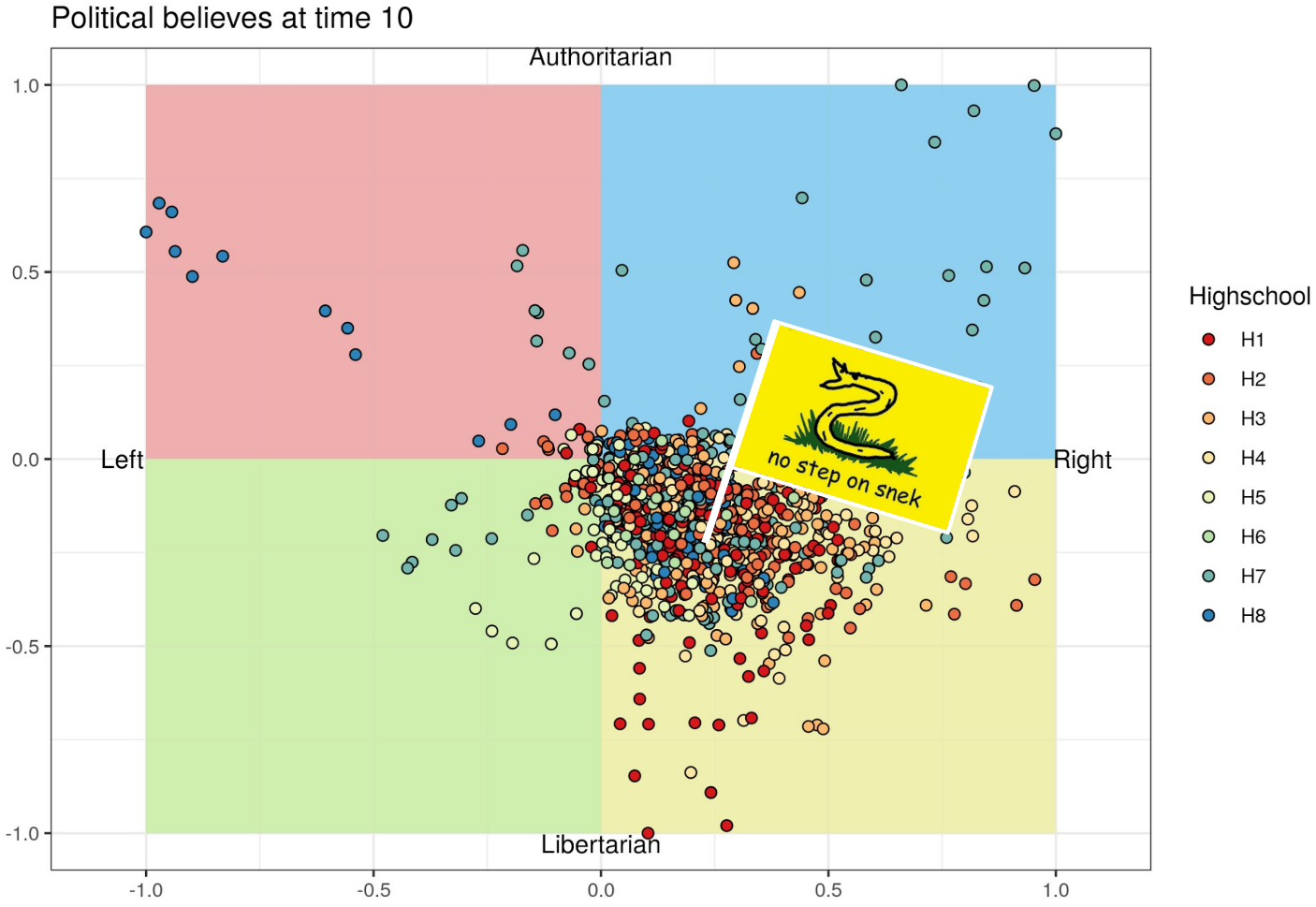
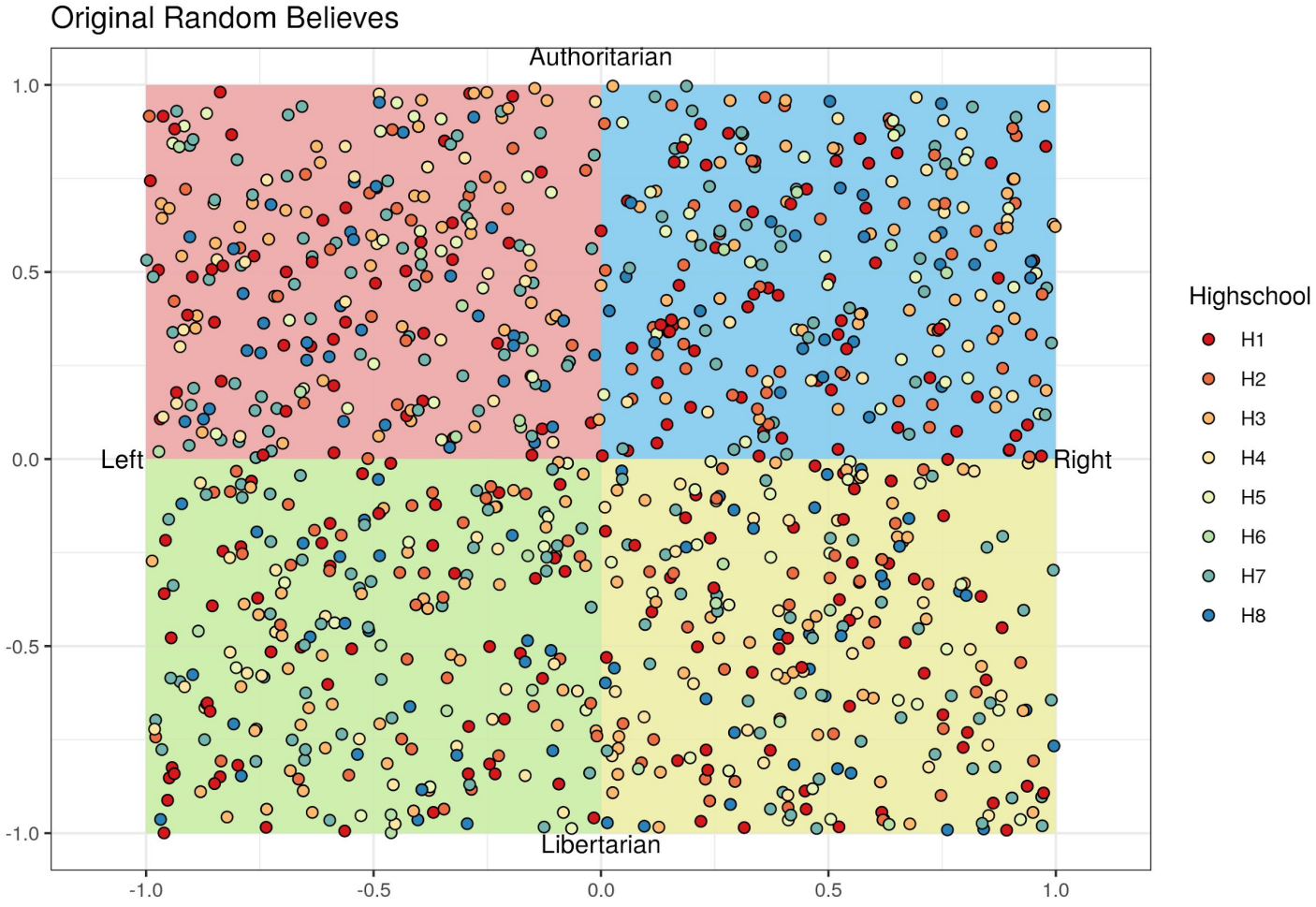
H7
H8


Political believes at time 10
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
no step on snek
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Original Random Believes
Authoritarian
Libertarian
Left
Right
1.0
0.5
0.0
-0.5
-1.0
-1.0
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Highschool
H1
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H3
H4
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H6
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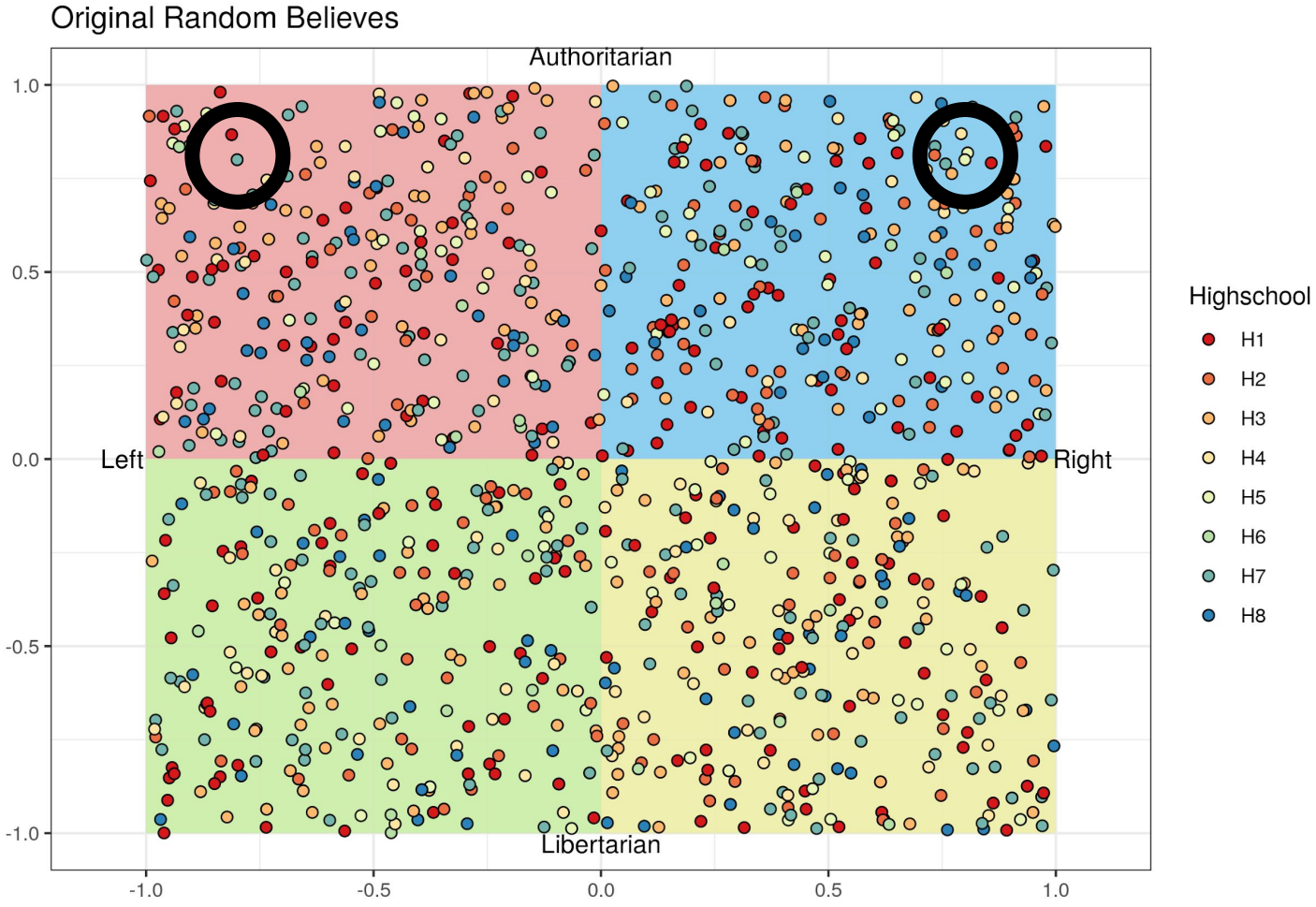
Original Random Believes
Authoritarian
Left
Right
Libertarian
1.0
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Highschool
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H3
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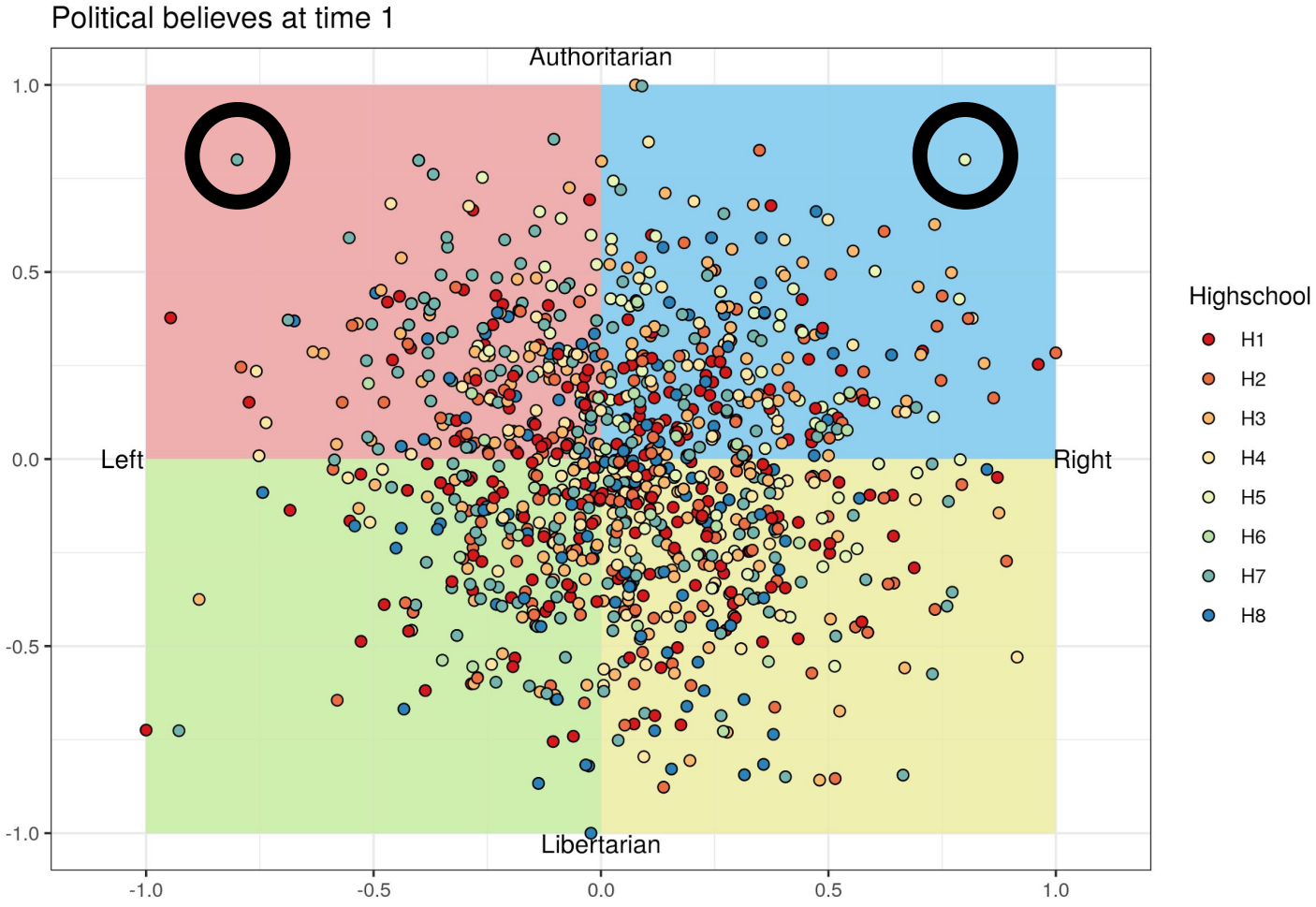
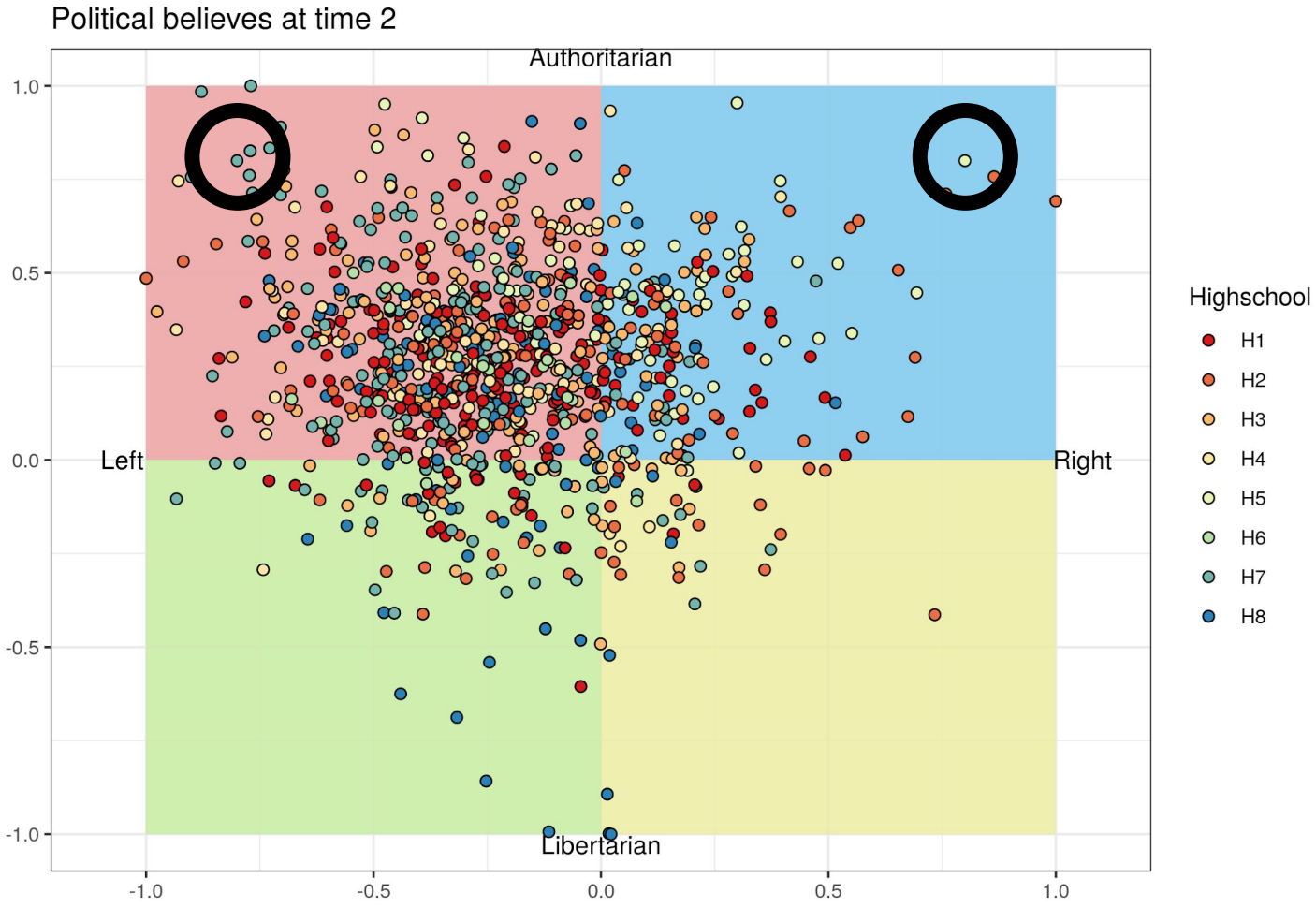

Political believes at time 1
Authoritarian
Libertarian
Left
Right
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 2
Authoritarian
Libertarian
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Right
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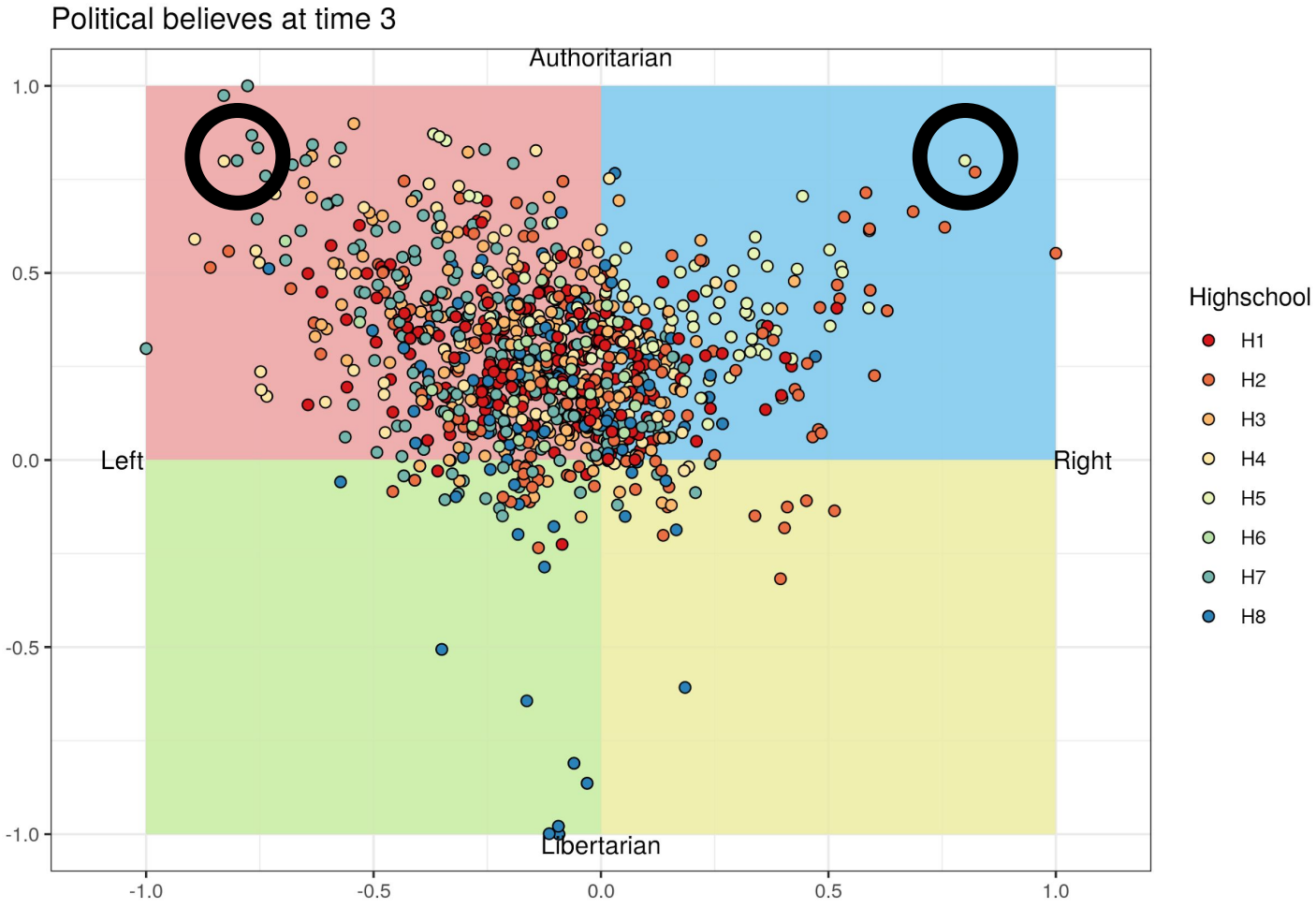
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8


Political believes at time 3
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
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Highschool
H1
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H6
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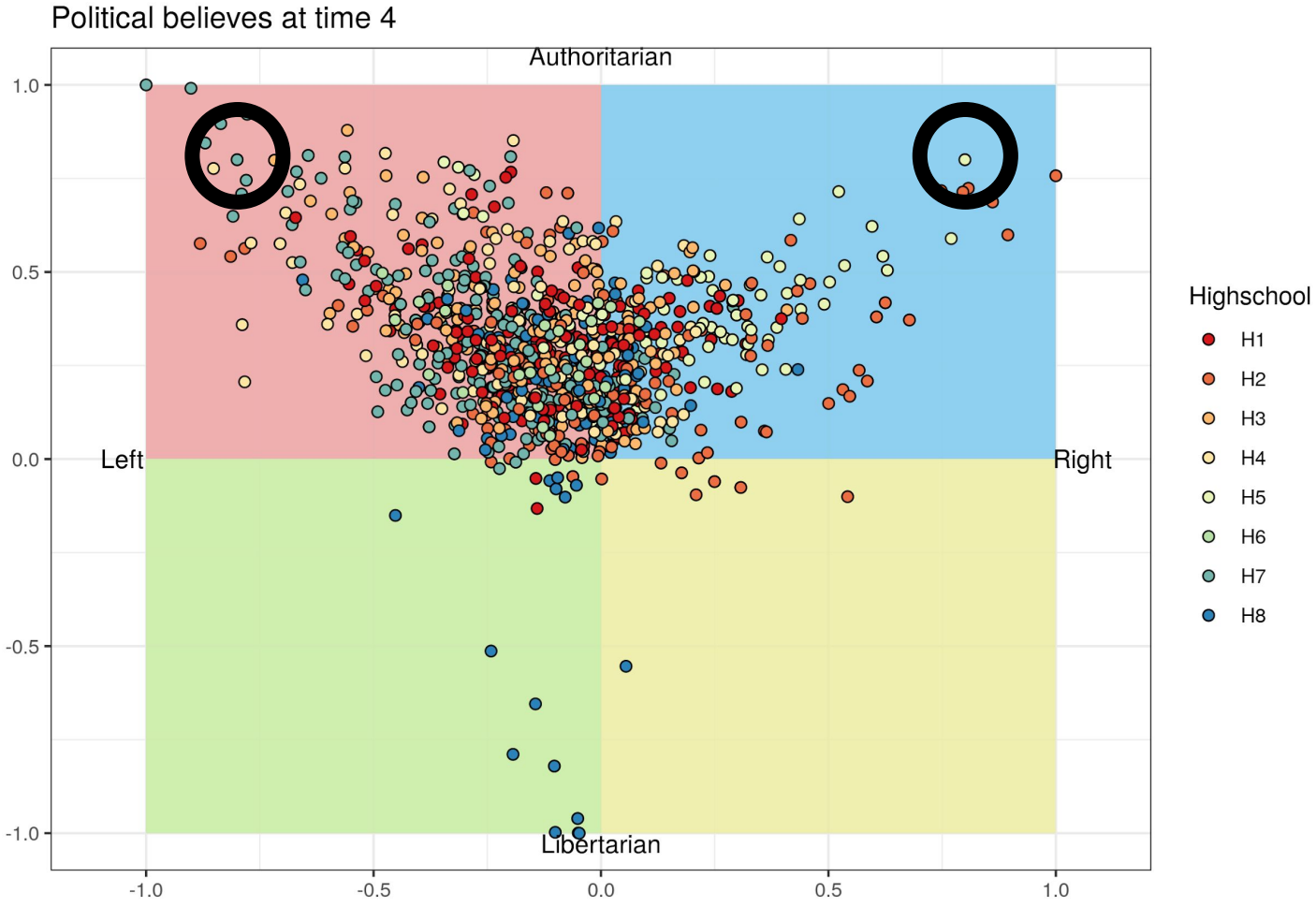
Political believes at time 4
Authoritarian
Libertarian
Left
Right
1.0
0.5
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-0.5
-1.0
-1.0
-0.5
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Highschool
H1
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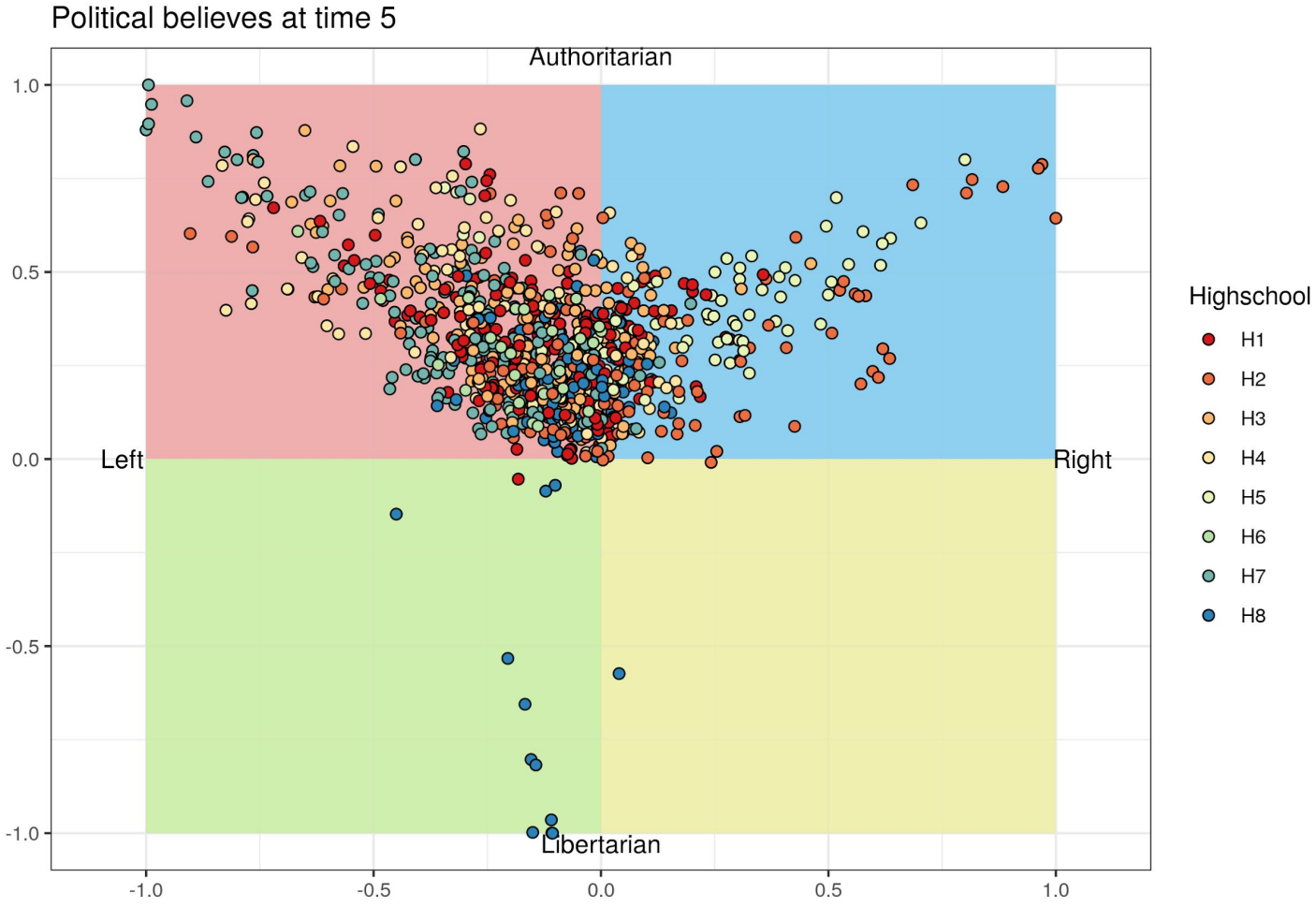
Political believes at time 5
Authoritarian
Left
Right
Libertarian
1.0
0.5
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-0.5
-1.0
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Highschool
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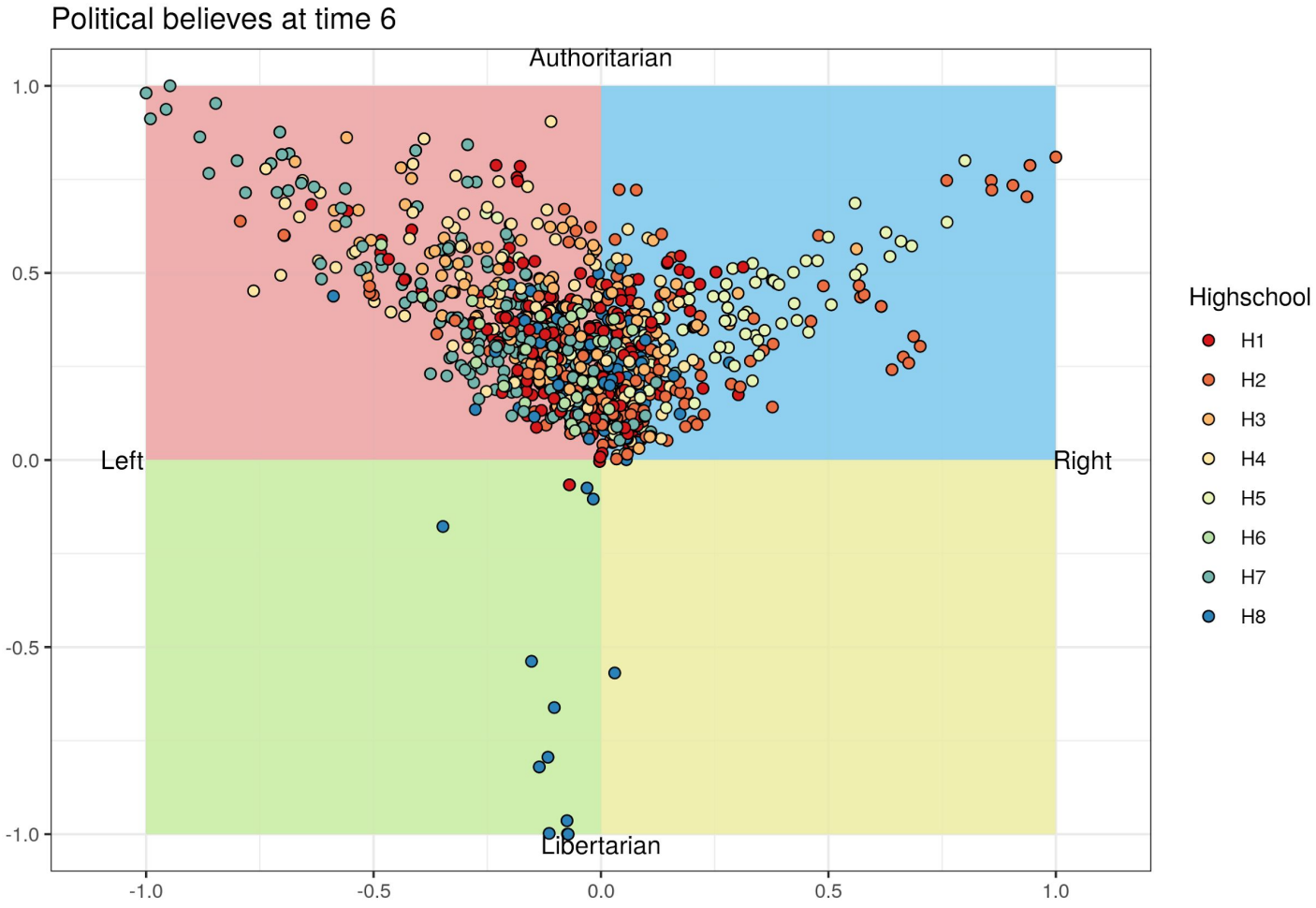
H8


Political believes at time 6
Authoritarian
Left
Right
Libertarian
1.0
0.5
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-0.5
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-1.0
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Highschool
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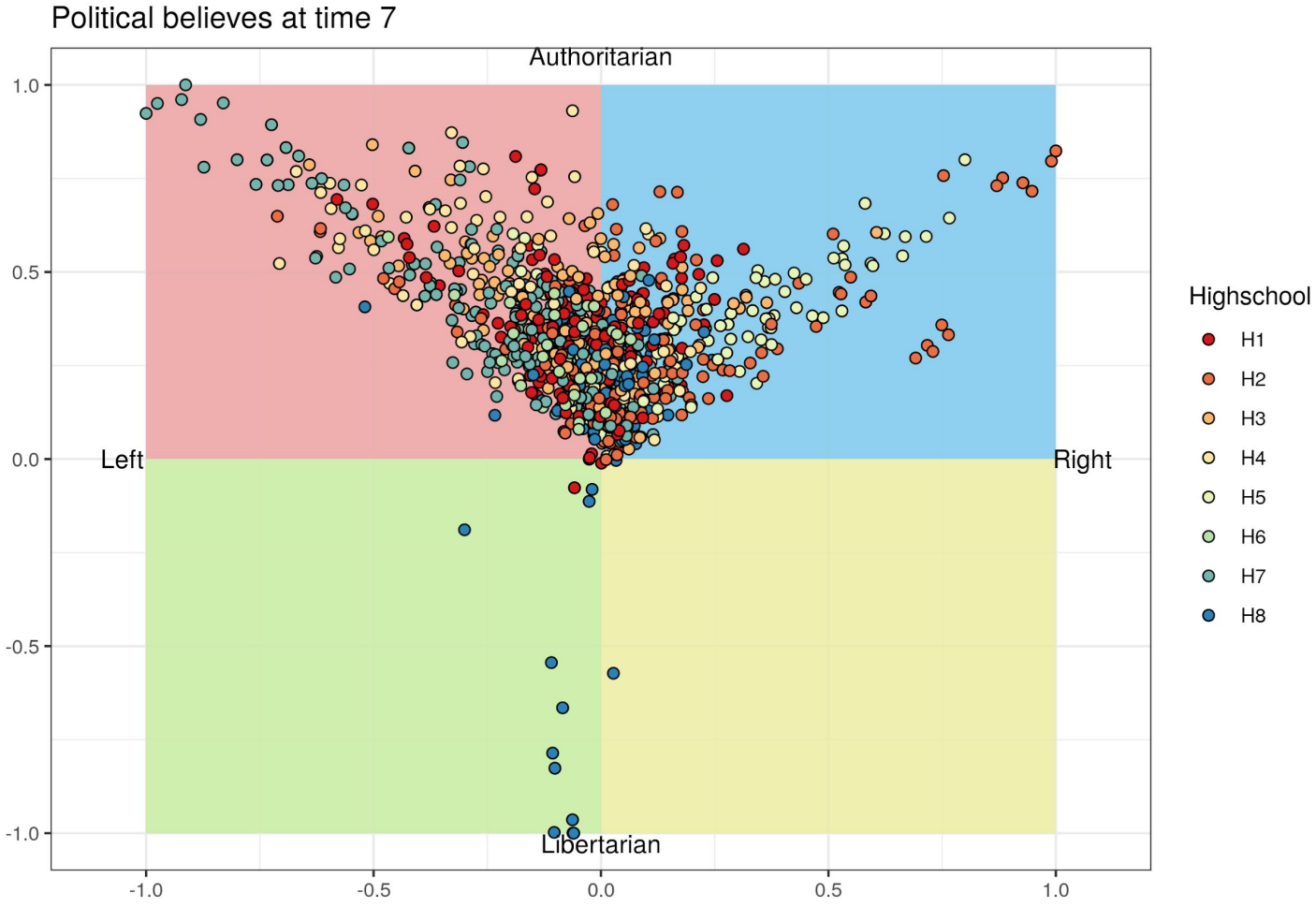
Political believes at time 7
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
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0.5
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Highschool
H1
H2
H3
H4
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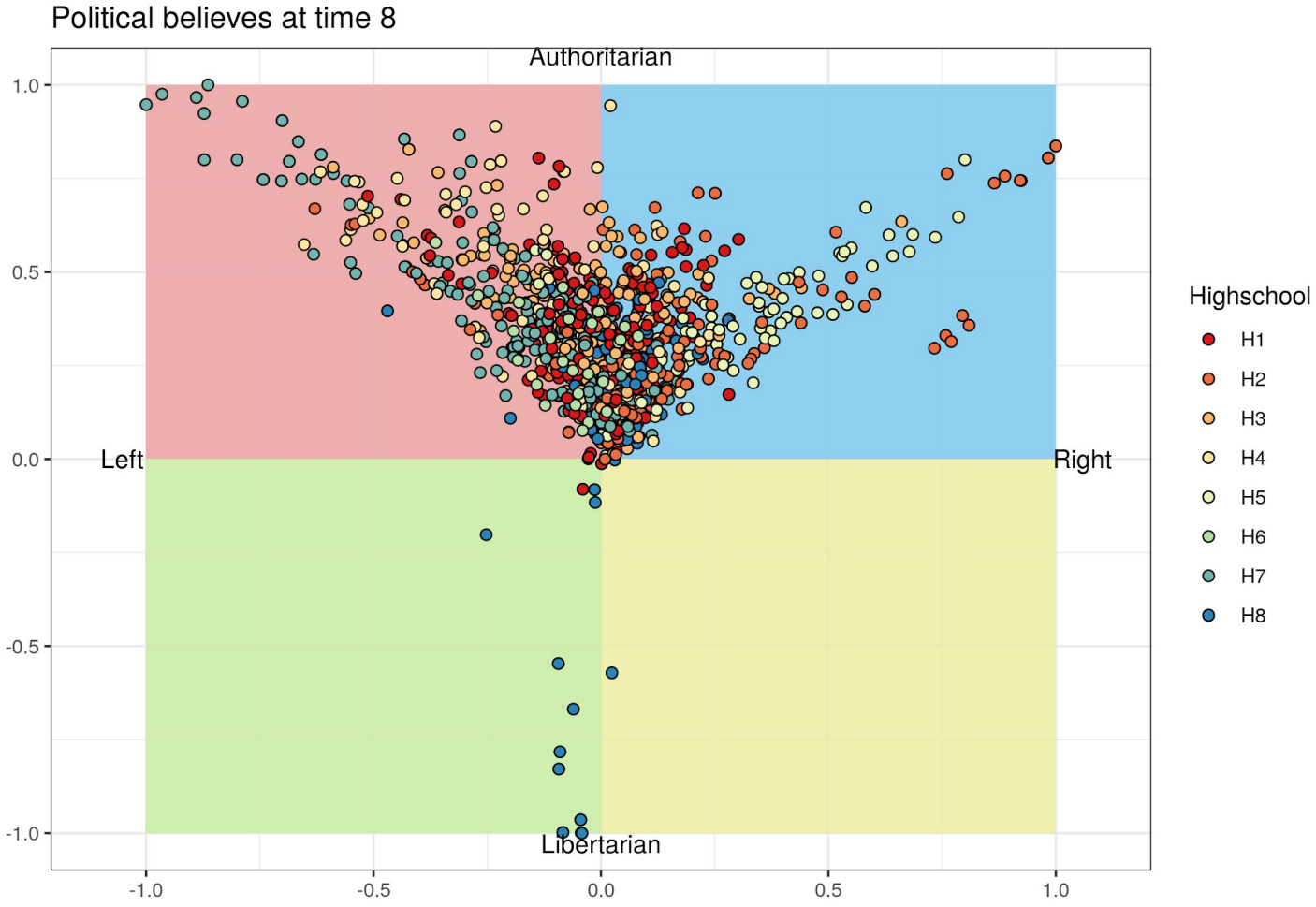
H6
H7
H8


Political believes at time 8
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
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1.0
Highschool
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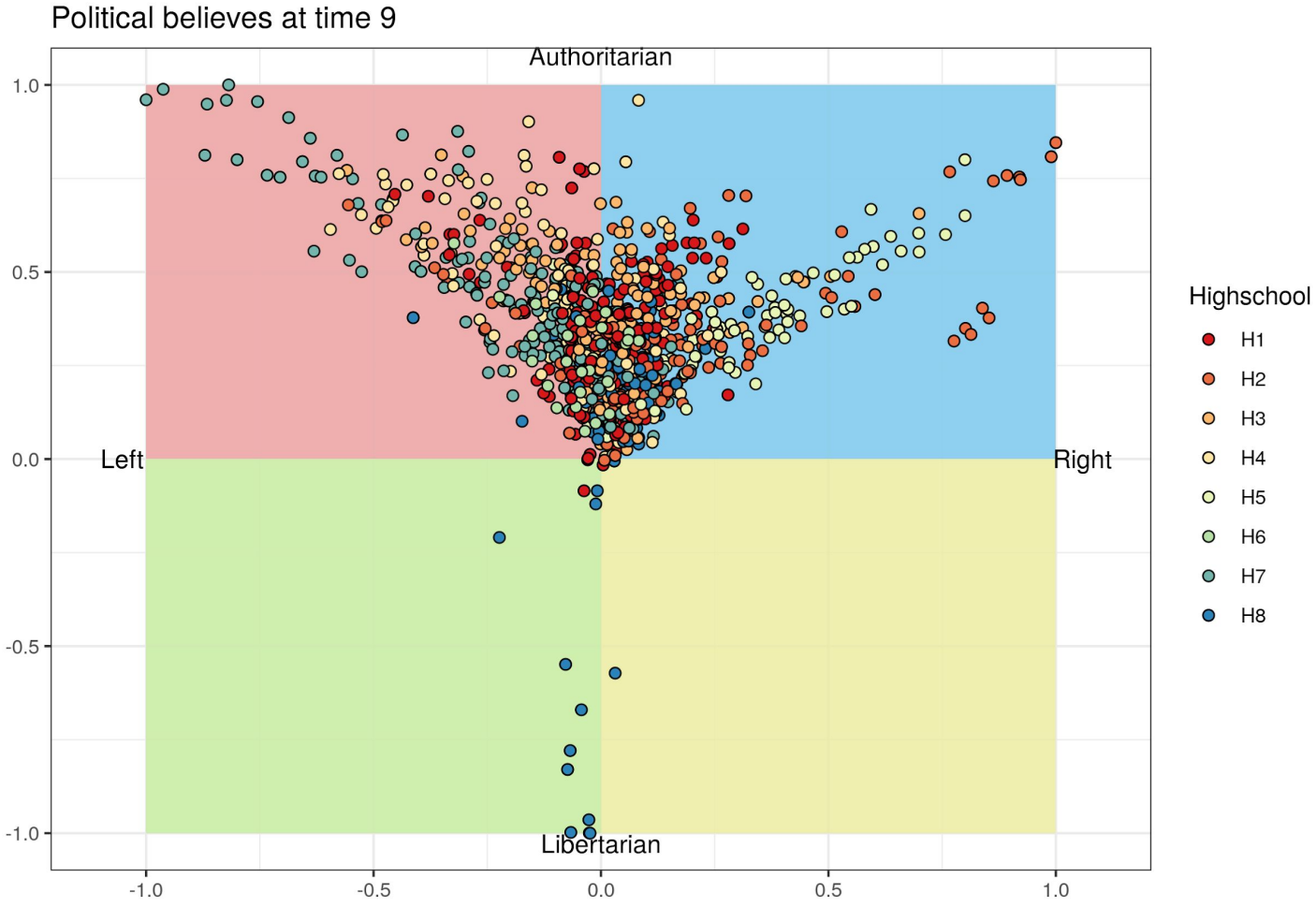
H6
H7
H8


Political believes at time 9
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
Highschool
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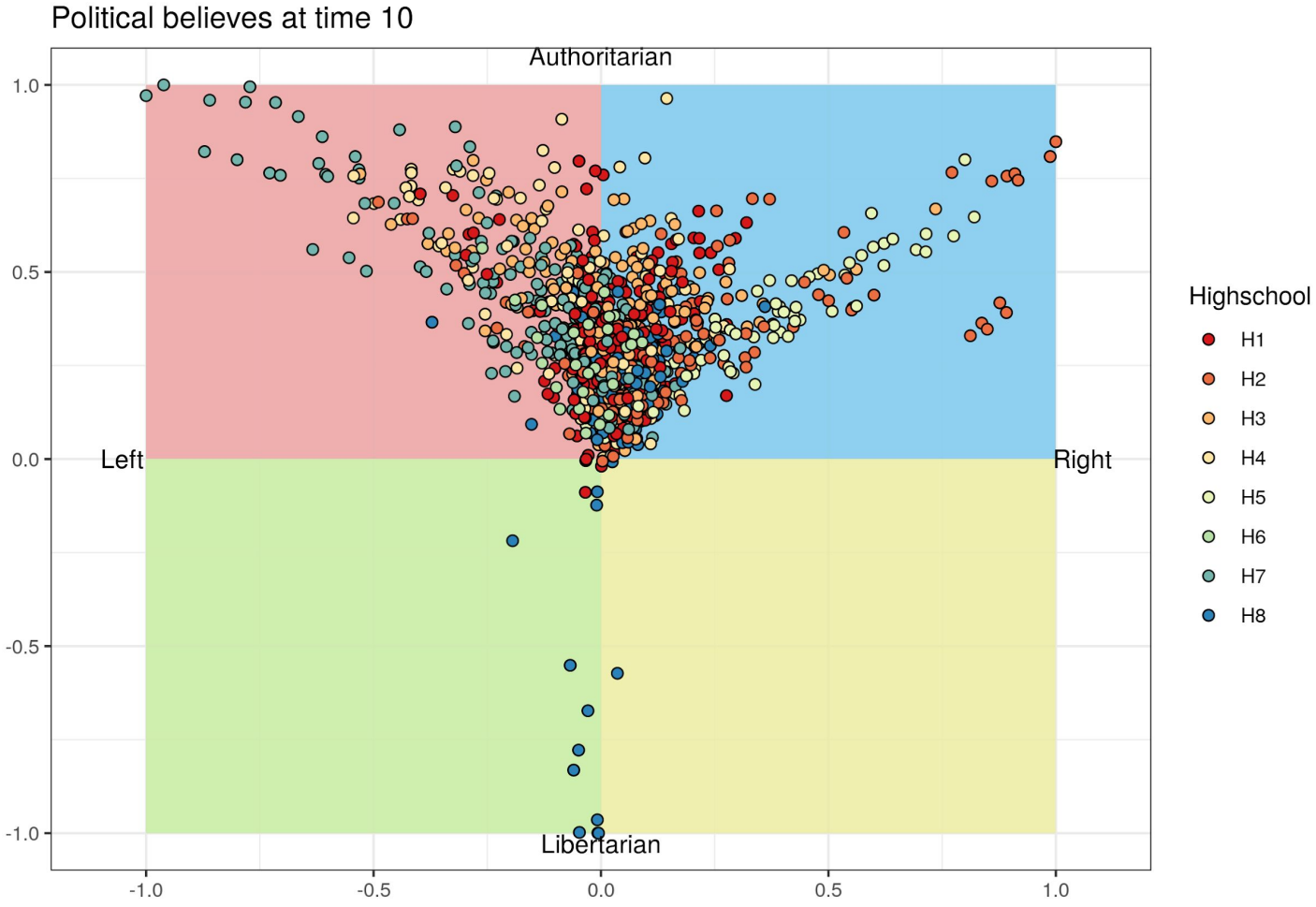
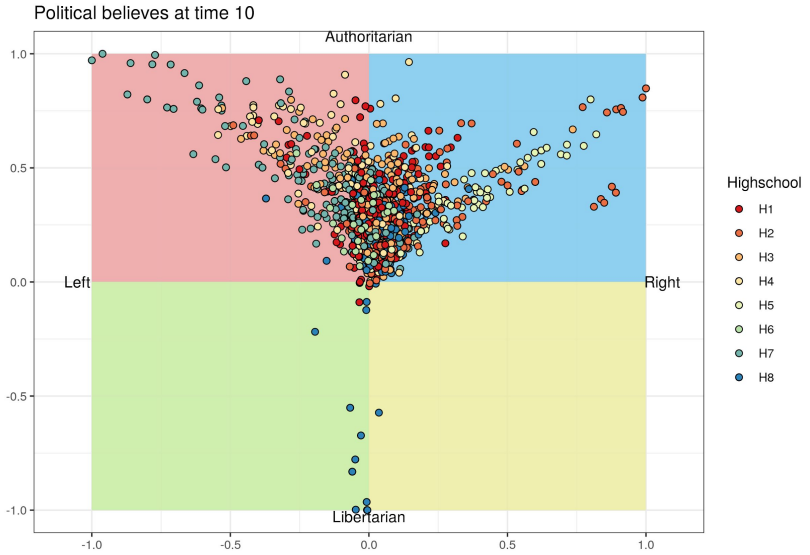
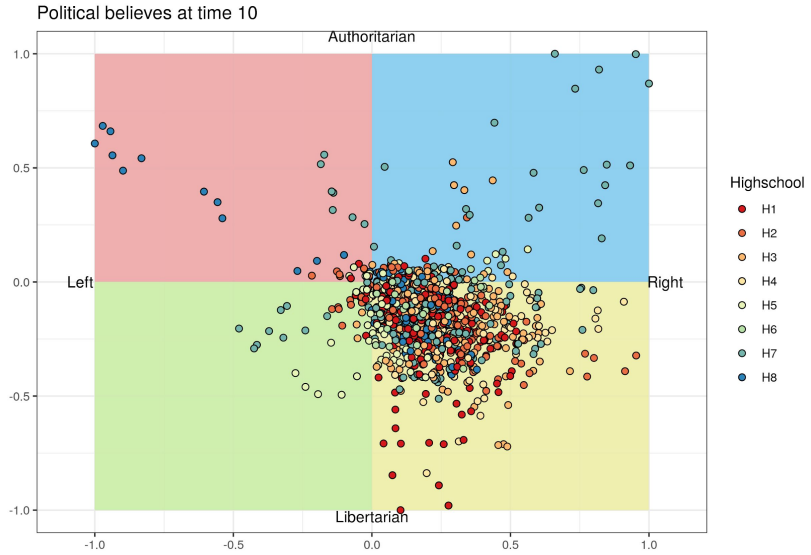
H2
H3
H4
H5
H6
H7
H8


Political believes at time 10
Authoritarian
Left
Right
Libertarian
1.0
0.5
0.0
-0.5
-1.0
-1.0
-0.5
0.0
0.5
1.0
Highschool
H1
H2
H3
H4
H5
H6
H7
H8

With 2 propagandists, out of 1034 students



Without propagandists



Linear Network Autocorrelation Model

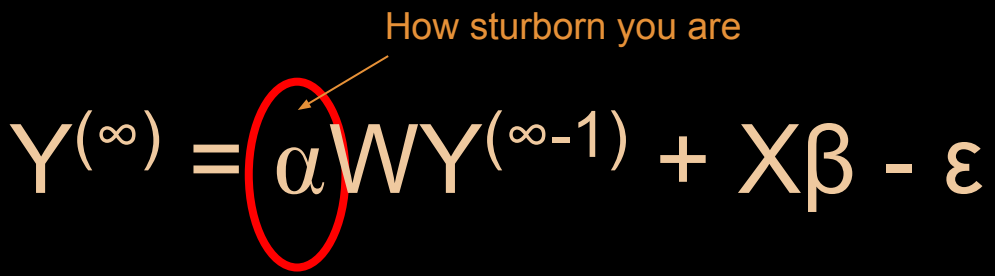
$Y^{(\infty)}$ = N x M matrix of converging opinions on M issues for N actors
X = N x K matrix of K exogenous variables that affect Y
β = K x M matrix of coefficients relating X to Y

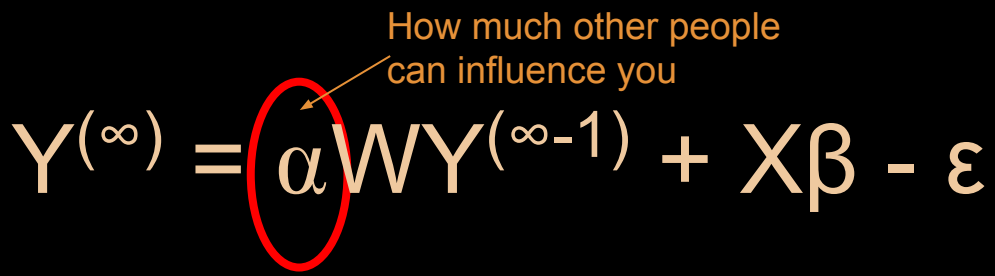
$$Y^{(\infty)} = \alpha W Y^{(\infty-1)} + X\beta - \varepsilon$$

random variable of error term is based on the assumption of being independently and identically distributed (*i.i.d.*) with mean zero and equal variances, σ^2

$Y^{(t)}$ = N x M matrix of current opinions on M issues for N actors
W = N x N matrix of interpersonal influences
α = a weight of the strenght of endogenous interpersonal influences

$$Y^{(\infty)} = \alpha W Y^{(\infty-1)} + X\beta - \varepsilon$$


How sturborn you are
$Y^{(\infty)} = \alpha WY^{(\infty-1)} + X\beta - \varepsilon$


How much other people
can influence you
$Y^{(\infty)} = \alpha WY^{(\infty-1)} + X\beta - \varepsilon$

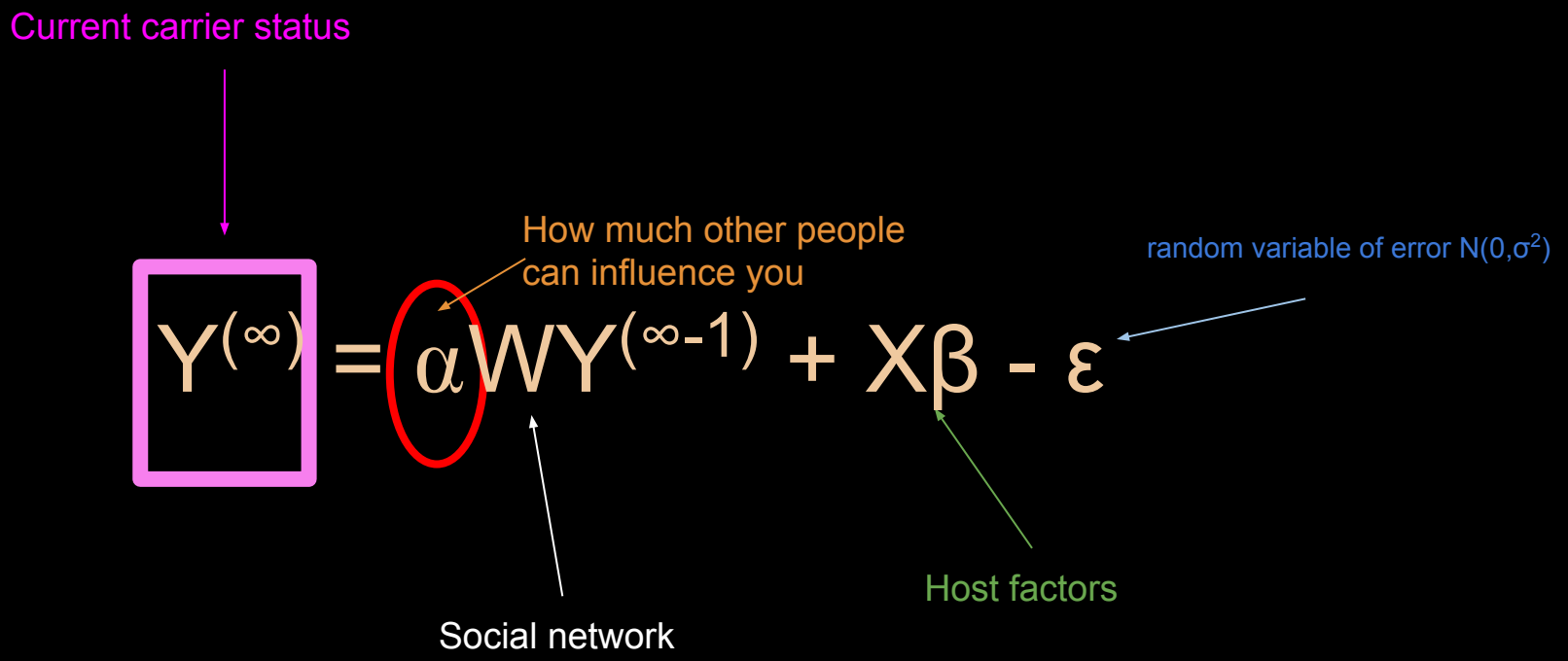

Current carrier status
How much other people can influence you
random variable of error N(0,σ²)
Y(∞) = αWY(∞-1) + Xβ - ε
Social network
Host factors

Table 5 Linear Network Autocorrelation Model with respect to each variable. Correlation between host risk factors and persistent nasal carrier status. The Tromsø Study Fit Futures 1.

	Beta estimate	Std Error	P-value
Direct culture persistent carrier			
ρ	**0.048**	**0.011**	***** <0.001**
Sex	-0.048	0.028	** 0.0016
School	0.043	0.022	0.0542
BMI[a]	0.107	0.018	*** <0.001
Smoke	-0.012	0.027	0.650
Snuff	-0.001	0.020	0.968
Alcohol	0.038	0.021	0.066
Physical Activity[b]	0.033	0.012	** 0.008
Enrichment persistent carrier			
ρ	**0.060**	**0.010**	***** <0.001**
Sex	-0.017	0.030	0.578
School	0.087	0.024	*** <0.001
BMI[a]	0.085	0.019	*** <0.001
Smoke	-0.019	0.029	0.517
Snuff	0.001	0.022	0.950
Alcohol	0.070	0.022	** 0.002
Physical Activity[b]	0.046	0.014	*** <0.001

[a] BMI = body mass index

[b] Physical activity: None = reading, watching TV, or other sedentary activity; Low level = walking, cycling, or other forms of exercise at least 4 hours a week; Medium level = participation in recreational sports, heavy outdoor activities with minimum duration of 4 hours a week; High level = Participation in heavy training or sports competitions regularly several times a week.

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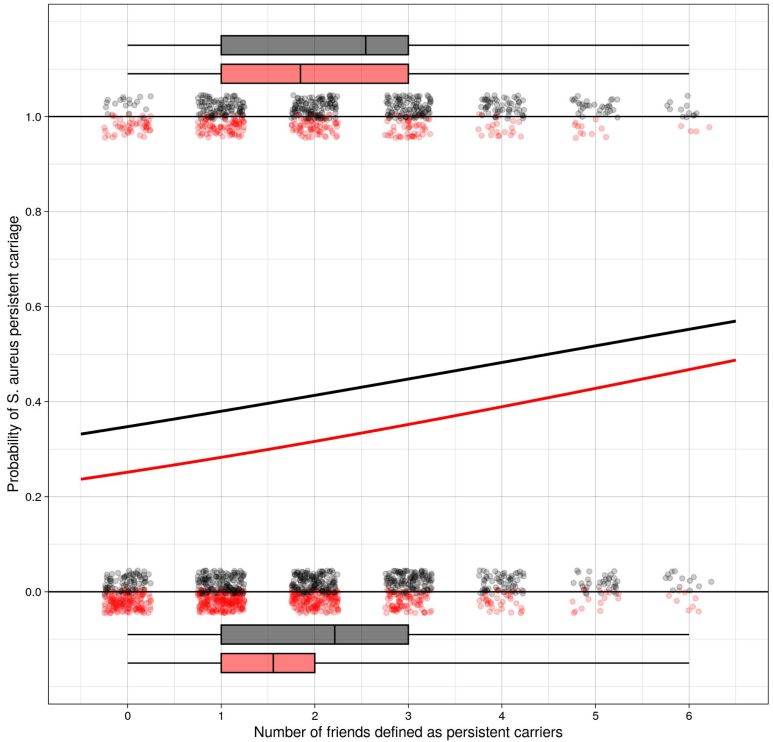
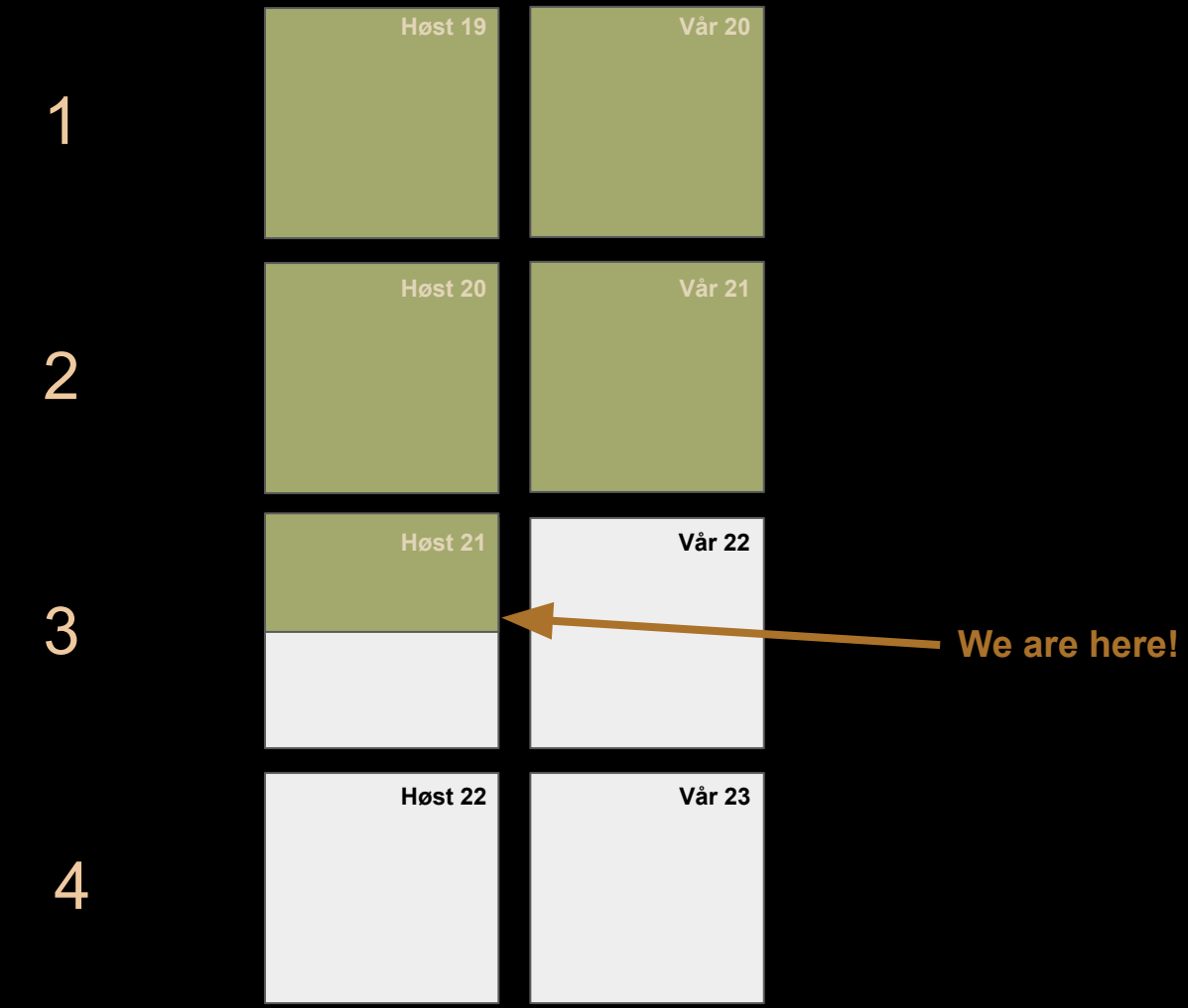
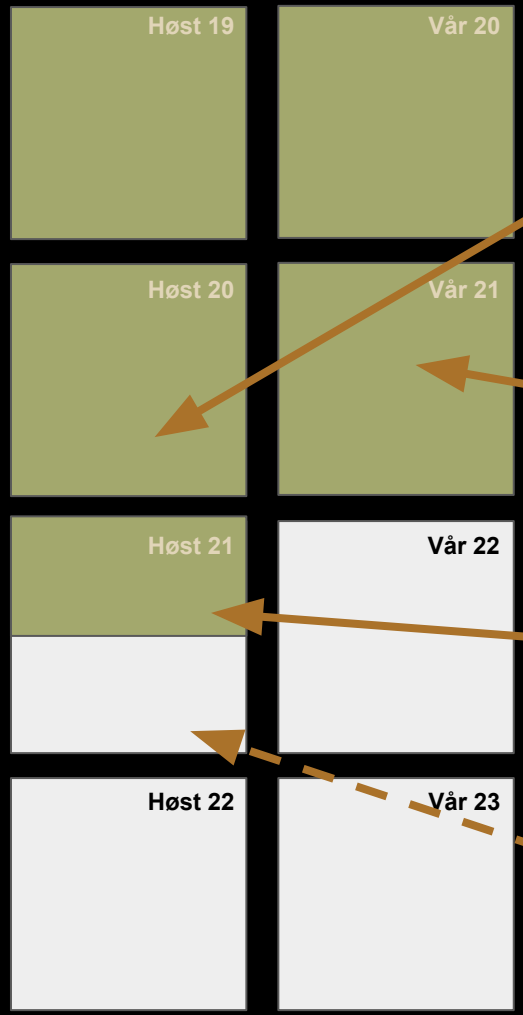
Logistic Regression between total friends who are carriers and probability of carrier status



CHAPTER 4:
PhD Progress, present and future


1
2
3
4
Høst 19
Vår 20
Høst 20
Vår 21
Høst 21
Vår 22
Høst 22
Vår 23
We are here!



Reliability Engineering & System Safety
Volume 202, October 2020, 107010

TTT-SiZer: A graphic tool for aging trends recognition

Maria Luz Gámiz [a], Rafael Nozal-Cañadas [b], Rocío Raya-Miranda [a]

Research in Social and Administrative Pharmacy
Volume 17, Issue 12, December 2021, Pages 2054-2061

An introduction to network analysis for studies of medication use

Mohsen Askar [a], Raphael Nozal Cañadas [b], Kristian Svendsen [a]

Statistical learning of $1/f$ noise from on-wafer MOSFETs

- *Staphylococcus aureus* carriers share the same SPA-type in a general youth population

Dina B. Stensen*[1,2], Rafael A. Nozal Cañadas*[3], Lars Småbrekke[4], Karina Olsen[5], Christopher Sivert Nielsen[6,7], Kristian Svendsen[4], Anne Merethe Hanssen[8], Johanna UE Sollid[8], Gunnar Skov Simonsen[5,8], Lars-Ailo Bongo[3], Anne-Sofie Furberg[1,5,9]

Reliability Engineering & System Safety
Volume 202, October 2020, 107010

TTT-SiZer: A graphic tool for aging trends recognition

Maria Luz Gámiz [a], Rafael Nozal-Cañadas [b], Rocío Raya-Miranda [a]

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https://doi.org/10.1016/j.ress.2020.107010

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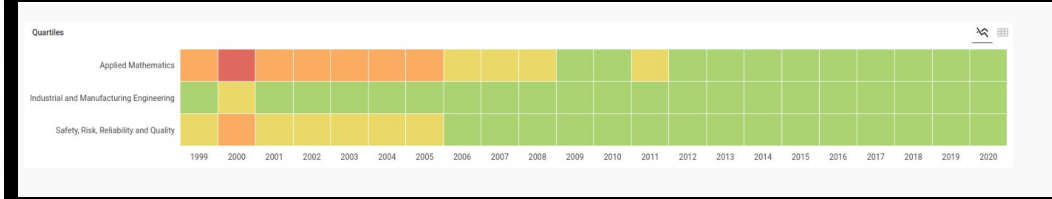
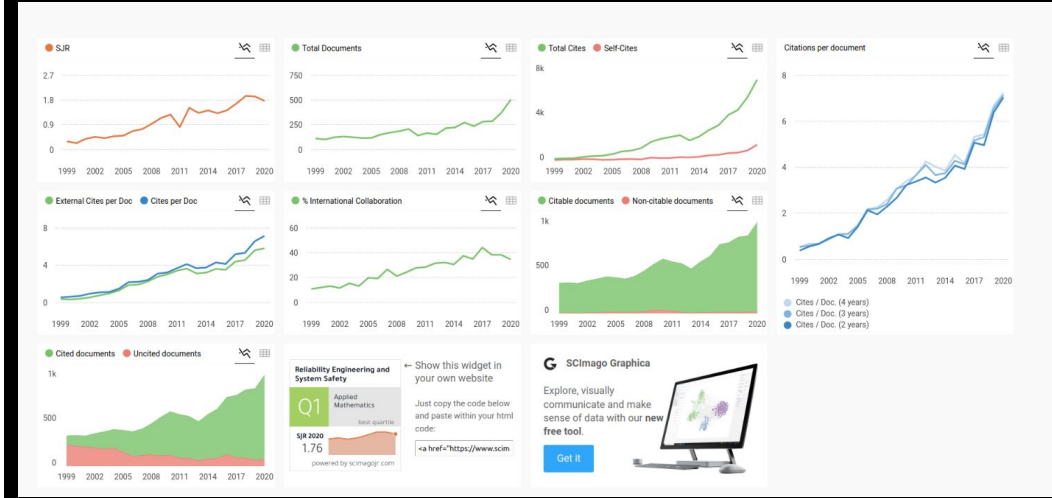
Highlights

- Scale-space inference through SiZer map.
- Smooth estimation of the Total-Time-on-Test transform.
- Visual testing for lifetime model selection.
- Aging properties evaluation based on data.
- Implementation of methods in by means of self-programmed code in R.





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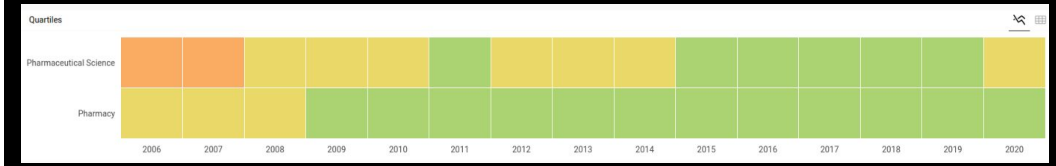
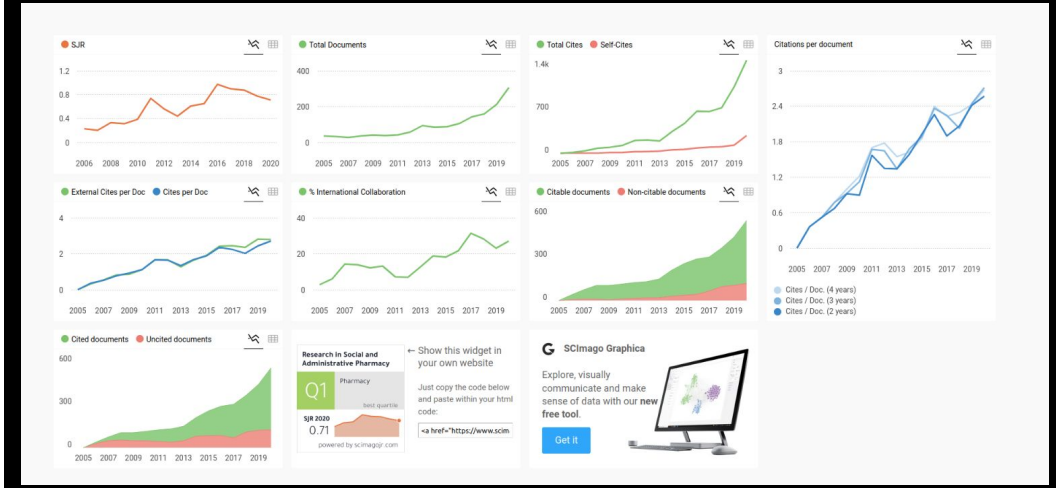
https://doi.org/10.1016/j.sapharm.2021.06.021

Highlights

- Network Analysis introduces a new way to study the medication use in a population.
- The paper explains common Network Analysis terminology.
- Prescription data can be used to create networks of co-medication.

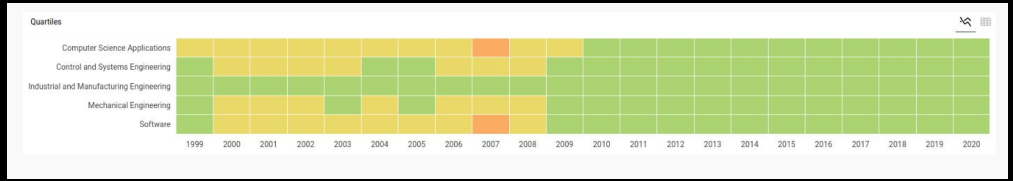


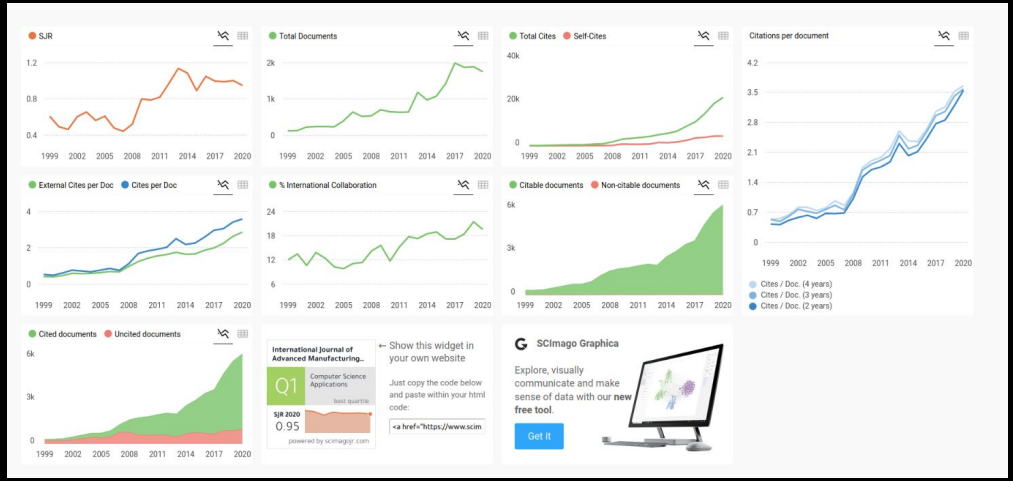


Statistical learning of $1/f$ noise from on-wafer MOSFETs

1 Introduction

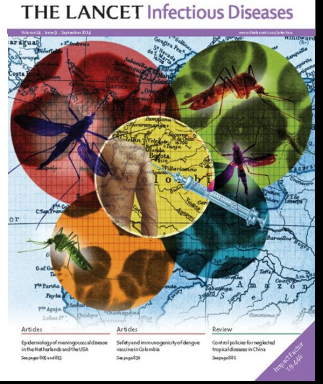
In the last 50 years, the Semiconductor Industry has decreased the dimensions of transistors significantly to almost atomic dimensions with the aim of increasing the production of transistors each year. This down-scaling strategy is leading to serious consequences. On the one hand, transistors become cheaper to manufacture, are able to work at faster switching rates and consume less power. On the other hand, due to physical causes and production defects, variability or rather distorsion are being induced thus causing signal fluctuations. These phenomena are not preventable at all and are becoming more and more important for the Semiconductor Industry, affecting to lower signal working levels (see reference [1] in masterthesis). One of the most important consequences is that the aggressive scaling of MOS transistors has decreased the current signals down to the level where they are not significantly higher than the fluctuations induced by carrier trapping phenomena (see reference [2]). Therefore, a lot of effort have been done to improve the quality and decrease noise inside the devices. One of the potential investigation issues is the study of possible correlations between the switching threshold voltage and the noise characteristics. New insights in this sense can initiate further improvements (see reference [1]).





Staphylococcus aureus carriers share the same SPA-type in a general youth population

Dina B. Stensen*[1,2], Rafael A. Nozal Cañadas*[3], Lars Småbrekke[4], Karina Olsen[5], Christopher Sivert Nielsen[6,7], Kristian Svendsen[4], Anne Merethe Hanssen[8], Johanna UE Sollid[8], Gunnar Skov Simonsen[5,8], Lars-Ailo Bongo[3], Anne-Sofie Furberg[1,5,9]



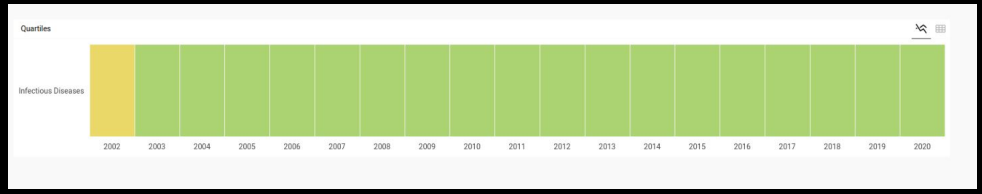
Abstract

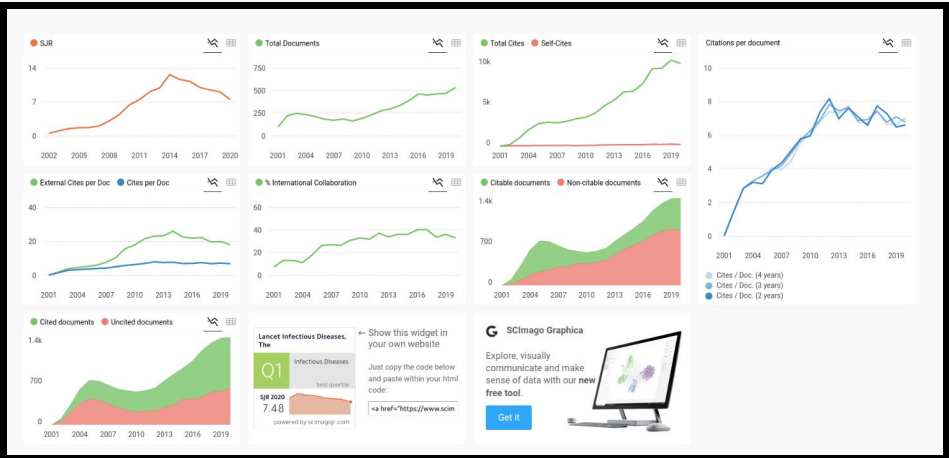
Background

Staphylococcus aureus is a common bacterial pathogen, and carriage is linked to increased risk of infection. Host risk factors for carriage include biological and lifestyle factors. However, no previous studies have used social network analysis to evaluate whether individuals have the same *S. aureus* genotype indicating direct transmission, or whether contagiousness of *S. aureus* carriage may be an indirect effect of contacts sharing the same characteristics or lifestyle.

Methods

Repeated nasal and throat swabs were collected from 1038 high school students in the population-based Fit Futures 1 health survey(2010-2011), with information on lifestyle and health. Social networks were constructed from information on social contact between participants in the cohort. Chi-square tests and odds ratios were used to evaluate the impact of host risk factors on *S. aureus* carriage, and bootstrap, t-tests, logistic regression and autocorrelation were used to measure the influence of the social networks.





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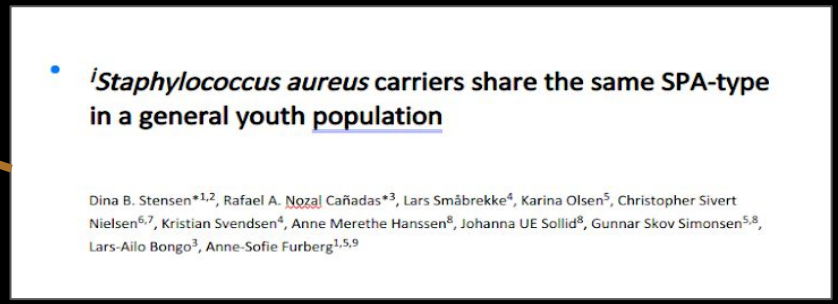

- *Staphylococcus aureus* carriers share the same SPA-type in a general youth population

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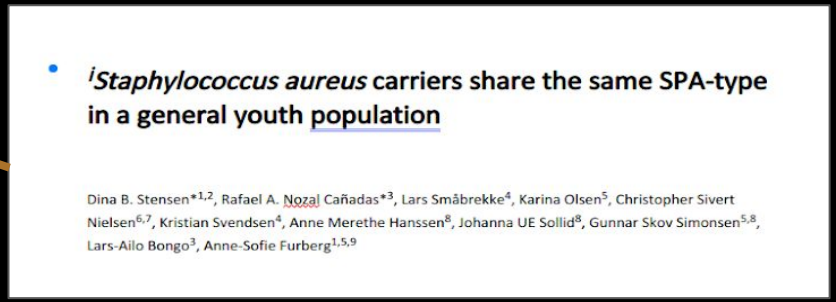
Finally got the complete data!



Staphylococcus aureus carriers share the same SPA-type in a general youth population

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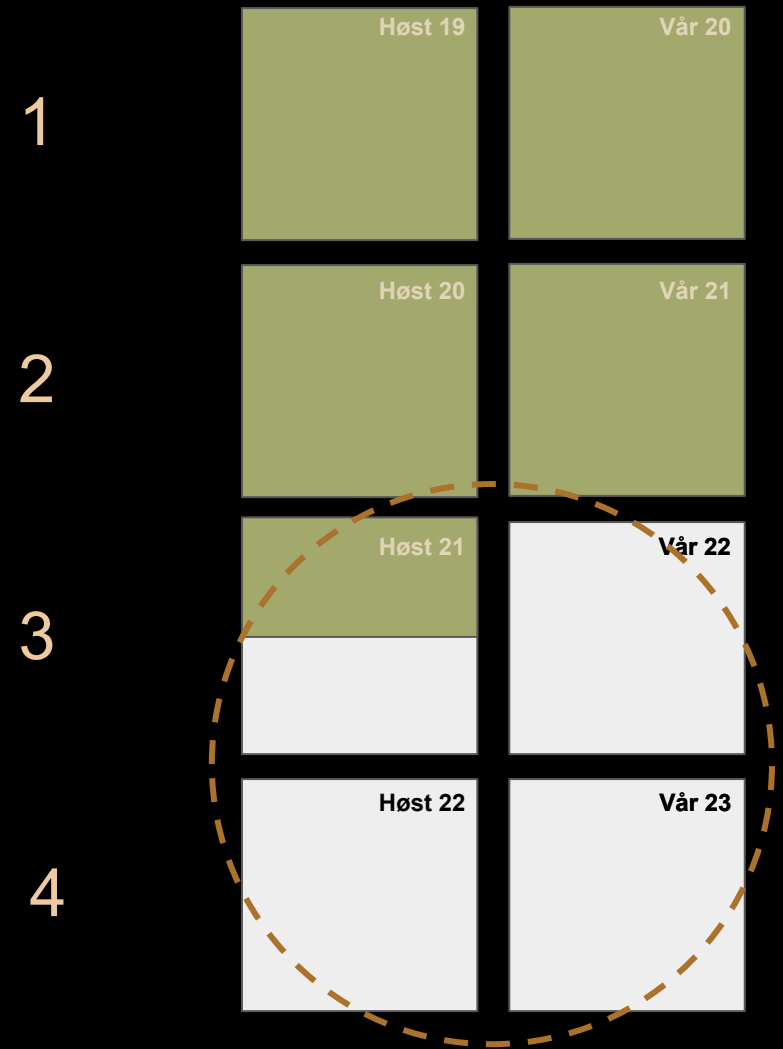
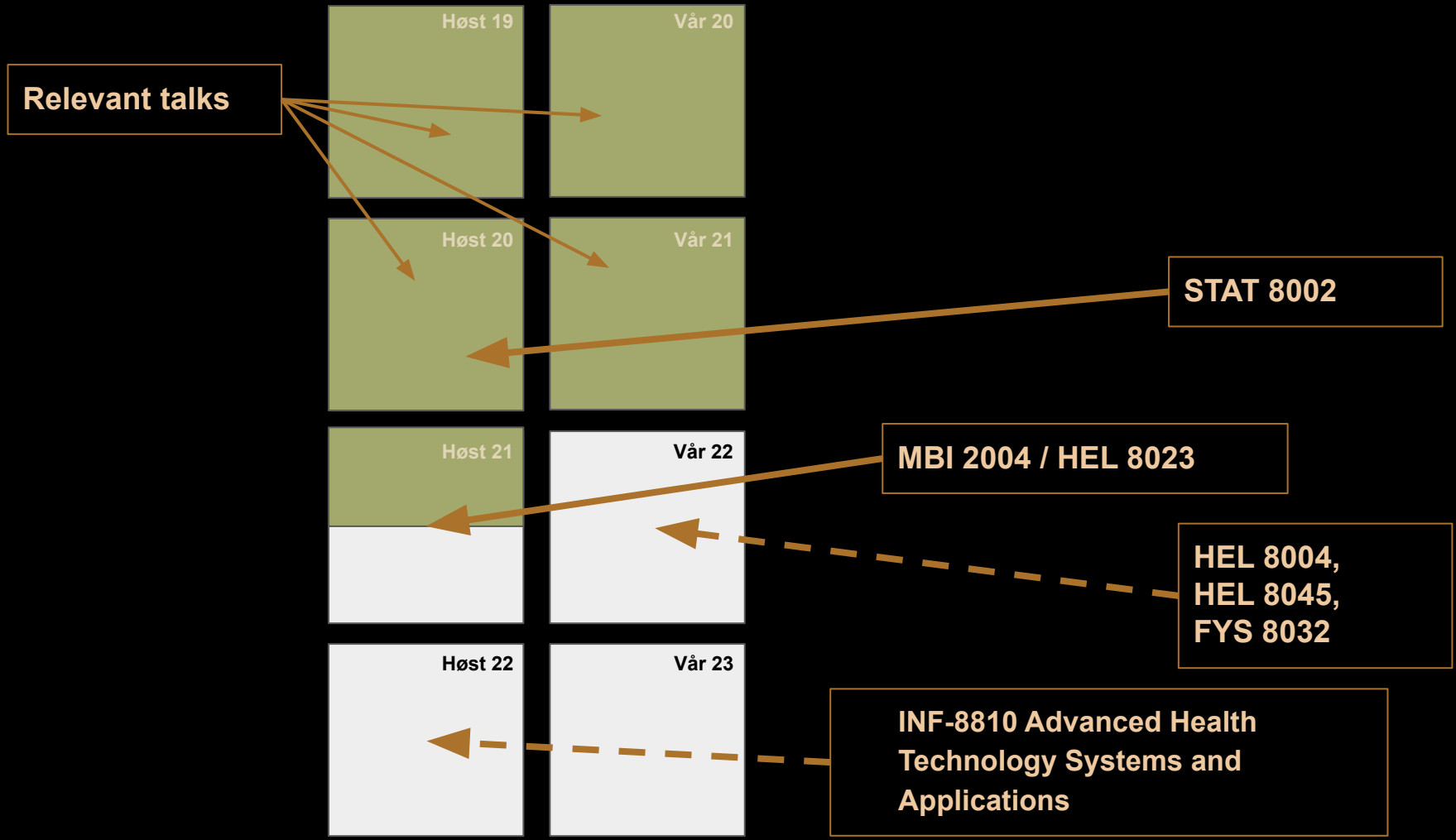


- Bacteria effects on Biomarkers
- FF2 / FF3
- Biological vs Social immunology
- Actual informatic paper about how this tools helps analyzing and replicating things.


Relevant talks
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STAT 8002
MBI 2004 / HEL 8023
HEL 8004,
HEL 8045,
FYS 8032
INF-8810 Advanced Health
Technology Systems and
Applications

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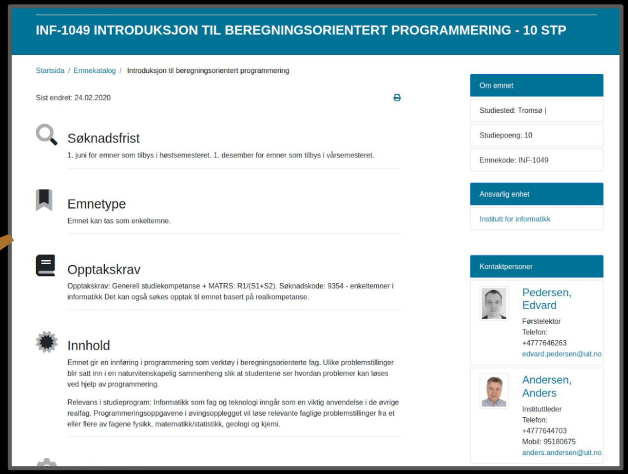
4	Høst 22	Vår 23



INF-1049 INTRODUKSJON TIL BEREGNINGSORIENTERT PROGRAMMERING - 10 STP

Startsida / Emnekatalog / Introduksjon til beregningsorientert programmering

Sist endret: 24.02.2020

Søknadsfrist

1. juni for emner som tilbys i høstsemesteret. 1. desember for emner som tilbys i vårsemesteret.

Emnetype

Emnet kan tas som enkeltemne.

Opptakskrav

Opptakskrav: Generell studiekompetanse + MATRS: R1/(S1+S2). Søknadskode: 9354 - enkeltemner i informatikk Det kan også søkes opptak til emnet basert på realkompetanse.

Innhold

Emnet gir en innføring i programmering som verktøy i beregningsorienterte fag. Ulike problemstillinger blir satt inn i en naturvitenskapelig sammenheng slik at studentene ser hvordan problemer kan løses ved hjelp av programmering.

Relevans i studieprogram: Informatikk som fag og teknologi inngår som en viktig anvendelse i de øvrige realfag. Programmeringsoppgavene i øvingsopplegget vil løse relevante faglige problemstillinger fra et eller flere av fagene fysikk, matematikk/statistikk, geologi og kjemi.

Om emnet

Studiested: Tromsø |

Studiepoeng: 10

Emnekode: INF-1049

Ansvarlig enhet

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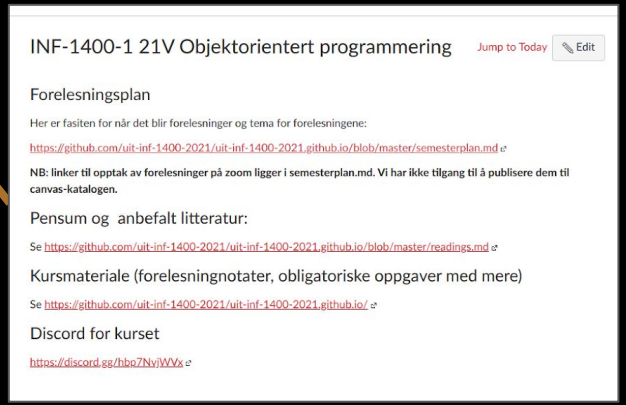

INF-1400-1 21V Objektorientert programmering

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Forelesningsplan

Her er fasiten for når det blir forelesninger og tema for forelesningene:

https://github.com/uit-inf-1400-2021/uit-inf-1400-2021.github.io/blob/master/semesterplan.md

NB: linker til opptak av forelesninger på zoom ligger i semesterplan.md. Vi har ikke tilgang til å publisere dem til canvas-katalogen.

Pensum og anbefalt litteratur:

Se https://github.com/uit-inf-1400-2021/uit-inf-1400-2021.github.io/blob/master/readings.md

Kursmateriale (forelesningnotater, obligatoriske oppgaver med mere)

Se https://github.com/uit-inf-1400-2021/uit-inf-1400-2021.github.io/

Discord for kurset

https://discord.gg/hbp7NvjWVx


(not)
The End
Continue 2022 - 2023