

Understanding the impact of residential segregation on the emergence of polarized attitudes towards ethnic minorities

Authors

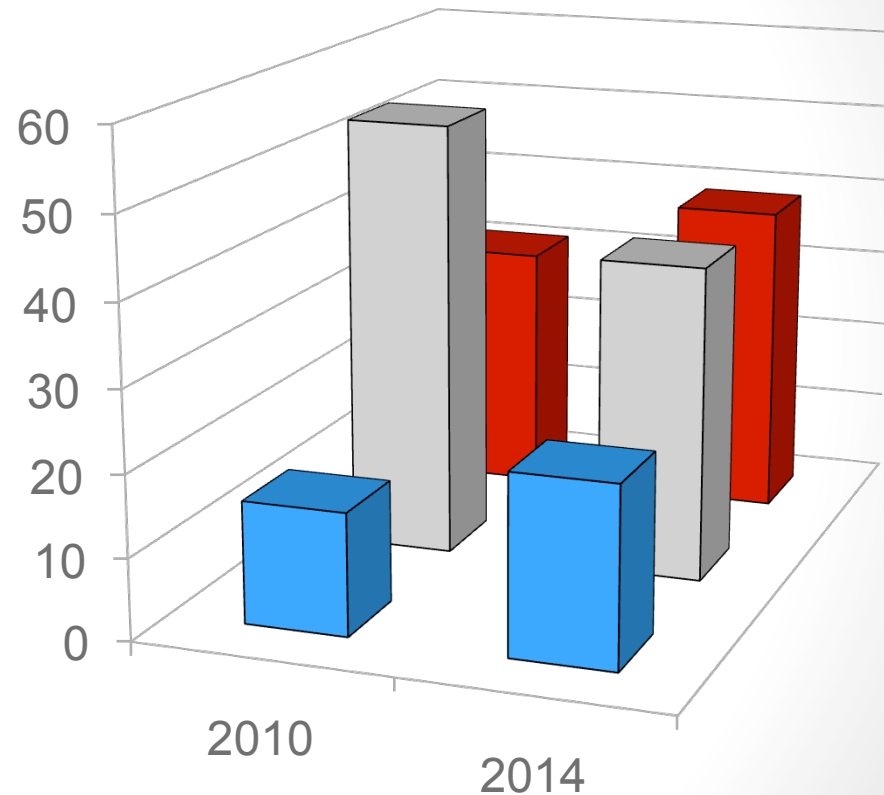
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Jochem Tolsma	(RU)
Michael Mäs	(RuG)

Polarized attitudes towards minorities

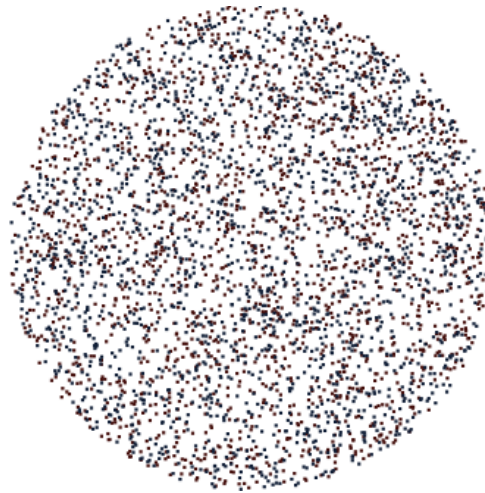
Do you generally think positively or negatively about Muslims in the Netherlands?

- (very) positive
- neutral or no opinion
- (very) negative

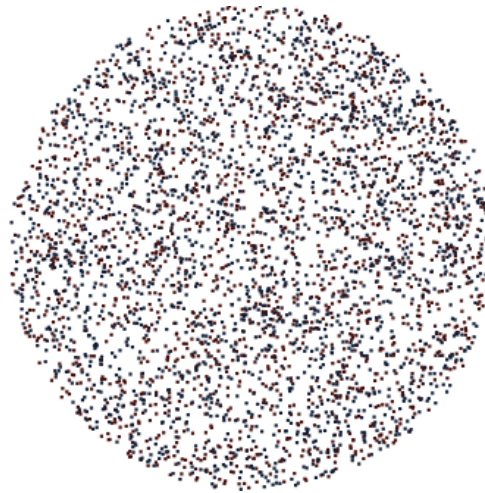
Representative random sample N=1089
TNS Nipo. De Beer & de Kraker, 2014



Opinion polarization

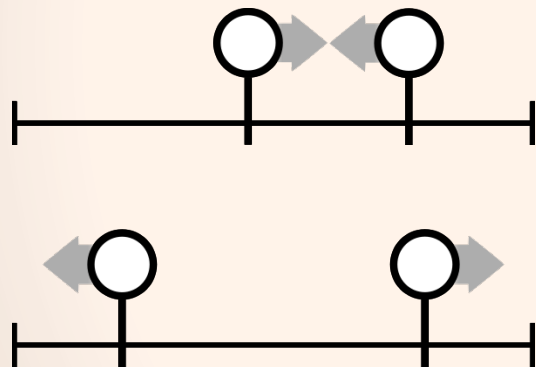


Opinion polarization



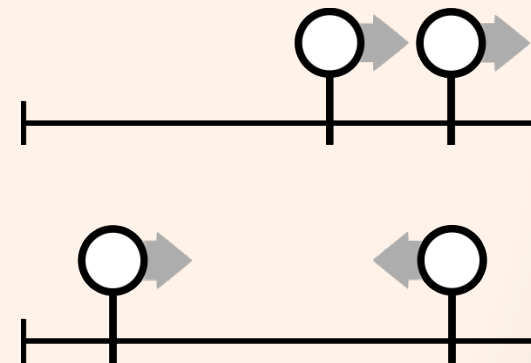
Modeling opinion polarization

Negative influence



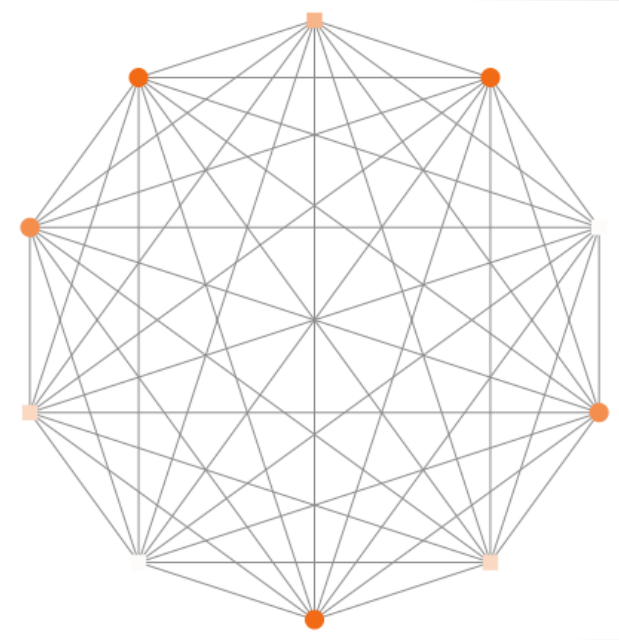
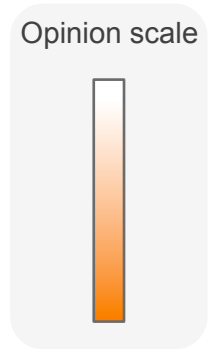
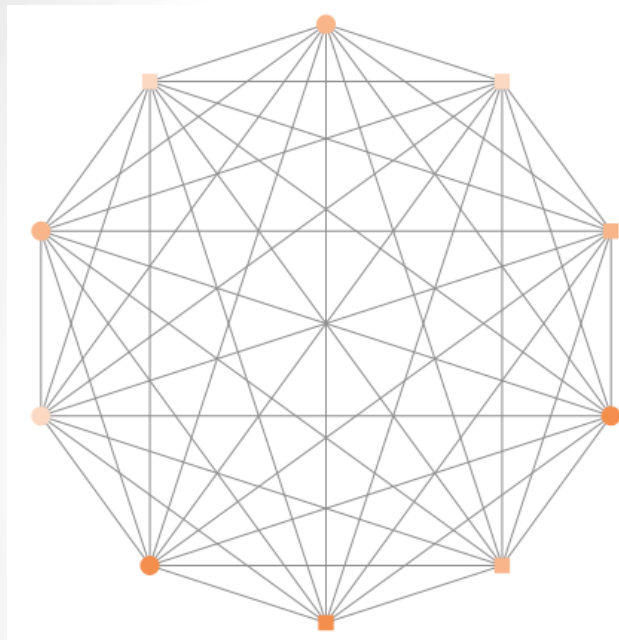
(Flache & Macy, 2011; Macy et al., 2003; Jager & Amblard, 2005)

Persuasive arguments

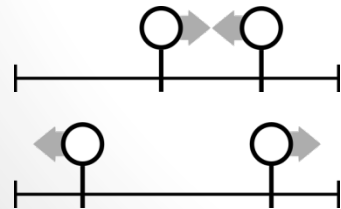


(Mäs & Flache, 2013)

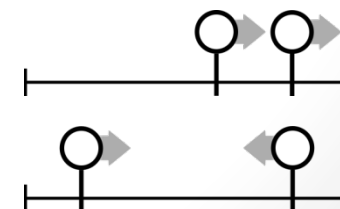
Opinion polarization in a small network



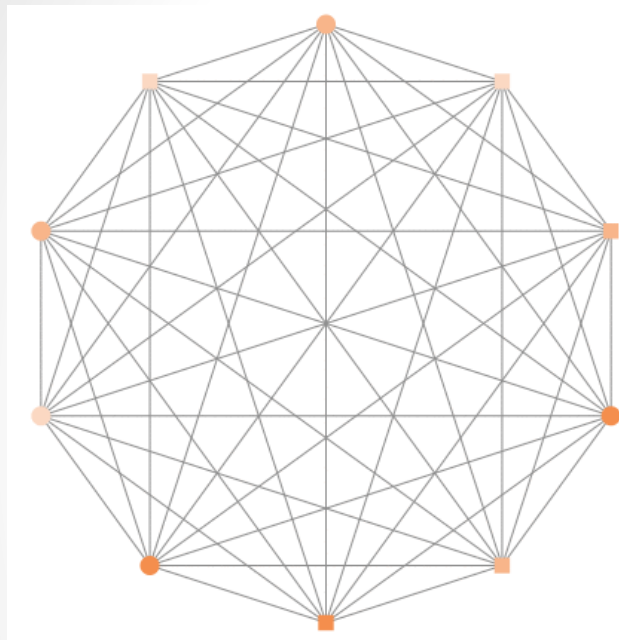
Negative influence



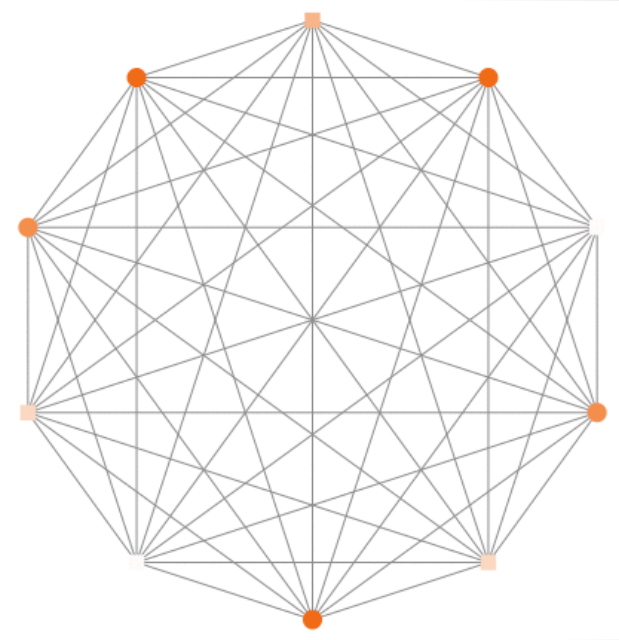
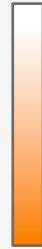
Persuasive arguments



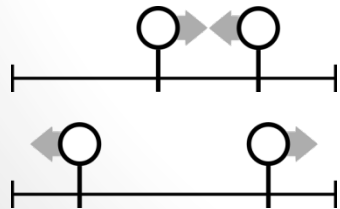
Opinion polarization in a small network



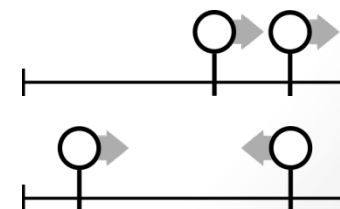
Opinion scale



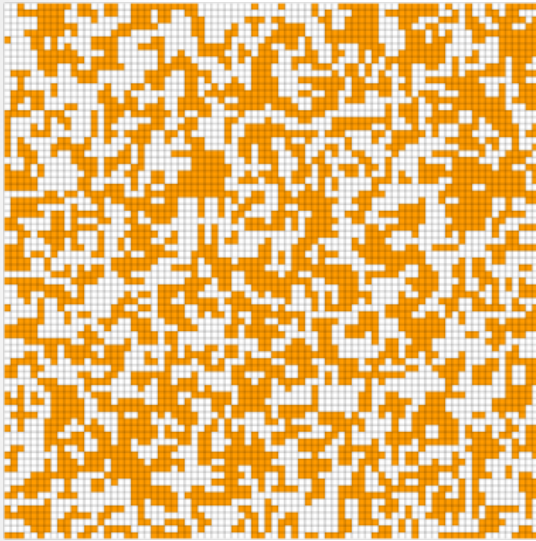
Negative influence



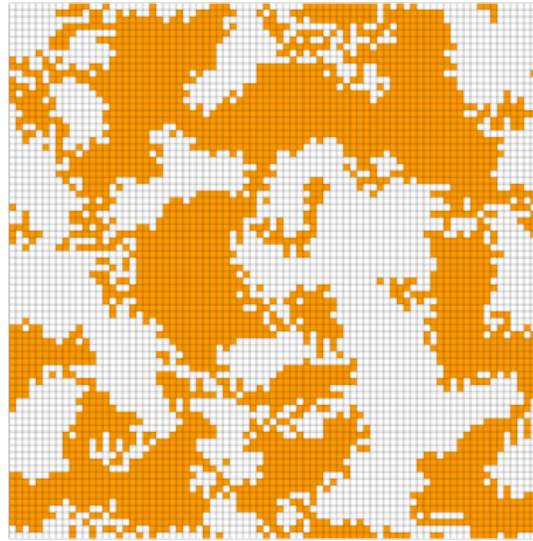
Persuasive arguments



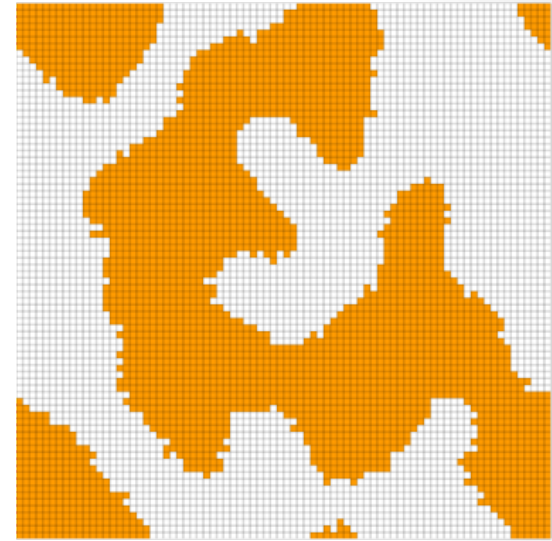
Decreasing abstraction: step 1



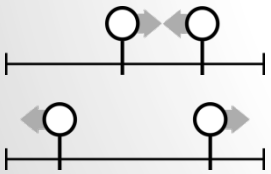
Low segregation



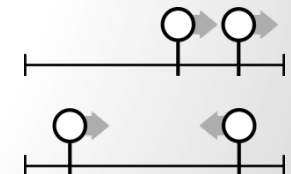
Medium segregation



High segregation

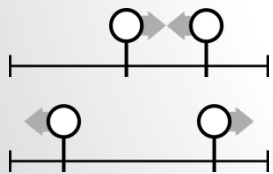
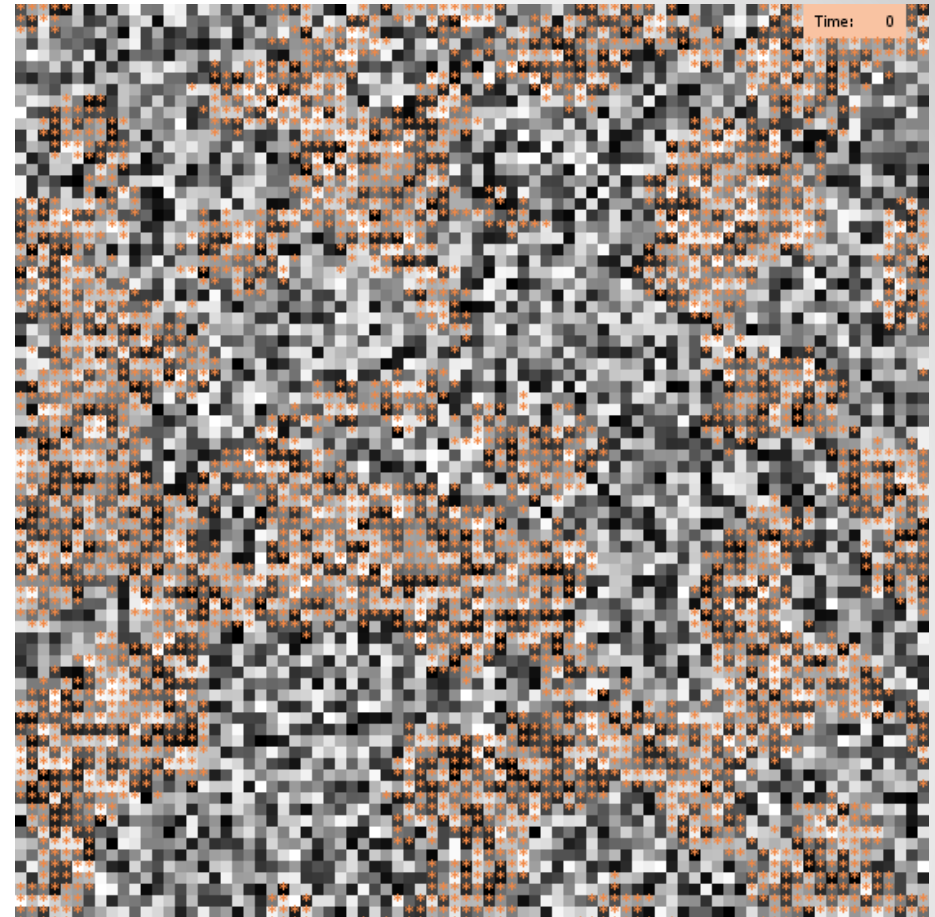
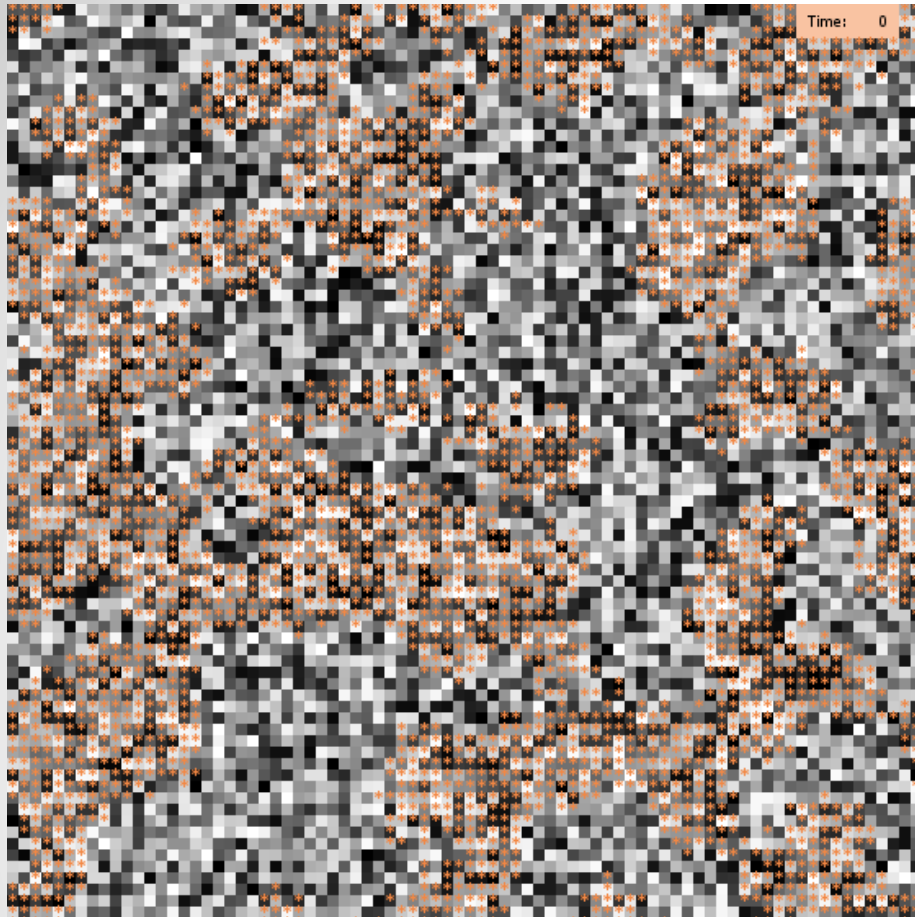


Negative influence



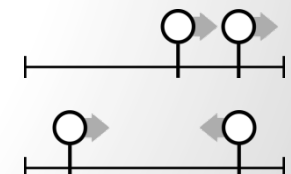
Persuasive arguments



- Spatial segregation of the two groups
- Local interactions
- Two groups: *

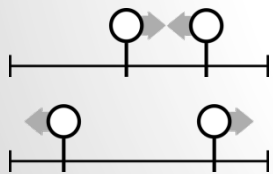
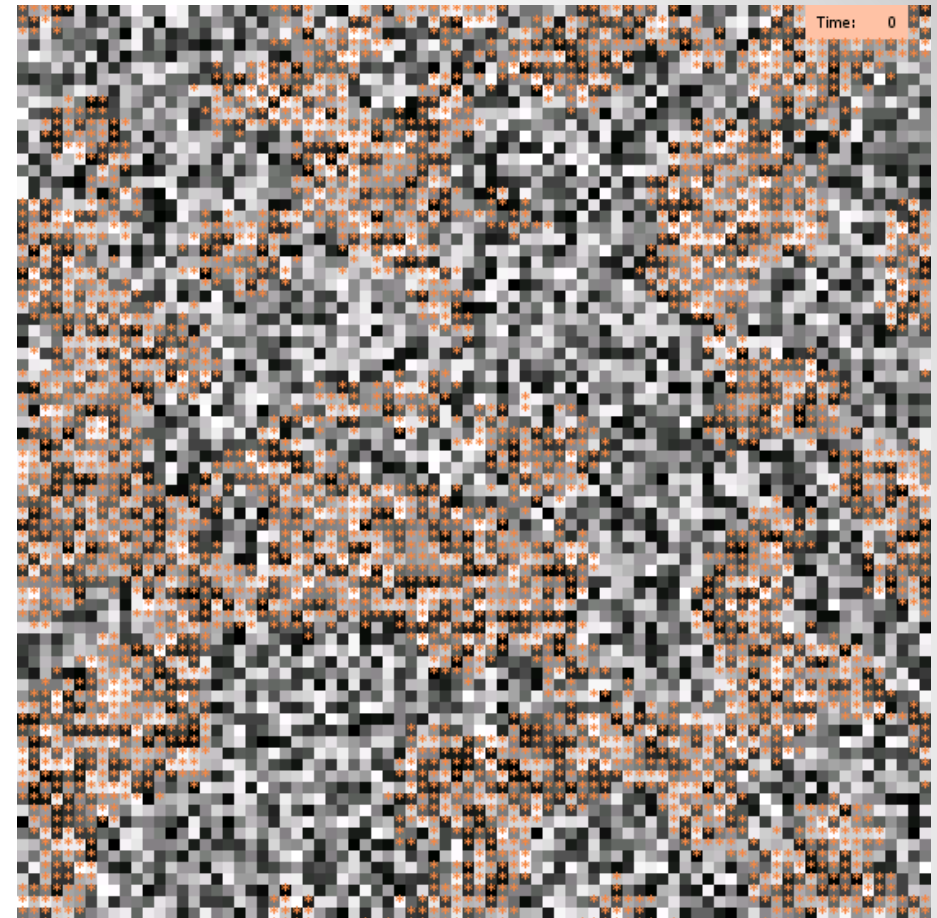
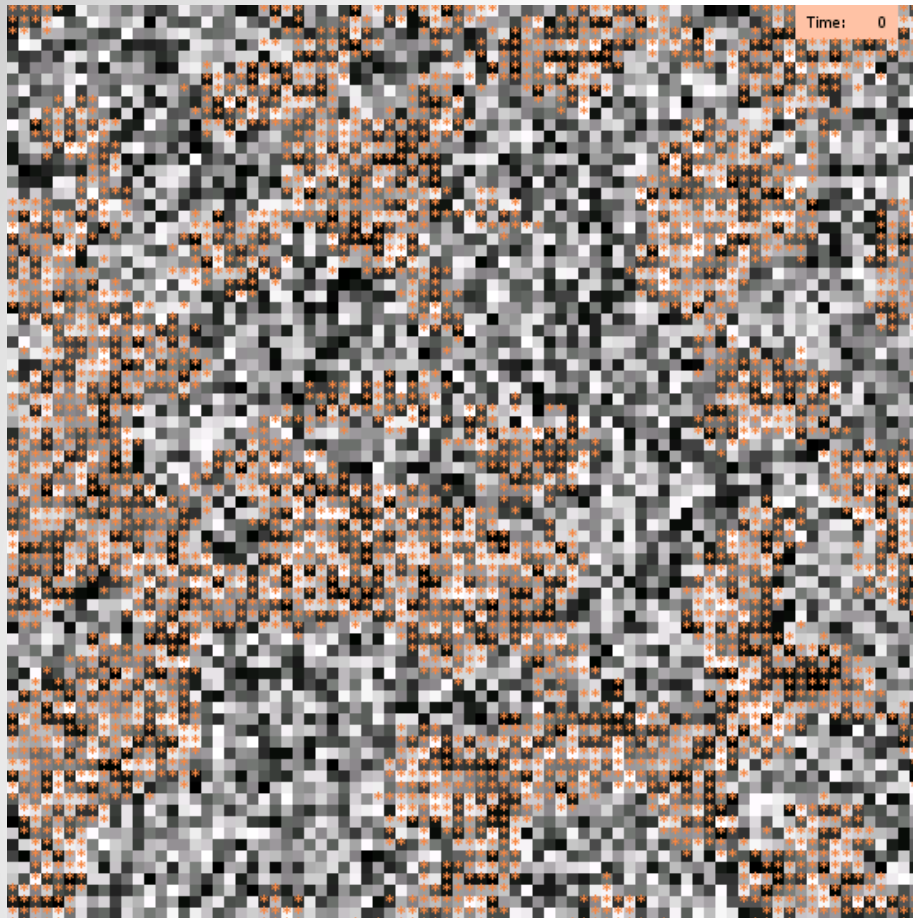


Negative influence

Persuasive arguments

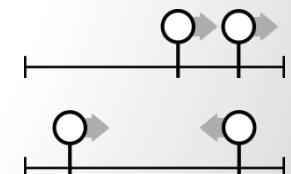




- Spatial segregation of the two groups
- Local interactions
- Two groups: 
- Opinion scale: 

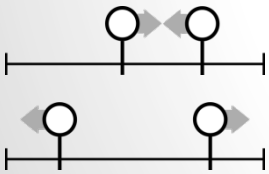
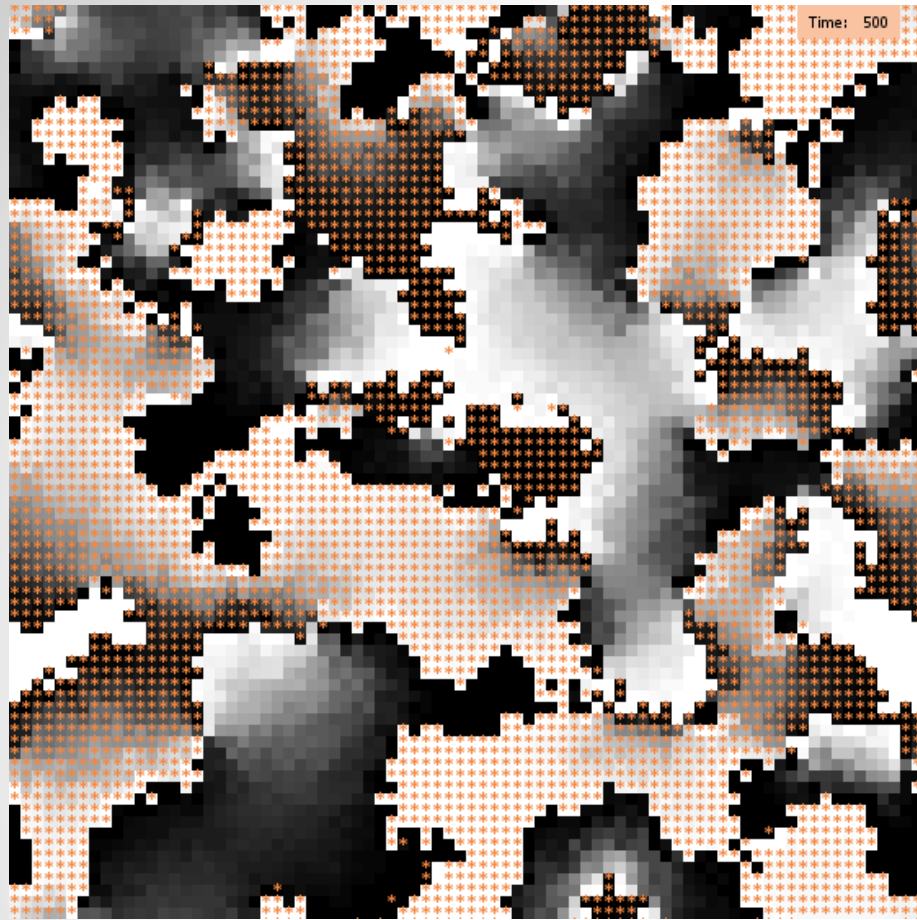


Negative influence

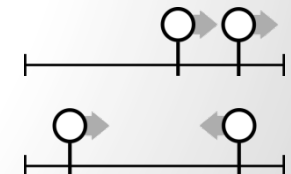
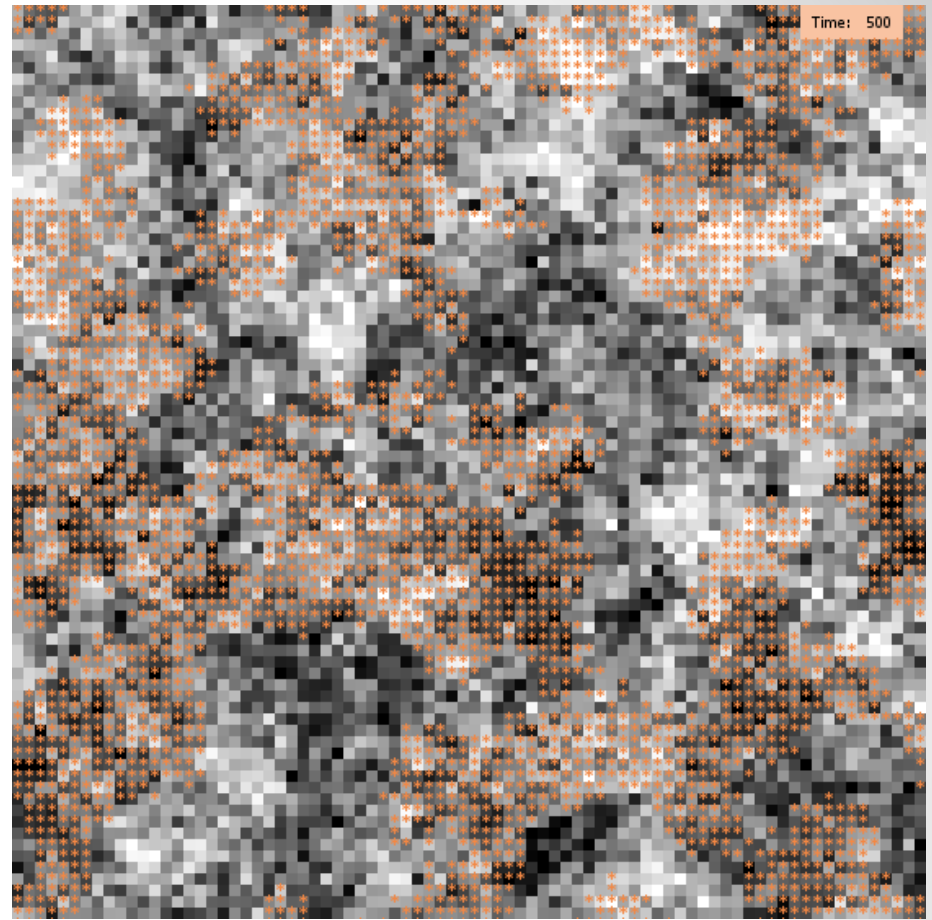
Persuasive arguments



- Spatial segregation of the two groups
- Local interactions
- Two groups: 
- Opinion scale: 



Negative influence

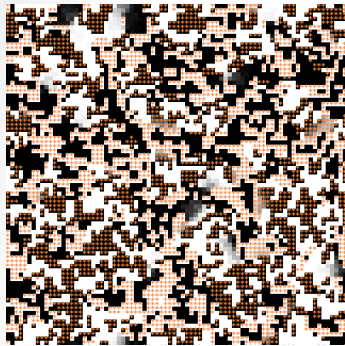


Persuasive arguments

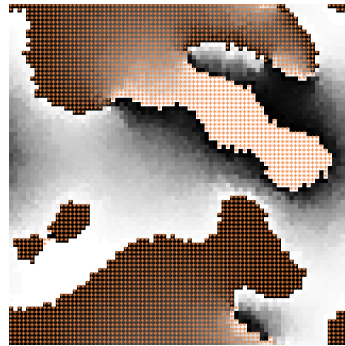
- Spatial segregation of the two groups
- Local interactions
- Two groups:
- Opinion scale:

Effects of (stylized) segregation

Negative influence

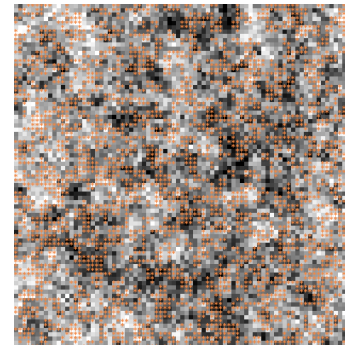


Low segregation

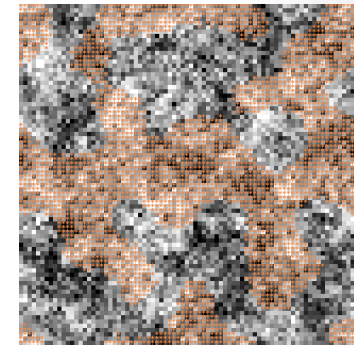


High segregation

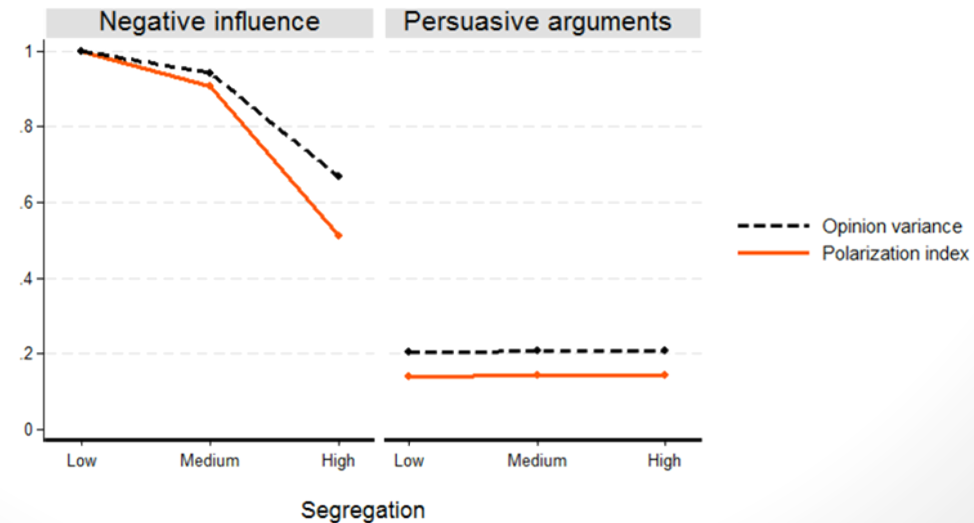
Persuasive arguments



Low segregation

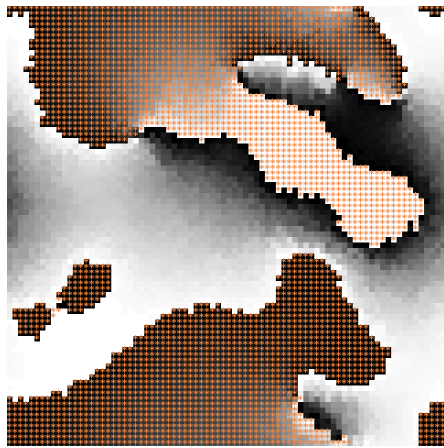


High segregation



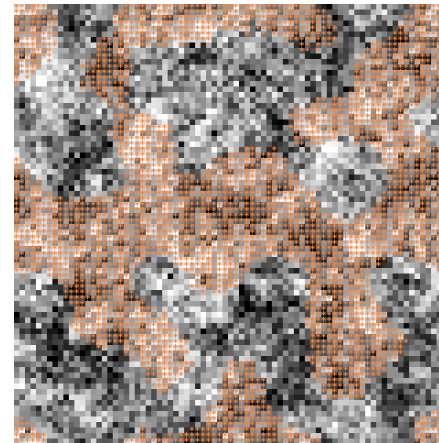
Alignment between demographic group and opinion

Negative influence



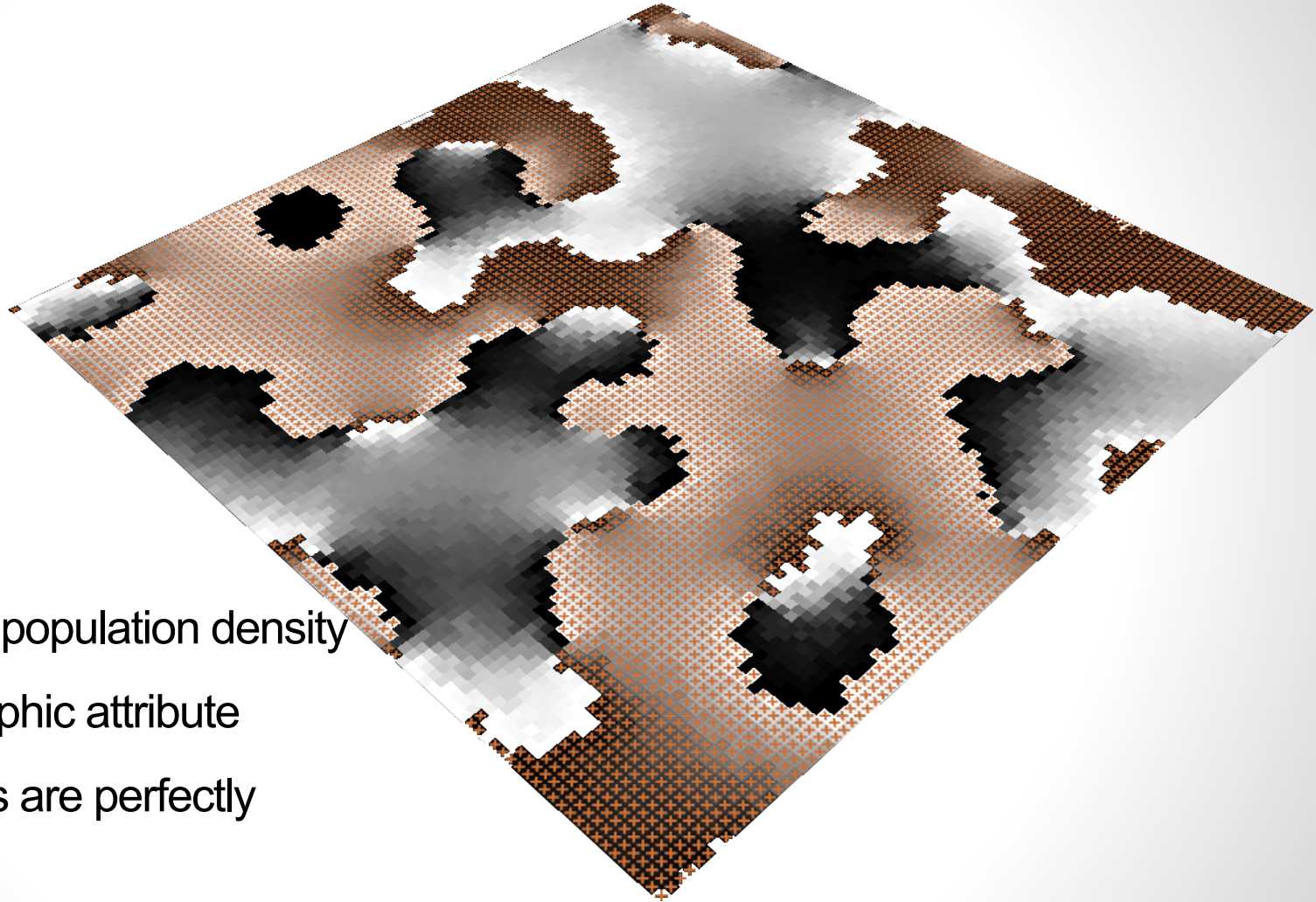
- Global alignment: **yes**
- Local alignment: **yes**

Persuasive arguments



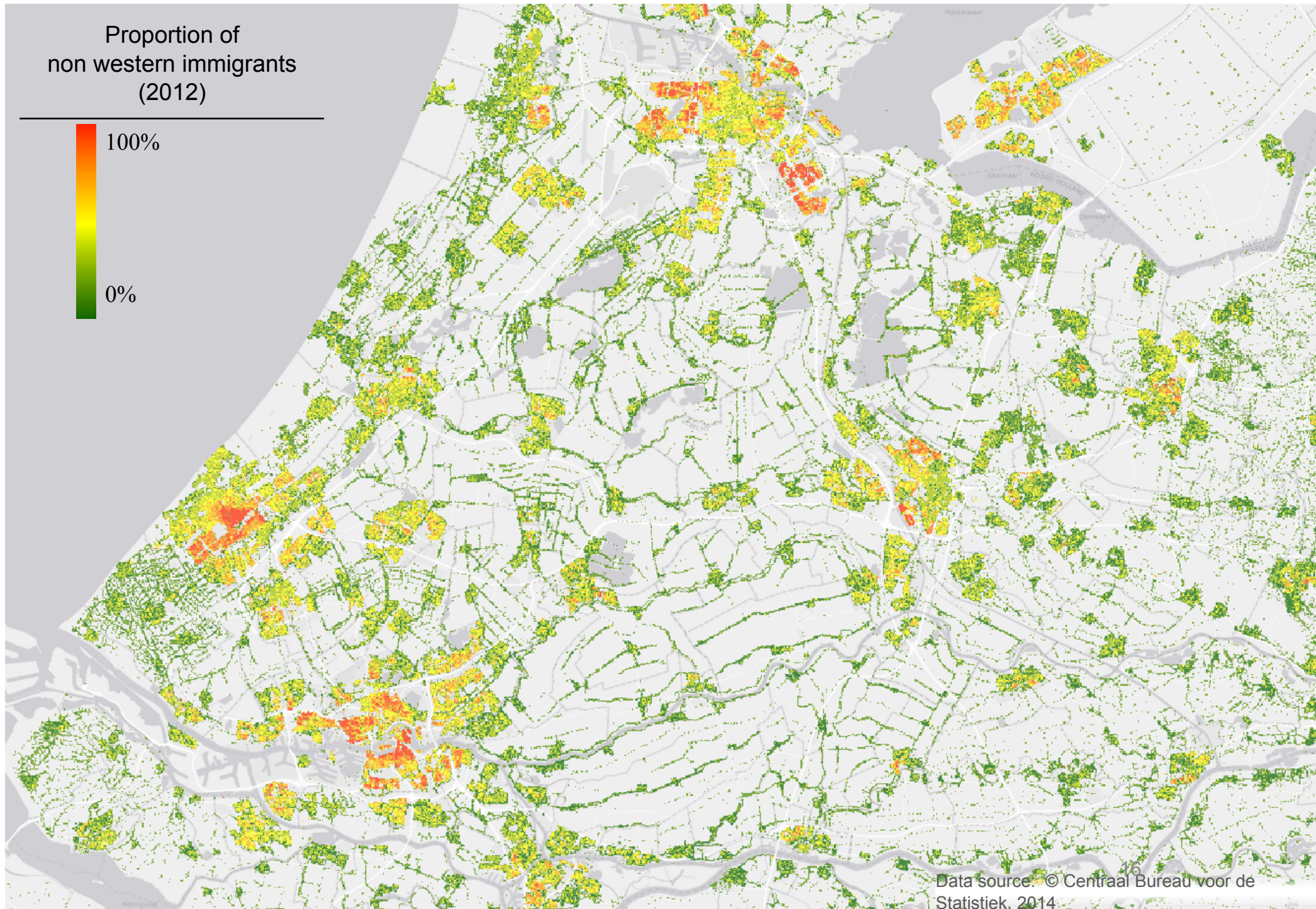
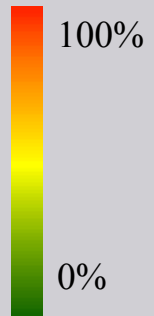
- Global alignment: **no**
- Local alignment: **mild**

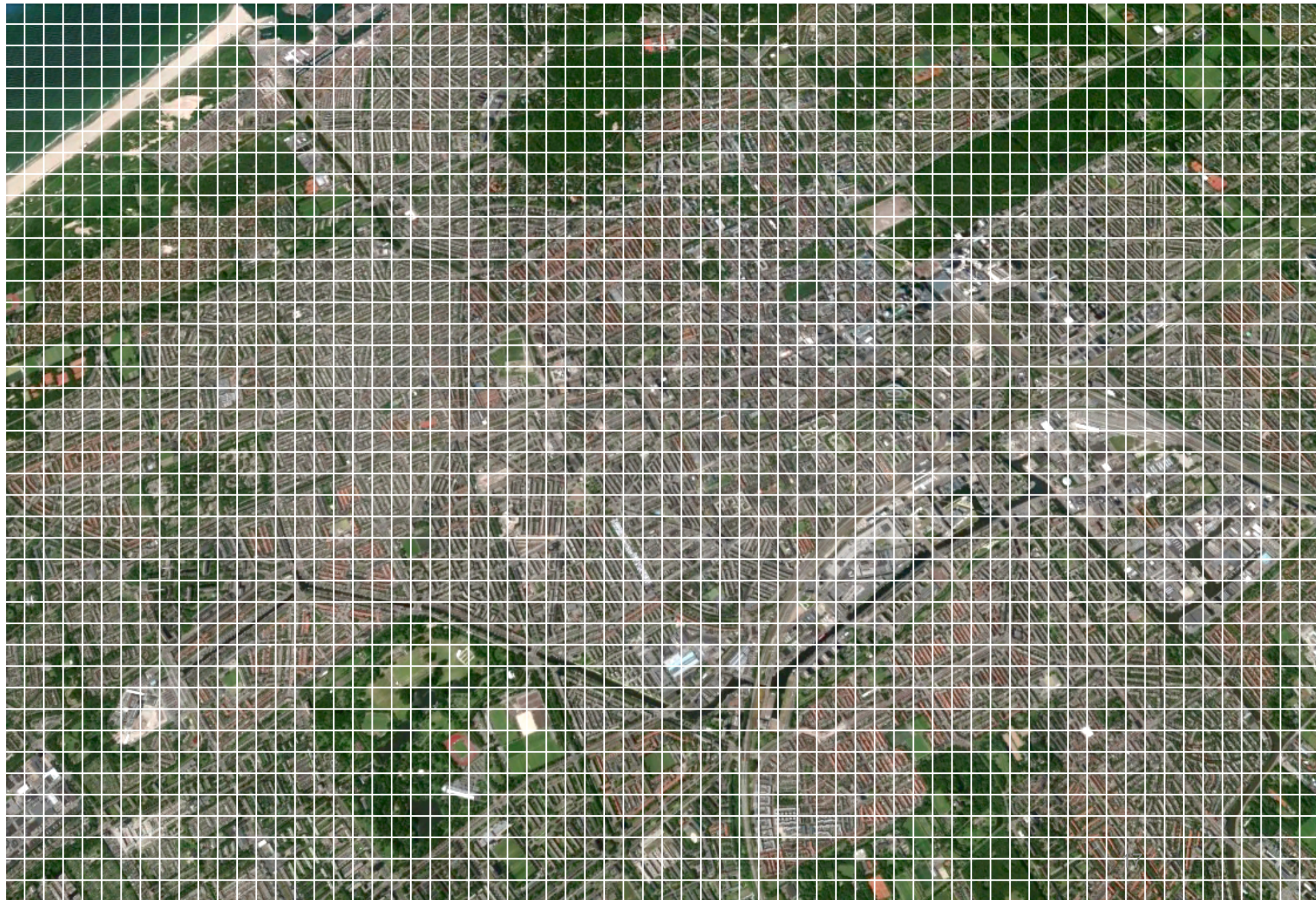
Decreasing abstraction: step 2



- Homogenous population density
- One demographic attribute
- Group clusters are perfectly homogenous
- Group boundaries are artificially sharp

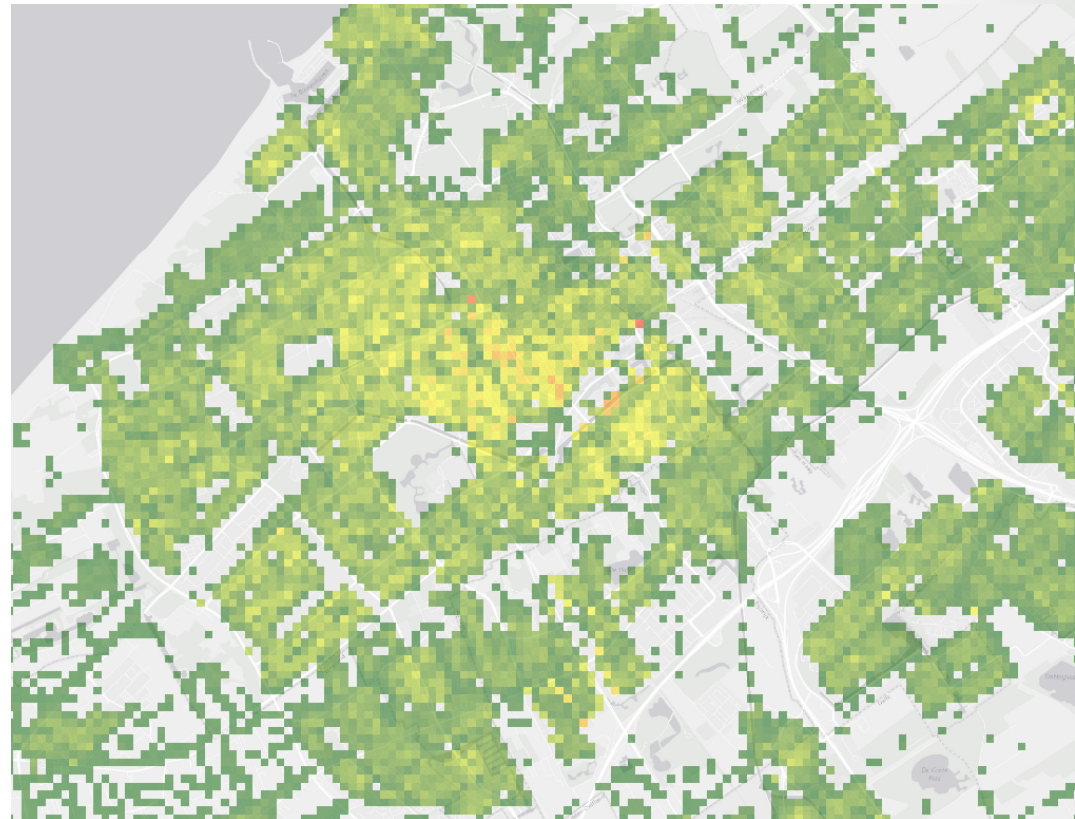
Proportion of
non western immigrants
(2012)





Model calibration

- Population density



- **Ethnic minority**

% Non-western immigrants



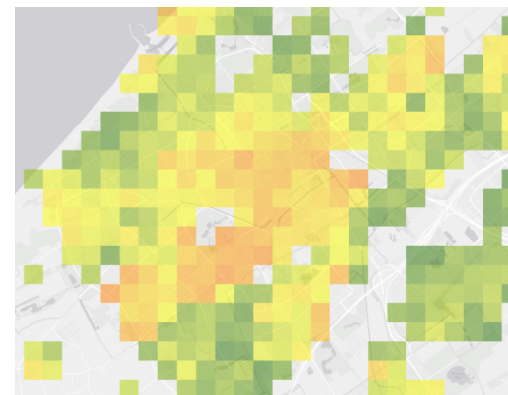
- **Age**

% Residents older than 44



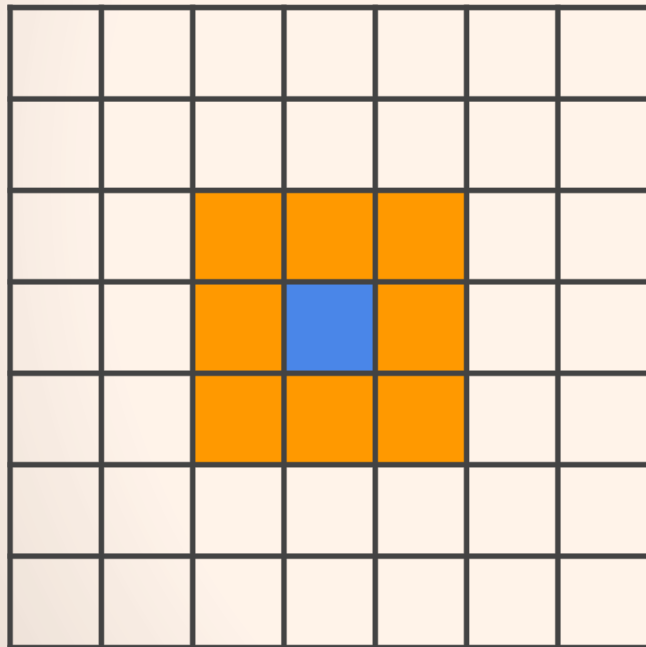
- **Household income**

% households whose income belongs to the lowest 40 percentiles

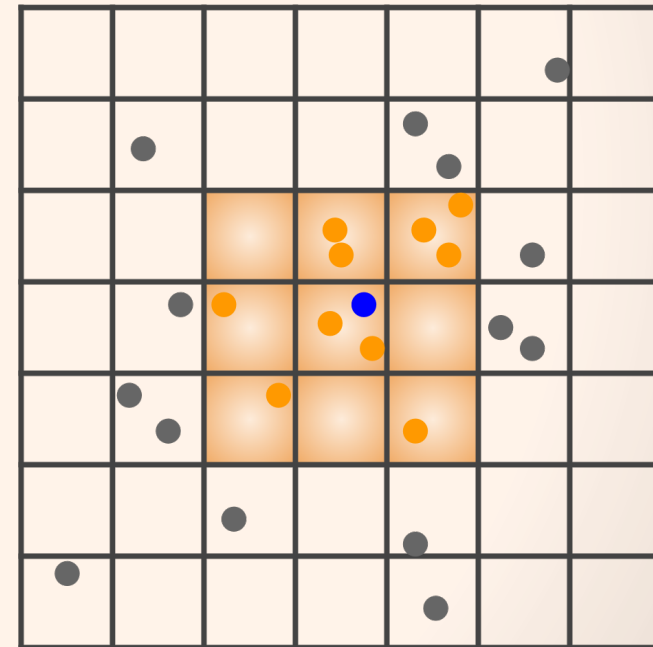


Interaction neighborhoods

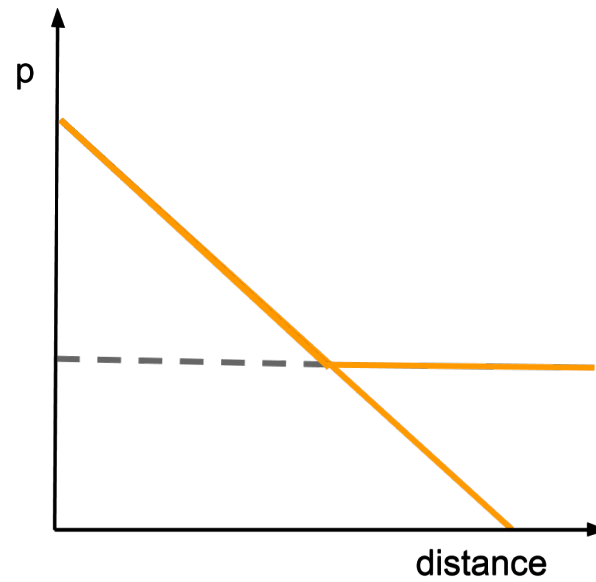
Moore neighborhoods



Ego-hoods



Interaction neighborhoods

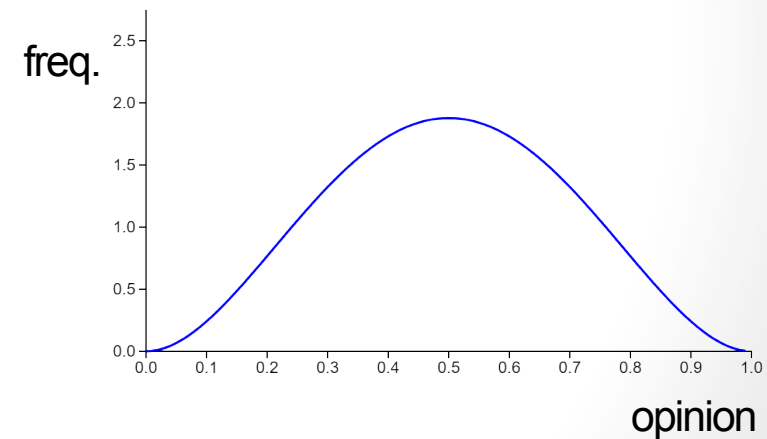


Extensions

Interaction structure

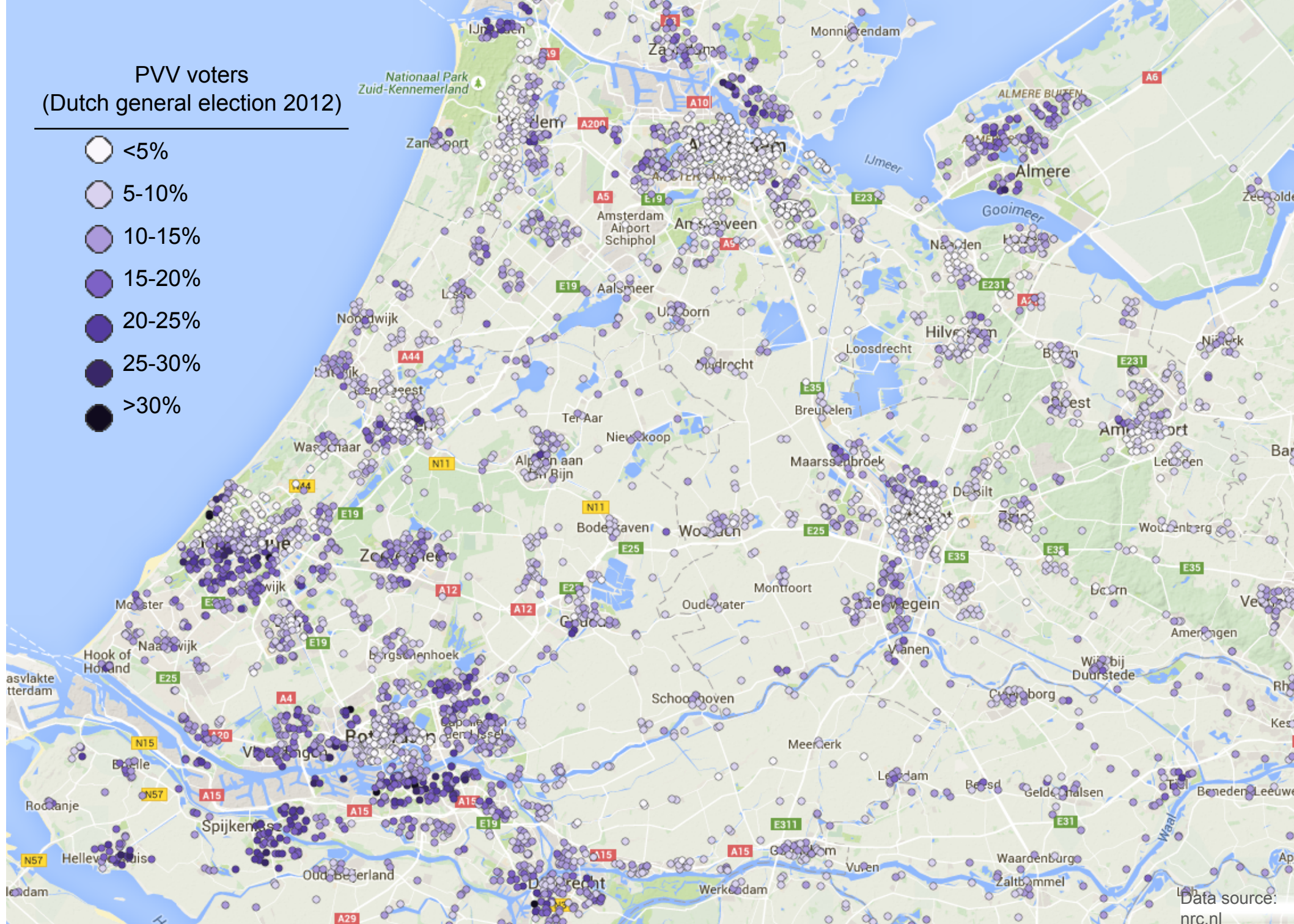
Initial opinion

- Linear
- Beta distribution with parameters
 $\alpha=\beta=3$
- **Future work:** calibrating opinions?



PVV voters (Dutch general election 2012)

- <5%
- 5-10%
- 10-15%
- 15-20%
- 20-25%
- 25-30%
- >30%



Thank you



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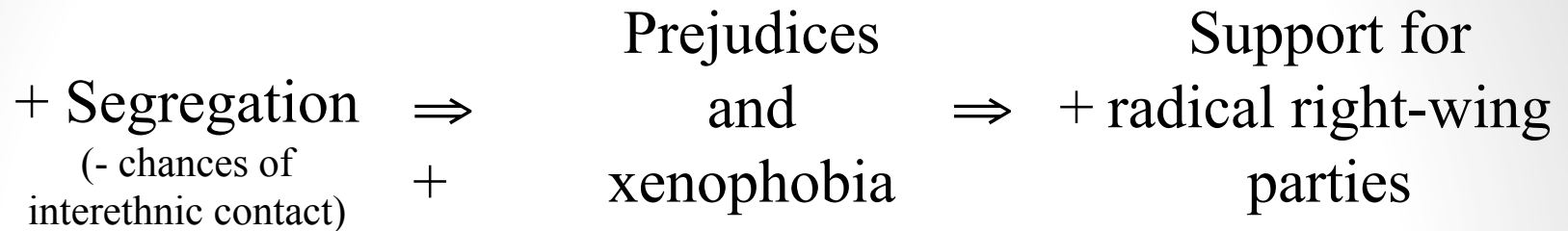
References

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- Flache, A., & Macy, M. W. (2011). Small Worlds and Cultural Polarization. *The Journal of Mathematical Sociology*, 35(1-3), 146–176.
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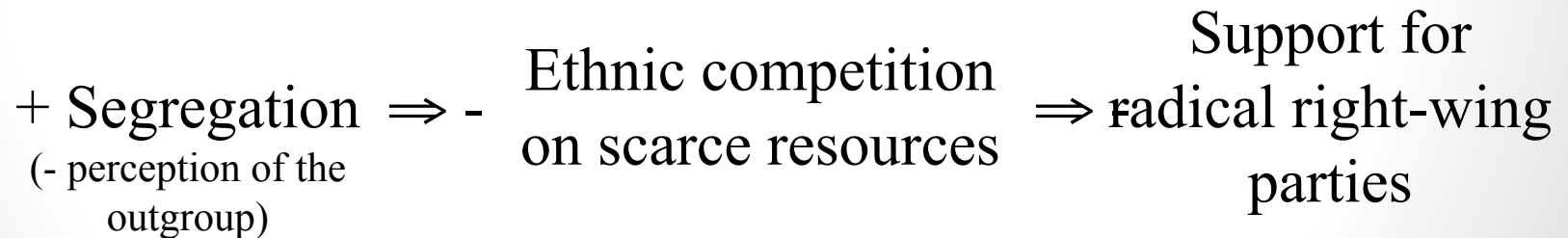


Two competing theories

- Contact theory (Allport, 1954)



- Ethnic threat theory (Blumer, 1958; Sherif and Sherif, 1969)



The math behind the model

$$w_{ij,t} = 1 - \frac{|o_{j,t} - o_{i,t}| \cdot H + |g_j - g_i|}{1 + H}$$

$$NI_{i,t} = \frac{1}{2} \cdot (o_{j,t} - o_{i,t}) \cdot w_{ij,t}$$

$$a_{i,t} = \begin{cases} \frac{2}{S}, & \text{for } j \text{ picking a pro argument} \\ 0, & \text{for ineffective argument exchange} \\ -\frac{2}{S}, & \text{for } j \text{ picking a con argument} \end{cases}$$

$$PA_{i,t} = a_{i,t} \cdot \frac{w_{ij,t} + 1}{2}$$

$$\Delta o_{i,t} = NI_{i,t} \cdot M + PA_{i,t} \cdot (1 - M)$$

$$o_{i,t+1} = o_{i,t} + \Delta o_{i,t}$$

- Weight w

- Measure of agents' similarity
- Used to model homophily and xenophobia

- Negative influence

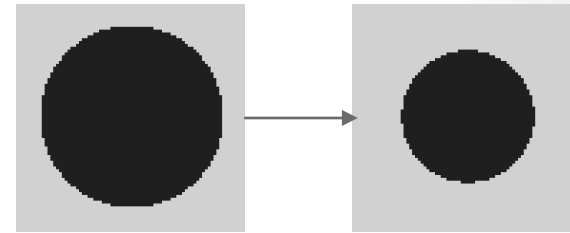
- Persuasive arguments

- Opinion update

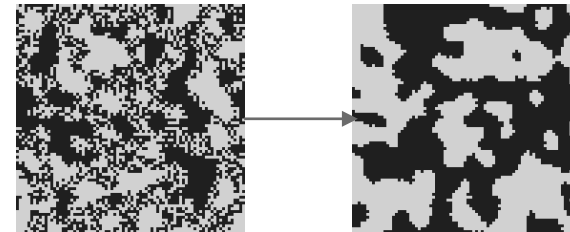
- Opinion range [-1; 1] is assured by a truncating function

Dimensions of segregation

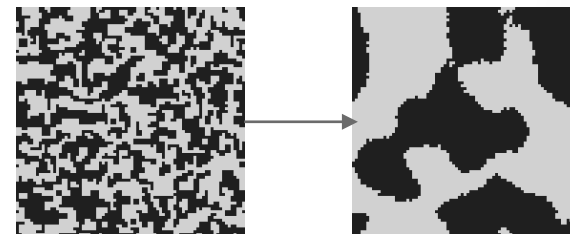
- Symmetry in groups' size



- Cluster homogeneity



- Cluster size



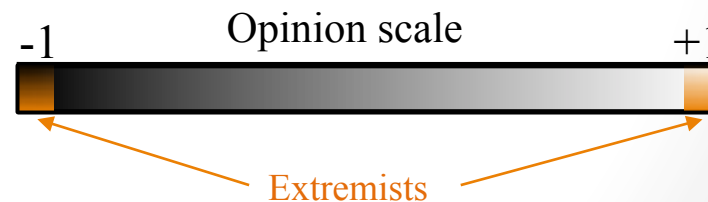
Measures of opinion polarization

- Polarization index

$$P = \frac{1}{N(N-1)} \sum_{ij \in N, i \neq j} (d_{ij} - \bar{d})^2$$

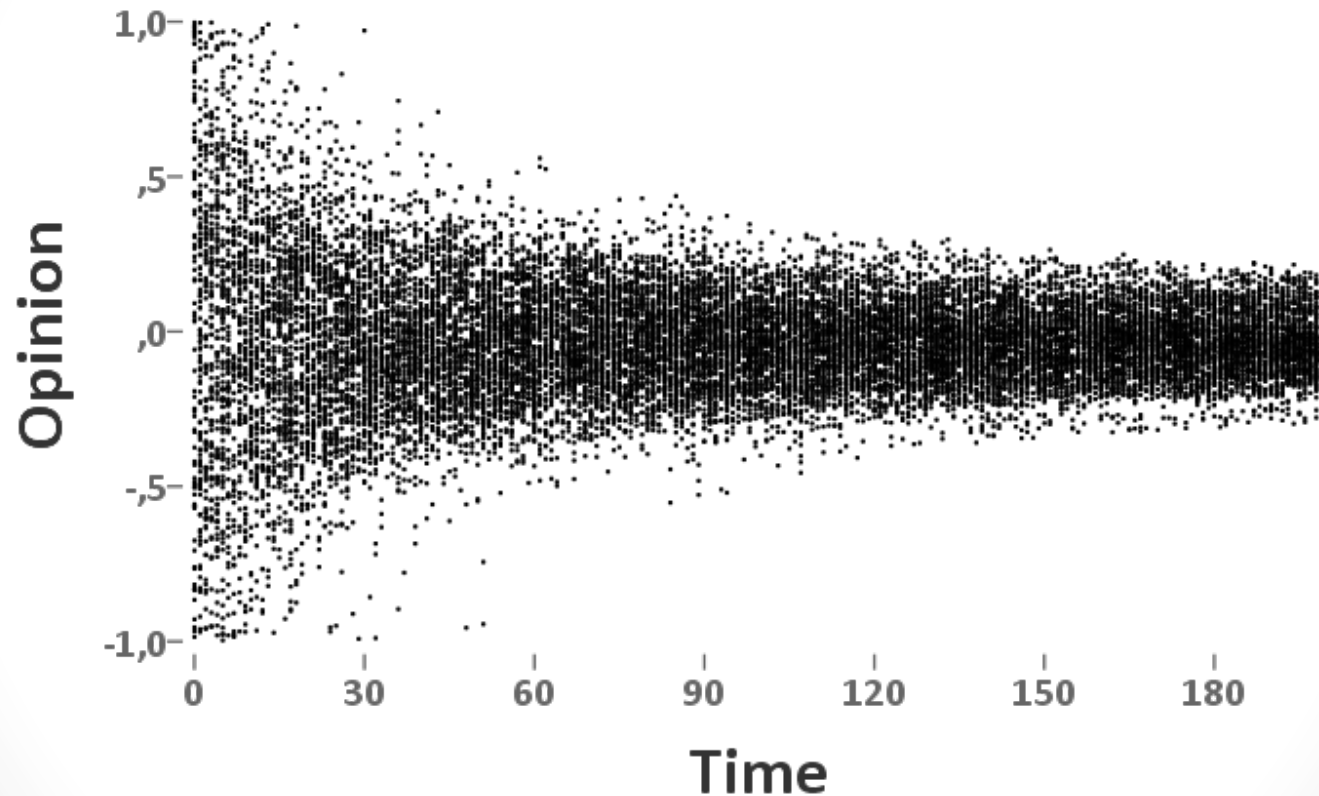
- Mean and variance of opinion

- Count of extremists



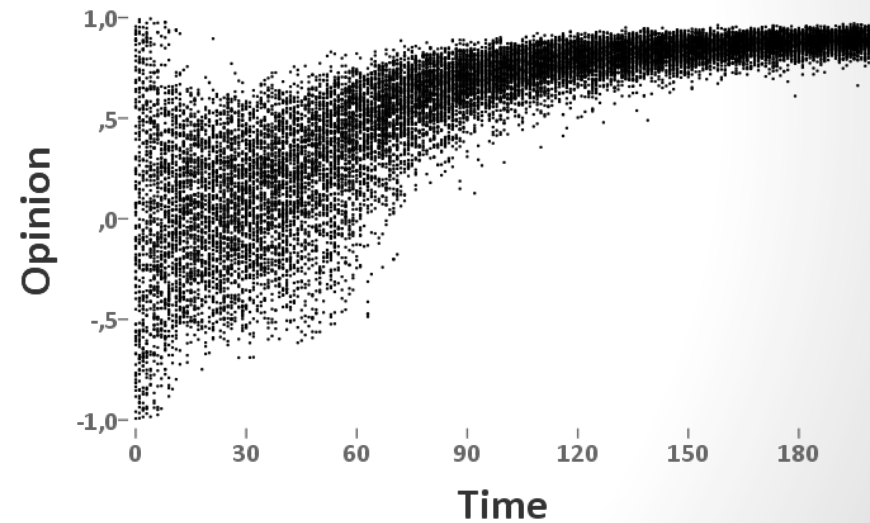
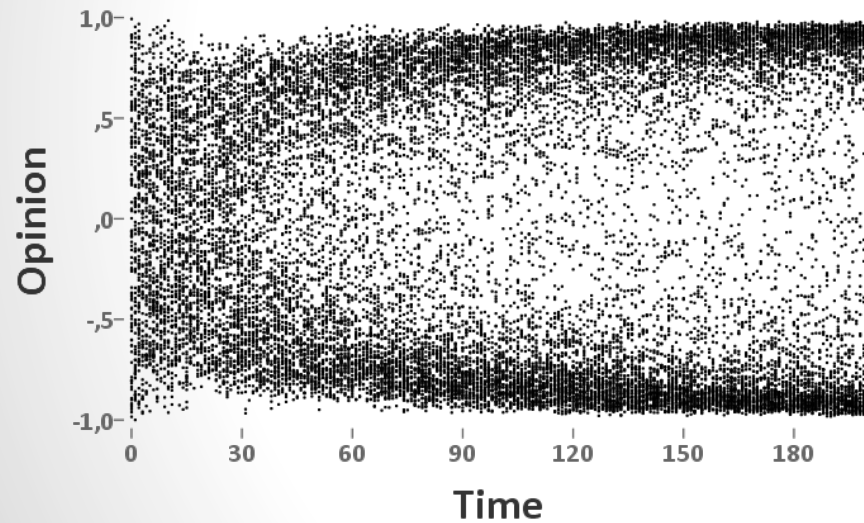
Emergence of opinion consensus

Through positive influence

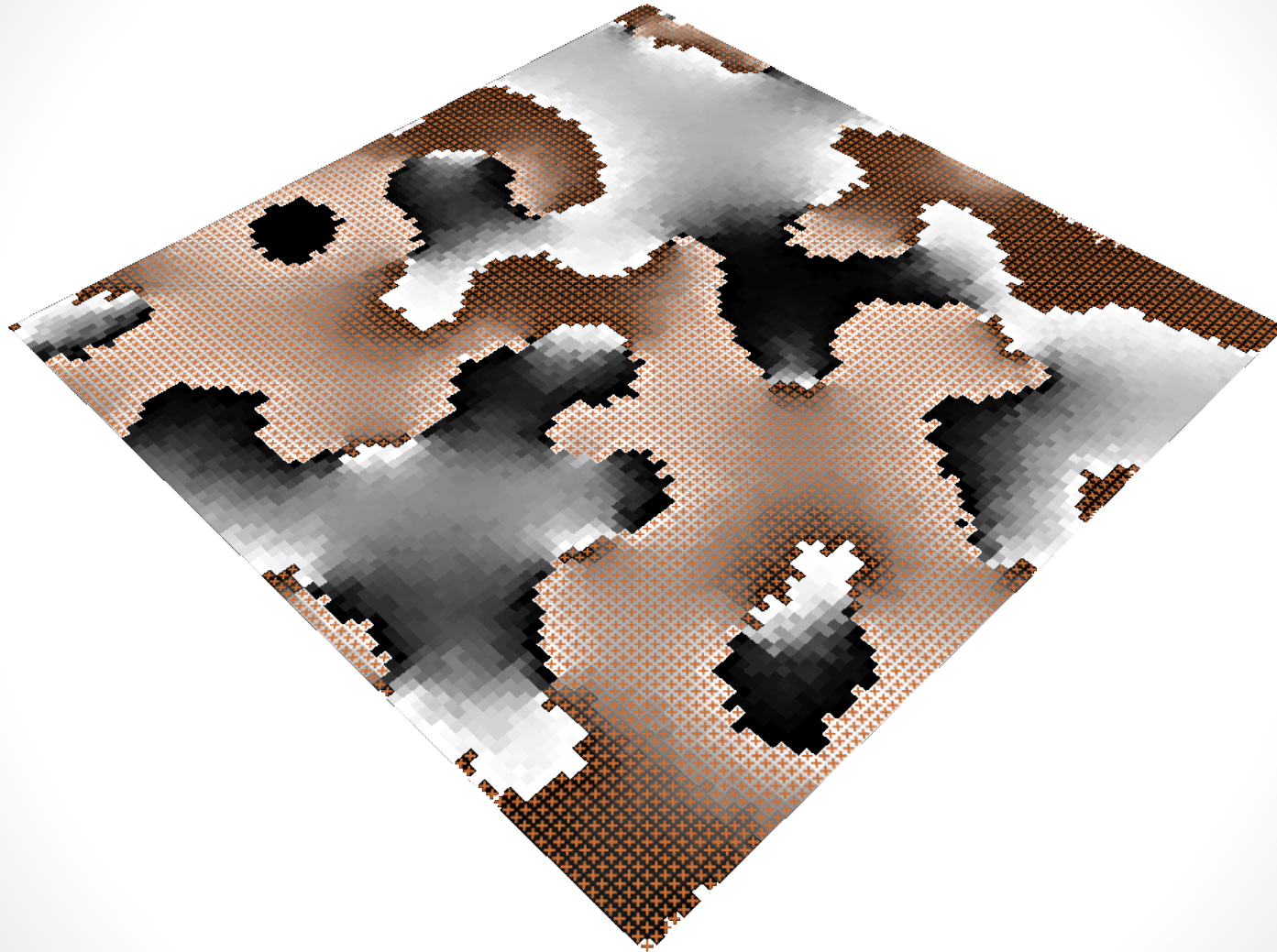


Emergence of opinion (bi-)polarization

Through processes of
Negative influence and Persuasive arguments



Negative influence



Persuasive arguments

