Geography and Social Space: Evidence from Watersheds and Dialects

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DH Coffee Talks

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Motivation

- How does Physical Geography shape Social Space?
- Economics focus on
  - endowments
  - disease environments
  - cost of mobility

This Project

- Can watersheds (drainage divides) affect the intensity of social interaction across space? How large and how persistent are these effects?

This Project

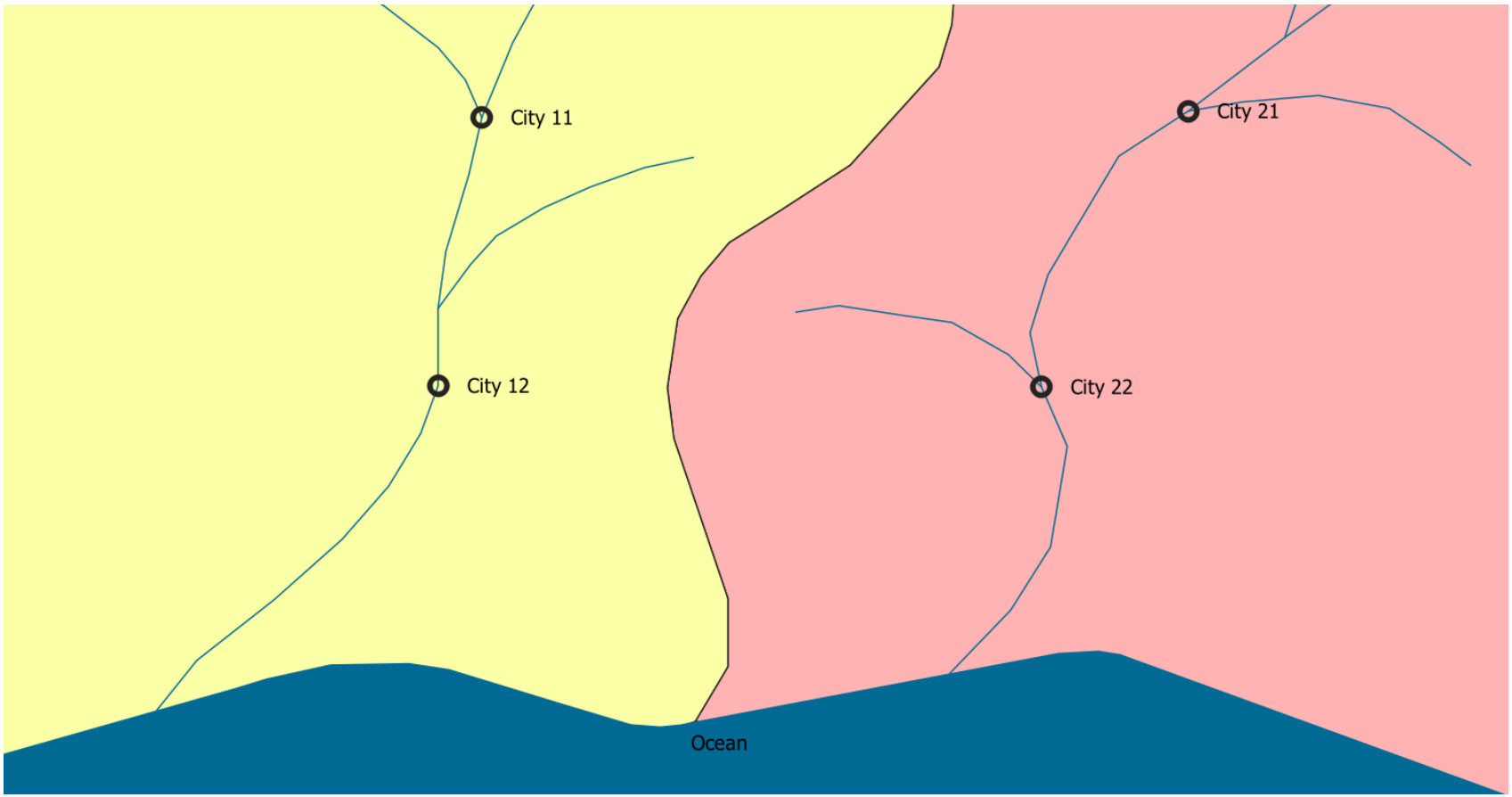


Figure 1: Example map

Data and empirical strategy

- Use data on German dialects to capture persistent features of social space: Digitaler Wenker-Atlas (DiWA) based on Wenker (1887)
- Use data on European watersheds with Pfaffstetter Coding: Catchment Characterisation and Modelling (CCM2)
- Map these two spatially continuous measures to discrete grid cells
- Merge and test for causal effects of watersheds on dialect space

Data and empirical strategy

- Correlate similarity measures on the cell-pair level:
  - Linguistic similarity à la Falck et al. (2012), Lameli et al (2015)

$$\boldsymbol{l}^i = \{l_1^i, l_2^i, \ldots, l_K^i\} \text{ with } l_k^i \in \{0,1\} \text{ for } K \text{ realizations in } M \text{ Wenker maps}$$

$$L_{ij} = (\boldsymbol{l}^i x \boldsymbol{l}^j)/M \in [0,1]$$

  - "Pfaffstetter similarity":

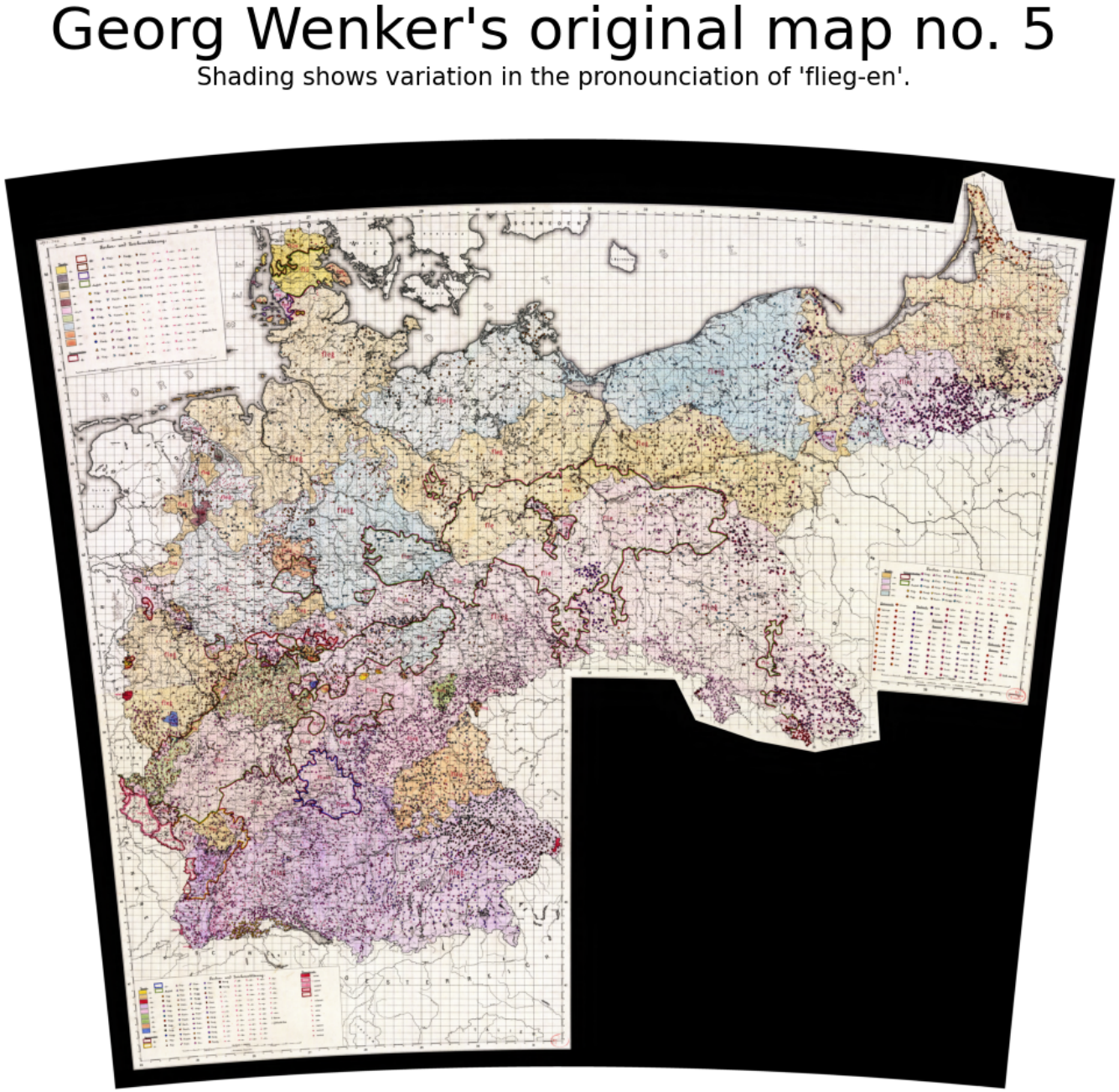
$$P_{ij}^p = \begin{cases} 1 \text{ if } i,j \text{ in same watershed at Pfaffstetter level } p \\ 0 \text{ else} \end{cases}$$

$$P_{ij} = \sum_{p=1}^{9} P_{ij}^p/9 \in [0,1]$$

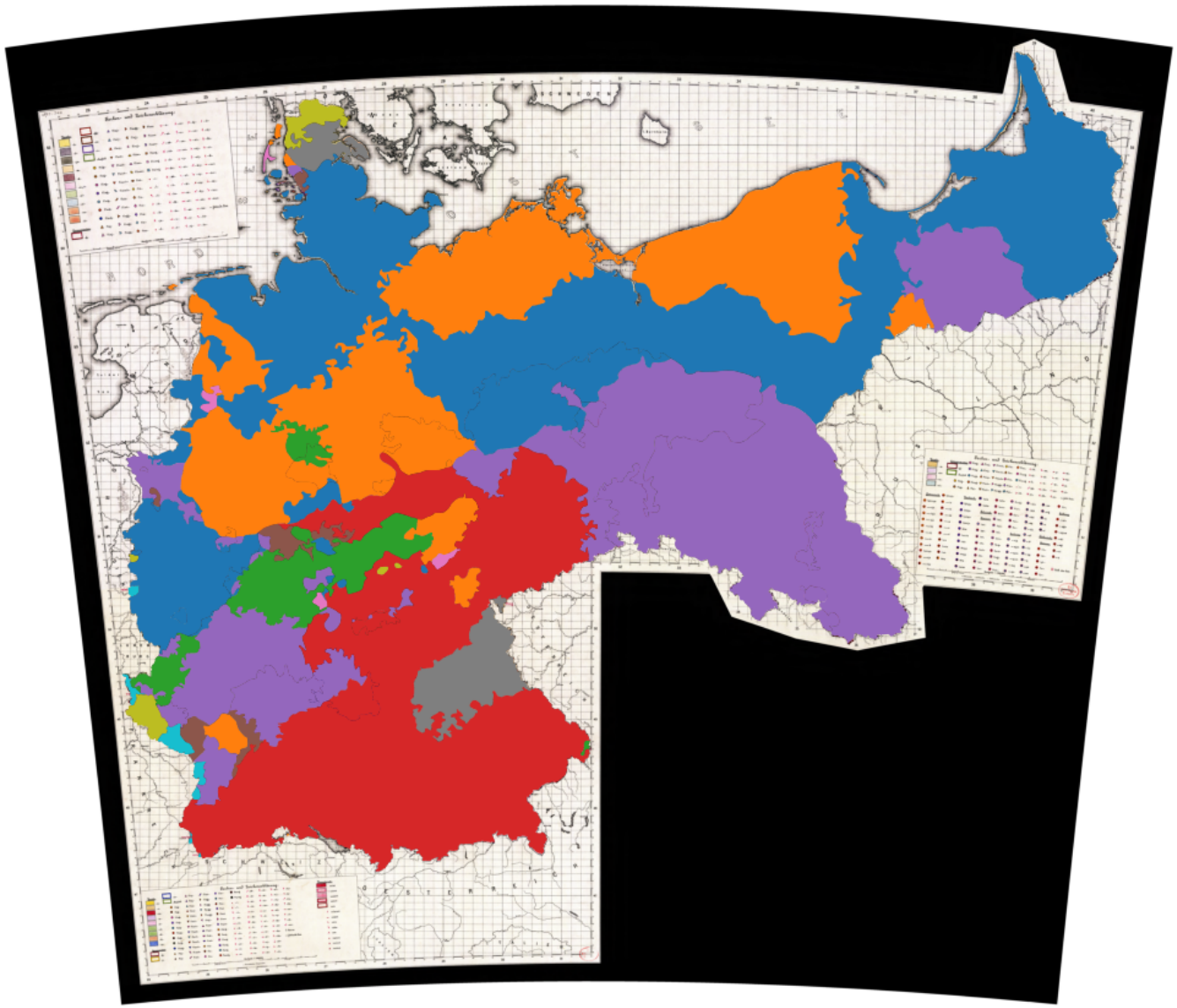
- Control for cell fixed effects and elevation-corrected distance (Tobler, 1993):

$$L_{ij} = \alpha_i + \alpha_j + \beta P_{ij} + \gamma dist_{ij} + \epsilon_{ij}$$

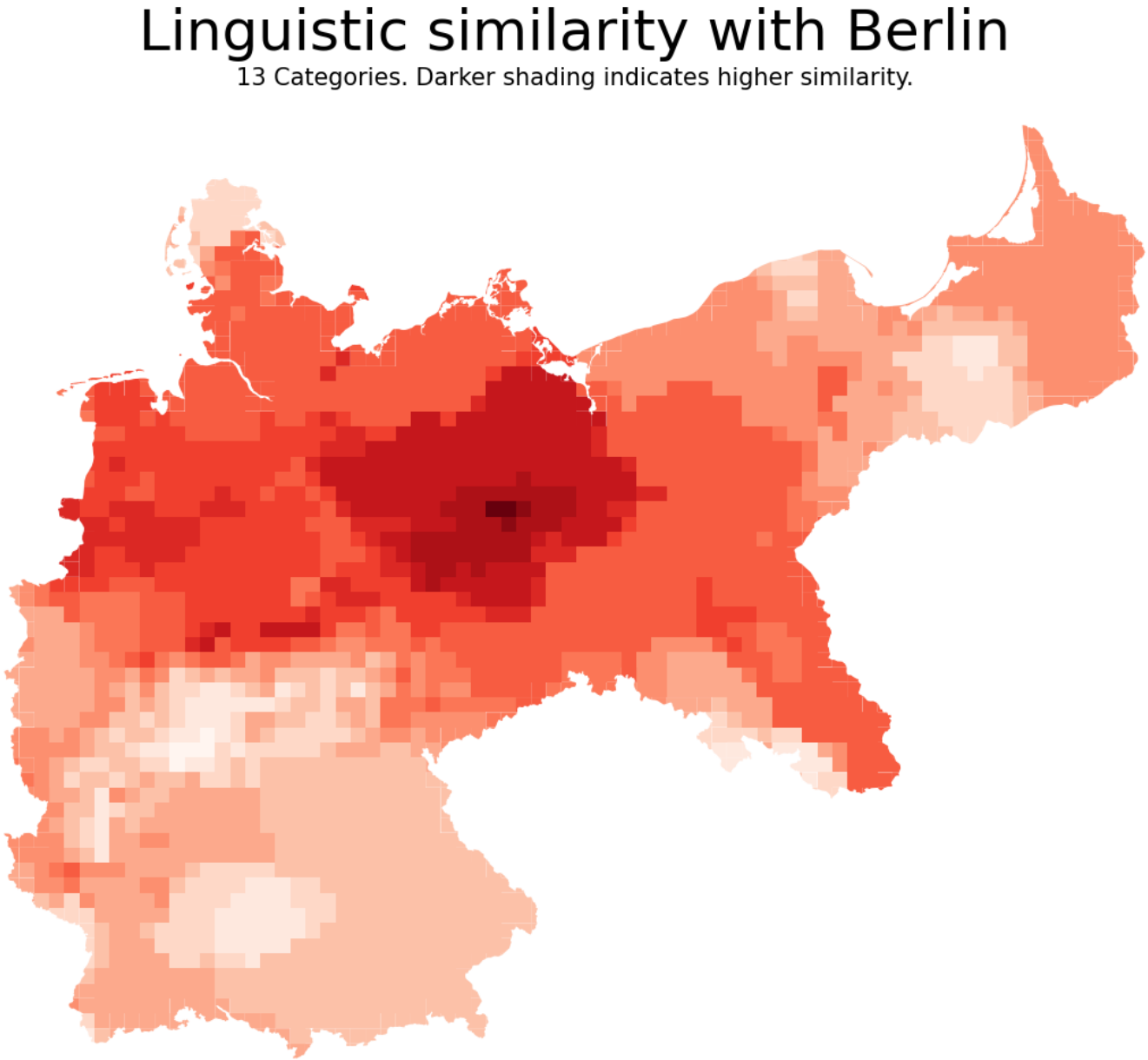
Linguistic similarity: Wenker's original maps



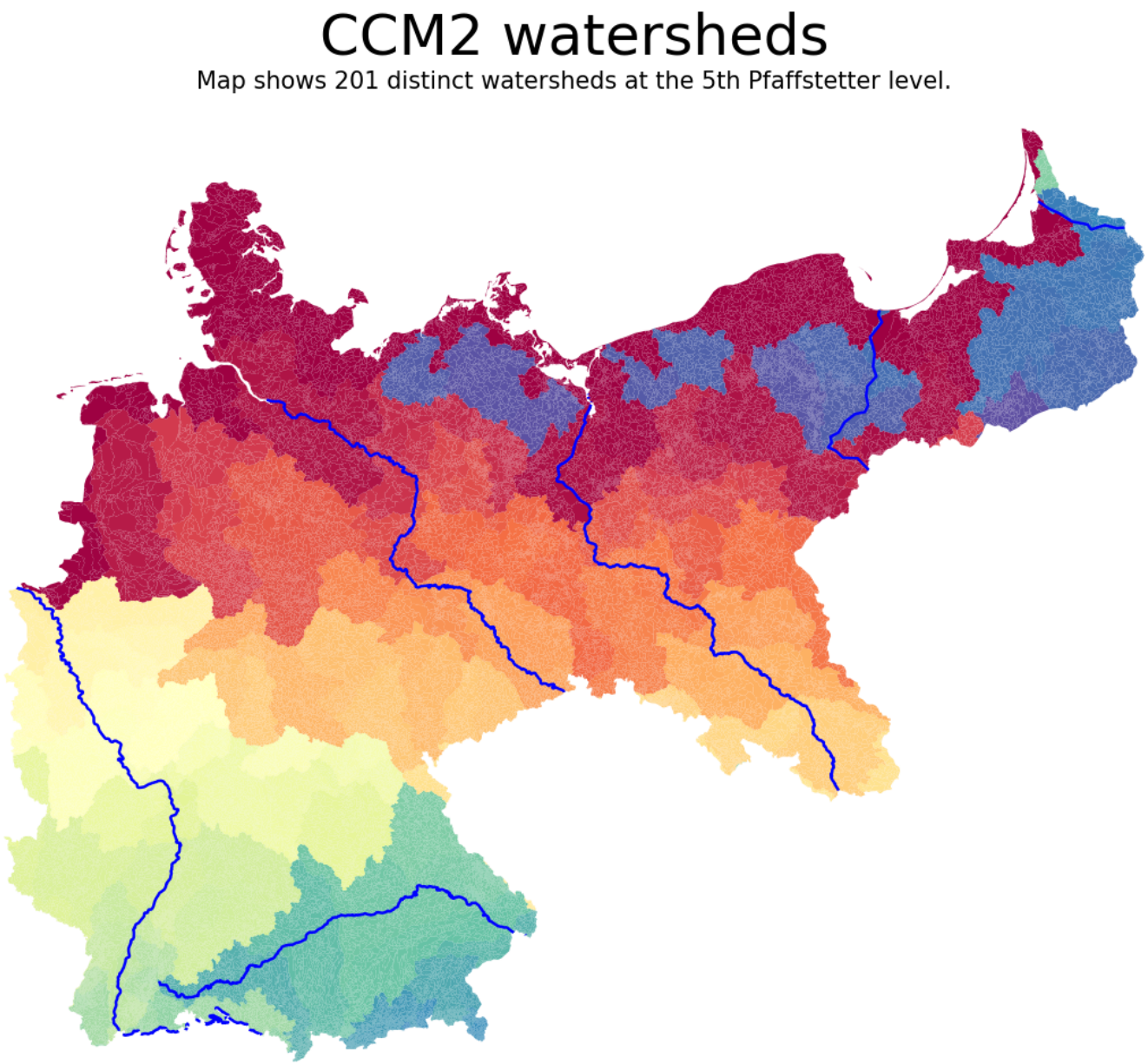
Linguistic similarity: Wenker's original maps



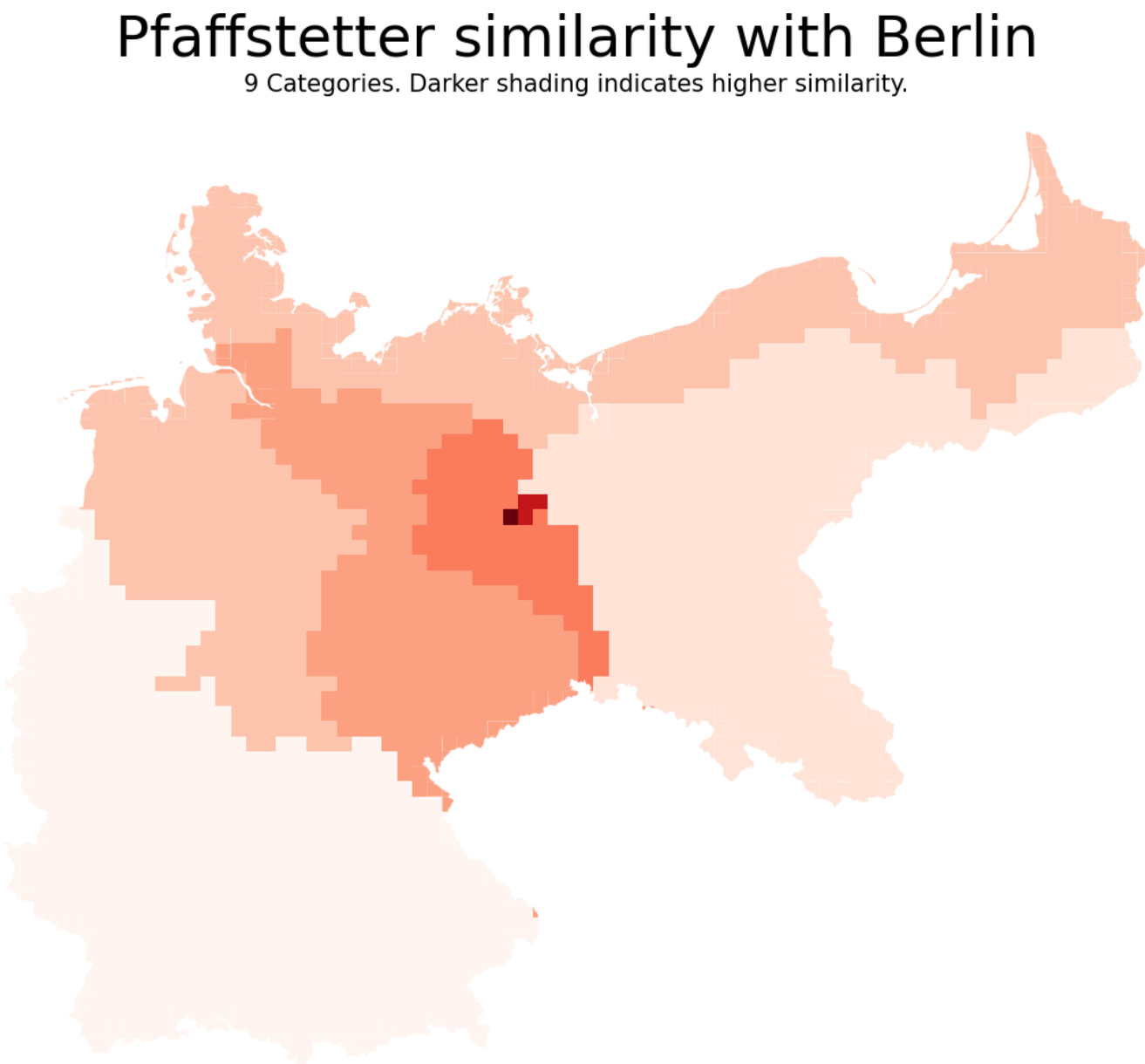
Linguistic similarity: Our measure



Pfaffstetter similarity: European watersheds



Pfaffstetter similarity: Our measure



Some preliminary correlations

	OLS	OLS	OLS	PPML
Dep. var.: Linguistic similarity				
Pfaffstetter similarity	.52***	.51***	.40***	.34***
	(.01)	(.00)	(.01)	(.01)
ln(distance in km)		.018	.002	.002
		(.002)	(.002)	(.002)
Cell FEs	no	no	yes	yes
N	3176460	3176460	3176458	3176458
R2	.14	.14	.35	.04

Table 1: Regression results. Note: Marginal effects. Both similarity measures run from 0 to 1. Robust SE clustered at the grid level in parantheses.

Methodological Challenges

- Measuring dialect similarity
- Measuring topological watersheds
- Definition of observations (and N)
- Omitted variables, spatial correlation
- Modern Outcome Variables at fine-level of disaggregation, direction-specific data?

Outlook

- Watershed topology with potentially large effect on social spaces
- Need more and better data, tackle methodological challenges