Detecting linguistic variation with geographic sampling

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Presentation is available here: tinyurl.com/y7kjsp67

Outline of the talk

Introduction

Our approach

Simulated data

Conclusion

Introduction

- Geolectal variation is often present in settings where one language is spoken across a vast geographic area (Labov [1963]).
- It can be found in phonological, morphosyntactic, and lexical features.
- Often overlooked by linguists (Dorian [2010]).

ADD SOME MAPS

The problem

- Let us consider a geolectal continuum formed by a group of small vilages (Chambers and Trudgill [1998])

FLAT MAP OF VILLAGES

- We are interested in spotting variation of a certain parameter among the lects spoken on these villages

MAP OF FEATURE ON VILLAGES

- We will very unlikely be able to conduct fieldwork in each single village. Therefore, we need to choose a *sample* of locations.
- *Research Question*: How to choose the sample of villages to survey?
    - 1 How many villages is enough for spotting variation?
    - 2 Given an amount of sampled villages, how to decide which ones are representative of our population?

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Our approach

- We assume that we want to find the distribution of variation for one feature, and we try different ways of choosing the sampled villages for finding it:
- As we assume we don't have any data beyond the geographic location of each village, we use these locations for building our sample
- We generate clusters with different algorithms (k-means, hierarchical clustering) and pick our sampled locations based on them (package stats, Team et al. [2013]).
- We compare our results with random sampling for two different scenarios:
    - Binary categories for simulated data with different distributions
    - Multiple categorical data for Circassian languages

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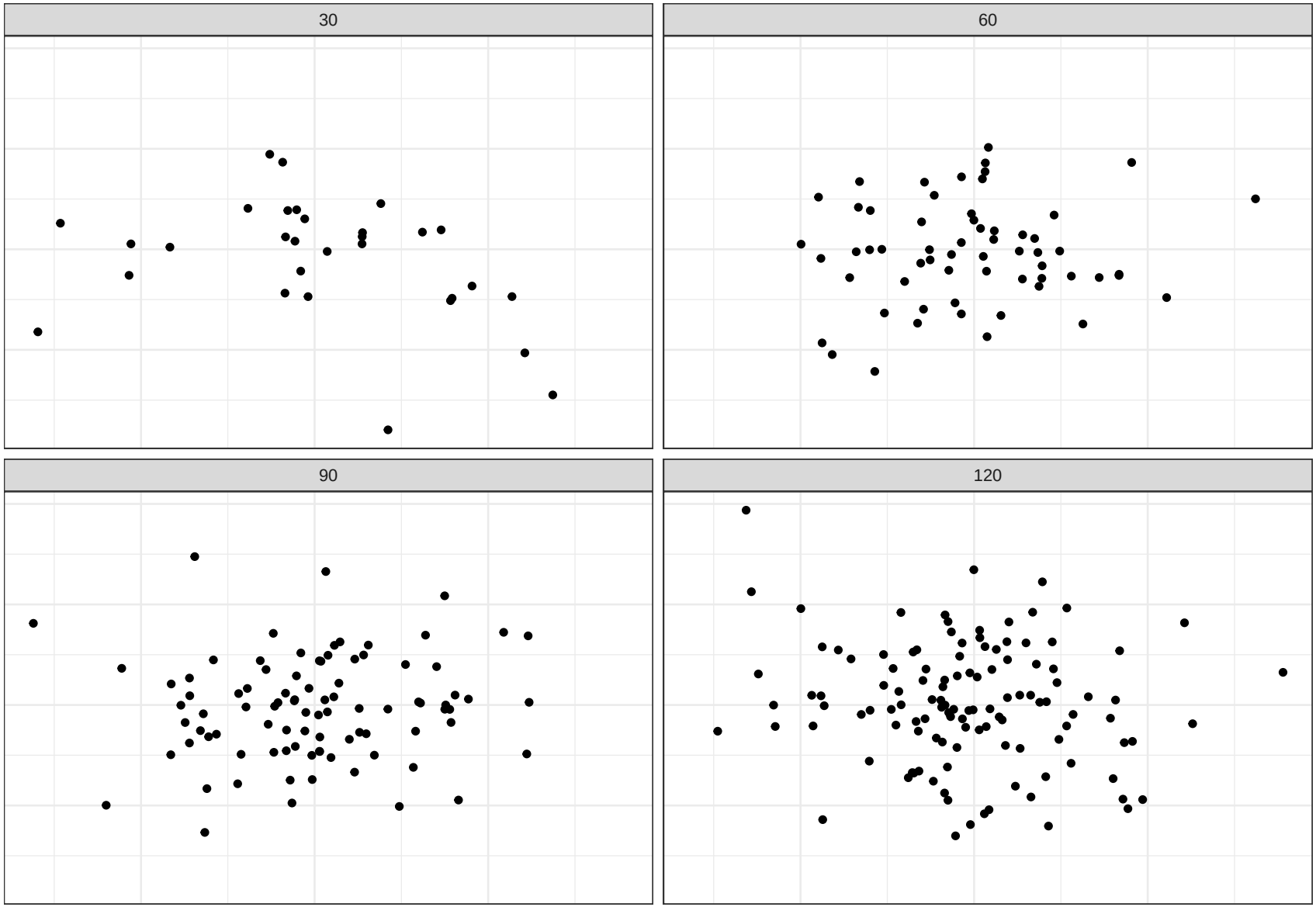
Simulated data

- total number of locations (N): 30, 60, 90, 120
- type of spatial relations:
  - random
  - two more or less separable regions
  - central and periphery
- proportion of variation in the explored variable (p): 0.1, 0.2, 0.3, 0.4, 0.5
- amount of clusters (k): $2, \ldots N/2$
- percantage of observations taken from each cluster (r): $0.1, 0.2, \ldots$

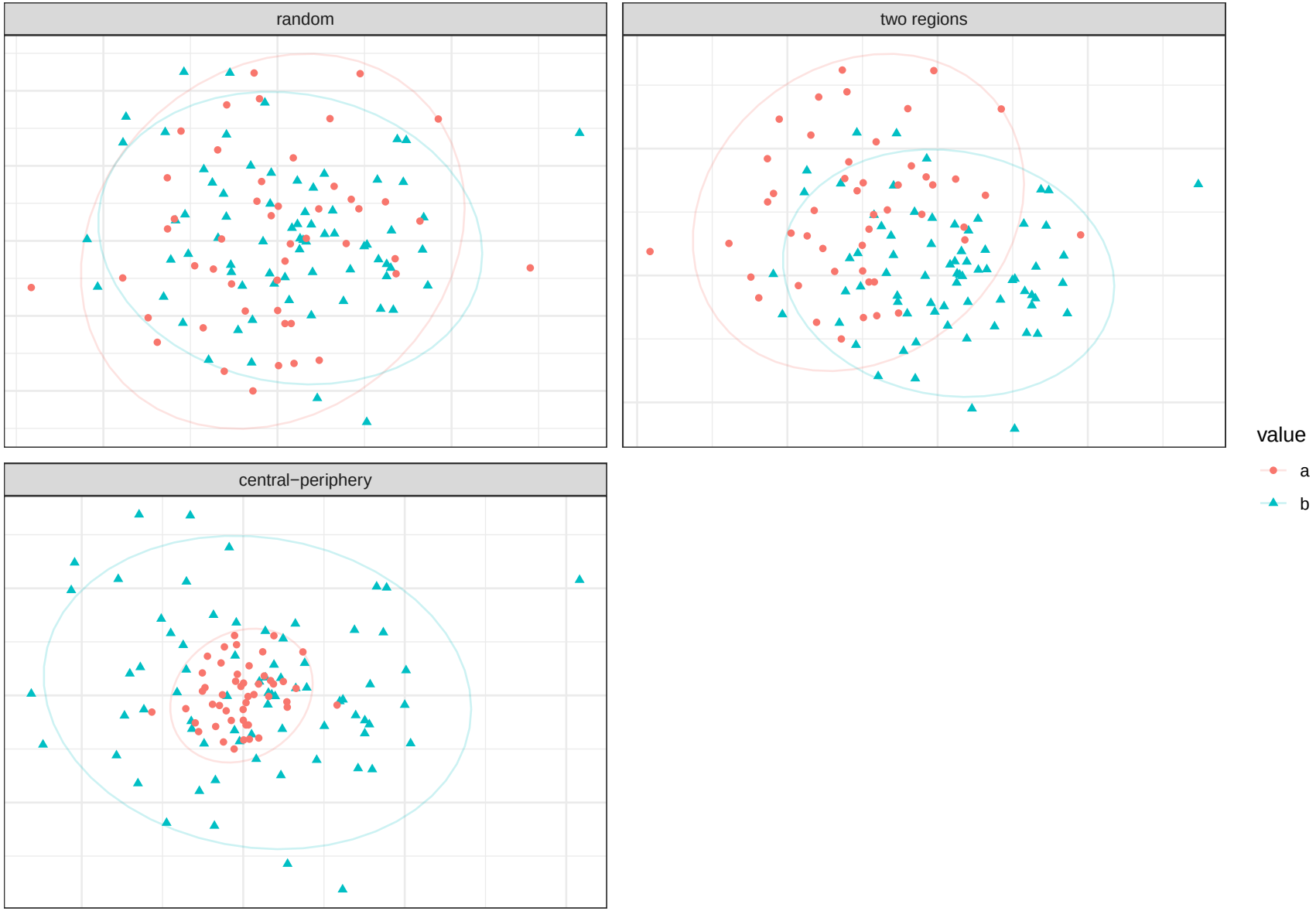
From those values we could derive a number of sampled locations (n):

$$n = N \times r$$

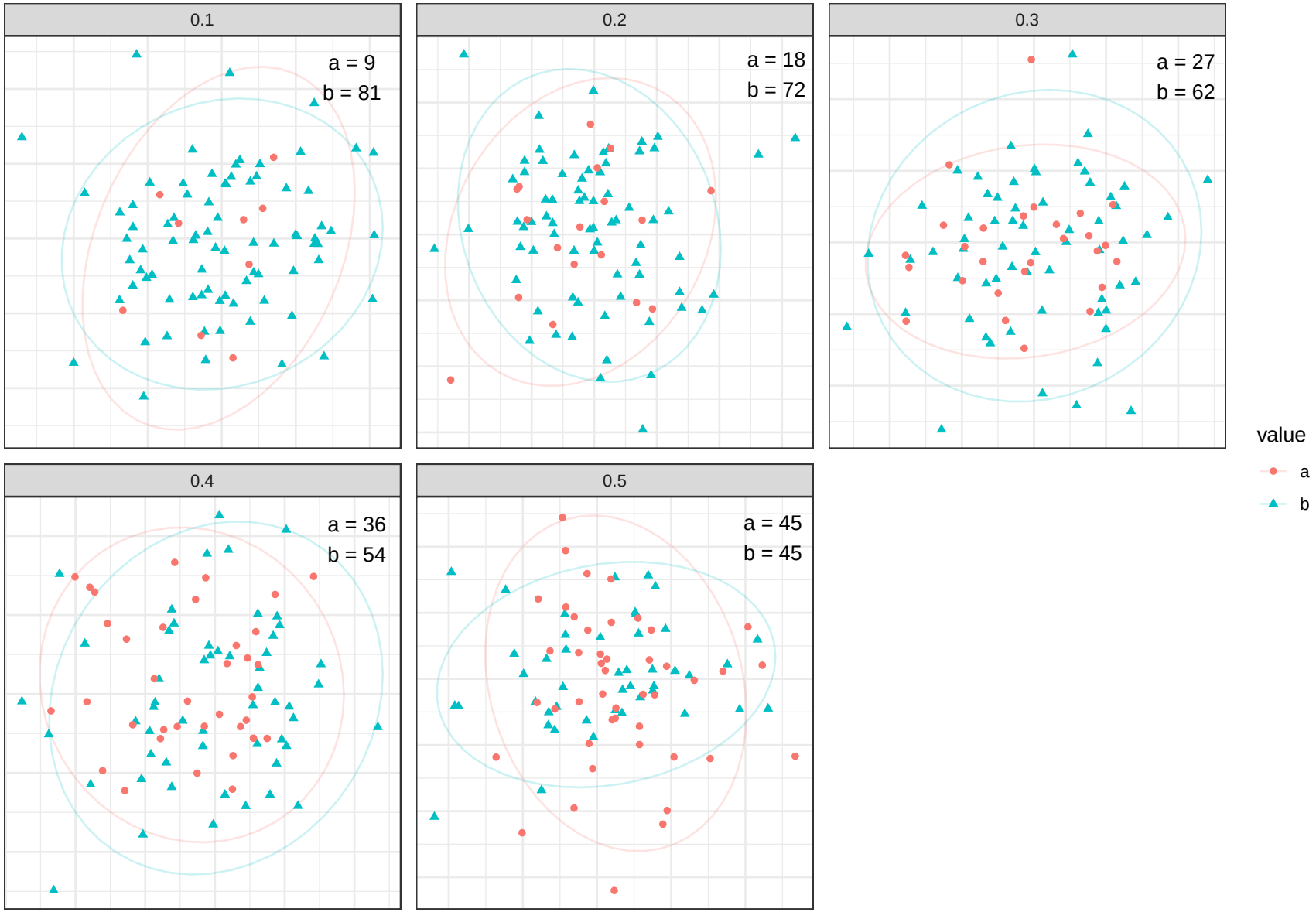
Example of different number of locations (N)



Example of different type of spatial relations



Example of different proportions of variation in the explored variable (p)



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