Summary: Three types of spatial data

- Geostatistical:
  - data collected at a point
  - usually smooth change over spatial locations
- Areal:
  - data are aggregates over a spatial region
  - abrupt changes between constant regions
- Point pattern:
  - the locations are the data
  - can have additional information (marks), which we haven't talked about
- For each, saw how to:
  - summarize the data (often graphically)
  - describe/model 1st order properties (mean, intensity)
  - describe/model 2nd order properties (covariance/semivariance, connections among regions, K function)

Summary and resources

- Briefly looked at some extensions (e.g., space-time)
- But 15 weeks only provides a quick glimpse at what has been and could be done.
- Along the way have looked at many methods
- Most also very useful for non-spatial data
  - likelihood as alternative for non-normal distributions
  - inference using randomization tests and bootstrapping
  - estimating parameters / predicting values rather than p-values
  - the need to identify your question before starting the analysis
- Folks in the department working on spatial issues:
  - me: point patterns, ecological/environmental applications
  - Mark Kaiser: count data, fisheries applications
  - Petrutza Caragea: general applications, large data
  - Zhengyuan Zhu: surveys, large data
  - Somak Dutta: variety trials, large data