

Spatial Data Analysis in Archaeology
Anthropology 589b

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Problem Set 1: Correlograms and Variograms

Background.

You have been hired by the State Historic Preservation Office to evaluate the spatial sampling strategy that was employed at a Phase-III salvage excavation at the Compton Site, a 17th-century plantation on the Patuxent River. The specific question the SHPO wants you to answer is: to what extent to was the sampling strategy successful in capturing spatial patterning in the following artifact classes:

- Total White-clay Pipe fragments (field name: WHITEPIPES)
- Total Red-clay pipe fragments (fieldname: RPIPEST)
- 6/64th inch-bore diameters white-clay pipe stems (fieldname: WPIPES6)
- 7/64th inch-bore diameters white-clay pipe stems (fieldname: WPIPES7)
- 8/64th inch-bore diameters white-clay pipe stems (fieldname: WPIPES8)
- 9/64th inch-bore diameters white-clay pipe stems (fieldname: WPIPES9)

The ability to document spatial patterning in these artifact classes is important for two reasons. First, archaeologists suspect that red-clay pipes, which were locally made, were less costly than white-clay ones, which were imported from Europe. Hence differences in spatial patterns of red and white-clays pipes can inform us about social differentiation in the use of space at the site. Second, archaeologists have long known that the interior bore diameter of white-clay pipes decreases over time. Hence differences in the spatial distribution of different bore diameter classes can allow us to trace change in the location of smoking at the site over time.

To answer the question, you will need to look at the correlogram that shows the relationship between autocovariance (or Moran's I) and lag distance and the variogram that shows the relationship between the semivariance (or Geary's C) and lag distance.

What to turn in.

A short (< 1 page single spaced) description of the problem, the methods you used to address it, your results, and your conclusions. Come to class prepared to describe your results. Due date: 02.05.07