Geo200cn sp17 – Lab7

Quantitative Geography

In this lab you will continue to practice point pattern analysis with R. If the concepts you are working with feel unclear or unfamiliar that's a good hint that you might want to re-review Chapt 5+6 of OSU and your lecture notes.

Start by reading and following along with the Distance section, and the first three subsections (Adjacency, Two Nearest Neighbors, Weight Matrix**)** of the Spatial Influence section of Chapt 2. Scale and Distance in the Spatial Data Analysis on RSpatial. Then respond to the questions below.

1. Distance [http://rspatial.org/analysis/rst/2-scale_distance.html#distance]
a) [Question 4 in the text] Show R code to make a cluster dendogram summarizing the distances between these six sites, and plot it. See ?hclust
[Remember dendogram are a tree of branching diagram that illustrates clustering or similarity]

b) [Question 5 in the text] What is the unit of the values in "gdis"? See ?pointDistance

2.Spatial Influence [http://rspatial.org/analysis/rst/2-scale_distance.html#spatial-influence]
a) In preparing the two nearest neighbors matrix, why do you select columns 2 and 3, and not column 1?

3. Distance and Weight Matrix UCD Places
a) Using the same UCD places we used in Lab4 [UCplaces.csv] you will calculate a binary distance matrix that defines neighbors as places closer than 500 meters.

b) Which places are defined as neighbors to Hunt Hall?

To do the above you will have to: read in the points; create a distance matrix that can accept longitude latitude values and output distances in meters; create a matrix that tells you if a neighbor distance is less than 500 meters; change the values of the diagonal to NA; and multiply by 1 to get the binary values.

Bonus) Calculate a continuous value matrix for the same data, with distances measured in meters, and where rows sum to 1.

Hint: if the matrix output from ?pointDistance only returns half the matrix you can calculate the symmetrical matrix fairly simply with the forceSymmetric function in the Matrix package. See ?forceSymmetric for details.

Deliverable
Hand in the results as a R Markdown file, include both the source file and HTML file.
You can complete the .Rmd file available on Canvas.

Due
Wednesday, May 3, by 9a