Guidelines for Research Paper

BST 6200 – Spring 2020

Generally speaking, the guidelines are very broad. Find data, pose a research question, and use one of the following three methods to answer your question.

1. Point process patterns (including the K-function, etc.)

2. Kriging

3. Hierarchical models for areal data

Originally, I envisioned all the projects would apply models for areal data, but we have been delayed due to the move to online courses and the extra week we missed. I still believe that areal data is the best choice, even though it is the last topic to be covered.

Here is an outline about how such a project would look. Models for areal data involve disease counts (or some other count) for cases that occur in predefined regions such as counties. You as the researcher might assume that the disease count depends on the population of the county and on other demographic variables for the county. For example, we will study cases of SIDS (sudden infant death syndrome) in North Carolina counties. Predictor variables might involve average income in the county, percent minority in the county, percent of college graduates in the county, etc. In applying these models you will be able to answer questions such as “What is the effect of variables X1, X2, and X3 on the rate of cases Y when we take into account the spatial correlation?”

You will likely need three sources of data for such a project:

1. the shape files for the state and its counties (Georgia would work great, because we already have the shape files for Georgia, but it’s not hard to find the shape files for other states and counties.)

2. the outcome variable (a count variable for each county in the state)

3. demographic characteristics for each county in the state.

It might be the case that you get data for steps 2 and 3 from the same source.

You can begin to collect this data immediately; you don’t have to wait for us to cover hierarchical models for areal data. You might even write the introduction, literature review, and statement of the problem for your paper. Then once we cover this topic you will be ready to “plug and chug” to do the calculations. You’ll just have to add the calculations, interpretations, and conclusions.

At some point I will ask you to send me a paragraph about your plans. That way I can make suggestions before you get too deep into the project.