

Spatial Analytics in R Term Project

Points: 200 Points

Overview:

The goal of this project is for you to undertake an independent analysis of data and report the findings. The findings must be reported using an R Markdown document that is then rendered to an HTML webpage. Note that this project will be integrated into your capstone if you are taking this course to fulfill the Environmental Geoscience Capstone. Graduate students can use data relating to their own research, thesis, or dissertation. However, you don't have to. If you need help defining a topic or finding data, please talk with me early in the semester.

Although this is the same project for graduate and undergraduate students, graduate student projects are expected to be more involved in terms of the methods used, the quality of the research and communication, and the interpretation of the findings. Graduate and undergraduate projects will not be directly compared.

Grading

1. You must turn in a short paragraph describing what you want to accomplish in this project. If this is not delivered by the specified date/time, there will be a 20-point reduction applied to the final project grade. It should include the following:
 - a. A clear description of the objectives of the project.
 - b. A description of the source(s) of the data for the project.
 - c. A description of the types of analyses you plan to undertake in R and the packages you may use. This doesn't have to be perfect at this stage, but you should be thinking about the type of data analyses you plan to perform.
 - d. A discussion of any issues or concerns you have moving forward with the project.
2. The results of the analysis must be delivered as a fully functional webpage generated from an R Markdown document. This will be graded out of 200 points and should include the following:
 - a. A descriptive title.
 - b. An introduction section that clearly described the goals of the study. (Up to 20 Points)
 - c. A background section that provides a literature review of related research. You should also include a reference list in a style of your choosing at the end of your document. You must also include in-text citations. (Up to 40 points)
 - d. A methods section that clearly explains the types of analyses performed. You should clearly describe the data you are using and the study area, if you have one. You should clearly explain the methods used and how they were implemented in R. Make sure to note what packages you used. This project will partially be judged based on the suitability of the methods used to address the objectives of the study. The methods section should include your code. (Up to 30 points)
 - e. A results and discussion section that clearly explains the results of your analysis. You should provide a discussion of your findings that are informative and supported by the analyzes performed. Any issues or limitations should be clearly explained. (Up to 30 Points)

- f. You should include figures in the report. All figures will be judge based on their quality. All figures should be of publication quality. You can include tables if you'd like. (Up to 30 Points)
- g. A conclusion section should be provided that clearly explains the key findings of the analysis. (Up to 10 points)
- h. The webpage will also be graded based on how well it is formatted. You should make good use of headers, bolding, italics, links, URLs, code, and plots. This document should be of publication quality. (Up to 20 points)
- i. You will also be evaluated based on the quality of your communication. This manuscript should effectively communicate your findings to a general audience, or someone that doesn't work in your discipline. There should be minimal grammatical issues and it should be logical and well structured. (Up to 20 points)

What to Deliver

1. R Markdown document
2. HTML webpage generated from an R Markdown document with any needed assets (This should be a fully functional webpage.)