Capstone project - outline

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Abstract

Once I've written the report I'll add an abstract

Keywords: I'll need to add keywords

Note that I will include a table of contents

1 Introduction

Here I will discuss why I chose this topic and will preview what the report contains.

1.1 Motivation

Motivations include:

- I have long had an interest in maps (since childhood)
- I wish I had access to a Shiny app like this when I was at Amherst
- I have no exposure to working with GIS data so this will be a challenge

1.2 Overview of the paper

I will go through the structure of the paper (subject to change).

2 Expository review

2.1 Basics of working with geospatial data

Here I will cover the very basics of geospatial data.

2.1.1 Why is it worthwhile to work with geospatial data?

MDSR section 17.1 provides a good example of why geospatial data can be helpful. I plan to come up with my own example (similar to the cholera deaths example) and/or list some examples of how geospatial data is ubiquitous in modern society: for example, think Google Earth, weather radar maps, GPS systems, etc.

2.1.2 Geospatial data files

I will first emphasize that there are *a lot* of different GIS data file types. I might give some as examples. Then, I will focus primariy on the file types that I will be utilizing (shp, shx,

dbf). I will discuss the functions/packages I will heavily relying upon to read the files/use them in R.

2.1.3 Projections

I will give a general overview of the concept of projections. I will also include some images that show drastically different portrayals of Earth in 2D depending upon the projections used.

2.2 Geospatial computations

I will try to emphasize in this section that geospatial computations sound scary but aren't!

2.2.1 Computing distance

I'll go into how distance is computed.

2.2.2 Elevation charts

I'll go into how elevation is computed.

3 Shiny app

The Shiny app portion of the report will include, for each aspect of the app:

- A brief introduction as to why I am including that aspect in the app
- Coding that I did
- A screen shot of that aspect of the app
- A brief ending few sentences to wrap up the subsection

3.1 Data wrangling

At present I plan to put the data wrangling in the Shiny app section, but I might make this its own section.

3.2 Elevation charts

3.3 Length of trails

3.4 Trail categorization scheme

3.5 Points of interest layer

3.6 Waypoints layer

3.7 Trail type layer

3.8 Engaging with the Shiny app

Here I'll put instructions for how to use the Shiny app (if necessary). I will also highlight particularly clever features of the app (if applicable).

4 Conclusion

I'll wrap up the report here, and will cover:

- Recall: motivation
- Review of what I did
- Why this is novel
- Why I'm proud of it