SOC 4650/5650: Lab-04 - Interactive Mapping of Structures at Risk

Christopher Prener, Ph.D.

Spring 2020

Directions

Using data from the `data/lab-04/` folder available in the `lecture-05` repository, create an interactive `leaflet` map using RStudio. Your entire project folder system should be uploaded to GitHub by Monday, February 17th at 4:15pm.

Analysis Development

The goal of this section is to create a self contained project directory with all of the data, code, map documents, results, and documentation a project needs.

Download Data

a. **Clone** the `lecture-05` repository from GitHub using GitHub Desktop.[1]

[1] If you are not sure where your GitHub Desktop data has download to on the computer, you can right click on the repo's entry in GitHub Desktop and have it take you to the repo in Windows File Explorer. By default, this should be within your `Documents/` directory.

Create a Project Folder System

b. Using RStudio, add an R Project to the *existing* directory in your assignments repository named `Lab-04`. To do this, you will want to go to: File ▷ New Project ▷ Existing Directory and find your *existing* `Lab-04` folder.

c. In the Files tab on the lower right-hand side of RStudio's screen, add a New Folder using the New Folder button right below Files. Name this new folder `docs`. Add two others named `data` and `results`.

d. Reduce RStudio for a moment. Using the Windows File Explorer app, find your project as well as the repository you cloned previously. It is easiest if these are in two separate windows.

e. Drag the lab data from `lecture-05/data/lab-04/` into your RStudio Project's `data/` subdirectory. Verify using RStudio that all of these data are accessible from within your project.

Create an R Markdown File

f. Back in RStudio, create a new notebook by going to File ▷ New
    File ▷ R Markdown. Choose the SLU Sociology template and save
    it within that `docs/` subdirectory you just created. The notebook
    should be named `lab-04`.

g. Expand the YAML heading by adding your name and the assign-
    ment title "Lab 04".

h. Use RMarkdown syntax to create your first assignment notebook!
    Make sure it has an introductory section, a section for loading
    packages, a section for loading data, and a section for part 2
    below. These sections should be second-level headings (e.g. `##`
    `Introduction`). Within Parts 1 through 4, use third level headings
    to designate question numbers (e.g. `### Question 1`).

i. When you are done, "knit" your document by clicking the Knit
    button in the toolbar at the top of the notebook.

Load Data

j. Import the files `METRO_STRUCTURE_PctMobileHome.shp` into your
    global environment.

Part 1: Data Exploration

The goal of this section is to initially explore the data.

1. List the variables in the mobile home data using `str()`.

2. Produce an interactive visual preview of the data using the `mapview`
    package.

Part 2: Interactive Mapping

The goal of this section is to create an interactive map using `leaflet`.

3. Use `names(providers)` to identify a basemap to use for your map.

4. Using a color ramp and basemap of your choice, symbolize the
    percentage of mobile homes in each county. Add a popup that has
    the county name as well as the percentage of mobile homes in that

county on separate lines. The popup should be formatted like the ones we created during the lecture, with bold labels on separate lines for each characteristic on the pop-up. Your map should also have a legend and the legend's name should be edited for clarity. [2]

[2] *Hint:* There is no need to export this - make sure you have PhantomJS installed on your computer and it will be included in your final, knit document.

Analysis Development Follow-up

Don't forget to knit your document when you are done!