SOC 4650/5650: Lab-08

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Directions

Please complete all steps below. All requested deliverables should be uploaded to your GitHub assignment repository by 5:00pm on Thursday, March 23rd, 2017. This lab uses data from the `MetroHydro` directory in `CourseData`.

Editing the Dam Data

1. Using Atom, construct a well-formatted do-file using the `headFull` snippet. Be sure to edit the appropriate lines in the template that detail the name and purpose of the file.
2. Your do-file should *successfully* accomplish the following tasks. It should include narrative text that explain what the command accomplished.
   (a) Import the raw data into Stata.
   (b) Confirm that the variable `objectid` uniquely identifies observations.
   (c) Create a string version of the variable `objectid` with an appropriate number of leading zeros. List the first ten observations in your output file to demonstrate the completion of this task.
   (d) Look at the latitude and longitude variables and test to make sure each has *complete* information by investigating their lengths. If either has fewer than seven digits, drop those observations. Tabulate both length variables to demonstrate the completion of this task.
3. Execute the do-file and debug any errors until the code executes without issue.
4. Add the do-file, log-file, and a *tidied* markdown output file to your assignments repository.

Projecting and Mapping the Dam Data

5. In Excel, save both metro dam `csv` files as `xlsx` files.
6. In ArcMap, set the data frame's coordinate system to `NAD 1983`.
7. Add the county boundary data from `MetroHydro/MetroHydro.gdb`.
8. Add the dam location data to your map document and then project the data using the `longitude` and `latitude` variables.
9. Export a map image as a `pdf` file at 300dpi of the projected dams overlaid on county boundaries. Add this image to your assignment repository.
10. Save the dam location data as a geodatabase feature class in `MetroHydro/MetroHydro.gdb`. Update your meta dictionary file accordingly.

Mapping Dangerous Dams

11. Add the dam hazard data to your map document and join it to your newly created dam location feature class.
12. Add the joined data as a geodatabase feature class in `MetroHydro/MetroHydro.gdb`. Update your meta dictionary file accordingly.
13. Symbolize the data using the attribute `hazard` where:
    - "H" refers to high hazard dams where failure would cause both loss of human life and/or economic as well as environmental losses,
    - "S" refers to significant hazard dams where failure would cause economic as well as environmental losses,
    - and "L" refers to low hazard dams where failure is not expected to cause loss of human life or economic or environmental losses. If economic losses are incurred, they are limited to the owner of the dam itself.
14. Export a map image as a `pdf` file at 300dpi of the dams categorized by hazard.

Mapping Dangerous Dams by County

15. Query the dam hazard feature class using the following statement to show only high hazard dams - `"hazard" = 'H'`

16. Join the high hazard dams to the county boundary data so that you have a count of the number of high hazard dams by county.

17. Save the combined counts of dams with county information as a new geodatabase feature class in `MetroHydro/MetroHydro.gdb`. Update your meta dictionary file accordingly.

18. Create a choropleth map of the number of high hazard dams by county. Use the Jencks Natural Breaks classification technique with three classes.

19. Export a map image as a `pdf` file at 300dpi of the number of high hazard dams by county.