SOC 4650/5650: Lab-08 - Health Outcomes and Resources in St. Louis

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Directions

Using data accessed from `stlData`, the course data release, and a mini data release in the `lecture-09` repository, create the maps below related to health outcomes and resources in St. Louis. Your entire project folder system, including data and notebook output, should be uploaded to GitHub by **Monday, March 26th** at 4:15pm.

Part 1: Analysis Development (Review from Lectures 01 and 02)

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. Make sure to include all relevant directories, a well formatted notebook, and a 'README' that traces the changes you make to all of your data.

Part 2: Mapping Diabetes Prevalence

The goal of this section is to be able to create a map of the prevalence of diabetes in the City of St. Louis by census tract using `R`.

1. Load the census tract data from the `stlData` package along with the data contained in `STL_HEALTH_Diabetes.csv`, which is included in the mini data release in the `lecture-09` repository.
2. Find and evaluate matching identification variables in both the tract and diabetes data. Remember, they do not have to be named the same, they just have to have the same data. Test both variables for their formatting (numeric or character). If they do not match, convert one so that it is formatted like the other.
3. Complete a table join of the diabetes data to the tract data.
4. Create a well-formatted map of diabetes prevalence in the City of St. Louis. Make sure to include all necessary additions and to use an appropriate color palette. Export the map as a `.png` file at 300 dpi.

Part 3: Mapping Federally Funded Community Health Centers

The goal of this section is to be able to create a map of federally funded community health centers in St. Louis using ArcMap.

5. Add the `STL_HEALTH_Centers.shp` data, which is included in the mini data release in the `lecture-09` repository, and the census tract boundary from the `DataLibrary/ExampleData/Shapefiles` folder to a new map document.
6. Complete a polygon to points spatial join where each health center has the census tract data added to it for the tract that it lies in.
7. Create a well laid-out qualitative map that shows each community health center on top of the census tract boundaries, which should be symbolized as ground. The community health centers should be symbolized as figure with hue selections that correspond to different census tract `GEOID` values. Include a legend showing how different point hues correspond to the `GEOID` values. Export the map as a `.pdf` file at 300 dpi.

Part 4: Density of Federally Funded Community Health Centers

The goal of this section is to be able to create a map of the density of federally funded community health centers in St. Louis using ArcMap.

8. Add the `STL_HEALTH_Centers.shp` data, which is included in the mini data release in the `lecture-09` repository, and the census tract boundary from the `DataLibrary/ExampleData/Shapefiles` folder to a new map document.
9. Complete a points to polygon spatial join where each census tract has a count of the community health centers within it added to it.
10. Create a well laid-out choropleth map that shows the density of community health centers (be sure to normalize your count data by `ALAND`!) per census tract. Export the map as a `.pdf` file at 300 dpi.

Part 5: Health Centers Closest to Each School

The goal of this section is to be able to create a qualitative map of public schools that are closest to each community health center in St. Louis using ArcMap.

11. Add the `STL_HEALTH_Centers.shp` and the `STL_EDU_Public.shp` data, which are both included in the mini data release in the `lecture-09` repository, to a new map document. Also add the city boundary data from the `DataLibrary/ExampleData/Shapefiles` folder.

12. Complete a points to points spatial join where each school has information about the closest community health center added to it.

13. Create a well laid-out qualitative map that shows both the schools and the community health centers. Schools should be symbolized as figure with hue selections that correspond to different community health centers (use the `Facility` variable). The health centers themselves should stand out but should contrast visually with the schools. The city boundary should be symbolized as figure. Export the map as a `.pdf` file at 300 dpi.