

SOC 4650/5650: Lab-02 - Tornado Sirens in Jefferson City, MO

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Directions

Using data from the `JeffCity.gdb` geodatabase and the `M0_DEMOS_JeffCityRegion` data available on Github in the lecture-03 repository's `data/` folder, create several maps using ArcGIS Pro. Your entire project folder system, including data, ArcGIS map document, and exported map images, should be uploaded to GitHub by Monday, February 3rd at 4:15pm.

Analysis Development

Download Data

- a. **Clone** the lecture-03 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 (Review)

- b. Open ArcGIS Pro and choose Map under New project. Name the project Lab-02, un-check the option to create a new folder, and select the Labs/Lab-02 subdirectory of your assignment's repository.
- c. Reduce ArcGIS Pro for a moment. On the Windows File Explorer app, add new folders named `data/` and `results/` to the project directory.
- d. Drag the `JeffCity.gdb/` folder within lecture-03/`data/` into the Lab-02 project's `data/` folder.
- e. Drag the `M0_DEMOS_JeffCityRegion` folder within lecture-03/`data/` into the Lab-02 project's `data/` folder.
- f. In ArcGIS Pro, click on Folders in the Contents pane. In the center Catalog window, double-click on Lab-02 and verify that the `data/` folder is visible.

Part 1: Create a County Population Map in ArcGIS

The goal of this section is to create a thematic map plotting population density of the two counties that Jefferson City, MO is located in - Cole and Callaway.

1. When you open the project, a Map/ folder will be created along with a default map named Map. If this is not the case, you can create a new map from the Catalog view by going to Insert ▸ New Map ▸ New Map.
2. In the Catalog view, right click on the map and rename it Part 1 - Population Map.
3. Open the map and add the MO_DEMOS_JeffCityRegion.shp data into the "Layers" data frame. These are all of the census tracts in Cole and Callaway counties.
4. Remove the basemap so that only the census tract polygons you just added are visible. You can either un-check the basemap in the Contents pane or right-click on it and choose Remove.
5. Map the population density of these census tracts using the total population variable and the square kilometers variable.^{2, 3}
6. Export the map as a png file at 300 dpi. Make sure it is saved to your results/ folder.

² Hint: Use the "estimate" variable that ends with an "E" and not the "margin of error" variable that ends with an "M"

³ Hint: These selections are made from the Symbology pane.

Part 2: Map Tornado Warning Sirens in Jefferson City, MO

7. In a new map named Part 2 - Tornado Sirens Map, add the city boundary feature class from JeffCity.gdb. Select the largest area of the city (the northeastern most area) and create a new layer symbolizing only that section of the city.⁴
8. Rename your new selection layer as JeffCity Main and rename the original city layer as JeffCity Ground. Make sure JeffCity Main is positioned above JeffCity Ground in your Contents.⁵
9. Symbolize JeffCity Ground as a ground layer by using a light gray fill.
10. Symbolize JeffCity Main as a feature layer by using white, which will offer high contrast to the data we will add next.
11. Add the streets feature class *on top* of the city boundary layers.

⁴ Hint: The Select tool is available in the Map ribbon's Selection section. Select the polygon, right click on the layer in the Contents, and choose Selection ▸ Create Layer from Selected Features.

⁵ Hint: Renaming is done by double-clicking on each feature name in the Contents and typing a new name.

12. Make sure that the city streets layer is above the city layers in the Contents.
13. Symbolize JeffCity GroundStreets with a line that has a width of 0.4. The color of this line should have the RGB values of 104,104,104.
14. Add the warning sirens feature class on to of the streets layers in the Contents.
15. Select the warning sirens that are in the main part of Jefferson City (within the JeffCity Main layer) and create a new layer for these sirens. Symbolize these sires as points sized 8. The fill color of these points should have the RGB values of 225,0,0.
16. The other warning sirens in the city should be symbolized as a ground layer. They should be size 4 points with a fill color that has the RGB values of 78,78,78.
17. Make sure that the final order of your layers is as follows:
 - (a) tornado warning sirens in JeffCity Main
 - (b) other tornado warning sirens
 - (c) JeffCity Streets
 - (d) JeffCity Main
 - (e) JeffCity Ground
18. Zoom to the JeffCity Main layer.
19. Export the map as a png file at 300 dpi.

Part 3: A Second Map of Jefferson City, MO

Using the tools we've covered this week (and last), make a second map using any data other than the tornado sirens and population counts for Jefferson City, MO. Pay particular attention to color choice as well as figure and ground. Create this map without a basemap. You should use a minimum of three features from JeffCity.gdb *that go together conceptually*. Export the map as a png file at 300 dpi. Make sure it is saved to your results/ folder.