SOC 4650/5650: PS-04

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Directions

Please complete all steps below. Your final map layout and the `.pdf` containing your wire frame and small multiple layout should be uploaded to your GitHub assignment repository by 4:20pm on Tuesday, February 28th, 2017. This problem set uses data from the `MOBoundary` and `MetroUnemploy.gdb` directories in `CourseData`.

Map Unemployment in the Metro Area, 2015

1. In a new map document, set the projected coordinate system to `NAD 1983 UTM Zone 15N` for the `Layers` data frame.
2. Add the following layers in this order on your Table of Contents:
   (a) Missouri state boundary from the `MOBoundary` directory - symbolize with no fill but use the "Boundary, National" symbol with a warm hue for the color[1]
   (b) Metro unemployment for 2015 - Use the Jenks natural breaks classification system with 5 classes to create a choropleth map of the unemployment rate per county, which you can find in the `pctUnemply` variable. Next to each range of values listed in the Symbology tab, you will see a Label column. Simplify the labels to remove all of the trailing zeros. Adjust the color ramp to a 5-class color ramp selected from Color Brewer. Finally, you should also rename this layer to something simple for use on the legend later.
   (c) Illinois state boundary from the `MOBoundary` directory - symbolize as a ground layer
   (d) Missouri state boundary from the `MOBoundary` directory - symbolize as a ground layer
3. Zoom to the metro area unemployment layer.
4. Rename this data frame as `Unemployment 2015`.

[1] *Hint:* See Lab-06 for this process if you've forgotten how to access these symbols.

Construct the Inset Map

5. Copy the Illinois and Missouri state boundary layers (the bottom two layers in each data frame) along with the metro area unemployment layer to a new data frame named `Inset Map`.

6. Change the data frame's coordinate system to `USA Contiguous Albers Equal Area Conic`.

7. Re-symbolize the metro area unemployment layer so that they use the "Rose" pre-set symbol.

8. Zoom to the full extent of the map.

Construct the Map Layout

9. Switch to the Layout View and create a well formatted map layout for an 8.5" by 11" printout in landscape orientation.

10. Add guides that create .5" margins around the page to help you construct your layout.

11. Re-size your data frames so that you make the best use of the available space and remove the neatline border around both of them. You should adjust the extent of the data in each of these data frames so that you can see the largest amount of data possible.

12. Include a legend that identifies the choropleth map values, a scale bar, a title, detailed text about authorship, and the projection. Also add detailed data about the primary source of these data. Check the `readme.pdf` file in the `SOC5650/Data` folder for details on data sources.

13. Manually add state names to the main map so that you have complete control over where the labels are positioned. Use the halo effect as you normally would for map labels.

14. Export the map layout as a `pdf` file at 300 dpi.

Mapping Change in Unemployment Over Time

15. In Microsoft PowerPoint[2] or Apple Keynote, wire frame a print

[2] If you are using the newest version of PowerPoint, make sure the slide size is changed to 4:3. You can adjust this under the Design tab.

layout that has place holder text and shapes for the following elements: title, subtitle for the assignment name (PS-04), authorship, space for seven small multiples,[3] a legend, and text boxes for data source and projection. Try to maximize the amount of space you have available to each map. All maps should be the same size. Note the dimensions of the wire frame boxes for the maps.[4]

16. In a new map document in ArcGIS, set the projected coordinate system to `NAD 1983 UTM Zone 15N` for the `Layers` data frame.

17. Add all seven of the layers containing unemployment data for the years 2009 through 2015.

18. Each layer except 2015 will need three manually applied data classes so that you can use one color ramp and one legend for all seven maps. Data for 2015 will be mapped using two color classes. The data classes you should use are: 3.9 to 4.9, 5.0 to 6.9, 7.0 to 8.9, 9.0 to 10.9, and 11.0 to 11.7. You will also need a 5-class color ramp that is selected from Color Brewer. Choose *one* color ramp for the entire project (i.e. each map should have the same ramp).

19. For each layer, use the Symbology tab to adjust the data classes to the distribution of values in the variable `pctUnemploy`. Use the Classification window that is accessible from the Symbology tab to manually specify the break values, which are the upper bound of each of the ranges specified previously. You only need to apply the break values that cover the distribution of data for the given year. So, for 2009, you would not need break values below the 7.0 to 8.9 data class because there are no values smaller than 7.8. Again, for all years but 2015 you will need three break values specified. The 2015 data will need only two break values.

20. After you apply the appropriate break values, adjust the fill colors accordingly. Make sure the *highest value hue* (i.e. the *lightest*) in your color ramp is associated with the lowest unemployment rate. So, for 2009, you will need to use only the three *lowest value hues* (i.e. the *darkest*) since your data cover the three data classes with the highest unemployment rates (7.0 to 8.9, 9.0 to 10.9, and 11.0 to 11.7).

21. Once all seven years of data are appropriately specified, switch the page settings for your document to match the dimensions that you identified when you wire framed your layout.

22. In the Layout View, remove the neatline around the data frame and resize it so that it covers the entirety of layout image. Export layers one at a time as `.png` images at 300dpi.

[3] In PowerPoint, use the Shapes toolset under the Insert tab to draw the rectangular boxes you need. In Keynote, use the Shape button in the toolbar to draw the rectangular boxes.

[4] If you are using PowerPoint, this will be in inches; if you are using Keynote, this will be in points.

23. In whatever application you are using (PowerPoint or Keynote), make a copy of your wire frame slide. Add your exported images to this second slide, re-size them down to the appropriate dimensions, and replace the placeholder text you created in question 15 with the appropriate text. Make sure each map is clearly labeled with the appropriate year.

24. Create a legend manually using square shapes that have had their hues adjusted to match your Color Brewer ramp, and add labels to each legend item.[5]

25. If you have not already done so, delete the title slide that is automatically created when you make a new presentation file.

26. Export your two slides as a single `.pdf` file.[6]

[5] As you did earlier, draw rectangles on your slides. They should be identically sized and appropriately sized for a legend.

In PowerPoint, right click on the shape and select Format Shape ▷ Fill ▷ Solid Fill. You can access the More Colors menu at the bottom of the Fill Color selector and specify RGB color values.

In Keynote, select the shape and choose the Style tab in the inspector. You can specify RGB color values by selecting Fill ▷ Solid Color and then clicking on the color wheel button. Use the Sliders tab on the color picker and choose RGB Sliders from the dropdown menu.

[6] In PowerPoint, you will need to use the File menu to either print or export your slides to `.pdf`, depending on the version you are using. In Keynote, you can export to `.pdf`.