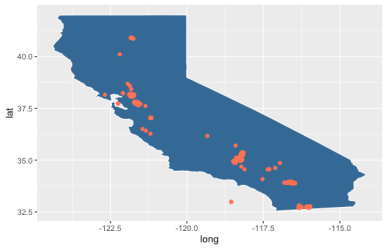
Homework 5

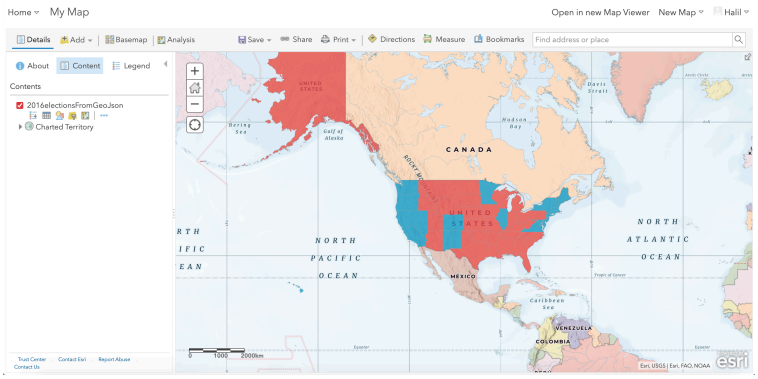
Introduction to Data Visualization - Winter 2022

Due on Mar 20, 11.59PM

1. Create a repository called, HW5, on your GitHub to upload your work.
2. Please inspect the R scripts which use ggplot() and geom_polygon() functions to see how the maps are drawn and new layer can be added -for instance- by using geom_point(). Then perform the followings:
   (a) Use map_data("state") from mapdata library to load the data frame which has geographic information for the US states. Then, filter out the coordinates for California to a new data frame called california.
   (b) Load wind_turbines.rda from DATA folder to your R environment and select the wind turbines located in California. You can name the new data frame with wind_ca.
   (c) Use ggplot() and geom_polygon() functions to visualize state of California.
   (d) Once you obtain the map, add your geom_point() function to plot wind turbine locations in CA. If your plot produces a colorbar (legend) please consider adding guides(fill="none") to your functions.
   (e) When you achieve the goals above, create a R markdown to create an html document which will have your code for both filtering and drawing, and the map embedded in it. Then submit your .rmd and html files to your GitHub. Your figure should be similar to the one below. Colors don't have to match.



3. Please perform the following steps on ArcGIS:
   (a) Go to Content, and click on New item button. Then select Your Device to import the geojson file for 2016 Elections (2016elections.geojson) from the DATA folder. Please use next button with default selections which will finalize creating your layer.
   (b) Click on Map on the main menu which should bring you a default map view. There, Add Charted Territory as your basemap first.
   (c) Click on Add on the left menu while map view is open and click on search for layers. This will first show your own content where you should be able to see 2016Election layer you created earlier. Then Add to Map after clicking on this layer.
   (d) Click on your 2016 Election layer to change your symbol settings. There, you should select the winner to color the states based on the winning candidate. The default coloring should use red for Trump, and blue for Clinton and you should get a map similar to below:



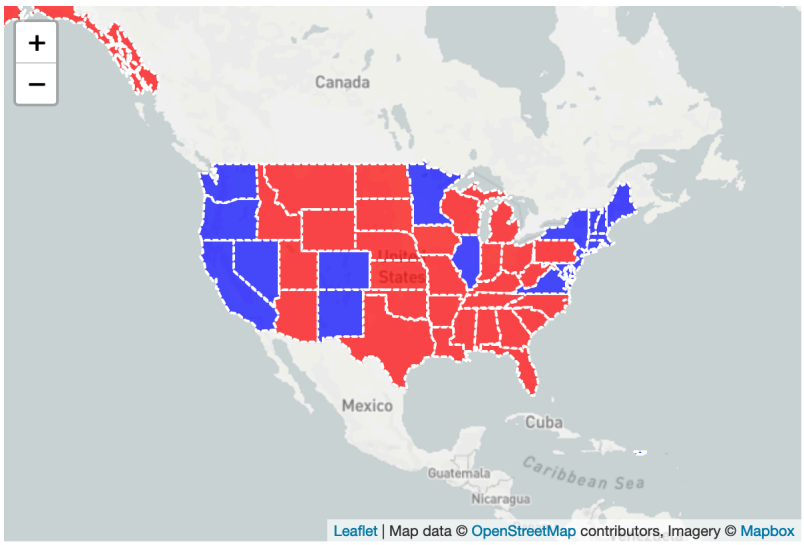
   (e) Please use the share button to create a web app and provide your URL along with the screenshot of your file content on ArcGIS with your name visible on right top of the screen. Please use the link submission option for this question so that I can click and see your web page.

4. Please see the content of ChoroplethUSMap.html and also open it in your browser how the states are colored based on the population density. Note that there are two functions defined in the html code. `getColor( )` is returning a color based d values which are population densities passed through another function `style( )`. Then please perform the followings:

   (a) Replace the JavaScript source in line 35 with "http://www-personal.umich.edu/~bisgin/2016elections.js"

   (b) Modify the `style( )` in a way that it should see "winner" in your .js file.

   (c) Modify your `getColor( )` in a way that it should have a if else statement which should return red color for Trump and blue for Clinton. (Please search for if statements in JavaScripts if you're not familiar with. Also search for the color code for red and blue to return. Your resulting map should like the one below)



   (d) Please upload your html file to your HW5 repository on GitHub, too. (GitHub doesn't preview your page, but we can pass the GitHub link to another party to view your page.)

- Please follow the submission instructions in each question.
- No late submissions will be accepted **unless you have an excuse**.