

Programming Assignment 7

GeoMapping: Population Density Map (12 points)

Due Date: Nov 16, Wednesday, 6:55pm

Your task is to create a population density map of one of the 49 states¹ (at the county level) of the United States.

You have been provided the code for visualizing county-wise unemployment data for the US states). This code uses us-10m.json cartographic file that has county boundaries. This code also uses county-wise unemployment data. The two data sets are related by the county code, that is common to both data sets.

For this assignment, you may use the us-10m.json cartographic data and visualize only the counties of the state (and ignore the rest) or find another website² to look for this dataset.

We have also provided the county population density data as “Population-Density by County.csv”. This data has been obtained from the following website:

[https://github.com/camillol/cs424p3/blob/master/data/Population-Density By County.csv](https://github.com/camillol/cs424p3/blob/master/data/Population-Density%20By%20County.csv)

This may have some missing counties or missing data. This is ok but you need to make sure that your program runs and that missing county or data are displayed in light grey (to indicate missing data).

These two data sets are related by the county code.

1. Your task is to create a simple county-wise population density map for the state. (4 points)

For color scheme, use exactly the *same normalization for population density* as used in California Population Density (link below), and *same color binding/legend and same data quantization*.

<https://bl.ocks.org/mbostock/5562380>

[This code is provided both in D3V3 and D3V4] (1 point)

2. Display the color legend as in the code above and create a variation where a different color binding and color legend is chosen (different shades of one color where deeper shade is more dense) so that it brings out the variations of population density within your

¹ No more than 2 students can choose the same state. Please fill out the Google form below to indicate the choice of your state. Please do **not** choose a state that has already been selected by two students.

² Cartographic boundaries of counties may also be available at the following website: <https://eric.clst.org/tech/usgeojson/> or at <https://github.com/topojson/us-atlas> (along with census tract boundaries). Alternatively, If you are able to find shape files (.shp) files, you can use the following website to convert shp files to Topojson files <https://mapshaper.org/> A tutorial to convert to Topojson files has been provided.

state better. You will provide a clickable button (unobtrusive button under the legend with something like “ Color” on the visualization) that will flip between the two visualizations. (2 points)

3. You will create a variation where the visualization will toggle (display or not display) county boundaries using the following button names “Toggle County Boundary”. (2 points)

4. Create a tooltip to display information associated with a county (3 points).

Proposing a State

Only two students can choose the same state. Every student must choose a different state. Propose the name of the state by filling out a Google form:

https://docs.google.com/forms/d/e/1FAIpQLSeGoYK_WHiQZFuBiZZuFBX_Xs1xan2Cq6RtB6lve92A7a70oQ/viewform?usp=sf_link

The google form is set to **accept submissions using your ucsc email**.

Before submitting the form, make sure that your proposed state has not been chosen already by two students.

https://docs.google.com/spreadsheets/d/1zhL5QnaHYiG5rh6w11_UKW53qArwsDT_QC-4NGzEQLw/edit - gid=1990950436

Your proposal is automatically approved so long as you are the first two students to propose the name of that state.

In addition,

1. Host above visualization on github.
2. Add a Bold Title at the top something like, “Arizona Population Density, 2022”
3. Add your name and affiliation with the class at the bottom as follows:

Your Name

Instructor: Suresh Lodha

CMPS 163: Data programming for Visualization

Fall 2022

Submission Requirements (2 points distributed as follows)

Submit all the files on canvas to run the program. In particular, be sure to include the json and csv files as well.

In addition, submit the following on canvas:

3. An inline clickable weblink for visualization (1 point)
4. An inline clickable weblink for github (1 point)

You may submit D3V3 or D3V4. Bonus points for implementations in D3 V5 or later versions.