ASSIGNMENT 3: Interactive Visualization

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INTRODUCTION:

In this visualization, we discover the distribution of various demographic aspects of different 'Census Areas' of Los Angeles & San Francisco Counties.

The dataset used divides these counties according to their 'Census Tracts'.

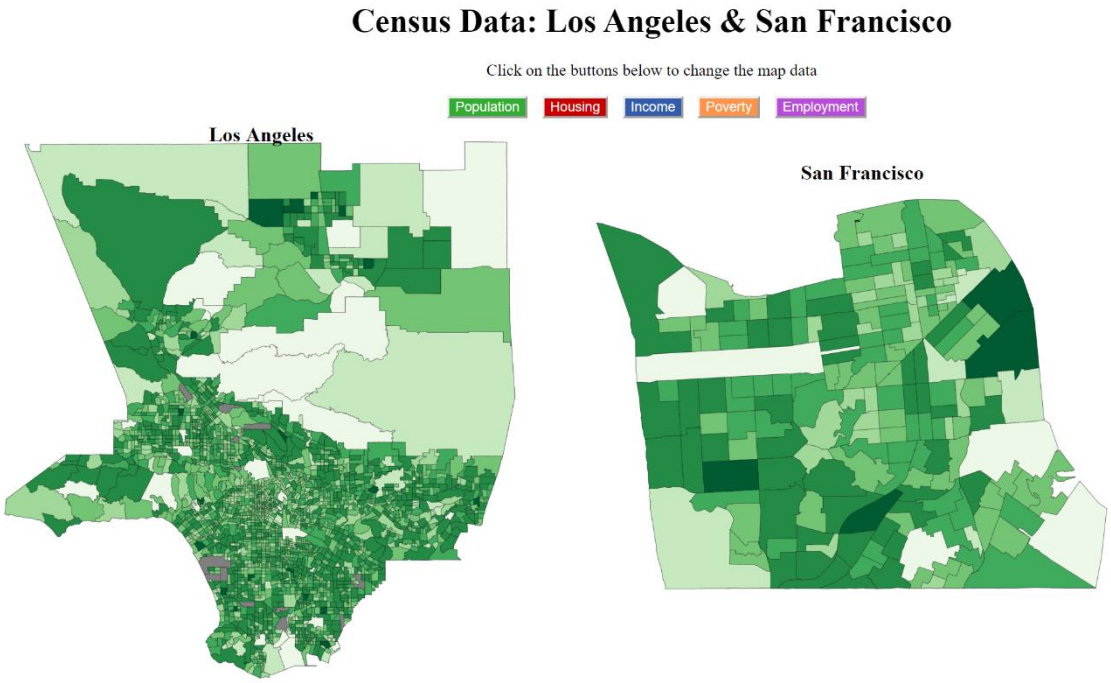
We observe the distribution of **FIVE** important demographic variables in the visualization:

- Population
- Housing
- Income
- Poverty
- Employment

DESIGN FEATURES:

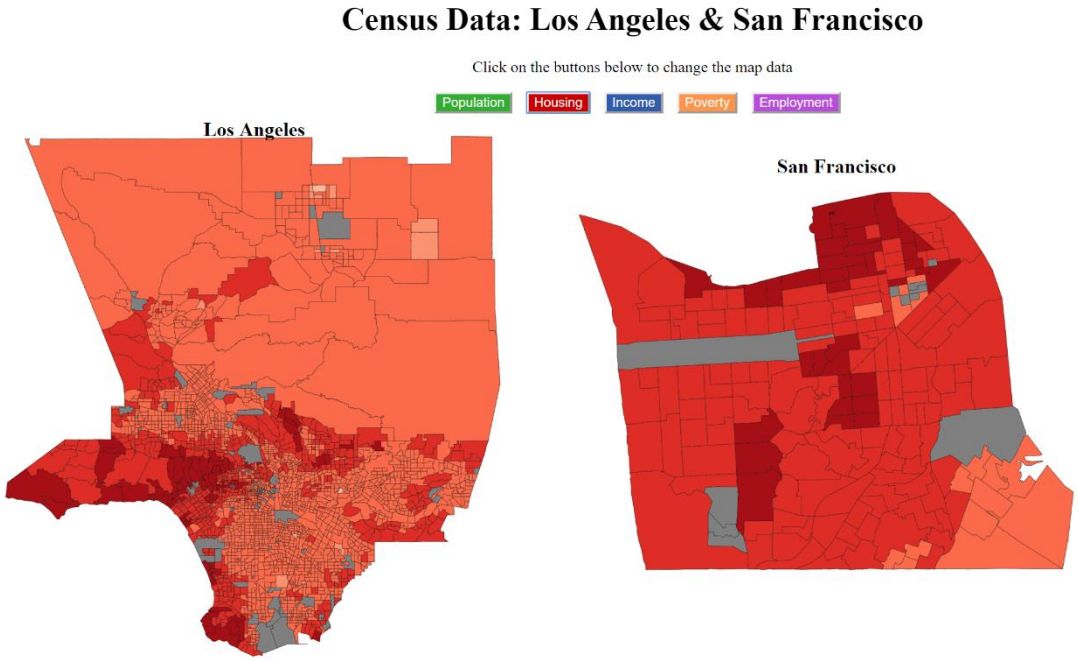
- **Geo-mapping:** We added json files containing the mapping data for Los Angeles and San Francisco counties. The maps are zoomable.
- **Dynamic query filtering:** Different tabs have been added as 'buttons' to view different demographic variables.
- **Color as Visual Encoding:** We added different colors for each of the five variables to quickly identify what data you are viewing. Color is also used to highlight missing values (gray colored values are missing). Color is also used to describe the magnitude (darker the color, larger the number).
- **Interactive Tooltip:** When you hover on a specific census area of a county, it displays the information of all the variables in the form of a tooltip.
- **Legend:** A legend has been added for enhanced understanding.

Homepage of the Visualization:



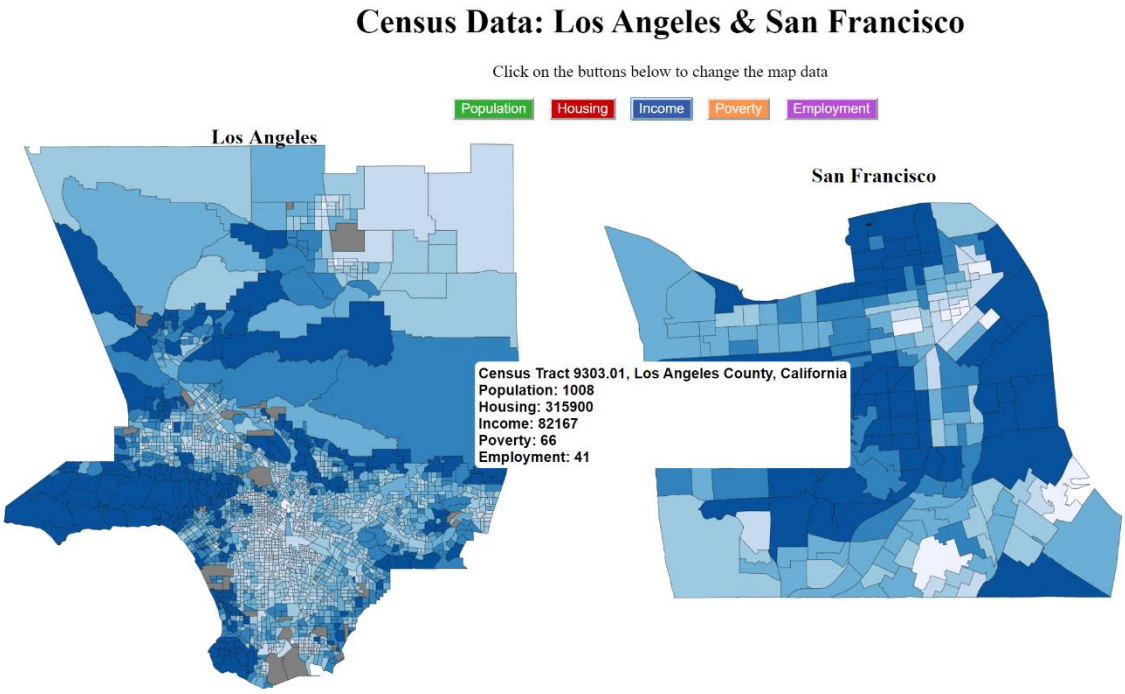
- This is the home page of the visualization, which shows the ‘population’ variable by default.
- Since we’re viewing the 'population’ variable, the maps are colored in ‘green’, which corresponds to the green population ‘button’ above the maps
- The census areas with lower populations are a lighter color, while the darker areas have a comparatively larger population. Thus, as the color gets larger, the population increases.
- This visual encoding helps us easily compare the population across various census areas.

Functionality of Buttons:



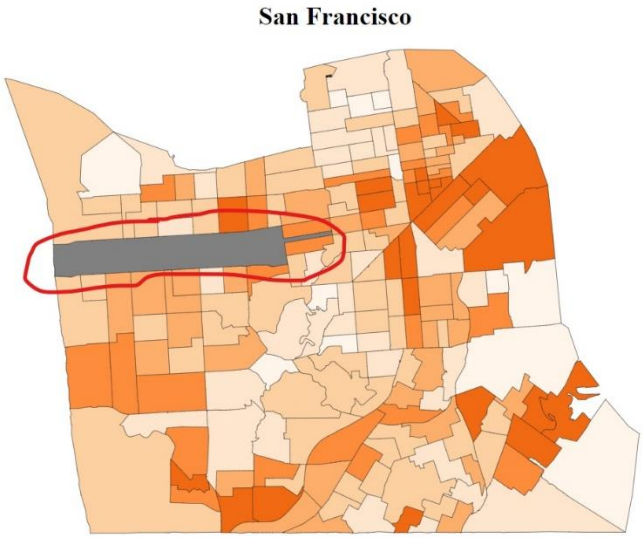
- In this image, we are viewing the 'Housing' variable of the visualization.
- This happens when you click on the 'Housing' button above the two maps.
- The color is changed to 'red' and the Housing button has also been colored red correspondingly.
- Using different colors for different variables helps a viewer easily understand what variable he/she is looking at.
- It should be noted that, color is still used as a visual encoding element, i.e., as the color gets darker, the number of the variable gets larger. This factor remains consistent for every variable.

Tooltip:

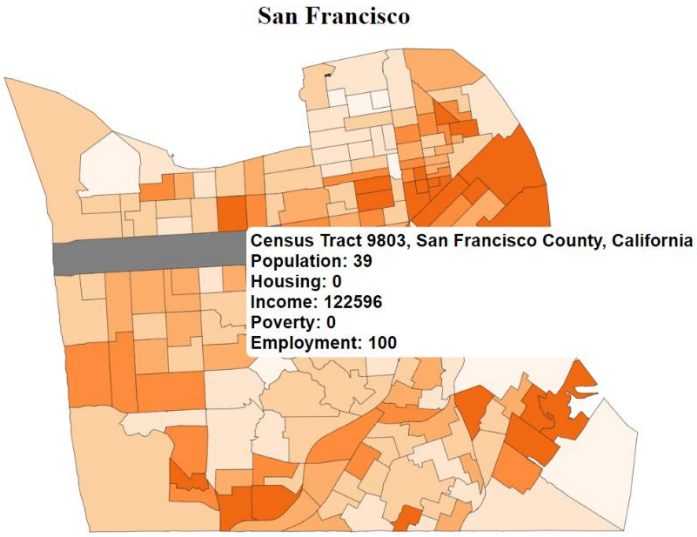


- In this image, we are viewing the 'Income' variable.
- The point of this image is to display how a tooltip has been integrated into the visualization.
- As you hover your mouse over a particular census area, a tooltip pops up giving you details about all the variables of that census area, including the 'Census Tract' number.
- The tooltip is always displayed fully and never gets cut off, even if an 'outer' census area is viewed.
- The tooltip always displays all the FIVE variables regardless of which variable is currently being viewed. This design decision was made so that the size of the counties

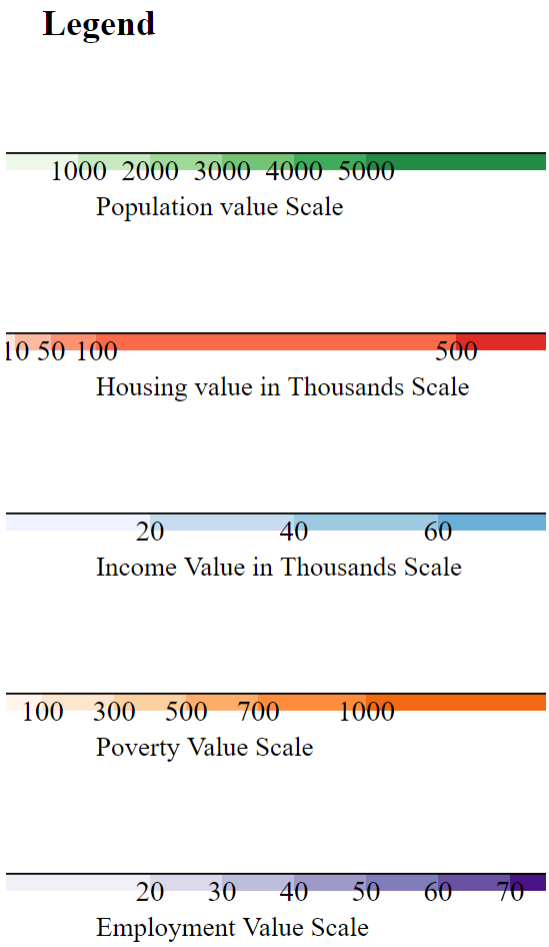
Null Values:



- This image is a snippet from the entire visualization. In this image, we are viewing the poverty variable.
- The point of this image is to show how missing values are dealt with in the visualization.
- Since the highlighted census area has a missing value for 'poverty', it has been highlighted in gray to indicate the same.
- Accordingly, you can see in the image below, that the tooltip displays a value of 'zero' for the 'Poverty' variable.



Legend:



- The legend has been color-coded according to the variables.
- The values have been displayed on the legend for easier comparison with the map.

Problem: The census areas don't have their names on them, just labelled as 'census tracts'

It was difficult to find a dataset that contained census areas and their corresponding names.

And even if we found that dataset, it would be difficult to include the names in the json file which was used to display the layout of the map.

WORK-SPLIT:

It took approximately 30 people-hours over a period of time for the entire development process.

Vighnesh did the exploratory analysis, laid out the basic HTML code, and did the initial planning and layout.

Neeraj made the design decisions of how it must be displayed, added the CSS styling, and edited the final design document.

Sahana worked on the core interactive code and added additional design features.