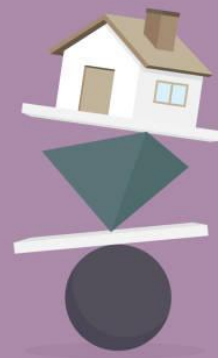# Project Team 10: Housing Inequality

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COSI 116A --- Prof. Dylan Cashman, Brandeis University

Agenda

Problem Statement

- Housing inequality is a significant issue in the United States, affecting access to safe, affordable, and quality housing for millions of people.
- Our project examines housing inequality in the United States using data from the U.S. Department of Housing and Urban Development, spanning the years 2016 to 2020.

Data

- We gathered data for this project with datasets from the U.S. Department of Housing and Urban Development, including **housing problems**, **demographic information**, **housing characteristics**, **and socioeconomic indicator**s by state from 2016 to 2020.
- Preprocessed data through cleaning, transformation, and aggregation for analysis and visualization.
- Downloaded datasets as Excel files from the HUD website and imported them into Google Sheets.
- Cleaned data by adding column headers from metadata, removing empty/unrelated columns.
- Explored cleaned data in Tableau to identify trends and patterns.
- Reduced data to needed columns:
    - Percent housing problems (housing problem dataset).
    - Percent household income brackets (socioeconomic dataset).
    - Percent racial demographics (race dataset)
- Exported data as CSV files and converted them to JSON for visualizations.
- Sorted income data in descending order to visualize state-wise income distribution.
- Used a US states GeoJSON file, integrated housing problem data, and created a choropleth map.

Tasks

After conducting interviews, we came up with our domain tasks, broken down into abstract tasks:

1. What factors contribute the most to housing inequality? (summarize, explore, present)
2. Do factors (such as race, income, etc.) affect housing inequality? (identify, locate, discover)
3. Which locations are most affected by housing disparity? (compare, locate, discover)
4. What trends can we find in the data? (summarize, explore, present)

The primary consumers of our visualization would be the general public, policymakers, possibly teachers, and researchers.

Sketches
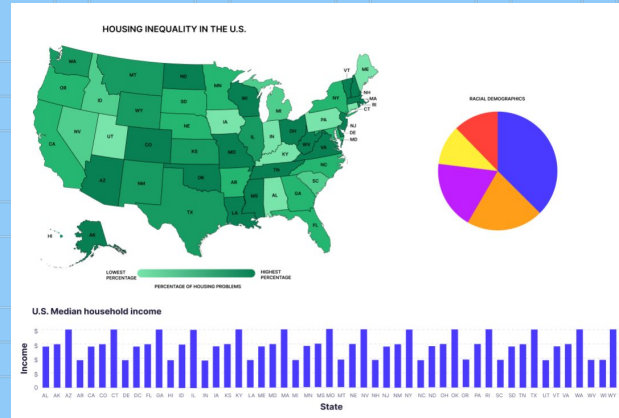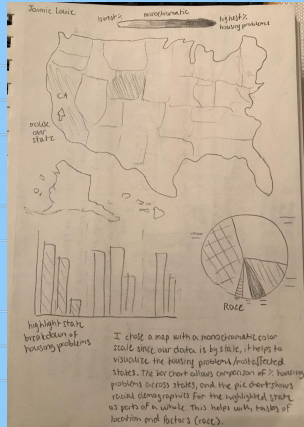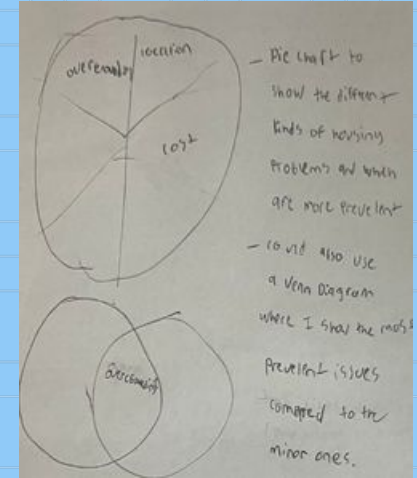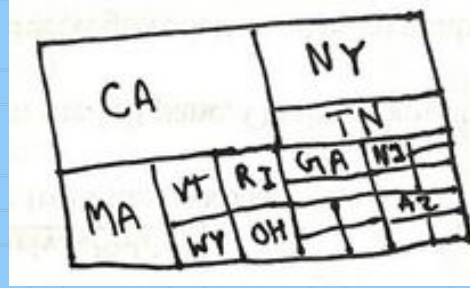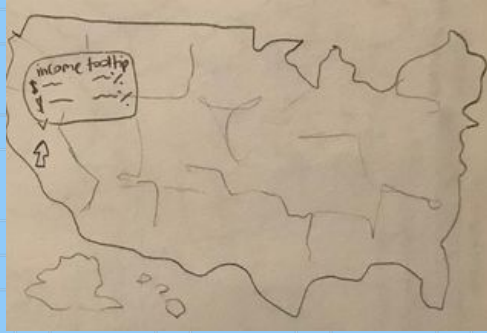
Visualizations

- Allows users to explore housing inequality data across states.
- Color-coded to represent the percentage of housing problems in each state, with housing problems defined as households with any of the following issues:
  - Housing unit lacks complete kitchen facilities
  - Housing unit lacks complete plumbing facilities
 - Household is overcrowded
  - Household is cost burdened

Choropleth map
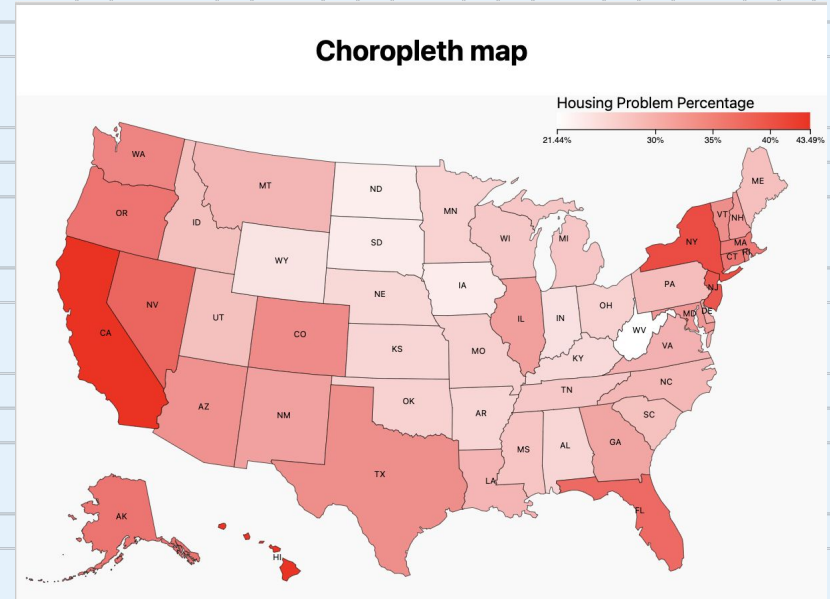
Median Income by State

- Comparison of income distribution across states, emphasizing income disparities
- **Highest income**: States like **District of Columbia, Maryland, and Massachusetts** appear on the far left, indicating the highest median incomes.
- **Lowest income**: States like **Mississippi and West Virginia** are on the far right, showing the lowest median incomes.
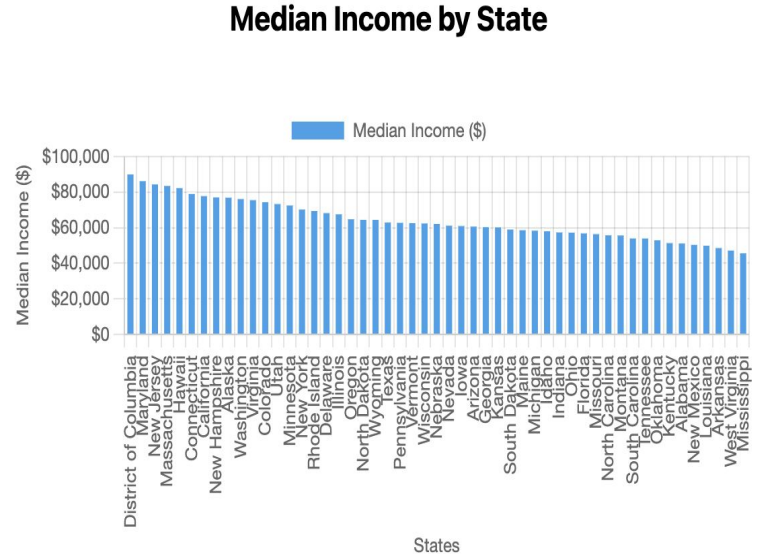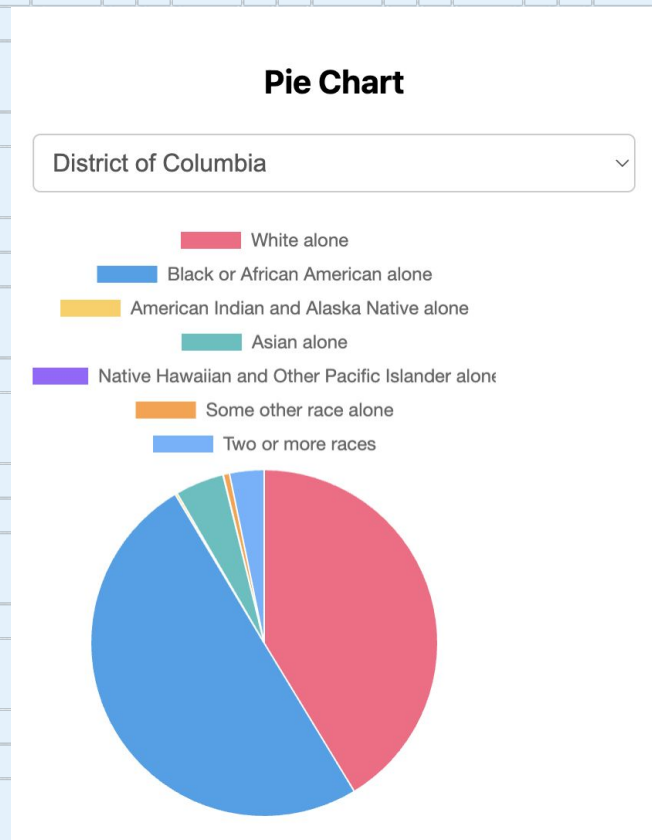
Visualizations

- Displays the income for each State

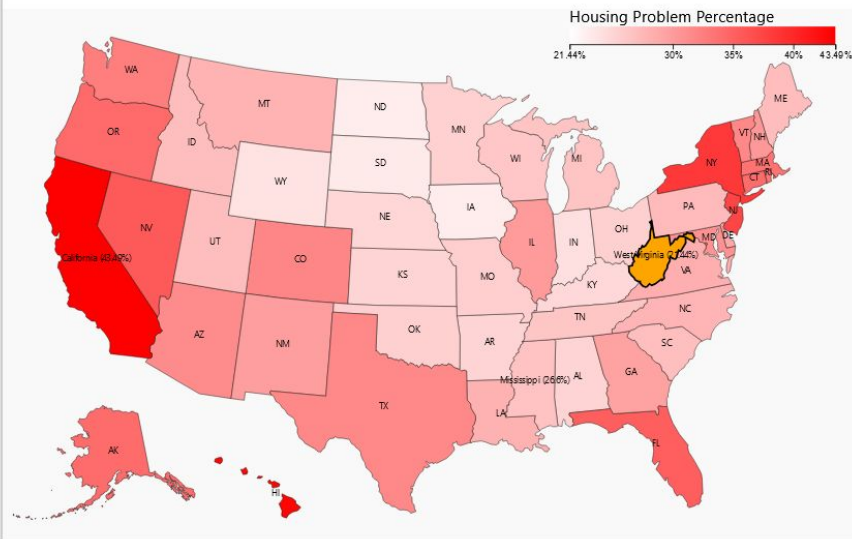- Changes as dropdown is updated
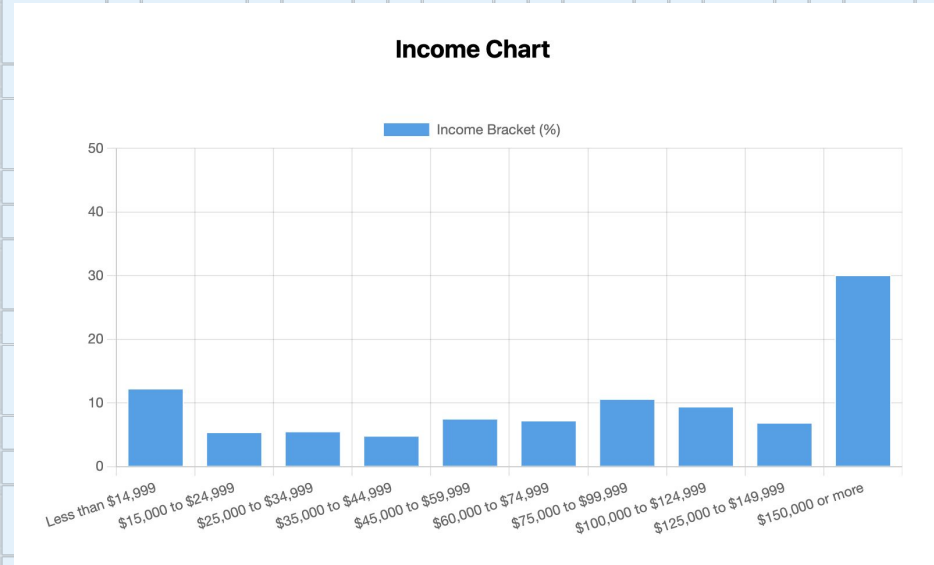
Visualizations

- Displays racial demographics

- Able to select a state from the dropdown
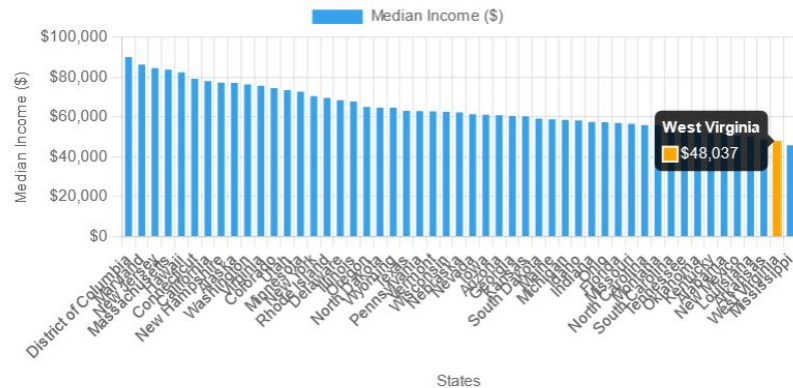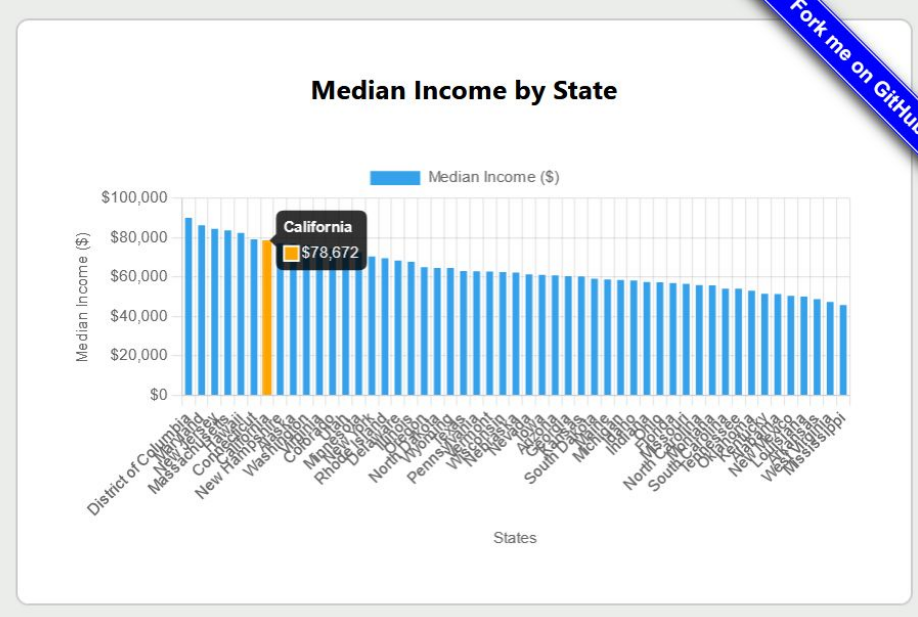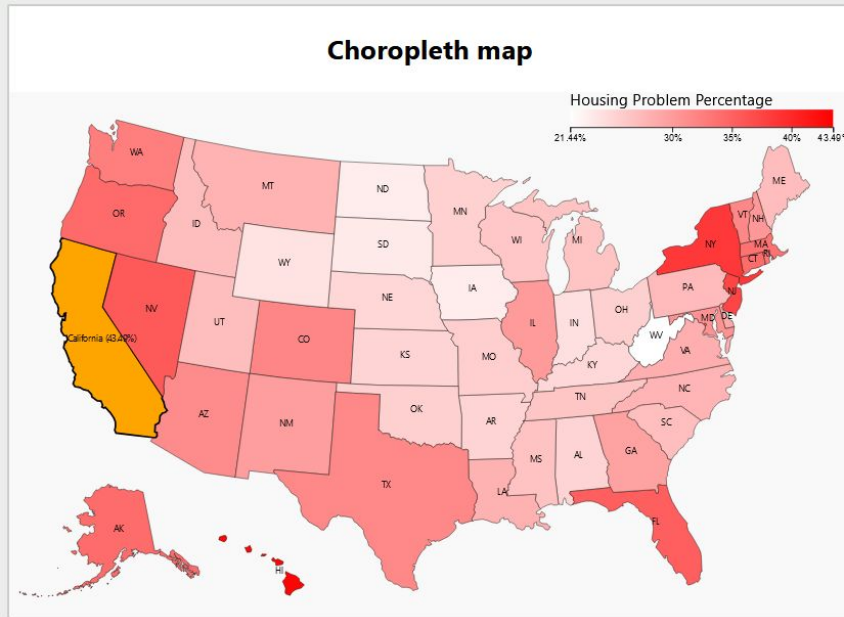 - Updates the map and charts (data for that state)

Areas of Interest

Despite having the lowest housing problem percentage of 21.44%, West Virginia has one of the lowest median incomes.

Areas of Interest

Choropleth map

Median Income by State

Despite having the highest housing problem percentage of 43.49%, California has one of the highest state median incomes. This could suggest a positive correlation of median income and percent housing problems.

Thank You!