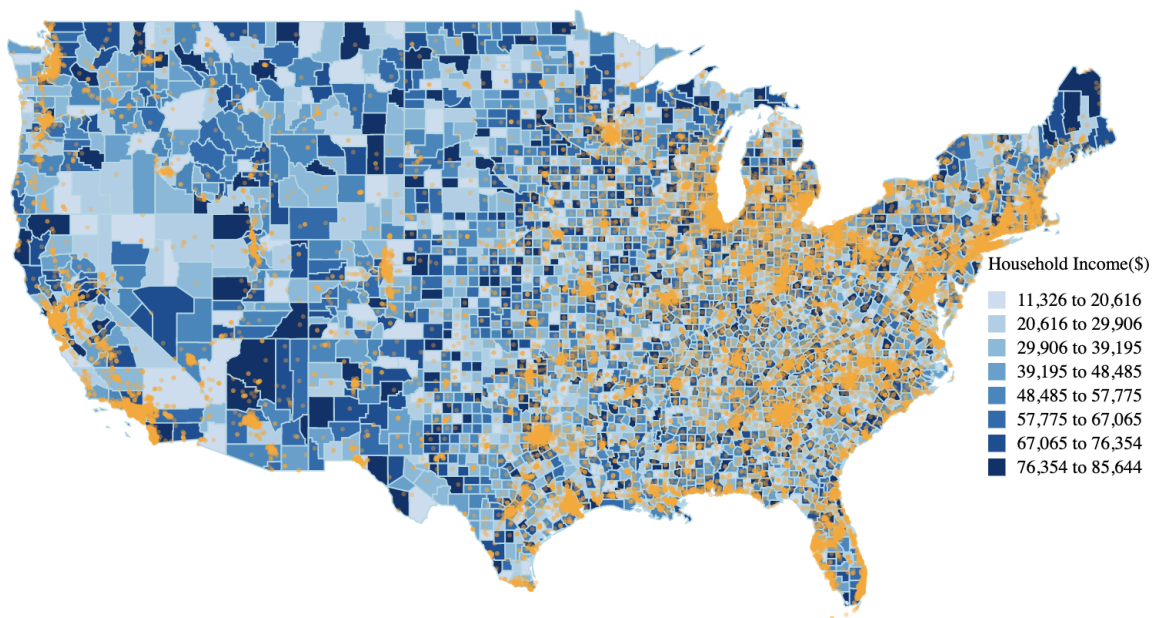

Subway locations & income data across the US

[back to \(continental\) us](#)

[view hawaii](#)

[view alaska](#)

As someone who has been around long enough to remember the iconic "five dollar foot-long" commercials, I was shocked during my most recent visit to Subway when I had to pay \$13 for my foot long. Has inflation truly gotten out of control, or has Subway become a higher end fast-food chain? We used both household income and Subway restaurant location datasets for this project. Feel free to pan/zoom, switch to different views, or hover for more information. Enjoy!



For our project's dataset, we utilized the topojson file of the United States. We took this dataset from the one provided in class, for a few reasons. Firstly, we were interested in leveraging the abilities that a topographic dataset would provide, and help us create a more interactive visualization. Secondly, we were interested in doing a project on geographic data and felt procuring the dataset from class would allow us to spend more time on other portions of the project. We then combined this with the dataset¹ of all Subway

¹ <https://www.kaggle.com/datasets/timmofeyy/-subway-locations-in-us>

locations in the United States. We handle these datasets separately and place the subway locations on the map using their coordinates. We do not use most of the subway restaurant information, as most is irrelevant to the information we aim to portray. We also used a household income dataset² on the county level and used it to create a choropleth map of 8 different levels to identify the spread of average household income and how it compares to locations of the Subway restaurant.

Visually, we built our design to highlight the locations of Subway locations. This was the goal of our project, so it made sense to begin with a map of the United States as the centerpiece of our visualization. We used dynamic outlines and modifications of brightness to accentuate the mouseover events, and used circles to represent the subway locations. We colored the circles orange because it nicely contrasted the background colors of the choropleth map. This allows the viewer to further understand the visualization. We utilize the channels of position, color, and shape through the map, and the green marks to demonstrate location. We did not have to modify the scales used to represent the data as the x and y coordinates were latitude and longitude, which were easily mapped to the topography.

Our interactive design elements were the ability to zoom in and out, highlight parts of the map with mouseover events, and switch to a view of Alaska and Hawaii. Our process for designing these interactive elements was human-centered. As we built the visualization, we decided to add these features as we found ourselves curious about those particular features. The zoom element is a benefit to the visualization, as it allows a closer look at portions of the visualization. It is discoverable due to the intuitive nature of the zoom action. In addition, the label element that appears on a mouseover tells information about the state and number of subways. This is discoverable because the user will drag their mouse over the visualization and view this. The final interactive element, viewing Alaska and Hawaii directly, can be easily found because of the buttons at the top of the screen. This is interesting because it allows users to view these portions separately, and because of the contrast between the mainland US and the other two states.

² <https://www.kaggle.com/datasets/goldenoakresearch/us-household-income-stats-geo-locations/versions/2>

Our visualization shows subway restaurants in the United States. It provides an understanding of the significant disparity between coastal areas and the central portion of the United States, and the subway consumption habits of the center of the Country. This is the most significant idea that we aimed to represent in our visualization, and also the centroids of Subway restaurants that exist in the United States. Comparing the household income data with the distribution of Subways, it appears that there is no apparent patterns in terms of any particular income bracket getting a greater concentration of fast food restaurants. One may observe more Subway restaurants concentrated near New York or LA which are both within or surrounded by counties of darker colors, but there may also be confounding variables for those areas, as they are rather densely populated metropolitan areas.

Team Contributions:

- Jiali:
 - Imported json files and cleaned csv files for Subway coordinates & household income
 - Implemented choropleth map and plotted Subway restaurant coordinates
 - Implemented pan/zoom, sticky tooltips upon hover, and Alaska/Hawaii buttons (translate transform)
 - Added project description on screen
 - Led design decisions on color schemes and overall presentation
- Ben:
 - Implemented hover over events, defined county mapping
 - assisted with optimization decisions to improve rendering speeds
 - Fixed CSS styling elements for main content
 - Project report documentation
 - added legend

- Wrote the initial project report
- Xiaohan:
 - Identified dataset website
 - Modified the state color scale to make it more reasonable
 - Assisted with fixing legends
 - Revised the project report
- Dinqissa:
 - Completed the legend
 - Worked on team contribution section of report