Mapping Food Insecurity: A Study of Miami's Food Deserts

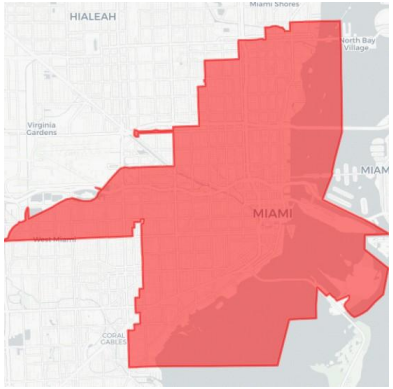
Contributors: Alexandra Calametti, Brian Kath, Laura Bishop and Noah McHale

What are food deserts and why do they matter?

- Food deserts are defined as geographical areas where people have limited access to healthy and affordable food.
  - For example: residents may have easy access to fast food restaurants but no affordable grocery store or supermarket
- According to a report by the USDA, it is estimated that up to 11.3 million people live in low-income areas and are more than a mile away from a supermarket (USDA, 2009).

Scope

- The scope of our project is focused on the city of Miami, Florida

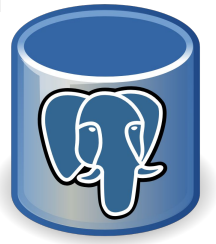


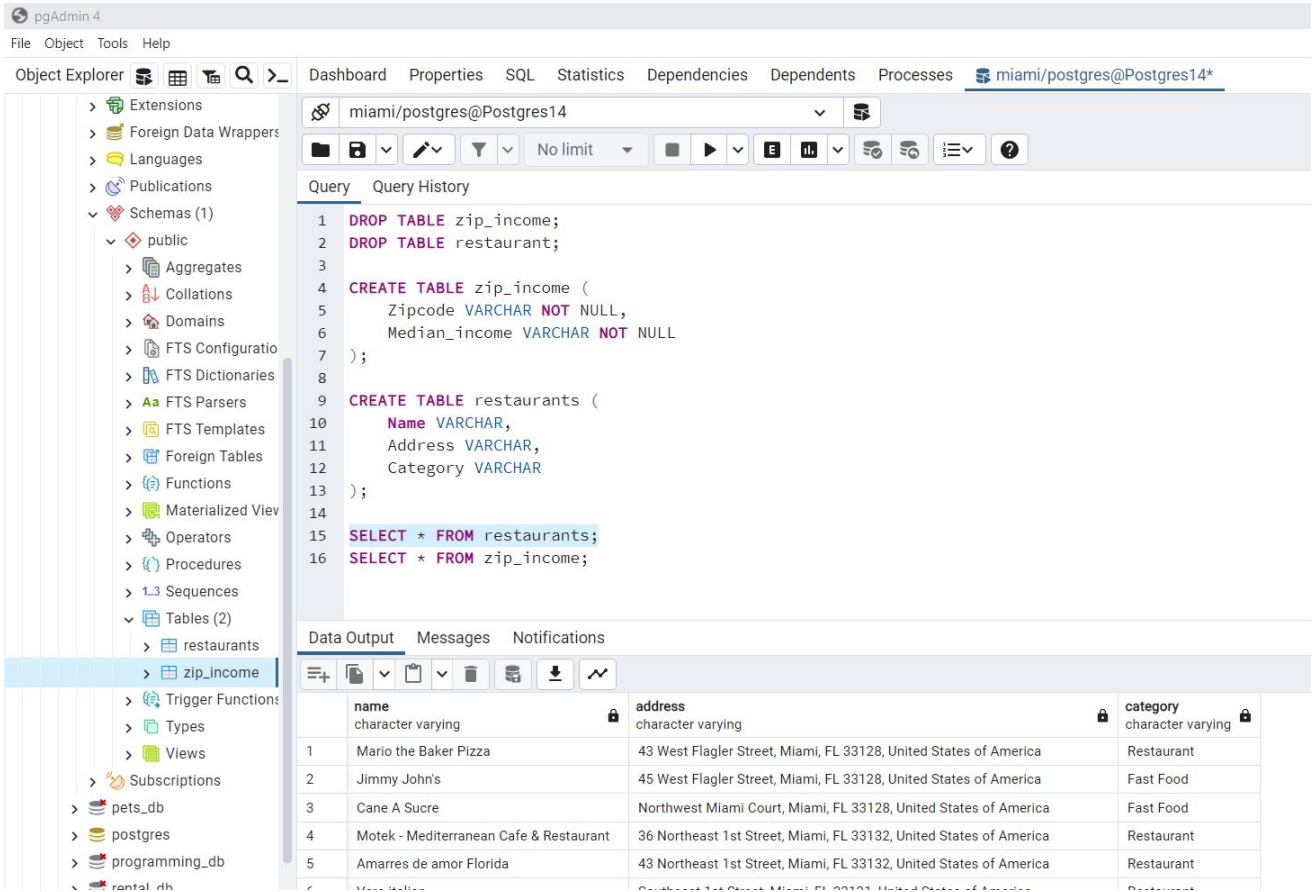
- We used data for median income and zip codes to explore which areas could be more susceptible to food deserts based on income
- We correlated that to data collected about various food options available to the defined area

Data Exploration

Data Analysis

- Zip Code Income data scraped from webpage MiamiDadeMatters.org to a CSV file
- Accessed Geopapify API to collect Restaurant, Fast Food, and Grocery Store location data. Cleaned and saved to CSV
- Created a database in PostgreSQL using information from our CSV files
- Used Flask API to connect our database and web page





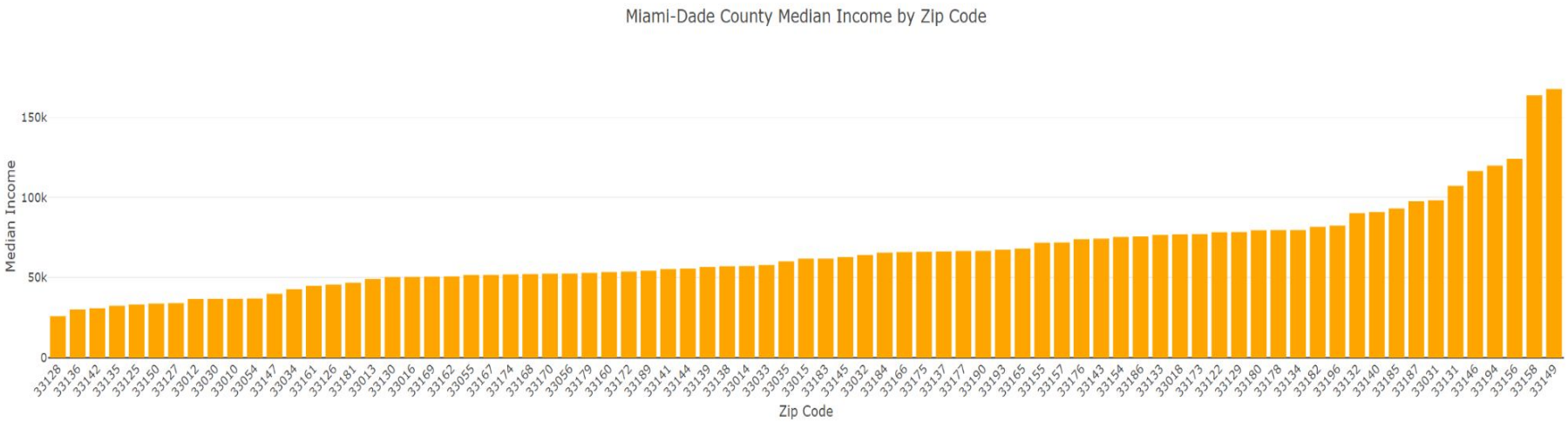
Example of the work done in our PostgreSQL, building the tables that would become the database.

Visualization Process

- Drafted website using HTML, CSS, and JavaScript
  - Utilized Bootstrap library
- Developed Leaflet map that displays food source information and income data for each zip code
- Used Plotly JavaScript library to produce graphical visualizations

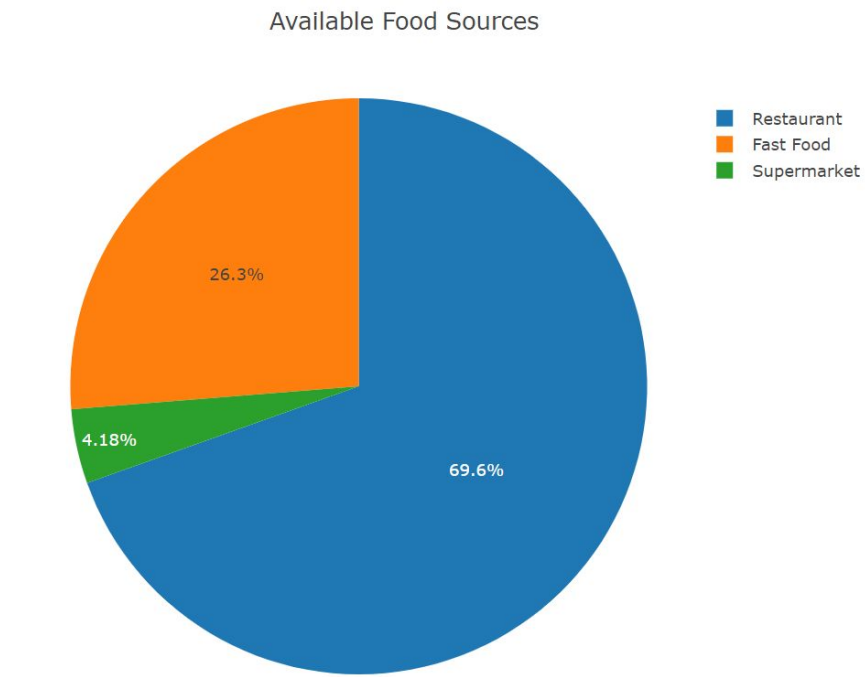
Visualizations

Bar chart of the income spectrum with data from the US Census Bureau, broken out by zip code



The lowest value (per year) is **$6,052**, and the highest value is **$254,062**. Half of the values are between **$22,156** and **$42,648**. The median value is **$29,197**. The national average is **$74,580**.

Pie chart showing the food resources available to the City of Miami, as defined by zip code



** Hunter's Favorite Visualization Model*

Of the 60 zip codes located within the City of Miami, **69.6%** of the available food sources identify as a 'restaurant'. These included individually owned establishments as well as chain establishments such as the Olive Garden or Jimmy Johns.

26.3% identify as a 'fast food chain', examples being McDonalds or Chick-fil-A.

Only **4.18%** of available food sources identify as a 'supermarket' or 'grocery store' in our data sampling, such as Publix or Sedano's.

This data did not account for convenience stores and/or bodegas.

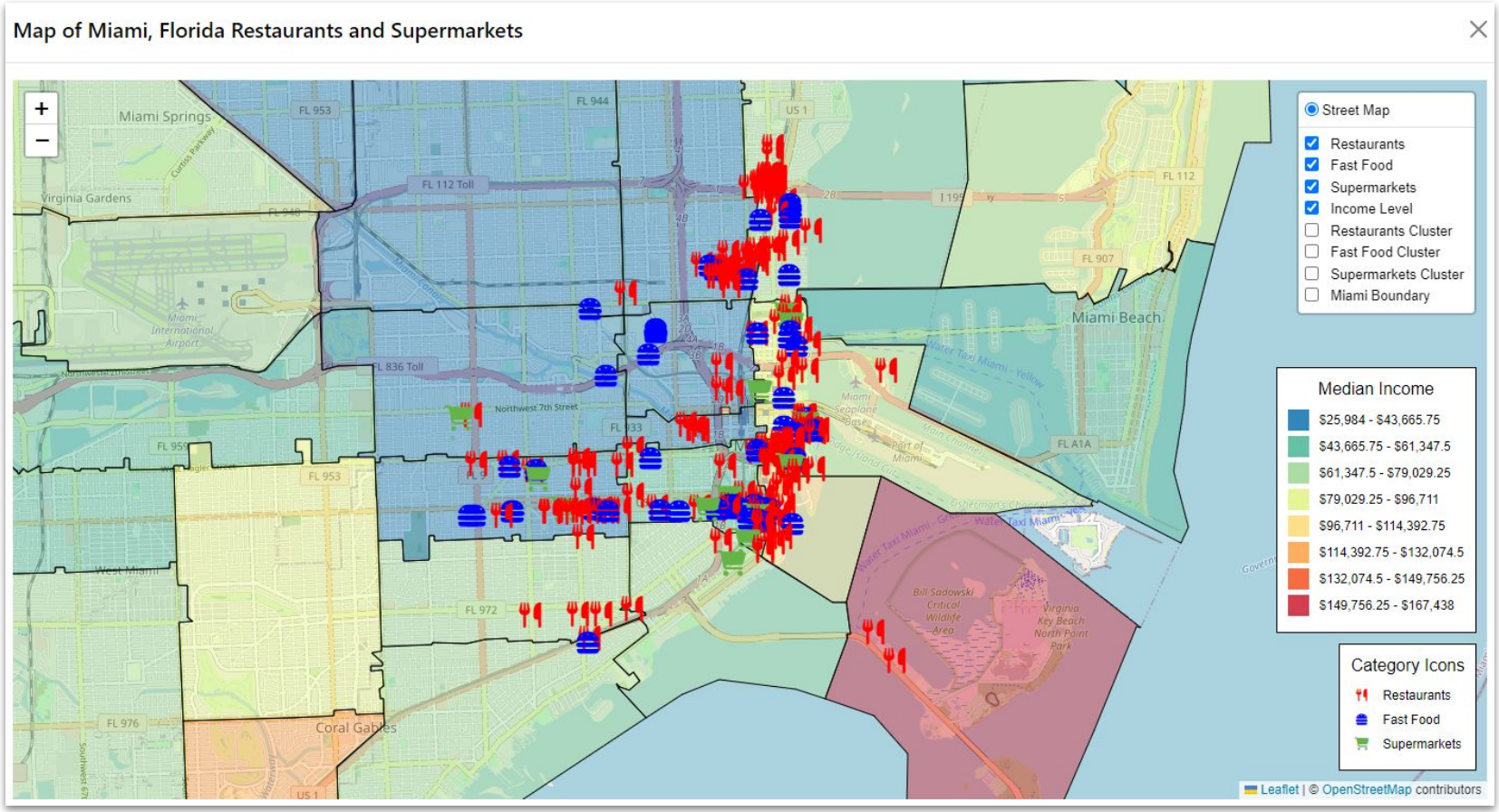


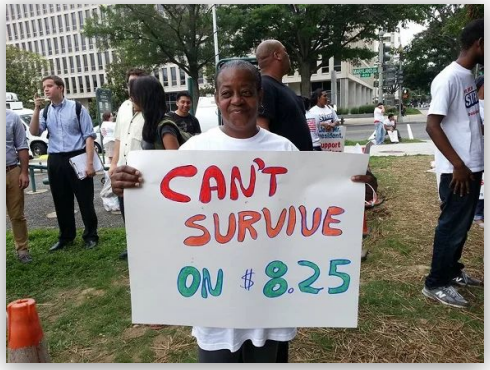
Image of City of Miami, found in Miami-Dade County, with layers applied.

All of this info can be found on our webpage!

Conclusion

Based on our findings we believe that income disparity and lack of access for healthy food is present in Miami. In order to solve this problem local and state government must work together to promote economic equity and increase food access in low-income communities.

This could include increasing minimum wage, providing equitable access to higher education and job training, affordable housing initiatives, and increasing funding for community gardens as well as farmers markets. The introduction of local grocery stores is also necessary to combat this issue paired with better transit to these stores.



Further Research

Due to the complexity of food deserts, further research is needed to fully understand the causes to create necessary changes in the future.

Topics that should be explored to meet the unique needs of communities in Miami include data on the race and ethnicity of those affected, education levels, time availability, transit accessibility, and availability of culturally appropriate food could be examined. More extensive data collection can help foster a more sustainable, healthy, and equitable future for Miami residents.

Questions?

Big thanks to our instructional team for all their help!

References and Photo Credit

United States Department of Agriculture. (2009, June). Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences.https://www.ers.usda.gov/webdocs/publications/42711/12716_ap036_1_.pdf?v=41055