# Problem and Background

Minneapolis is a city rich in culture. Though overlooked by most, it is a great city, diverse in its roots. Throughout this project, I will explore how diverse Minneapolis is in its types of cuisines. This data could help people who visit Minneapolis by showing them where they should go for different types of cuisine. Additionally, it will show current residents which types are lacking as well as which are thriving.

# Data

## 1. Data Source

The data I used was gathered from a public website that provide locational data. The source includes the zip code, city name, county name and zip code type for all cities in Minnesota. My main goal was to retrieve city and zip code data, and this source had the most complete information of any I was able to locate.

## 2. Feature Selection

Once I obtained the locational data for Minnesota, I narrowed it down by county. I know that Minneapolis is in Hennepin County, so I selected all data that matched that criteria. Then, I narrowed it down even further by selecting only zip codes that corresponded with the city of Minneapolis. Finally, I removed columns with data that was not relevant to my project.

## 3. Foursquare API

Using Foursquare API, I was able to pull information for various venues in the Minneapolis area. I yielded a result with 295 unique categories. With so many venue types to choose from, I decided to focus on restaurants.

# Methodology

## 1. Top Venues

The first step I took in manipulating data was to create a data frame based on only the top ten distinct venues in the cities. The results reflected that of a normal city. The top three venue types were coffee shops, parks and sandwich shops.
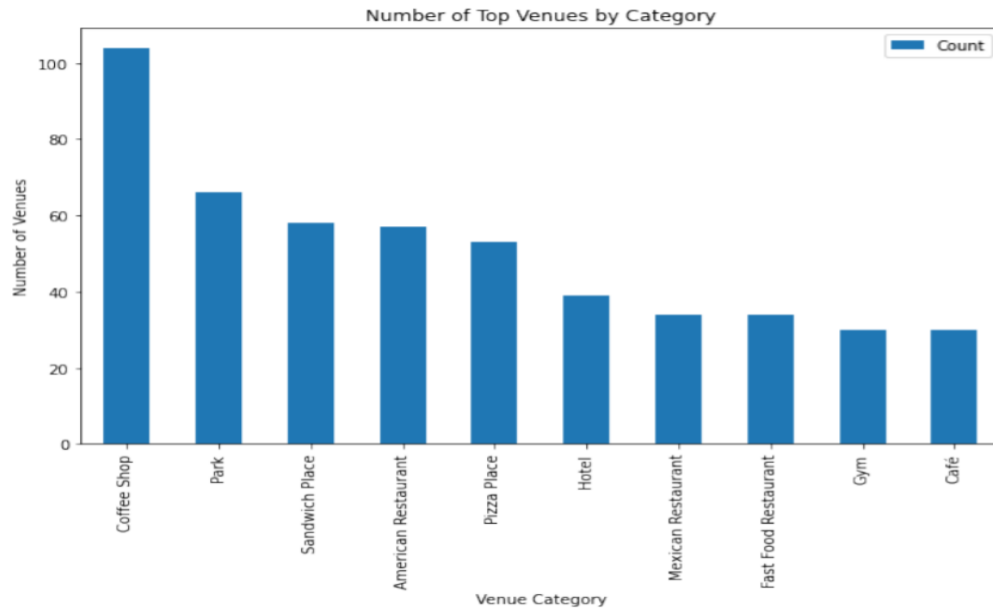


*Figure 1 Top Venues in Minneapolis*

## 2. Restaurants by Type

Next, I narrowed my venues down to only those that included the word "restaurant" in the venue category, which yielded 364 results. Once I broke the restaurants down by style of cuisine, I learned that there are 42 types of cuisines located within Minneapolis. In order to create a more cohesive and readable graph, I narrowed this down to the top ten types of cuisine.
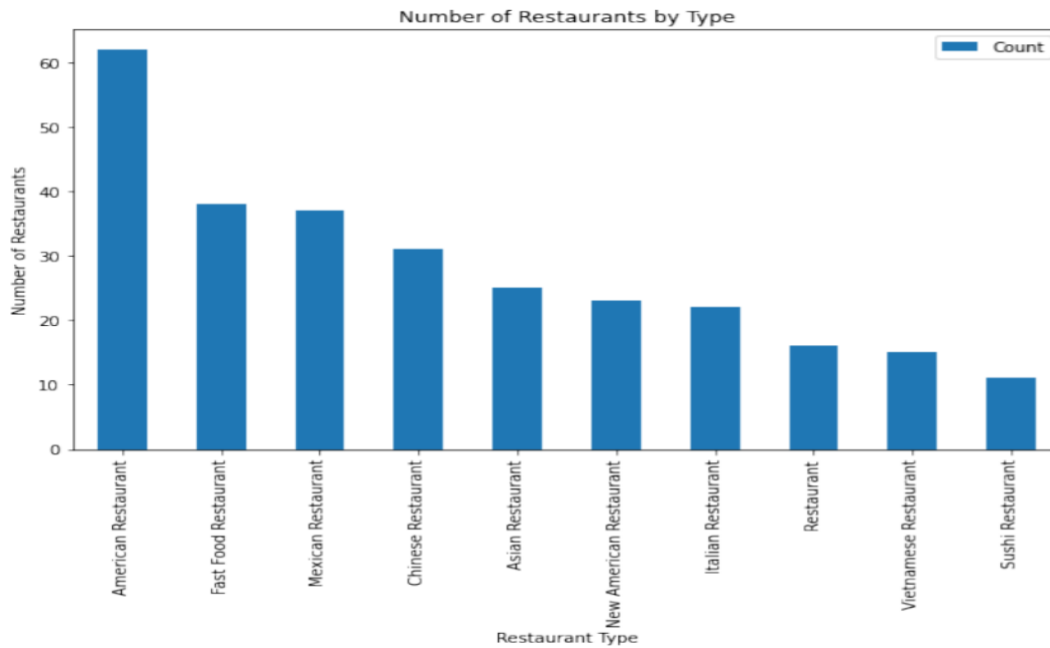


*Figure 2 Number of Restaurants for Top Ten Cuisines*

# 3. Restaurants by City

Another factor to consider when looking at these restaurants is where they are located. It was important to understand how many restaurants are found in each city. Although some areas contain more than 20, some contain only one. Just as I did with the Restaurant types, I narrowed the data down to the top ten cities with the most restaurants to create a visualization.
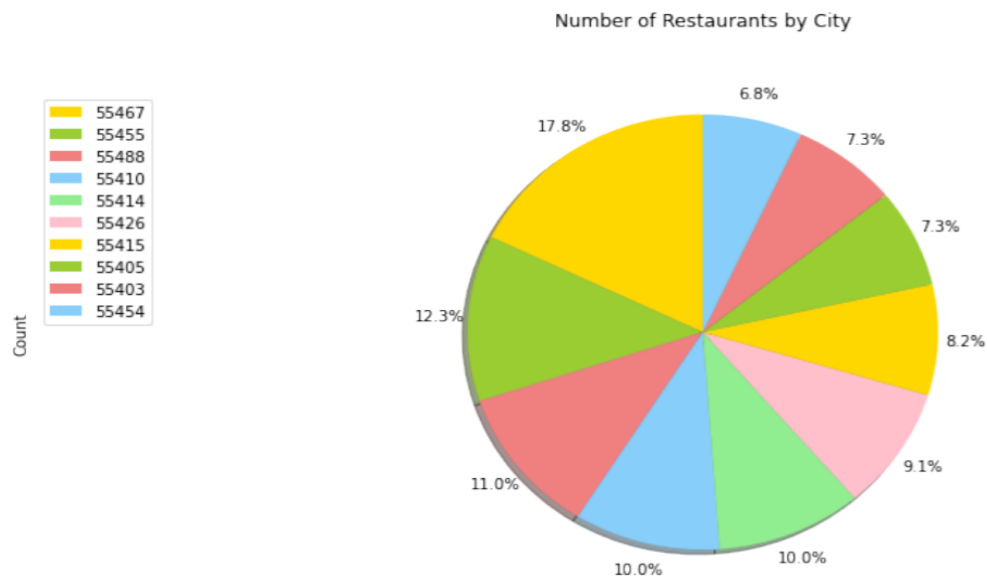


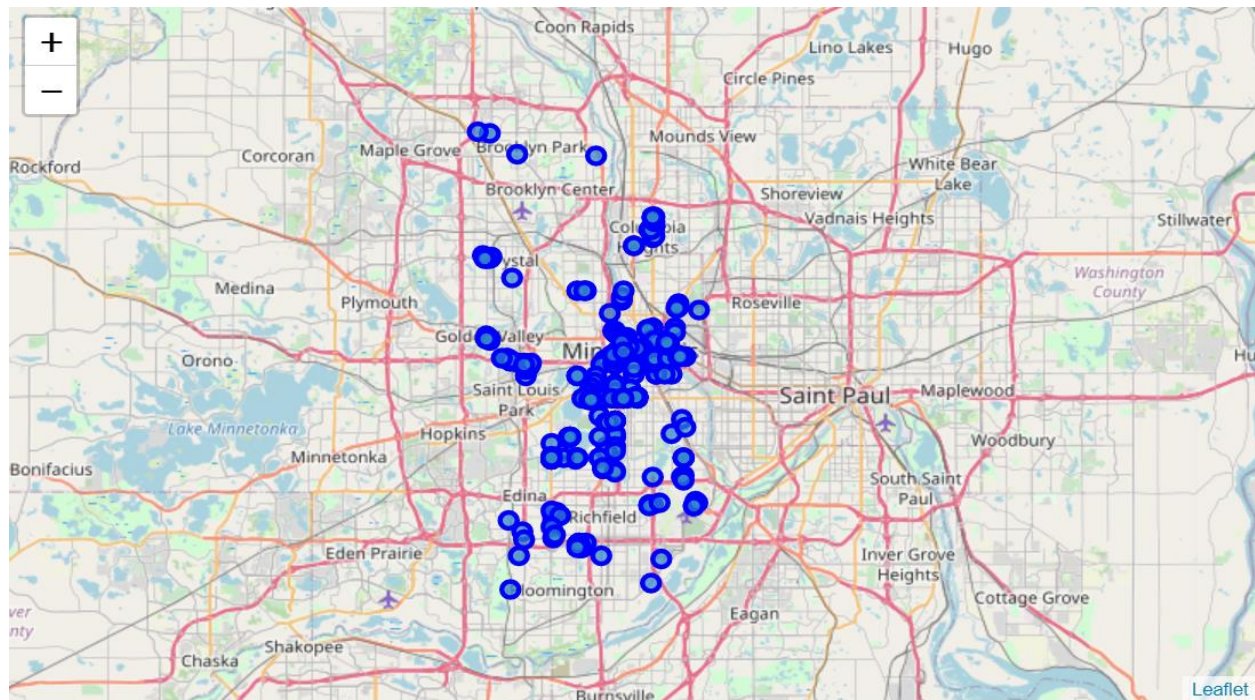*Figure 3 Number of Restaurants in Ten Cities with Most Restaurants*



*Figure 4 Map of Restaurants in Minneapolis*

## 4. Type by City

Putting everything together, I looked at type of cuisine by city. Due to the high amount of cuisines located throughout Minneapolis, I narrowed the data down to the top ten styles found earlier.
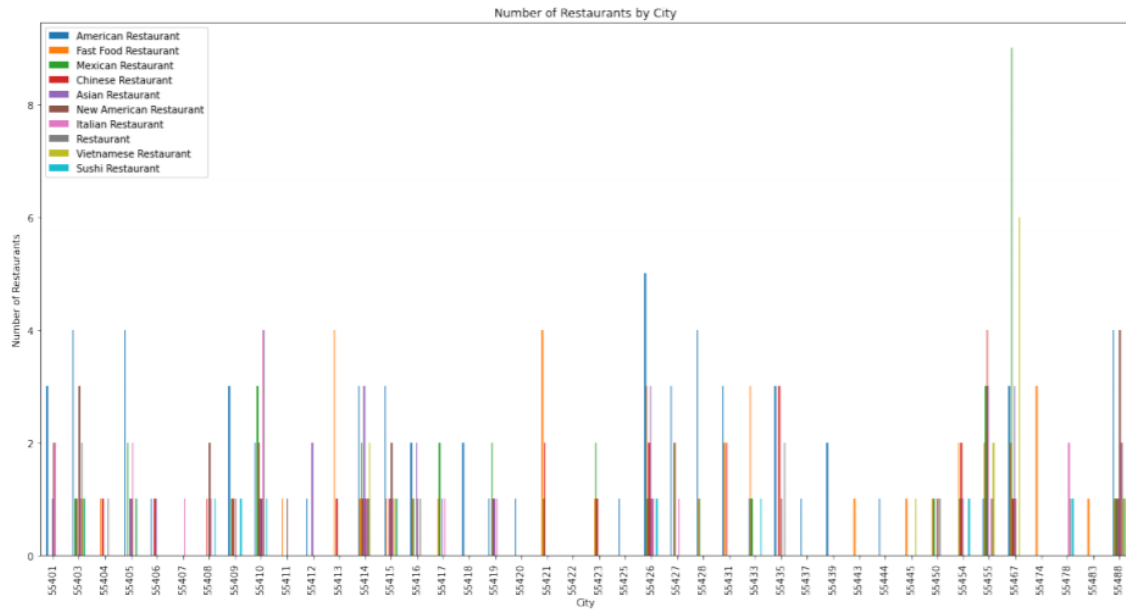


*Figure 5 Top 10 Cuisines by City*

# 5. Mexican Restaurant Ratings

Finally, I decided to focus on one type of cuisine: Mexican. Throughout Minneapolis, there are a total of 37 Mexican restaurants. After looking at the Mexican restaurants by city, I pulled their ratings using Foursquare API. Only three restaurants did not have any ratings.
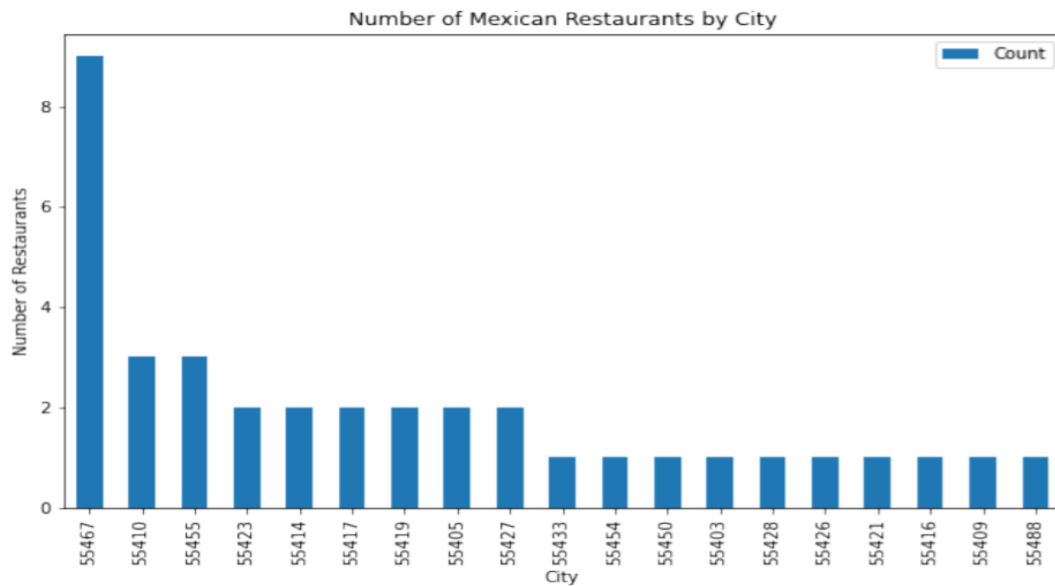


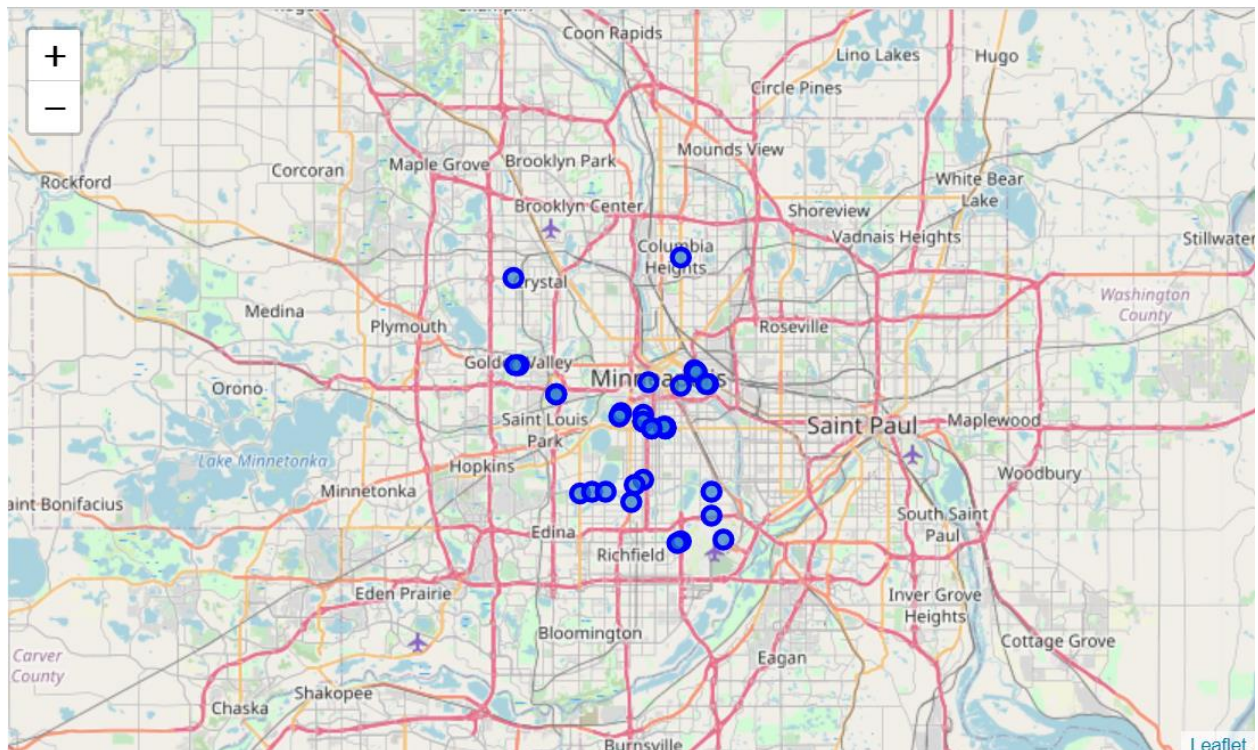*Figure 6 Number of Mexican Restaurants by City*



*Figure 7 Map of Mexican Restaurants in Minneapolis*

|  | VenueRating |
| --- | --- |
| count | 31.000000 |
| mean | 7.367742 |
| std | 0.916656 |
| min | 5.500000 |
| 25% | 6.800000 |
| 50% | 7.500000 |
| 75% | 8.050000 |
| max | 9.000000 |

*Figure 8 Statistical Regression of Mexican Restaurant Ratings*

# Results

## 1. Restaurants

It was no surprise that a majority (15%) restaurants were American. Although this seems like such a small fraction of the total restaurants in Minneapolis, it is important to understand that 24 of the 42 cuisine styles had less than five restaurants. Additionally, the map shows that a majority of the restaurants are located in downtown Minneapolis, while the zip codes located farther away from downtown house only one or two. The mean number of restaurants housed in each city was determined to be 9.380952. The ten cities with the most restaurants contain a combined 56.58% of the total restaurants.

## 2. Mexican Restaurants

The 37 Mexican restaurants and pretty equally distributed throughout the cities, however, 55467 (which is downtown) houses nine Mexican restaurants, or 24% of the total number. The ratings seemed pretty high overall, with the highest rating being 9.0 and the lowest 5.5. The mean rating for the 34 Mexican restaurants with ratings was 7.367742. One observation I was able to make is that many of the included restaurants are chains, but they did have different ratings based on location.

# Discussion

## 1. Limitations

One of the main issues with the data was the limitation of not having city or neighborhood names instead of zip codes. Although zip codes helped to provide the ability to separate Minneapolis into segments, there was a lack of general readability. Another limitation was the cap on how many ratings could be called per day. Since I used a free Foursquare API account, I was only able to make 50 premium calls per day. Since ratings were considered premium calls, I was forced to use only a subset of my data rather than all the restaurants located throughout Minneapolis.

## 2. Further Exploration

If additional studies are to be done similar to this one, I would recommend finding a data set that names the individual zip codes further than just "Minneapolis." Many cities located around Minneapolis are tied to the city by zip code even though they are more of a suburb rather than downtown. Additionally, More research should be conducted on ratings for all restaurants located throughout the area.