Where to Open an Italian Restaurant in New York City

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1. Introduction

Background: As an Italian American, I would like to embrace my heritage and the work ethic of my ancestors and open an Italian restaurant in one of the 5 boroughs of New York City. New York City is large, ethnically diverse, and ever expanding. New York City as of 2018 had a population of 8.623 million which makes up 44% of New York State's population of 19.54 million (circa 2018). With a vast number such as 8.623 million and given the immense ethnic diversity of the city comes an immeasurable amount of different cuisines.

Problem: Given the diversity of New York City over its 5 boroughs, it seems near impossible to determine where to open a specific restaurant. This project hopes to utilize geo local data to determine which borough and which neighborhood would be best to open an Italian restaurant in, while decreasing potential competition.

Interest: This problem can be extrapolated to any individual who is looking to open any ethnic restaurant in the 5 boroughs of New York City.**Data Acquisition & Cleaning**
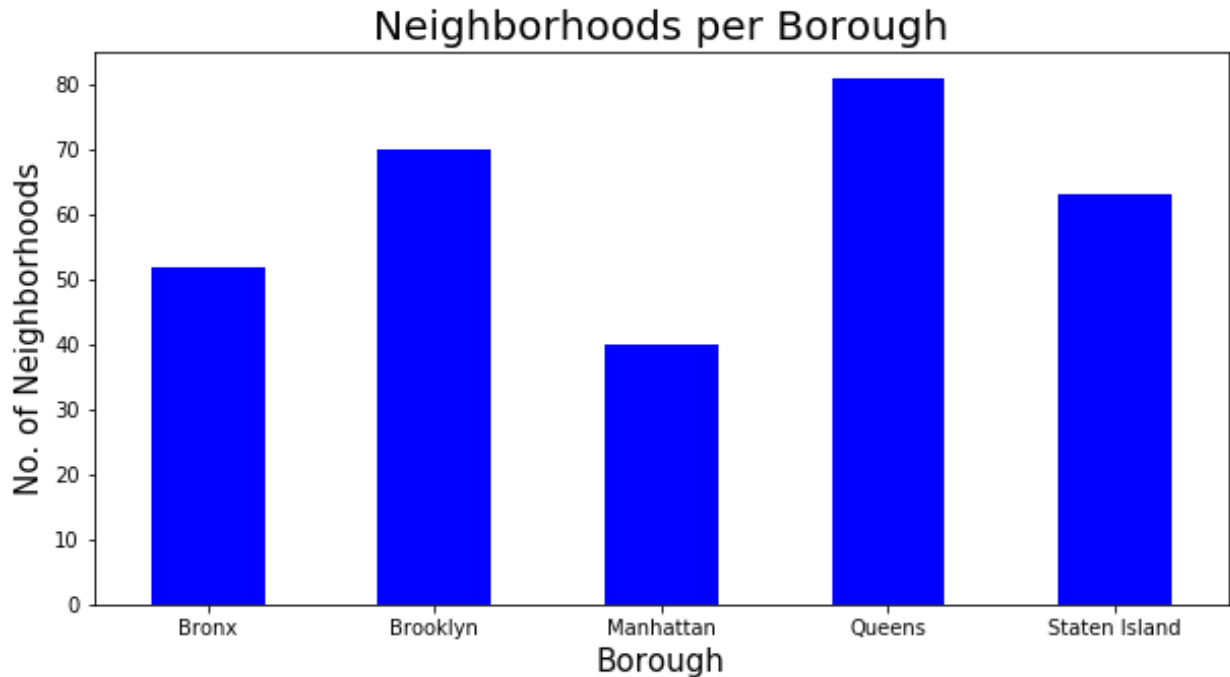
2. Data Acquisition & Cleaning

Data Sources: Utilizing the Foursquare API will enable the ability to search and filter restaurants based on ratings, style of cuisine, and tips. Data containing information on the boroughs, their neighborhoods, latitudes, and longitudes will be gathered. The GeoSpace data will allow us to get the New York City Borough boundaries that will allow for the visualization of the choropleth map.

- **Italian Restaurants in New York City**
  - Data Source: Foursquare API
- **New York City Data**
  - Data Source: https://cocl.us/new_york_dataset
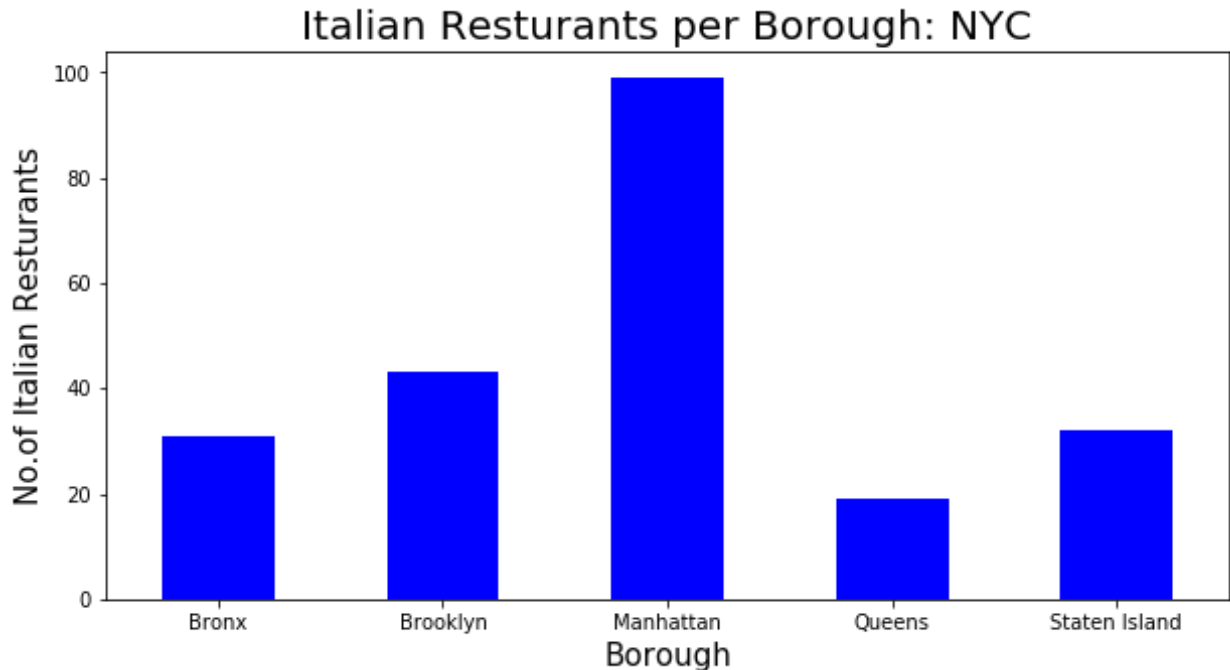- **GeoSpace Data**
  - Data Source: https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm

Data Cleaning: Since the data was gathered from a variety of sources it was important to extract the necessary information and build functions and data frames that would allow for more expeditious work when performing the analysis
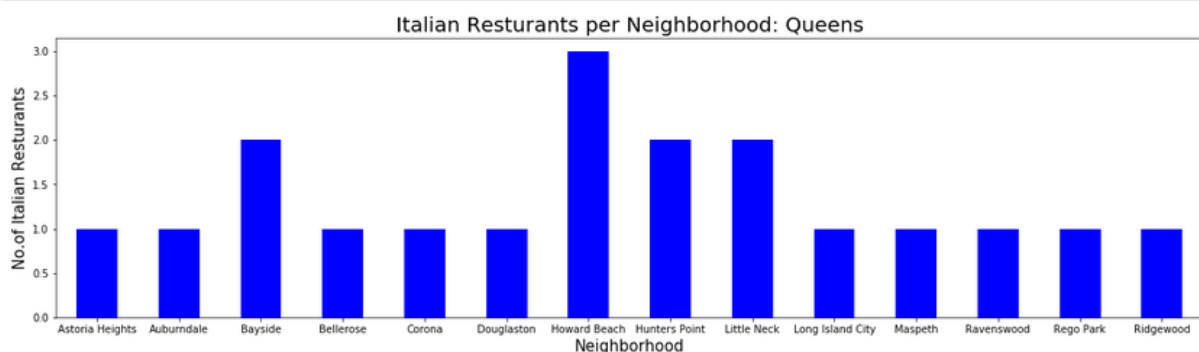
3. Methodology & Results

Task Narrowing: The task at hand was to find where the optimal neighborhood in the 5 boroughs of New York City to open an Italian restaurant. In order to do this, one must first look at the total number of neighborhoods in the city. I used the data of the boroughs to create a bar chart depicting the number of neighborhoods per borough.
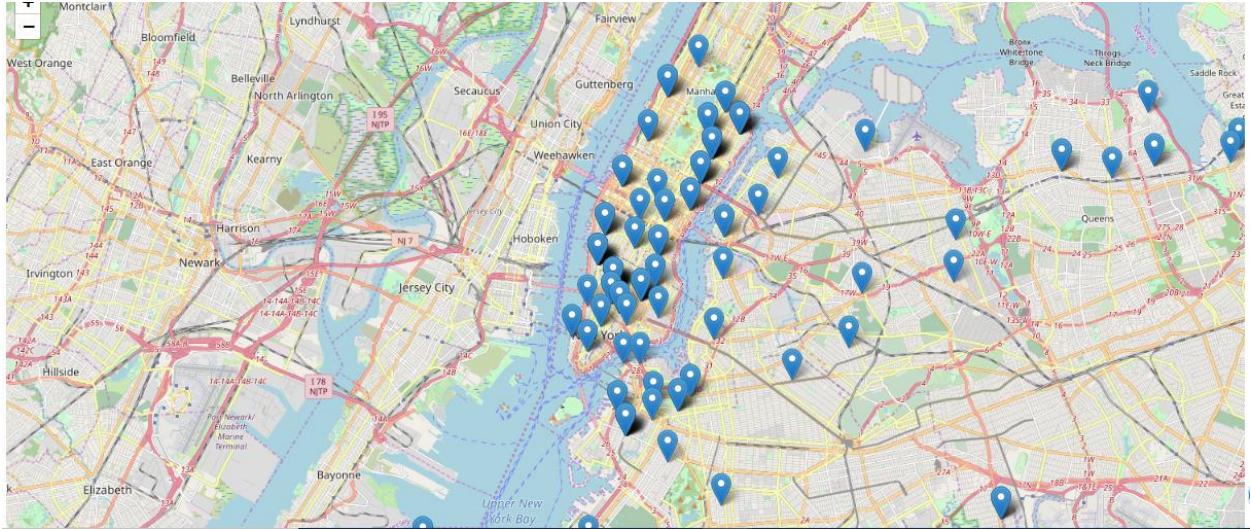

Neighborhoods per Borough

The graph allows us to see that Queens followed by Brooklyn and Staten Island have the highest number of neighborhoods in their respective boroughs, whereas Manhattan has the least. In the overarching theme of the problem this doesn't tell rather specific information. It is imperative to continue to dive into the data. Upon producing the above chart, the next step was to determine the number of Italian restaurants for each of the boroughs.

Italian Resturants per Borough: NYC

This new chart permits us to see that Manhattan has the largest number of Italian restaurants in its borough. The inference that one can make from this and the previous chart is that the number of neighborhoods does not necessarily correlate the number of Italian restaurants within the borough. The visualization of Italian restaurants per borough also allows for a further analysis of the problem at hand. We now have the ability to narrow down our search for the more optimal borough. In this situation we would have better luck opening a restaurant in Queens as it holds the fewest number of Italian restaurants. Queens itself is a rather large borough and therefore a more in-depth look into its various neighborhoods may allow for an even better insight.

Italian Resturants per Neighborhood: Queens

Utilizing a further look into the borough of Queens it's apparent that Howard Beach followed by Bayside, Hunters Point, and Little Neck have the highest number of Italian restaurants in their respective neighborhoods. It would be disadvantageous to open a restaurant here due to the level of competition. It would behoove one to open an Italian restaurant in any of the other neighborhoods of Queens.

The map generated by the choropleth allows us to see the cluster of Italian restaurants that lie within the borough of Manhattan, all the while visualizing the sparsity of the Italian restaurants in Queens.

4. Discussion & Conclusion

Discussion: This is a relatively simplistic approach to the problem. There are some limitations that have an effect on the results. The location of the restaurants and accuracy entirely depends on the data that is provided by using the Foursquare API.

Conclusion: Queens is the ideal borough to open an Italian restaurant in due to the sheer lack of availability of Italian restaurants in comparison to other boroughs. Manhattan has the largest number of Italian restaurants in a smaller area than Queens. More importantly the restaurant would have a higher chance of success if it were to open in one of the neighborhoods in Queens that only has 1 current Italian restaurant.