Coursera Capstone

IBM Applied Data Science Capstone

Open a supply store for Japanese Restaurants in New York City

INTRODUCTIONS

One of my friends will re-relocate from Austin, Taxes to New York City. His family want to re-open Supply Store to Japanese restaurants in New York City like what they did in Austin. He need some help from me to determine which neighborhood in New York City he should open his new store based on data science.

New York City's demographics show that it is a large and ethnically diverse metropolis. It is the largest city in the United States with a long history of international immigration. New York City was home to nearly 8.5 million people in 2020, accounting for over 40% of the population of New York State and a slightly lower percentage of the New York metropolitan area, home to approximately 23.6 million. Over the last decade, the city has been growing faster than the region. The New York region continues to be by far the leading metropolitan gateway for legal immigrants admitted into the United States.

This final project explores the best locations to open supply store for Japanese restaurants throughout the city of New York. Potentially the owner of the store can have great success and consistent profit. However, as with any business, opening a new store requires serious considerations and is more complicated than it seems from the first glance. In particular, the location of the store is one of the most important factors that will affect whether it will have success or a failure. So our project will attempt to answer the questions “Where should the investor open a new store that are mostly close to Japanese Restaurants with high ratings in new York city?”

PROBLEM DESCRIPTIONS

The objective of this Capstone project is to analyze and select the best locations in the city of New York to open a new Supply Store to Japanese restaurants. Using Data Science methodology and instruments such as Data Analysis and Visualization.

This project aims to provide solutions to answer the business question: Where in the city of New York, should the investor open a supply store to Japanese restaurants with steady customer and profits?

DATA AND METHODS

To solve the problem, we will need the following data: (1) New York City data containing the neighborhoods and boroughs; (2) Latitude and longitude coordinates of those neighborhoods. This is required to plot the map and get the venue data; (3) Venue data, customer rating data related to restaurants. We are going to use this data to perform further analysis of the neighborhoods

The data processing and analysis following the following steps. (1) New York City data containing the neighborhoods and boroughs will be obtained from the open data source: https://cocl.us/new_york_dataset; (2) Get the geographical coordinates of the neighborhoods (latitude and longitude) using Python Geocoder package; (3) find the number of Japanese restaurants and rating of each restaurants in each neighborhoods. (4) Identify the location using statically analyses with more Japanese restaurants with better customer ratings. (5) Foursquare API to get the venue data for the neighborhoods defined at the previous step

RESULTS

Using the url to fetch data from foursquare api , the borough, neighborhood, latitude and longitude data can be extracted and summarized in one pandas dataframe as showed in Fig.1

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

Fig1.

The number of Neighborhood per Borough can be calculated from that dataframe as showed in Fig.2. Queens has more Neighborhoods than others.

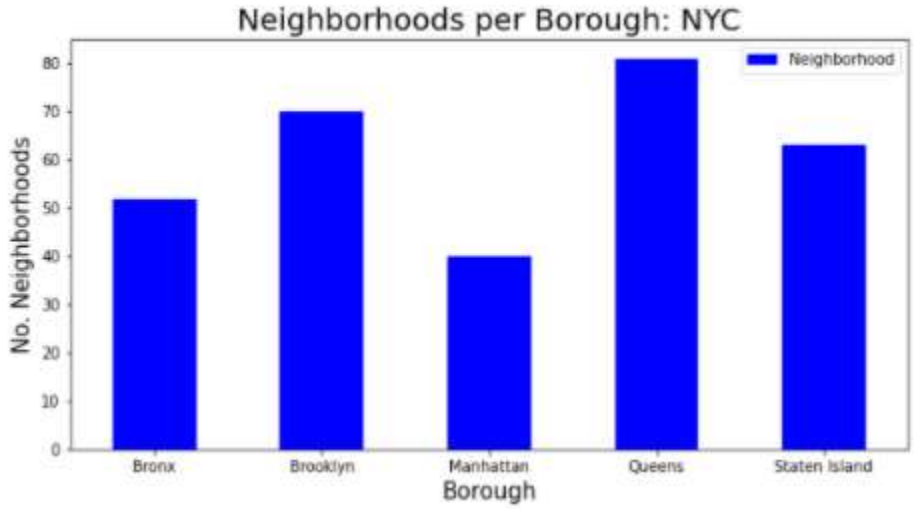

fig.2

Fig.3 showed the comparison of No. of Japanese Restaurants among boroughs. Manhattan has 28 ones, much more than other boroughs.

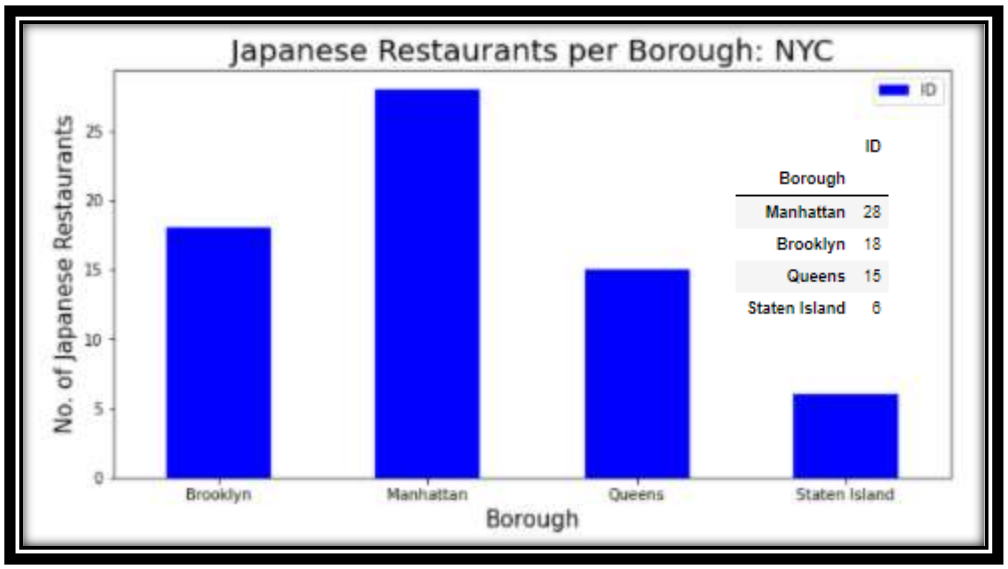

Fig.3

Fig.4 showed that most of the Japanese restaurants in Manhattan are located in Flatiron, Midtown South and Murray Hill.

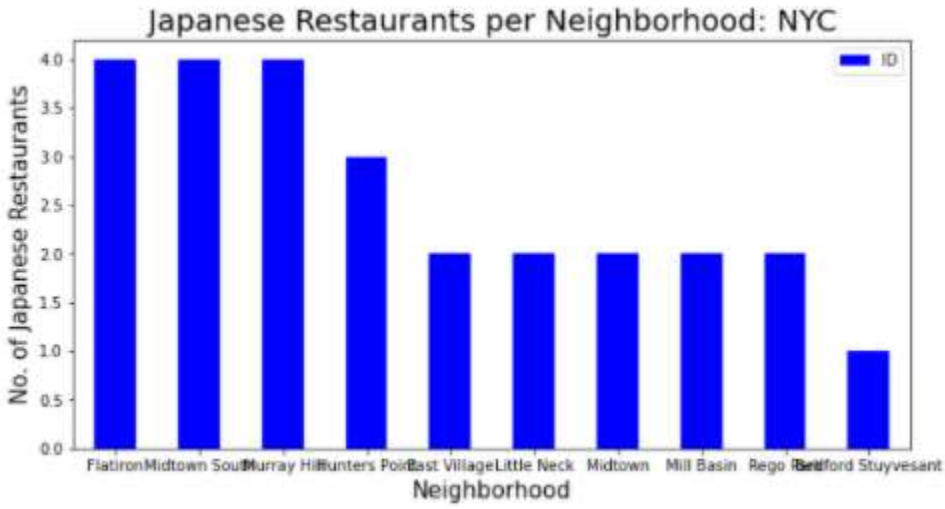

Fig.4

Fig.5. showed the average rating of Japanese Restaurants from each borough. As shown in the bar charts, Manhattan has the highest rating of 8.39 /10 among all the boroughs. It indicates that these Japanese Restaurants need more supplier to serve their customers.

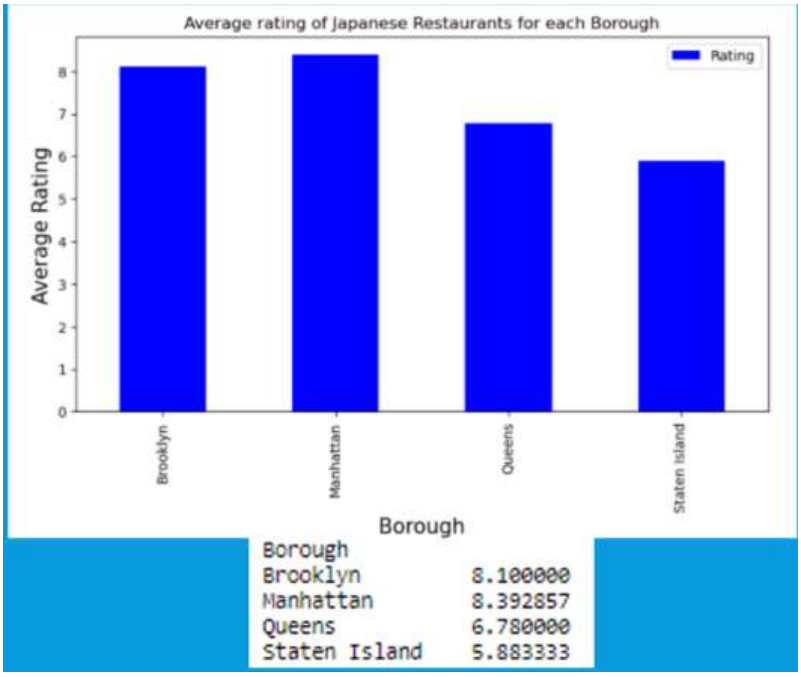

Fig.5

With folium python library, the locations of these restaurants with good rating can be labelled in the maps as Fig.6 showed. The locations within these locations are good candidate to open a new supply store.

Fig.6

CONCLULSIONS

In summary, Manhattan has the most number of Japanese restaurants and most of the Japanese restaurants in Manhattan are located in Flatiron, Midtown South and Murray Hill. Additionally, Manhattan has the best rating that Japanese restaurants received. Based on all these analysis, the location as showed in the maps are the good candidates to open a supply store for Japanese restaurants.