

Open a Homestyle Japanese Restaurant in New York

Introduction

New York city is major of cultural, financial, commercial centers in the world. The population of New York city is 8 million and it is most density population. The city has as-you-desired choice of restaurants. One of my clients ask to open a Japanese restaurant in New York city. This client plans to open a homestyle Japanese restaurant, unlike generic of Sushi restaurants, the homestyle restaurants are relatively reasonable. It is a niche market analysis that explore existing Japanese restaurants in New York city and what are the current trends. Among the current popularity of existing Japanese restaurants, we are going to recommend the best location to open the Homestyle Japanese restaurant.

Data

Initial analysis involves current household economic status data in the United States which is retrieved from NYCdata (https://www.baruch.cuny.edu/nycdata/population-geography/avg_size_hhold.htm) and United States Census Bureau (<https://www.census.gov/>) in order to examine a correlation between Persons per household and Average annual expenditures in New York City. Also median household income is retrieved from United States Census Bureau (Fig. 1), (Fig. 2).

New York city data is obtained from URL 'https://cocl.us/new_york_dataset' which has neighborhood latitude and longitude (Fig.3). Venue and the detail information are retrieved from Foursquare using unique credentials (Fig. 4),(Fig.5).

	City	Persons_per_household	Average_annual_expenditures
0	Atlanta	2.19	64103
1	Boston	2.36	68119
2	Chicago	2.48	64804
3	Houston	2.65	75288
4	New York	2.60	73806
5	San Diego	2.70	77451

(Fig. 1)

	Borough	Person_per_household	Number_of_household	Asian_percentage	Median_household_income
0	Manhattan	2.07	759460	13%	86553
1	Bronx	2.76	503829	5%	40088
2	Queens	2.90	778932	27%	68666
3	Brooklyn	2.66	958567	13%	60231
4	Staten Island	2.82	166246	11%	82783

(Fig. 2)

	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

(Fig.3)

	Borough	Neighborhood	ID	Name
0	Brooklyn	Kensington	4d5c12a01e43236a87eb1583	Sake Sushi
1	Brooklyn	Prospect Heights	5cb5e5f9a35f4600255406c6	Maison Yaki
2	Brooklyn	Williamsburg	51f9b7b3498eefe896caeb23	Shalom Japan
3	Brooklyn	Bedford Stuyvesant	5b3bcb69bfc6d0002ca9bf17	Warude
4	Brooklyn	Brooklyn Heights	479ccb47f964a5206b4d1fe3	Iron Chef House

(Fig. 4)

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Brooklyn	Kensington	4d5c12a01e43236a87eb1583	Sake Sushi	31	7.5	49
1	Brooklyn	Prospect Heights	5cb5e5f9a35f4600255406c6	Maison Yaki	82	8.3	23
2	Brooklyn	Williamsburg	51f9b7b3498eefe896caeb23	Shalom Japan	298	8.1	99
3	Brooklyn	Bedford Stuyvesant	5b3bcb69bfc6d0002ca9bf17	Warude	30	8.3	6
4	Brooklyn	Brooklyn Heights	479ccb47f964a5206b4d1fe3	Iron Chef House	142	8.1	66

(Fig. 5)

Methodology

According to the National Center for Biotechnology Information (<https://pubmed.ncbi.nlm.nih.gov/6667739/>), family size affects the patterns of spending and income levels and spending increases as the number of children increases. The initial analysis is to get a big picture of household economics in relative to the number of household and the expenditure in the major metropolitan cities in the United States.

The purpose of this analysis to understand what type of household tends to spend more on food for their daily life. In this analysis, linear regression imported from scipy to run a correlation analysis. The regression displays a correlation between person per household and average annual expenditures.

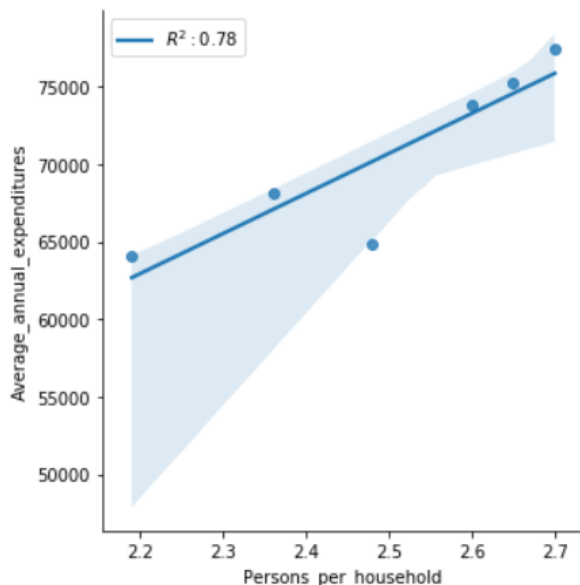
In the second analysis, similarly to the first, we will look into a dataset which elaborates household economic factors in New York city. We will see median income and person per household in this analysis.

Now, we are getting into a phase of core analysis to identify which locations are the candidate for opening homestyle Japanese restaurants in New York city. We will get latitude and longitude of New York city. Then, we will visualize the borough and the neighborhood with the latitude and longitude using folium map.

With Foresquare credentials, we retrieve venues information. Then we will look into a venue which category is Japanese Restaurants. We will explore numbers of Japanese restaurants in New York city. Then venue details from Foresquare has information such as rating which can indicate popularity of the Japanese restaurants. We will extract Japanese restaurant only above average rate of seven. Finally, we will run KMean cluster the high rating Japanese restaurants in the neighborhood. The neighborhood in clusters will be displayed in a map for result.

Results

As we examine in the initial analysis of linear regression between average annual expenditure and persons per household for US metropolitan cities shows significant correlation of R square 0.78. This means there are more people in one household they spend more including food (Fig.6).

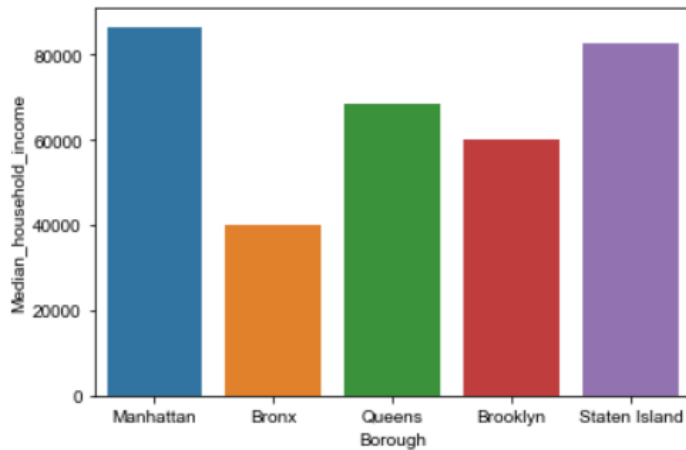


(Fig.6)

When we dive into the similar household statistics for New York city, income for Bronx is fairly low compared to other four boroughs (Fig.7). Number of persons per household shows Manhattan is the

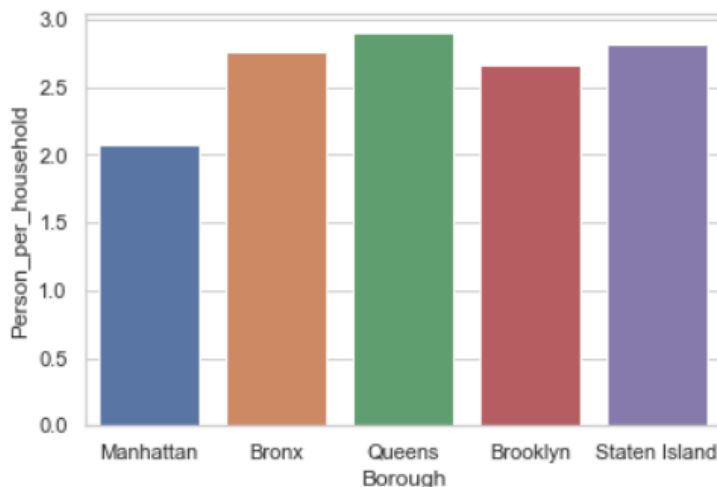
lowest (Fig.8). This analysis may indicate higher possibility of candidates of opening homestyle Japanese restaurants in three boroughs of Queens, Brooklyn, and Staten Island.

Median Household Income by Borough in New York City



(Fig.7)

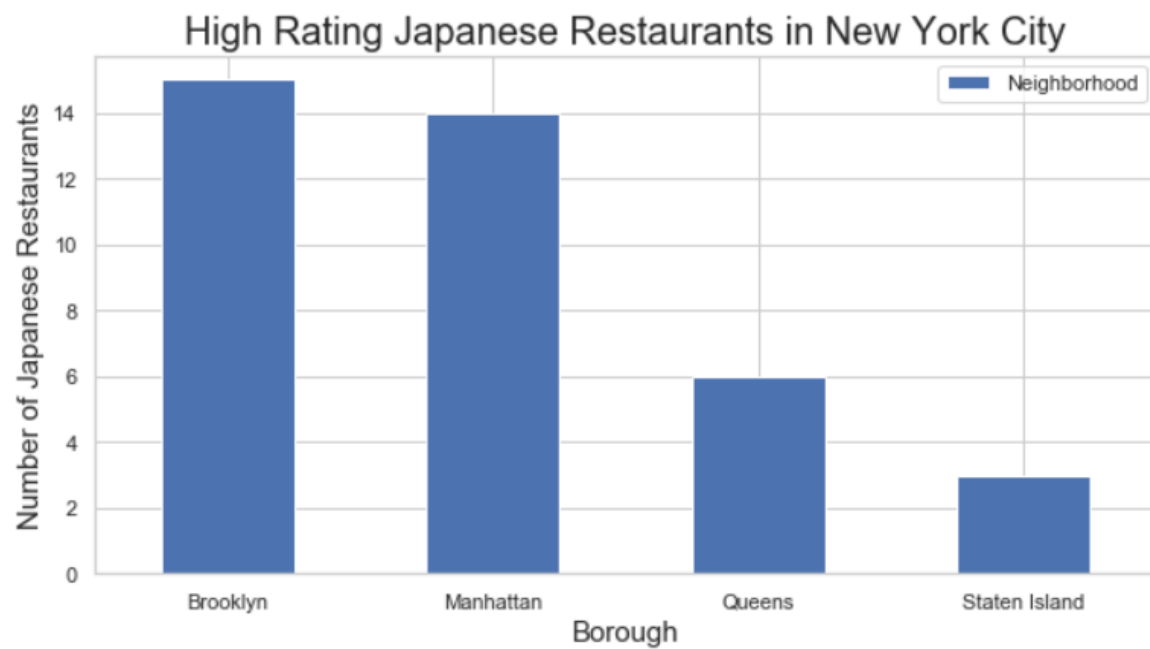
Number of Person per Household Borough in New York City



(Fig. 8)

For the core analysis, we extract rating above seven among Japanese restaurants in New York city. The first obvious result is Bronx is eliminated as the neighborhood do not have any high rating Japanese restaurants. The greatest number of Japanese restaurants are in Brookelyn and Manhattan, then Quees is the third and Staten Island only has a few in the neighborhood (Fig. 9). Average rating for Japanese restaurants also shows the same order as Queens and Staten Island are close each other (Fig. 10).

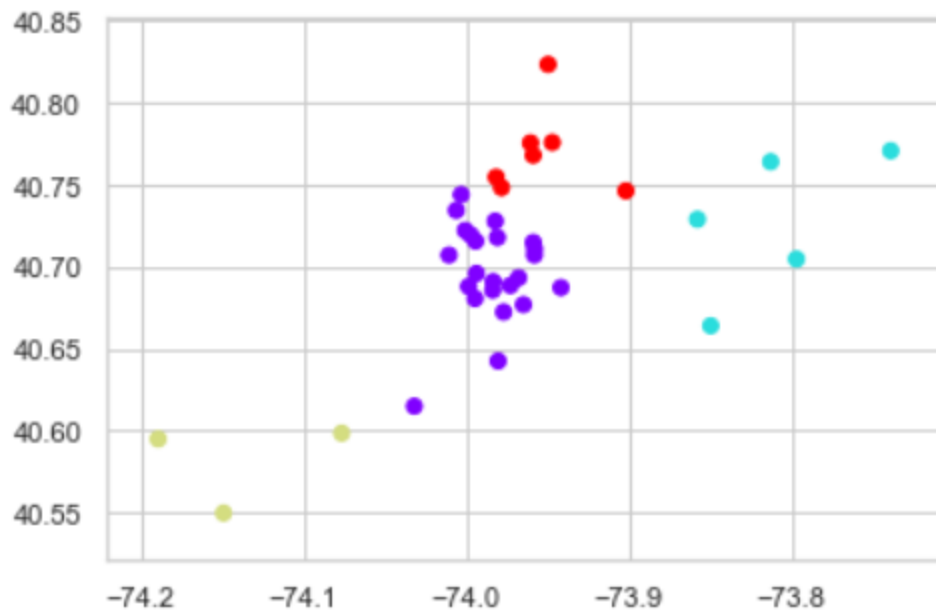
As clusters are created for high rating Japanese restaurants in New York city, the scatter plot shows the spread among the four boroughs (Fig 11). The clusters are translated in the folio map (Fig. 12)



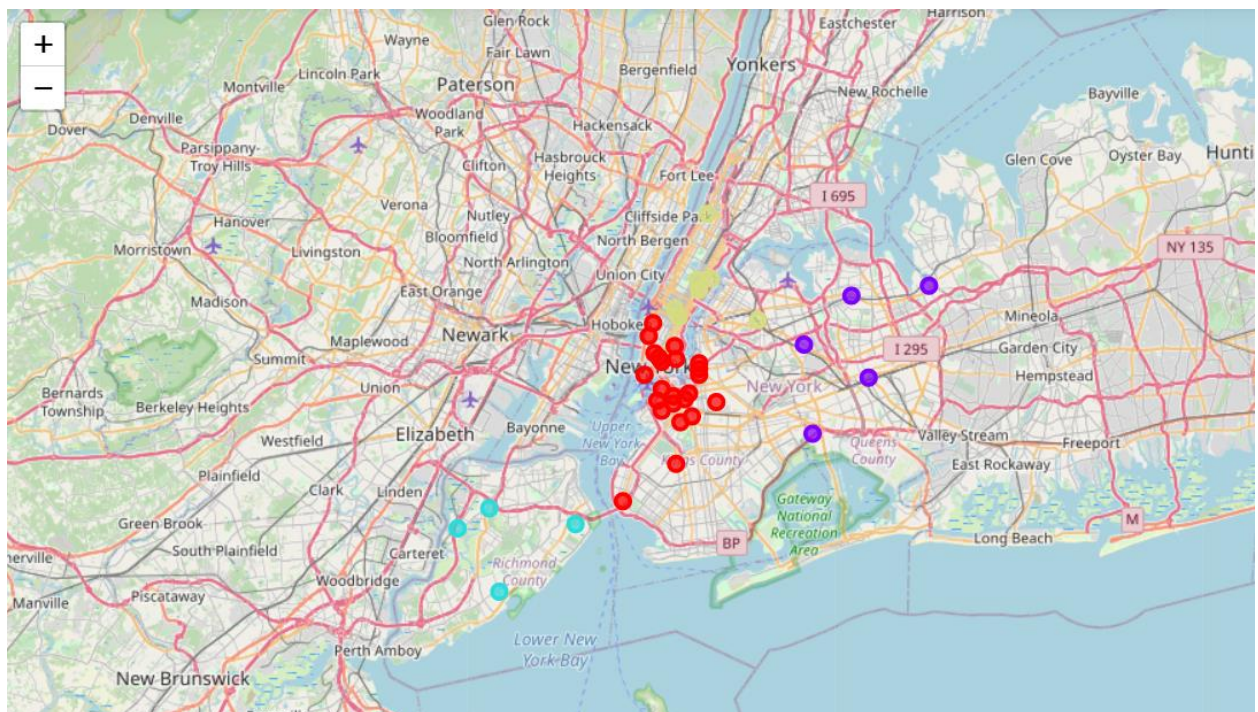
(Fig. 9)

	Borough	Average Rating
0	Brooklyn	8.260000
1	Manhattan	8.236842
2	Queens	6.030000
3	Staten Island	5.983333

(Fig. 10)



(Fig. 11)



(Fig. 12)

Discussion

From the overview of US metropolitan city analysis, we estimated Brooklyn, Queens and Staten Island could be good candidate for opening the homestyle Japanese restaurant. Unlike relatively high value Sushi restaurants, the homestyle Japanese restaurant targets the middle-income neighborhood market. The target market has larger number of persons in a household may spend more on food.

Foresquare information provides insights of current Japanese restaurants trend. Brooklyn looks like to have the greatest number and highest rating of Japanese restaurants in New York city. Queens has less number and rating among top boroughs and Staten Island has only a few high rating Japanese restaurants. With this result, we would recommend to open a homestyle Japanese restaurants in Queens. Brooklyn seems to have a high competition with existing Japanese restaurants; however, Queens may have high potentials to establish a new restaurant in less competitive environment and target household economic neighborhood.

Conclusion

US household economic and demographic statistics shows that there is a significant correlation between persons per household and annual average household expenditures. Manhattan and Bronx have identified as outliers in this analysis. It leaves Brooklyn, Queens, and Staten Island are the possible candidates for opening a homestyle Japanese restaurants.

Studying high rating Japanese restaurants using Foresquare results in Brooklyn has the most numbers and highest rating Japanese restaurants in New York city. However, a new homestyle Japanese restaurants target neighborhood is middle-income and more people in a household neighborhood. Also, current competition should be incorporated in the selection factor. Thus, we recommend Queens borough as the first recommendation for opening the Japanese restaurants in New York city. The borough has average income among five borough and persons per household is the greatest. The neighborhoods have several high rating Japanese restaurants, however we speculate there is a high potential for a new restaurants in the environment.