

# Selecting a suitable Location for Japanese restaurant in New York

## Introduction & Business Problem :

The City of New York, is the most populous city in the United States. It is diverse and is the financial capital of USA. It is multicultural. It provides lot of business opportunities and business friendly environment. It has attracted many different players into the market. It is a global hub of business and commerce. The city is a major center for banking and finance, retailing, world trade, transportation, tourism, real estate, new media, traditional media, advertising, legal services, accountancy, insurance, theater, fashion, and the arts in the United States. This also means that the market is highly competitive. As it is highly developed city so cost of doing business is also one of the highest. Thus, any new business venture or expansion needs to be analysed carefully. The insights derived from analysis will give good understanding of the business environment which help in strategically targeting the market. This will help in reduction of risk. And the Return on Investment will be reasonable.

## Business Problem

The City of New York is famous for its excellent cuisine. Its food culture includes an array of international cuisines influenced by the city's immigrant history. Japanese restaurants have become so popular in the United States now it seems that there is one on every corner, not only in major cities but also in smaller cities. Starting a Japanese restaurant can be a great business opportunity, but you need to distinguish yourself from others to enjoy long-term success.

If you plan a real restaurant that can demand higher prices for fresh fish, delivered daily from Japan, focus on neighborhoods and outlets that already attract a sophisticated Japanese client. If you plan a cheap buffet restaurant, points to the masses looking for affordable high-traffic locations with large shopping centers and other local points of interest.

My client wants to open his business in Brooklyn area, so I focus on that borough during my analysis. We define potential neighborhood based on the number of sushi bars which are operating right in each neighborhood. Brooklyn has full potential but

also is a very challenging district to open a business because of high competition. New Japanese restaurants should be open in an area that inadequate neighborhood in this way the bar can attract more customers. Therefore, this analysis necessary to ensure that we have enough customers and that we are not so close to other Japanese restaurants.

## Data

**Data 1:** Neighborhood has a total of 5 boroughs and 306 neighborhoods. In order to segment the neighborhoods and explore them, we will essentially need a dataset that contains the 5 boroughs and the neighborhoods that exist in each borough as well as the the latitude and logitude coordinates of each neighborhood. This dataset exists for free on the web. Link to the dataset is: [https://geo.nyu.edu/catalog/nyu\\_2451\\_34572](https://geo.nyu.edu/catalog/nyu_2451_34572)

	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

**Data2:** Newyork city geographical coordinates data will be utilized as input for the Foursquare API, that will be leveraged to provision venues information for each neighborhood. We will use the Foursquare API to explore neighborhoods in New York City.

In addition, Japanese restaurant category Id 4bf58dd8d48988d1d2941735 is used for retrieving data from Foursquare API.

## Methodology

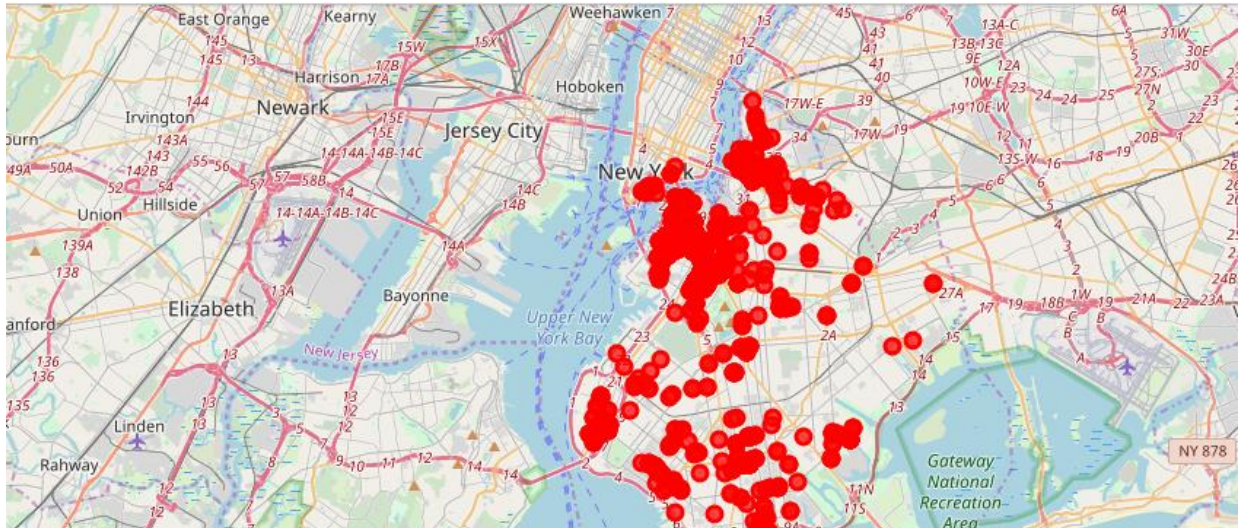
In this project, I will use the basic methodology as taught in Week 3 lab.

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
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Above, I have converted the addresses into their equivalent latitude and longitude values. Then we will use the Foursquare API to explore neighborhoods in Brooklyn, New York. After that, explore function to get Japanese restaurant categories in each neighborhood.

[10]:

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bay Ridge	40.625801	-74.030621	Inaka	40.625141	-74.030418	Sushi Restaurant
1	Bay Ridge	40.625801	-74.030621	Arirang Hibachi Steakhouse	40.621168	-74.029299	Japanese Restaurant
2	Bay Ridge	40.625801	-74.030621	Omiya	40.622329	-74.028576	Sushi Restaurant
3	Bay Ridge	40.625801	-74.030621	Chopstix Restaurant	40.622670	-74.025465	Asian Restaurant
4	Bay Ridge	40.625801	-74.030621	Taiyo Japanese Fusion	40.631792	-74.027477	Japanese Restaurant



Japanese Restaurants in Brooklyn

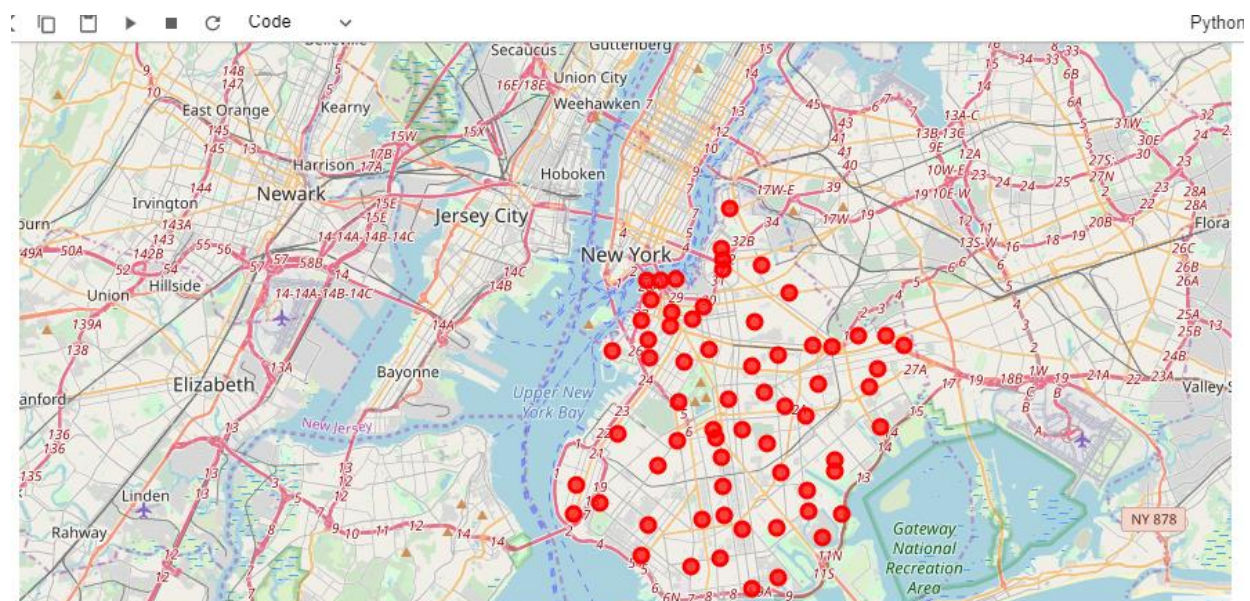
[16]:

	Neighborhood	Asian Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market	Food Stand	Japanese Restaurant	Kosher Restaurant	Poke Place	Ri
0	Bay Ridge	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	Bay Ridge	0	0	0	0	0	0	0	0	0	0	1	0	0	
2	Bay Ridge	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	Bay Ridge	1	0	0	0	0	0	0	0	0	0	0	0	0	
4	Bay Ridge	0	0	0	0	0	0	0	0	0	0	1	0	0	

Then use this feature to group the neighborhoods into clusters K-means clustering algorithm will be use to complete this task. And also, the Folium library to visualize the neighborhoods in Brooklyn and its emerging clusters.

[17]:

	Neighborhood	Asian Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market	Food Stand	Japanese Restaurant	Kosher Restaurant
0	Bath Beach	0.000000	0.043478	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.478261	0.000000
1	Bay Ridge	0.037037	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.592593	0.000000
2	Bedford Stuyvesant	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.333333	0.000000
3	Bensonhurst	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.481481	0.000000
4	Bergen Beach	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.333333	0.000000
5	Boerum Hill	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.031250	0.000000	0.000000	0.000000	0.406250	0.000000
6	Borough Park	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.250000	0.250000
7	Brighton Beach	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
8	Broadway Junction	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000
9	Brooklyn Heights	0.033333	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.033333	0.400000	0.000000
10	Brownsville	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000





## Results

**K-mean Cluster** Using K-mean to clustering data area with less number of Japanese restaurants.

### Cluster 0

```
In [23]: brooklyn_merged.loc[brooklyn_merged['Cluster Labels'] == 0, brooklyn_merged.columns[[1] + list(range(5, brooklyn_merged.shape[1])
```

Out[23]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
1	Bensonhurst	Japanese Restaurant	Sushi Restaurant	Thai Restaurant	Shabu-Shabu Restaurant	Ramen Restaurant	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café
4	Gravesend	Japanese Restaurant	Sushi Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
9	Crown Heights	Japanese Restaurant	Sushi Restaurant	Burger Joint	Chinese Restaurant	Vietnamese Restaurant	Snack Place	Shabu-Shabu Restaurant	Ramen Restaurant	Poke Place	Kosher Restaurant
13	Prospect Heights	Sushi Restaurant	Japanese Restaurant	Ramen Restaurant	Asian Restaurant	Chinese Restaurant	Cocktail Bar	Tapas Restaurant	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop
15	Williamsburg	Sushi Restaurant	Japanese Restaurant	Ramen Restaurant	Bubble Tea Shop	Udon Restaurant	Asian Restaurant	Shabu-Shabu Restaurant	Snack Place	Poke Place	Kosher Restaurant
16	Bushwick	Sushi Restaurant	Japanese Restaurant	Asian Restaurant	Ramen Restaurant	Tapas Restaurant	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café
18	Brooklyn Heights	Japanese Restaurant	Sushi Restaurant	Ramen Restaurant	Food Stand	Poke Place	Asian Restaurant	Shabu-Shabu Restaurant	Snack Place	Tapas Restaurant	Kosher Restaurant
19	Cobble Hill	Sushi Restaurant	Japanese Restaurant	Snack Place	Ramen Restaurant	Poke Place	Cocktail Bar	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint
20	Carroll Gardens	Sushi Restaurant	Japanese Restaurant	Ramen Restaurant	Snack Place	Cocktail Bar	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Café
22	Gowanus	Sushi	Japanese	Ramen	Fish Market	Snack Place	BBQ Joint	Bubble Tea	Burger Joint	Café	Chinese

### Cluster 1

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
14	Brownsville	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
26	East New York	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
30	Mill Island	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
43	Ocean Hill	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
44	City Line	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
56	Rugby	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
57	Remsen Village	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
59	Paerdegat Basin	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market
64	Broadway Junction	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant	Fish Market

### Cluster 2

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
8	Flatbush	Japanese Restaurant	Ramen Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
17	Bedford Stuyvesant	Japanese Restaurant	Tapas Restaurant	Ramen Restaurant	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
63	Weeksville	Tapas Restaurant	Ramen Restaurant	Vietnamese Restaurant	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar

## Cluster 3

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Bay Ridge	Japanese Restaurant	Sushi Restaurant	Ramen Restaurant	Asian Restaurant	Tapas Restaurant	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café
2	Sunset Park	Japanese Restaurant	Sushi Restaurant	Ramen Restaurant	Asian Restaurant	Tapas Restaurant	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café
35	Dyker Heights	Japanese Restaurant	Sushi Restaurant	Dumpling Restaurant	Ramen Restaurant	Asian Restaurant	Snack Place	Shabu-Shabu Restaurant	Tapas Restaurant	Poke Place	Kosher Restaurant
37	Marine Park	Japanese Restaurant	Sushi Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
47	Prospect Park South	Japanese Restaurant	Sushi Restaurant	Ramen Restaurant	Asian Restaurant	Tapas Restaurant	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café
48	Georgetown	Japanese Restaurant	Sushi Restaurant	Chinese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Cocktail Bar	Dumpling Restaurant
53	Fort Hamilton	Japanese Restaurant	Sushi Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
54	Ditmas Park	Japanese Restaurant	Sushi Restaurant	Ramen Restaurant	Asian Restaurant	Tapas Restaurant	Dumpling Restaurant	BBQ Joint	Bubble Tea Shop	Burger Joint	Café
60	Mill Basin	Japanese Restaurant	Sushi Restaurant	Chinese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Cocktail Bar	Dumpling Restaurant
69	Erasmus	Japanese Restaurant	Asian Restaurant	Thai Restaurant	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar

## Cluster 4

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
3	Greenpoint	Sushi Restaurant	Japanese Restaurant	Ramen Restaurant	Café	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Chinese Restaurant	Cocktail Bar
5	Brighton Beach	Sushi Restaurant	Vietnamese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
6	Sheepshead Bay	Sushi Restaurant	Japanese Restaurant	Poke Place	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
7	Manhattan Terrace	Sushi Restaurant	Japanese Restaurant	Café	Kosher Restaurant	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Chinese Restaurant	Cocktail Bar
11	Kensington	Sushi Restaurant	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
12	Windsor Terrace	Sushi Restaurant	Japanese Restaurant	Ramen Restaurant	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
31	Manhattan Beach	Sushi Restaurant	Japanese Restaurant	Poke Place	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar
32	Coney Island	Sushi Restaurant	Vietnamese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
36	Gerritsen Beach	Sushi Restaurant	Vietnamese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
45	Bergen Beach	Sushi Restaurant	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
46	Midwood	Sushi Restaurant	Japanese Restaurant	Food Stand	BBQ Joint	Bubble Tea Shop	Burger Joint	Café	Chinese Restaurant	Cocktail Bar	Dumpling Restaurant
52	Ocean Parkway	Sushi Restaurant	Japanese Restaurant	Café	Kosher Restaurant	Fish Market	BBQ Joint	Bubble Tea Shop	Burger Joint	Chinese Restaurant	Cocktail Bar

As can be deduced from data-frame above Cluster 2 is the best places to open a new Japanese restaurants.

## Discussion

In this section, I would be discussing the observations I have noted and the recommendation that I can make based on the results.

This analysis is performed on data from solely one source, Foursquare. If there are any discrepancies in the data, it will affect our prediction. If more and more accurate data is available, there is scope to come up with better results.

## **Conclusion**

Although the goals of this project were met there is definitely room for further improvement and development as noted below. However, the goals of the project were met and, with some more work, could easily be developed into a full-fledged application that could support the opening a business idea in an unknown location.