

Capstone Project - The Battle of Neighborhoods

Introduction:

New York City, in the state of New York, is by far the United States city with the largest population: in 2020, New York's population estimation is about 8.5 million. New York City's population is expected to reach 9 million by 2040, based on recent projections created by the city.

Immigration is a big part of New York history. In fact, New York have been in the past, and still is, one of the biggest hub for immigration in the United States and in the world. New York is a coastal city. As the first port of entry to the United States, it was the logical point of arrival for the majority of immigrants from other continents. It has therefore always been the main U.S. port of immigration because of its geographical location, and the majority of these newcomers to the United States chose to settle in New York City. Indeed, the city has almost always had an attractive economy and employment opportunities.

Thanks to this immigration, New York is the most diverse city in the world when it comes to talk about linguistic and cultural multiplicity. Indeed, 800 languages are spoken, we can find diverse ethnicities like Chinese, African, Italian, Indian and many others, as many as foods culture.

Problem:

We're going to study the field of Japanese restaurant, and to find the best neighborhood for Japanese food lovers, by answering the following questions:

- 1) Which parts of New York City has good Japanese restaurants?
- 2) What is the best Japanese food location in New York City?
- 3) What are the areas for potential Japanese restaurant market?
- 4) What are the areas in lack of Japanese restaurants?
- 5) Which is the best place to live if you are a big Japanese food lover?

Data section:

New York is the most diverse city in the world when it comes to talk about linguistic and cultural multiplicity. Indeed, 800 languages are spoken, we can find diverse ethnicities like Chinese, African, Italian, Indian and many others, as many as foods culture.

For this project we need the following data:

- New York City data with the location data like latitude and longitude of the different Boroughs and Neighborhoods of the city.
 - o Source: https://cocl.us/new_york_dataset
 - o Description: This dataset list the required location data (latitude, longitude) of boroughs and neighborhoods of New York City.

- Japanese restaurant in each neighborhood of New York City
 - o Source: Foursquare API
 - o Description: Thanks to foursquare API we will have all the venues of the different neighborhoods and be able to filter those venues to get only Ethiopian restaurant.

Methodology:

- First, we collected the New York City data with the location data like latitude and longitude of the different Boroughs and Neighborhoods of the city from the following url:
“https://cocl.us/new_york_dataset”.

Here is a sample of the New York city data after collection and data preprocessing:

	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

The city of New York is constituted of 306 neighborhoods dispatched in five boroughs.

- Thanks to the foursquare API we were able to get all venues from each neighborhoods of NEW York City.
- So we filtered ‘Japanese Restaurant’ venues as we want to find the best neighborhoods for Japanese food lovers.

Here is a sample of the filtered venues dataframe:

	Borough	Neighborhood	ID	Name
0	Bronx	Riverdale	503cfaffe4b066d39de5005a	Aoyu Japanese Restaurant
1	Bronx	Riverdale	4b0b311af964a520642e23e3	Palace of Japan
2	Bronx	Kingsbridge	503cfaffe4b066d39de5005a	Aoyu Japanese Restaurant
3	Bronx	Kingsbridge	4b0b311af964a520642e23e3	Palace of Japan
4	Bronx	City Island	4dbdf3d790a02849cbd675be	Ohana Japanese Habachi Seafood & Steakhouse

Thanks to the shape of this dataframe, we know that there are 183 Japanese restaurants in New York.

- Next we gathered the ratings, tips and number of likes of the different Japanese restaurants thanks to the foursquare API.

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Bronx	Riverdale	503cfafe4b066d39de5005a	Aoyu Japanese Restaurant	32	8.8	19
1	Bronx	Riverdale	4b0b311af964a520642e23e3	Palace of Japan	38	8.6	26
2	Bronx	Kingsbridge	503cfafe4b066d39de5005a	Aoyu Japanese Restaurant	32	8.8	19
3	Bronx	Kingsbridge	4b0b311af964a520642e23e3	Palace of Japan	38	8.6	26
4	Bronx	City Island	4dbdf3d790a02849cbd675be	Ohana Japanese Habachi Seafood & Steakhouse	34	7.4	18

- Then we sort the neighborhoods and boroughs with higher average ratings

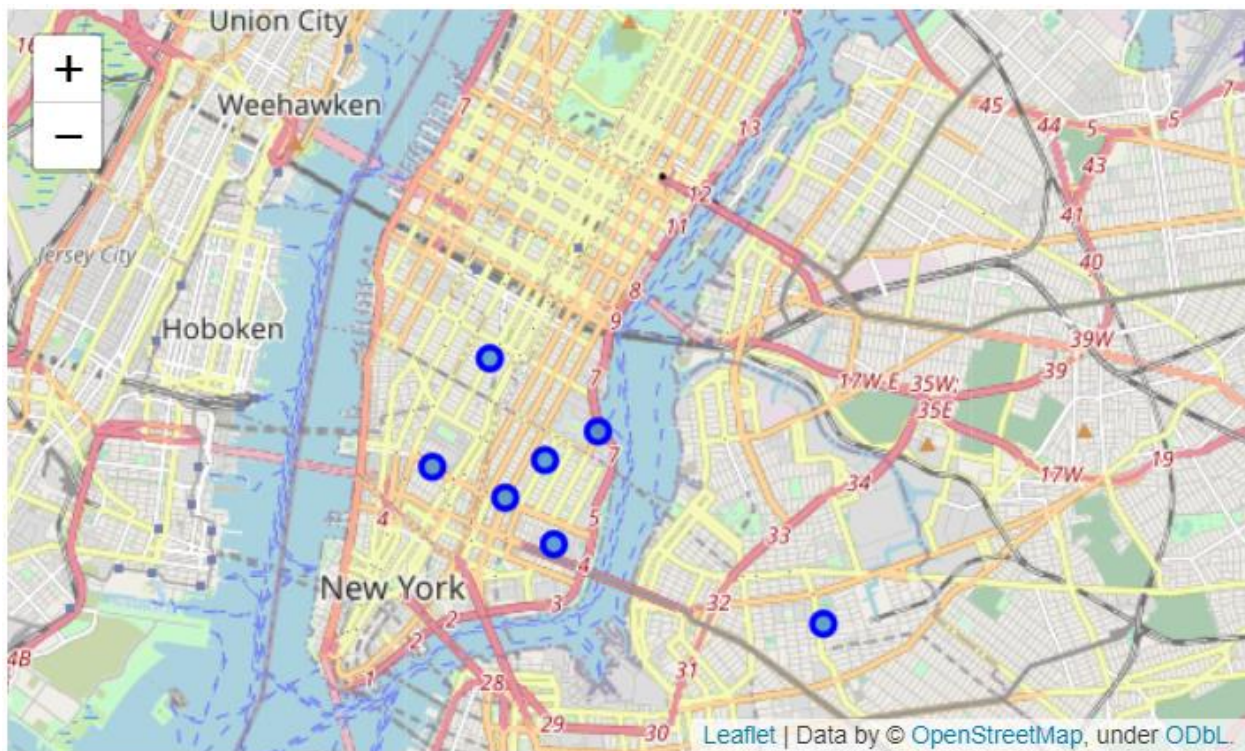
	Neighborhood	Average Rating
66	Lower East Side	9.200000
79	Noho	9.175000
28	East Village	9.125000
19	Cobble Hill	9.100000
33	Flatiron	9.033333
98	Stuyvesant Town	9.000000
48	Greenwich Village	9.000000
29	East Williamsburg	9.000000
43	Gramercy	8.900000
80	North Side	8.900000

	Borough	Average Rating
2	Manhattan	8.646939
1	Brooklyn	7.672131
0	Bronx	7.500000
3	Queens	7.195652
4	Staten Island	5.941176

- As we want the best for our clients, we only considered neighborhoods with average ratings better than 9 :

	Neighborhood	Average Rating
19	Cobble Hill	9.100000
28	East Village	9.125000
29	East Williamsburg	9.000000
33	Flatiron	9.033333
48	Greenwich Village	9.000000
66	Lower East Side	9.200000
79	Noho	9.175000
98	Stuyvesant Town	9.000000

- Finally, we visualized those neighborhoods on a map thanks to folium package:

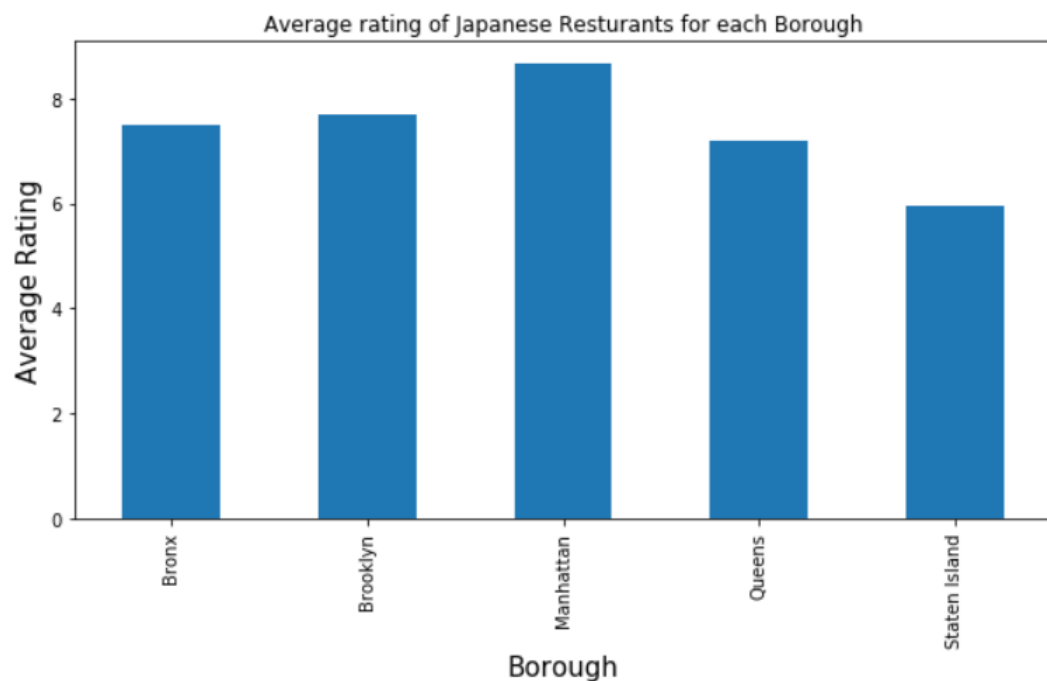


Results:

- You can find good Japanese restaurants in the following location of New York City:

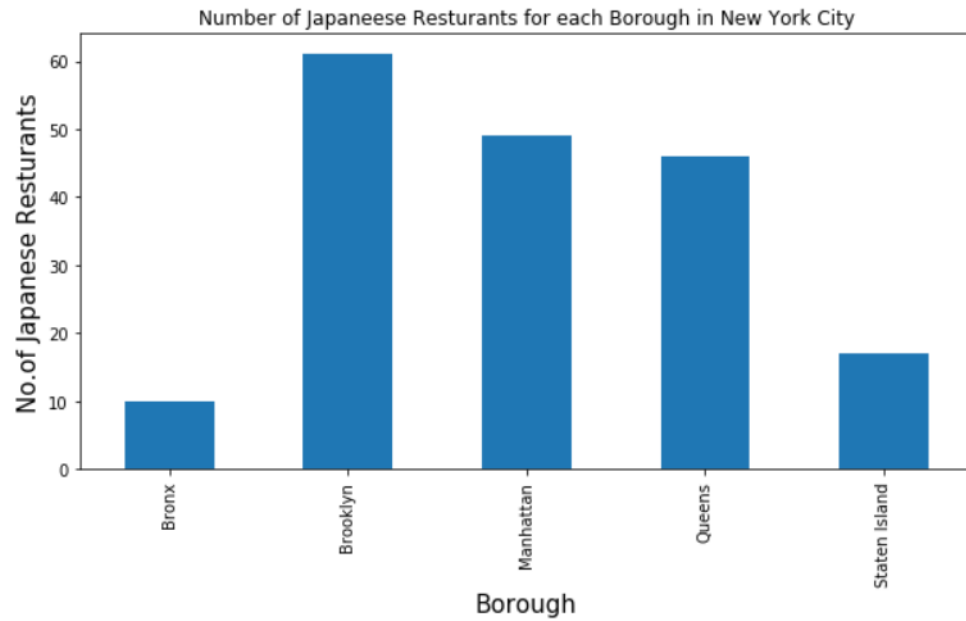
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- The 5 best neighborhoods to find the best Japanese food is Lower East Side (Manhattan), Noho (Manhattan), East Village (Manhattan), Cobble Hill (Brooklyn) and Flatiron (Manhattan).
- The area where the Japanese restaurant market seems to be the more appreciated is Manhattan:

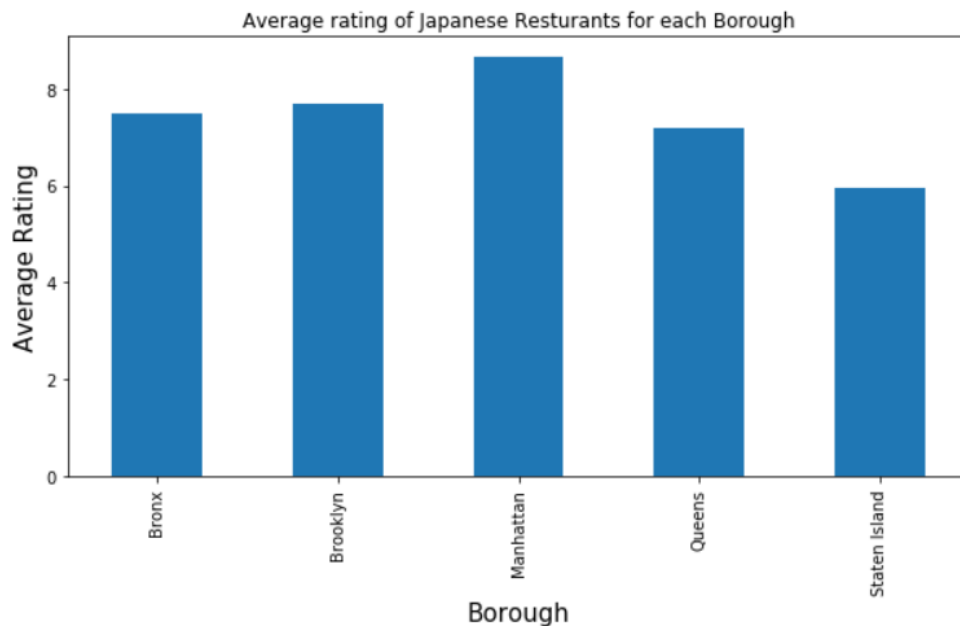


Manhattan is a potential market for Japanese restaurant.

- The Bronx only have 10 Japanese restaurant:



Furthermore the ratings of Japanese restaurants from the Bronx are not the best:



- Finally, we can say that Manhattan is the best place to stay if you are a big sushi lover.

Conclusion:

Manhattan is the best place to stay for a Japanese food lover, as it has a lot of good Japanese restaurant there. We also said that Manhattan is a potential market for Japanese restaurant but to verify this affirmation we have to study the competition of this market.