

Capstone Project - The Battle of Neighborhoods

Japanese Restaurants in New York City

1. Introduction/Business Understanding

1.1 Discussion of the background

New York City (NYC), officially known as the City of New York and often called simply New York (NY), is the **most populous city** in the **United States**. With an estimated 2018 population of 8,398,748 distributed over a land area of about 302.6 square miles (784 km²), New York is also the **most densely populated** major city in the United States.^[10] Located at the southern tip of the U.S. state of New York, the city is the center of the **New York metropolitan area**, the largest **metropolitan area** in the world by **urban landmass**^[11] and one of the world's most populous **megacities**. A **global power city**,^[12] New York City has been described as the **cultural** capital of the world,^{[13][14]} and exerts a significant impact upon commerce,^[15] entertainment, research, technology, education, politics, tourism, art, fashion, and sports. The city's fast **pace** has inspired the term *New York minute*.^[16] Home to the **headquarters of the United Nations**,^[17] New York is an important center for **international diplomacy**.^{[18][19]}

The restaurant business in New York City is like no other business in the world. The rent structure, the volume of business, minimum wage pay scale, spotlight and notoriety, 3rd party online order, celeb chefs, and delivery platforms, as well as the ever-increasing regulation set forth by NYC, make operating a restaurant in NYC exciting, exhausting, and sometimes as nerve-wracking as bungee jumping. As a result, national organizations established to support restaurant operators in other parts of the country very often do not connect with restaurant issues in New York City. The unique rewards and challenges facing restaurateurs are often more complicated, misunderstood, or not embraced at all. As a franchise consultant in the restaurant development space, my experience has been that when it comes to addressing and assisting restaurateurs in New York, one size does not fit all.

NYC is home to more than 24,000 eating and drinking establishments, employing more than a quarter of a million people, our industry is vital to the economic footprint and social fabric of New York City.

1.2 Description of the problem

I am going to explore the best places for Japanese Restaurants in New York City. One of world wide Japanese company is willing to open new restaurant there. Thus, it want to understand locations better through exploring neighborhoods and boroughs. Firstly, I want to know a number of Japanese Restaurants in New York City. Secondly, I need to understand qualities (ratings) of such a Restaurants there. Additionally, I will attempt to answer the questions “Where should I open an Japanese Restaurant?” and “Where should I stay If I want great Japanese food?”

Problem Statement

1. What is / are the best location(s) for Japanese cuisine in New York City?
2. In what Neighborhood and/or borough should I open an Japanese restaurant to have the best chance of being successful?
3. Where would I go in New York City to have the best Japanese food?

2. Data Requirements

In order to answer the above questions, data on New York City neighborhoods, boroughs to include boundaries, latitude, longitude, restaurants, and restaurant ratings and tips are required.

New York City data containing the neighborhoods and boroughs, latitudes, and longitudes will be obtained from the data source: https://cocl.us/new_york_dataset

New York City data containing neighborhood boundaries will be obtained from the data source: <https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm>

All data related to locations and quality of Japanese restaurants will be obtained via the FourSquare API utilized via the Request library in Python.

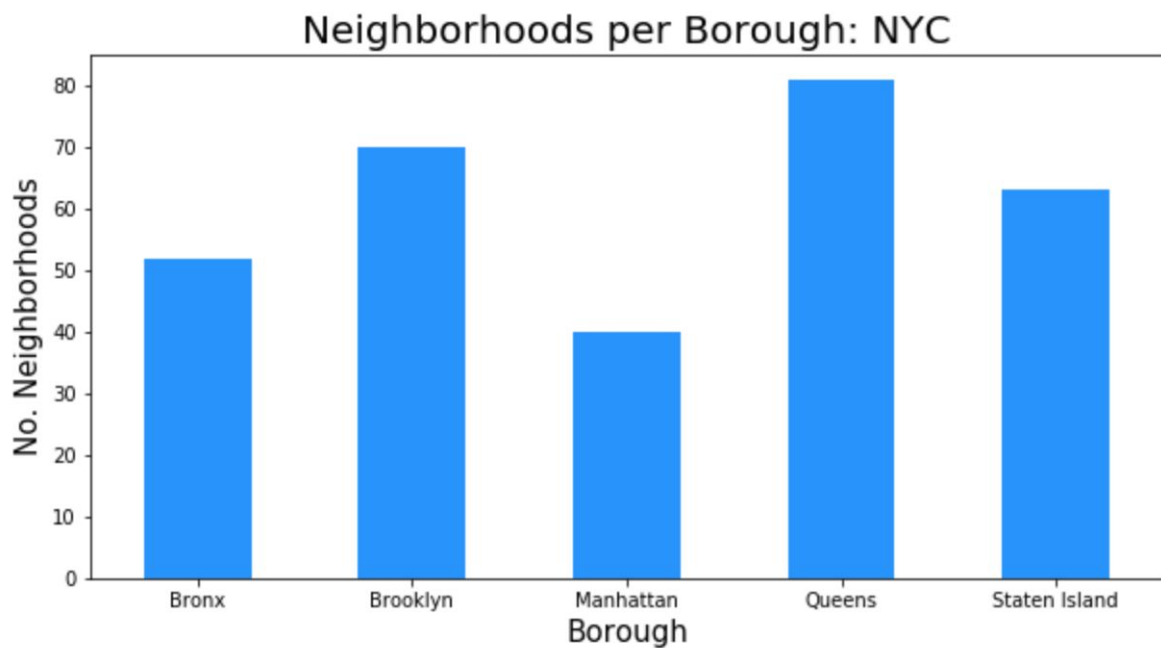
3. Methodology

- Data will be collected from https://cocl.us/new_york_dataset and cleaned and processed into a dataframe.
- FourSquare will be used to locate all venues and then filtered by Japanese restaurants. Ratings, tips, and likes by users will be counted and added to the dataframe.
- Data will be sorted based on rankings
- Finally, the data be will be visually assessed using graphing from various Python libraries.

First, obtain our initial NYC data

	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

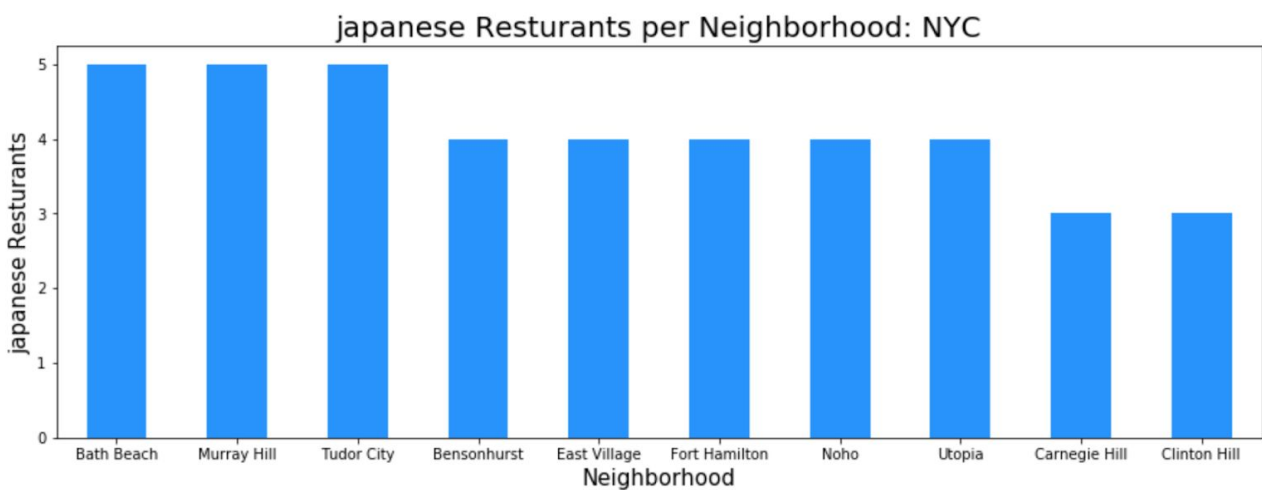
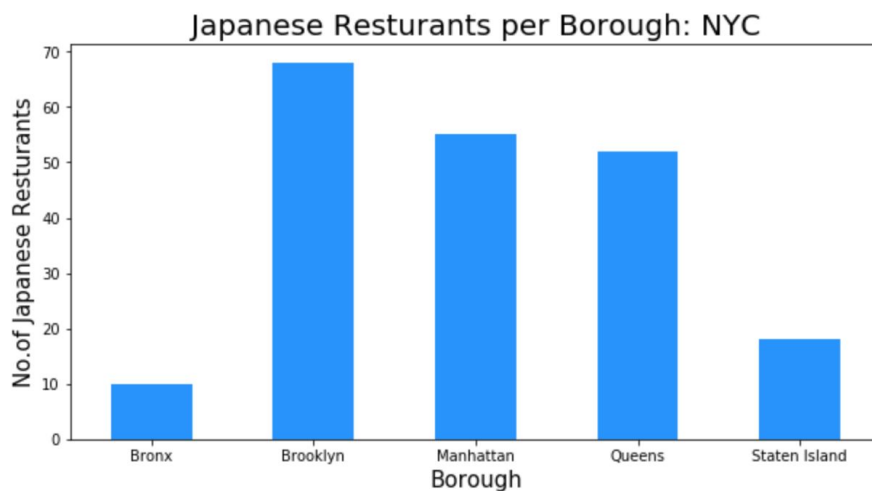
Now that we have our initial data, let's start analyzing it. We can see below that Manhattan has the least number of neighborhoods in all five boroughs.



Let's analyze further and see how many Japanese restaurants there are in each neighborhood and borough and graph the results.

	Unnamed: 0	Borough	Neighborhood	ID	Name
198	198	Brooklyn	Homecrest	4d6adae62ea9b1f7cb22ca28	Fuji Hana
199	199	Brooklyn	Homecrest	4bfb16ebd2b720a16395326a	Omiya Sushi
200	200	Staten Island	Richmond Valley	4bc898de15a7ef3b40697bda	Buddha Lounge
201	201	Staten Island	Richmond Valley	584de48c01f433697d786f21	Fushimi Tottenville
202	202	Queens	Malba	4c6038b654ac0f4736f7b421	Akiyama™ Sushi

As we continue our analysis, we see below that Brooklyn has the highest number of Japanese restaurants. Additionally, we see how many restaurants the top 10 neighborhoods have. The neighborhoods of Bath Beach, Murray Hill, and Tudor City have the highest number of Japanese restaurants in all of NYC.



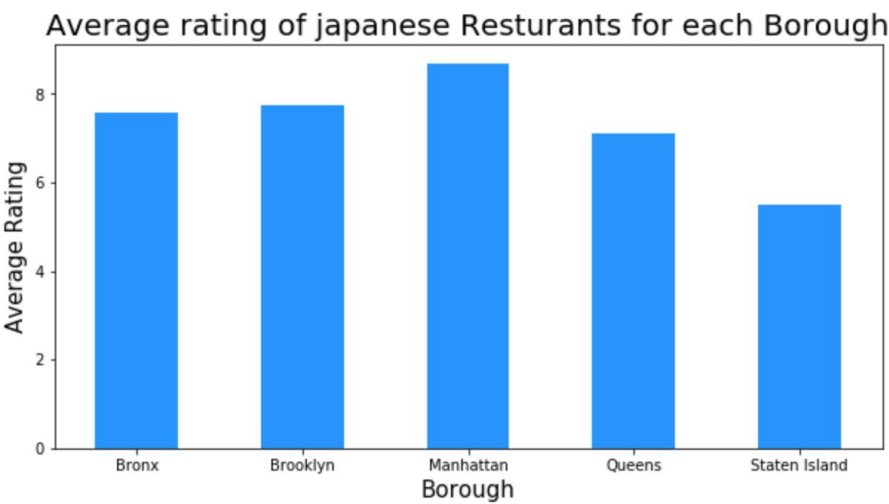
Let's obtain ratings, likes, and tip for Japanese restaurants

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Bronx	Riverdale	503cfafe4b066d39de5005a	Aoyu Japanese Restaurant	32	9.2	19
1	Bronx	Riverdale	4b0b311af964a520642e23e3	Palace of Japan	38	8.5	26
2	Bronx	Kingsbridge	503cfafe4b066d39de5005a	Aoyu Japanese Restaurant	32	9.2	19
3	Bronx	Kingsbridge	4b0b311af964a520642e23e3	Palace of Japan	38	8.5	26
4	Bronx	City Island	4dbdf3d790a02849cbd675be	Ohana Japanese Habachi Seafood & Steakhouse	33	7.5	18

Additionally, we find out the best 10 neighborhoods and boroughs by average rating of Japanese restaurants

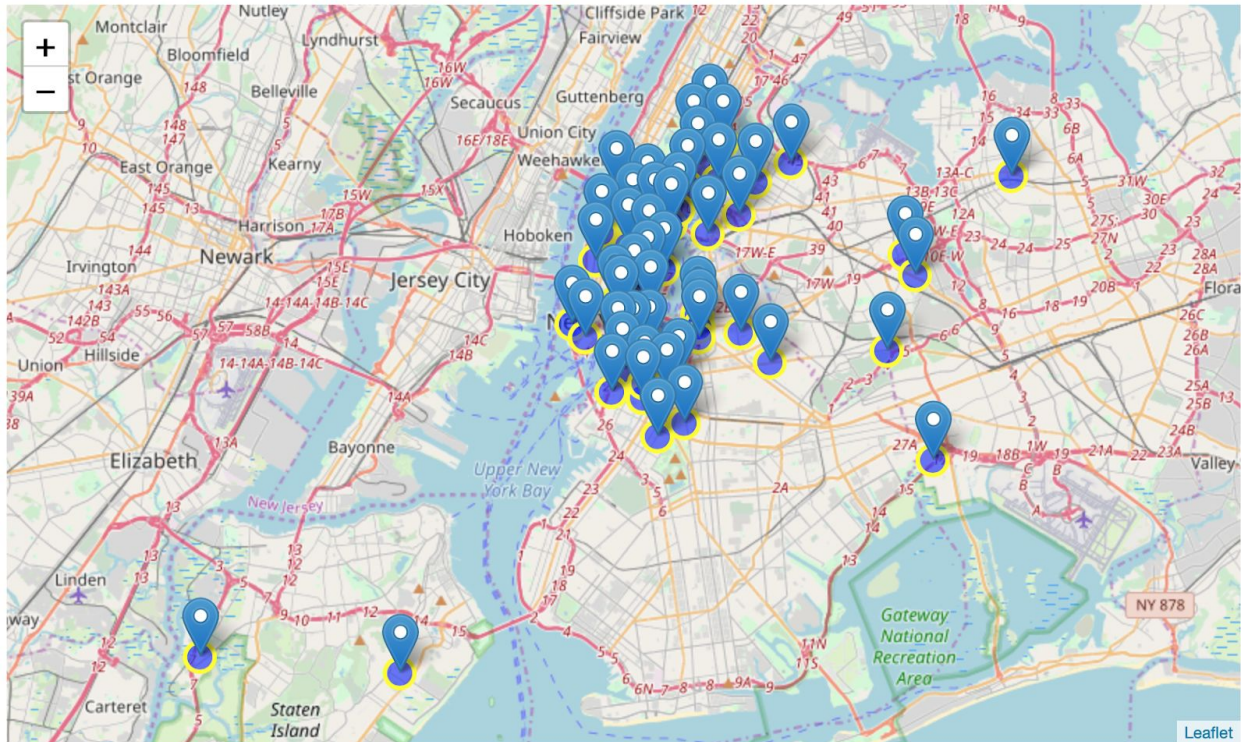
	Neighborhood	Average Rating
100	Stuyvesant Town	9.200
97	South Side	9.100
37	Flatiron	9.100
23	Cobble Hill	9.100
78	Midtown South	9.100
19	Chinatown	9.100
66	Little Italy	9.100
83	North Side	9.050
82	Noho	9.050
32	East Village	9.025

	Borough	Average Rating
2	Manhattan	8.689091
1	Brooklyn	7.760294
0	Bronx	7.580000
3	Queens	7.103846
4	Staten Island	5.494444

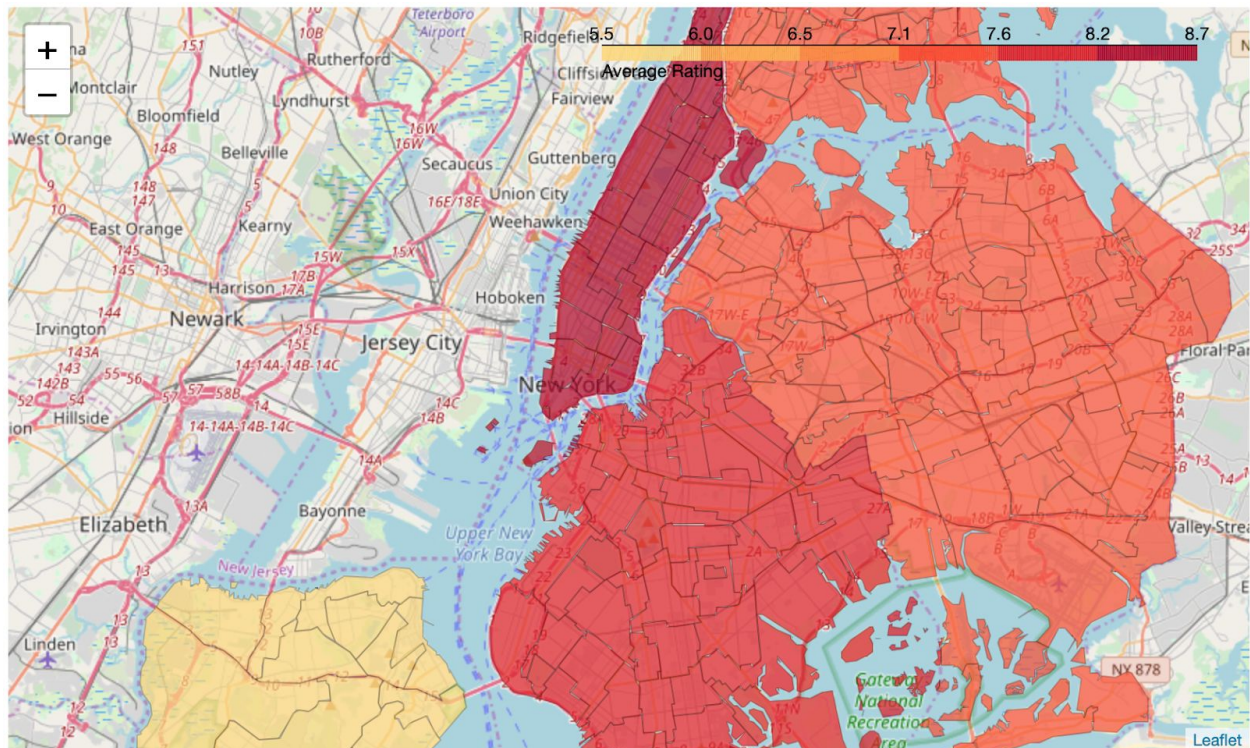


We will visually map the neighborhoods with an average rating greater than or equal to 8 after joining the appropriate dfs to include latitudes and longitudes.

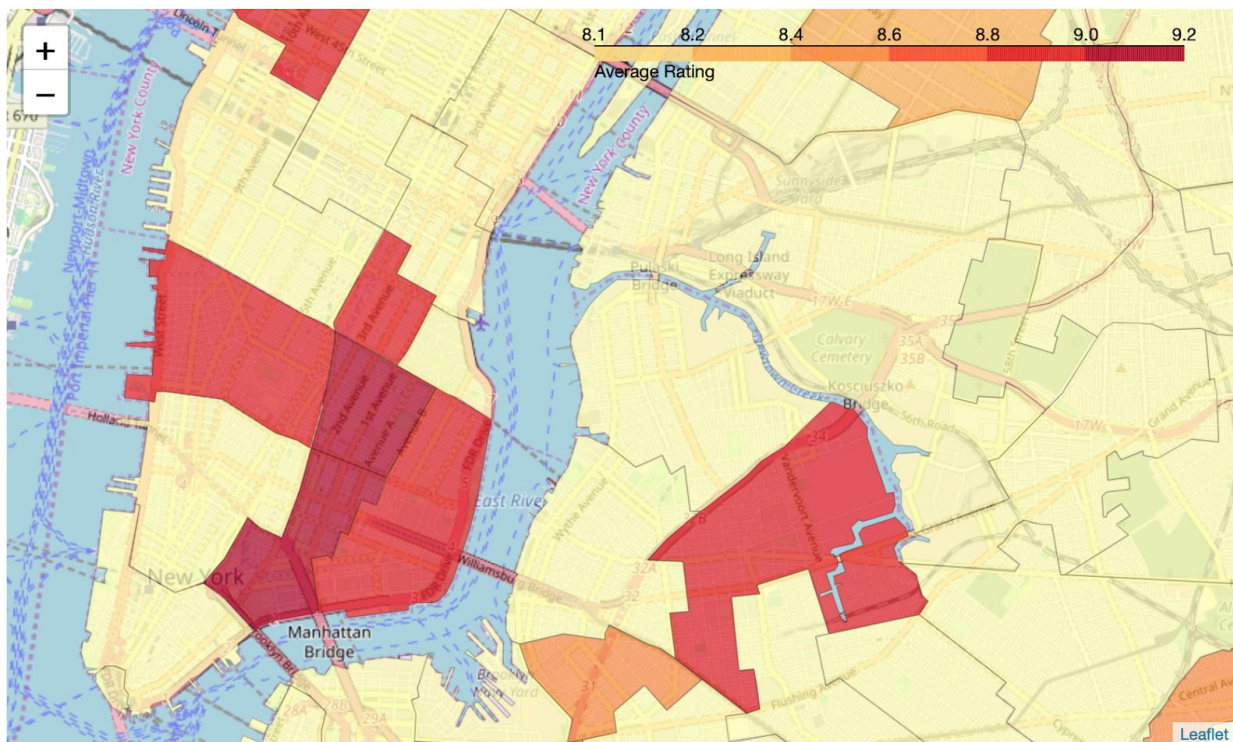
	Borough	Neighborhood	Latitude	Longitude	Average Rating	Label
0	Queens	Astoria	40.768509	-73.915654	8.30	Astoria, Queens(8.3)
1	Manhattan	Battery Park City	40.711932	-74.016869	8.70	Battery Park City, Manhattan(8.7)
2	Brooklyn	Boerum Hill	40.685683	-73.983748	8.75	Boerum Hill, Brooklyn(8.75)
3	Brooklyn	Brooklyn Heights	40.695864	-73.993782	8.70	Brooklyn Heights, Brooklyn(8.7)
4	Brooklyn	Bushwick	40.698116	-73.925258	8.10	Bushwick, Brooklyn(8.1)



Now, we will visualize all NYC boroughs based on average Rating.



Finally, we will visualize NYC Neighborhoods with the best Japanese restaurants based on average Rating.



5. Results and Discussion

As a result, we obtained a lot of interesting facts about Japanese restaurants in the city of New York:

1. There are about 203 Japanese restaurants located in all 5 boroughs
2. Brooklyn has the highest number of Japanese restaurants.
3. The neighborhoods of Bath Beach, Murray Hill, and Tudor City have the highest number of Japanese restaurants in all of NYC.
4. The average rating of Japanese restaurant in NYC is 7.6
5. The best Japanese restaurant in NYC according to a rating (9.3) is Brooklyn Ball Factory (East Williamsburg, Brooklyn).
6. The best Japanese restaurant in NYC according to likes is OOTOYA (Flatiron, Manhattan).
7. The best Japanese restaurant in NYC with maximum tips is Morimoto (Chelsea, Manhattan).
8. The best borough with an average rating of Japanese restaurants about 8.7 is Manhattan.
9. The best neighborhood with an average rating of Japanese restaurants about 9.2 is Stuyvesant Town (Manhattan).
10. Most Japanese restaurants with a rating of 8.0 or more are located in the south of Manhattan.

6. Conclusion

As we can see, although most Japanese restaurants are located in Brooklyn, the best places are in Manhattan. Answering the first question, the best Japanese restaurants are in Stuyvesant Town, South Side, Flatiron, Cobble Hill, Midtown South, Chinatown.

At the same time, according to choropleth map, there are a lot of neighborhoods where Japanese restaurants have ratings below 8 in NYC. Consequently, there is less competition and a better perspective to open new restaurants. Answering the second question, the best place to open a new Japanese restaurant is any neighborhood in the middle part of Manhattan or Tribeca and World Trade Center.

Finally, I would go to Brooklyn Ball Factory (East Williamsburg, Brooklyn) or OOTOYA (Flatiron, Manhattan) in New York City to have the best Japanese food.

As a final note, all of the above analysis depends on the adequacy and accuracy of Four Square data. A more comprehensive analysis and future work would need to incorporate data from other external databases.

7. References

https://en.wikipedia.org/wiki/New_York_City

<https://www.forbes.com/sites/garyocchiogrosso/2019/12/20/the-new-york-city-restaurant-business-is-so-much-more-than-just-the-center-of-the-plate/#16cc4d9c639c>