

Capstone Project - The Battle of the Neighborhoods

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1. Introduction: Business Problem

A classmate of mine, who has immigrated with his family from Japan to America and want to open a Japanese Restaurant in New York City. He is only a small-business owner, so the best choice of him is to invest a small Restaurant in New York. We know hat there are a large number of Asia style restaurant in New York City, including korean, chinese, japanese, tailandese restaurants. So he want to know weather it is possible to open a japanese restaurant in New York City or not?

As a data scientist, I can help him to solve this problem and give some advise. Firstly, we need to know how many restaurants are in New York City, especially the number of the japanese restaurants in each Borough and neighbourhood. Secondly, the location, the ratings and tips of these restaurants are what we are interested.

Buisness Problem:

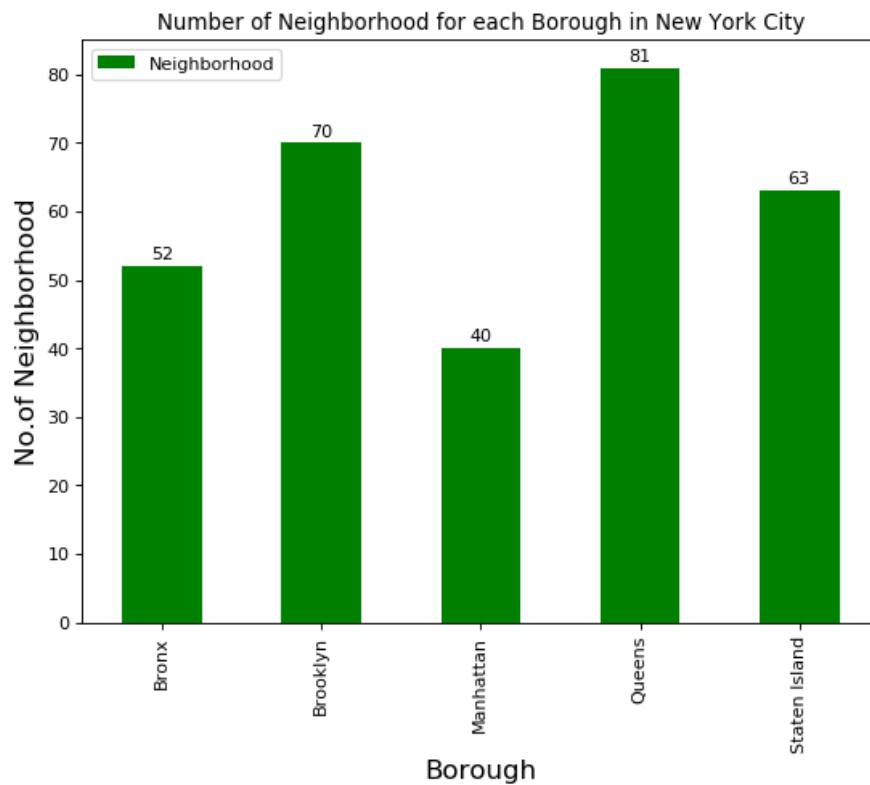
Try to provide as much as more information of the Japanese restaurants in New York City so that my classmate could make a decision whether he can open a new Japanese restaurant or not?

2.Data

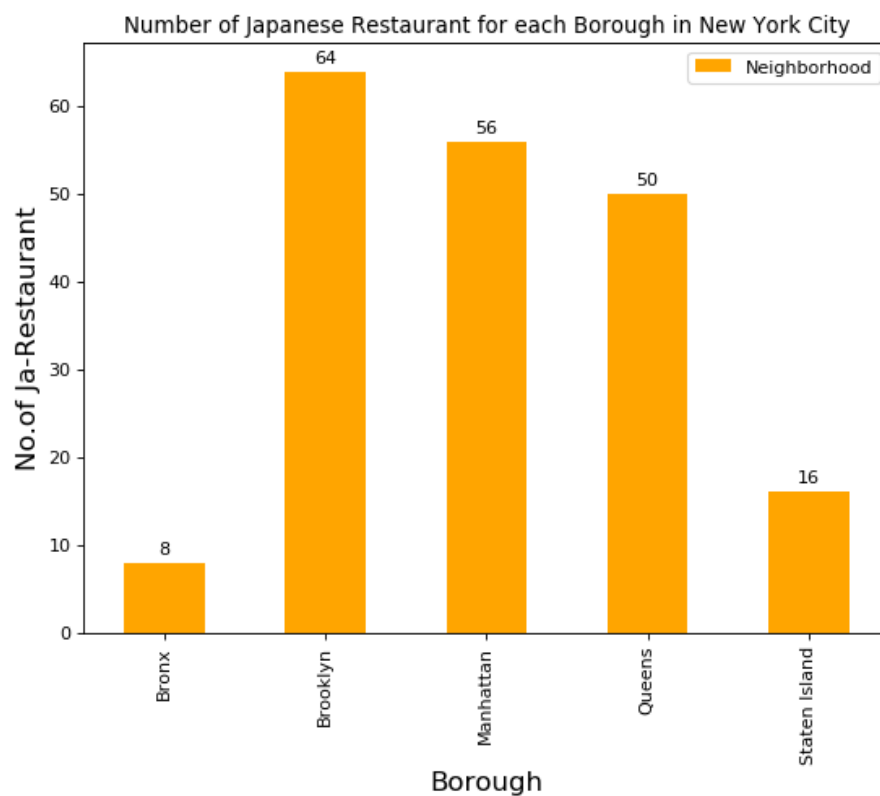
Accordding to this problem, some below data will be needed :

1. the geographical information of New York City: New York City data that contains list Boroughs, Neighborhoods along with their latitude and longitude. the Data source is available here: https://cocl.us/new_york_dataset
2. Chinese restaurants and distribution in each neighborhood of NYC. We are going to use Foursquare API to get this data.
3. GeoSpace Data of venues in New York City. We can obtain these data from website: <https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm>.

We get the number of neighborhood for each Borough in New York City, as below:



And then we get a chart for the number of Japanese restaurants in NYC.



3.Methodology

We use this Analysis to provide enough information about the Japanese Restaurants In New York City for businessman.

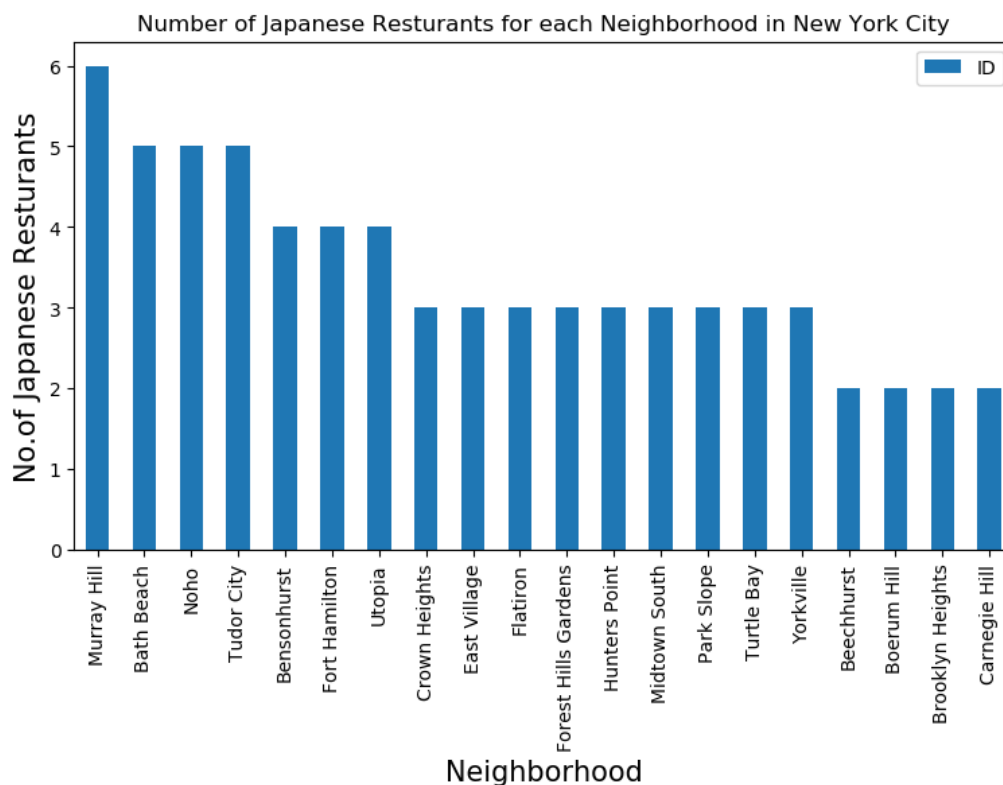
Firstly, We have collected the geographical data from internet, which including the Borough and Neighbourhoods in New York city. According this data we could visualize the comparison of the number of Japanese restaurant in each borough and neighbourhood.

Secondly, we could get the detailed information about each japanese restaurant from Foursquare API. The information of name for each restaurant is the essential of this Analysis.

Thirdly, we know which Neighbourhood will be prefer to open a japanse resturant, we analysis each neighbourhood.

Finally, we can provide the information of common venue, where can be choosed by businessman. Then let him to make a disicion based on my analysis.

Now we know the number of Japanese restaurant for each Neighbrhood in New York City, as the chart below:



4. Analysis

Now we analysis the six neighbourhoods(Bensonhurst,Bath Beach, Fort Hamilton, Noho, Utopia, Tudor).

From the result before, we know the neighbourhood Murray Hill has the most number of jappanese Restaurant, when the businessman choose this neighbourhood, he will afford a big competition. For example, the neighbourhood Bath Beach has 5 jappanese restaurants. So we analysis such neighbourhoods to find whether it has the oppotunity to open a jappanese restaurant.

From the table below, we know the mean of the frequency of occurrence od each category.

	Neighborhood	Adult Boutique	Afghan Restaurant	American Restaurant	Argentinian Restaurant	Art Gallery	Asian Restaurant	Australian Restaurant	Automotive Shop	Bagel Shop	...
0	Bath Beach	0.00	0.000000	0.000000	0.00	0.00	0.020833	0.00	0.000000	0.000000	...
1	Bensonhurst	0.00	0.000000	0.000000	0.00	0.00	0.000000	0.00	0.000000	0.030303	...
2	Fort Hamilton	0.00	0.000000	0.014286	0.00	0.00	0.014286	0.00	0.000000	0.028571	...
3	Noho	0.01	0.000000	0.020000	0.01	0.04	0.020000	0.01	0.000000	0.000000	...
4	Tudor City	0.00	0.000000	0.012346	0.00	0.00	0.024691	0.00	0.000000	0.012346	...
5	Utopia	0.00	0.066667	0.000000	0.00	0.00	0.000000	0.00	0.066667	0.000000	...

6 rows × 136 columns

And also we get the ranking of each type of business.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Bath Beach	Pharmacy	Pizza Place	Bubble Tea Shop	Italian Restaurant	Fast Food Restaurant
1	Bensonhurst	Chinese Restaurant	Donut Shop	Sushi Restaurant	Dessert Shop	Ice Cream Shop
2	Fort Hamilton	Pizza Place	Pharmacy	Italian Restaurant	Sandwich Place	Bank
3	Noho	Italian Restaurant	French Restaurant	Art Gallery	Cocktail Bar	Gift Shop
4	Tudor City	Café	Park	Mexican Restaurant	Sushi Restaurant	Greek Restaurant
5	Utopia	Deli / Bodega	Indie Movie Theater	Basketball Court	History Museum	Donut Shop

6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Sushi Restaurant	Chinese Restaurant	Donut Shop	Kids Store	Clothing Store
Park	Italian Restaurant	Butcher	Smoke Shop	Shabu-Shabu Restaurant
Gym / Fitness Center	Diner	Café	Pub	Chinese Restaurant
Pizza Place	Mexican Restaurant	Rock Club	Coffee Shop	Boutique
Diner	Deli / Bodega	Pizza Place	Asian Restaurant	Thai Restaurant
Pizza Place	Playground	Chinese Restaurant	South American Restaurant	Spa

5. Result and Discussion

From the analysis before, we know the asia restaurant from neighbourhood Bensonhurst and Utopia have the lowst frequency of occurance. But in neighbourhood Bensonhurst the 1rd most common venue is chinese restaurant and 3rd most common venue is the Sushi restaurant, it has already good asia restaursnts. For the neighbourhood Fort Hamilton, the 10th most Commom Venue is chinese restaurant, so I think there would be some people like asia food, probably the food isn't delicious enough, so this neighbourhood maybe a good choice. For the neighbourhood Utopia is the same situation as Fort Hamilton. In neighbourhood Noho we can't find such information, maybe the asia food is not so popular there.

6. Conclusion

The best choice of this analysis would be neighbourhood Fort Hamilton and Utopia. Also I recommand the businessman to make a visit to these restaurant and try to find the weakness of their restaurants, at the same time to make a final decision.