Capstone Project Report -

The Battle of Neighborhoods

by

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1. Introduction:

   One of the most common business problems that can affect the success of a business is location. Such as why Walmart stores are next to highways or why restaurants are close to one another. There is a reason why businesses spend a great deal of time and resources doing market research on which location to choose.

   Some of the factors that influence location are the business type and the targeted customer group along with each business's own purpose. Should the business be close to school, close to a highway, away from a highway, close to a hospital, etc.?

2. Data:

   Since we have already looked at New York's neighborhood data, I will continue my project on comparing these neighborhoods and decide where to open a new restaurant at.

   Besides the datasets of New York Neighborhoods we used in the lab, I will bring in the dataset of population and capita of each neighborhood for the city.

3. Methodology:

   My goal is to open a new restaurant in New York for the middle income level customers. From the population and per capita dataset of the different boroughs in New York, we exclude Manhattan, Bronx and Staten Island from our consideration due to the too high or too low population and GDP. We narrow down our option to 2 boroughs: Brooklyn and Queens.

Borough	County	Estimate (2017)[3]	billions(US$) [4]	per capita (US$)	square miles	square km	persons /sq.mi	persons /sq.km
The Bronx	Bronx	1,471,160	28.787	19,570	42.1	109.04	34,653	13,231
Brooklyn	Kings	2,648,771	63.303	23,900	70.82	183.42	37,137	14,649
Manhattan	New York	1,664,727	629.682	378,250	22.83	59.13	72,033	27,826
Queens	Queens	2,358,582	73.842	31,310	108.53	281.09	21,460	8,354
Staten Island	Richmond	479,458	11.249	23,460	58.37	151.18	8,112	3,132

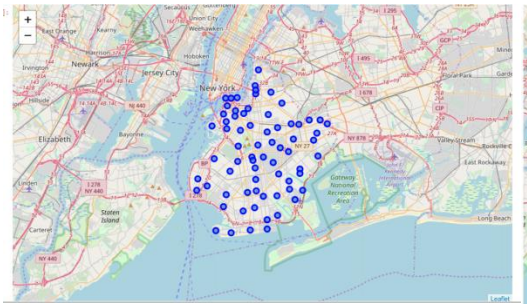
Table 1 Population and Capita[1]

Source from: https://en.wikipedia.org/wiki/Boroughs_of_New_York_City

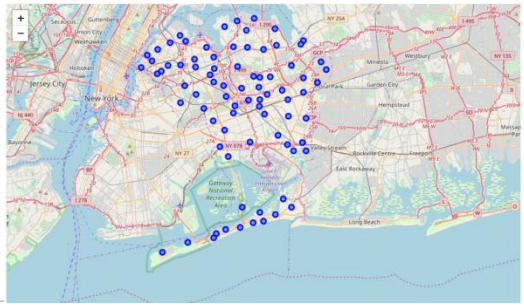
I use the neighborhoods dataset provided in the lab to bring in location (latitude, longitude) information of the two boroughs. And use FourSquare to generate maps.

3.1 Neighborhoods distribution

Comparing Brooklyn's (Map 1) and Queens' (Map 2) neighborhoods distribution, we can see that Brooklyn is one big area while Queens are one big area plus one small piece separated by Gateway National Recreation Area.



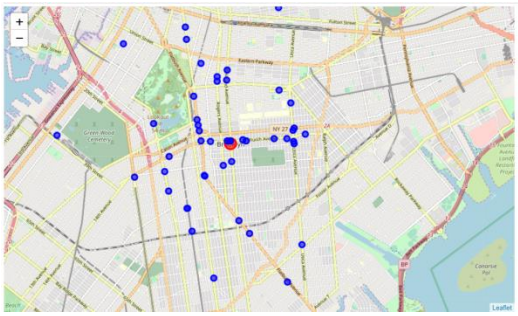
Map 1 Brooklyn Neighborhoods



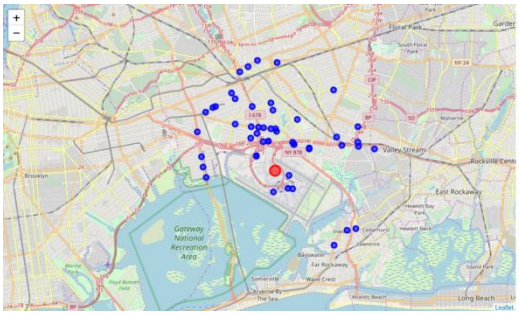
Map 2 Queens Neighborhoods

3.2 Current restaurants distribution

From the current restaurants distribution at Brooklyn (Map3) and Queens (Map 4), we can find that restaurants are more evenly spread out in Brooklyn than Queens



Map 3 Brooklyn Current Restaurants



Map 4 Queens Current Restaurants

3.3 Restaurants types

When I group by all the current restaurants at Brooklyn and Queens by categories, the results are surprisingly similar. Caribbean and Chinese restaurants are the most popular categories for both places.

categories	name	address	lat	lng	labeledLatLngs	distance	postalCode	cc	city	state	country	formattedAddress	crossStreet	neighborhood	id
African Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Asian Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Bakery	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Bar	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Caribbean Restaurant	17	15	17	17	17	17	17	17	17	17	17	17	10	1	17
Chinese Restaurant	9	8	9	9	9	9	9	9	9	9	9	9	7	0	9
Diner	5	5	5	5	5	5	5	5	5	5	5	5	4	2	5
Food	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2
Halal Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Hotel Bar	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Indian Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Japanese Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Latin American Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Mexican Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Pizza Place	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Southern / Soul Food Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Thai Restaurant	2	2	2	2	2	2	2	2	2	2	2	2	2	0	2
Turkish Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1

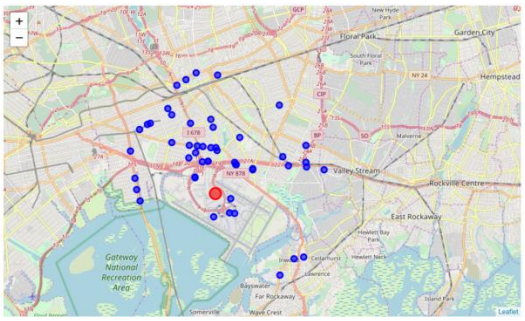
Table 2 Brooklyn Restaurants Categories

categories	name	lat	lng	labeledLatLngs	distance	cc	city	state	country	formattedAddress	address	postalCode	crossStreet	neighborhood	id
American Restaurant	3	3	3	3	3	3	3	3	3	3	1	3	0	0	3
Asian Restaurant	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1
Bakery	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Caribbean Restaurant	13	13	13	13	13	13	13	13	13	13	13	13	3	0	13
Chinese Restaurant	8	8	8	8	8	8	7	8	8	8	7	7	0	0	8
Food	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Greek Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Italian Restaurant	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2
Latin American Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Lounge	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Mexican Restaurant	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1
North Indian Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Other Nightlife	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Pizza Place	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2
Pub	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Restaurant	5	5	5	5	5	5	4	5	5	5	3	2	0	0	5
Seafood Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Southern / Soul Food Restaurant	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1

Table 3 Queens Restaurants Categories

4. Results:

   Using the current restaurants dataset I gathered from FourSquare, I generate a trending map for each area. From the map, we can clear tell that most restaurants at Brooklyn are on the Church Avenue while the restaurants at Queens are close to Highway 1678 and NY878.

5. Discussion:

   Obviously, there are more factors we need to take into concern for the decision making. For example, rent, tax, labor, and etc. For this project, we just simply bring in one set of data to analyze and predicting.

   The surprising finding so far is it seems only Caribbean and Chinese restaurants are popular at these areas. Does this mean there are more Caribbean and Chinese residents or the tastes of food are more likely to be accepted and liked by people? If we expand the area, will it be still the same results?

6. Conclusion:

   After comparing the neighborhoods along with current restaurant distributions and categories, it apparent that 2 best locations to open a new restaurant is in Brooklyn on Church Avenue and by the crossroads marked on the map with green stars.