The Battle of the Neighbourhoods

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1.0 Introduction

1.1 Problem Background:

New York City is a thriving, vibrant city that is known for being the cultural, financial and creative hub of the United States. The City attracts a constant influx of new businesses and is home to many well-established global companies and institutions.

Because of this, however, the cost of doing business in the city is extremely high and any new business venture will have to analyze and evaluate the situation in as much detail as possible. By strategically analyzing the market, the new business venture will be able to minimize their risk as much as possible and hopefully, establish themselves in the city.

1.2 Description:

New York City is known for their wide variety of international cuisines and is even the home of some original dishes only found in the city. As a restaurant looking to open their first branch in the city, it will need to analyze the overarching conditions as deeply as possible. The restaurant will need to consider factors such as:

1. NYC demographics and population
2. Competitor location and analysis
3. Supply of ingredients nearby
4. Proximity of entertainment venues, parks, gyms etc.
5. Segmentation of the different neighborhoods
6. Cusine served and popularity in each neighborhood

Choosing the location of the new restaurant based on these factors is the main goal of this research project.

1.3 Target Audience:

The target audience will include anyone interested in opening a restaurant in New York City, or generally interested in which districts have what kind of restaurants. The research should be able to convey the information gathered to restaurant owners and managers of restaurant chains. This will allow them to fully utilize the data.

2.0 Data Collection

2.1 NYC Dataset:

NYC and the boroughs and neighborhoods belonging to the city will be analyzed and compared in this project. NYC has 5 boroughs and 306 neighborhoods. To be able to analyze these boroughs in detail, the information for geographical location on each borough and neighborhood is required. This dataset can be obtained by scraping the data from: 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

Figure 1 NYC Geographical Data

2.2 Farmers Market Dataset

This dataset will help in determining which borough and neighborhood has the most amount of farmers markets. Any restaurant will need to know if it can quickly and affordably obtain fresh ingredients, so this dataset is a must.

The updated information on the number of farmers markets and their location can be obtained from here: https://data.cityofnewyork.us/dataset/DOHMH-Farmers-Markets-and-Food-Boxes/8vwk-6iz2.

	FacilityName	Service Category	Service_Type	Address	Address 2	Borough	ZipCode	Latitude	Longitude	AdditionalInfo	StartDate	EndDate	Monday	Tuesday	Wednesday	Thursday
0	Inwood Park Greenmarket	Farmers Markets and Food Boxes	Farmers Markets	Isham St bet Seaman & Cooper	NaN	Manhattan	10034	40.869009	-73.920320	Open year-round	NaN	NaN	NaN	NaN	NaN	NaN
1	82nd Street Greenmarket	Farmers Markets and Food Boxes	Farmers Markets	82nd St bet 1st & York Aves	NaN	Manhattan	10028	40.773448	-73.948954	Open year-round	NaN	NaN	NaN	NaN	NaN	NaN
3	125th Street Farmers Market	Farmers Markets and Food Boxes	Farmers Markets	125th St & Adam Clayton Powell Jr Blvd	NaN	Manhattan	10027	40.808981	-73.948327	Market open dates: 6/13/2017 to 11/21/2017	06/13/2017	11/21/2017	NaN	10am-7pm	NaN	NaN
4	170 Farm Stand	Farmers Markets and Food Boxes	Farmers Markets	170th St & Townsend Ave	NaN	Bronx	10452	40.840095	-73.916827	Market open dates: 7/5/2017 to 11/22/2017	07/05/2017	11/22/2017	NaN	NaN	2:30pm-6:30pm	NaN
5	175th Street Greenmarket	Farmers Markets and Food Boxes	Farmers Markets	175th St bet Wadsworth Ave & Broadway	NaN	Manhattan	10033	40.845956	-73.937813	Market open dates: 6/29/2017 to 11/30/2017	06/29/2017	11/30/2017	NaN	NaN	NaN	8am-5pm

Figure 2 NYC Farmers Markets Data

2.3 NYC Population, Demographic and Cuisine data by Borough and Neighborhood

This data will enable us to see which boroughs are the most populous, where the highest population density is and which cuisines are popular in which boroughs and neighborhoods. By analyzing these factors with our geographical data, we can establish the optimal location for a new restaurant based on their cuisine. The data for all of these has been scraped from these sites:

https://en.wikipedia.org/wiki/New_York_City
https://en.wikipedia.org/wiki/Economy_of_New_York_City
https://en.wikipedia.org/wiki/Portal:New_York_City
https://en.wikipedia.org/wiki/Cuisine_of_New_York_City

3.0 Methodology

3.1 Research Aim:

The main goal of this research is to determine the best location for a new restaurant and optimize this based on the factors of cuisines, population demographics and competition.

3.2 NYC Neighborhood Analysis

NYC has 5 boroughs and 306 neighborhoods. The NYC geographical data that we have obtained will be used with foursquare to obtain the venues data. This venues data will then be superimposed for each borough.

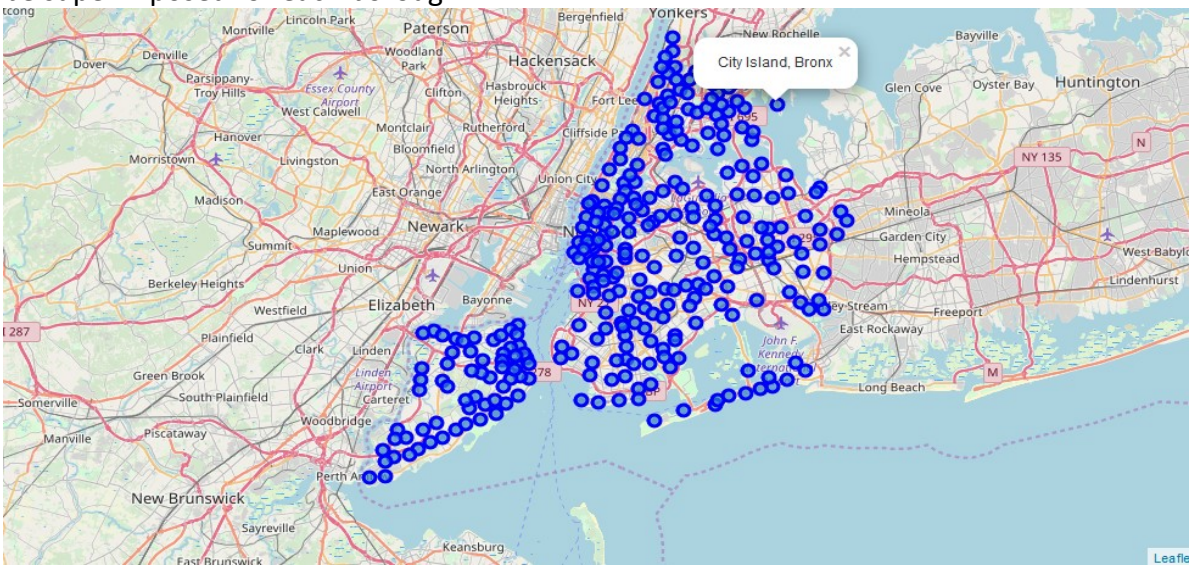

Figure 3 NYC Neighborhoods

3.3 NYC Farmers Market

There are 144 Farmers Markets in NYC, with the highest amount of them being in Brooklyn. We can demonstrate the number of the markets in each borough and visualize on the NYC Map using folium.

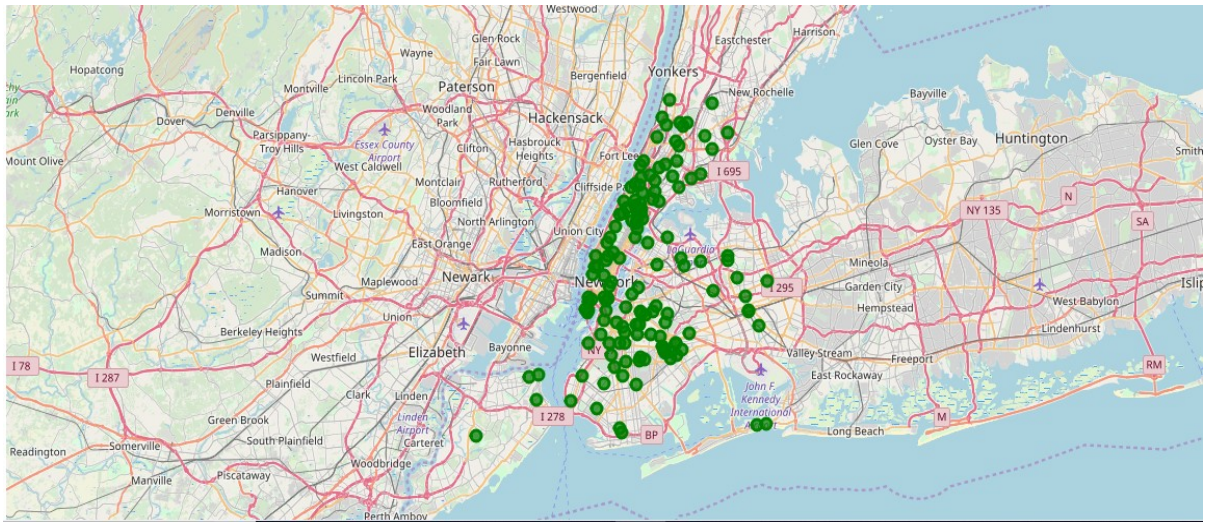

Figure 4 NYC Farmers Markets

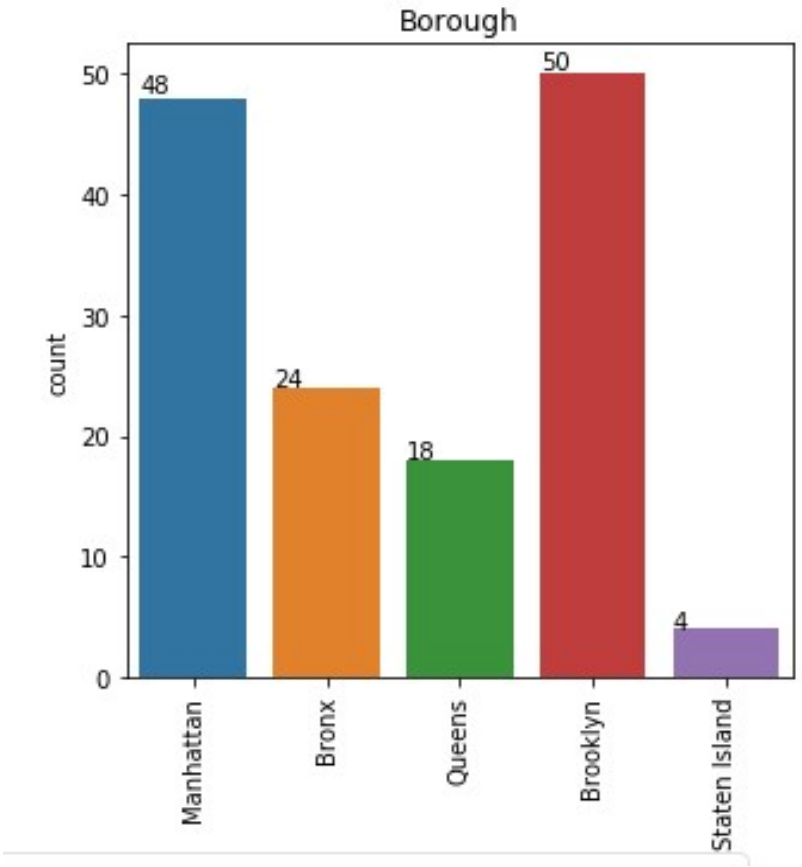

Figure 5 Farmers Markets by Borough

3.4 NYC Demographics, Population and Cuisine Data

This data has been scraped from the relevant Wikipedia pages and been transformed as a csv file so we can use it for our analysis. This has been done using BeautifulSoup in Python.

3.4.1 NYC Borough population and size comparison

NYC borough data shows us that Manhattan is the borough with the highest population density, while Brooklyn is the most populated Borough. Queens is the largest borough by size.

	Borough	County	Estimate_2017	square_miles	square_km	persons_sq_mi	persons_sq_km
0	Manhattan	New York	1,664,727	22.83	59.13	72,033	27,826
1	The Bronx	Bronx	1,471,160	42.10	109.04	34,653	13,231
2	Brooklyn	Kings	2,648,771	70.82	183.42	37,137	14,649
3	Queens	Queens	2,358,582	108.53	281.09	21,460	8,354
4	Staten Island	Richmond	479,458	58.37	151.18	8,112	3,132
5		City of New York	8,622,698	302.64	783.83	28,188	10,947
6		State of New York	19,849,399	47,214	122,284	416.4	159

Figure 6 Borough Sizes

3.4.2 NYC Racial Composition

NYC has an incredible international culture, with over 111 nationalities being present in the city. Whites make up the largest portion with 44%, while Asian make up the least with 12.7%. This cultural diversity leads to people having a variety of different tastes and preferences. This can enable restaurants with different cuisine specializations to thrive, even if their cuisine is more of a niche.

	Racialcomposition	2010	1990	1970	1940
0	White	44.0%	52.3%	76.6%	93.6%
1	—Non-Hispanic	33.3%	43.2%	62.9%	92.0%
2	Black or African American	25.5%	28.7%	21.1%	6.1%
3	Hispanic or Latino (of any race)	28.6%	24.4%	16.2%	1.6%
4	Asian	12.7%	7.0%	1.2%	–

3.4.3 Cuisine of NYC

The cuisine data of NYC is extracted from the following page: https://en.wikipedia.org/wiki/Cuisine_of_New_York_City

We can see that NYC 's most preferred food is Italian. However, cuisines such as, Puerto Rican, Dominican, Jewish or Mexican are also extremely popular. This shows that there is a large variety of different tastes in NYC.

In Brooklyn, the most preferred food was Italian, followed by Puerto Rican ad Mexican. This indicates that in Brooklyn specifically an Italian restaurant would be most successful.

In Queens, the most preferred food is Indian followed by Irish and Pakistani. Therefore, an Indian or Irish restaurant could have high chances of success in the market.

In Bronx, the most preferred food was Italian, Puerto Rican and Albanian. This shows that in Bronx, an Italian restaurant would be sought-after.

3.5 Brooklyn and Manhattan Venue Data

This data will be used to see where the most competitors are located in. This can help in determining if a location will be good for the new restaurant, because if an area is already densely populated with competing venues, thena. New restaurant may have a much harder time. The data will be called upon with the foursquare API.

	Neighborhood	NeighborhoodLatitude	NeighborhoodLongitude	Venue	VenueLatitude	VenueLongitude	VenueCategory
0	Marble Hill	40.876551	-73.91066	Arturo's	40.874412	-73.910271	Pizza Place
1	Marble Hill	40.876551	-73.91066	Bikram Yoga	40.876844	-73.906204	Yoga Studio
2	Marble Hill	40.876551	-73.91066	Tibbett Diner	40.880404	-73.908937	Diner
3	Marble Hill	40.876551	-73.91066	Sam's Pizza	40.879435	-73.905859	Pizza Place
4	Marble Hill	40.876551	-73.91066	Loeser's Delicatessen	40.879242	-73.905471	Sandwich Place

Figure 7 Manhattan and Brooklyn Venues

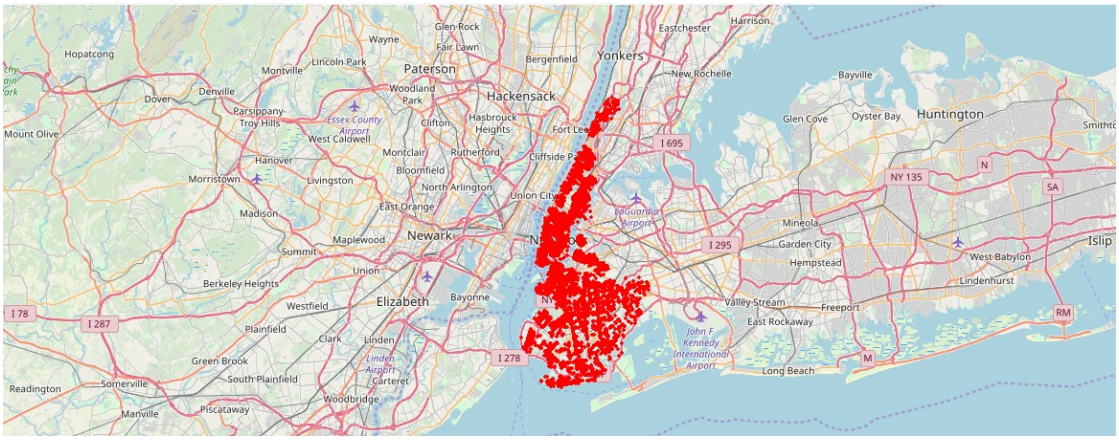

Figure 8 Manhattan and Brooklyn venues visual

3.6 Bronx, Queens and Staten Island Venue Data

	Neighborhood	NeighborhoodLatitude	NeighborhoodLongitude	Venue	VenueLatitude	VenueLongitude	VenueCategory
0	Wakefield	40.894705	-73.847201	Lollipops Gelato	40.894123	-73.845892	Dessert Shop
1	Wakefield	40.894705	-73.847201	Ripe Kitchen & Bar	40.898152	-73.838875	Caribbean Restaurant
2	Wakefield	40.894705	-73.847201	Jackie's West Indian Bakery	40.889283	-73.843310	Caribbean Restaurant
3	Wakefield	40.894705	-73.847201	Ali's Roti Shop	40.894036	-73.856935	Caribbean Restaurant
4	Wakefield	40.894705	-73.847201	Rite Aid	40.896521	-73.844680	Pharmacy

Figure 9Manhattan and Brooklyn

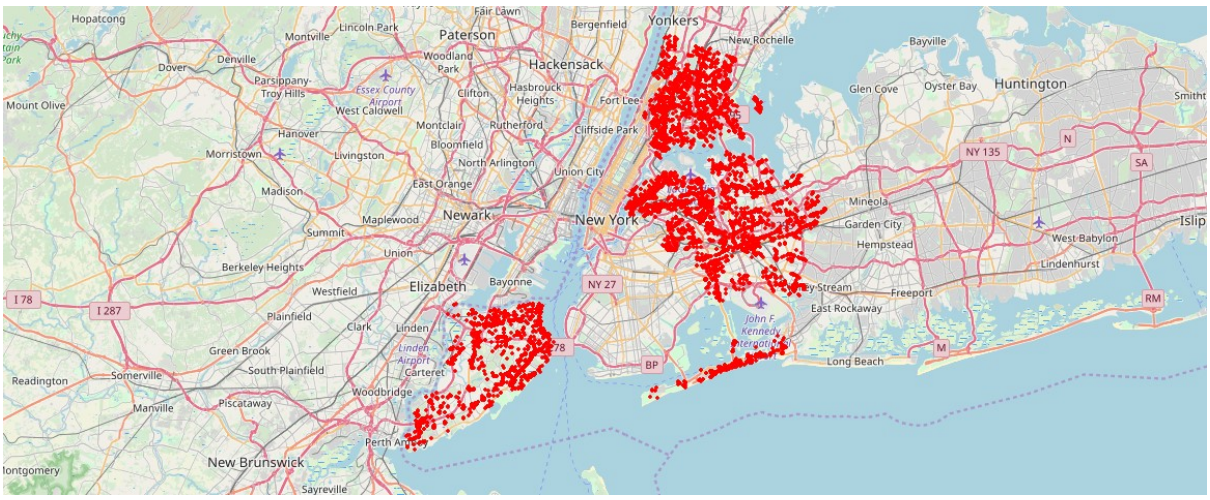

Figure 10 Manhattan and Brooklyn visual

4.0 Discussion

There are several questions that ca be asked upon seeing the datasets. Is the risk of high competition worth the abundance of demand and farmers markets for supplies? There is a higher degree of risk in these densely competitive neighborhoods, but the positives may outweigh the negatives in this scenario. Furthermore, any changes in the future of the boroughs may affect preferences. To what degree should this be considered?

5.0 Conclusion and Results

We can see that Brooklyn and Manhattan are incredibly populated with restaurant venues and there is a high level of competition. However, in Queens, Bronx and Staten Island there is much less competition and this indicates that there is an untapped potential for a new restaurant business.