

## **Capstone Project – New York Chinese Restaurants**

April, 2020

### **Introduction**

New York City (NYC), often called the City of New York or simply New York (NY), is the most populous city in the United States. With an estimated 2018 population of 8,398,748 distributed over about 302.6 square miles (784 km<sup>2</sup>), New York is also the most densely populated major city in the United States. 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. With almost 20 million people in its metropolitan statistical area and approximately 23 million in its combined statistical area, it is one of the world's most populous megacities. New York City has been described as the cultural, financial, and media capital of the world, significantly influencing commerce, entertainment, research, technology, education, politics, tourism, art, fashion, and sports. Home to the headquarters of the United Nations. New York is an important center for international diplomacy.

### **Problem**

Besides to what I just mentioned before New York is one of the most cosmopolitan city in the whole world. There a lot of people of different backgrounds, and there a lot of different kind of restaurants around the city. In the matter of cuisine, there are a lot of chinese, thai, japanese and korean restaurants, and for our concerns we need to choose a new neighbourhood for a new asian restaurant that we want build. The idea of the restaurant is to gather in just one place food of all over the asian continent.

### **Data**

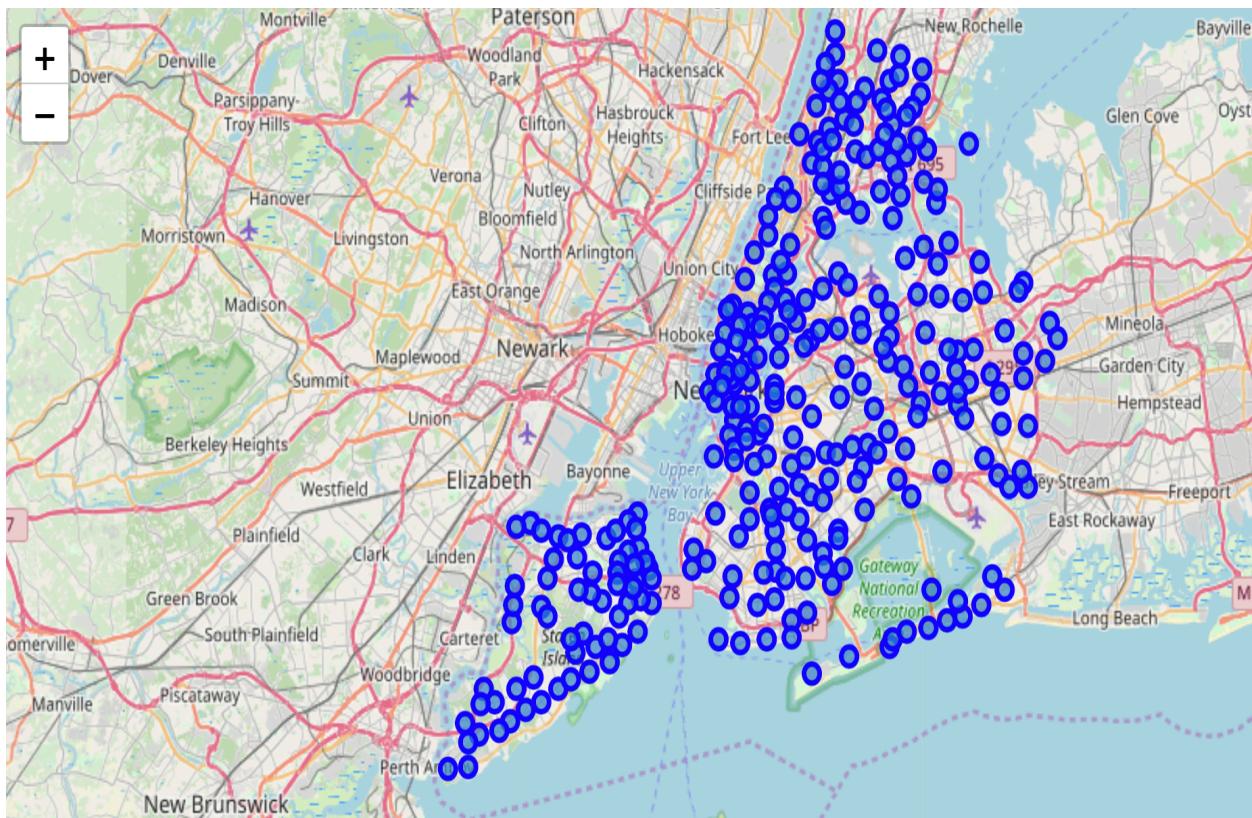
For this project we need the following data:

- \* New York City data that contains list Boroughs, Neighborhoods along with their latitude and longitude.
  - \* Data source: [https://cocl.us/new\\_york\\_dataset](https://cocl.us/new_york_dataset)
  - \* Description: This data set contains the required information. And we will use this data set to explore various neighborhoods of New York city.
- \* Chinese restaurants in each neighborhood of new york city.
  - \* Data source: Fousquare API
  - \* Description: Using this API we will get all the venues in each neighborhood. We can filter these venues to get only Asian restaurants.
- \* GeoSpace data
  - \* Data source: <https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm>
  - \* Description: By using this geo space data we will get the New york Borough boundaries that will help us visualize choropleth map.

## Exploratory Analysis

Giving the amount of different people that live in New York, there are a huge amount of different types of location in each neighborhood. First of all, I would like to show a map of all the neighborhoods in New York City, in order to visualize each one of them.

New York Map



Source: Own Elaboration

## Methodology

Using the information in Foursquare, I build 10 clusters of neighborhoods in New York city, taking into account the information of the top 10 venues in each one of them. In the second map you can see the information of the clusters that I found. The principal idea is to find a right place to build the new Chinese restaurants in New York. The information can give us two main insights.

First of all, I analyze the data of each one of the neighborhoods. Actually, we find the amount of different type of venues that there are in each of the neighborhoods, here it is include the places where there are chines restaurants. For example, in Allerton, there are 31 different venues, in Astoria there are 100 different venues

**Table. 1. Venue Category for each Neighborhood**

Neighborhood	Venue Category
Allerton	31
Annadale	9
Arden Heights	6
Arlington	7
Arrochar	21
Arverne	18
Astoria	100
Astoria Heights	11
Auburndale	19
Bath Beach	45
Battery Park City	87
Bay Ridge	87
Bay Terrace	45
Baychester	19
Bayside	76
Bayswater	4
Bedford Park	35
Bedford Stuyvesant	26
Beechhurst	16
Bellaire	12
Belle Harbor	17
Bellerose	23
Belmont	99
Bensonhurst	32
Bergen Beach	6
Blissville	17
Bloomfield	5
Boerum Hill	95
Borough Park	19
Breezy Point	3
Briarwood	12
Brighton Beach	45

Source: Own Elaboration

After that, I find the top ten venues for each one of the places that we include in the analysis. Since we want to find the right place for a Chinese restaurant, we would like to find a place with similar characteristics to the one in where there are the most amount of this kind of places. Following I will show you the example of one neighborhood.

**Table 2. Top 10 Venues – Allerton**

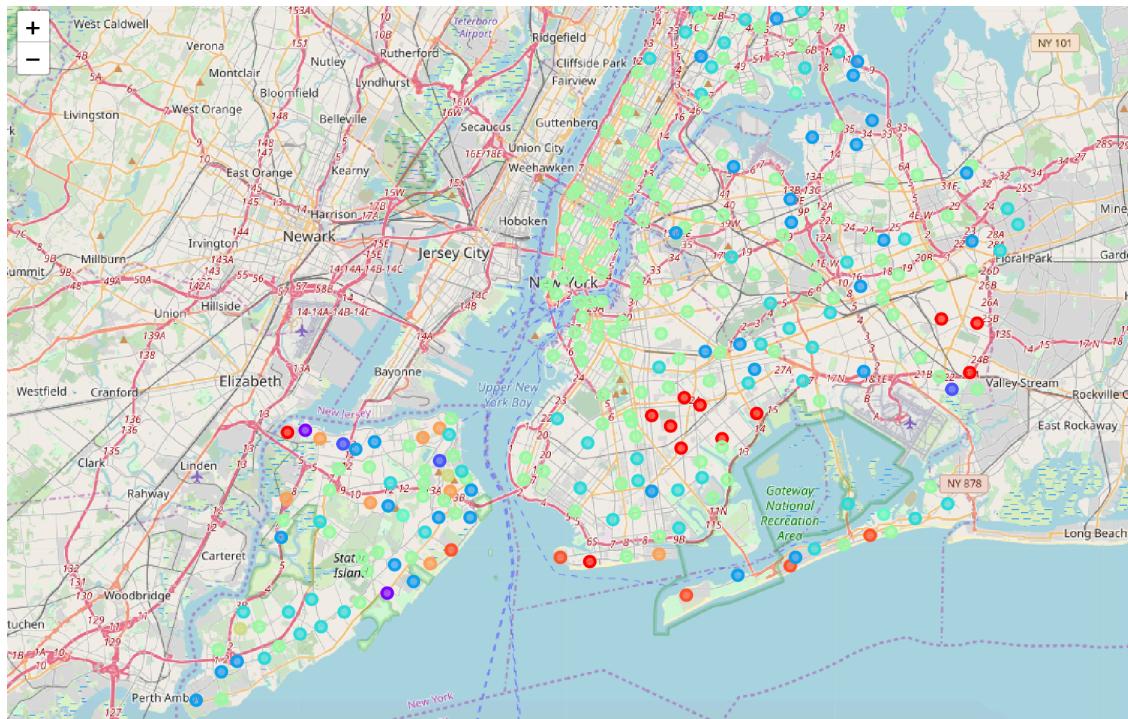
----Allerton----		
	venue	freq
0	Pizza Place	0.19
1	Department Store	0.06
2	Deli / Bodega	0.06
3	Supermarket	0.06
4	Chinese Restaurant	0.06
5	Bus Station	0.06
6	Playground	0.03
7	Fried Chicken Joint	0.03
8	Gas Station	0.03
9	Spanish Restaurant	0.03

Source: Own Elaboration

## Results

After that, I build the ten cluster in order to know which can be a good place for the new restaurant. Here is the graph representation of the results.

**New York Map Clusters**



Source: Own Elaboration

**Clusters 1 - Results**

	Neighborhood	1st Most Common Venue	2nd Most Common Venue
0	Wakefield	Pharmacy	Ice Cream Shop
2	Eastchester	Caribbean Restaurant	Deli / Bodega
9	Williamsbridge	Bar	Soup Place
41	Olinville	Caribbean Restaurant	Basketball Court
56	East Flatbush	Hardware Store	Department Store
73	Starrett City	Caribbean Restaurant	Pharmacy
74	Canarsie	Chinese Restaurant	Shipping Store
75	Flatlands	Pharmacy	Fried Chicken Joint
78	Coney Island	Baseball Stadium	Caribbean Restaurant
165	St. Albans	Caribbean Restaurant	Market
168	Cambria Heights	Caribbean Restaurant	Cosmetics Shop
188	Laurelton	Caribbean Restaurant	Cosmetics Shop
223	Rugby	Caribbean Restaurant	Bank
257	Howland Hook	NaN	NaN
259	Remsen Village	Caribbean Restaurant	Fast Food Restaurant
300	Erasmus	Caribbean Restaurant	Grocery Store

Source: Own Elaboration

### Clusters 3 - Results

	Neighborhood	1st Most Common Venue	2nd Most Common Venue
7	Woodlawn	Pizza Place	Pub
28	Throgs Neck	Italian Restaurant	American Restaurant
32	Van Nest	Pizza Place	Deli / Bodega
34	Belmont	Italian Restaurant	Pizza Place
39	Edgewater Park	Italian Restaurant	Deli / Bodega
72	East New York	Deli / Bodega	Food Truck
89	Ocean Hill	Deli / Bodega	Playground
134	Corona	Mexican Restaurant	Italian Restaurant
148	South Ozone Park	Park	Deli / Bodega
149	College Point	Deli / Bodega	Bakery
150	Whitestone	Bubble Tea Shop	Dance Studio
154	Douglasston	Bank	Deli / Bodega
159	Briarwood	Playground	Deli / Bodega
174	Beechhurst	Chinese Restaurant	Italian Restaurant
190	Belle Harbor	Beach	Pub
194	Bellaire	Chinese Restaurant	Italian Restaurant
195	North Corona	Deli / Bodega	Gym / Fitness Center
205	Port Richmond	Pizza Place	Rental Car Location
210	Travis	Hotel	Deli / Bodega
211	New Dorp	Italian Restaurant	Pizza Place
217	Tottenville	Italian Restaurant	Deli / Bodega
228	Arrochar	Italian Restaurant	Pizza Place
230	Old Town	Italian Restaurant	Restaurant
234	New Dorp Beach	Italian Restaurant	Deli / Bodega
237	Pleasant Plains	Bank	Donut Shop
252	Shore Acres	Italian Restaurant	Bus Stop
258	Elm Park	Italian Restaurant	Deli / Bodega
264	Utopia	Deli / Bodega	Automotive Shop
266	Astoria Heights	Italian Restaurant	Bus Station
268	Concourse Village	Deli / Bodega	Bus Station
278	Blissville	Hotel	Deli / Bodega
284	Manor Heights	Donut Shop	Deli / Bodega
288	Roxbury	Irish Pub	Deli / Bodega
293	Richmond Valley	Bank	Smoothie Shop
295	Highland Park	Grocery Store	Metro Station
296	Madison	Deli / Bodega	Bagel Shop
297	Bronxdale	Italian Restaurant	Coffee Shop

Source: Own Elaboration

### Conclusion

Any of the neighborhoods in the cluster 1 or 3 can be a good option to build the Chinese restaurant that we want except the ones where the top venue is Chinese restaurants. The mentioned before is taking into account that if there are a lot of Chinese restaurants in one of this hoods it should be because there is a great demand and we would like to do the restaurant in a place like these.