Coursera Capstone Project - The Battle of Neighborhoods

Selecting the best location to open an Indian restaurant in Manhattan, New York

Outlines

- Introduction/Business Problem
- Data Selection
- Methodology
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- Discussion
- Conclusion

Introduction/ Business Problem

- The City of New York is famous for its excellent cuisine. It's food culture includes an array of international cuisines influenced by the city's immigrant history.

- Indian restaurants have become so popular in the United States now it seems that there is one on every corner, not only in major cities but also in smaller cities. Starting an Indian restaurant can be a great business opportunity, but you need to distinguish yourself from others to enjoy long-term success.

Introduction/ Business Problem

- My Client wants to open his business in the Manhattan area, so I only focus on that borough during my analysis. The objective is to locate and recommend to the management which neighbourhood of New York city will be the best choice to start a restaurant. Management also expects to understand the rationale of the recommendations made.
- Any new business venture or expansion needs to be analysed carefully. The insights derived from the analysis will give a good understanding of the business environment which help in strategically targeting the market. This will help in the reduction of risk and the return on Investment will be reasonable.

Data Selection

- To identify the characteristics of our competitors' venues in Manhattan, we would first need to find out the number of Indian restaurant in Manhattan currently and their location.

- Here is the link to the dataset for neighborhood of Manhattan: https://geo.nyu.edu/catalog/nyu_2451_34572
- From Foursquare Venues Categories - https://developer.foursquare.com/docs/resources/categories

  Indian restaurant category Id – 4bf58dd8d48988d10f941735

Methodology

Using dataframe first plot the neighborhoods of Manhattan to visualize the distribution of neighborhoods.
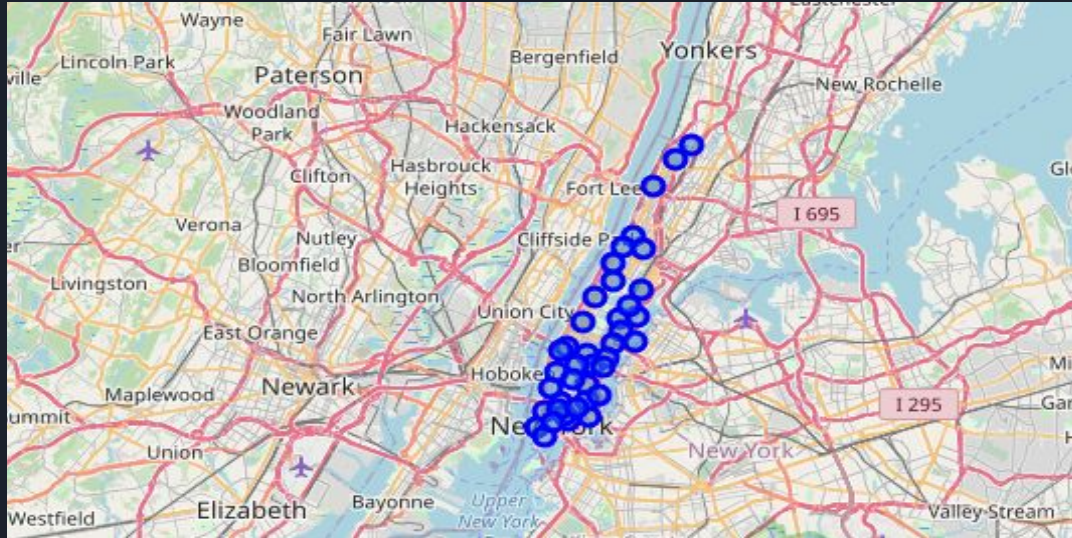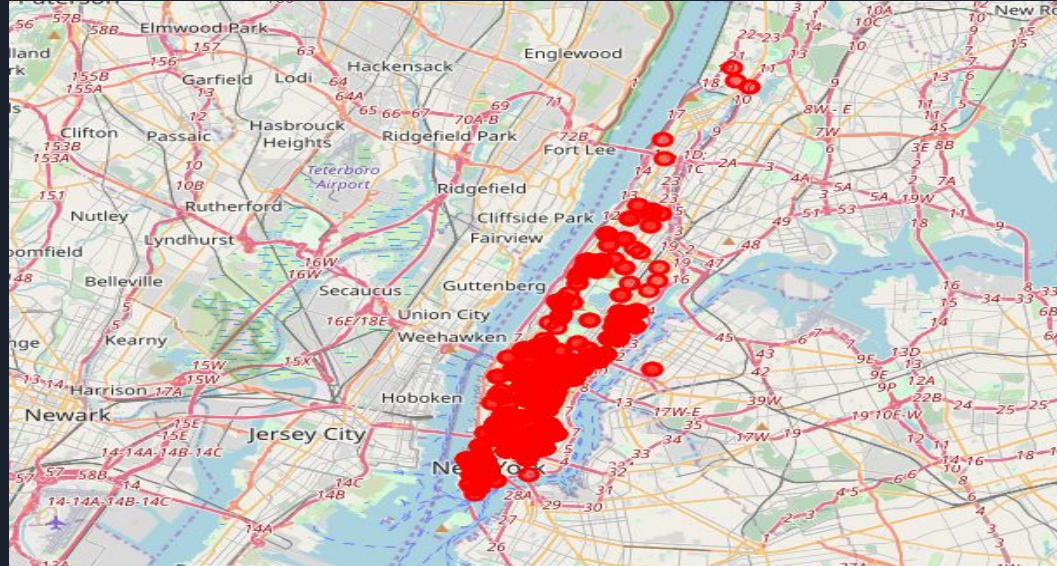
Methodology

Next we use, foursquare to get Indian restaurants venue details for all neighborhoods in Manhattan.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Marble Hill	40.876551	-73.910660	Riverdale Indian Cuisine	40.880886	-73.908800	Indian Restaurant
1	Marble Hill	40.876551	-73.910660	Tazmohol Indian Restaurant	40.878058	-73.903045	Indian Restaurant
2	Marble Hill	40.876551	-73.910660	Cumin Indian Cuisine	40.886459	-73.909816	Indian Restaurant
3	Chinatown	40.715618	-73.994279	Kabab Bites	40.720094	-73.995819	Indian Restaurant
4	Chinatown	40.715618	-73.994279	indi thai	40.719830	-73.990350	Indian Restaurant

Methodology

Next we plot all Indian restaurants on Manhattan map to visualize their distribution.

Methodology

Then we group all venue details by their neighborhood and prepare data by sorting then according to most common venues in each neighborhood.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue
0	Battery Park City	Indian Restaurant	Food Truck	Tapas Restaurant	Asian Restaurant	Vegetarian / Vegan Restaurant	South Indian Restaurant	Pakistani Restaurant	North Indian Restaurant	Music Store
1	Carnegie Hill	Indian Restaurant	North Indian Restaurant	Vegetarian / Vegan Restaurant	Tapas Restaurant	South Indian Restaurant	Pakistani Restaurant	Music Store	Himalayan Restaurant	Food Truck
2	Central Harlem	Indian Restaurant	Vegetarian / Vegan Restaurant	Tapas Restaurant	South Indian Restaurant	Pakistani Restaurant	North Indian Restaurant	Music Store	Himalayan Restaurant	Food Truck
3	Chelsea	Indian Restaurant	Food Truck	Vegetarian / Vegan Restaurant	Tapas Restaurant	South Indian Restaurant	Pakistani Restaurant	North Indian Restaurant	Music Store	Himalayan Restaurant
4	Chinatown	Indian Restaurant	North Indian Restaurant	Dosa Place	Deli / Bodega	Vegetarian / Vegan Restaurant	Tapas Restaurant	South Indian Restaurant	Pakistani Restaurant	Music Store

Results

Using one hot encoding and then K Means clustering algorithm, we cluster all those neighborhoods in 5 clusters.

Cluster 0: Similarly all other clusters.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	1(C V(
27	Gramercy	Indian Restaurant	South Indian Restaurant	North Indian Restaurant	Vegetarian / Vegan Restaurant	Dosa Place	Deli / Bodega	Chaat Place	Burrito Place	Asian Restaurant	Ta R
37	Stuyvesant Town	Indian Restaurant	Vegetarian / Vegan Restaurant	South Indian Restaurant	North Indian Restaurant	Dosa Place	Deli / Bodega	Chaat Place	Tapas Restaurant	Pakistani Restaurant	M S

Results

Number of neighborhoods in different clusters are as-
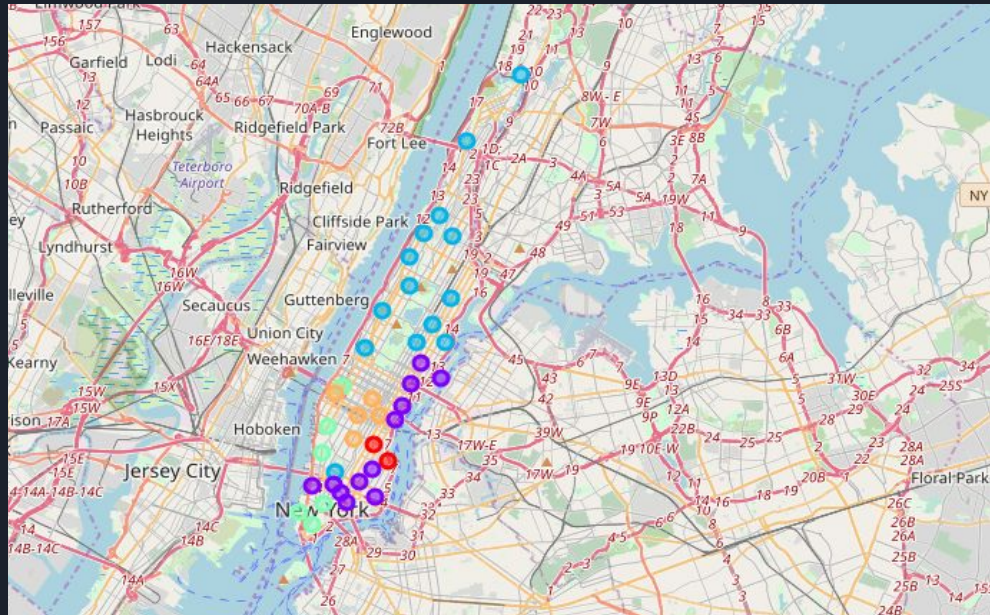
Cluster 0: 2

Cluster 1: 12

Cluster 2: 13

Cluster 3: 6

Cluster 4: 5

Results

Visualizing all clusters-

Discussion

Recommendation that I can make based on the results.

• Gramercy and Stuyvesant town have good potential and unique cluster in itself.

• Cluster 3 neighbourhoods have also good potential with food trucks being second most common venue.

• Cluster 4 is more popular for South Indian restaurants.

• More detailed analysis by adding other factors such as transportation, demographics of inhabitants.

Conclusion

Although all of the goals of this project were met there is definitely room for further improvement and development.

Incorporating transportation factors and demographic details, It could easily be developed into a fully fledged application that could support the opening a business idea in an unknown location.

A venue with lowest risk and competition can be identified by this approach.

Thank You.