

NEW YORK CITY

Capstone Project – The Battle of
Neighborhoods
New York City: Caribbean Restaurant



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INTRODUCTION

NYC has 5 unique boroughs:

Brooklyn, The Bronx, Queens,
Manhattan and Staten Island

Most populous US city: est. 8.3
million people (NYC, n.d.)

Multi-cultural city with a diverse
culinary scene



PROBLEM DESCRIPTION

Aim: Determine the optimum location to open the first of a franchise chain of dedicated Caribbean cuisine restaurants.

Target audience: investors, lending institutions and restaurant entrepreneurs



PROBLEM DESCRIPTION

CONT'D

Borough selection criteria:

Primary

Not more than 10 Caribbean restaurant categories currently in existence

Not less than 7 farmers' market categories currently in existence

Secondary:

Presence of bus stop venue categories to support fast public transit

First most common venue categories being non-competing restaurant menus (i.e. first most common and/or second most common venue is a non-Caribbean Restaurant)

Presence of at least one landmark or monument

DATA SOURCE

Main data source: https://geo.nyu.edu/catalog/nyu_2451_34572: the boroughs and neighborhoods of NYC

Data use:

1. Download and explore dataset for the city of New York
2. Load and explore neighborhoods of New York City using *Foursquare API*
3. Analyze each neighborhood using *one hot encoding*, *geopy library* and *json*
4. Cluster the neighborhoods into three (3) clusters to determine similarities using *k-means*
5. Examine each cluster based on the criteria outlined in the Problem Description section

MACHINE LEARNING

The following libraries will be used to assist with data manipulation from the data source:

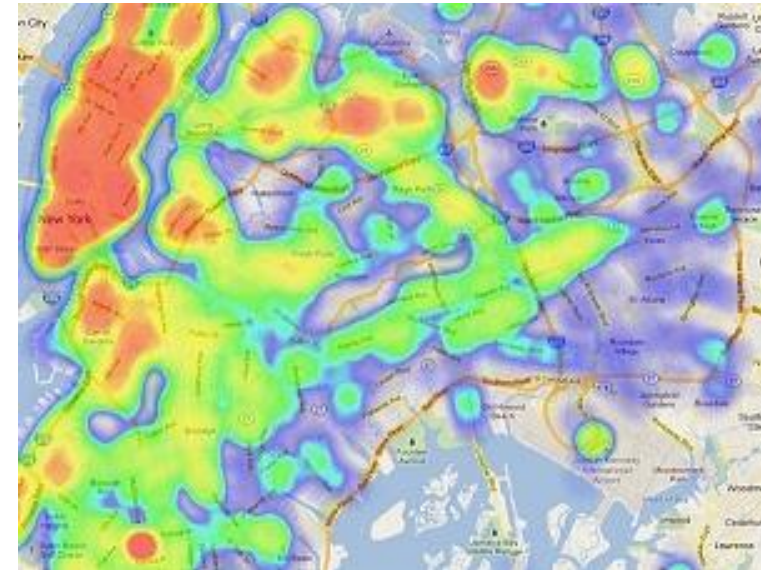
1. Numpy library for data structuring
2. Pandas library to read data into a pandas data frame for observation
3. Json library and json_data
4. Requests library
5. Sklearn.cluster for K-means to segment and cluster neighborhoods
6. Geopy to convert addresses to their equivalent latitude and longitude
7. Folium for map creation

Foursquare API will be used to obtain common venue categories, cuisine types and other variables in each neighborhood.

RESULTS

Close observation of the venues within *getNearbyVenues* function within each borough was significant in determining the borough for which the restaurant should be opened.

The Manhattan borough met the primary criteria of having no more than 10 Caribbean restaurants present and no less than 9 Farmers' Markets



```
In [34]: manhattan_venues.groupby('Venue Category').count()
Out[34]:
```

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude
Venue Category						
Accessories Store	4	4	4	4	4	4
Adult Boutique	2	2	2	2	2	2
Afghan Restaurant	1	1	1	1	1	1
African Restaurant	3	3	3	3	3	3
American Restaurant	75	75	75	75	75	75
Animal Shelter	1	1	1	1	1	1
Antique Shop	2	2	2	2	2	2
Arcade	1	1	1	1	1	1
Arepa Restaurant	3	3	3	3	3	3
Argentinian Restaurant	4	4	4	4	4	4
Art Gallery	29	29	29	29	29	29
Art Museum	3	3	3	3	3	3
Arts & Crafts Store	3	3	3	3	3	3
Asian Restaurant	13	13	13	13	13	13
Athletics & Sports	3	3	3	3	3	3
Auditorium	1	1	1	1	1	1
Australian Restaurant	4	4	4	4	4	4
Austrian Restaurant	2	2	2	2	2	2

RESULTS CONT'D

Close examination of the Manhattan borough was achieved using:

1. Onehot encoding to convert categorical data
2. Groupby function for venue category mean frequency of occurrence
3. Group functions to return top 5 most common venues based on the primary and secondary criteria
4. K-means clustering function to segment and cluster neighborhoods

RECOMMENDATION AND CONCLUSION

The most appropriate neighborhoods in the Manhattan borough for the opening of a new Caribbean cuisine restaurant are: Central Harlem or Inwood, resulting from:

1. low mix of other restaurants exists which do not offer a Caribbean menu. It can be assumed that the frequency of the different restaurant types will also result in customer traffic being directed to the new Caribbean cuisine restaurant.
2. The existence of Farmers' Markets in order to source the fresh produce and spices required to support a Caribbean cuisine menu.
3. The higher frequency of bus stops to support fast transit.

The entrepreneur seeking to open a Caribbean cuisine restaurant may therefore complete the business proposal with two appropriate locations to the team of investors or lending institution in order to obtain funding.

WORKS CITED

New York City (n.d.) Wikipedia. Retrieved April 12, 2019 from

https://en.wikipedia.org/wiki/New_York_City