

# Restaurant location Identification

In the city of New York

# Business Problem

- Every city has a lot of restaurants, but still there is always scope for new ones. Selecting the best suitable location is the most important factor for a restaurant to flourish. It should be set up in a location that has the target population and has other advantages such as little or no competition.

# Purpose

The objective of the solution is to find a location that suits the below criteria.

- 1. A location that has more number of restaurants as that implies a good demand for restaurants.
- 2. A location that has no or few Asian cuisine restaurants, as this will ensure that there is no incumbent player or very little competition.

# Data

The data that will be used in this solution is from a json file available at <https://ibm.box.com/shared/static/fbpwbovar7lf8p5sgddm06cgipa2rxpe.json>. The json file has the data related to all neighborhoods in the city of New York.

This solution focuses on neighborhoods in Manhattan and Brooklyn to identify the suitable location.

# Libraries, packages, and APIs used

- Pandas
- Geopy
- Folium
- Requests
- Matplotlib
- Scikit-learn
- Foursquare API

# Methodology

- The data is cleaned to retain only the required details of neighborhoods in Manhattan and Brooklyn
- The neighborhoods are visualized using Folium
- The neighborhoods are explored using Foursquare API
- The venues in the neighborhoods are filtered to identify the restaurants and Asian restaurants
- The neighborhoods are compared based on the number of restaurants and Asian restaurants available in them
- The neighborhoods are studied to identify the top most common venues in them

# Methodology Contd...

- We run K-means clustering on neighborhoods to split them into clusters
- We analyze the clusters to identify the cluster which predominantly has restaurants as the top 10 most common venues

# Results

- Manhattan has more venues than Brooklyn
- Manhattan has more restaurants than Brooklyn
- Manhattan has fewer Asian restaurants than Brooklyn (We choose Manhattan as the preferred Borough based on results 2 & 3)
- In Manhattan Greenwich Village has the most number of restaurants and Chinatown stands next
- Greenwich Village has no Asian restaurants, whereas Chinatown has 2 of them



# Results Contd...

- Both Greenwich Village and Chinatown have restaurants as the 4 out of 5 most common venues in the neighborhood. But, the restaurants in Chinatown appear to be those serving cuisines which overlap with Asian cuisine. Whereas, the restaurants in Greenwich Village are more spread out in terms of the cuisine they offer
- Greenwich Village falls in cluster 0 when we do K-means clustering. The neighborhoods in cluster 0 predominantly have eatery joints as the top 10 common venues.

# Results Interpretation

- Manhattan has more venues than Brooklyn, even though it has less neighborhoods than Brooklyn. This implies that Manhattan has more commercial activity than Brooklyn.
- Manhattan has more restaurants than Brooklyn, but fewer Asian restaurants than Brooklyn. This tilts the scale in favor of Manhattan to open a new Asian restaurant as there are fewer options available in it for Asian cuisine.
- Greenwich village has the most number of restaurants followed by Chinatown. In general, more number of restaurants implies that there is good demand for restaurants in that locality.

# Results Interpretation Contd...

- Both Greenwich Village and Chinatown have restaurants as the 4 out of 5 most common venues in the neighborhood. But, the restaurants in Chinatown appear to be those serving cuisines that overlap with Asian cuisine. Whereas, the restaurants in Greenwich Village are more spread out in terms of the cuisine they offer. Further, Chinatown already has 2 Asian restaurants whereas Greenwich Village doesn't have any.
- Greenwich Village falls in cluster 0 when we do K-means clustering. The neighborhoods in cluster 0 predominantly have eatery joints as the top 10 common venues.

# Results Interpretation Contd...

- The added advantage for Greenwich village is it is in close proximity of affluent neighborhoods such as Soho and Tribeca. So, it is quite possible that people of these affluent neighborhoods would visit a restaurant that serves a new cuisine in a nearby locality.

# Conclusion

Greenwich village is the best neighborhood to start an Asian Restaurants among the neighborhoods of Manhattan and Brooklyn. The major factors that worked in favor of Greenwich Village are the absence of Asian restaurants in it even though it has the most number of restaurants in Manhattan, wide spread of the cuisines offered by the restaurants located in it, and it's close proximity to affluent neighborhoods.