Where to Open An Italian Restaurant In Boston

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Introduction to a Business Problem

- Boston is a city with many neighborhoods that have different characteristics about them. Some areas are well known for their specific cultures and while others are known for their eliteness. Given these differences, how would someone who is looking to open a restaurant somewhere in Boston pick a location? Also, what type of restaurant should be chosen? Entrepreneurs open up restaurants all the time but one of the biggest problems is picking the wrong location. If you pick a spot where most people don't like a certain type of restaurant, then you won't do well. Picking the correct area will be vital in running a successful restaurant.
- The goal here is to find a neighborhood with restaurants with a lot of likes(people like going out to restaurants in the area) but not in an overcrowded area. Areas where there is not restaurants will not be favorable as people most likely don't like to go out to eat in those areas.
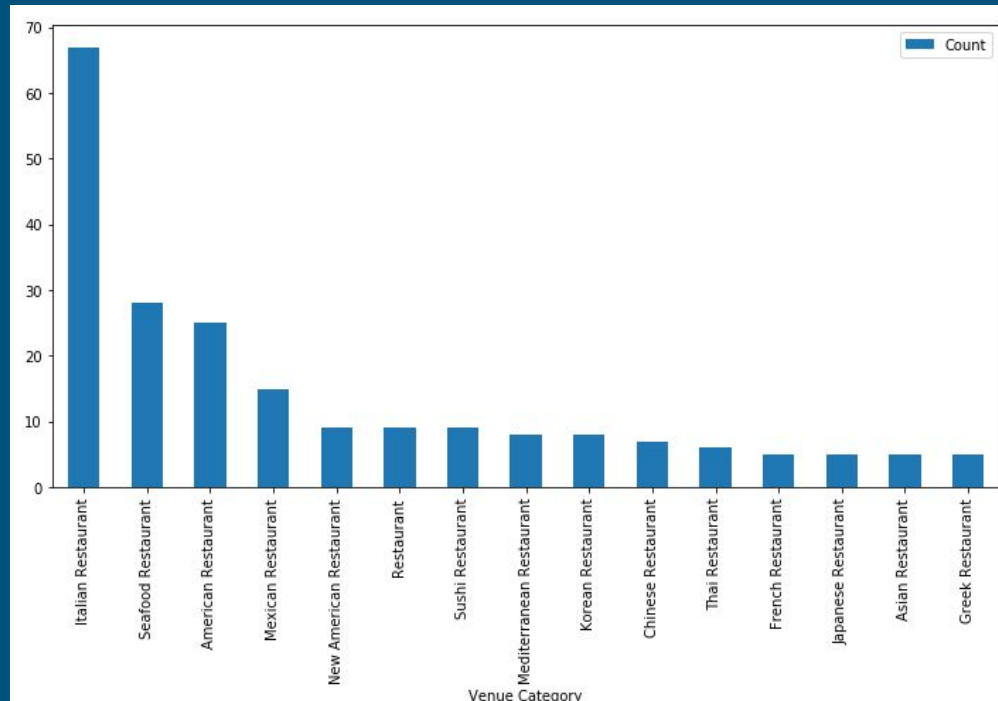
Data

- First, I need to figure out all the neighborhoods in Boston. Using https://data.boston.gov/dataset/zoning-districts, I was able to retrieve all the names of the neighborhoods. From there, I need to find the locations of each neighborhood. I used the geocoder API to retrieve this information. From there, I used the Foursqare API to retrieve information about all the restaurants in each neighborhood and all the likes received for each restaurant. With this data, I will use the location and number of likes to cluster the data into tiers so the location of the restaurant can be chosen on the neighborhoods in the best tier.
- I am going to use how crowded a neighborhood with restaurants and how many likes each restaurant receives as my statistics to decide where to open up the restaurant.

Acquiring the Data

- Data.boston.gov
  - Neighborhoods in Boston
- Geocoder
  - Locations of each Neighborhood

- Foursquare
  - Explore Request
    - Each venue in each neighborhood
    - Location of each venue
    - Venue Category
    - Venue ID
    - Venue Name
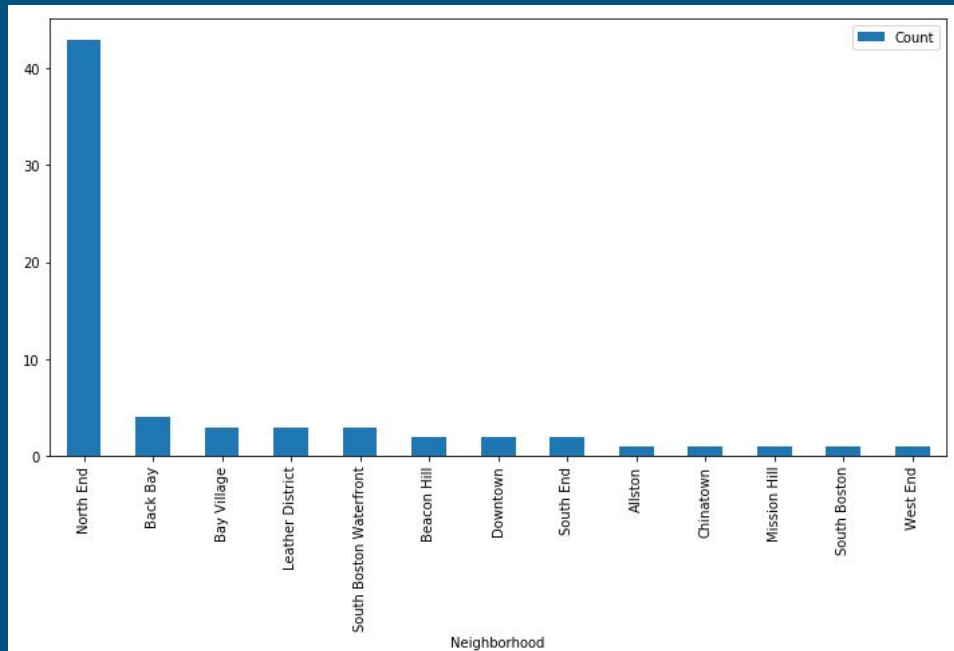 - Venue ID Request
    - Number of likes per Venue

Exploratory Data Analysis

- Italian Restaurant is the most common restaurant in Boston

Exploratory Data Analysis

- North End is an outlier with over 40 Italian Restaurants

Clustering

- K-Means Clustering was used on the following attributes
  - Number of likes per restaurant
  - Number of restaurants in the neighborhood
  - Number of Italian restaurants in the neighborhood
- Number of clusters was set to 4

```
# run k-means clustering
kmeans = KMeans(n_clusters=kclusters, random_state=0).fit(Itl_cmbnd_prep)
```

Data Visualization

- Circle Marker Size - Number of likes
- Circle Marker Color - Cluster
- These results show Back Bay and Bay Village look like hotspots for Italian Restaurants

Conclusion

- Recommend Back Bay for an starting an Italian Restaurant
  - .15 ratio of Italian Restaurants to Total Restaurants
  - Only 4 are Italian out of the 26 Restaurants
    - Plenty of room more Italian Restaurants
  - 3 of 4 Italian Restaurants are found in the 2nd best cluster based on likes
    - Italian Restaurants seem to do well this area
- Recommend against Bay Village
  - Of 3 Italian Restaurants, they fall in the 1st, 3rd, and 4th tiers for the clustering.
  - Deceiving with the one outlier that has done really well.