

Opening a Restaurant in New York City

IBM Data Science Professional Certificate

Introduction

- ▶ New York City is a popular tourist destination. According to NYC & Company's Annual report, New York City receives over 65 million visitors a year on average. As people visit the City, they will be looking for places to eat.
- ▶ If an entrepreneur wants to open a restaurant in New York City focused on tourism:
 - ▶ Where should the restaurant be located?
 - ▶ What cuisine should the restaurant serve?

Data acquisition and cleaning

- ▶ Data sets: To answer where and what type of restaurant to open, two data sets will be used.
 - ▶ Hotel location - To identify density of tourists
 - ▶ Restaurant location and category - To map restaurants to tourism areas and assess popular cuisine type in New York City
- ▶ Data sources: Both data sets will be obtained using the Foursquare API

Methodology

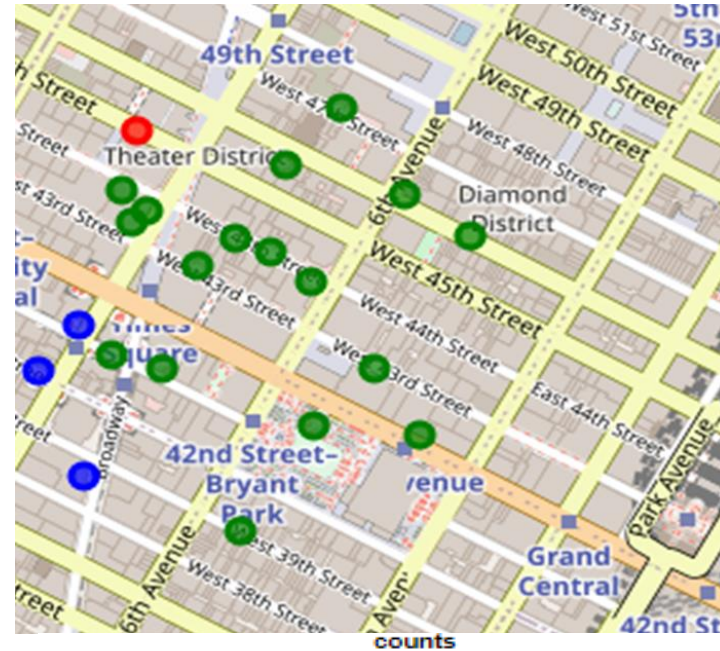
Hotel Information

- ▶ Using the FourSquare API, 34 hotels centered around New York Time Square were identified.
- ▶ Using latitude and longitude, the hotels were clustered into three groupings utilizing the K-Means clustering algorithm. (See upper right map, clusters differentiated by color)
- ▶ Each cluster is centered around a single point, which was extracted and mapped in the graph on the lower right.



Restaurant Locations

- ▶ A second Foursquare API call was used to identify 21 trending restaurants around New York City Time Square.
- ▶ Using the center points of the hotel clusters, K Nearest Neighbor Algorithm, and restaurant latitude and longitude, the restaurants were classified into the same three clusters as the hotels.
- ▶ In addition, the frequency of cuisine type was extracted.



categories	
American Restaurant	4
Italian Restaurant	3
Seafood Restaurant	2
French Restaurant	2
Japanese Restaurant	1

Results and Conclusion

Results

Cluster	Hotels	Trending Restaurants
Cluster 1 (Red)	19	1
Cluster 2 (Green)	13	17
Cluster 3 (Blue)	2	3

- ▶ Cluster 1 appears to be under served in terms of popular restaurants compared to Cluster 2 and Cluster 3.
- ▶ An entrepreneur looking to open a new restaurant should look at locations in Cluster 1 as there is a high density of tourists but low competition.
- ▶ From the previous section, it was shown that the entrepreneur may want to focus on an American cuisine restaurant as American restaurants are currently the most trending in the Forusquare data.

Conclusion and next steps

- ▶ The results of this analysis have provided a general location and cuisine type for a new restaurant focused on tourists in New York City.
- ▶ Further analysis to support the results of this analysis may include:
 - ▶ Looking at hotel occupancy rates and capacity in New York City to better understand tourism density.
 - ▶ Examining rent prices to understand cost of operations in various New York City areas.
 - ▶ Evaluating restaurant trends over a period of time to confirm trending cuisine types.