Opening New Restaurant in New York, US

Coursera Capstone

IBM Applied Data Science Capstone

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BUSINESS PROBLEM

- Location of a restaurant is one of the most important decisions that will determine whether the restaurant will be profitable or not
- Objective is to analyse and select best location in new york to open a new restaurant
- This project is will address the problem of over supply of restaurants in new York
- Business question : *in new York city, if an investor is looking to open a new restaurants, where would you recommend them to open it ?*

DATA

- Data Required
  - List of neighbourhoods in new York
  - Geographical coordinates of the neighbourhoods
  - Venue data related to the neighbourhood
- Sources of data
  - Spatial data repository NYU (https://geo.nyu.edu/catalog/nyu_2451_34572)
  - Geocoder package of python for geographical coordinates
  - Foursquare API for venue data

METHODOLOGY

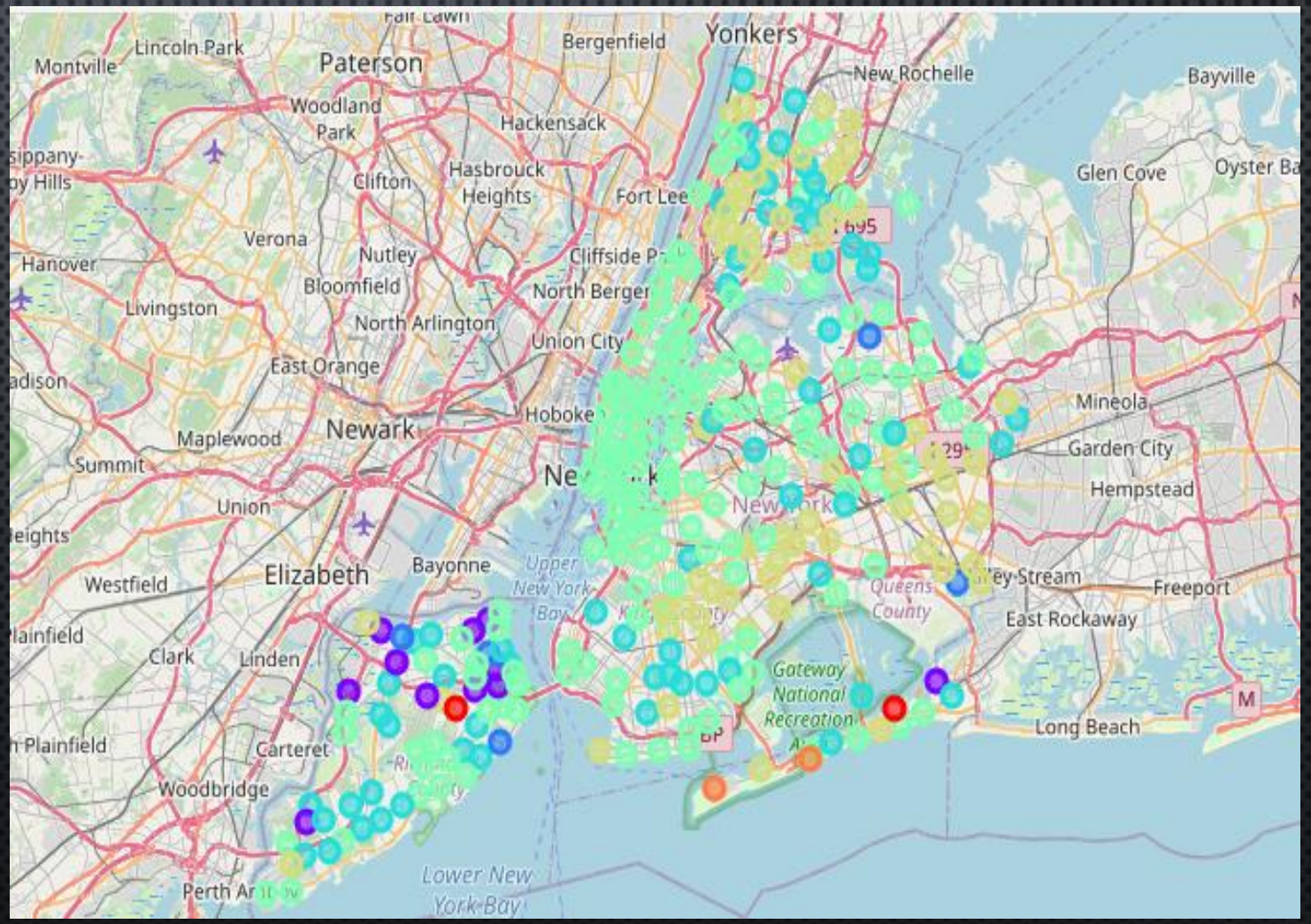
- Web scrapping geospatial data from NYU page for neighbourhoods data
- Get latitude and longitude coordinates using Geocoder
- Use Foursquare API to get venue data
- Group data by neighbourhood and taking the mean of the frequency of occurrence of each venue category
- Perform clustering on the data by using k-means clustering
- Visualize the clusters in a map using folium
- Filter venue category by restaurant and visualize the result with a bar chart

RESULTS

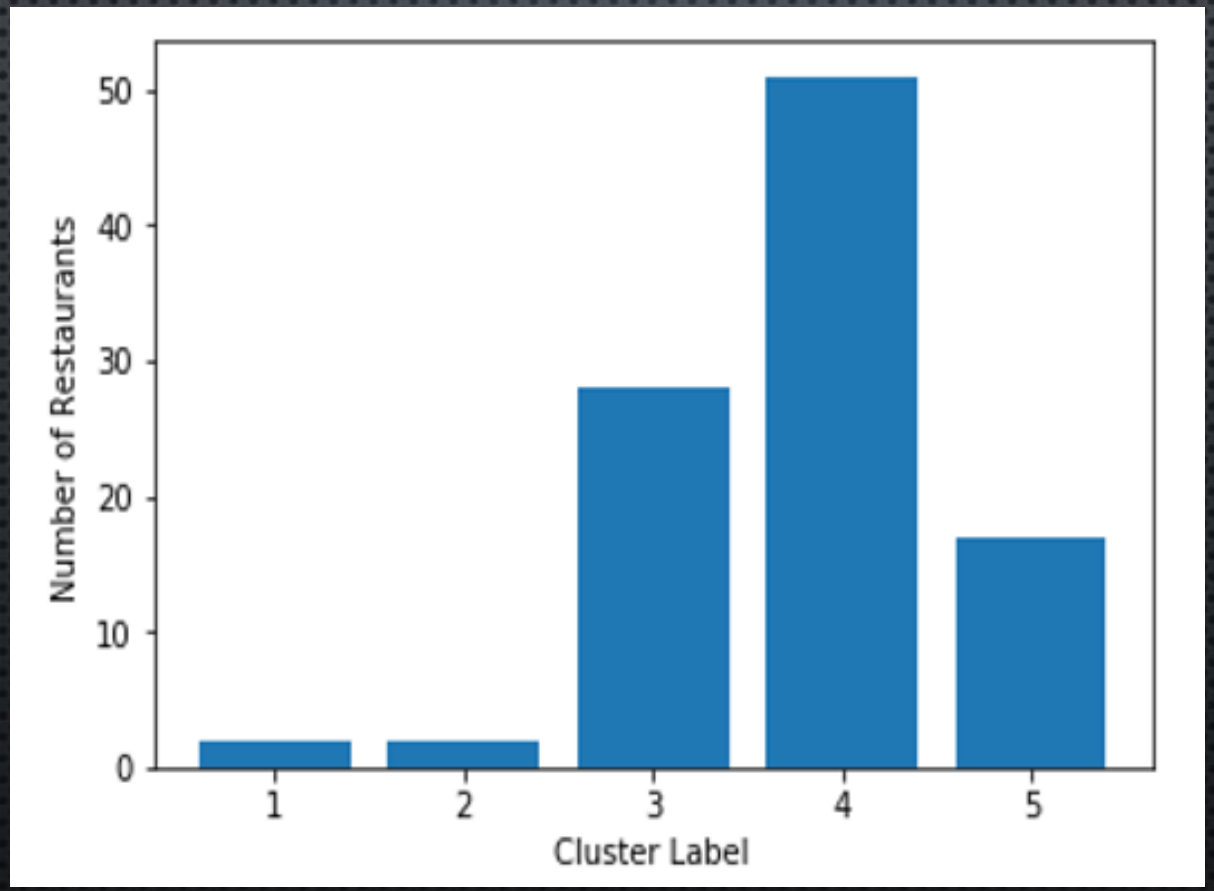
- Categorized neighbourhoods into 7 clusters :
  - Cluster 1 - Neighbourhoods with low number of restaurants and high number of unfavourable factors
  - Cluster 2 - Neighbourhoods with low number of restaurants and moderate number of unfavourable factors
  - Cluster 3 - Neighbourhoods with moderate number restaurants and high number of favourable factors
  - Cluster 4 - Neighbourhoods with high number of restaurants and high number of favourable factors
  - Cluster 5 - Neighbourhoods with moderate number restaurants and moderate number of favourable factors
  - Cluster 6 - Neighbourhoods with very low number of restaurants and high number of unfavourable factors
  - Cluster 7 - Neighbourhoods with no restaurants nearby and high number of unfavourable factors

RESULTS(CONTD.)

- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- Cluster 5
- Cluster 6
- Cluster 7



RESULTS(CONTD.)



DISCUSSION

- Most of the restaurants are concentrated in cluster 3, cluster 4 and cluster 5
- Highest number are present in cluster 4
- Cluster 3 and cluster 5 have moderate numbers
- Cluster 1 and cluster 2 have low numbers of restaurants
- Cluster 6 has very less number of restaurants
- Cluster 7 has no restaurant

RECOMMENDATION

- Opening a new restaurant in neighbourhoods of cluster 7 will be highly unfavourable
- Opening a New restaurant in neighbourhoods of cluster 1, cluster 2 and cluster 6 will have little to no competition but the location has to be chosen cautiously due to presence of unfavourable elements
- Opening a new restaurant in neighbourhoods of cluster 3 and cluster 5 will be somewhat competitive but other elements present in those areas will be highly favourable
- Opening a new restaurant in neighbourhoods of cluster 4 will provide very favourable conditions but presence of so many restaurants there will cause a tough competition for getting profits

CONCLUSION

- Answer to business question: *The neighbourhoods present in cluster 3 and cluster are most preferred location to open a new restaurant. With a small difference in number of restaurants present in both cluster, areas in Cluster 3 are more preferable than cluster 4.*
- Relative stakeholders should capitalize on findings of this project and should consider neighbourhoods present in cluster 3 and cluster 4 for opening a new restaurant while avoided over-crowded areas like in cluster 5 and areas with unfavourable conditions like in other clusters.

THANK YOU !

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তোমাকে ধন্যবাদ
감사합니다
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