Coursera Capstone

IBM Applied Data Science

Opening new Shopping Mall in Mumbai, India

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Business Problem

- Identifying correct Location for opening new shopping mall
- Objective:
  - Analyse and select the best locations in Mumbai city, India, to open a new shopping mall
- Business question:
  - In Mumbai city, if a property developer is looking to open a new shopping mall, where would you recommend that they open it?

Data

- Data requirements:
  - List of Neighborhoods in Mumbai
  - Latitude & Longitude of these neighborhoods
  - Venue data to identify number of shopping malls in each neighborhood

- Data sources:
  - Wikipedia page with list of Neighborhoods & related latitude, longitude information in Mumbai
    - https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai
  - Venue data
    - Foursquare API

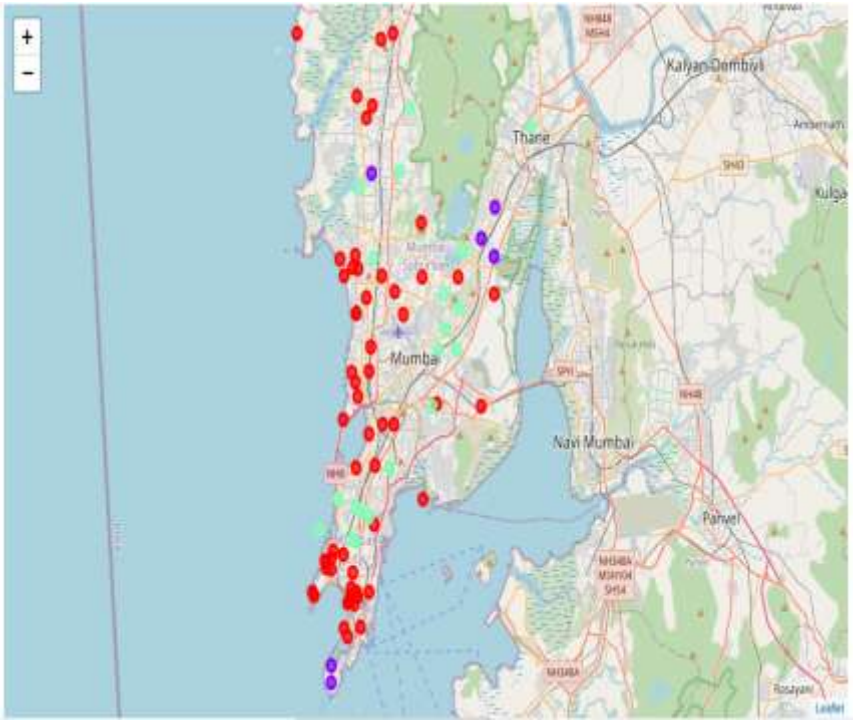
- References:
  - About Mumbai:
    - https://en.wikipedia.org/wiki/Mumbai
  - Number of shopping malls in Mumbai:
    - https://en.wikipedia.org/wiki/Category:Shopping_malls_in_Mumbai
    - https://www.ixigo.com/shopping-malls-in-at-around-near-mumbai-lp-1140436#:~:text=248%20shopping%20malls%20in%20Mumbai%20%7C%20shopping%20in%20Mumbai
    - https://list.fandom.com/wiki/List_of_shopping_malls_in_Mumbai
  - Mumbai population
    - https://populationstat.com/india/mumbai

Methodology

- Web scraping Wikipedia page for neighbourhoods list
- Use Foursquare API to get venue data
- Group data by neighbourhood and taking the mean of the frequency of occurrence of each venue category
- Filter venue category by “Shopping Mall”
- Perform clustering on the data by using k-means clustering
- Visualize the clusters in a map using Folium

Results

- Categorized neighbourhoods into 3 clusters :
  - Cluster 0 (Red): 65 Neighbourhoods with low number to no existence of shopping malls
  - Cluster 1 (blue): 7 Neighbourhoods with high concentration number of shopping malls
  - Cluster 2 (light green): 20 Neighbourhoods with moderate number of shopping malls



Discussion

- Highest number of shopping malls in cluster 1 and moderate number in cluster 2
- Cluster 0 has very low number to no shopping mall in the neighbourhoods
- Provides great opportunity to open new shopping malls in Cluster-0

Conclusion

- Open new shopping malls in neighbourhoods in cluster 0 where there is little to no competition
- Can also open in neighbourhoods in cluster 2 with moderate competition if have unique selling propositions to stand out from the competition
- Avoid neighbourhoods in cluster 1, already high concentration of shopping malls and intense competition

"The neighbourhoods in cluster 0 are the most preferred locations to open a new shopping mall".