Coursera Capstone

IBM Applied Data Science Capstone

Opening a new Shopping Mall in Delhi, India

By- **Avanendra Pratap Singh**

July 2020

Business Problem

- Location of the shopping mall is one of the most important decisions that determines whether the mall will be success or a failure.
- Objective: To analyze and select the best locations in the city of Delhi, India to open a new shopping mall.
- This project is timely as the city is currently suffering from the oversupply of Shopping malls.
- Business question- In the city of Delhi, India , if a property developer is looking to open a new shopping mall where would you recommend that they open it?

Data

Data required

- List of the neighborhoods in Delhi city.
- Latitude and Longitude coordinates of the neighborhoods.
- Venue data particularly data related to shopping malls

Sources of data

- Wikipedia page for the neighborhoods

https://en.wikipedia.org/wiki/Category:Neighbourhoods_in_Delhi

- Geocoder package for Latitude and Longitude coordinates.
- Foursquare API for venue data.

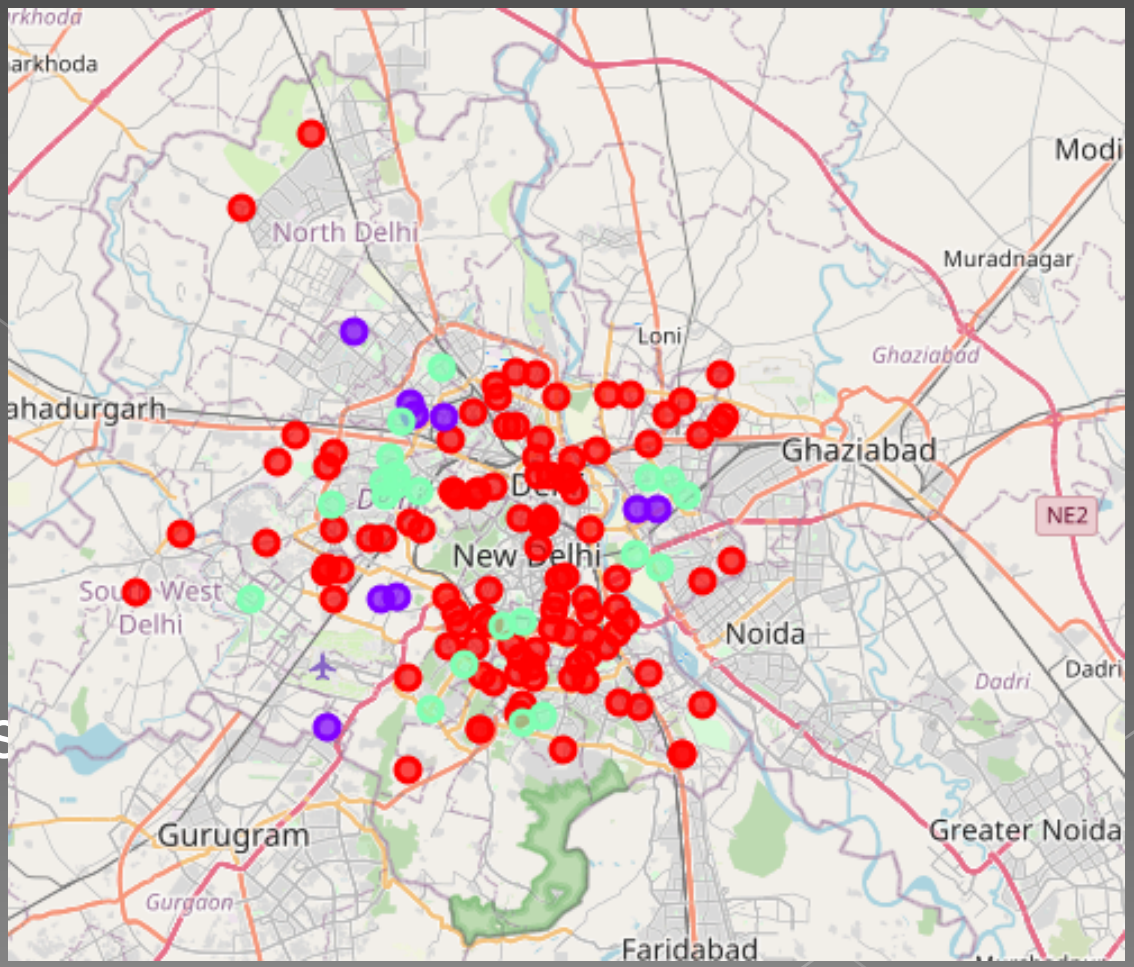
Methodology

- Web scrapping Wikipedia page for neighborhoods list.
- Get latitude and longitude coordinates using Geocoder.
- Use Foursquare API to get venue data
- Group data by neighborhoods and taking the mean of the 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 the neighborhoods into 3 clusters:-

- **Cluster 0**:Neighborhoods with moderate number of shopping malls
- **Cluster 1**:Neighborhoods with low number to no existence of shopping malls
- **Cluster 2**:Neighborhoods with high number of shopping malls



Map of Delhi with clustered neighborhoods

Discussion

- Most of the shopping malls are concentrated in the central area of the city.
- Highest number in cluster 2 and moderate number in cluster 0.
- Cluster 1 has very low number to no shopping mall in the neighborhoods.
- Oversupply of shopping malls mostly happened in the central area of the city, with the suburb area still have very few shopping malls

Recommendations

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

Conclusion

- **Answer to the business question**: The neighborhoods in cluster 1 are the most preferred locations to open a new shopping mall.
- Findings of this project will help the relevant stakeholders to capitalize on the opportunities on high potential locations while avoiding overcrowded areas in their decisions to open a new shopping mall

Thank You
Obrigado
Mamana
Arigato
Salamat
Juspaxar
MERCI
Vinaka
KIITOS
GRAZIE
MATONDO
Kia Ora
ASANTE
DANK JE
SPASIBO
NIRRINGRAZZJAK
MAAKE
Matondo
Multumesc
Mochchakkeram
Raibh Maith Agat
Chokrane
Kiitos
Obrigado
Merci
Grazie
Dankon
Maake
Ua Tsaug Rau Koj
Terma Kasih
Matur Nuwun
Cam on ban
Welalin
Nirringrazzjak
Salamat
Multumesc