



# IBM APPLIED DATA SCIENCE CAPSTONE

FINDING BEST LOCATION TO OPEN  
NEW SHOPPING MALL IN NEW DELHI, INDIA

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# BUSINESS PROBLEM

- ▶ Location of the shopping mall is one of the most important decisions that will determine whether the mall will be a success or a failure
- ▶ Objective: To analyse and select the best location in the city of New Delhi, to open a new shopping mall

## BUSINESS QUESTION

- ▶ Considering existing competitors in the market, what could be
- ▶ the best location in the city of New Delhi, India to open a new
- ▶ shopping mall?

# DATA

- **Data required**

- ▶ List of neighborhoods in New Delhi, India
- ▶ Latitude and longitude coordinates of the neighborhoods
- ▶ Venue data, particularly data related to shopping malls

- **Sources of data**

- ▶ Foursquare API for venue data
- ▶ Wikipedia page for neighborhoods  
([https://en.wikipedia.org/wiki/Category:Neighbourhoods\\_in\\_Delhi](https://en.wikipedia.org/wiki/Category:Neighbourhoods_in_Delhi))
- ▶ Geocoder package for latitude and longitude coordinates

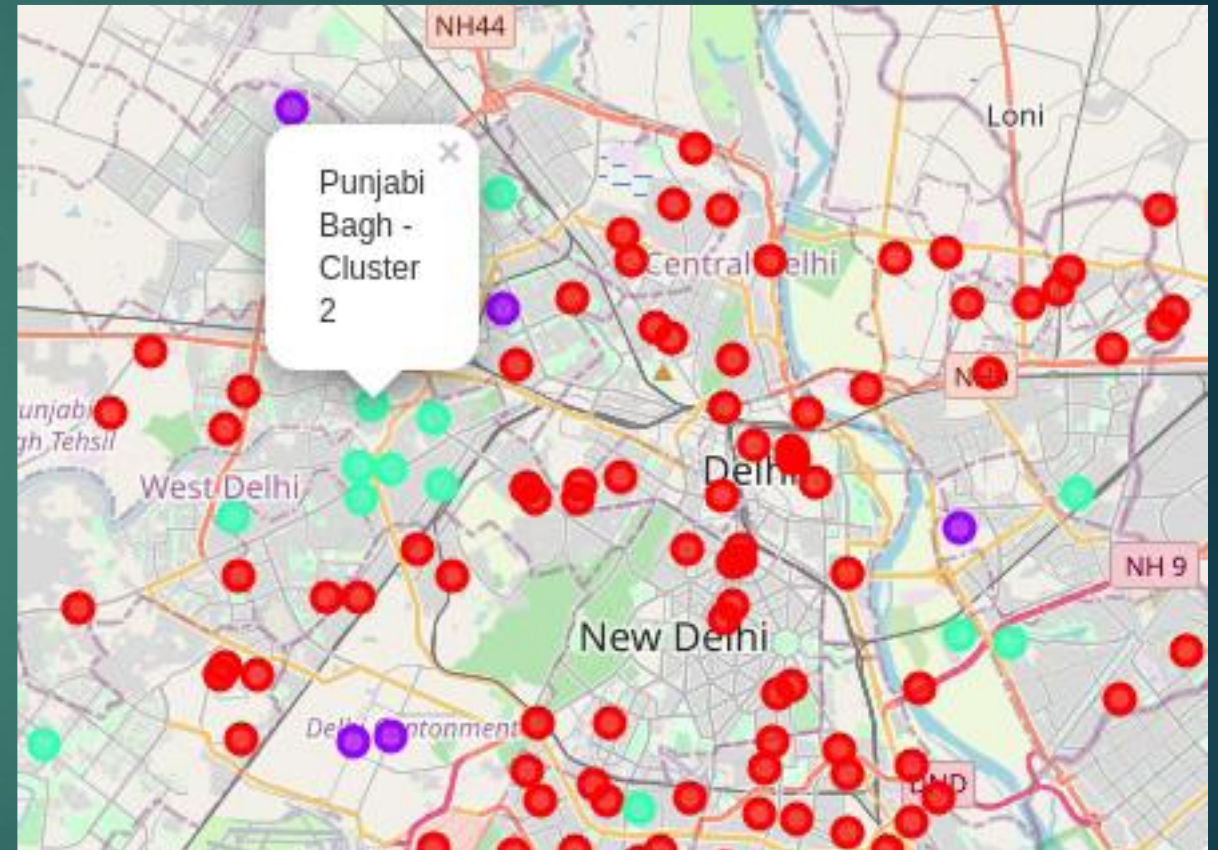
# METHODOLOGY

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

1. **Cluster 0:** Neighborhoods with highest number of shopping malls
2. **Cluster 1:** Neighborhoods with lowest number of shopping malls
3. **Cluster 2:** Neighborhoods with moderate concentration of shopping malls





# DISCUSSION

- ▶ Highest number of malls in cluster 0
- ▶ Cluster 2 has very less number of malls than cluster 0 but higher than cluster 1
- ▶ Cluster 1 has very low shopping malls
- ▶ Oversupply of shopping malls mostly happened in the central area of the city, with the suburb area still have very few shopping malls
- ▶ Property developers are advised to avoid neighborhoods in cluster 0 which already have high concentration of shopping malls

# RECOMMENDATIONS

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

# CONCLUSION

- ▶ Answer to 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