



# IBM Applied Data Science Capstone

## Development of New Public Parks in Delhi, India

- **By: Ashish Tiwari**
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# Business Problem

- Public Parks are one of the basic needs
- The objective of this capstone project is to analyse and select the best locations in the city of Delhi, India to develop new Public Parks.
- Business Question: In Delhi, what are the locations where public parks need to be developed for the benefit of residents and lower down the pollution of the city.

# Data

- List of neighbourhoods in Delhi ([https://en.wikipedia.org/wiki/Category:Neighbourhoods in Delhi](https://en.wikipedia.org/wiki/Category:Neighbourhoods_in_Delhi))
- Latitude and longitude coordinates of neighbourhoods(Use Geocoder Package)
- Venue data, particularly data related to Parks(Use Foursquare API)



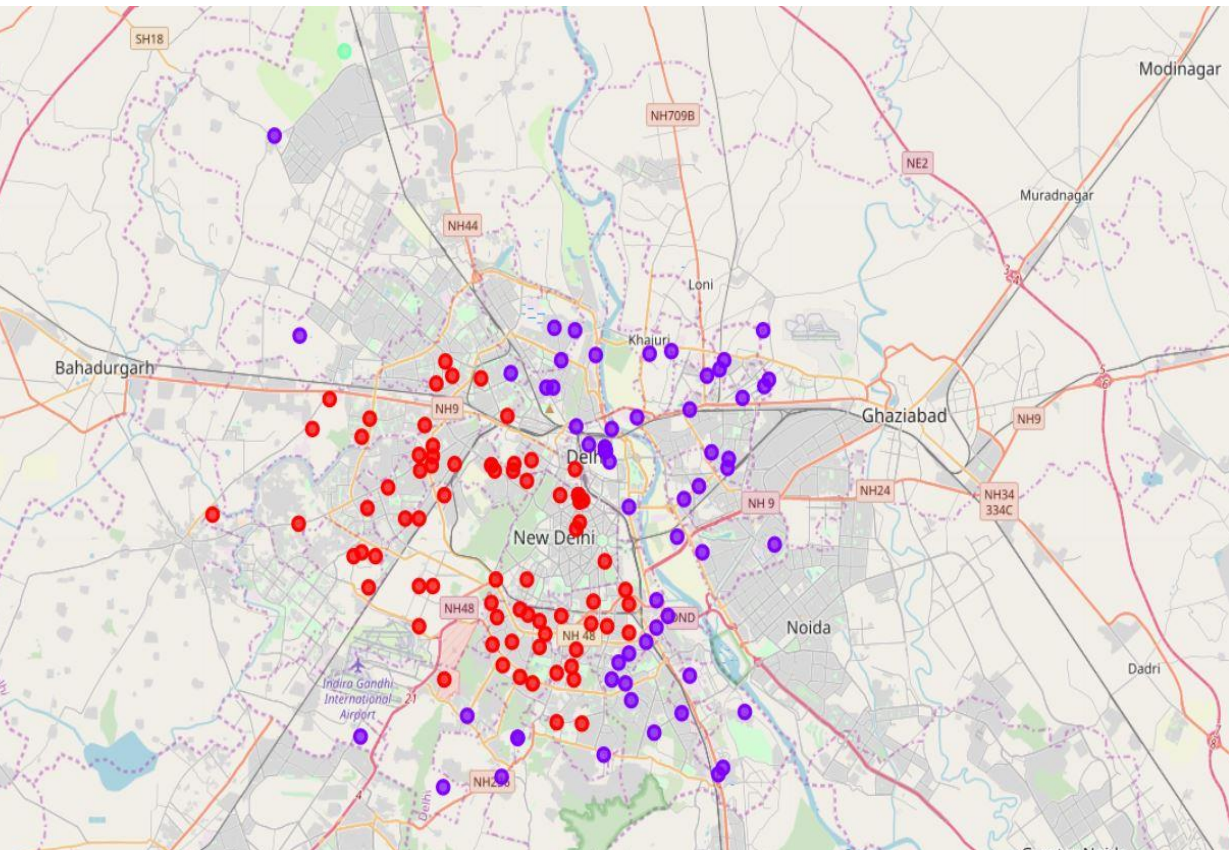
# Methodology

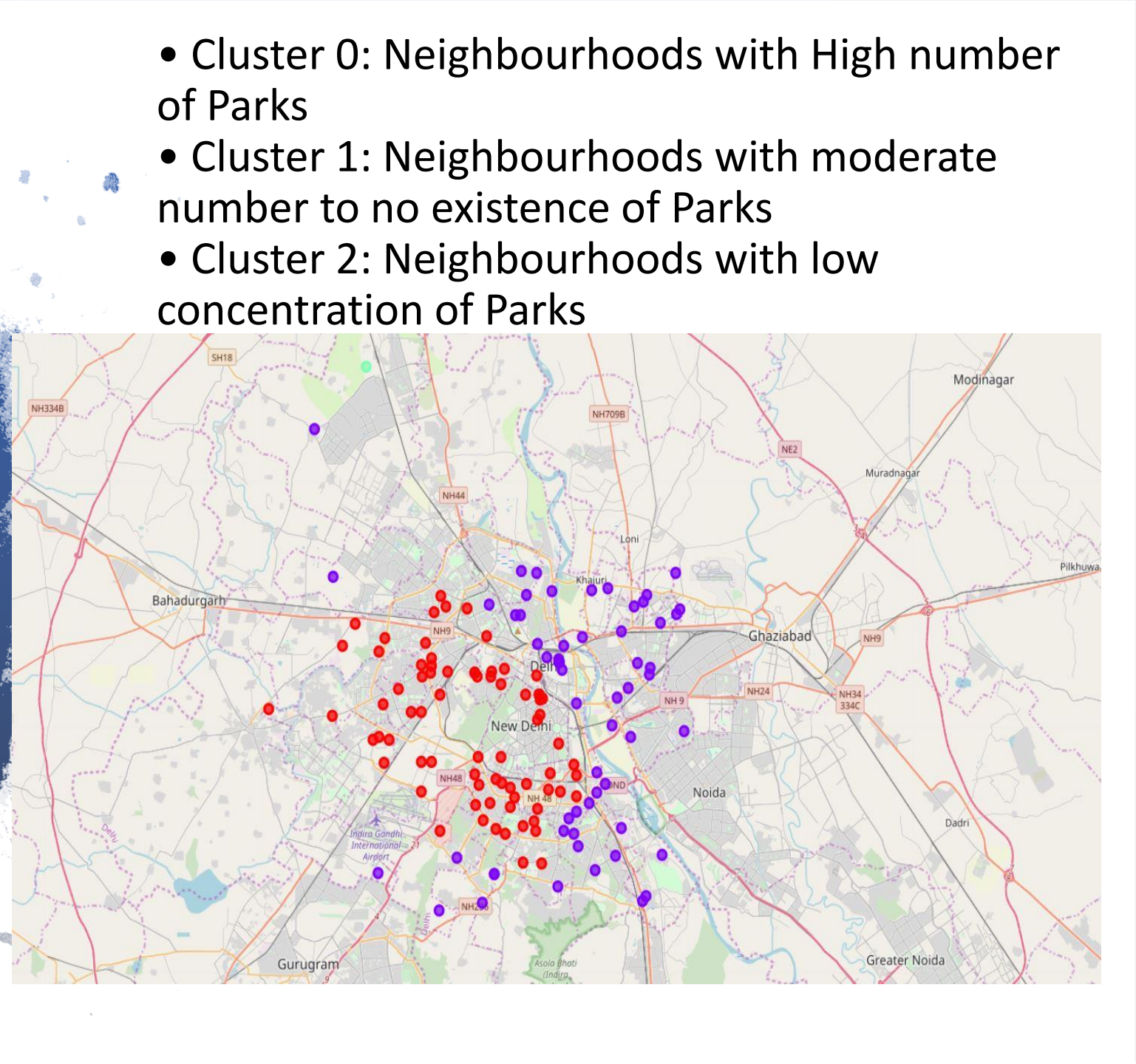
- Web Scrapping Wikipedia page for Neighbourhood list
- Get Coordinates from Geocoder Package
- Use Foursquare API to get Venue Data
- Group data by neighbourhood by taking mean of frequency of occurrence of each venue category
- Filter venues by Park
- Perform k means Clustering
- Visualize clusters in Map using Folium Package





# Results

- Cluster 0: Neighbourhoods with High number of Parks
  - Cluster 1: Neighbourhoods with moderate number to no existence of Parks
  - Cluster 2: Neighbourhoods with low concentration of Parks
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- The map displays the Delhi region, including parts of Haryana (Gurugram) and Uttar Pradesh (Noida, Greater Noida). It shows a network of roads (NH, SH, NE) and green spaces. Red dots are densely clustered in the central urban area of Delhi, particularly around the Indira Gandhi International Airport and the city center. Purple dots are scattered in the surrounding suburban and rural areas, including Gurugram, Noida, and Greater Noida. The map illustrates the spatial distribution of parks, with a high concentration in the central urban core and a more dispersed pattern in the outskirts.





# Discussion

- Most of the parks are concentrated in the south, west and centre area of Delhi
- Highest number of Parks are in cluster 0 and Moderate number of Parks are in cluster 1
- Cluster 2 has very low number to no parks which includes rural, congested and outer areas
- Government should focus on Cluster 2 and slightly cluster 1 to develop new Parks

# Conclusion

- Open new Public Parks in neighbourhoods of Cluster 2 areas.
- Also, New parks should be developed in Cluster 1 areas as less number of Parks are there in these neighbourhoods.
- This gives the answer of our Business Problem of finding areas in Delhi to build new Public Parks for benefit of Citizens and lower down the rising pollution.