Opening a New Restaurant in Bangalore

Hello!

I am Sadhiman Das

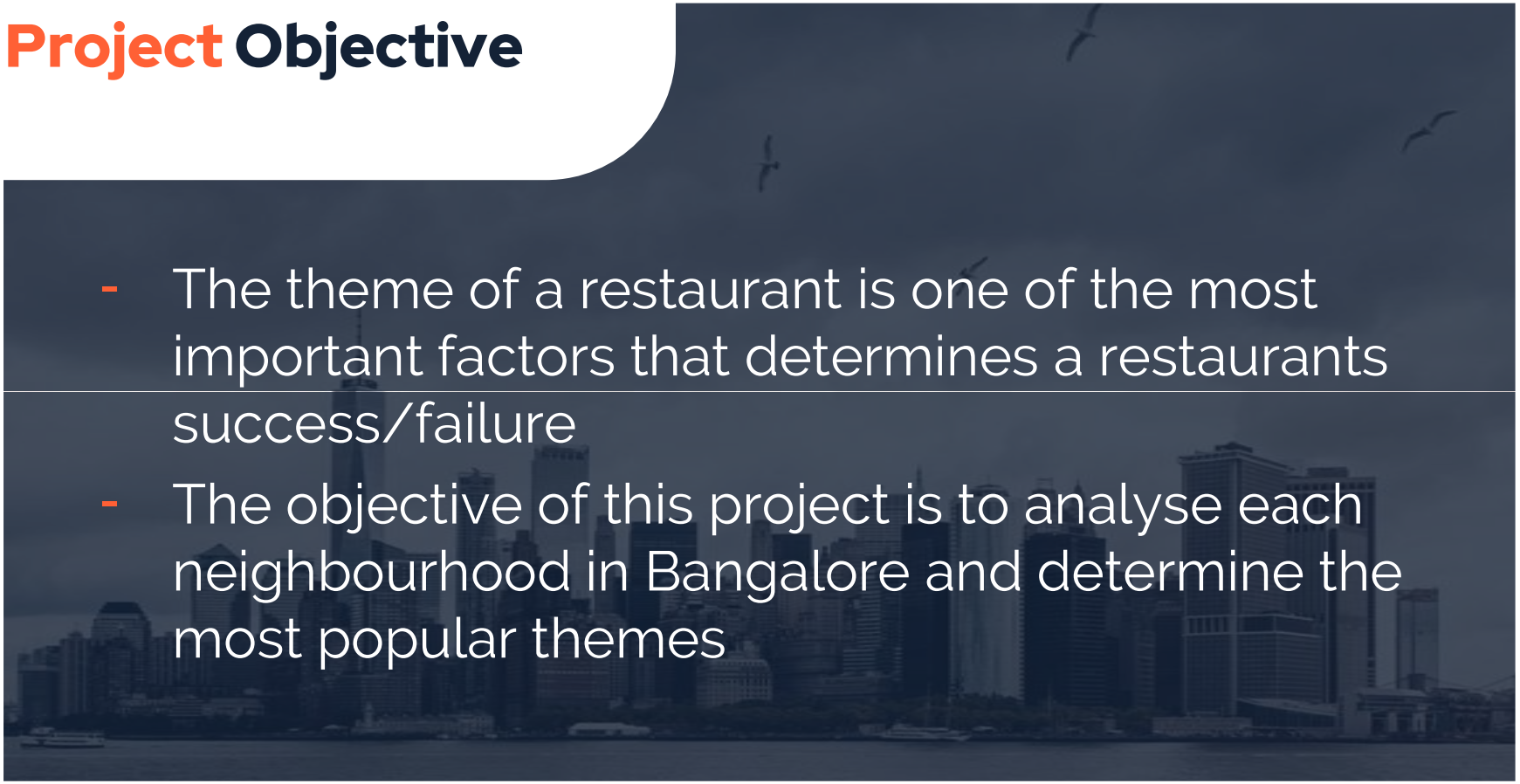
This is my final presentation for the course Applied Data Science Capstone on Coursera

My github link github.com/sadhiman7/Coursera-Capstone

Business Problem

- In the city of Bangalore, India if a entrepreneur is looking to open a new restaurant, what type of restaurant would you recommend opening based on the location?

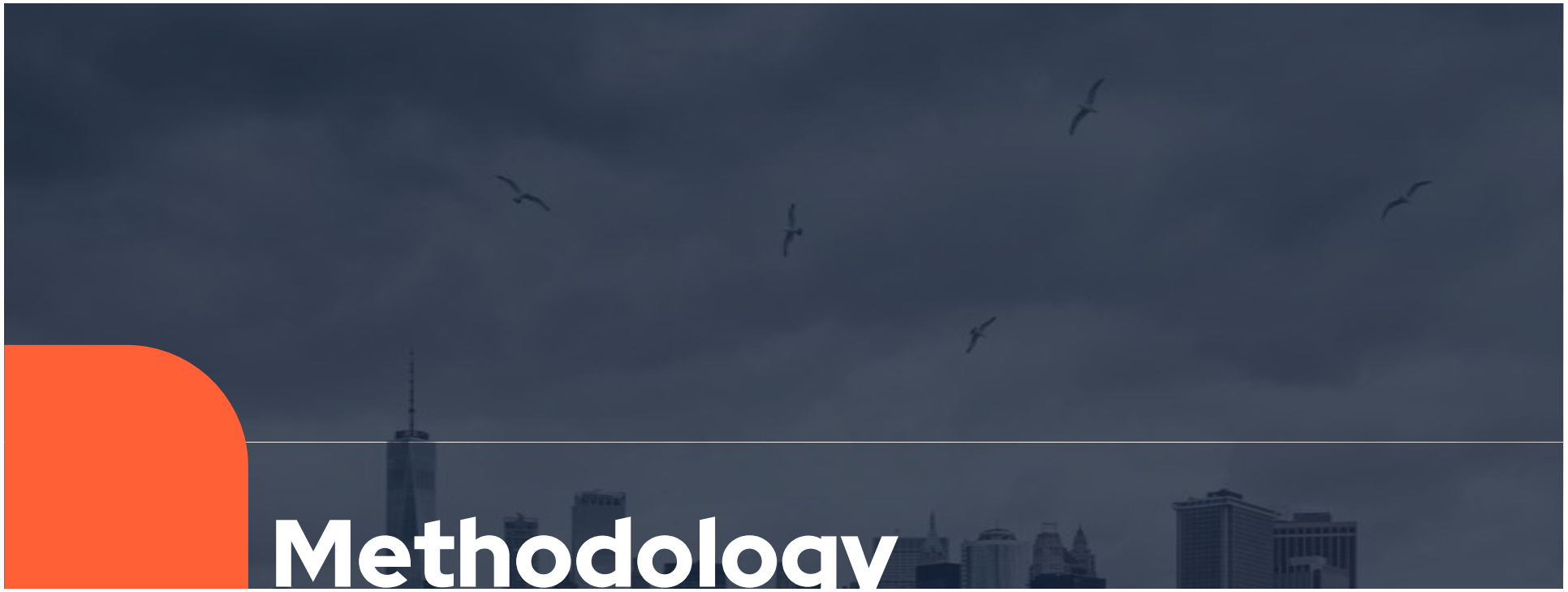
Project Objective



- The theme of a restaurant is one of the most important factors that determines a restaurants success/failure
- The objective of this project is to analyse each neighbourhood in Bangalore and determine the most popular themes

Data Required

- List of neighborhoods in Bangalore. This defines the scope of this project which is confined to the city of Bangalore, India. (https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Bangalore)
- Latitude and longitude coordinates of those neighborhoods. This is required in order to plot the map and also to get the venue data (Geocoders API)
- Venue data, particularly data related to restaurants. We will use this data to perform clustering on the neighborhoods. (Foursquare API)

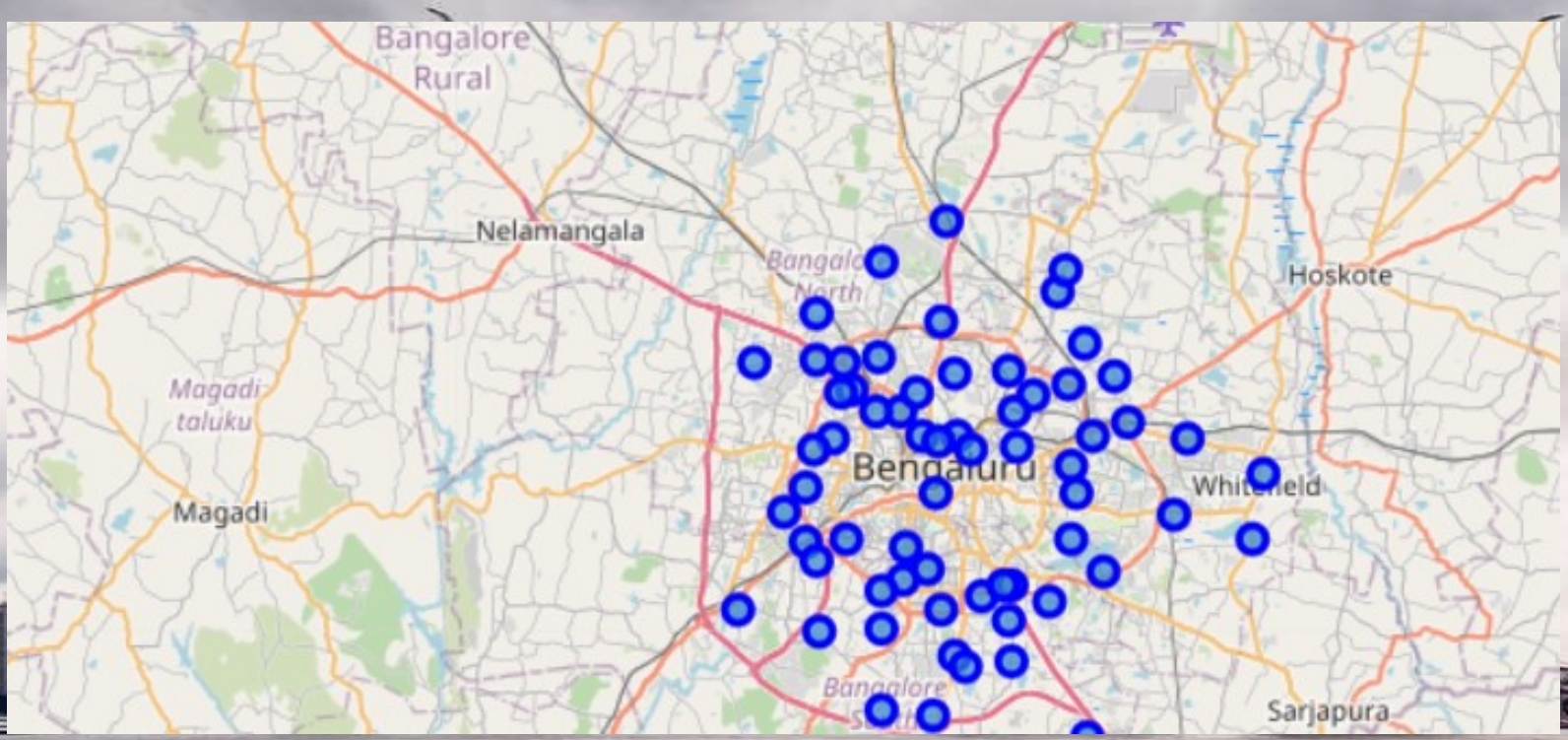


Methodology

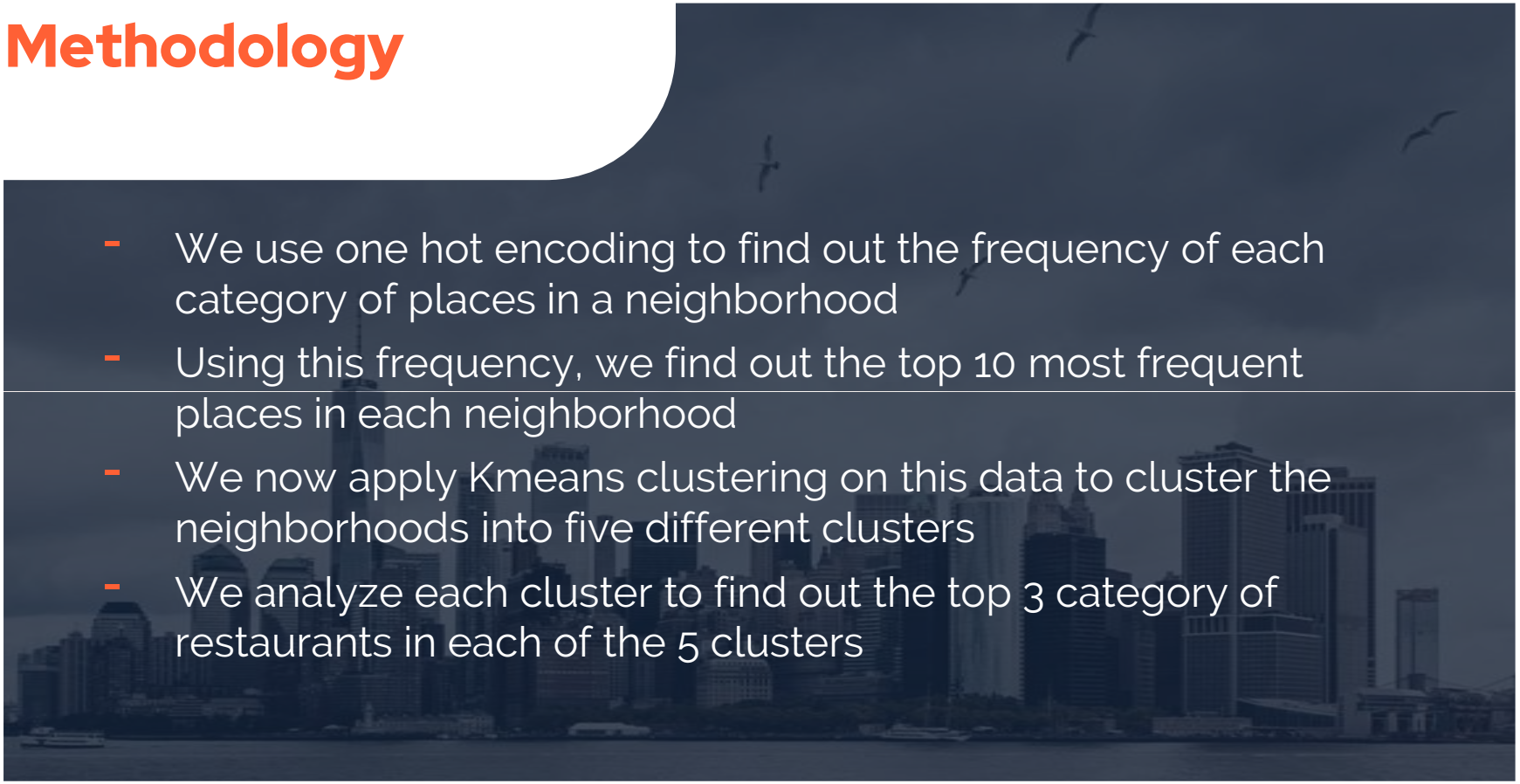
Methodology

- We first use web scraping methods to get a list of neighborhoods from the Wikipedia page https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Bangalore and store it into a pandas dataframe
- We then obtain the latitude and longitude of each of these neighborhoods and store it in the dataframe with the help of Geocoders API
- We plot these neighborhoods onto a map using the Folium library
- Using Foursquare API, we get the list of venues in each of the neighborhoods

Neighborhoods in Bangalore



Methodology

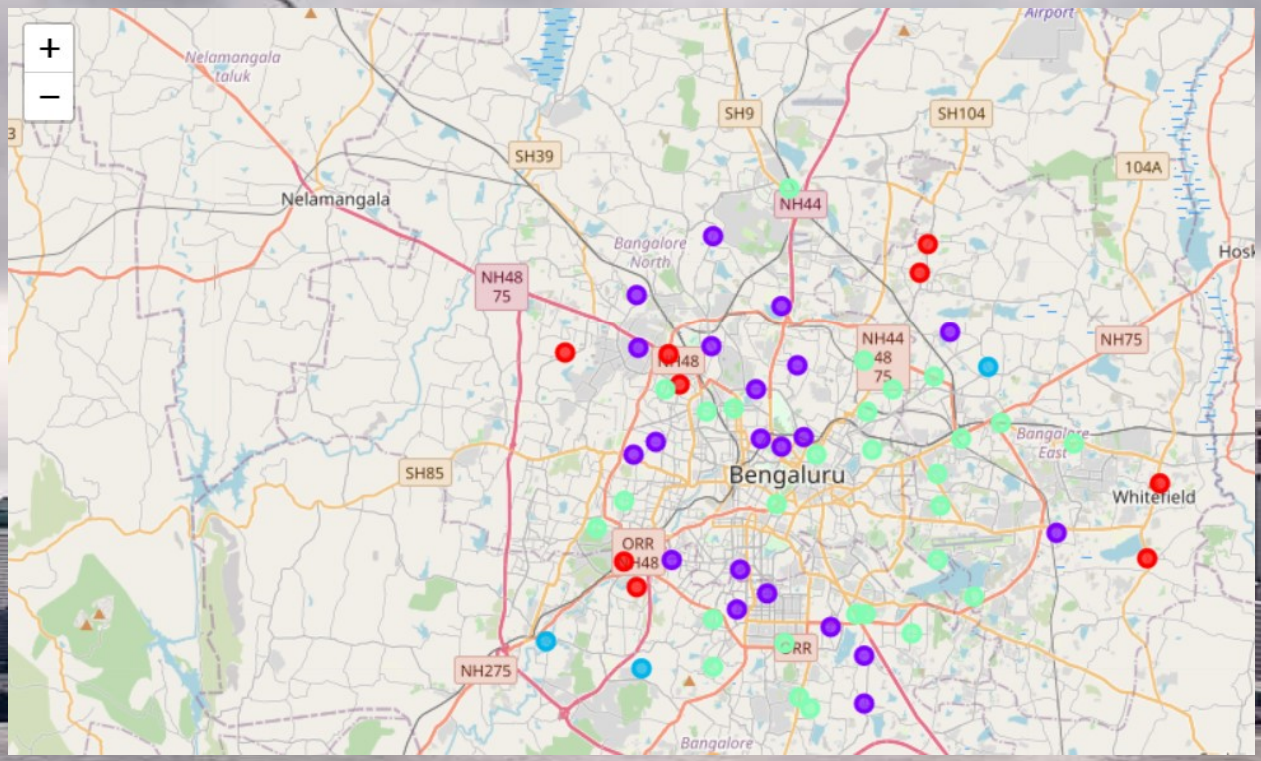


- We use one hot encoding to find out the frequency of each category of places in a neighborhood
- Using this frequency, we find out the top 10 most frequent places in each neighborhood
- We now apply Kmeans clustering on this data to cluster the neighborhoods into five different clusters
- We analyze each cluster to find out the top 3 category of restaurants in each of the 5 clusters

Results

By using Kmeans algorithm the neighborhoods in Bangalore were divided into 5 different clusters based on their choices of food joints.

Clustered Map



Cluster 1

Neighbourhoods

- Indiranagar
- Varthur
- Whitefield
- Yeshwanthpur
- Kothnur
- Mahalakshmi Layout
- Nayandahalli
- Rajarajeshwari Nagar
- Vijayanagar

Top 3 Places

- Pizza Place
- Indian Restaurant
- Fast Food Restaurant

Inference

- As we can see from the data the most preferred place for this cluster of neighbourhoods is an Pizza Place followed by Indian Restaurant and Fast Food Restaurant. Opening any of these type of food joints would be profitable in these neighborhoods

Cluster 2

Neighbourhoods

- Cantonment area
- Sadashivanagar
- Seshadripuram
- Vasanth Nagar
- Marathahalli
- Horamavu
- Hebbal
- Jalahalli
- Mathikere
- Peenya
- Basaveshwaranagar
- Kamakshipalya
- R. T. Nagar
- Vidyaranyapura
- Bommanahalli
- Bommasandra
- BTM Layout
- Electronic City
- Banashankari
- Basavanagudi
- Girinagar
- Jayanagar
- Begur

Top 3 Places

- Indian Restaurant
- Fast Food Restaurant
- Pizza Place

Inference

- As we can see from the data the most preferred place for this cluster of neighbourhoods is a Indian Restaurant followed by a Fast Food Restaurant and Pizza Place. Opening any of these type of food joints would be profitable in these neighbourhoods

Cluster 3

Neighbourhoods

- Ramamurthy Nagar
- Uttarahalli
- Gottigere
- Kengeri

Top 3 Places

- Indian Restaurant
- Andhra Restaurant
- Creeperie

Inference

- The 1st preferred place to eat in these neighbourhoods is same as cluster 1 ie Indian Restaurant but Andhra Restaurants and Creeperies are much more popular in these neighbourhoods. Opening or investing in such restaurants would seem profitable if one is looking to invest in these neighbourhoods.

Cluster 4

Neighbourhoods

- Domlur
- Jeevanbheemanagar
- Malleswaram
- Pete area
- Shivajinagar
- Ulsoor
- Bellandur
- CV Raman Nagar
- Hoodi
- Krishnarajapuram
- Mahadevapura
- Banaswadi
- HBR Layout
- Rajajinagar
- Kalyan Nagar
- Kammanahalli
- Lingarajapuram
- Yelahanka
- HSR Layout
- Koramangala
- Madiwala
- J. P. Nagar
- Kumaraswamy Layout
- Padmanabhanagar
- Arekere
- Hulimavu
- Nagarbhavi
- Nandini Layout

Top 3 Places

- Indian Restaurant
- Cafe
- Fast Food Restaurant

Inference

- The preference of people in these neighborhoods similar to the general trend in Bangalore. Indian Restaurants, Cafes and Fast Food Restaurants are very popular in these neighborhoods

Cluster 5

Neighbourhoods

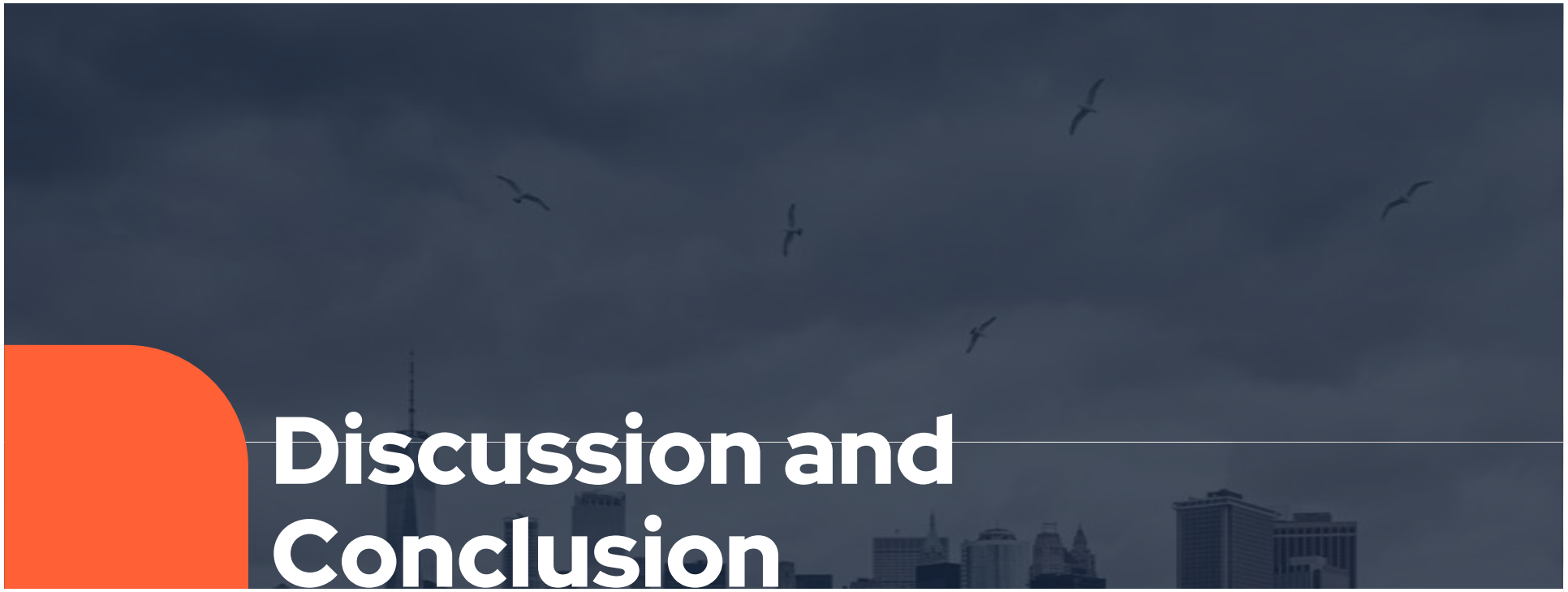
- Anjanapura

Top 3 Places

- North Indian Restaurant
- Snack Place
- Asian Restaurant

Inference

- There is only one neighborhood in this cluster as the preferences of this neighborhood differ much more from the general trend in Bangalore. North Indian Restaurant, Snack Place and Asian Restaurants are some of the popular restaurants in this Area.

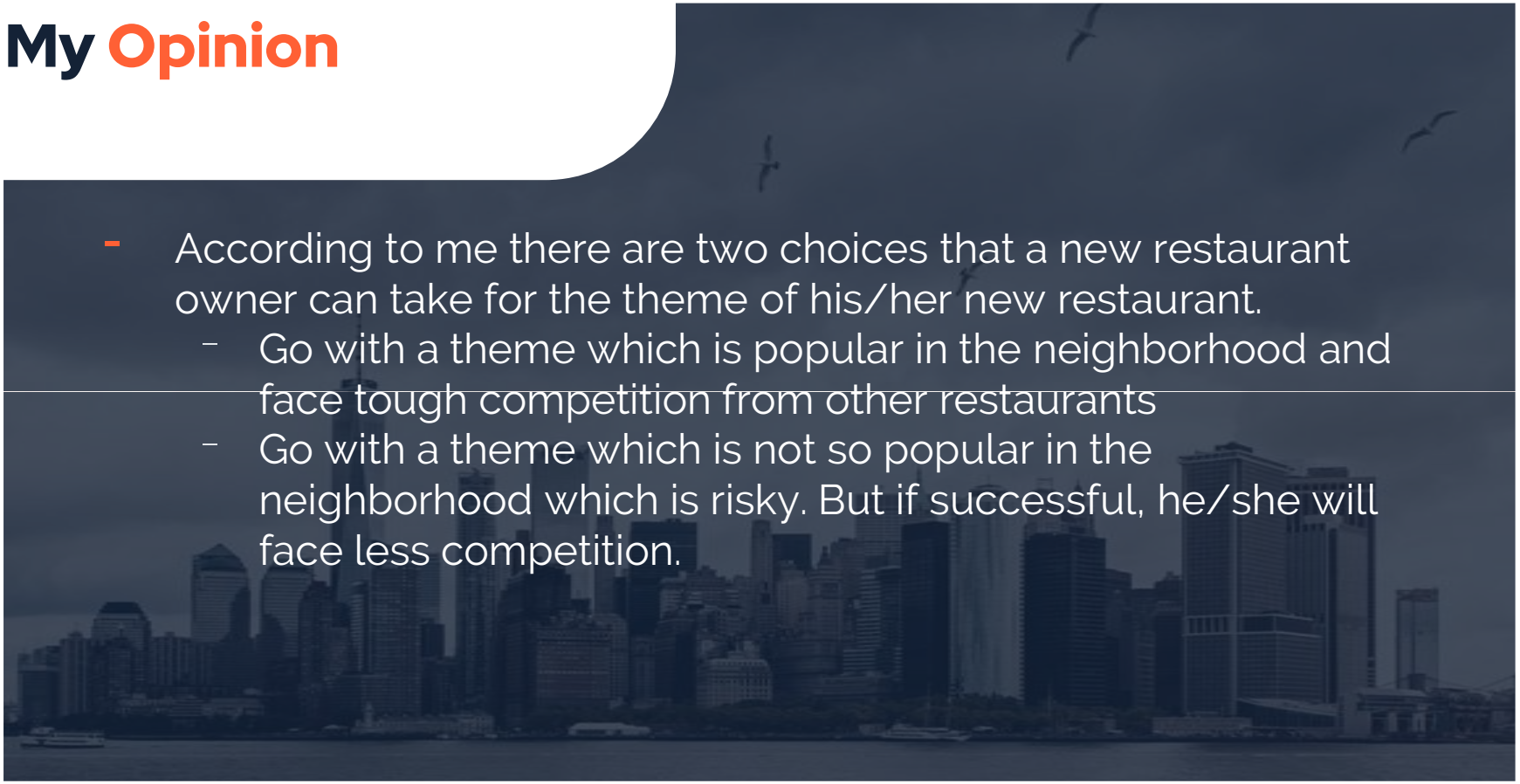


Discussion and Conclusion

Discussion

- Observing from the results and the map, most of the neighborhoods in Bangalore fall into cluster 2 and cluster 4. The general preference in the city for restaurants is Indian Restaurants. Starting a new Indian themed restaurant or investing in one will prove to be profitable in most of the neighborhoods and is the top choice according to our analysis. Cafes and Snack Places are also great choices for themes of a new restaurant in the city. However, as the frequency of these types of restaurants is also higher, one may face high competition in the business.

My Opinion



- According to me there are two choices that a new restaurant owner can take for the theme of his/her new restaurant.
  - Go with a theme which is popular in the neighborhood and face tough competition from other restaurants
  - Go with a theme which is not so popular in the neighborhood which is risky. But if successful, he/she will face less competition.

Conclusion

- In this project, we have gone through the process of identifying the business problem, specifying the data required, extracting and preparing the data, performing machine learning by clustering the data into 5 clusters based on their similarities, and lastly providing recommendations to the relevant stakeholders i.e. new restaurant owners and investors regarding the best theme for a new restaurant in each neighborhood in Bangalore.

To answer the business question that was raised in the introduction section, the answer proposed by this project is:

The most popular type of restaurant in Bangalore is Indian Restaurants. Opening a new Indian Restaurant or investing in one would prove beneficial

Thanks!

You can find this project at:

- https://github.com/sadhiman7/Coursera-Capstone