



Capstone Project

BATTLE OF NEIGHBORHOODS – OPENING A RESTAURANT IN MUMBAI

INTRODUCTION

- ▶ Mumbai is the financial capital of India, It consists of a large variety of venues under different categories.
- ▶ The objective of this project is to find a suitable neighbourhood to attract customers and where there is a scarcity of restaurants.

Target Audience

- ▶ One has recently moved to Mumbai to start a new venture.
- ▶ Ones who are in Mumbai and looking to expand in to restaurant business.

DATA SOURCE

- ▶ The data used in this project is from a csv file found online which contains the data related to all neighbourhoods in Mumbai.
- ▶ We will use Geolocator to map out coordinates of these neighborhoods and accordingly plot them on city map.
- ▶ To explore out venues in these neighbourhoods, Foursquare API is used to fetch venues within a certain radius in each neighbourhood.
- ▶ The API returns a JSON file which is converted into pandas dataframe to proceed with further analysis.

	Location	Pincode	State	District	Latitude	Longitude
0	A I staff colony	400029	Maharashtra	Mumbai	NaN	NaN
1	Aareymilk Colony	400065	Maharashtra	Mumbai	NaN	NaN
2	Agripada	400011	Maharashtra	Mumbai	18.9753	72.8249
3	Airport	400099	Maharashtra	Mumbai	19.0901	72.8637
4	Ambewadi	400004	Maharashtra	Mumbai	19.1868	72.8593
...
177	Worli	400018	Maharashtra	Mumbai	19.0117	72.8181
178	Worli Colony	400030	Maharashtra	Mumbai	18.9752	72.824
179	Worli Naka	400018	Maharashtra	Mumbai	18.987	72.8285
180	Worli Police camp	400030	Maharashtra	Mumbai	19.0098	72.8172

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Agripada	18.975302	72.824898	Celejor	18.975844	72.823679	Bakery
1	Agripada	18.975302	72.824898	cafe coffee day	18.976988	72.824051	Coffee Shop
2	Agripada	18.975302	72.824898	HDFC Bank	18.973795	72.822895	Bank
3	Agripada	18.975302	72.824898	YMCA	18.972187	72.823491	Athletics & Sports
4	Agripada	18.975302	72.824898	YMCA Ground	18.972006	72.824011	Soccer Field

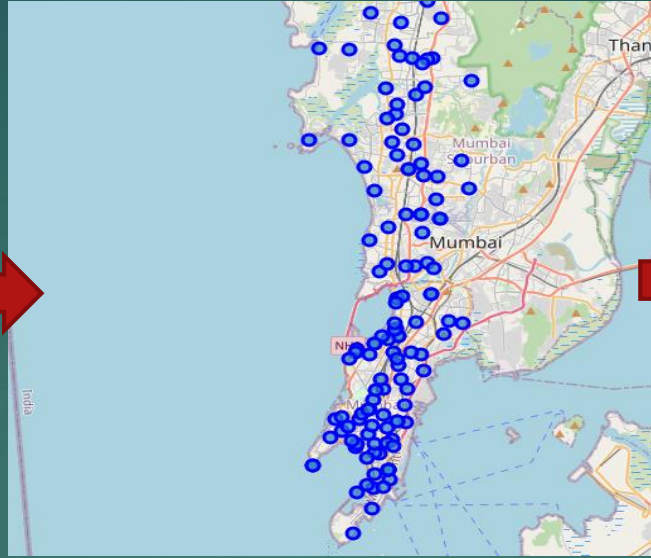
METHODOLOGY

- ▶ Information for venues in each neighbourhood is obtained via foursquare API.
 - ▶ Geolocator Nomanitim is used to find geospatial data for each address of neighbourhood which acts as input to Foursquare API.
 - ▶ The result is a JSON which is then converted in pandas dataframe.
 - ▶ Folium is used to plot the neighbourhoods on Map for holistic view of clusters.
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- ▶ To find clusters we will use Kmeans clustering algorithm to identify clusters types of each neighbourhood.
 - ▶ Based on the results we will finalise the cluster which will be suitable for a restaurant.

EXPLORATORY DATA ANALYSIS

Location	Pincode	State	District	Latitude	Longitude
Agripada	400011	Maharashtra	Mumbai	18.9753	72.8249
Airport	400099	Maharashtra	Mumbai	19.0901	72.8637
Ambewadi	400004	Maharashtra	Mumbai	19.1868	72.8593
Andheri	400053	Maharashtra	Mumbai	19.1197	72.8464
Andheri East	400069	Maharashtra	Mumbai	19.1159	72.8542
...
Worli	400018	Maharashtra	Mumbai	19.0117	72.8181
Worli Colony	400030	Maharashtra	Mumbai	18.9752	72.824
Worli Naka	400018	Maharashtra	Mumbai	18.987	72.8285
Worli Police camp	400030	Maharashtra	Mumbai	19.0098	72.8172
Worli Sea face	400030	Maharashtra	Mumbai	19.0055	72.8137

Latitudes and Longitudes mapped out via geolocator



Folium to plot these neighbourhoods

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Agripada	6	6	6	6	6	6
Airport	5	5	5	5	5	5
Ambewadi	4	4	4	4	4	4
Andheri	8	8	8	8	8	8
Andheri East	13	13	13	13	13	13
...
Worli	10	10	10	10	10	10
Worli Colony	7	7	7	7	7	7
Worli Naka	8	8	8	8	8	8
Worli Police camp	13	13	13	13	13	13
Worli Sea face	15	15	15	15	15	15

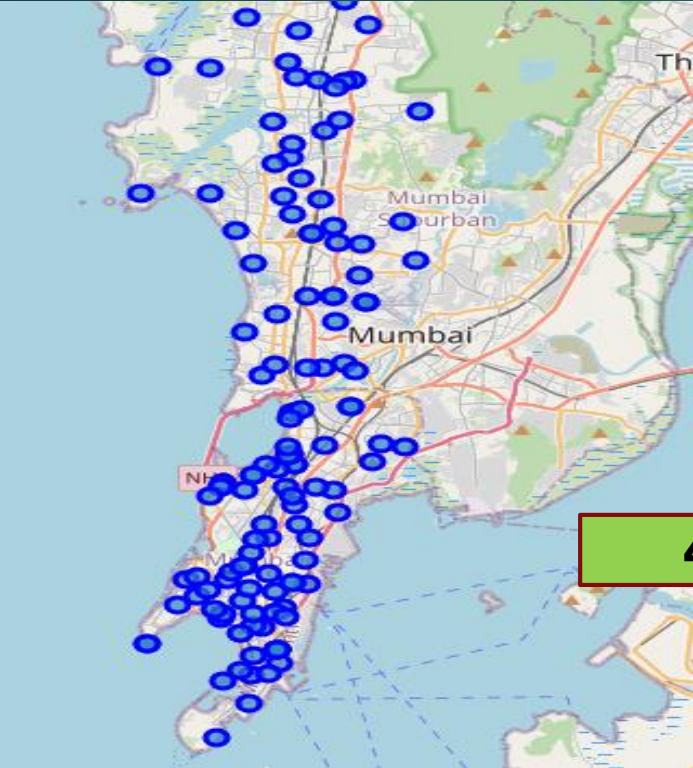
134 rows x 6 columns

Grouping to identify no. of venues in each neighbourhood.

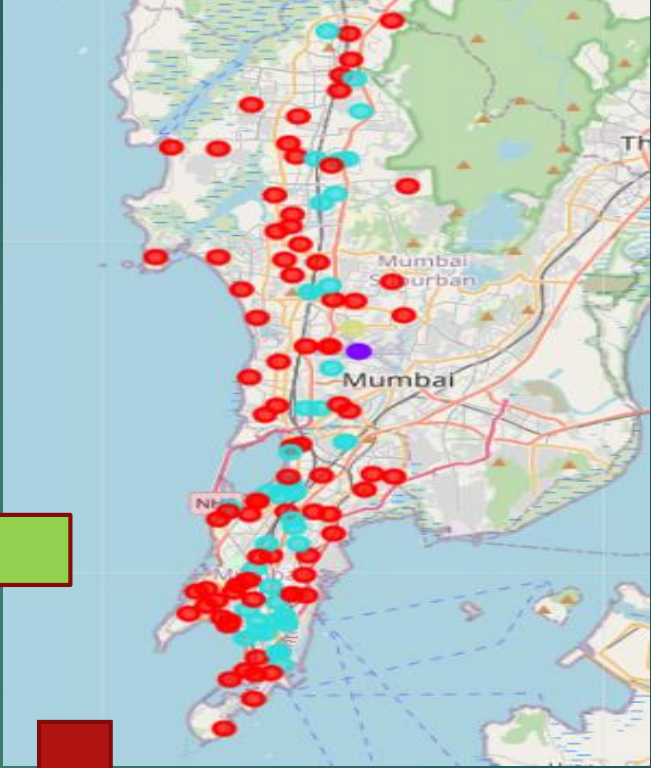
	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Agripada	Soccer Field	Platform	Coffee Shop	Bank	Athletics & Sports	Bakery	Event Space	Food & Drink Shop	Food	Flower Shop
1	Airport	Airport	Spa	Airport Service	Event Space	Food Court	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish & Chips Shop
2	Ambewadi	Women's Store	Indian Restaurant	Department Store	Mattress Store	Event Space	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish & Chips Shop
3	Andheri	Indian Restaurant	Fast Food Restaurant	Restaurant	Sandwich Place	Bakery	Food Court	English Restaurant	Food	Flower Shop	Flea Market
4	Andheri East	Indian Restaurant	BBQ Joint	Chinese Restaurant	Smoke Shop	Food Truck	Bar	Camera Store	Electronics Store	Shopping Mall	Hotel

Most Common venues identified in Each Neighbourhood

RESULTS



4 Clusters Identified



	1st Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Latitude	Longitude	Cluster Labels
0	Soccer Field	Athletics & Sports	Bakery	Event Space	Food & Drink Shop	Food	Flower Shop	18.975302	72.824898	0
4	Indian Restaurant	Food Truck	Bar	Camera Store	Electronics Store	Shopping Mall	Hotel	19.115883	72.854202	0
6	Bar	Women's Store	Falafel Restaurant	Food & Drink Shop	Food	Flower Shop	Flea Market	19.020761	72.865256	0
7	American Restaurant	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish & Chips Shop	Field	18.900689	72.816134	0
8	Bar	Sandwich Place	Athletics & Sports	Asian Restaurant	Falafel Restaurant	Snack Place	Indian Restaurant	19.128315	72.840038	0
...

For Each Cluster Common Venues Identified

DISCUSSION AND CONCLUSION

- ▶ According to results we observed majority of restaurants identified are Indian restaurants, thereby there is a huge scope in other Cuisines.
- ▶ Mumbai has a good night life having Bars and Clubs.
- ▶ Based on the above clusters, Cluster 2 & 3 seems to be a reasonable choice for a restaurant as there are less fast food restaurants in 3 that area and 2 is dominated by Indian Restaurants majorly.
- ▶ These results have limitations – Foursquare is not much popular in India, thereby we might have lost some data.

Thank You !