Comparison on lifestyle choices offered by the two biggest metro cities of India

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1. Introduction/Business Problem

Mumbai and Delhi are the two most important metro cities of India. There has been a war for supremacy in terms of quality of life, jobs, education, entertainment and recreation that these cities offer to its residents. In this project I attempt to analyze the neighbourhoods in each of these two cities and try to understand what is popular in them and what they have to offer to someone who is contemplating to make a choice on seeking a life in either of the metro cities. The deciding factor for most would be on how lively, supportive, vibrant and unique each of the cities can be when compared to each other. The business problem assumes there are people who would be interested in this study, which can reveal or create a projection of potential life and activities if the subject moves to live in one of these metro cities. The decision to choose one over the other would depend on popular venues in the neighborhoods in each of these metro cities

2. Data

2.1 Acquiring data

The dataset which we will use for our study is a csv downloaded from https://data.gov.in/catalog/all-india-pincode-directory. This dataset has pincodes for all the post offices in India.
We will specifically download the csv provided under https://data.gov.in/resources/all-india-pincode-directory-contact-details-along-latitude-and-longitude.

Table 1 Snapshot of the sample dataset from the csv

officename	pincode	officeType	Deliverystatus	divisionname	regionname	circlename	Taluk	Districtname	statename	Telephone	RelatedSubOffice	RelatedHeadOffice	longitude	latitude
Achalapur B.O	504273	B.O	Delivery	Adilabad	Hyderabad	Andhra Pradesh	Asifabad	Adilabad	TELANGANA	NA	Rechini S.O	Mancherial H.O	NA	NA

Ada B.O	504293	B.O	Delivery	Adilabad	Hyderabad	Andhra Pradesh	Asifabad	Adilabad	TELANGANA	NA	Asifabad S.O	Mancherial H.O	NA	NA
Adegaon B.O	504307	B.O	Delivery	Adilabad	Hyderabad	Andhra Pradesh	Boath	Adilabad	TELANGANA	NA	Echoda S.O	Adilabad H.O	NA	NA
Adilabad Collectorate S.O	504001	S.O	Non-Delivery	Adilabad	Hyderabad	Andhra Pradesh	Adilabad	Adilabad	TELANGANA	08732-226703	NA	Adilabad H.O	NA	NA

2.2 Cleaning data

In this study we will download the csv, read it into a pandas Dataframe and curate it to remove the data related to all other cities, towns and places which are not Mumbai or Delhi, since we are only interested in comparing these two biggest metro cities in India. We shall then clean up the unnecessary columns in the csv, which is not relevant or useful for our current study. Post office names (***officename***) will be used as the neighbourhood names in each of the regions such as Mumbai or Delhi.

Neighbourhood names with same ***pincode*** will be combined as a single row.

Foursquare API will be used to find the longitude and latitude of each of the neighbourhoods in both Mumbai and Delhi. This will form the dataset we will use for this study.

3. Plotting the neighbourhoods in the two metro cities

3.1 Building the required dataset

As described in the Cleaning data section, we will first focus of creating a dataset that only has information from the csv which is relevant to the two cities Mumbai and Delhi. We also see from the csv that there are a few columns which is of no value to our current study, so we will drop these columns from our dataset.
We will also rename officename column as neighbourhood, as the postal office names in the csv dataset indicate the neighbourhood names. We will remove S.O, H.O and B.O references from the officenames as we are only interested in neighbourhood names and do not want the information on the postal office references. First five rows of our curated data would be as shown.

neighbourhood	pincode	regionname	longitude	latitude
Antop Hill	400037	Mumbai	NaN	NaN
B P T Colony	400037	Mumbai	NaN	NaN
B.P.Lane	400003	Mumbai	NaN	NaN
BEST STaff Quarters	400012	Mumbai	NaN	NaN
C G S Colony	400037	Mumbai	NaN	NaN

Figure 1 Dataset after clean up and curation

We now see that there are same *pincode* values for different neighbourhoods. Next step is to combine the rows having the same pincode, we do this by changing the value of the neighbourhood by building a comma separated concatenation of neighbourhood values for rows with same pincode.
We also notice that the longitude and latitude values from the csv data are NaN, which means that we do not have relevant data, we can drop these columns from the dataset as well. We now have the neighbourhoods for both the metro cities.

	pincode	regionname	neighbourhood
0	110001	Delhi	Baroda House, Bengali Market, Bhagat Singh Mar...
1	110002	Delhi	A.G.C.R., Ajmeri Gate Extn., Darya Ganj, Gandh...
2	110003	Delhi	Delhi High Court Extension Counter, Delhi High...
3	110004	Delhi	Rashtrapati Bhawan
4	110005	Delhi	Anand Parbat Indl. Area, Anand Parbat, Bank St...

…

	pincode	regionname	neighbourhood
330	421506	Mumbai	Additional Ambernath
331	421601	Mumbai	Aghai, Alyani, Ambarje, Andad, Asangaon, Atgao...
332	421602	Mumbai	Kasara (Thane), Mokhawane, Shirol, Vashala, Vi...
333	421603	Mumbai	Bhatsanagar, Birwadi
334	421605	Mumbai	Khadavali, Manda, Phalegaon, Titwala

Figure 2 Dataset with top 5 and bottom 5 rows displayed

3.2 Getting the Long, Lat for the neighbourhoods

Next step is to enhance the dataset we have, with required information. We would need the longitude and latitude values for the neighbourhoods. We will use the Nominatim library from geocoders.geopy package to find the longitude and latitude for each of the neighbourhoods and would eventually create a dataset having all the necessary columns for our analysis.

pincode	regionname	neighbourhood	latitude	longitude
110001	Delhi	Baroda House, Bengali Market, Bhagat Singh Mar...	28.651718	77.221939
110002	Delhi	A.G.C.R., Ajmeri Gate Extn., Darya Ganj, Gandh...	28.651718	77.221939
110003	Delhi	Delhi High Court Extension Counter, Delhi High...	28.651718	77.221939
110004	Delhi	Rashtrapati Bhawan	28.614458	77.199594
110005	Delhi	Anand Parbat Indl. Area, Anand Parbat, Bank St...	28.651718	77.221939

Figure 3 Dataset with Lat, Long values

3.3 Visualize the neighbourhoods on a map

We now have the necessary information to visualize the neighbourhoods for both the cities on a folium map.

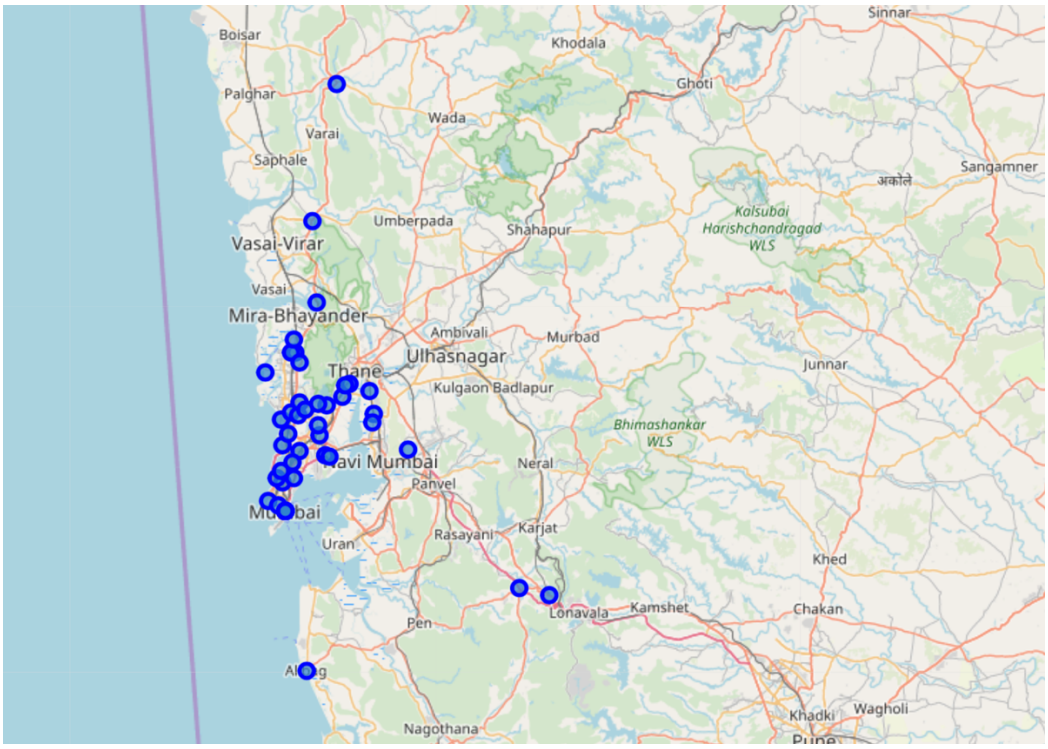

Figure 4 Neighbourhoods in Mumbai

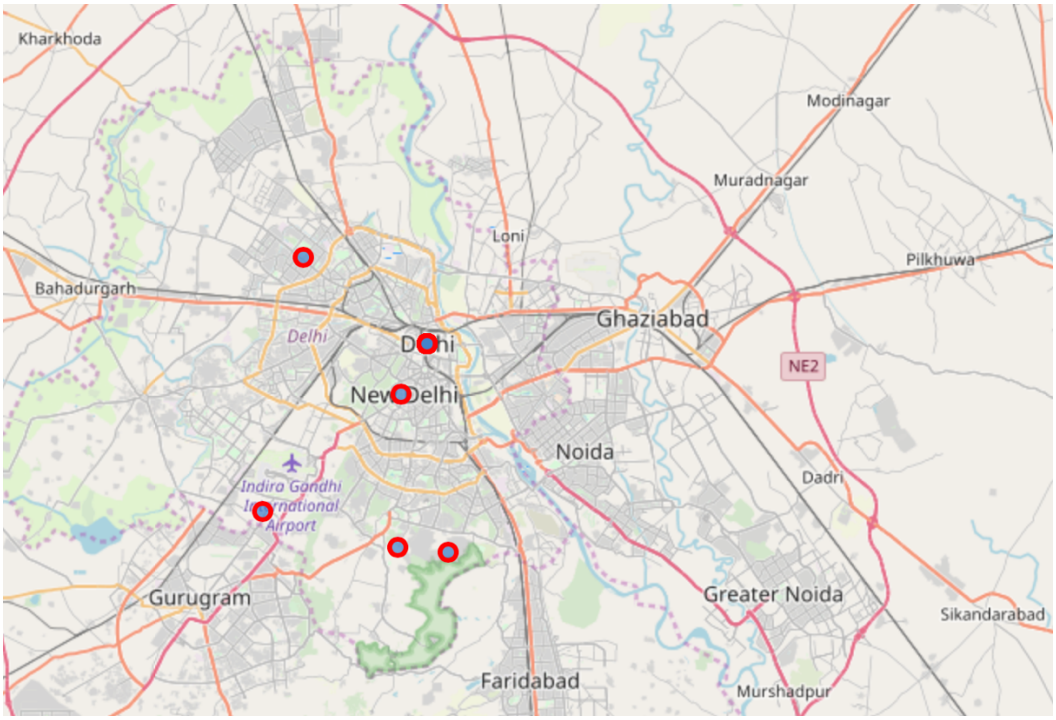

Figure 5 Neighbourhoods in Delhi

4. Analyse the neighbourhoods in the two metros

4.1 Analyse Mumbai neighbourhoods

4.1.1 Find top venues in Mumbai neighbourhoods

We will use the Foursquare API to find the top venues in the neighbourhoods of Mumbai. This will help us in understanding the nature of life Mumbai neighbourhoods has to offer. We will iteratively make Foursquare API call for each of the Mumbai neighbourhoods in our dataset. For illustration purpose, we will look at venues close to one of the neighbourhoods in Mumbai, which is Bazargate, Elephanta Caves Po, M.P.T., Stock Exchange, Tajmahal, Town Hall (Mumbai), Foursquare API returns the following response as the popular venues close to 500m radius of this neighbourhood.

	name	categories	lat	lng
0	Royal China	Chinese Restaurant	18.938715	72.832933
1	Town House Cafe	Bar	18.938550	72.833464
2	Cafe Excelsior	Café	18.937701	72.833566
3	Chhatrapati Shivaji Maharaj Terminus	Train Station	18.940297	72.835384
4	Sher-E-Punjab	Indian Restaurant	18.937944	72.837853

Figure 6 Top venues close to one of the Mumbai neighbourhoods

4.1.2 Find unique venues and calibrate neighbourhoods in Mumbai based on frequency of presence of the venues near them

Next we will employ statistically and analytical methods to find the unique venues/venue categories in the Mumbai neighbourhoods and we will build a Dataframe that calibrates each of the neighbourhoods with the frequency of occurrence for each of the venue category.

From our analysis we see that there are 116 unique venue categories in Mumbai neighbourhoods. Yoga studios, Indian, Chinese, Thai, American, Spanish, Mediterranean, Deli restuarants, Burger joints, Tea shops, Cafes, Concert halls, theatres, Boutiques, Bowling Alleys, Bars, Flea markets, Harbors, Gourmet shops, Nigh clubs, Pubs, Bagel shops, Pharmacies and Spas being some of them.
We then create a dataset that lists the top 5 common venues against each of the neighbourhoods in Mumbai. We get a representation such as below for all the neighbourhoods in Mumbai.

Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
A I Staff Colony, Santacruz P&t Colony	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
Aareymilk Colony, Nagari Niwara, S R P F Camp	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
Abitghar, Abje, Alonde, Baliwali, Dohe, Gargoa...	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant

Figure 7 Top 5 common venues around each of the Mumbai neighbourhoods

4.1.3 Cluster the neighbourhoods in Mumbai based on similarity of top common venues

Given that we now have the required information regarding the top venues against each of the neighbourhoods in Mumbai, let us now apply clustering algorithm to group the neighbourhoods based on the similarity in types of venues they have. By clustering we also provide information to users on common type of neighbourhoods in Mumbai. We will use the k-Means clustering approach to cluster the neighbourhoods. k will be selected as 5. This means that we will group the neighbourhoods into 5 clusters. Each of the neighbourhoods gets a Cluster Label assigned.

	pincode	regionname	Neighborhood	latitude	longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	400001	Mumbai	Bazargate, Elephanta Caves Po, M.P.T., Stock E...	18.938771	72.835335	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
1	400002	Mumbai	Kalbadevi, Ramwadi, S. C. Court, Thakurdwar	18.938771	72.835335	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
2	400003	Mumbai	B.P.Lane, Mandvi (Mumbai), Masjid, Null Bazar	18.938771	72.835335	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant

Figure 8 Neighbourhoods with Cluster Labels assigned

We will then use the dataset with cluster labels assigned to visualize the clusters in folium map.

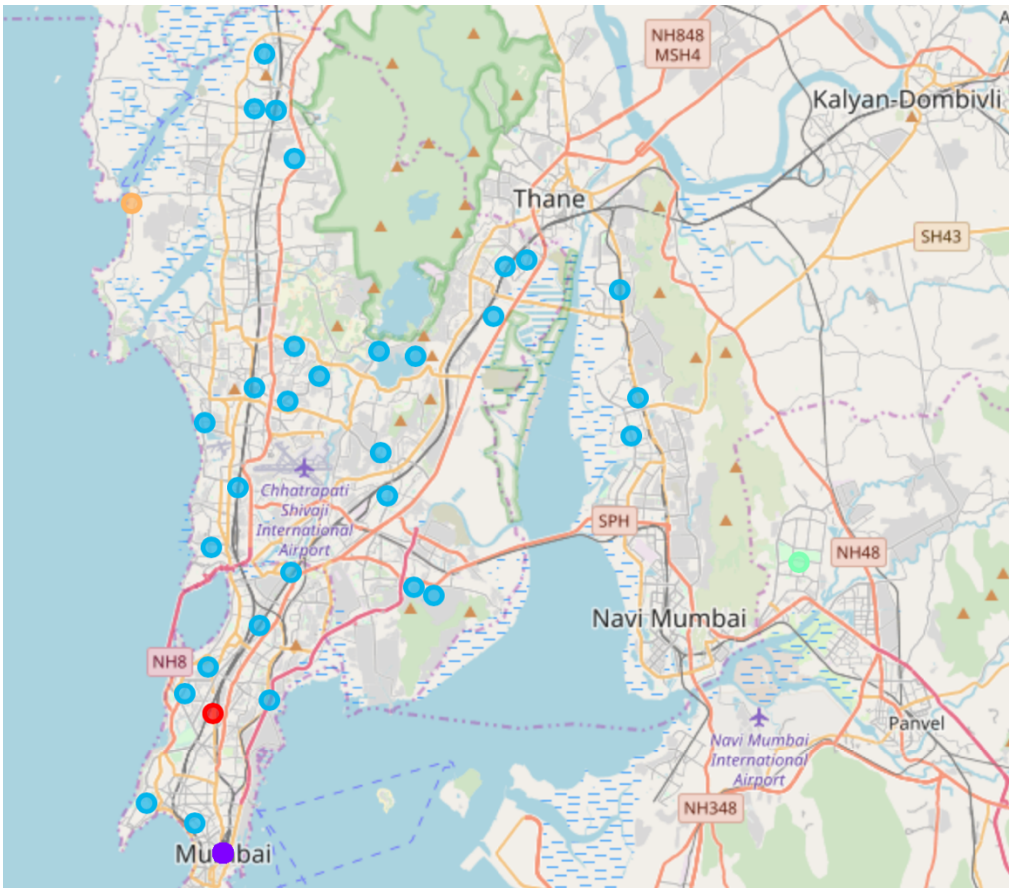

Figure 9 Clusters of neighbourhoods in Mumbai

An important information this map provides is that many neighbourhoods in Mumbai are of similar nature with respect to the venues they have around, indicated by the cluster marked in blue.

Let us now dig a little deeper into how the neighbourhoods are clustered and what is the characteristic of the cluster that is very common across most neighbourhoods in Mumbai.

Cluster Label 0

The neighbourhoods belonging to this cluster is popular for having Indian restaurants, Cafes, markets and vegetarian joints. We see that this neighbourhood would be something that a subsection of Indians would prefer if they want a scaled down lifestyle with close to home vegetarian food.

	regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
	Mumbai	0	Indian Restaurant	Coffee Shop	Music Venue	Vegetarian / Vegan Restaurant	Fish & Chips Shop
	Mumbai	0	Indian Restaurant	Bus Station	Fish & Chips Shop	Vegetarian / Vegan Restaurant	Flea Market
	Mumbai	0	Indian Restaurant	Café	Vegetarian / Vegan Restaurant	Flea Market	College Auditorium
	Mumbai	0	Indian Restaurant	Café	Bus Station	Breakfast Spot	Vegetarian / Vegan Restaurant

Cluster Label 1

The neighbourhoods belonging to this cluster is popular for having Indian restaurants, Irani Cafes, Cafes, Seafood and fast food joints. We see that this neighbourhood would be something that would be interesting to those who would like Seafood, fast food, probably these neighbourhoods are also of interest to those who come from Iran and would like to visit places serving their kind of food.

	regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
	Mumbai	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
	Mumbai	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
	Mumbai	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
	Mumbai	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant
	Mumbai	1	Indian Restaurant	Irani Cafe	Café	Seafood Restaurant	Fast Food Restaurant

Cluster Label 2

The neighbourhoods belonging to this cluster is popular for having a mix of Indian and Chinese restaurants, Train stations, Pubs, Bus stations, Bakeries etc. We see that this neighbourhood would be something that would be interesting to those who depend more on public commute, since these neighbourhoods are closer to train and bus stations. Also these neighbourhoods may interest people who have diverse food choices starting from Indian, Asian, Chinese, Afghan to having Snacks, Sandwich, Ice-cream shops. These neighbourhoods also provide for some recreational places such as Gyms, Parks, Bowling Alleys, Theatres and Harbours.

regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Mumbai	2	Park	Fast Food Restaurant	Gym	Restaurant	Bakery
Mumbai	2	Harbor / Marina	Bus Station	Flea Market	Train Station	Afghan Restaurant
Mumbai	2	Indian Restaurant	Seafood Restaurant	Vegetarian / Vegan Restaurant	Bookstore	Movie Theater
Mumbai	2	Indian Restaurant	Fast Food Restaurant	Vegetarian / Vegan Restaurant	Bar	Train Station
Mumbai	2	Ice Cream Shop	Indian Restaurant	Dessert Shop	Bakery	Seafood Restaurant
Mumbai	2	Theater	Bakery	Indian Restaurant	Chinese Restaurant	Sandwich Place
Mumbai	2	Asian Restaurant	Train Station	Ice Cream Shop	Bowling Alley	Snack Place
Mumbai	2	Café	Lounge	Chinese Restaurant	Bar	Hotel
Mumbai	2	Indian Restaurant	Café	Chinese Restaurant	Bakery	Pub

Cluster Label 3

Very few neighbourhoods belong to this cluster, making this unique. The main attraction in this neighbourhood seems to be its proximity to Theme Park, Pizza place and Cocktail bars.

regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Mumbai	3	Theme Park	Pizza Place	Vegetarian / Vegan Restaurant	Fast Food Restaurant	Cocktail Bar

Cluster Label 4

Again very few neighbourhoods belong to this cluster, making this unique. The main attraction in this neighbourhood seems to be its proximity to Ferry and College Auditorium.

regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Mumbai	4	Moving Target	Boat or Ferry	Vegetarian / Vegan Restaurant	Fish & Chips Shop	College Auditorium

Since, the objective of this study is to compare the neighbourhoods between the two metro cities of Mumbai and Delhi, and not really to compare neighbourhoods within Mumbai, we will put forth our conclusion from the study after doing a similar analysis on the neighbourhoods in Delhi.

4.2 Analyse Delhi neighbourhoods

4.2.1 Find top venues in Delhi neighbourhoods

We will use the Foursquare API to find the top venues in the neighbourhoods of Delhi. This will help us in understanding the nature of life Delhi neighbourhoods has to offer. We will iteratively make Foursquare API call for each of the Delhi neighbourhoods in our dataset. For illustration purpose, we will look at venues close to one of the neighbourhoods in Delhi, which is Sansad Marg, Sansadiya

Soudh, Secretariat North, Shastri Bhawan, Supreme Court, New Delhi G.P.O., Foursquare API returns the following response as the popular venues close to 500m radius of this neighbourhood.

	name	categories	lat	lng
0	bishan kite merchant	Arts & Crafts Store	28.652778	77.223145

Figure 10 Top venues closest to one of the neighbourhoods in Delhi

4.2.2 Find unique venues and calibrate neighbourhoods in Delhi based on frequency of presence of the venues near them

Next we will employ statistically and analytical methods to find the unique venues/ venue categories in the Delhi neighbourhoods and will build a Dataframe that calibrates each of the neighbourhoods against the frequency of occurrence of each of the type or category of the venue.

From our analysis we see that there are 14 unique venue categories in Delhi neighbourhoods. ATMs, Arts and Crafts stores, Burger Joints, Cafes, Gardens, Gyms, Multiplexes, Museums, Pizza places, Indian restaurant, Shopping malls, Water Parks, Gardens and Hotels being some of them.

We then create a dataset that lists the top 5 common venues against each of the neighbourhoods in Delhi. We get a representation such as below for all the neighbourhoods in Delhi.

Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
505 A B Workshop, A F Palam, Aps Colony, Bazar...	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
A F Rajokari, Rajokari	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
A.G.C.R., Ajmeri Gate Extn., Darya Ganj, Gandh...	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
A.K.Market, Multani Dhanda, Pahar Ganj, Swami ...	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum

Figure 11 Top 5 common venues in the neighbourhoods of Delhi

4.2.3 Cluster the neighbourhoods in Delhi based on similarity of top common venues

Given that we also have the required information regarding the top venues against each of the neighbourhoods in Delhi, let us now apply clustering algorithm to group the neighbourhoods based on the similarity in types of venues they have. By clustering we also provide information to users on common type of neighbourhoods in Delhi. We will use the k-Means clustering approach to cluster the neighbourhoods. k will be selected as 5. This means that we will group the neighbourhoods into 5 clusters. Each of the neighbourhoods gets a Cluster Label assigned.

	pincode	regionname	Neighborhood	latitude	longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	110001	Delhi	Baroda House, Bengali Market, Bhagat Singh Mar...	28.651718	77.221939	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
1	110002	Delhi	A.G.C.R., Ajmeri Gate Extn., Darya Ganj, Gandh...	28.651718	77.221939	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
2	110003	Delhi	Delhi High Court Extension Counter, Delhi High...	28.651718	77.221939	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
3	110004	Delhi	Rashtrapati Bhawan	28.614458	77.199594	4	Museum	Garden	Water Park	Shopping Mall	Pizza Place
4	110005	Delhi	Anand Parbat Indl. Area, Anand Parbat, Bank St...	28.651718	77.221939	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum

Figure 12 Delhi neighbourhoods and venues with Cluster Label assigned

We will then use the dataset with cluster labels assigned to visualize the clusters in folium map.

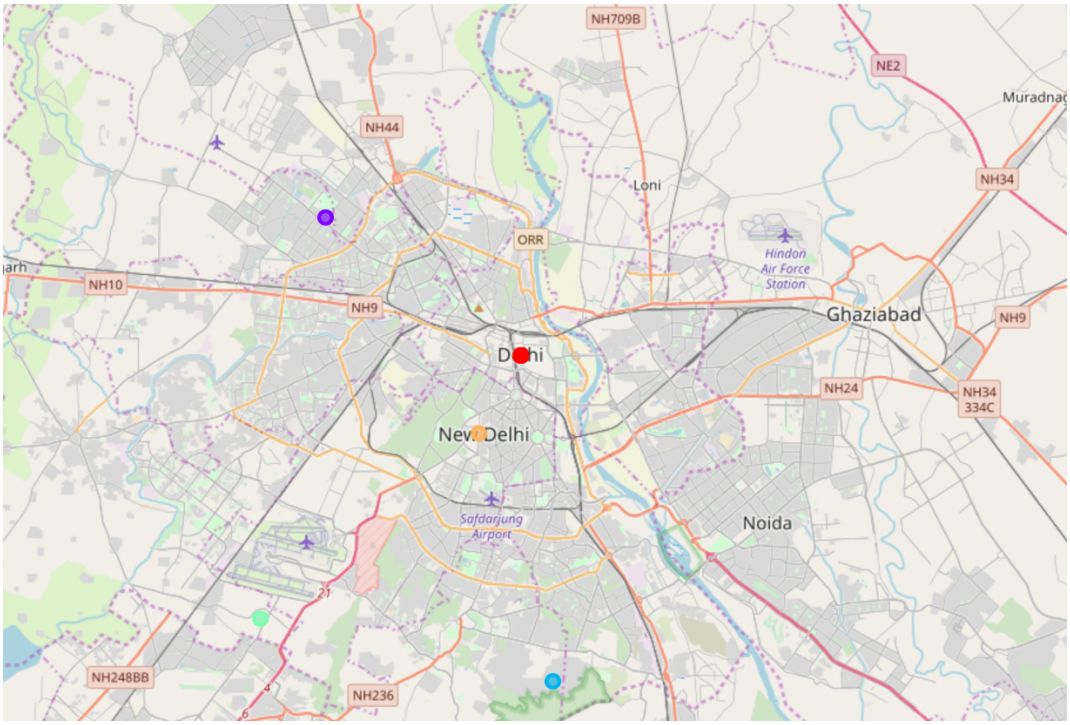

Figure 13 Delhi neighbourhoods clustered

An important information this map provides is that the neighbourhoods in Delhi are of diverse nature with respect to the venues they have around, indicated by the clusters marked in different colours. Also, we did see earlier that we did not have too many venue categories for the neighbourhoods that were returned for the neighbourhoods in Delhi.

Let us now dig a little deeper into how the neighbourhoods are clustered and what is their characteristic.

Cluster Label 0

There are close to 93 neighbourhoods belonging to this cluster type. This cluster is popular for having Arts and Crafts stores, Water Parks, Shopping malls and Museums. These neighbourhoods are not good for foodies. However, this should be good for those who have children, since the venues close to these neighbourhoods are great to keep the children engaged.

	regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Delhi	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
1	Delhi	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
2	Delhi	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
4	Delhi	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
5	Delhi	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum
6	Delhi	0	Arts & Crafts Store	Water Park	Shopping Mall	Pizza Place	Museum

Cluster Label 1

Not many neighbourhoods belong to this cluster, Multiplexes, department stores and Gyms seem to be popular venues close to neighbourhood in this cluster.

regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Delhi	1.0	Shopping Mall	Department Store	Multiplex	Indian Restaurant	Gym

Cluster Label 2

Not many neighbourhoods belong to this cluster, ATMs, Water Parks and Museums seem to be popular venues close to neighbourhood in this cluster.

regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Delhi	2.0	ATM	Water Park	Shopping Mall	Pizza Place	Museum

Cluster Label 3

Not many neighbourhoods belong to this cluster, Pizza places, Water Parks and Museums seem to be popular venues close to neighbourhood in this cluster.

regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Delhi	3.0	Hotel	Water Park	Pizza Place	Shopping Mall	Museum

Cluster Label 4

Not many neighbourhoods belong to this cluster, Museums, Shopping malls and Gardens seem to be popular venues close to neighbourhood in this cluster.

regionname	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
Delhi	4.0	Museum	Garden	Water Park	Shopping Mall	Pizza Place

5. Study findings & conclusion

In this project we have attempted to load the dataset for two of India's prime metro cities and have tried to analyse the neighbourhood regions in these metro cities based on the type of popular and top venues they have. We have clustered the neighbourhoods based on the most common top venues in each of the neighbourhood. Our intention with this project was to analyse and understand the difference in the ype of life in these metros, which can offer decision points for anybody who is considering to settle in either of the metro cities and can get a peek into what type of experience and facilities he will be provided with.

Given our cluster information for both Mumbai and Delhi, we see that Mumbai and its neighbourhoods are a great place for a foodie. There are a lot of restaurants, cafes, bars etc in Mumbai neighbourhoods. Also due to the proximity of Mumbai to seashore, Mumbai neighbourhoods also offer for harbours, seafoods, boat and ferry rides. On the other hand we see how dissimilar life in Delhi neighbourhoods would be compared to Mumbai neighbourhoods. Delhi neighbourhoods and good for those who like Arts and Crafts, Museums, Water Parks and Pizza places. There is very less in terms of foreign cuisine restaurants in Delhi. Mumbai on the other had is great for international visitors, expats etc, because of the variety and types of food outlets it has. Delhi is inland and its neighbourhoods has proximity to Water Parks, Museums and Arts and Crafts stores.

Thus with this project we have analysed the kind of life each of these big metro cities have to offer based on the popular venues in their neighbourhood. Mumbai would be the choice if you are a foodie! Another important aspect the study reveals is that the categories of venues Mumbai offers is far too many compared to Delhi. This means that Delhi becomes restrictive in terms of variety and convenience. With the data we have studied Mumbai wins this battle of metros!