

# Mumbai vs. Bangalore, Where to travel? Let the Data Decide!

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## 1. Introduction

### 1.1 Background

India is a great country with a haven of tourism delights like wealth of sights, cultural exuberance, and diversity of terrain. It is no doubt a place of wonder, with creative burst of cultures, races, and religions, over a billion people, 15 official languages, and gifted nature's beauty. Its diversity is out of all bounds. Indians live with variety and thrive on diversity. From mud hut to mansion, there is variety. Known for its spectacular, India has become a favoured place of visit for travellers from all over the world. Each state of this wonderful country is unique when it comes to the scenic beauty, nature of the people living in the country and the hospitality of Indians. While many may have the reasons for travelling, some look at the bustling cities which are to be explored and have an unforgettable experience, but where would city would they want to go to, for starting such a journey?

### 1.2 Problem Statement

There are various cities to explore, but for one, we may look at Mumbai and Bangalore. These are the two most important metro cities in India, while also having a war for supremacy in terms of quality of life, jobs, education, entertainment and recreational facilities that these cities have to offer to its residents. For an avid traveller, things may be different, as some may prefer the blustering City of Dreams, while there could be those who would prefer the Silicon Valley of India.

To understand this, an analysis is done to look at various places in each of these two cities and tries 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.

1. The deciding factors for most would be on how lively, supportive, vibrant and unique each of the cities can be when compared to each other.
2. The business problem in this study assumes that people who would be interested in this study are those who would like to create a projection of potential life and activities in these places if the subject wants to explore one of them.
3. The decision to choose one over the other would depend on popular venues in the area in each of these metro cities.

### 1.3 Interest

Well, this could be helpful to those who are unsure as to where to travel between the two cities, by looking at the various venues and also to understand what venues are rather popular and why are they so with the help of the data.

## 2. Data

### 2.1 Data Acquisition

For any “data science project” data is of paramount importance. For this study, we needed data about places in each of these metro cities. The data published by the government on postal codes for all India would serve us well for this study. We will specifically download the CSV provided under <https://data.gov.in/resources/all-india-pincode-directory-contact-details-along-latitude-and-longitude>.

### 2.2 Data Cleaning

After getting the csv file, we 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 Bangalore, 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 (*office name*) will be used as the place names in each of the regions such as Mumbai or Bangalore. We shall save both the data separately in two different csv files for a faster analysis of the same.

Place names with the same *Pincode* will be combined as a single row. Foursquare API will be used to find the longitude and latitude of each of the places in both Mumbai and Bangalore. This will form the dataset we will use for this study. The next step is to combine the rows having the same Pincode, we do this by changing the value of the places by building a comma-separated concatenation of places values for rows with the same Pincode.

We also notice that the longitude and latitude values from the CSV data are not available, which means that we do not have relevant data, we can drop these columns from the dataset as well. We now have the places for both the metro cities.

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

#### *Final Mumbai Data*

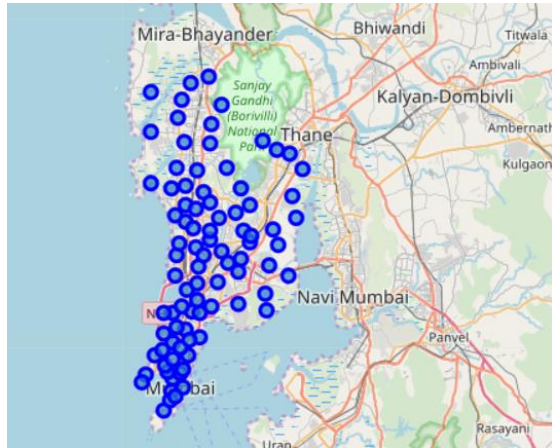
	Pincode	Location	Place	Latitude	Longitude
0	400001	Mumbai	Bazargate , Elephanta Caves, M.P.T. , Stock Ex...	18.939031	72.837345
1	400002	Mumbai	Kalbadevi , Ramwadi , S. C. Court , Thakurdwar	18.947905	72.826741
2	400003	Mumbai	B.P.Lane , Mandvi , Masjid , Null Bazar	18.952760	72.834560
3	400004	Mumbai	Ambewadi , Charni Road , Chaupati , Girgaon , ...	18.954380	72.821556
4	400005	Mumbai	Asvini , Colaba Bazar , Colaba , Holiday Camp ...	18.915923	72.817565

#### *Final Bangalore data*

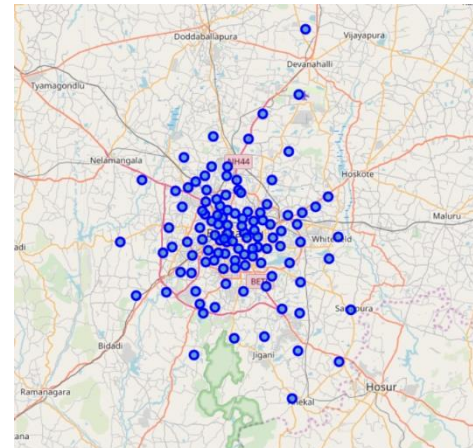
	Pincode	Location	Place	Latitude	Longitude
0	560001	Bangalore	Bangalore Bazaar , CMM Court Complex , Dr. Amb...	12.979185	77.606623
1	560002	Bangalore	Bangalore Corporation Building , Bangalore City	12.964070	77.577647
2	560003	Bangalore	Malleswaram , Palace Guttahalli , Swimming Poo...	13.003656	77.569745
3	560004	Bangalore	Basavanagudi , Mavalli , Pampamahakavi Road , ...	12.945664	77.575075
4	560005	Bangalore	Fraser Town	12.998115	77.620842

### 3. Methodology

First off, from the above data, we can visualise the places that both the cities have, with the help of folium.



*Mumbai*



*Bangalore*

#### *Finding top venues near places in Mumbai*

##### *a. Simple Analysis*

We will use the Foursquare API to find the top venues in the various places of Mumbai. This will help us understand the nature of life it has to offer. We will iteratively make Foursquare API calls for each of the places in our dataset. Foursquare API returns the popular venues within 500m radius of these places in Mumbai. Next, we will employ statistically and analytical methods to find the unique venues/venue categories for these places and we will build a dataframe that calibrates each of the place with the frequency of occurrence for each of the venue category.

From our analysis, we see that there are **183** unique venue categories of places in Mumbai. Yoga studios, Indian, Chinese, Thai, American, Spanish, Mediterranean, Deli restaurants, Burger joints, Tea shops, Cafes, Concert halls, theatres, Boutiques, Bowling Alleys, Bars, Flea markets, Gourmet shops, Night 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 places in Mumbai. We get a representation such as below for all the places in Mumbai.

	Place	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	A I Staff Colony , Santacruz P&t Colony	Airport	Airport Service	Coffee Shop	Zoo	Fast Food Restaurant
1	Aareymilk Colony , Nagari Niwara , S R P F Camp	Event Space	Zoo	Fast Food Restaurant	French Restaurant	Food Truck
2	Agripada , BPC Jacob Circle , Chinchpokli , H...	Indian Restaurant	Bakery	Furniture / Home Store	Spa	Coffee Shop
3	Airport , International Airport , Sahar P & T...	Airport	Airport Lounge	Business Service	Zoo	Fast Food Restaurant
4	Ambewadi , Charni Road , Chaupati , Girgaon ,...	Ice Cream Shop	Fast Food Restaurant	Juice Bar	Train Station	Indian Restaurant
5	Andheri , Azad Nagar	Indian Restaurant	Café	Bakery	Food Truck	Vegetarian / Vegan Restaurant

From the above data, we first look at what is actually the highest 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> most common venues present in Mumbai and analyse that,

Highest 1<sup>st</sup> Most Common Venue: Indian Restaurant

Highest 2<sup>nd</sup> Most Common Venue: Cafe

Highest 3<sup>rd</sup> Most Common Venue: Bakery

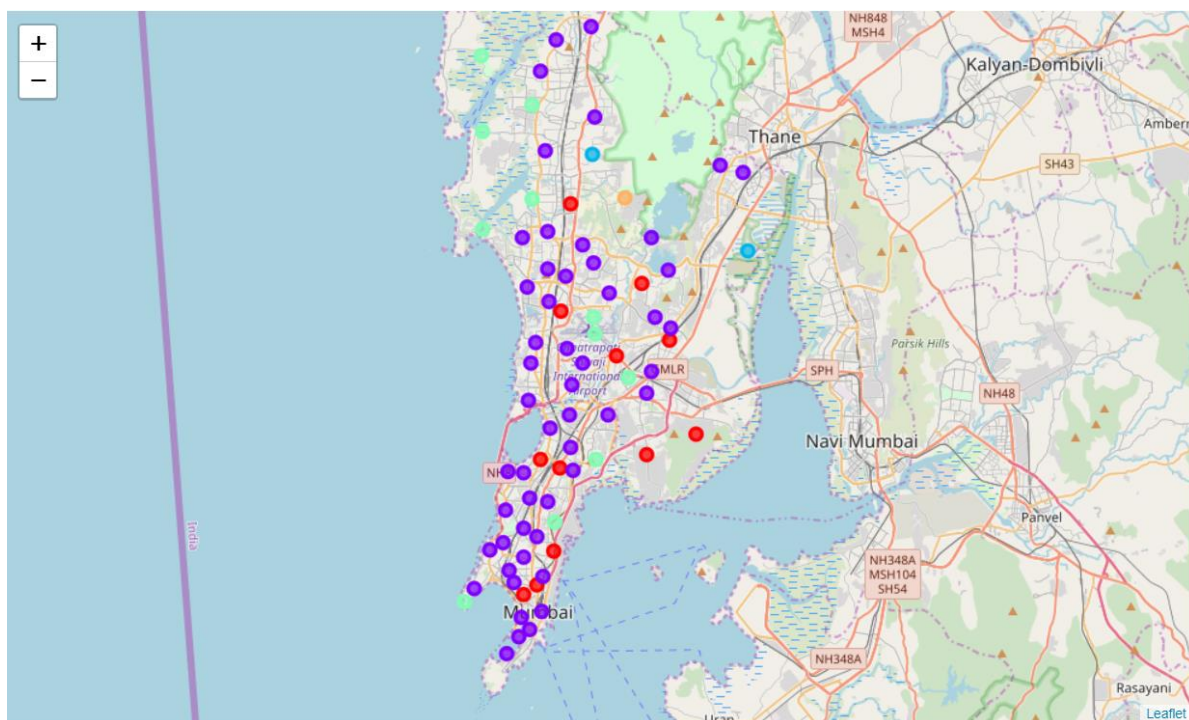
Highest 4<sup>th</sup> Most Common Venue: Zoo

Highest 5<sup>th</sup> Most Common Venue: Food truck

### ***b. Cluster Analysis***

We also do another analysis where we apply a clustering algorithm to group the places based on the similarity in types of venues they have. By clustering, we also provide information to users on a common type of place in Mumbai. We will use the k-Means clustering approach to cluster the places. k will be selected as 5. This means that we will group the places into 5 clusters. Each of the places gets a Cluster Label assigned.

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



*Mumbai Cluster Map*

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

## FIRST CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
1	Kalbadevi , Ramwadi , S. C. Court , Thakurdwar	0.0	Indian Restaurant	Café	Movie Theater	Train Station	Market
2	B.P.Lane , Mandvi , Masjid , Null Bazar	0.0	Indian Restaurant	Chinese Restaurant	Dessert Shop	Café	Arcade
9	Dockyard Road , Mazgaon Dock , Mazgaon Road , ...	0.0	Ice Cream Shop	Indian Restaurant	Dessert Shop	Café	Field
13	Dadar Colony , Dadar , Nalgaon	0.0	Indian Restaurant	Coffee Shop	Café	Farmers Market	Hotel
26	Bhawani Shankar Rd , Bhawani Shankar , Gokhale...	0.0	Indian Restaurant	Ice Cream Shop	Bakery	Diner	Dessert Shop
45	Hanuman Road , Vileparle (East) , Vileparle R...	0.0	Indian Restaurant	Sandwich Place	Café	Tea Room	Bakery
50	Goregaon East , Sharma Estate	0.0	Indian Restaurant	Café	Chinese Restaurant	Sandwich Place	Coffee Shop
57	Kurla North , Kurla , Netajinagar	0.0	Indian Restaurant	Pizza Place	Mughlai Restaurant	Dessert Shop	Diner
59	Sakinaka , Vihar Road	0.0	Indian Restaurant	Department Store	Health & Beauty Service	Café	Zoo
60	Chembur Extension , FCI , Mahul Road	0.0	Indian Restaurant	Zoo	Farmers Market	French Restaurant	Food Truck
63	Rajawadi	0.0	Indian Restaurant	Coffee Shop	Pizza Place	Grocery Store	Café
79	Anushakti Nagar	0.0	Indian Restaurant	Playground	Zoo	Farmers Market	Food Truck

The places belonging to this cluster is popular for having various restaurants which are majorly Indian, along with cafes and market areas. We see that these place would be something that a traveller would prefer if they are a foodie or are more into knowing about food-related areas.

## SECOND CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Bazargate , Elephanta Caves, M.P.T. , Stock Ex...	1.0	Irani Cafe	Café	Indian Restaurant	Hotel	Sandwich Place
3	Ambewadi , Chami Road , Chaupati , Girgaon ,...	1.0	Ice Cream Shop	Fast Food Restaurant	Juice Bar	Train Station	Indian Restaurant
4	Asvini , Colaba Bazar , Colaba , Holiday Camp ...	1.0	Indian Restaurant	Italian Restaurant	Ice Cream Shop	Bar	Gym
5	Malabar Hill	1.0	Indian Restaurant	Ice Cream Shop	Coffee Shop	Gym	Lighthouse
6	Bharat Nagar , Grant Road , N.S.Patkar Marg ,...	1.0	Electronics Store	Sandwich Place	Hotel	Fast Food Restaurant	Indian Restaurant
7	Falkland Road , J.J.Hospital , Kamathipura , M...	1.0	Department Store	Fast Food Restaurant	Pizza Place	Smoke Shop	Dessert Shop
8	Chinchbunder , Noor Baug , Princess Dock	1.0	Hotel	Harbor / Marina	Furniture / Home Store	Sandwich Place	Flea Market
10	Agripada , BPC Jacob Circle , Chinchpokli , H...	1.0	Indian Restaurant	Bakery	Furniture / Home Store	Spa	Coffee Shop
11	BEST Staff Quarters , Chamarbaug , Haffkin Ins...	1.0	Indian Restaurant	Lounge	Ice Cream Shop	Bank	Park
12	Delisle Road	1.0	Café	Indian Restaurant	Dessert Shop	Pub	Lounge
15	Kapad Bazar , Mahim Bazar , Mahim East , Mahim...	1.0	Bakery	Indian Restaurant	Chinese Restaurant	Café	Breakfast Spot
16	Dharavi Road , Dharavi	1.0	Fast Food Restaurant	Hotel	Dance Studio	Shoe Store	Zoo
17	Worli Naka , Worli	1.0	Chinese Restaurant	Coffee Shop	Asian Restaurant	Pub	Shopping Mall

The places belonging to this cluster is popular for having many shops, along with shopping malls, with some stores, hotels and pubs. We see that these place would be something that a traveller would prefer if they need to do some shopping along with where they would normally stay.

### THIRD CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
35	Bhandup East	2.0	ATM	Fruit & Vegetable Store	French Restaurant	Food Truck	Food Court
81	Malad East , Rani Sati Marg	2.0	ATM	Mattress Store	Fast Food Restaurant	French Restaurant	Food Truck

Not many places belong to this cluster, ATM's, Food trucks and some stores are popular values close to these places.

### FOURTH CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
22	Nehru Nagar	3.0	Train Station	Convenience Store	Arts & Crafts Store	Zoo	Fast Food Restaurant
27	A I Staff Colony , Santacruz P&T Colony	3.0	Airport	Airport Service	Coffee Shop	Zoo	Fast Food Restaurant
31	Cotton Exchange , Kalachowki , L B S N E colla...	3.0	Department Store	Train Station	Bakery	Zoo	Fast Food Restaurant
33	Rajbhavan	3.0	IT Services	Farmers Market	French Restaurant	Food Truck	Food Court
34	Antop Hill , B P T Colony , C G S Colony , Wad...	3.0	Trail	Gym / Fitness Center	Smoke Shop	Zoo	Farmers Market
49	Madh , Vesava	3.0	Boat or Ferry	Bakery	Zoo	Furniture / Home Store	Fried Chicken Joint
54	Charkop , Kandivali RS , Kandivali West	3.0	Gym / Fitness Center	Pizza Place	Pool	Falafel Restaurant	Food Court
76	Borivali	3.0	Theme Park Ride / Attraction	Skating Rink	Zoo	Farmers Market	Food Truck
80	Ins Hamla , Kharodi	3.0	Boat or Ferry	Dessert Shop	Moving Target	Zoo	Field
83	Airport , International Airport , Sahar P & T...	3.0	Airport	Airport Lounge	Business Service	Zoo	Fast Food Restaurant
87	Bangur Nagar , Goregaon RS , Goregaon , Motil...	3.0	Smoke Shop	Seafood Restaurant	Speakeasy	Pool	Zoo

The places belonging to this cluster is popular for travelling towards places, like the train station, airports, boats or ferry and also other entertainment areas. We see that these place would be something that a traveller would prefer if they have to move from on place to another and for various attractions.

### FIFTH CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
52	Aareymilk Colony , Nagari Niwara , S R P F Camp	4.0	Event Space	Zoo	Fast Food Restaurant	French Restaurant	Food Truck

Not many places belong to this cluster, Event Space, Zoos and restaurants stores are popular values close to these places.

## ***Finding top venues near places in Bangalore***

### ***a. Simple Analysis***

Similarly as above, we shall be using Foursquare API to find the top venues in the various places of Bangalore and employ statistically and analytical methods to find the unique venues/venue categories for these places and we will build a dataframe that calibrates each of the place with the frequency of occurrence for each of the venue category.

From our analysis, we see that there are **175** unique venue categories of places in Bangalore. Design studios, Event Spaces, Hot Springs, Lakes, Burger joints, Tea shops, theatres, Boutiques, Breweries, Bars, Flea markets, Fish Markets, Night Clubs, Parks, Shopping Malls and Departmental Stores being some of them. We then create a dataset that lists the top 5 common venues against each of the places in Bangalore. We get a representation such as below for all the places in Bangalore.

	Place	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	A F Station Yelahanka , BSF Campus Yelahanka	Hot Spring	Lake	Bar	Women's Store	Event Space
1	Adugodl	Indian Restaurant	Design Studio	Fast Food Restaurant	Restaurant	Furniture / Home Store
2	Agara , Koramangala I Block , Koramangala , St..	Indian Restaurant	Café	Department Store	Bar	Hyderabadi Restaurant
3	Agram , Air Force Hospital	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
4	Amruthahalli , Byatarayanapura , Kodigehalli ,...	Indian Restaurant	Pizza Place	Cosmetics Shop	Ice Cream Shop	Brewery
5	Anandnagar , H.A. Farm , Hebbal Kempapura	Pizza Place	Bakery	Café	Indian Restaurant	Food Court

From the above data, we first look at what is actually the highest 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> most common venues present in Bangalore and analyse that,

Highest 1<sup>st</sup> Most Common Venue: Indian Restaurant

Highest 2<sup>nd</sup> Most Common Venue: Pizza Place

Highest 3<sup>rd</sup> Most Common Venue: Flea Market

Highest 4<sup>th</sup> Most Common Venue: Fish Market

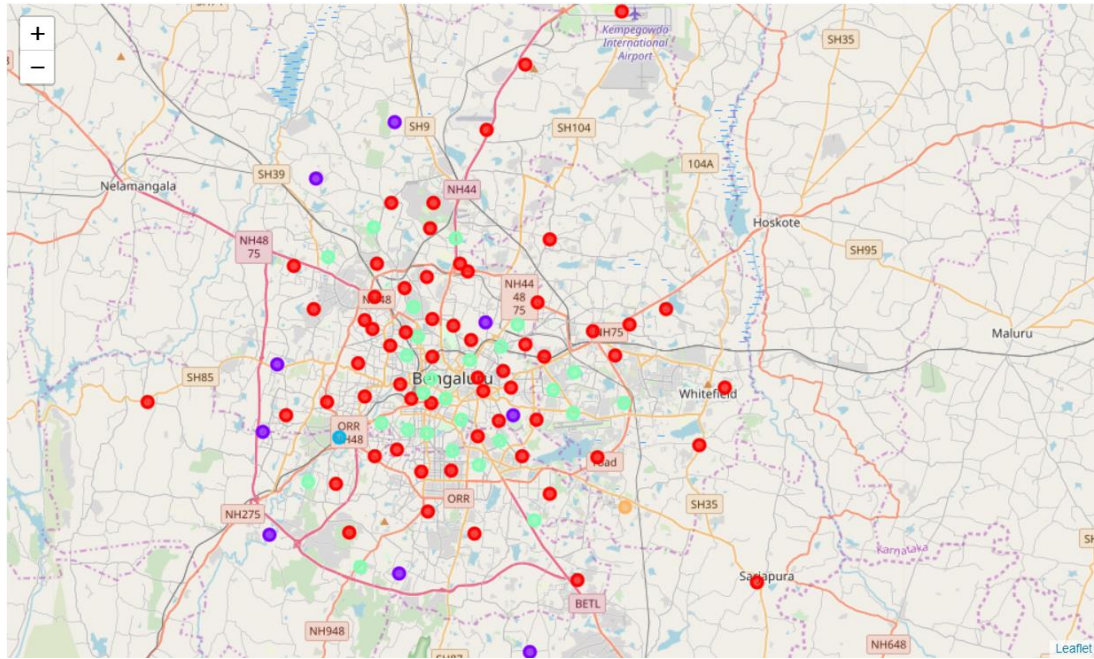
Highest 5<sup>th</sup> Most Common Venue: Fish and Chip Shop

### ***b. Cluster Analysis***

We also do another analysis where we apply a clustering algorithm to group the places based on the similarity in types of venues they have. By clustering, we also provide information to users on a common type of place in Bangalore. 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 places into 5 clusters. Each of the places gets a Cluster Label assigned.

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





*Bangalore Cluster Map*

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

## FIRST CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Bangalore Bazaar , CMM Court Complex , Dr. Amb...	0.0	Indian Restaurant	Café	Bar	Clothing Store	Lounge
1	Bangalore Corporation Building , Bangalore City	0.0	Food	Historic Site	Plaza	Miscellaneous Shop	Arts & Crafts Store
5	J.C.Nagar , Training Command IAF	0.0	Movie Theater	Bowling Alley	Field	Bus Station	Asian Restaurant
7	H.A.L II Stage , Hulsur Bazaar	0.0	Café	Juice Bar	Pizza Place	Light Rail Station	Bar
9	Industrial Estate , Rajajinagar , Rajajinagar...	0.0	Indian Restaurant	Juice Bar	Vegetarian / Vegan Restaurant	Café	Seafood Restaurant
12	Jalahalli	0.0	Vegetarian / Vegan Restaurant	Indian Restaurant	Playground	Indie Movie Theater	Bakery
15	Doorvaninagar , Krishnarajapuram R S , Ramamur...	0.0	Shoe Store	Mobile Phone Shop	Pharmacy	Department Store	Snack Place
17	Chamrajpet	0.0	Coffee Shop	Sporting Goods Shop	Shopping Mall	Department Store	Big Box Store
19	Seshadripuram	0.0	Ice Cream Shop	Hotel	Café	Juice Bar	Golf Course
21	Yeshwanthpur Bazar , Yeswanthpura	0.0	Hotel	Spa	Seafood Restaurant	Mediterranean Restaurant	Light Rail Station
22	Magadi Road	0.0	Metro Station	Clothing Store	Electronics Store	Women's Store	Event Space
23	Anandnagar , H.A. Farm , Hebbal Kempapura	0.0	Pizza Place	Bakery	Café	Indian Restaurant	Food Court

The places belonging to this cluster is popular for travelling towards places to stay with hotels, various shops and restaurants, with historic sites and fields. We see that these place would be something that a traveller would prefer if they has to stay and also look for various historic sites.



## SECOND CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
6	Agram , Air Force Hospital	1.0	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
41	Arabic College , Venkateshapura	1.0	ATM	Pet Store	Hot Spring	Electronics Store	Fish Market
51	Bnagalore Viswavidalaya , Mallathahalli	1.0	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
55	Chudenapura	1.0	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
59	Attur , CRPF Campus Yelahanka , Jakkur , Rajan...	1.0	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
76	Bolare , Thataguni	1.0	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
82	Tarabanahalli	1.0	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
83	Bapagrama , Herohalli , Viswaneedam	1.0	ATM	English Restaurant	Flea Market	Fish Market	Fish & Chips Shop
96	Haragadde , Hennagara , Hulimangala , Jigani , ...	1.0	ATM	Pizza Place	Hot Spring	Electronics Store	Fish Market
97	Anjanapura	1.0	ATM	Pool	English Restaurant	Flea Market	Fish Market

The places belonging to this cluster is popular for travelling towards places for collecting money via ATMs, going towards flea and fish markets, along with fish and chip shops. We see that these place would be something that a traveller would prefer if they may do shopping or more into fish-related areas.

## THIRD CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
36	Nayandahalli	2.0	Miscellaneous Shop	Women's Store	Hotel Bar	Flea Market	Fish Market

Not many places belong to this cluster, Miscellaneous Shop, Flea Market and Hotel Bar are popular values close to these places.

## FOURTH CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
2	Malleswaram , Palace Guttahalli , Swimming Poo...	3.0	Indian Restaurant	Coffee Shop	Vegetarian / Vegan Restaurant	Department Store	Ice Cream Shop
3	Basavanagudi , Mavalli , Pampamahakavi Road , ...	3.0	Indian Restaurant	Bakery	Fast Food Restaurant	Metro Station	Ice Cream Shop
4	Fraser Town	3.0	Indian Restaurant	Pizza Place	Shopping Mall	Bus Station	Food Truck
8	Bangalore Dist Offices Bldg , K. G. Road	3.0	Indian Restaurant	Hotel	Seafood Restaurant	Indie Movie Theater	Restaurant
10	Jayangar III Block , Madhavan Park	3.0	Indian Restaurant	Lounge	Men's Store	Jewelry Store	Park
11	Science Institute	3.0	Indian Restaurant	Bar	Women's Store	Event Space	Flower Shop
13	Jalahalli East	3.0	Indian Restaurant	Movie Theater	Women's Store	English Restaurant	Fish Market
16	NAL , Vimanapura	3.0	Indian Restaurant	Moving Target	Farmers Market	Bus Stop	English Restaurant
18	Gaviopuram Extension	3.0	Indian Restaurant	Sandwich Place	Theater	Fast Food Restaurant	Grocery Store
20	Gayathrinagar , Srirampuram	3.0	Indian Restaurant	Arcade	Motorcycle Shop	Café	Women's Store
25	Deepanjalinagar , Governmemnt Electric Factory	3.0	Indian Restaurant	Department Store	Bus Station	Women's Store	Event Space
26	Sampangiramnagar , Shanthinagar , Wilson Garden	3.0	Indian Restaurant	Coffee Shop	Vegetarian / Vegan Restaurant	Department Store	Supermarket

The places belonging to this cluster is popular for travelling towards places for majorly Indian restaurants, with various other amenities such as departmental stores, shopping malls and so on. We see that these places would be something that a traveller would prefer for being a foodie or rather try out Indian restaurants as a whole.

## FIFTH CLUSTER

	Place	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
32	Carmelram	4.0	Resort	Women's Store	Convenience Store	Flea Market	Fish Market
110	Avathi	4.0	Resort	Women's Store	Convenience Store	Flea Market	Fish Market

Not many places belong to this cluster, Resorts, Flea Market and Convenience Store are popular values close to these places.

## 4. Results

In this project, we have attempted to load the dataset for two of India's prime metro cities and have tried to analyze the places in these metro cities based on the type of popular and top venues they have. We have clustered the places based on the most common top venues in each of the places . Our intention with this project was to analyze and understand the difference in the type 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 Bangalore, we see that Mumbai and its neighbourhoods are a great place for a foodie. There are a lot of restaurants, cafes, bars, etc in places of Mumbai. Also due to the proximity of Mumbai to the seashore, places in Mumbai offer for harbours, seafood, boat, and ferry rides. While for Bangalore, it is definitely more popular for being a shopping district considering there are many shops and shopping malls surrounded around the areas, and also containing various markets ranging from flea to fish markets. Thus, we can say that if a person travelling is a foodie then he should definitely go for Mumbai, while if the person travelling is interested in shopping, then they should visit Bangalore instead.

## **5. Discussions**

Thus with this project, we have analysed the kind of life each of these big metro cities has to offer based on the popular venues in the places of each city. Another important aspect the study reveals is that the categories of venues Mumbai offers more as compared to Bangalore. This means that Bangalore becomes restrictive in terms of variety and convenience. There were certain places which didn't have venues, which were eventually cut from the data for better understanding as well.

## **6. Conclusion**

Thus, looking at all things considered, the traveller should go for Mumbai, considering its vast amount venues it offers, along with the ease of transport and is perfect for foodies to try Indian cuisines.