

The Battle of Neighborhood – Bangalore Restaurant in India

1. INTRODUCTION

Bangalore, formally Bengaluru is the capital of the Indian territory of Karnataka. It has a populace of more than ten million, making it a megacity and the third-most crowded city and fifth-most crowded urban agglomeration in India. It is situated in southern India, on the Deccan Plateau at a rise of more than 900 m (3,000 ft) above ocean level. Its multi-ethnic, multi-religious,[promotional language] and cosmopolitan character[promotional language] is reflected by its in excess of 1000 Hindu sanctuaries, 400 mosques, 100 holy places, 40 Jain Basadis, three Sikh gurdwaras, two Buddhist viharas and one Parsi fire sanctuary situated in a zone of 741 km² of the metropolis. The strict spots are additionally spoken to by the proposed Chabad of the Jewish people group.

Bengaluru is now and then alluded to as the "Silicon Valley of India" (or "IT capital of India") in view of its job as the country's driving data innovation (IT) exporter. Indian technological organisations ISRO, Infosys, Wipro and HAL are headquartered in the city. Bangalore is the second quickest developing significant city in India. Bengaluru has one of the most exceptionally instructed workforces on the planet. It is home to numerous instructive and research establishments.

With a populace of 8,443,675 in the city and 10,456,000 in the urban agglomeration, up from 8.5 million at the 2011 evaluation, Bangalore is a megacity, and the third-most-crowded city in India and the eighteenth most-crowded city in the world. Bangalore was the quickest developing Indian city after New Delhi somewhere in the range of 1991 and 2001, with a development pace of 38% during the decade. Individuals from different states have moved to Bangalore.

Bangalore lies in the southeast of the South Indian Territory of Karnataka. It is in the core of the Mysore Plateau (a locale of the bigger Precambrian Deccan Plateau) at a normal height of 900 m (2,953 ft). It is situated at 12.97°N 77.56°E and spreads a region of 741 km² (286 sq mi). Most of the city of Bangalore lies in the Bangalore Urban locale of Karnataka and the encompassing provincial territories are a piece of the Bangalore Rural area. The Government of Karnataka has cut out the new region of Ramanagara from the old Bangalore Rural region.

2. PROBLEM STATEMENT:

Until now, we can understand that this city is densely populated by migrants as it is “Silicon Valley of India”. Most of the people are from North India and this project is intended to know the best places for north Indian to find best place for their cuisine and to plan the best spot for starting North Indian restaurant in Bangalore, India.

3. CHALLENGES ADDRESSED IN THIS PROJECT:

In this project the following problems are addressed:

1. What is best area in Bangalore City for North Indian Cuisine?
2. Which zones have huge number of North Indian eatery Market?
3. Which all zones have less number of eatery?
4. Which is the best spot to start North Indian restaurant?
5. What spots are have best Indian restaurants in Bangalore?

4. SOURCE FOR DATA:

For this Analysis we need the accompanying information:

Bangalore restaurants information that contains list Locality, Restaurant name, rating alongside their scope and longitude.

4.1 The Database for this project is found from the following link

<https://www.kaggle.com/shrutimehta/zomato-restaurants-data/tasks>

- Information source: Zomato kaggle dataset
- Depiction: This informational collection contains the necessary data. Furthermore, we will utilize this informational index to investigate different region of Bangalore city.

4.2 Close by places in every area of Bangalore city:

- Information source: Four square API
- Depiction: By utilizing this programming interface we will get all the settings in every area.
- The data retrieved from Foursquare contained information of venues within a specified distance of the longitude and latitude of the postcodes. The information obtained per venue as follows:
 1. Neighbourhood
 2. Neighbourhood Latitude
 3. Neighbourhood Longitude
 4. Venue
 5. Name of the venue e.g. the name of a store or restaurant
 6. Venue Latitude
 7. Venue Longitude
 8. Venue Category

5. PROCEDURE:

- Gather the Bangalore city information from Zomato kaggle dataset.
- Utilizing Four Square API we will discover all settings for every area.
- Channel out all settings that are close by territory.
- Utilizing collection rating for every café to locate the best places.
- Picture the Ranking of neighborhoods utilizing folium library (python)

6. FLOW OF THE PROJECT AND RESULTS:

1. Reading the Database:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude	Cuisines	...	Currency	Has Table booking	Has Online delivery	Is delivering now	Switch to order menu	Price range	Aggregate rating	Rating color
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	121.027535	14.565443	French, Japanese, Desserts	...	Botswana Pula(P)	Yes	No	No	No	3	4.8	Dark Green
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Tokyo, Legaspi Village, Makati City, Ma...	121.014101	14.553708	Japanese	...	Botswana Pula(P)	Yes	No	No	No	3	4.5	Dark Green
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...	121.056831	14.581404	Seafood, Asian, Filipino, Indian	...	Botswana Pula(P)	Yes	No	No	No	4	4.4	Green
3	6318506	Ooma	162	Mandaluyong City	Third Floor, Mega Fashion Hall, SM Megamall,	SM Megamall, Ortigas, Mandaluyong City	SM Megamall, Ortigas, Mandaluyong City, Mandal...	121.056475	14.585318	Japanese, Sushi	...	Botswana Pula(P)	No	No	No	No	4	4.9	Dark Green

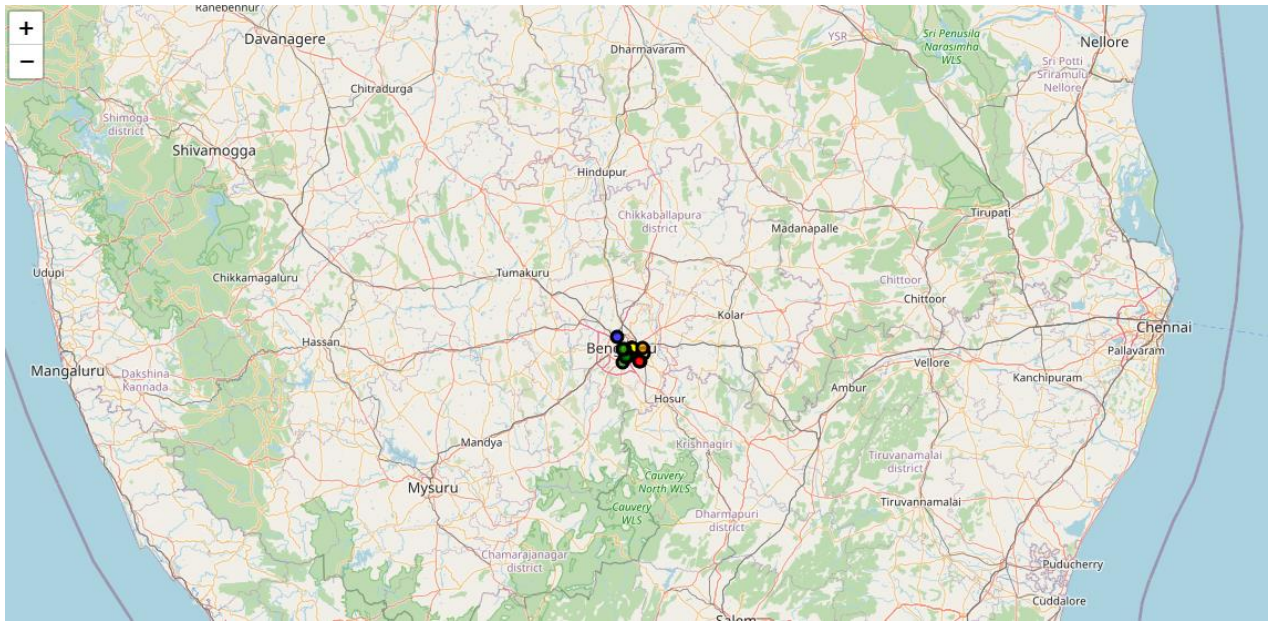
2. Data Cleaning:

Removing the unwanted dataset

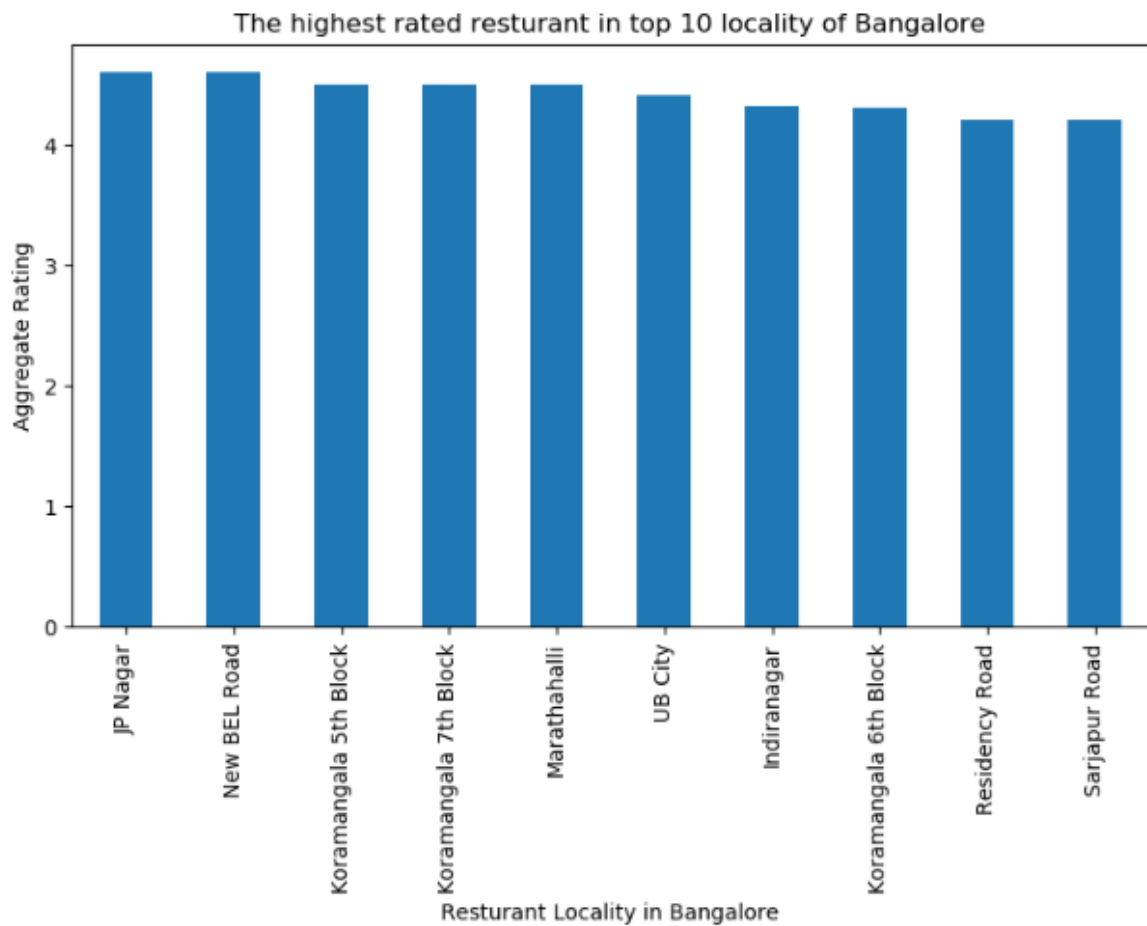
```
df_country = df[df['Country Code'] == 1]
df_NDLS = df_country[df_country['City'] == 'Bangalore']
df_NDLS.reset_index(drop=True, inplace=True)
df_NDLS.head()
```

[illegible]

3. Creation of Map to show the Cluster of Restaurants:

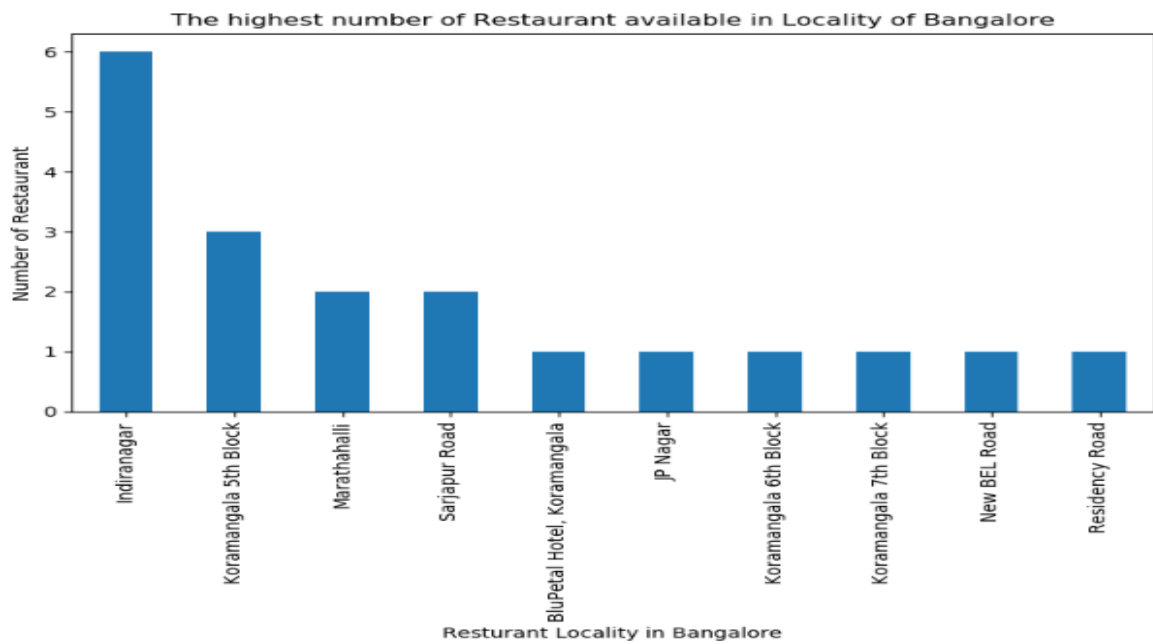


4. What is best area in Bangalore City for North Indian Cuisine?



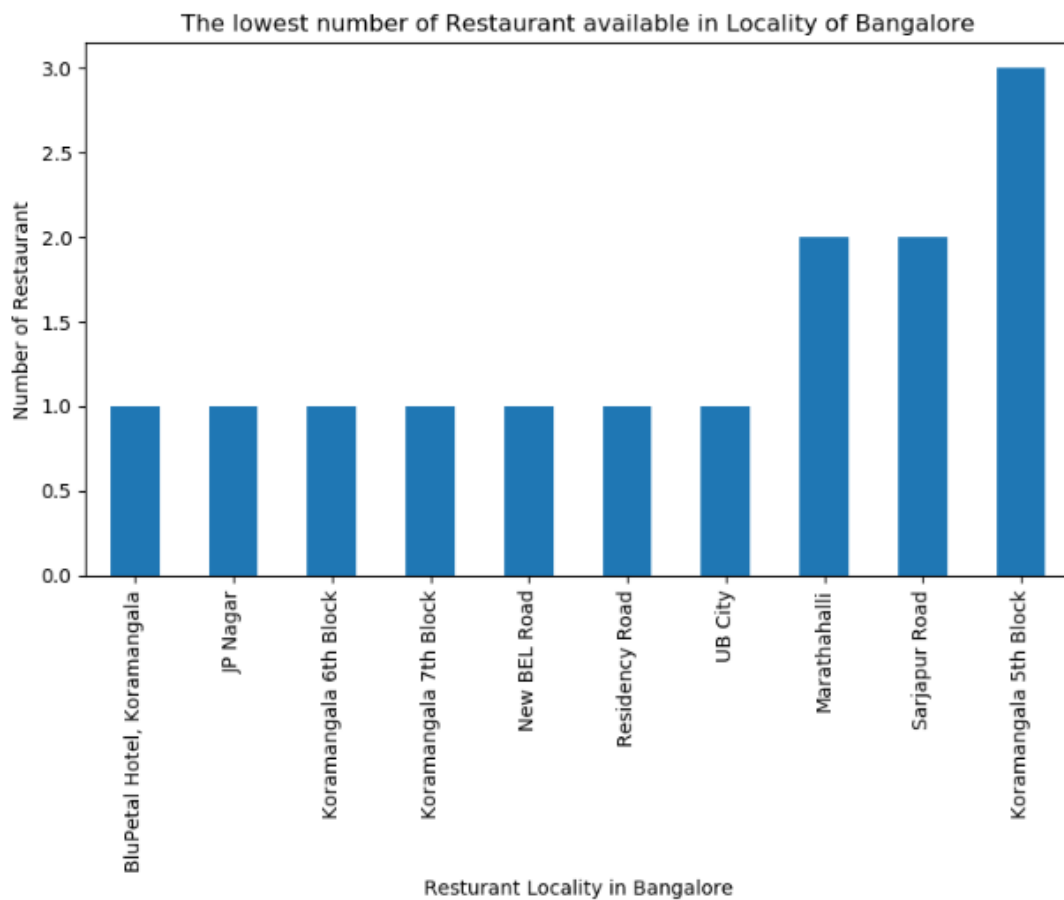
The best restaurants available in JP Nagar and New BEL Road

5. Which zones have huge number of North Indian eatery Market?



According to Analysis, Indira Nagar is the best place for North Indians for restaurants

6. Which all zones have less number of restaurant?



7. Applying K-means algorithm to cluster the data:

	Locality	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	BLUPetal Hotel, Koramangala	Indian Restaurant	Chinese Restaurant	Café	Fast Food Restaurant	Dessert Shop	Restaurant	Lounge	Coffee Shop	Bar	Bookstore
1	Indiranagar	Café	Indian Restaurant	Pub	Pizza Place	Dessert Shop	Chinese Restaurant	Lounge	Ice Cream Shop	Bakery	Bar
2	JP Nagar	Café	Indian Restaurant	Bar	Pizza Place	Coffee Shop	Department Store	Pub	Chinese Restaurant	Cosmetics Shop	Multiplex
3	Koramangala 5th Block	Indian Restaurant	Chinese Restaurant	Café	Lounge	Dessert Shop	Fast Food Restaurant	Restaurant	Coffee Shop	Bar	Bookstore
4	Koramangala 6th Block	Pizza Place	Café	Italian Restaurant	Fast Food Restaurant	Lounge	Seafood Restaurant	Food Court	Clothing Store	South Indian Restaurant	Pub
5	Koramangala 7th Block	Indian Restaurant	Dessert Shop	Chinese Restaurant	Café	Lounge	Bookstore	Bar	Snack Place	Donut Shop	Multiplex
6	Marathahalli	Indian Restaurant	Pizza Place	Dessert Shop	Clothing Store	Chinese Restaurant	Café	Financial or Legal Service	Cupcake Shop	Deli / Bodega	Department Store
7	New BEL Road	Ice Cream Shop	Fast Food Restaurant	Chinese Restaurant	Indian Restaurant	Pizza Place	Bar	Burger Joint	Mexican Restaurant	Coffee Shop	Sandwich Place
8	Residency Road	Café	Indian Restaurant	Pub	Bar	Coffee Shop	Hotel	Clothing Store	Donut Shop	Chinese Restaurant	Pizza Place
9	Sajapur Road	Café	South Indian Restaurant	Brewery	Afghan Restaurant	Ice Cream Shop	Indian Restaurant	Liquor Store	Lounge	Eastern European Restaurant	Pizza Place
10	UB City	Italian Restaurant	Mexican Restaurant	Café	Lounge	Coffee Shop	Restaurant	Electronics Store	Hotel	Clothing Store	Pizza Place

```
## Cluster Locality
## Run k-means to cluster the Locality into 5 clusters.

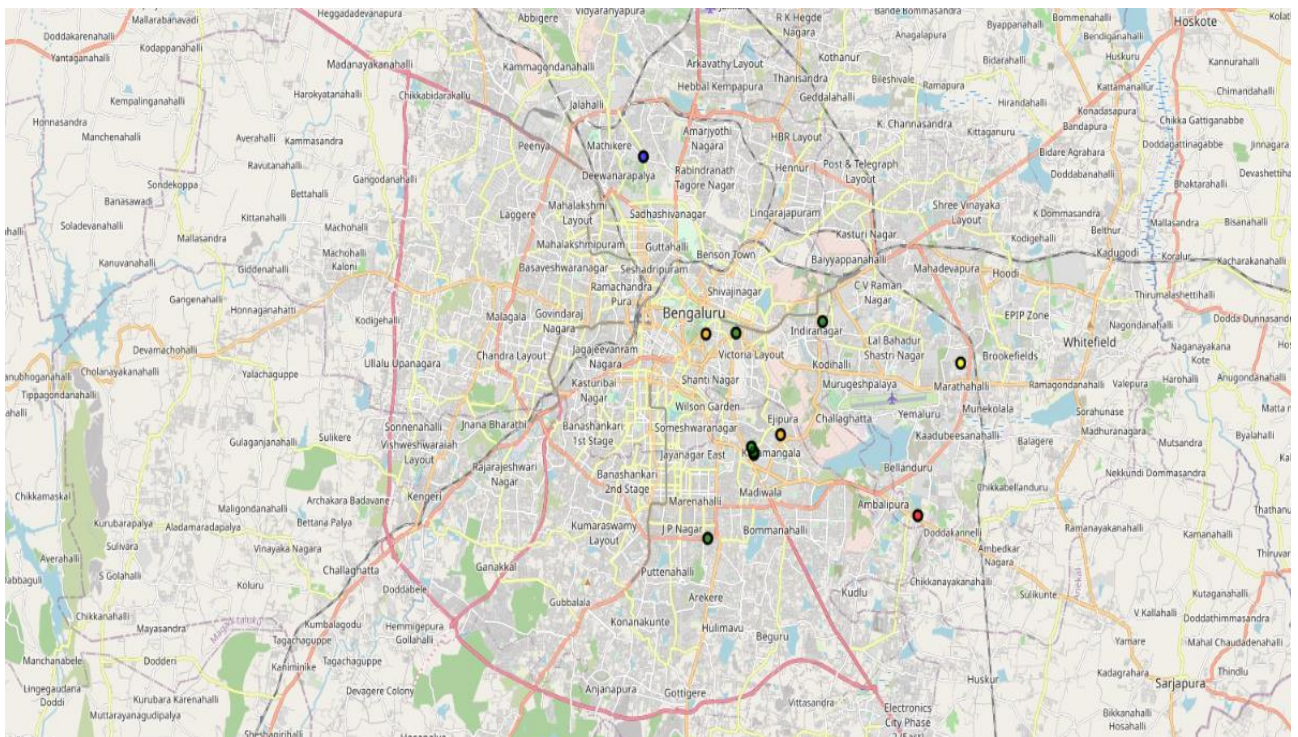
# set number of clusters
kclusters = 5

Bangalore_clustering = Bangalore_grouped.drop('Locality', 1)

# run k-means clustering
kmeans = KMeans(n_clusters=kclusters, random_state=0).fit(Bangalore_clustering)

# check cluster Labels generated for each row in the dataframe
kmeans.labels_[0:10]
kmeans.labels_.shape
```

8. creating final map:



9. Cluster 1 to Cluster 5:

```
## Examine Clusters
```

```
## Cluster 1
```

```
Bangalore_merged.loc[Bangalore_merged['Cluster_Labels'] == 0, Bangalore_merged.columns[[1] + list(range(5, Bangalore_merged.shape[1]))]]
```

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels	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
9	12.913652	4.2	Excellent, Good	6110	0	Café	South Indian Restaurant	Brewery	Afghan Restaurant	Ice Cream Shop	Indian Restaurant	Liquor Store	Lounge	Eastern European Restaurant	Pizza Place

```
## Examine Clusters
```

```
## Cluster 2
```

```
Bangalore_merged.loc[Bangalore_merged['Cluster_Labels'] == 1, Bangalore_merged.columns[[1] + list(range(5, Bangalore_merged.shape[1]))]]
```

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels	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	12.933284	4.100000	Very Good	2416	1	Indian Restaurant	Chinese Restaurant	Café	Fast Food Restaurant	Dessert Shop	Restaurant	Lounge	Coffee Shop	Bar	Bookstore
1	12.976278	4.316667	Excellent, Good, Very Good	19834	1	Café	Indian Restaurant	Pub	Pizza Place	Dessert Shop	Chinese Restaurant	Lounge	Ice Cream Shop	Bakery	Bar
2	12.906229	4.600000	Excellent	781	1	Café	Indian Restaurant	Bar	Pizza Place	Coffee Shop	Department Store	Pub	Chinese Restaurant	Cosmetics Shop	Multiplex
3	12.933947	4.500000	Excellent, Very Good	15328	1	Indian Restaurant	Chinese Restaurant	Café	Lounge	Dessert Shop	Fast Food Restaurant	Restaurant	Coffee Shop	Bar	Bookstore
5	12.935662	4.500000	Excellent	1288	1	Indian Restaurant	Dessert Shop	Chinese Restaurant	Café	Lounge	Bookstore	Bar	Snack Place	Donut Shop	Multiplex
8	12.972532	4.200000	Very Good	334	1	Café	Indian Restaurant	Pub	Bar	Coffee Shop	Hotel	Clothing Store	Donut Shop	Chinese Restaurant	Pizza Place

```
## Examine Clusters
```

```
## Cluster 3
```

```
Bangalore_merged.loc[Bangalore_merged['Cluster_Labels'] == 2, Bangalore_merged.columns[[1] + list(range(5, Bangalore_merged.shape[1]))]]
```

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels	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
7	13.029198	4.6	Excellent	627	2	Ice Cream Shop	Fast Food Restaurant	Chinese Restaurant	Indian Restaurant	Pizza Place	Bar	Burger Joint	Mexican Restaurant	Coffee Shop	Sandwich Place

10. Conclusions:

- Koramanagala 5th & 6th Block are have best neighborhood of North Indian Restaurants
- Koramanagala 6th block has best restaurant as per the ratings.
- Indira Nagar is best place for foodies.
- JP nagar, New BEL road, Koramangalam Marthali have best restaurants in Bangalore.

Cluster 1: This zone is recommended for Cafes.

Cluster 2: This zone is recommended for Indian Restaurants.

Cluster 3: This zone is recommended for Ice Cream shops and Fast food Restaurants.

Cluster 4: This zone is recommended for Pubs and Night clubs.

Cluster 5: This zone is recommended for Italian and Mexican Restaurants.