

Explore, segment, and cluster the neighborhoods in the Bangalore to identify business opportunities

# Capstone Project The Battle of Neighborhoods

**IBM Data Science Professional  
Certificate on Coursera**

A peer-graded assignment on Coursera  
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# About Bangalore

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Bangalore, officially Bengaluru, is the capital of the Indian state of Karnataka. It has a population of over ten million, making it a megacity and the third-most populous city and fifth-most populous urban agglomeration in India. It is located in southern India

Modern Bangalore was begun in 1537 by a vassal of the Vijayanagara Empire, Kempe Gowda I, who aligned with the Vijayanagara empire to campaign against Gangaraja (whom he defeated and expelled to Kanchi), and who built a mud-brick fort for the people at the site that would become the central part of modern Bangalore

With an economic growth of 10.3%, Bangalore is the second fastest-growing major metropolis in India,[142] and is also the country's fourth largest fast-moving consumer goods (FMCG) market.[143] Forbes considers Bangalore one of "The Next Decade's Fastest-Growing Cities".[144] The city is the third largest hub for high-net-worth individuals and is home to over 10,000-dollar millionaires and about 60,000 super-rich people who have an investment surplus of ₹45 million (US\$630,900) and ₹5 million (US\$70,100) respectively.[145]

The headquarters of several public sector undertakings such as Bharat Electronics Limited (BEL), Hindustan Aeronautics Limited (HAL), National Aerospace Laboratories (NAL), Bharat Earth Movers Limited (BEML), Central Manufacturing Technology Institute (CMTI) and HMT (formerly Hindustan Machine Tools) are located in Bangalore. In June 1972 the Indian Space Research Organisation (ISRO) was established under the Department of Space and headquartered in the city. Bangalore also houses several research and development centres for many firms such as ABB, Airbus, Bosch, Boeing, General Electric, General Motors, Google, Liebherr-Aerospace, Microsoft, Mercedes-Benz, Nokia, Oracle, Philips, Shell, Toyota and Tyco.

Bangalore is called as the Silicon Valley of India because of the large number of information technology companies located in the city which contributed 33% of India's ₹1,442 billion (US\$20 billion) IT exports in 2006–07.[146] Bangalore's IT industry is divided into three main clusters – Software Technology Parks of India (STPI); International Tech Park, Bangalore

(ITPB); and Electronics City. UB City, the headquarters of the United Breweries Group, is a high-end commercial zone.[147] Infosys and Wipro, India's third and fourth largest software companies are headquartered in Bangalore, as are many of the global SEI-CMM Level 5 Companies.

## **Overview of Project**

Explore, segment, and cluster the neighborhoods in the Bangalore to identify business opportunities

## **Business Problem**

Bangalore, officially Bengaluru is the capital of the Indian state of Karnataka. It has a population of over ten million, making it a megacity and the third-most populous city and fifth-most populous urban agglomeration in India.

Knowing this it has become a dream business location for many of the prospective businessmen, but due to its scope length and breadth of Bangalore it becomes challenge for one to find the type of business and location to choose.

## **Target Audience**

Our solution with help prospective businessmen to decide businesses that they can opt for particular location

By adopting our solution they will ensure that they are in right business and at right place

## **Data acquisition and cleaning**

### **Data**

To arrive on the objective, we will need the following data

- 1) Bangalore Pin codes with places
- 2) Latitude and Longitude data for all the pincodes
- 3) List of Neighborhood of Bangalore with what it is popular for

### **Data Source and Method of Extract**

For this project I have used Bangalore Postal codes data from below link and also used FourSquare API to understand the Neighborhood

Link : For Bangalore neighborhood

Latitude & Longitude: <http://www.geonames.org/export/zip/>

## Methodology

- Data will be collected from <http://www.geonames.org/export/zip/> and cleaned and processed into a dataframe.
- FourSquare be used to locate all venues and then filtered by Italian restaurants. Ratings, tips, and likes by users will be counted and added to the dataframe.
- Data will be sorted based on rankings
- Finally, the data be will be visually assessed using graphing from various Python libraries

## Results

The following are the highlights of the 8 clusters above:

### *Cluster 0*

Auto Garage are clearly located only in Cluster 0 (6 Neighborhood), which makes the choice of the autobbile business.

### *Cluster 1*

Restaurants are clearly located only in Cluster 1 (174 Neighborhood), which makes the choice of the Hotel business or since it is a crowd puller area one can think of childrends play area etc.

### *Cluster 2*

IT Services are clearly located only in Cluster 2 (13 Neighborhood), which makes the choice of the PG, restaurants , fast joints etc.

### *Cluster 3*

Tourist Information Center are clearly located only in Cluster 3 (7 Neighborhood), which makes the choice of the Tours and Travel shops etc.

#### *Cluster 4*

Bakery are clearly located only in Cluster 4 (6 Neighborhood), which makes the choice of the various packed food business options.

#### *Cluster 5*

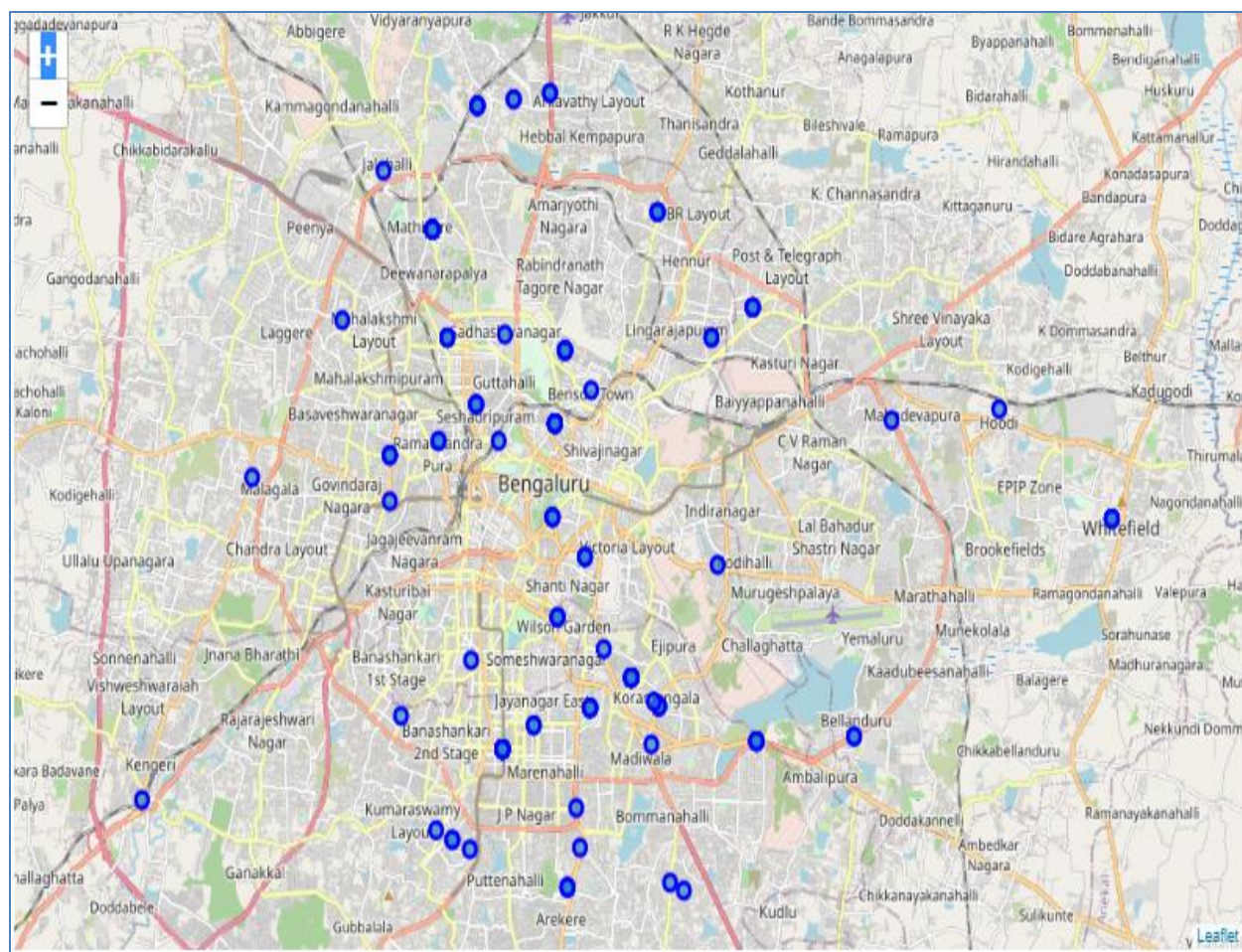
Indian Restaurants are clearly located only in Cluster 5 (12 Neighborhood), which makes the choice of the home food style, variety of Indian style restaurants etc.

#### *Cluster 6*

Home Services are clearly located only in Cluster 6 (9 Neighborhood), which makes the choice of the appliance spare parts etc.

#### *Cluster 7*

Business Services are clearly located only in Cluster 7 (11 Neighborhood), which makes the choice of the spare parts, hotels etc.



	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	A F Station Yelahanka	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
1	Adugodi	Fast Food Restaurant	Indian Restaurant	Design Studio	Bus Station	Diner	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar
2	Agara	Café	Indian Restaurant	Coffee Shop	Pub	Lounge	Ice Cream Shop	Yoga Studio	Bar	Paper / Office Supplies Store	Mexican Restaurant
3	Agram	Home Service	Yoga Studio	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop
4	Air Force Hospital	Home Service	Yoga Studio	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop



	Neighborhood	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	Bangalore G.P.O.	1.0	Indian Restaurant	Coffee Shop	Chinese Restaurant	Tea Room	Italian Restaurant	Bakery	Pizza Place	Mediterranean Restaurant	Pool Hall	Pub
1	Legislators Home	1.0	Indian Restaurant	Coffee Shop	Chinese Restaurant	Tea Room	Italian Restaurant	Bakery	Pizza Place	Mediterranean Restaurant	Pool Hall	Pub
2	Vasanthanagar	1.0	Indian Restaurant	Coffee Shop	Chinese Restaurant	Tea Room	Italian Restaurant	Bakery	Pizza Place	Mediterranean Restaurant	Pool Hall	Pub
3	Mahatma Gandhi Road	1.0	Indian Restaurant	Coffee Shop	Chinese Restaurant	Tea Room	Italian Restaurant	Bakery	Pizza Place	Mediterranean Restaurant	Pool Hall	Pub
4	Vidhana Soudha	1.0	Indian Restaurant	Coffee Shop	Chinese Restaurant	Tea Room	Italian Restaurant	Bakery	Pizza Place	Mediterranean Restaurant	Pool Hall	Pub
...	...	...	...	...	...	...	...	...	...	...	...	...
271	Hunasamaranahalli	1.0	Indian Restaurant	Coffee Shop	Lake	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar
272	Tarahunise	1.0	Indian Restaurant	Coffee Shop	Lake	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar
273	Doddajala	1.0	Indian Restaurant	Coffee Shop	Lake	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar
274	Bettahalsur	1.0	Indian Restaurant	Coffee Shop	Lake	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar
275	Chikkajala	1.0	Indian Restaurant	Coffee Shop	Lake	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar

	Neighborhood	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
128	Subramanyapura	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
129	Chikkalasandra	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
130	Doddakallasandra	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
131	Konanakunte	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
132	Tataguni	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
133	A.F Station Yelahanka	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
134	BSF Campus Yelahanka	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
142	G.K.V.K.	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
147	Devanagundi	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
148	Kadugodi	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
149	Kannamangala	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store
150	Medimallasandra	2.0	IT Services	Diner	Fast Food Restaurant	Farmers Market	Electronics Store	Eastern European Restaurant	Donut Shop	Dive Bar	Dessert Shop	Fishing Store



## Discussion and Conclusion

It is noticeable that Cluster 1 is the most viable clusters to start a business. The proximity to various Neighborhoods is an advantage for businessmen. Options are wide open since it filled with Restaurants, coffee shops, Market area, Pubs, Halls...One can think of starting Children's play area, or another restaurant etc.. Similarly Cluster 3's common spot is Tourism so one can start connect business plan in this cluster. So objective is to see business opportunity and each cluster has unique opportunity to think of.