

# Visualizing, analysing of all rent houses data of Mumbai

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## 1.1 Introduction, Description and Discussion of the Background

Mumbai is a densely populated city on India's west coast. A financial center. It's India's largest city with over 603.4km area and a population of 1.84 crores. It serves as an economic hub of India, contributing 10% of factory employment, 25% of industrial output.

As I mentioned earlier that Mumbai serves as an economical hub of India, lots of peoples move to Mumbai for doing a job, finding a job, education, labour work, etc. as we know Mumbai is a densely populated city so, it's hard to find the house on rent(in the budget of person) in this type of city.

So, to solve this problem I will be going to analyse all the rents house data of Mumbai and find some reliable house for users.

## 1.2 Description of the data

After searching a couple of data provider sites, I have found perfect data set on [kaggle.com](https://www.kaggle.com/datasets/ashishpatel26/flats-for-rent-in-mumbai), I'm going to use "Flats for Rent in Mumbai" data set from Kaggle. This data set contains data from 12/08/2019 to 14/01/2020 total of 34349 rows.

This dataset contains major key columns like price, latitude, longitude, Locality, City, Description of the house(e.g 3 Bath, Unfurnished,5 floors, East facing 3 bhk flat available for

rent in Mira Road East, Mira Road And Beyond. It is located in Samarpan, which is a very good society.)

Followings are a list of columns with a small description of each

1. area : Floor area of the property
2. bathroom\_num : Number of bathrooms available
3. bedroom\_num : Number of bedrooms available
4. city : City in which property is located
5. desc : Text description of the property
6. dev\_name : Name of property developer
7. floor\_count : Total number of floors in building
8. floor\_num : Floor on which property is located
9. furnishing : Furnishing status
10. id : Unique ID
11. id\_string : Unique ID string used to scrape a particular HTML page element.
12. latitude : Latitude of location

- 13. locality : Locality in which property is located
- 14. longitude : Longitude of location.
- 15. post\_date : Date on which property was listed on website.
- 16. poster\_name : Name of poster
- 17. price : Price of the property
- 18. project : Name of the residential complex
- 19. title : Title of the property ad on the website
- 20. trans : Type of property transaction
- 21. type : Type of residential complex
- 22. URL : URL of the individual property
- 23. user\_type : Type of user who posted the ad

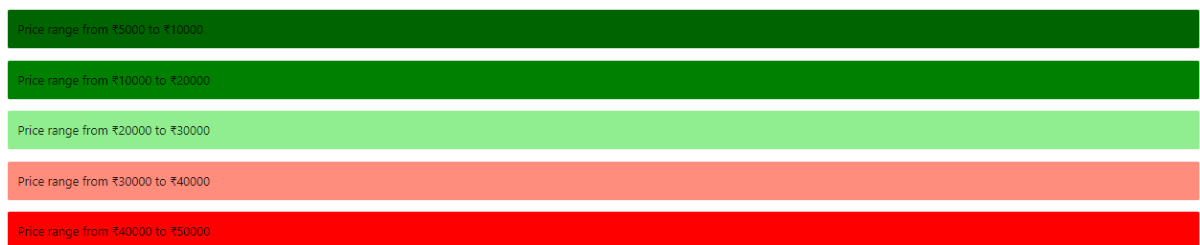
This data set contains 23 columns but, we will filter the data set and remove the un-relevant column and keep only those column which will be useful to us. We will also be going to apply data cleaning on the filtered dataset.

After removing un-relevant final data set will look like this.

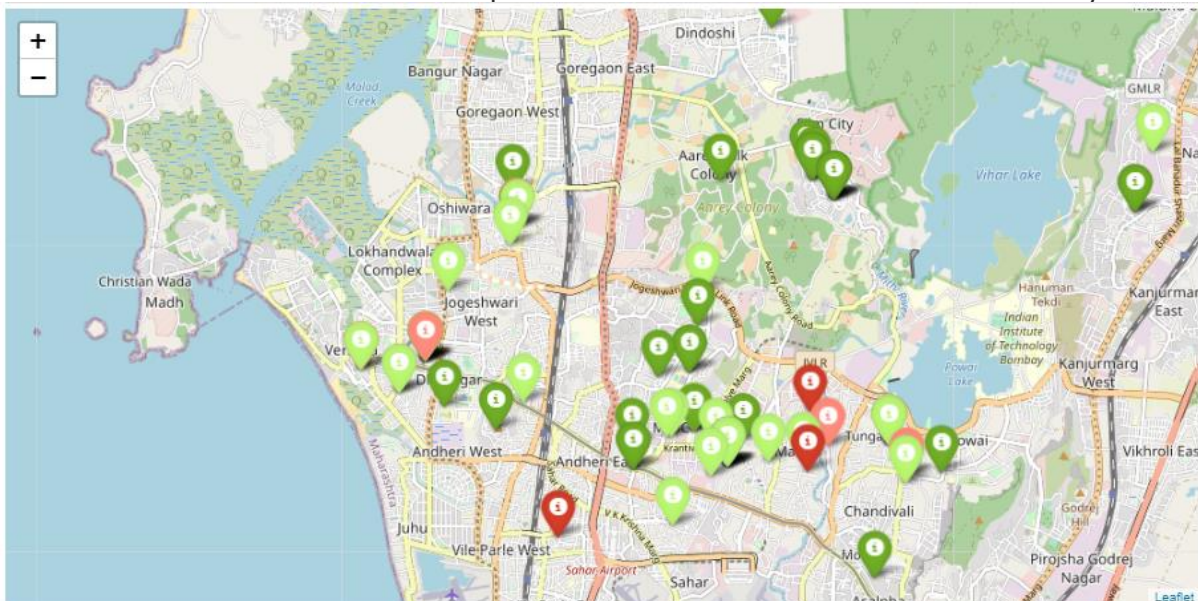
area	desc	latitude	locality	longitude	price	title
225	1 Bath,Unfurnished,1 floor,South facing Single...	19.233532	Borivali West	72.839195	11500	1 BHK Apartment for Rent in Borivali West
225	1 Bath,Unfurnished,Upper Basement floor 1 BHK,...	19.009829	Antop Hill	72.825241	16000	1 BHK Apartment for Rent in Antop Hill
225	1 Bath,Unfurnished,1 floor,West facing hi i ha...	72.874649	Azad Nagar	19.174179	18000	1 BHK Apartment for Rent in Azad Nagar
225	1 Bath,Semi-Furnished,4 floor,North - East fac...	19.134399	Andheri East	72.868393	10000	1 BHK Apartment for Rent in Andheri East
225	1 Bath,Semi-Furnished,1 floor One Room Kitchen...	19.115490	Andheri East	72.872696	15000	1 BHK Apartment for Rent in Andheri East

### 1.3 Methodology

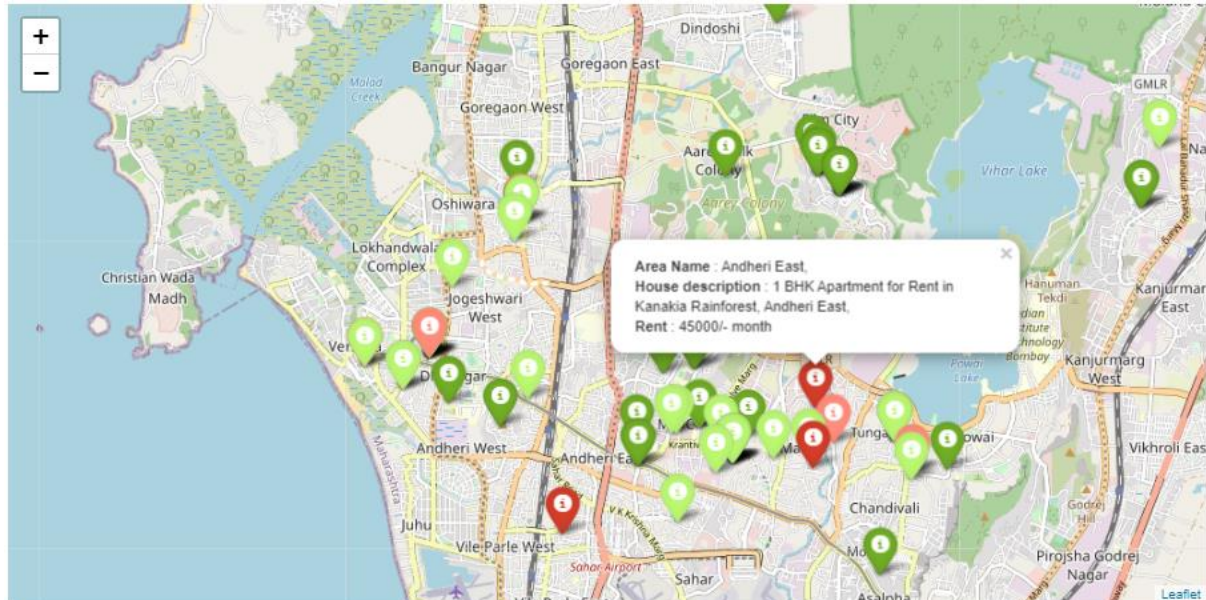
I used a folium library to visualize all the rent house data of Mumbai. But before visualizing the data on a map, I have classified the dataset base on price.



Now let's visualize the dataset on a map and all markers that you see on a map are based on that classified dataset. Each marker represents the rent house location in Mumbai city.



And when you click on any marker you will be able to see all primary information about that rent house.



The purpose behind the classification is to easily identify the house with low rent price to the highest rent price. I used foursquare APIs to explore the restaurants near all rent house locations and clusters them accordingly. Foursquare return all Venues near each house and then put all venues inside the data frame.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Borivali West	19.233532	72.839195	Dakshin	19.229800	72.842783	Restaurant
1	Antop Hill	19.009829	72.825241	And Chillies, Pan Asian Cuisine	19.006001	72.824465	Thai Restaurant
2	Andheri East	19.134399	72.868393	Chilly & Onion restaurant	19.131110	72.869123	Asian Restaurant
3	Andheri East	19.115490	72.872696	Spirit Kitchen and Bar	19.111258	72.869820	Indian Restaurant
4	Borivali West	19.233532	72.839195	Dakshin	19.229800	72.842783	Restaurant

**NOTE:** locality column of the main dataset used as 'Neighborhood' in the above venue dataset.

I have also analysed the number of venues found by foursquare API for each area (locality)

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
4 Bungalows	1	1	1	1	1	1
Aarey Milk Colony	12	12	12	12	12	12
Akurli Nagar	1	1	1	1	1	1
Andheri East	22	22	22	22	22	22
Andheri West	16	16	16	16	16	16
Antop Hill	1	1	1	1	1	1
Asalfa Village JJC	1	1	1	1	1	1
Asha Nagar	5	5	5	5	5	5
Ashok Nagar Western Mumbai	2	2	2	2	2	2
Azad Nagar	1	1	1	1	1	1
BDD Chawl	1	1	1	1	1	1
Bandra	1	1	1	1	1	1
Bandra Band Stand	1	1	1	1	1	1
Bandra East	2	2	2	2	2	2
Bandra Kurla Complex	1	1	1	1	1	1
Bandra West	6	6	6	6	6	6
Behram Baug	1	1	1	1	1	1
Best Nagar - Goregaon West	1	1	1	1	1	1
Beverly Park	2	2	2	2	2	2
Bhakti Park	2	2	2	2	2	2
Bhandup East	1	1	1	1	1	1
Bhandup West	4	4	4	4	4	4
Bharat Nagar	1	1	1	1	1	1
Bhatti Pada	1	1	1	1	1	1
Bhoiwada	2	2	2	2	2	2
Bolinj	1	1	1	1	1	1
Borivali East	7	7	7	7	7	7
Borivali West	10	10	10	10	10	10
Breach Candy	1	1	1	1	1	1
Byculla	6	6	6	6	6	6
CAMA Industrial Estate	1	1	1	1	1	1
Chakala	2	2	2	2	2	2
Chakala MIDC	4	4	4	4	4	4
Chandivali	9	9	9	9	9	9
Chembur	12	12	12	12	12	12
Chembur Camp	1	1	1	1	1	1
Chembur Colony	1	1	1	1	1	1

## 1.4 Result

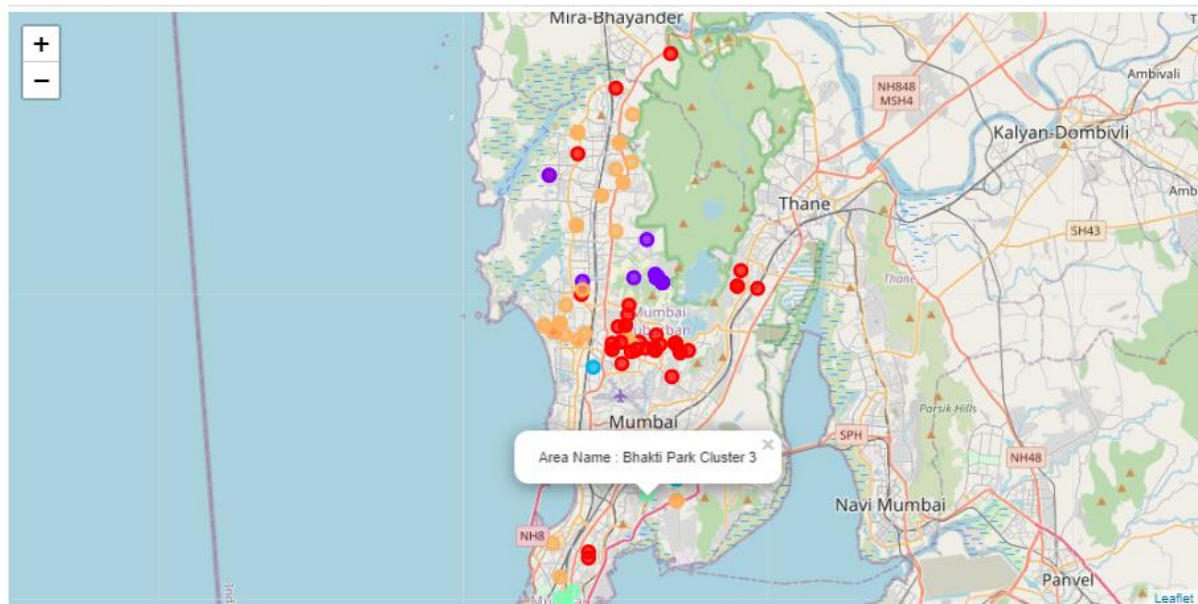
As a result, I group Neighborhood('locality') by the number of top 5 common venues.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	4 Bungalows	Indian Restaurant	Thai Restaurant	Donut Shop	Bakery	Brazilian Restaurant
1	Aarey Milk Colony	Café	Indian Restaurant	Thai Restaurant	Donut Shop	Bakery
2	Akurli Nagar	Chinese Restaurant	Thai Restaurant	Snack Place	Bakery	Brazilian Restaurant
3	Andheri East	Indian Restaurant	Asian Restaurant	Restaurant	Donut Shop	Bakery
4	Andheri West	Pizza Place	Indian Restaurant	Falafel Restaurant	Bakery	Diner

And then merged them with the main data frame.

	area	desc	latitude	locality	longitude	price	title	Cluster	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
101	225	1 Bath,Unfurnished,1 floor,South facing Single...	19.233532	Borivli West	72.839195	11500	1 BHK Apartment for Rent in Borivli West	4	Restaurant	Seafood Restaurant	Thai Restaurant	Donut Shop	Bakery
53	225	1 Bath,Unfurnished,Upper Basement floor,1 BHK...	19.009829	Antop Hill	72.825241	16000	1 BHK Apartment for Rent in Antop Hill	4	Thai Restaurant	Snack Place	Bakery	Brazilian Restaurant	Café
62	225	1 Bath,Unfurnished,1 floor,West facing hi l...	72.874649	Azad Nagar	19.174179	18000	1 BHK Apartment for Rent in Azad Nagar	1	Café	Thai Restaurant	Snack Place	Bakery	Brazilian Restaurant
15	225	1 Bath,Semi-Furnished,4 floor,North - East fac...	19.134399	Andheri East	72.868393	10000	1 BHK Apartment for Rent in Andheri East	0	Indian Restaurant	Asian Restaurant	Restaurant	Donut Shop	Bakery
14	225	1 Bath,Semi-Furnished,1 floor,One Room Kitchen...	19.115490	Andheri East	72.872696	15000	1 BHK Apartment for Rent in Andheri East	0	Indian Restaurant	Asian Restaurant	Restaurant	Donut Shop	Bakery

After merging the venue data to the main data frame you can see the clusters map of restaurants near rent hour's locations Mumbai.



## 1.5 Discussion

As I mentioned earlier that Mumbai serves as an economical hub of India, lots of peoples move/travel to Mumbai for doing a job, finding a job, education, labour work, etc. as we know Mumbai is a densely populated city so, it's hard to find the house on rent(in the budget of person) in this type of city. So, to solve this problem I did the analysis of all the rent houses of Mumbai and find some reliable house by classifying them and also did exploring each nearby venue location.

## 1.6 Conclusion

By classifying, visualizing, and explore each nearby venue location, it is easier to make decisions for stakeholders like real-estate builders and brokers.