

Location selection for restaurants in Mumbai

By Chirag Shetty



Background:

Mumbai is the most populated city in the world and fifth most densely populated city. It is the financial capital of India and it is no surprise that Mumbai is also the restaurant capital of India. The business has flourished with the local food and cuisine as well as multinational franchises. With such over-crowdedness comes cut throat competition. One of the main aspects of starting or expanding a restaurant business is choosing its location. Location of a restaurant decides the amount of traffic in a restaurant which makes it necessary to optimize.

Problem:

A restaurant franchise owner should understand that expanding their business might be limited due to the parent company's territorial restrictions. Parent companies do not want multiple franchises competing with each other, so spatial and geographic growth might be limited for an owner. Not only is there competition from same franchises but also from already established restaurants. Such restrictions should be considered while setting up a location. Businesses thriving in a certain neighborhood can be expanded easily in similar neighborhoods in a city. Restaurants have a very high risk associated with them while starting out in a new location. If classification of neighborhood is made possible, the restaurant would have lower risk and better chances of survival. Stepping into the highly competitive restaurant industry can be both thrilling and intimidating to new franchise owners. Being able to see the benefits, rewards, and potential failures of a neighborhood, will help prospective owners decide whether or not opening a restaurant franchise is the right decision for them.

Data:

Most of the Data associated with restaurants will be collected using the Foursquare API. It is an excellent tool to collect venues at a given co-ordinate. To use the Foursquare API, we first need a list of boroughs in India along with their pin-codes. The resulting data-frame of Boroughs and pin-codes is shown here.

	Borough	Pincode
0	Bazargate	400001
1	Kalbadevi	400002
2	B.P.Lane	400003
3	Ambewadi	400004
4	Asvini	400005
5	Malabar Hill	400006
6	Bharat Nagar	400007
7	Falkland Road	400008
8	Chinchbunder	400009
9	Dockyard Road	400010
10	Agripada	400011

After this the latitude and longitude value for the given pin-codes are required. This can be achieved by using a geocoder. The resulting data-frame should look something like this.

	Borough	Pincode	Latitude	Longitude
0	Bazargate	400001	18.938771	72.835335
1	Kalbadevi	400002	18.949439	72.826324
2	B.P.Lane	400003	18.951606	72.834797
3	Ambewadi	400004	18.954329	72.821730
4	Asvini	400005	18.916863	72.824315
5	Malabar Hill	400006	18.944790	72.793776
6	Bharat Nagar	400007	18.965888	72.814797
7	Falkland Road	400008	18.963839	72.831471
8	Chinchbunder	400009	18.959645	72.838526
9	Dockyard Road	400010	19.053122	73.099739
10	Agripada	400011	19.016016	72.867872

We can begin our analysis by getting the details of restaurant venues in 7.5 km radius of the given location, this will ensure major parts of the city are covered without worrying about overlapping locations. Once the resulting data frame is obtained the process of data collection can be considered complete and we can proceed with exploratory data analysis. Data cleaning is required to get rid of the venues which are not restaurants or venues that are not related to food.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Bazargate	18.938771	72.835335	Food for Thought	18.932031	72.831667	Café
1	Bazargate	18.938771	72.835335	Wankhede Stadium	18.938792	72.825944	Cricket Ground
2	Bazargate	18.938771	72.835335	Royal China	18.938715	72.832933	Chinese Restaurant
3	Bazargate	18.938771	72.835335	Starbucks	18.932190	72.833959	Coffee Shop
4	Bazargate	18.938771	72.835335	Britannia & Co.	18.934683	72.840183	Parsi Restaurant
5	Bazargate	18.938771	72.835335	Marine Drive	18.941221	72.823261	Scenic Lookout
6	Bazargate	18.938771	72.835335	Trishna	18.928619	72.832356	Seafood Restaurant
7	Bazargate	18.938771	72.835335	Natural's Ice Cream Parlour	18.934892	72.824222	Ice Cream Shop
8	Bazargate	18.938771	72.835335	Jehangir Art Gallery	18.927606	72.831464	Art Gallery
9	Bazargate	18.938771	72.835335	Taj Mahal Palace & Tower	18.922306	72.833578	Hotel
10	Bazargate	18.938771	72.835335	Nariman Point	18.929183	72.822232	Scenic Lookout