Medical shop in Mumbai

Introduction

Access to the medical facilities is very crucial in current time. So, pharma business is growing very fast in India. To have a medical shop in city like Mumbai in India will be very profitable business. For that having medical shop in right place becomes key feature. In the current project I will try to find out those places where possibilities of getting more customers is high. New businessman who wants to have a medical shop will be interested in it.

Data

Data for this entire project will be from foursquare API, which provides detailed location of any items. So, I will be using medical institution's (like hospital, clinic etc.) location data longitude and latitude

Methodology

At first import essential library after that get location of medical institution from Foursquare API by passing Foursquare developer Credential as a *.json file, something like that-

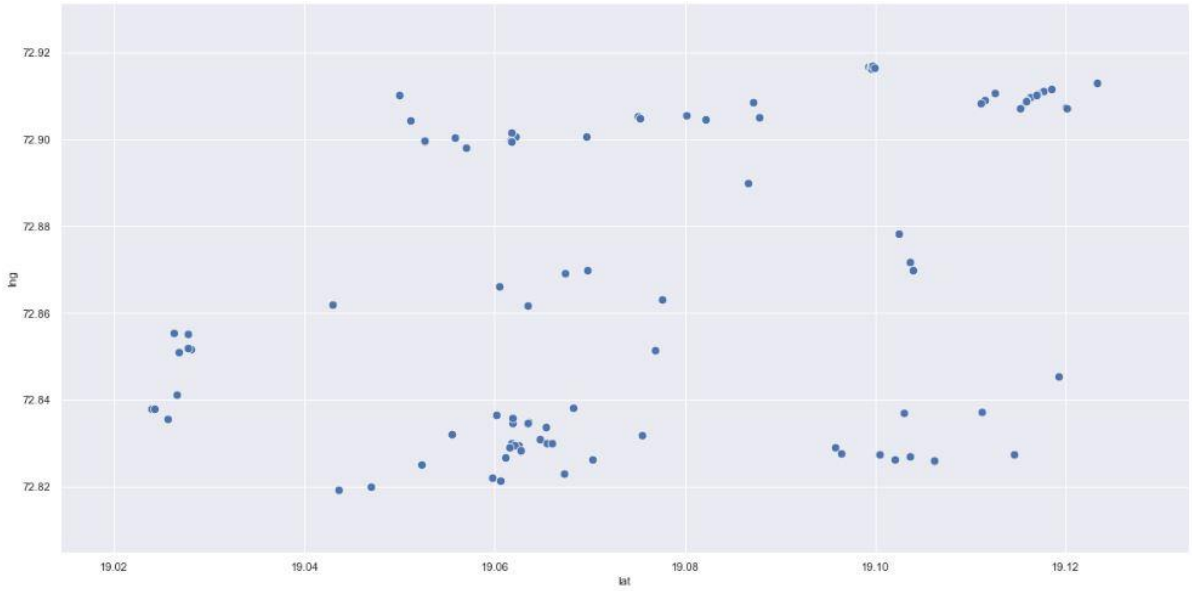

```
  'items': [{'summary': 'This spot is popular',
    'type': 'general',
    'reasonName': 'globalInteractionReason'}]},
 'venue': {'id': '4d9b39ed2ae860fc0f5a81cb',
  'name': 'Sofitel Mumbai BKC',
  'location': {'address': 'C 57 Bandra Kurla Complex, Bandra East, Maharashtra',
   'crossStreet': 'Bandra East',
   'lat': 19.0674478,
   'lng': 72.8690057,
   'labeledLatLngs': [{'label': 'display',
     'lat': 19.0674478,
     'lng': 72.8690057}],
   'distance': 1297,
   'postalCode': '400051',
   'cc': 'IN',
   'city': 'Mumbai',
   'state': 'Mahārāshtra',
   'country': 'India',
   'formattedAddress': ['C 57 Bandra Kurla Complex, Bandra East, Maharashtra (Bandra East)'
```


There is other useless (for this project point of view) data are there in this *, json file, for that it need be cleaned and converted into dataframe so that it will be easy to use in further analysis. Dataframe will look something like that.

	name	categories	address	crossStreet	lat	lng	labeledLatLngs	distance	postalCode	cc	city	state	count
0	Rude Lounge	Lounge	Supreme Business Park 8th Floor ,B wing	Hiranandani gardens	19.111052	72.908298	[{'label': 'display', 'lat': 19.11105226299543...	5079	400076	IN	Powai	Mahārāshtra	Inc
1	Le Pain Quotidien	Bakery	Central Avenue, Hiranandani Gardens, 1st Floor...	central avenue,hiranandani gardens	19.118580	72.911624	[{'label': 'display', 'lat': 19.11857965196816...	5953	400076	IN	Mumbai	Mahārāshtra	Inc
2	Gold's Gym	Gym	Supreme Business Park, Powai	NaN	19.112610	72.910616	[{'label': 'display', 'lat': 19.11260998178343...	5369	NaN	IN	Mumbai	Mahārāshtra	Inc
3	Mad over Donuts	Donut Shop	8 Central Ave	Powai	19.115847	72.908805	[{'label': 'display', 'lat': 19.11584677419096...	5532	400076	IN	Mumbai	Mahārāshtra	Inc

Medical shop in Mumbai

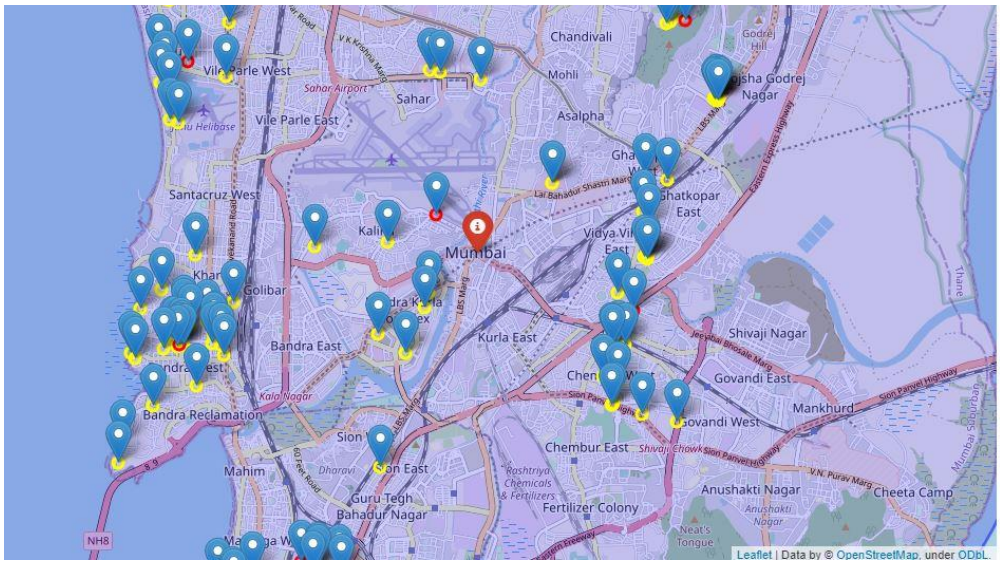
After getting dataframe, it is very important to see where are these point actually on a 2D plane of latitude and longitude so that guessing a number of cluster is possible



From the above plot one can see that there are total 6 number of clusters. From kmean clustering I will find the cluster centres, those are the target points where medical shop should open. To use Kmean Clustering, longitude and latitude data should be converted into 2D array. After applying Kmean clustering I got these coordinates as cluster centre.

	lat	lng
centre 1	19.081719	72.870911
centre 2	19.061809	72.829229
centre 3	19.067062	72.903049
centre 4	19.105351	72.830526
centre 5	19.111539	72.911447
centre 6	19.028423	72.849013

Now put those locations of medical institution and centres on Map using Folium.



Medical shop in Mumbai

Results

From Kmean clustering we get 6 centre points .

[19.08171906, 72.87091105],

[19.06180932, 72.82922863],

[19.06706176, 72.90304881],

[19.10535132, 72.8305259],

[19.11153864, 72.91144736],

[19.02842308, 72.849013]

These location is marked in red in the map.

Conclusion-

Here we can observe that 4out of 6 centres are very close to medical institution. If someone put their medical shop around that location, selling will be high.

Thank You