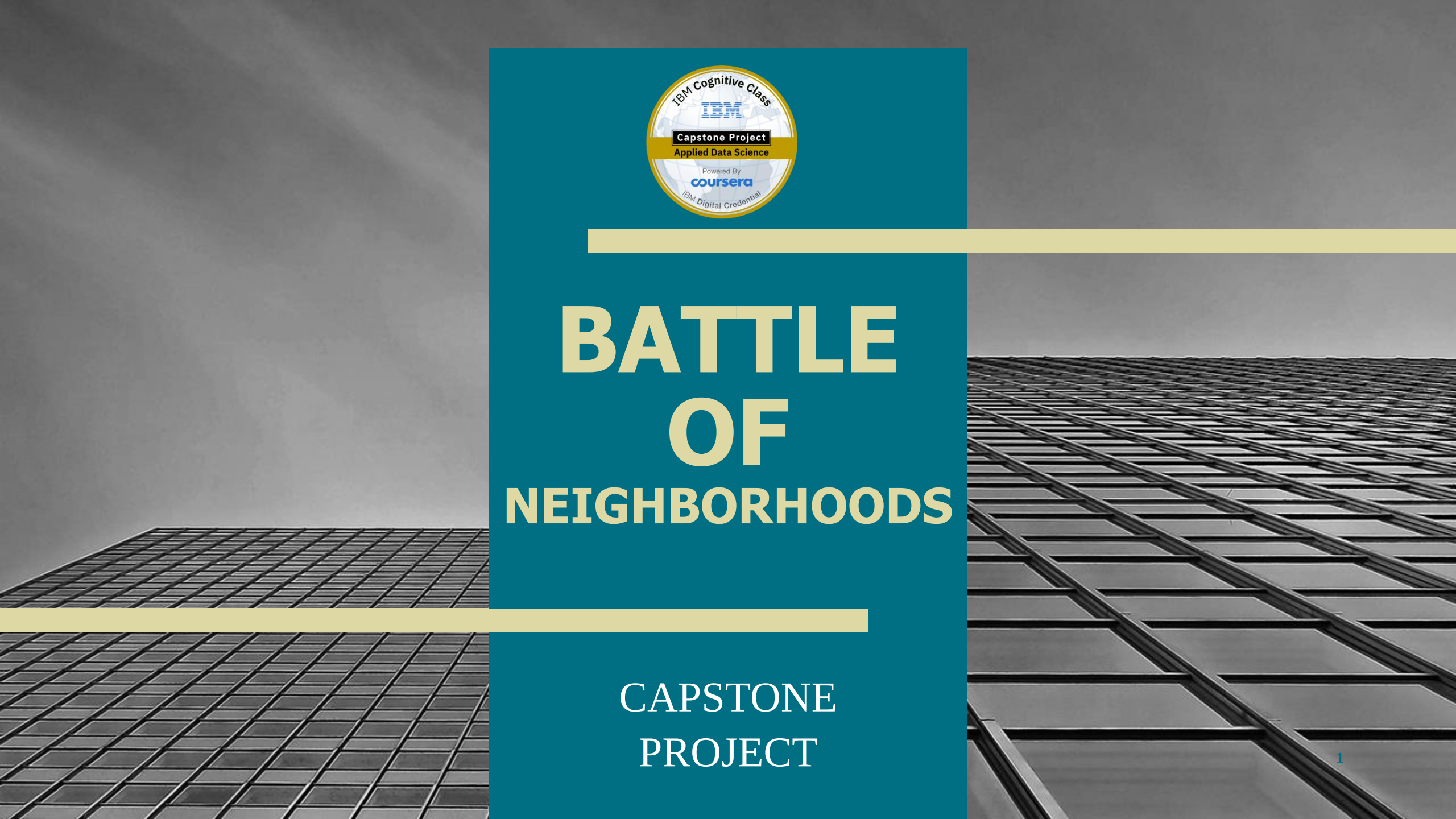


BATTLE OF NEIGHBORHOODS

CAPSTONE PROJECT

PROBLEM

To Open a new Hotel/Restaurant in Chandigarh, India

- The hotel/restaurant should be near to core area of Chandigarh
- It should attract local as well as foreign people.
- The location should be according to the famous venues around the city. Overall the location should be best in all.

SOLUTION

- This problem can be solved using Data Science.
- We just need to gather the data of locations of different venues using foursquare API .
- After gathering data a K-Means clustering will solve our problem.

Location

The given area that we need to analyze for this problem is Chandigarh, India

- The latitudes and longitudes of Chandigarh are

  30.7400652,76.7825889

  Chandigarh, a beautiful tourist spot in northen India. Chandigarh, the capital of the northen Indian states of Punjab and Haryana, was designed by the Swiss-French modernist architect, Le Carbusier.

STEPS

The necessary steps for solving this problem

- **Data Gathering**
- **Analysis**
- **Visualization**
- **Result**

Data

All the data is retrieved using Foursquare API of Hotels/restaurants and other famous venues.

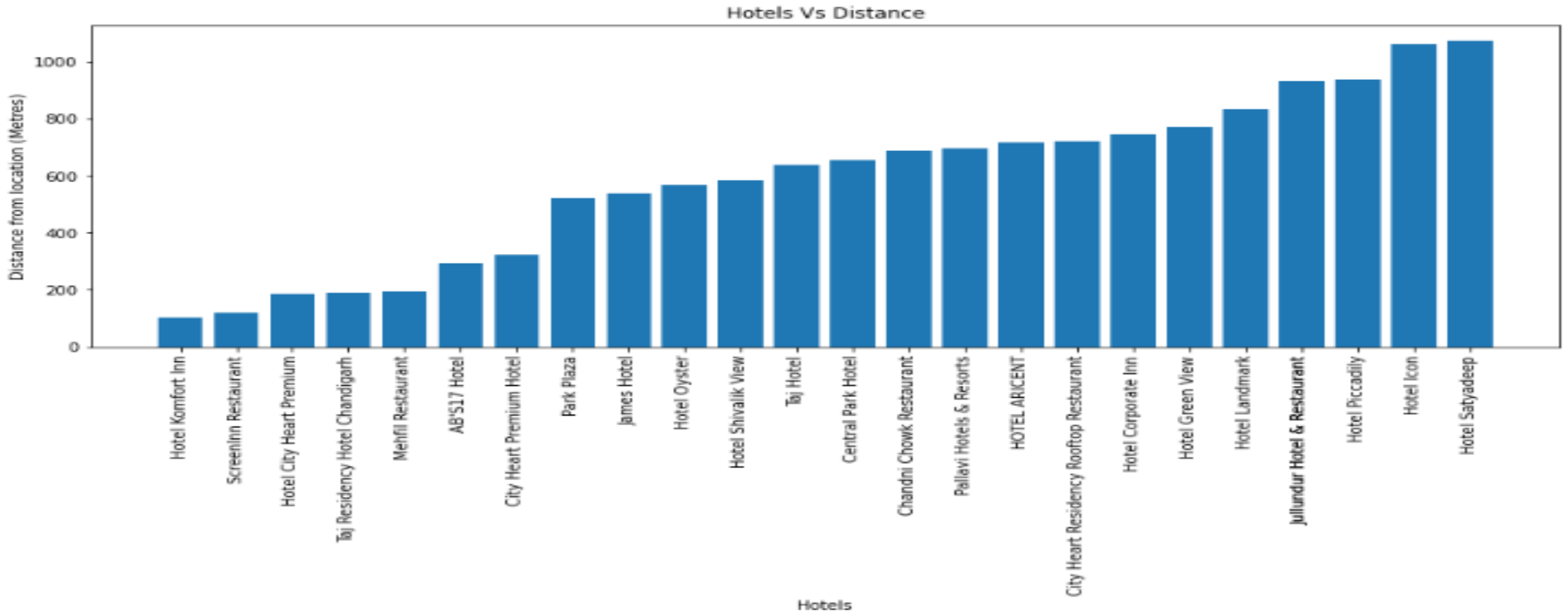
Data of Hotels and other venues

Here is how the foursquare provided the details of the locations to us that we can process as per our need , we also gathered the data of famous venues too and their tips and ratings as needed.

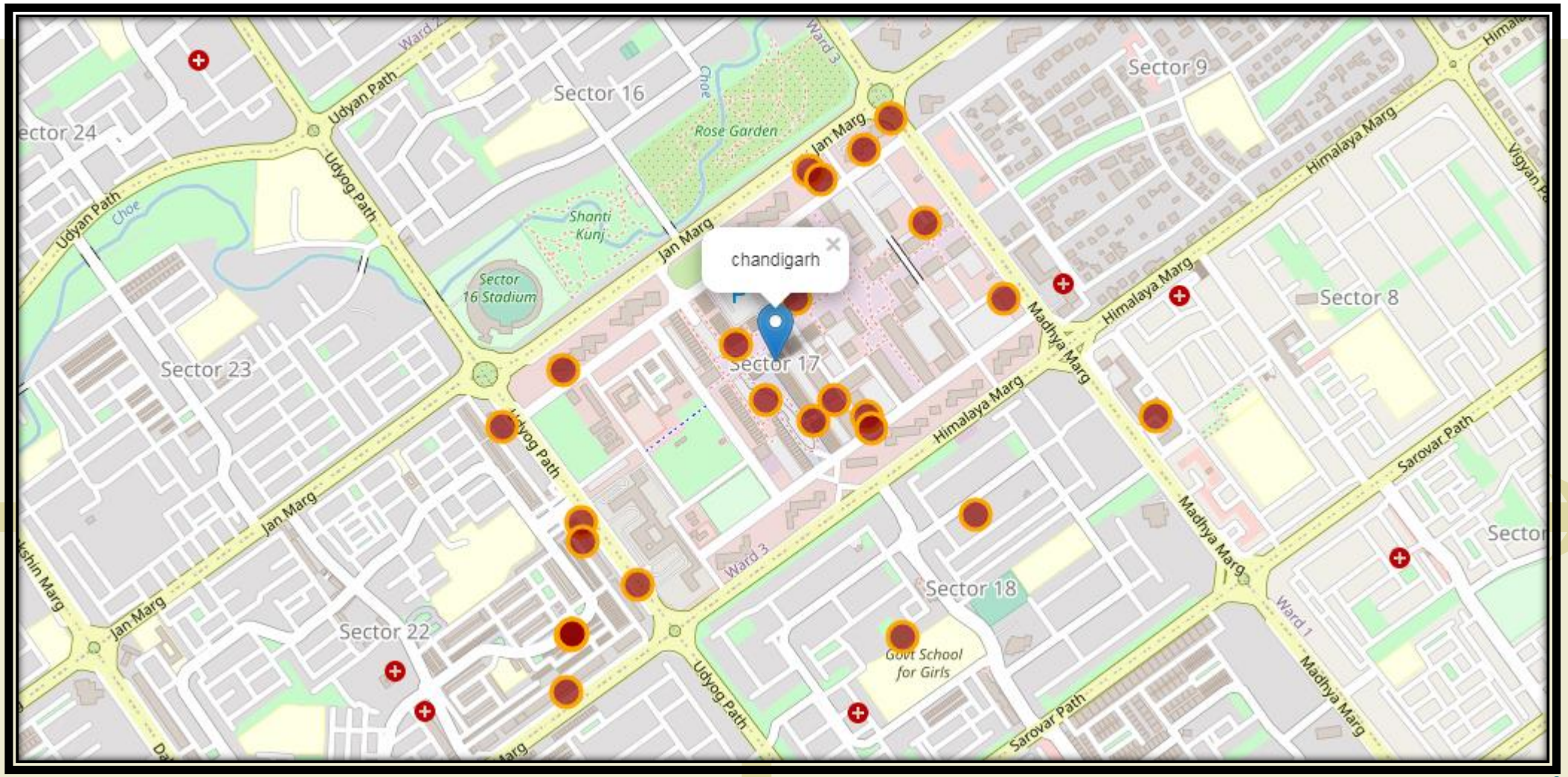
	name	categories	distance	lat	lng	id
0	Taj Hotel	Hotel	636	30.745340	76.785161	4bc8db62762beee1d69a3d38
1	Hotel Shivalik View	Hotel	583	30.739890	76.776496	4e3ec5391495bf24a5ec0c51
2	Hotel Corporate Inn	Hotel	746	30.746130	76.785923	4bd79397304fce7226b833ab
3	Hotel Piccadily	Hotel	937	30.733332	76.776710	4bd10e6620cd9960c4ae2e9e
4	Hotel Komfort Inn	Hotel Pool	103	30.739159	76.782327	5167015ee4b0e36021fdc146

Hotels v/s distance

The data collected is analyzed and seen that there are total 25 hotels within 1 km area . The average distance between all hotels and our location is 600 m.

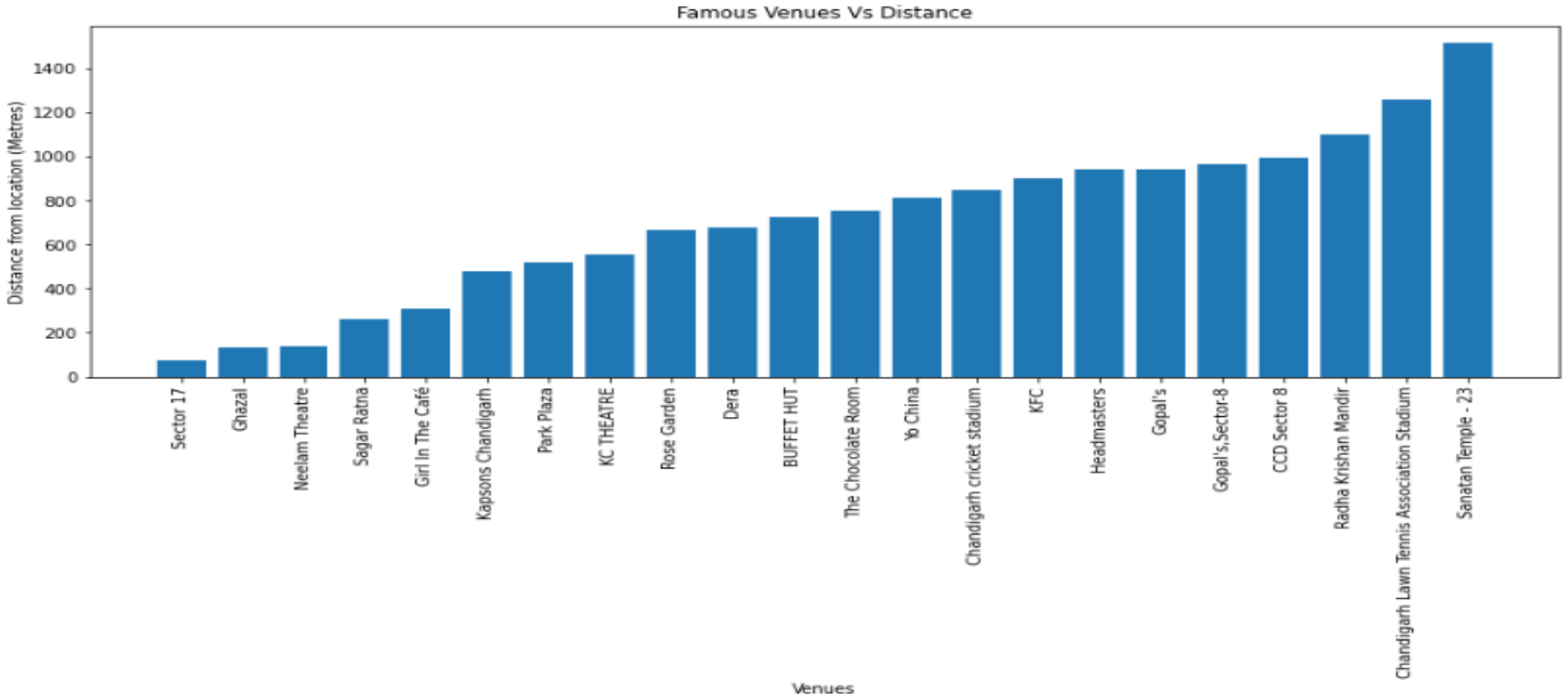


Hotel’s Locations

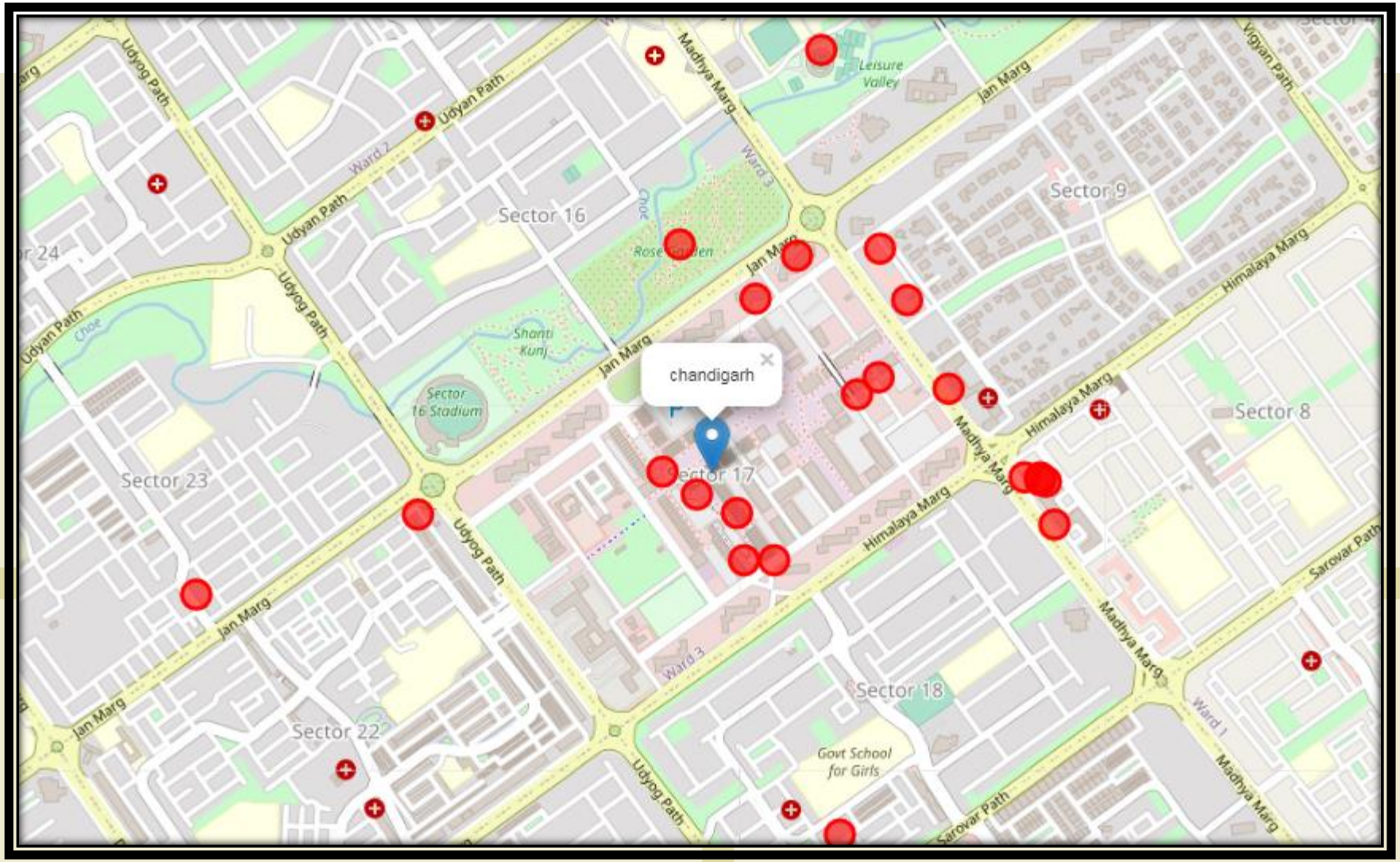


Venues v/s distance

Now the data of famous venues is also plotted to see their distance too. A total of 22 venues spotted within 1 km area

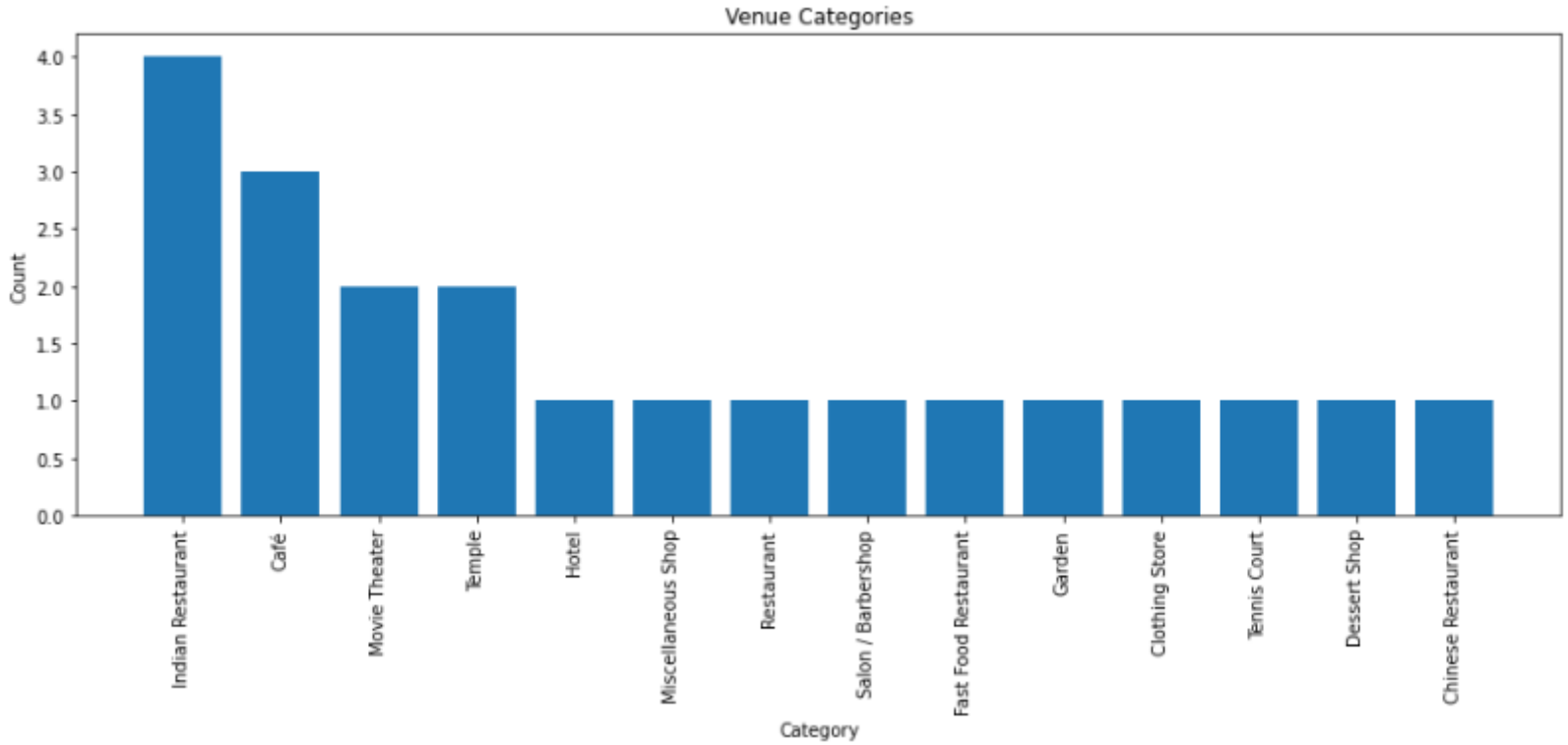


Venue's Locations



Categories of venues

There are 14 venue categories found. With none of them with much high variation



Ratings and Tips

	Venue	Rating	distance	Tips
0	Ghazal	7.9	134	No tips Yet
1	Girl In The Café	8.1	307	No tips Yet
2	Sector 17	7.8	71	No tips Yet
3	Rose Garden	8	667	No tips Yet
4	Headmasters	7.4	942	No tips Yet
5	Park Plaza	6.8	522	No tips Yet
6	Sagar Ratna	6.2	264	No tips Yet
7	Kapsons Chandigarh	6.1	477	No tips Yet
8	The Chocolate Room	6.3	753	No tips Yet
9	KFC	6.4	899	No tips Yet
10	BUFFET HUT	5.8	724	No tips Yet
11	Yo China	5.8	811	No tips Yet

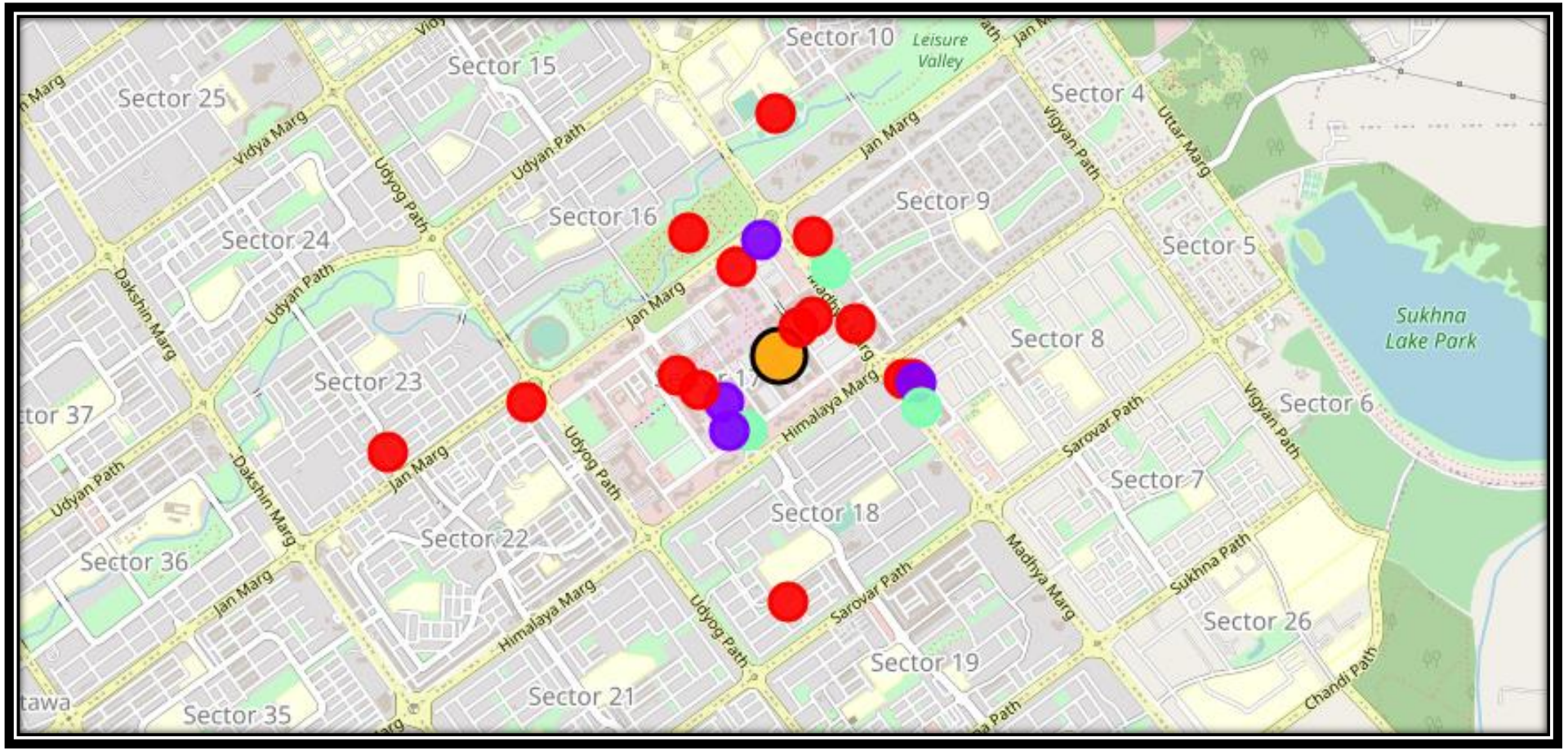
Ratings and tips were not available for every venue . But according to available ratings data we managed to list the most famous venues .

- The Ghazal , Girl in the café , Rose garden , and sector-17 seem to be most famous venues of all.

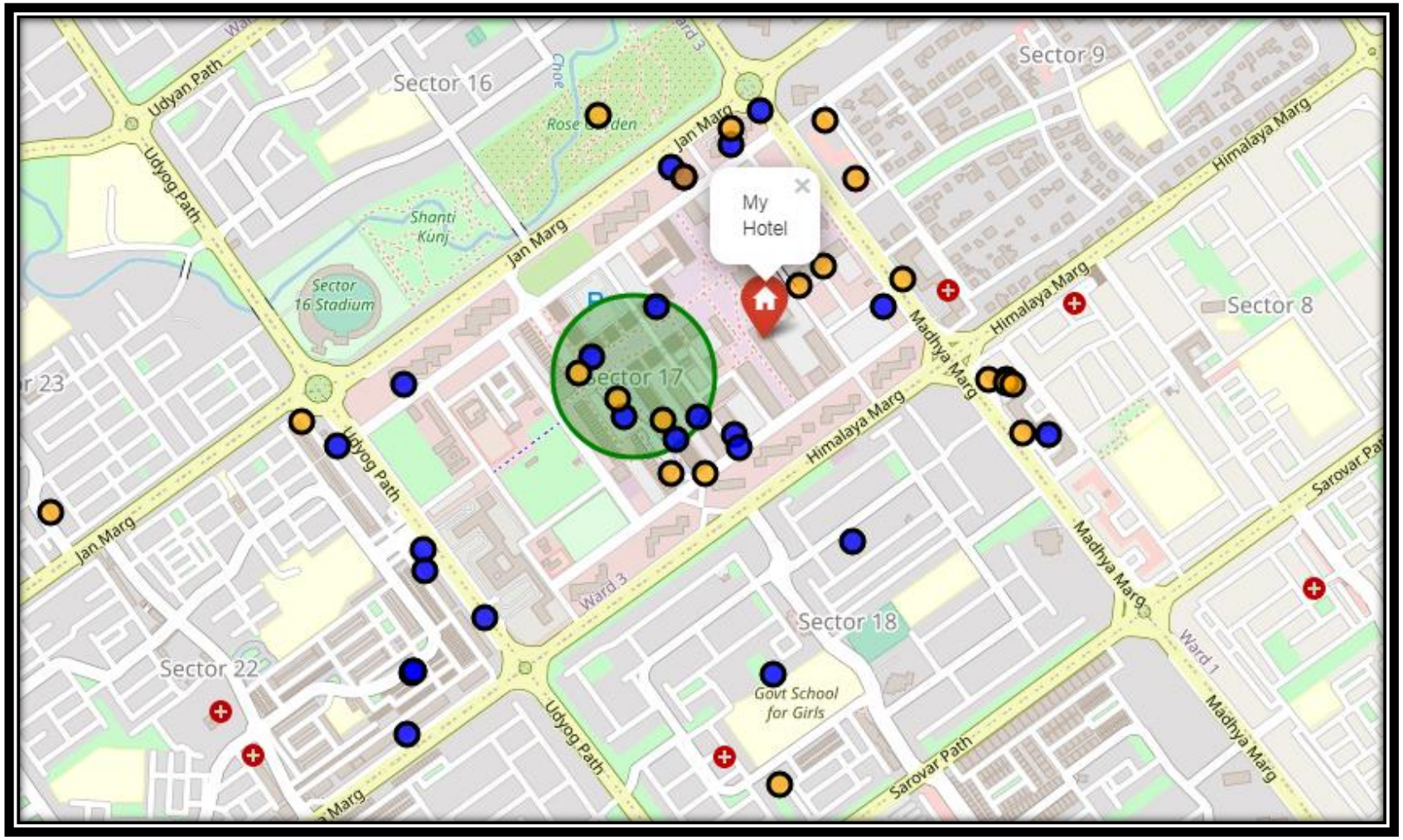
Clustering

- *The ideology behind this could be to produce the centre location of all famous top rated/tips venues.*
- *First we will find the clusters and based on it, we will take average of all centroids.*
- *Secondly, we will get midpoint of all shortlisted rated venues.*
- *Now we will get mean of both and decide our final location.*
- *We looked for three clusters and they were sorted out as shown in map (next slide).*

Clustered Map



Complete Map of all venues and hotels



- Here the **green** area represents the core location.
- The **blue** marker indicates the hotels/restaurants.
- The **yellow** marker indicates the famous venues.
- The **red pop-up marker** is your location for new hotel that is pointed out.

Result

- *Final location is pointed at 30.7409581,76.7860204*
- *This location is at the centre of the main market of sector 17.*
- *Located at exact junction , which can give more attention to people who pass by.*

Discussion and Conclusion

- The output which we achieved was very adjacent to the core location. This proves the accurate spotting of our predicted algorithm.
- As a business person , one would be able to set up a hotel/restaurant on given spot. This will bring revenue automatically as we have located in very near to core one. We proved this with combination of K-means and midpoint of coordinates.
- Despite of the findings, there were some lack in data. Tips and ratings were missing for most of the venues. Also when I compared foursquare data with google map ,I could see there were many hotels and venues found missing in foursquare.
- Anyways, I enjoyed learning and implementing this capstone.

THANK YOU!

MANISH KUMAR