Finding the best location for a Restaurant

1. Introduction/Business Problem

Discussion of the business problem and the audience who would be interested in this project. Something about the tourist place - KANYAKUMARI,INDIA I am from kanyakumari,a beautiful tourist spot in southern India. Kanyakumari is a coastal town in the state of Tamil Nadu on India's southern tip. Jutting into the Laccadive Sea, the town was known as Cape Comorin during British rule and is popular for watching sunrise and sunset over the ocean.Kanyakumari is also home to the Statue of the Saint Poet Thiruvalluvar, one of the greatest Tamil poets in India. Standing at a massive height of 133 feet, the statue is one of the biggest in the entire Asian subcontinent and is the result of the hard work of over 500 sculptors. Other historic sights that you can visit in Kanyakumari include the Padmanabhapuram Palace, the Vattakottai Fort, and the Gandhi Memorial.

Opening the Hotel/Restaurant

Coming down to business problems, I would like to open a hotel/restaurant near the beach. As it is a famous tourist spot,there is already lots of attention towards it.I know there will be many competitors in terms of hotel and restaurant and keeping them in mind, I need to locate my hotel in a place where more people are attracted and feel comfortable for a stay by providing good ambience and food. I want to target both foreign and local people to my new hotel.

The challenge is to find a suitable location for opening a new hotel / restaurant attracted to all local and foreign people in the centre of all famous venues.

Expected / Interested Audience: This is a brief EDA around a tourist spot in India, which is Kanyakumari. I have figured out the best spot around the region to open a hotel/restaurant keeping in mind the different dynamics of the place.

2.Data section

We will be completely working with foursquare data to explore and try to locate our new hotel with nearby church, temples, beach, museums which have a good ambience and vibes.
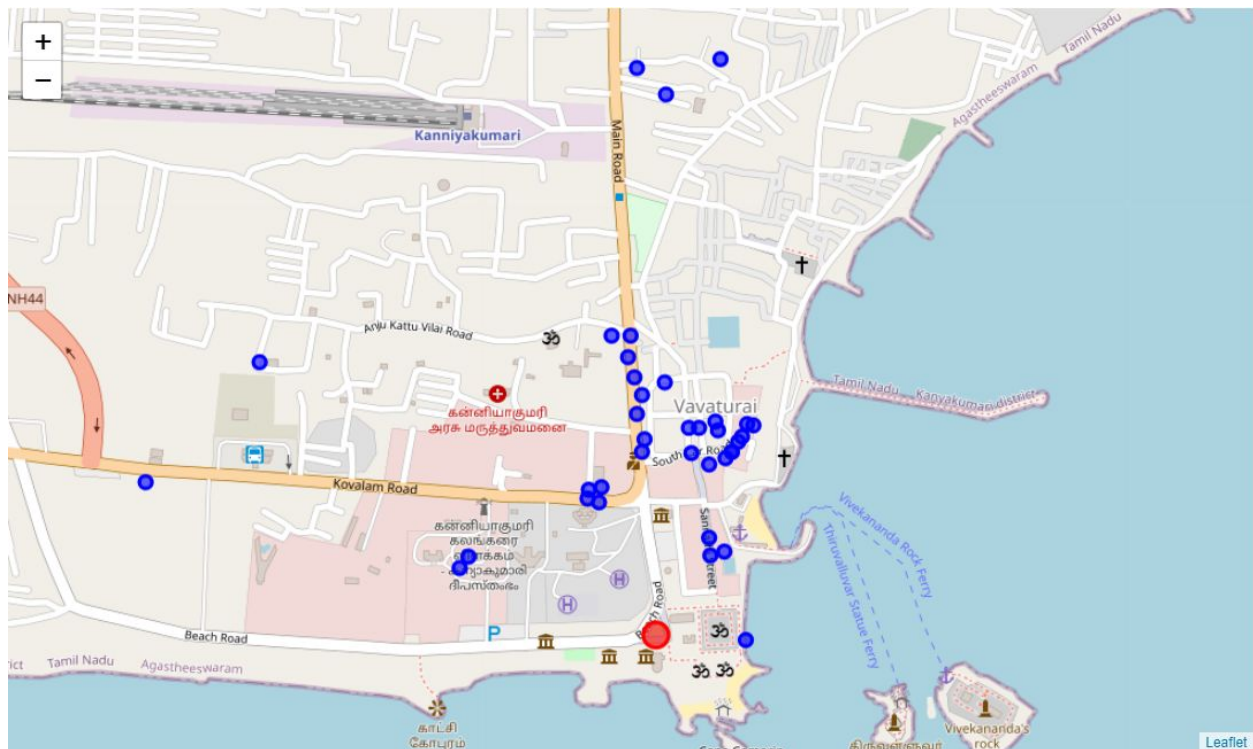
How will we be solving using this data?

We will look for midpoint area venues to locate our new hotel. Before that, our major focus will be on all the venues present in and around the core place of kanyakumari.

Just a heads up on how many hotels are distributed now around kanyakumari. We will perform Exploratory Data Analysis(EDA) on hotels & restaurants which are present in the tourist spot. In the other notebook we will use foursquare to determine the other venue data and find out the best spot for the hotel/restaurant.
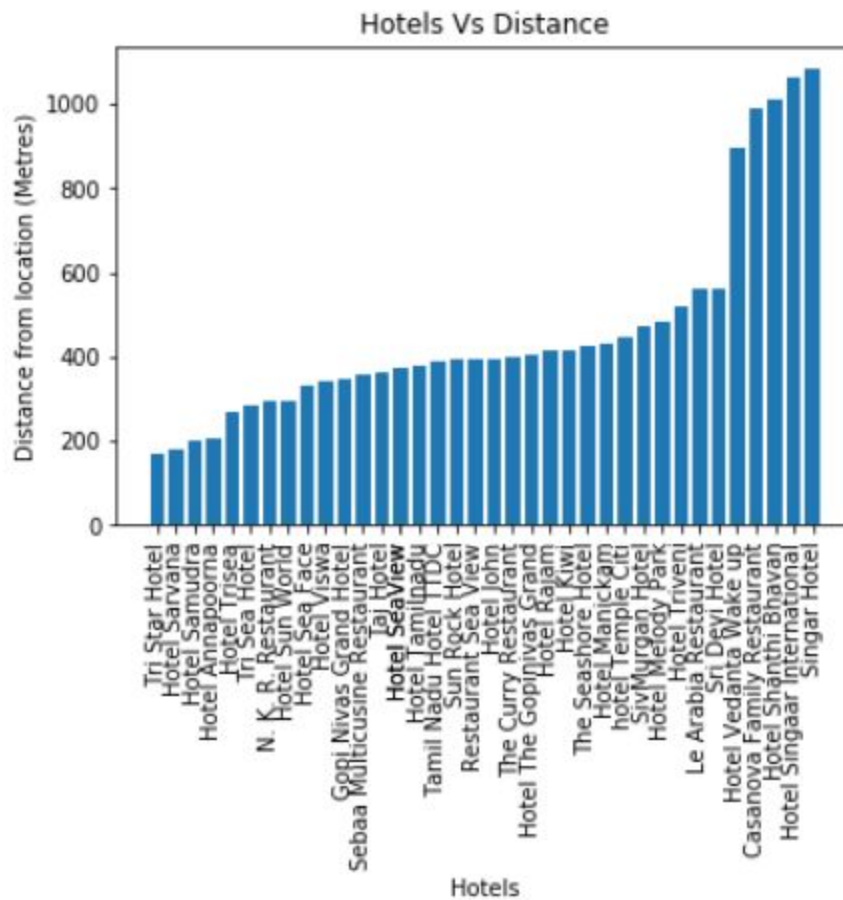
3 Methodology Section

3.a Removing Outlier -

Hotel Bharani looks like an outlier and is removed in the next step.

3.b How far are hotels from the core location?

Hotels Vs Distance

Average distance between hotels and core location is 457 metres

3.c Exploring other venues around Kanyakumari

```
0                   Sunrise Point
1       Vivekananda Rock Memorial
2                 End of the Land
3              Kanyakumari Beach
4                 Triveni Sangam
5          Sparsa Resorts and Spa
6                  Hotel SeaView
7              Sangam Restautant
8                  Hotel Sarvana
9            Thiruvalluvar Statue
10                Gandhi Memorial
11                     Ferry Boat
12          Kanyakumari Lighthouse
13              The Seashore Hotel
14          Kanyakumari Bus Stantion
15          Thiruvalluvar Mandapam
Name: name, dtype: object
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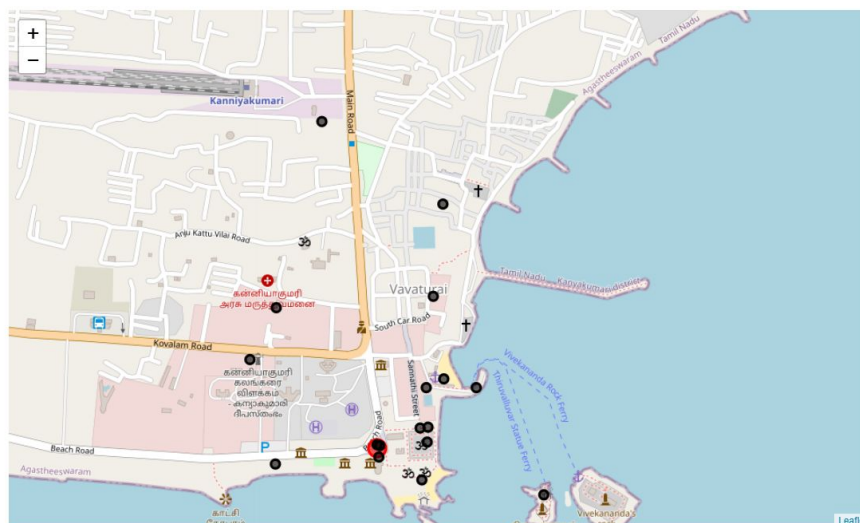
Other popular venues around the location are obtained which is the key factor for locating the place for our restaurant/hotel.
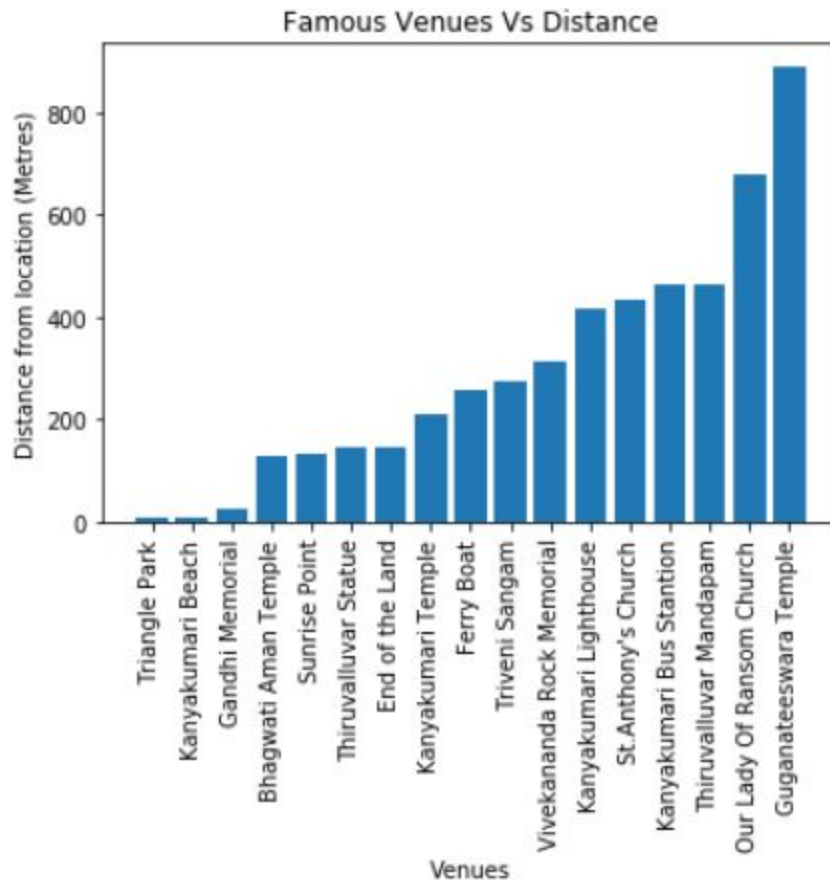
3.d Extract Venues using Search Queries

3.e Location of all venues

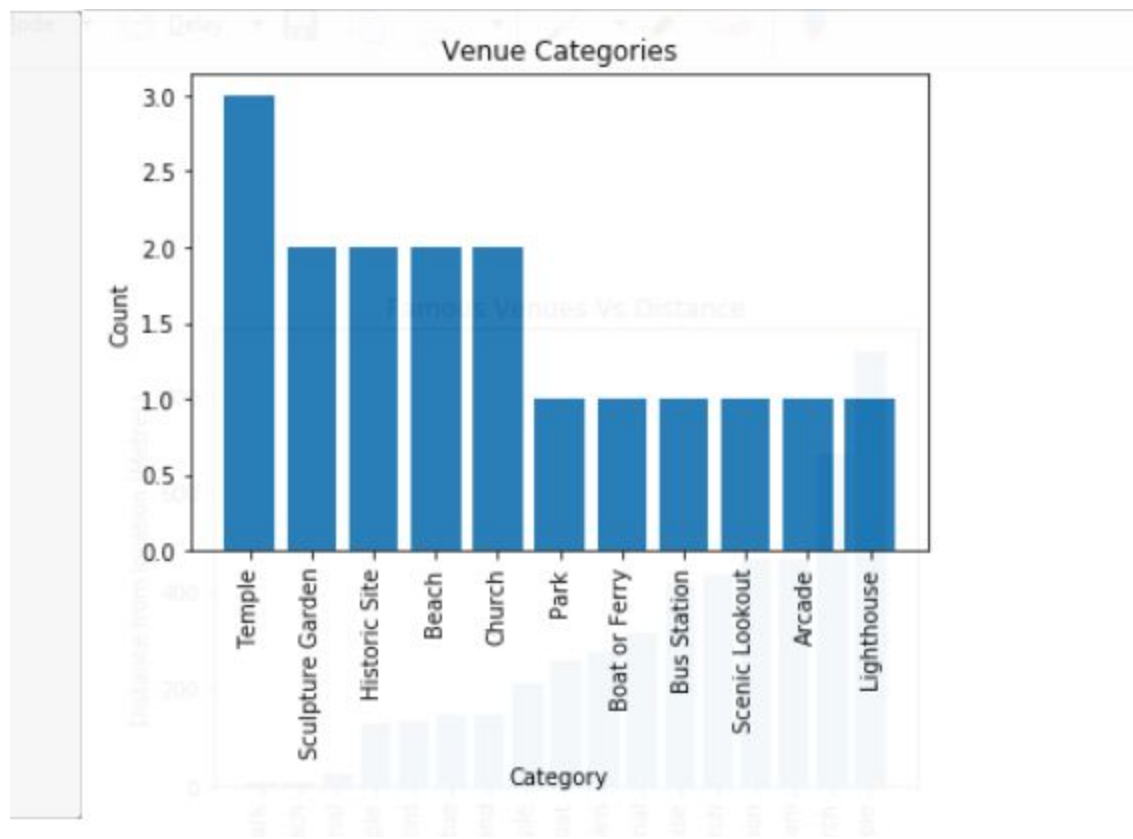We then locate all the key spots in and around Kanyakumari. All venues seem to be dispersed except seashore areas.

We have listed out the number of hotels and venues around kanyakumari.There are 36 Hotels/Restaurant and 17 Venues.

3.f How far are venues from the core location?

Famous Venues Vs Distance

We could see Kanyakumari beach,Gandhi Memorial,Triangle Park are more close to our location. Guganateswara temple is far from the rest of places. Bus station is also an important venue which is 465 metres from our location.

3.g Venue Categories

Even Though we didn't have immense data to consider the distribution of categories we could see that Temple, Beach, Historic sites and Church are more common venues.

3.h Rating of all Venues

Ratings of all venues are then analyzed.

3.i Number of Tips for all Venues

Number of tips is analyzed using EDA

3.j Extracting Rated and Tips Venues

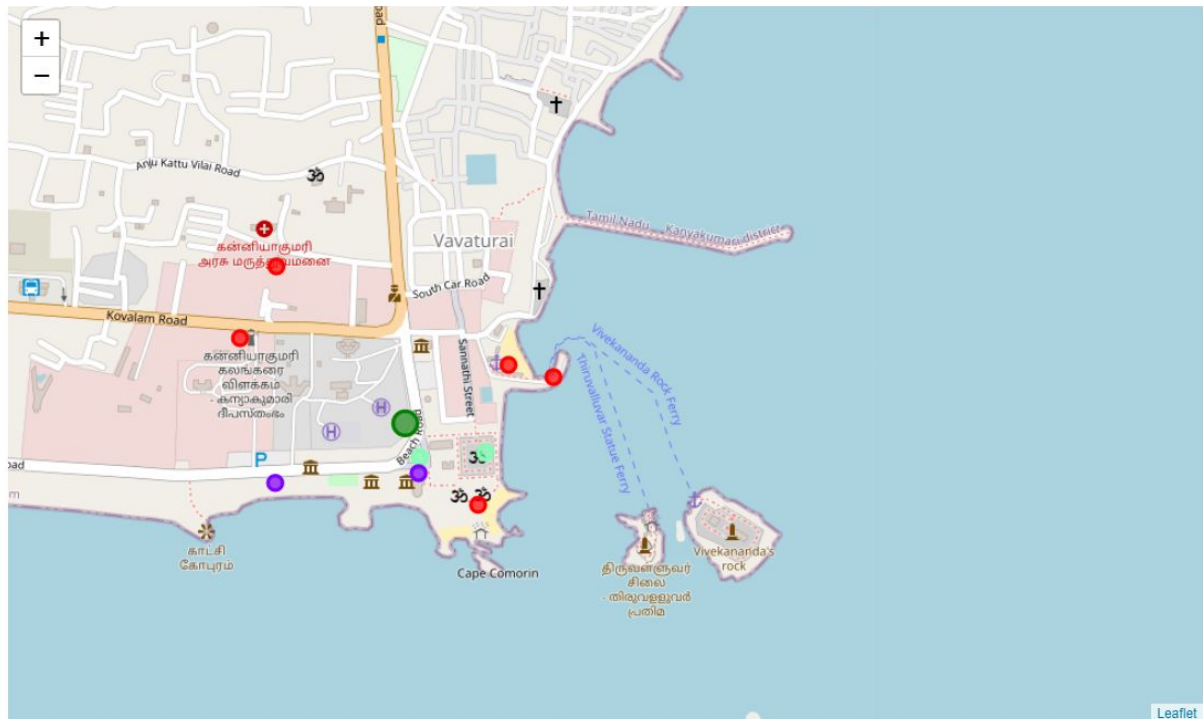Ratings and Tips are then extracted into a single table to obtain the final list of venues.

3.k Final list of Venues

	index	categories	distance	id	lat	lng	name
0	0	Beach	135	4f21fd64e4b0717a65eeddc3	8.079398	77.551158	Sunrise Point
1	1	Sculpture Garden	312	4b9cbc7ef964a520e37836e3	8.080707	77.552362	Vivekananda Rock Memorial
2	2	Arcade	148	4f22babfe4b0ed339695e61e	8.078479	77.551035	End of the Land
3	3	Beach	10	4e8d9f944fc653e47d1afef1	8.079311	77.550005	Kanyakumari Beach
4	4	Historic Site	277	4eb57ae40cd688257829927c	8.078860	77.547448	Triveni Sangam
5	10	Historic Site	26	4e8d8fc94fc653e47d19524a	8.079021	77.549976	Gandhi Memorial
6	11	Boat or Ferry	259	4c71df7857b6a1436f4ec4cc	8.080931	77.551561	Ferry Boat
7	12	Lighthouse	417	4c711c4334443704e6f5255f	8.081389	77.546820	Kanyakumari Lighthouse
8	14	Bus Station	465	4edc1b4846907c1b44ba0ed8	8.082652	77.547469	Kanyakumari Bus Stantion

Final list of key spots are analysed using K-means clustering.

3.l Clustering based on venues

3.m Center of all clusters & Midpoint of all venues

The location gives the central point to visit all other venues.Hence this can be locked down to attract all tourist.

The process of exploratory data analysis is done with the following steps.

4. Results section

4.a My hotel location

Final location is pointed at 8.07985,77.54973

This location is at Beach Road opposite to Gandhi Memorial and Kumari Temple.

Located at the exact junction of two cross roads which can give more attention to people who pass by.

4.b Top Rated Venues

Sunrise Point Vivekananda Rock Memorial End of the Land Kanyakumari Beach Triveni Sangam Gandhi Memorial All these venues are rated better than others and also they have more tips and are located within 320 metres to the core location of kanyakumari.So tourists may like to visit these places.

4.c Spot my hotel against others

Green - My hotel location Red - Kanyakumari core location. Black - Venues. Blue - Other hotels. My predicted location and core location are very close to each other which is expected.As this has central attraction,the predicted one almost matched with the core.

5. Discussion section

From above reports,we could get an idea why the predicted one is pointed/clustered on the given spot.First most thing could be the center of attraction for the place.

KMeans have figured out the most common place for all the venues.This output was very adjacent to the core location.This proves the accurate spotting of our predicted algorithm.

Despite 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.

6. Conclusion section

As a business person,one would be able to set up a hotel/restaurant on a given spot.This will bring revenue automatically as we have located in very near to core one.We proved this with Kmeans.

Future Scope of the Project

As mentioned earlier,most of the data needs to be extracted from google maps.Even though we got a somewhat accurate prediction.To be very confident on concluding our output,we may need more data to analyse.

Research based on hotel reviews and restaurant menus could be used for future purpose.

My Experience:

It was a wonderful journey for me in IBM capstone and other courses.Thanks to Coursera for keeping Skilful instructors with their awesome materials.