



Predicting the suitable location to open a Restaurant in Chennai Neighborhood

IBM Applied Data Science Capstone Project

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Business Problem

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- The market size of the Indian restaurants and food services industry stands at Rs 3.7 trillion as of 2018 registering a year on year growth of about 10% and a CAGR growth of 8.4% between 2013 and 2018
- Location of the restaurant is one of the most important decision that will determine whether the investor will be able to make a profit out of it or not
- **Objective:** To analyze and find out the best/suitable locations in the Chennai city, India to open a new Restaurant
- **Question :** In the Chennai City, India if an Investor is looking to open a new restaurant, where would be the best place/location to open it?

Data

Data requirements

- List of neighborhoods in Chennai, Tamil Nadu
- Latitude and longitude coordinates of those neighborhoods
- Venue data, particularly data related to restaurants

Source of data

- This Wikipedia page (https://en.wikipedia.org/wiki/List_of_neighbourhoods_of_Chennai) contains a list of neighborhoods in Chennai, Tamil Nadu with a total of 180 neighborhoods.
- Geographical coordinates of the neighborhoods were collected using google map API which will give us the latitude and longitude coordinates of the neighborhoods.
- Foursquare PI calls are used to get the venue data for those neighborhoods.

Methodology and Feature selection

Methodology

- Filter the Restaurant venues details from complete list
- Categorize the Restaurant type like Dining, Quick service Restaurants(QSRs) and Cafes
- To find out the suitable locations/neighborhoods (using k-means clustering) this will provide the locations to the investor to find out the optimal place to start the restaurants

Feature selection

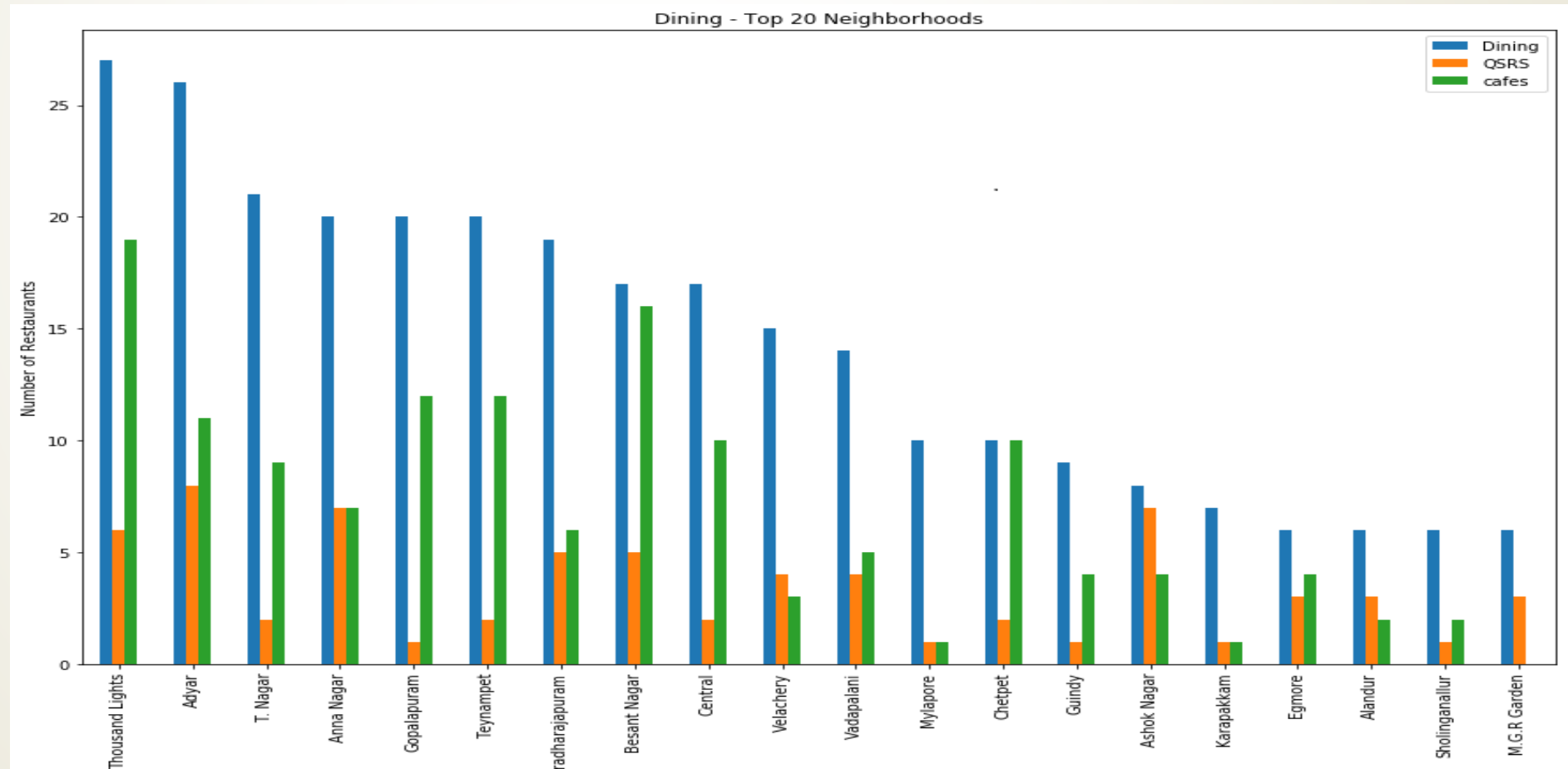
Three new features need to be created based on the nature/type of Restaurants

- Casual and fine dining restaurants categorized as **Dinning**
- Fast food cuisines as well as minimal table services are considered as Quick service Restaurants (**QSRs**) and
- Cafes, Food courts , Kiosks and bars are considered as **Cafes**

Analysis

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There are close to 6 neighborhoods which are having more than 20 dining/casual dining Restaurants. Those area are **Thousand lights, Adyar, T.Nagar, Anna Nagar, Gopalapuram and Teynampet** . Cafes and lounges type of also bit populated in this Neighborhoods

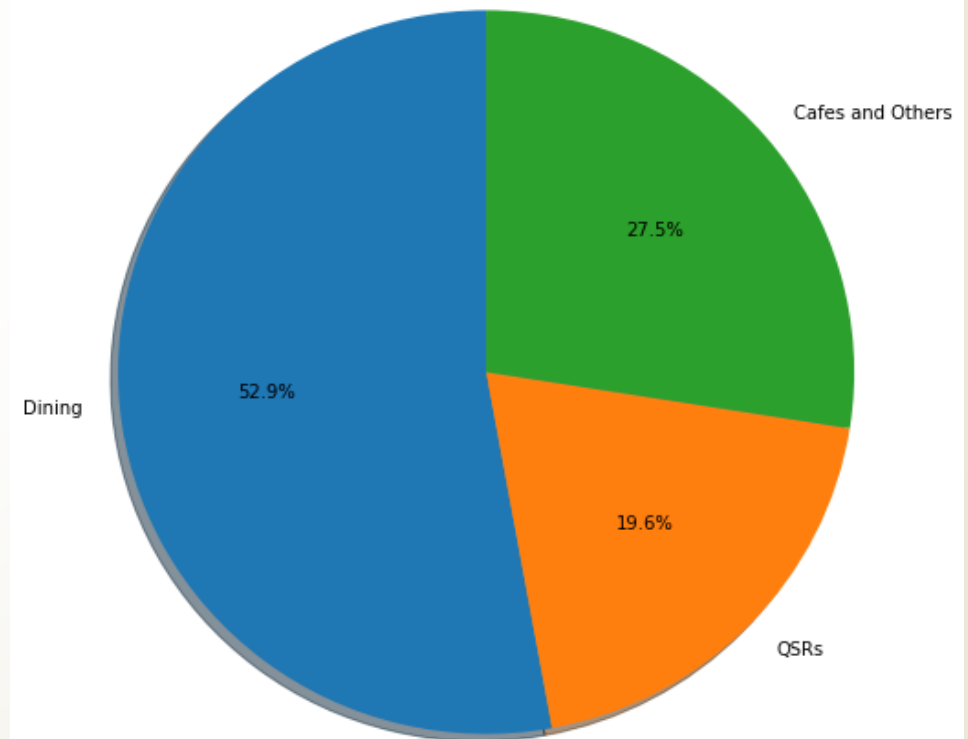


Analysis contd...

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- There are close to 6 neighborhoods which are having more than 20 dining/casual dining Restaurants. Those area are **Thousand lights, Adyar, T.Nagar, Anna Nagar, Gopalapuram and Teynampet** . Cafes and lounges type of also bit populated in this Neighborhoods
- There are 5 neighborhoods having more than 10 cafes and lounges type restaurants. Those neighborhoods are **Thousand Lights, Besant Nagar, Gopalapuram, Teynampet and Adyar**
- Percentage of restaurants available in **data set** is similar to data represented in **CAGR** reporting. This data is sufficient to continue for further analysis and model building

Market share of Restaurants in chennai City

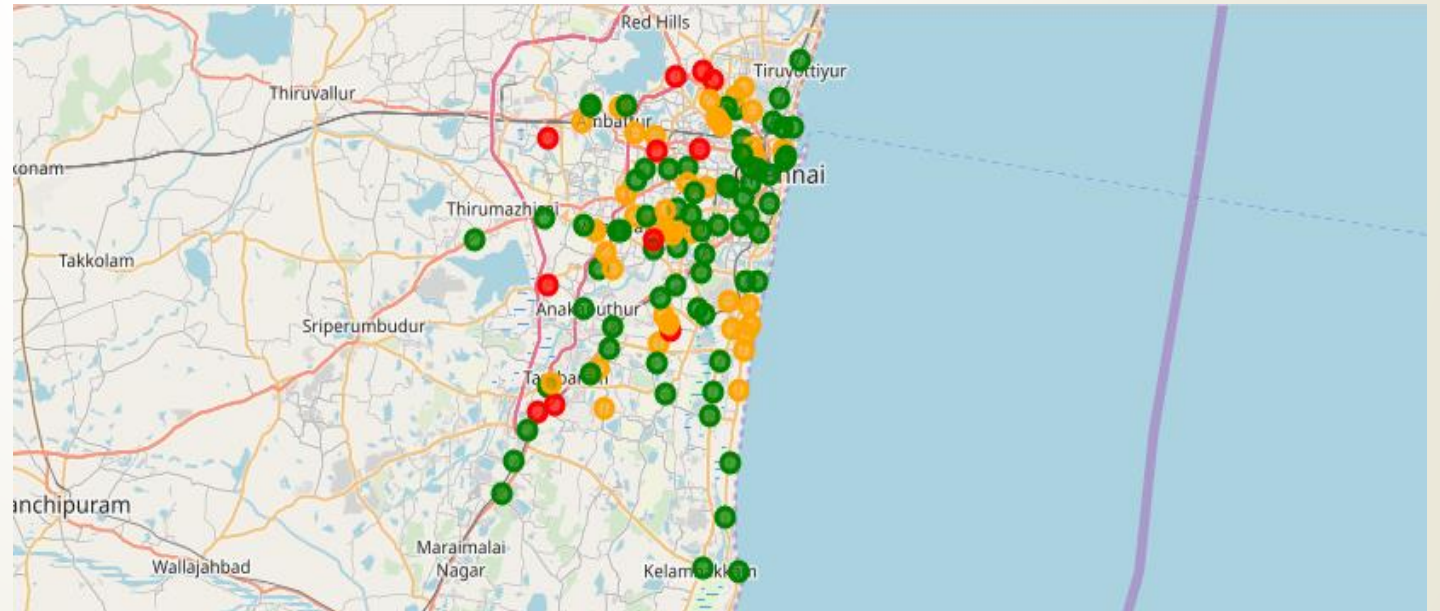


Results

Categorize the neighborhoods into 3 clusters based on the frequency of occurrence for “Restaurants”:

- Cluster 0: Neighborhoods with high number of **Quick Service Restaurants(QSRs)** and less number of Casual dining and Cafes
- Cluster 1: Neighborhoods with high number of **Casual Dining** and less number of QSRs and Cafes
- Cluster 2: Neighborhoods with high numbers of **cafes** and there are Casual dining and QSRs available in this location

The results of the clustering are visualized in the map below with cluster 0 in **Orange**, cluster 1 in **Green**, and cluster 2 in **Red**.



Results contd...

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Cluster - 0

Alapakkam
Choolai
Iyyapanthangal
Iyyappanthangal
Kodungaiyur
Kolappakkam
M.G.R Nagar
M.K.B Nagar
Maduravoyal
Mowlivakkam
Nesapakkam
Pattalam
Pattravakkam
Perambur
Puzhuthivakkam
Selavoyal
Sembiam
T.V.K Nagar
Ullagaram

Cluster - 1

Anakaputhur	Ponneri
Chembarambakkam	Poonamallee
Defence Colony	Purasawalkam
Erukanchery	Royapuram
Gerugambakkam	Saidapet
Guduvancherry	Thirumazhisai
Jamalia	Thirumullaivayal
Kanathur	Thirumullaivoyal north
Kelambakkam	Tiruvottiyur
Kosapet	Triplicane
Kovalam	Urapakkam
Kovilambakkam	Vandalur
MMDA Colony	Old Washermenpet
Mogappair	Pallavaram
Moolakadai	
Mudichur	
Muttukadu	
New Washermenpet	

Cluster - 2

Avadi
ICF Colony
Kathirvedu
Kundrathur
Madhavaram
Madipakkam
Manjambakkam
Padi
Peerankaranai
Perungalathur
Ramapuram

Conclusion and future directions

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- Opening a Restaurant in cluster 2 neighborhoods will be good option but investors has to consider other factors like population, income of residents and lifestyle of residents ..etc.
- Investors specifically looking for open a casual dining type restaurants , they can refer cluster 0 neighborhoods. These locations do not have any casual dining type restaurants.
- The neighborhoods in Cluster 1 which are potential to open a QSR type restaurants
- Future research can be done to include other factors population, income of residents , lifestyle of residents and paid version of foursquare data to get some more insights about these neighborhoods would help to make a better decision

Thank you!