

Choosing Location for Restaurants in Stockholm, Sweden.

1.Introduction

A restaurant , or an eatery, is a business which prepares and serves food and drinks to customers in exchange for money. Meals are generally served and eaten on the premises, but many restaurants also offer take-out and food delivery services. Restaurants vary greatly in appearance and offerings, including a wide variety of cuisines and service models ranging from inexpensive fast food restaurants and cafeterias, to mid-priced family restaurants, to high-priced luxury establishments.



The project named The battle of neighbourhood deals with finding a location for the restaurant, ie a suitable location. We have to build a restaurant in Stockholm, Sweden. In order to build a restaurant we have

to analyse the location and restaurant and we have to locate the areas which have less restaurants, ie least crowded area. In order to get profit in an area, we have to locate areas with least or no restaurants nearby. We will collect maps and data and will use our data science to find the appropriate location.

Data

Data title: - Open Data published by Government of Sweden under the section HM Land Registry: Location Data
Type of data: Dataset in form of CSV file
Duration: August 2018 data

Location Data includes information on all property sales in Sweden and Stockholm that are sold for full market value and are lodged with us for registration. The dataset includes the transactions received at HM Land Registry in the period from the first to the last day of August 2018.

- Data title: Google Maps Geocoding API

Type of data: JSON

Duration: N/A

Description of the data: Location coordinates obtained by Gmaps API calls. Location Information obtained is used to obtain the location coordinates from Google Maps. A separate Python script has been developed to extract the unique street names, district names from the

Dataset and embed those in the GMaps API calls to obtain the required information.

Google Cloud Platform/ Google Maps• Data title: Restaurant location data

Description of the data: Location coordinates obtained by Foursquare API calls. To determine the proximity of various amenities as per the client's requirement, restaurant location data is used.

1.2 Problem

Stockholm,Sweden is the place where there are all there are lot of restaurants.We have to detect places that are having less restaurants.We have to detect places where there are less number of restaurants or no restaurants to earn profit and it should also be noted that it should be crowded place also.

2. Data acquisition and cleaning

Data requirements and Methods

We have locate places using Foursquare and coordinates.We have to trace points such as

- Venue ID
- Location
- Category
- Preferences

Methodology

The thought process behind this is that likes are a proxy for quality. The more likes there are, the better the restaurant is. This might be incorrect but API call issues (how many I can use for free) holds me back from getting price / rating data. We will then bin this data into a quality categorical variables so we can cluster appropriately. The gathered data (see above in Data Acquisition Approach and Data Required sections) and will create a k-means clustering algorithm that groups restaurants into 4-5 clusters so that people looking to eat in Stockholm can easily see which restaurants are the best to eat at, what cuisine is available and where in Stockholm they can look to eat.

5. Results

Our analysis shows that although there is a great number of restaurants in Stockholm, there are pockets of low restaurant density fairly close to city center. Another borough was identified as potentially interesting but our attention was focused on offer a combination of popularity among tourists, closeness to city center, strong socio-economic dynamics and a number of pockets of low restaurant density. After directing our attention to this more narrow area of interest we first created a dense grid of location candidates (spaced 100m appart); those locations were then filtered so that those with more than two restaurants in radius of 250m and those with a restaurant closer than 400m were removed. Result of all this is all zones containing largest number of potential new restaurant locations based on number of and distance to existing venues - both restaurants in general and Italian restaurants particularly. This, of course, does not imply that those zones are actually optimal locations for a new restaurant! Purpose of this analysis was to only provide info on areas close to Stockholm center but not crowded with existing restaurants - it is entirely possible that there is a very good reason for small number of restaurants in any of those areas, reasons which would make them

unsuitable for a new restaurant regardless of lack of competition in the area.

These are four clusters of restaurants as follows:

- Cluster 1 • Characteristics of Good quality food or Mostly Bar or Cafe Cluster 2
- Characteristics Below average quality food Mostly Scandinavian food Cluster 3
- Characteristics of High quality food of American inspired food Cluster 4 •
- Characteristics of Above average quality food of Mostly Bars / Cafe

6. Conclusion

Purpose of this project was to identify Stockholm areas close to center with low number of restaurants in order to aid stakeholders in narrowing down the search for optimal location for a new restaurant. Clustering of those locations was then performed in order to create major zones of interest (containing greatest number of potential locations) and addresses of those zone centers were created to be used as starting points for final exploration by stakeholders. Final decision on optimal restaurant location will be made by stakeholders based on specific characteristics of neighborhoods and locations in every recommended zone, taking into consideration additional factors like attractiveness of each location.

