# 1. Introduction Section :

## Introduction & Business Problem :

**Problem Background:**
The City of New York, is the most populous city in the United States. It is diverse and is the financial capital of USA. It is multicultural. It provides lot of business opportunities and business friendly environment. It has attracted many different players into the market. It is a global hub of business and commerce. The city is a major center for banking and finance, retailing, world trade, transportation, tourism, real estate, new media, traditional media, advertising, legal services, accountancy, insurance, theater, fashion, and the arts in the United States. This also means that the market is highly competitive. As it is highly developed city so cost of doing business is also one of the highest. Thus, any new business venture or expansion needs to be analysed carefully. The insights derived from analysis will give good understanding of the business environment which help in strategically targeting the market. This will help in reduction of risk. And the Return on Investment will be reasonable.

**Problem Description:**
A restaurant is a business which prepares and serves food and drink to customers in return for money, either paid before the meal, after the meal, or with an open account. The City of New York is famous for its excellent cuisine. It's food culture includes an array of international cuisines influenced by the city's immigrant history.

1. Central and Eastern European immigrants, especially Jewish immigrants - bagels, cheesecake, hot dogs, knishes, and delicatessens

2. Italian immigrants - New York-style pizza and Italian cuisine

3. Jewish immigrants and Irish immigrants - pastrami and corned beef

4. Chinese and other Asian restaurants, sandwich joints, trattorias, diners, and coffeehouses are ubiquitous throughout the city

5. Mobile food vendors - Some 4,000 licensed by the city

6. Middle Eastern foods such as falafel and kebabs examples of modern New York street food

7. It is famous for not just Pizzerias, Cafe's but also for fine dining Michelin starred restaurants.The city is home to "nearly one thousand of the finest and most diverse haute cuisine restaurants in the world", according to Michelin.

So it is evident that to survive in such competitive market it is very important to strategically plan. Various factors need to be studied inorder to decide on the Location such as :

1. New York Population
2. New York City Demographics

3. Are there any Farmers Markets, Wholesale markets etc nearby so that the ingredients can be purchased fresh to maintain quality and cost?
4. Are there any venues like Gyms, Entertainment zones, Parks etc nearby where floating population is high etc
5. Who are the competitors in that location?
6. Cuisine served / Menu of the competitors
7. Segmentation of the Borough
8. Untapped markets
9. Saturated markets etc

Even Though well funded XYZ Company Ltd. need to choose the correct location to start its first venture.If this is successful they can replicate the same in other locations. First move is very important, thereby choice of location is very important.

## Target Audience

To recommend the correct location, XYZ Company Ltd has appointed me to lead of the Data Science team. The objective is to locate and recommend to the management which neighborhood of Newyork city will be best choice to start a restaurant. The Management also expects to understand the rationale of the recommendations made.

This would interest anyone who wants to start a new restaurant in Newyork city.

## Success Criteria:

The success criteria of the project will be a good recommendation of borough/Neighborhood choice to XYZ Company Ltd based on Lack of such restaurants in that location and nearest suppliers of ingredients.

# Data Section:

## Description of the data and its sources that will be used to solve the problem
The following data is required to answer the issues of the problem:

- List of Boroughs and neighborhoods of Manhattan with their geodata (latitude and longitude)
- List of Subway metro stations in Manhattan with their address location
- List of apartments for rent in Manhattan area with their addresses and price
- Preferably, a list of apartment for rent with additional information, such as price, address, area, # of beds, etc

- Venues for each Manhattan neighborhood ( than can be clustered)
- Venues for subway metro stations, as needed

# Methodology section:

This section represents the main component of the report where the data is gathered, prepared for analysis. The tools described are used here and the Notebook cells indicates the execution of steps.

## The analysis and the strategy:

The strategy is based on mapping the above described data in section 2.0, in order to facilitate the choice of at least two candidate places for rent. The choice is made based on the demands imposed : location near a subway, rental price and similar venues to Singapore. This visual approach and maps with popups labels allow quick identification of location, price and feature, thus making the selection very easy.
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- What is the cost of rent (per square ft) around a mile radius from each subway metro station?
- What is the area of Manhattan with best rental pricing that meets criteria established?
- What is the distance from work place ( Park Ave and 53 rd St) and the tentative future home?
- What are the venues of the two best places to live? How the prices compare?
- How venues distribute among Manhattan neighborhoods and around metro stations?
- Are there tradeoffs between size and price and location?
- Any other interesting statistical data findings of the real estate and overall data.

## How the data will be used to solve the problem

The data will be used as follows:

- Use Foursquare and geopy data to map top 10 venues for all Manhattan neighborhoods and clustered in groups ( as per Course LAB)
- Use foursquare and geopy data to map the location of subway metro stations , separately and on top of the above clustered map in order to be able to identify the

venues and amenities near each metro station, or explore each subway location separately

- Use Foursquare and geopy data to map the location of rental places, in some form, linked to the subway locations. create a map that depicts, for instance, the average rental price per square ft, around a radius of 1.0 mile (1.6 km) around each subway station - or a similar metrics.
- Addresses from rental locations will be converted to geodata( lat, long) using Geopy-distance and Nominatim.
- Data will be searched in open data sources if available, from real estate sites if open to reading, libraries or other government agencies such as Metro New York MTA, etc.
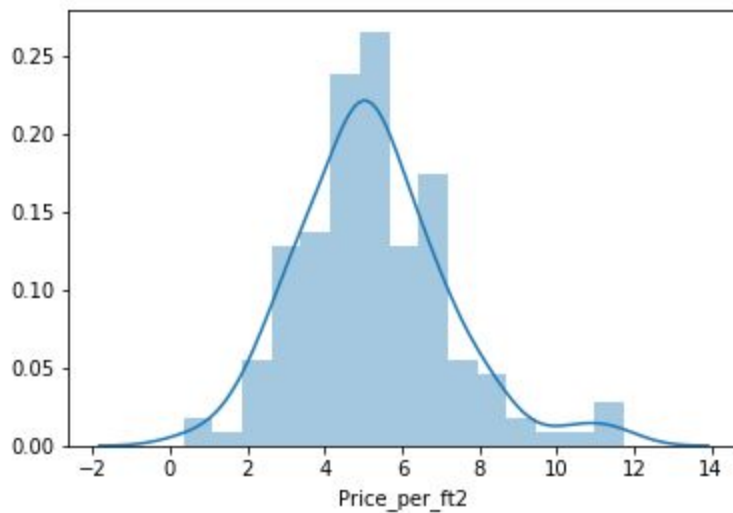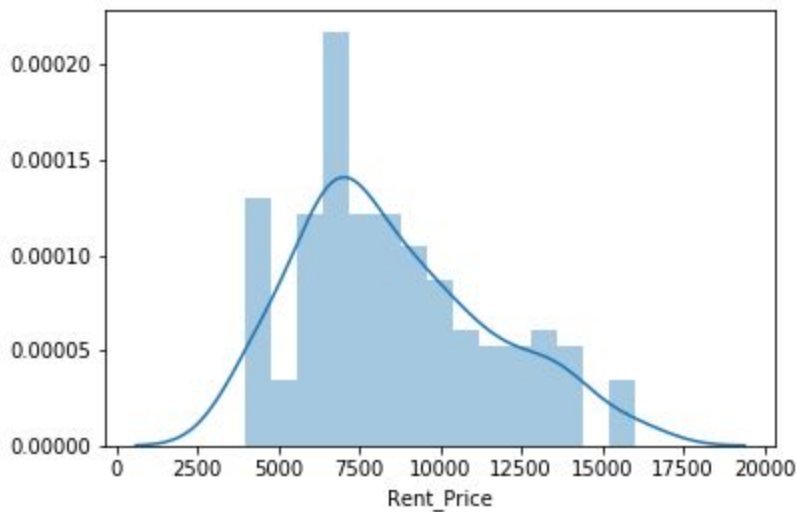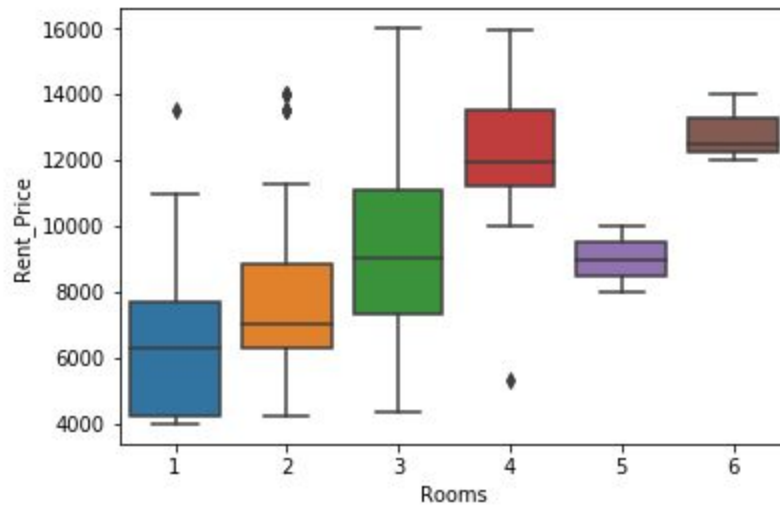
# Result:

Map of Manhattan with rental places, subway locations and cluster of venues
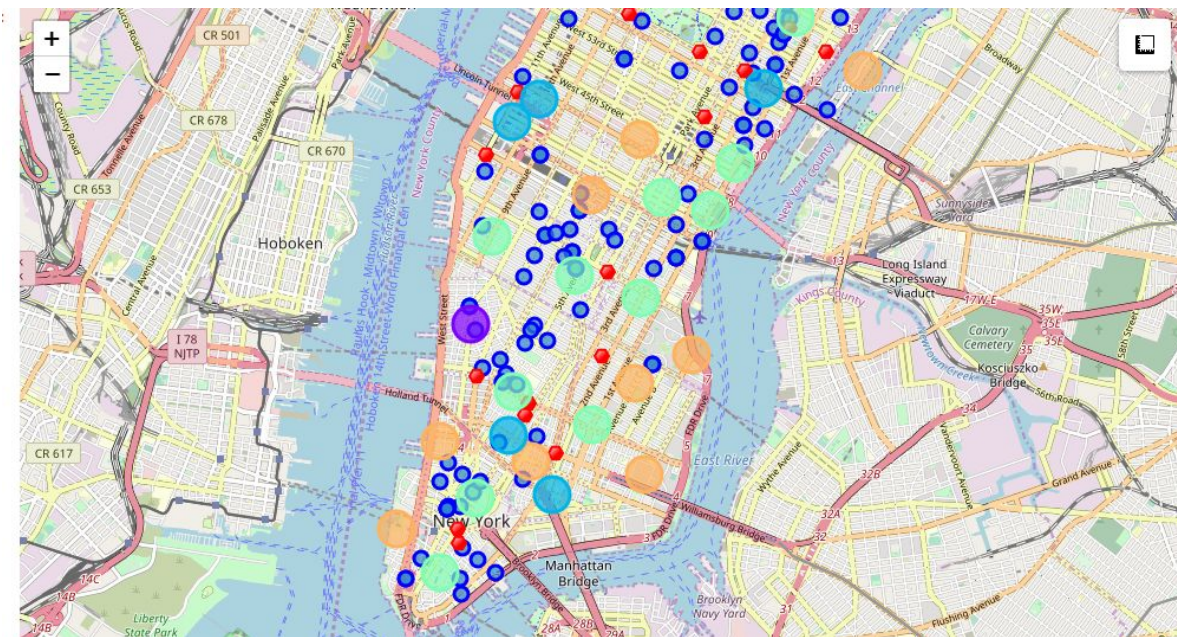


### Selecting the appropriate apartment for rent
After careful examination 2 locations have been chosen

Apartment 1: 305 East 63rd Street in the Sutton Place Neighborhood and near 'subway 59th Street' station, Cluster # 2 Monthly rent : 7500 Dollars

Apartment 2: 19 Dutch Street in the Financial District Neighborhood and near 'Fulton Street Subway' station, Cluster # 3 Monthly rent : 6935 Dollars

## Apartment Selection

Using the "one map" above, I was able to explore all possibilities since the popups provide the information needed for a good decision.

Apartment 1 rent cost is US7500 slightly above the US7000 budget. Apt 1 is located 400 meters from subway station at 59th Street and work place ( Park Ave and 53rd) is another 600 meters way. I can walk to work place and use subway for other places aroung. Venues for this apt are as of Cluster 2 and it is located in a fine district in the East side of Manhattan.

Apartment 2 rent cost is US6935, just under the US7000 budget. Apt 2 is located 60 meters from subway station at Fulton Street, but I will have to ride the subway daily to work , possibly 40-60 min ride. Venues for this apt are as of Cluster 3.