# Applied Data Science Capstone Project
## By

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## Introduction

The city was founded by Dutch Republic in 1624 on Lower Manhattan, originally was called New Amsterdam in 1626. The city of New York is one of the most recognized cities in the world. All types of people are attracted to come to NYC. NYC is described as the cultural, financial, and media capital of the world. It has an estimated population of 8,398,748 spread around 302.6 square miles. It also impacts other areas such as:

1. Commerce

2. Entertainment

3. Research

4. Technology

5. Education

6. Politics

7. Tourism

8. Art

9. Fashion

10. Sports

It boosts a GDP of $1.9 Trillion dollars and if it was a state by itself, it would be considered 12th highest GDP. New York boosts highest number of billionaires in the world. The city has great amount of tourist attractions, which is great for businesses.

## Business Case

SAH Consulting has been hired to locate office area for manufacturing headquarters for a client HAL Manufacturing Group. The client is looking for an area that has good eateries to take clients too and keep their employee's happy. They want to present their high net worth clients with entertainment options in close vicinity to the office. The ability to have multiple different cuisine nearby is ideal for our client, since their business operations are around the world and has large influx of different ethnicities in their business.

To summarize what the client is looking for:

1. Great restaurant Variety

2. Diversity

3. Entertainment spots

## Methodology

This section will include the following:

1. Data mining the information from websites and transforming it into dataframes for it to be analyzed.
2. Understanding the census data and see what the breakout of the distinct ethnicities is.
3. Perform data analysis to see where restaurants are located and what is the best area to build headquarters.
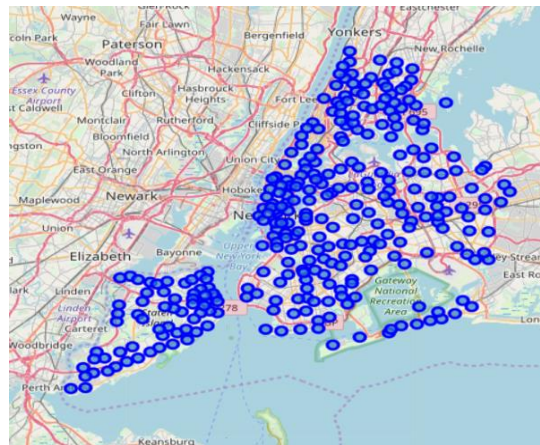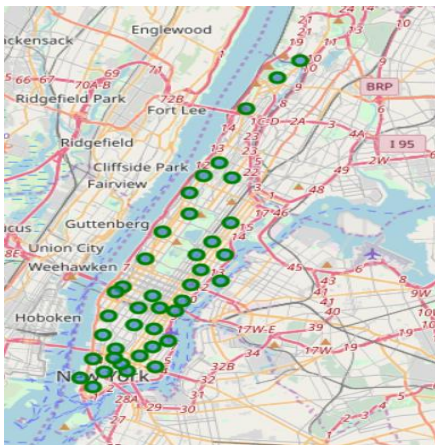
## Data 1

The following data is for the neighborhoods in Manhattan.  Since the client wanted the location in lower Manhattan.  The neighborhoods are below for Manhattan.
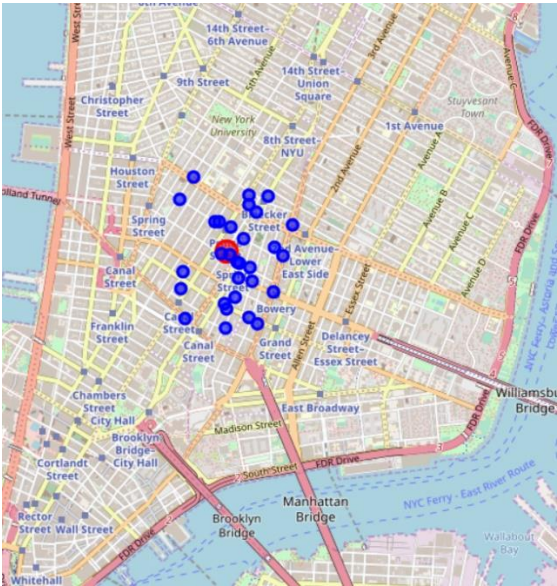
| | Borough | Neighborhood | Latitude | Longitude |
|---|---|---|---|---|
| 0 | Manhattan | Marble Hill | 40.876551 | -73.910660 |
| 1 | Manhattan | Chinatown | 40.715618 | -73.994279 |
| 2 | Manhattan | Washington Heights | 40.851903 | -73.936900 |
| 3 | Manhattan | Inwood | 40.867684 | -73.921210 |
| 4 | Manhattan | Hamilton Heights | 40.823604 | -73.949688 |

The geospatial maps below show all the neighbors in blue on the right side below.  All the neighborhoods that are listed below in green are for Manhattan.
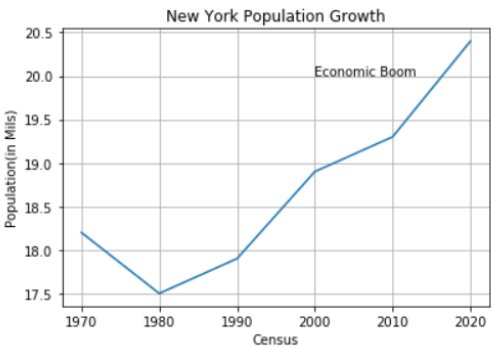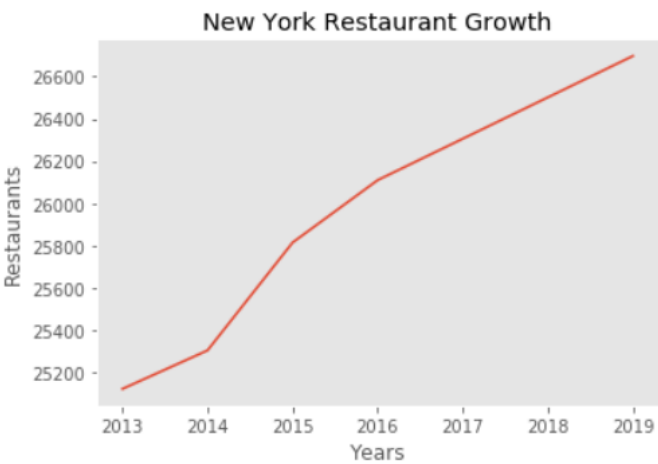
## Data 2

We used the **Foursquare API** and Lower Manhattan to scan the spot for the criteria our client was looking for. We scanned for top 30 spots that are in the around Conrad Hotel. There were more results than expected.



```
0                          Best Western Bowery Hanbee Hotel
1                                                  Balthazar
2                                            Galli Restaurant
3                                                   Best Buy
4                                           Puglia Restaurant
5                                             Frog Restaurant
6                                      Chef Restaurant Supply
7                                       Win Restaurant Equipment
8                                              218 Restaurant
9                                           Best of Ryley Inc
10      Bari Restaurant and Pizzeria Equipment Corp
11                             Canal Best Chinese Restaurant
12                                         Arturo's Restaurant
13                                 Bowery Restaurant Supply Co
14                                           Best Makeout Spot
15                                                   Gatsby's
16                                              Delicatessen
17                                             Mercer Kitchen
18                                               Lure Fishbar
19                                             Rice to Riches
20                                                  Best Made
21                                  Baz Bagel and Restaurant
22                                         Natural Restaurant
23                              East Boat Seafood Restaurant
24                        Coco Pazzo Kitchen & Restaurant
25                                           The Best Shades
26                                           Best Coffee Cart
27                                     Best Chinese Back Rub
28      This isthe best bar on Hudson St in NYC!
29                                          Lunela Restaurant
..                         ..          . .  .
```

## Data 3:

The restaurant growth in New York City has been explosive. More than 500 restaurants are opening per year. The variety of cuisine availability is wide. Which is what the client was looking for in there initial scope.

## Discussion

As evident it is from the graphs and maps, New York City is the ideal place for Hal Manufacturing Group.  The city has abundant entertainment and restaurant spots to keep clients and employees happy.  Their plenty of locations that are available in New York City that the headquarters can be housed.

## Conclusion

After reviewing the information, we made a recommendation of Lower Manhattan as the location to house Hal Manufacturing Group.  Our firm used data science as to make the recommendation for the best place to house the headquarters.