Introduction

Burgers are an American classic and you would be hard-pressed to find a city with a better burger spread than New York. There are mouth-watering spots in every neighbourhood. I am a Culinary Youtuber based in Singapore and I am planning to do a Burger Tour in New York with the eventual hope of starting my own Burger Joint there. Therefore, to facilitate the completion of this goal, I will have to identify:

1. All the Burger Joints present in New York City.

2. Borough and neighbourhood that have the highest concentration of Burger Joints.

3. Neighbourhoods with top average ratings for Burger Joints

4. Which Burger Joints have the highest ratings (Based on "Likes", "Ratings" and "Tips")

This project will also provide a good insight for aspiring burger chefs who are looking to set up their own restaurants in terms of best location, competition present as well as potential restaurants that they can study to better improve their services/food quality.

Please note that this project only takes into the “Burger Joint” classification as per FourSquare’s Category.

Data Requirements

For this project, we will require the following data:

1. Data on the 5 boroughs as well as the neighbourhoods that exist in each borough. The latitude and longitude coordinates of each neighbourhood are required as well. I will obtain this information from https://cocl.us/new_york_dataset.

2. Detailed information on Burger joints in New York City. This will be obtained from Foursquare. Foursquare will be able to provide us with detailed information of all the burger joints in New York such as location, ratings, likes, reviews, etc.

By combining and integrating both sources of information using data science tools, we will be able to obtain the information required to solve the business problem that was previously discussed.

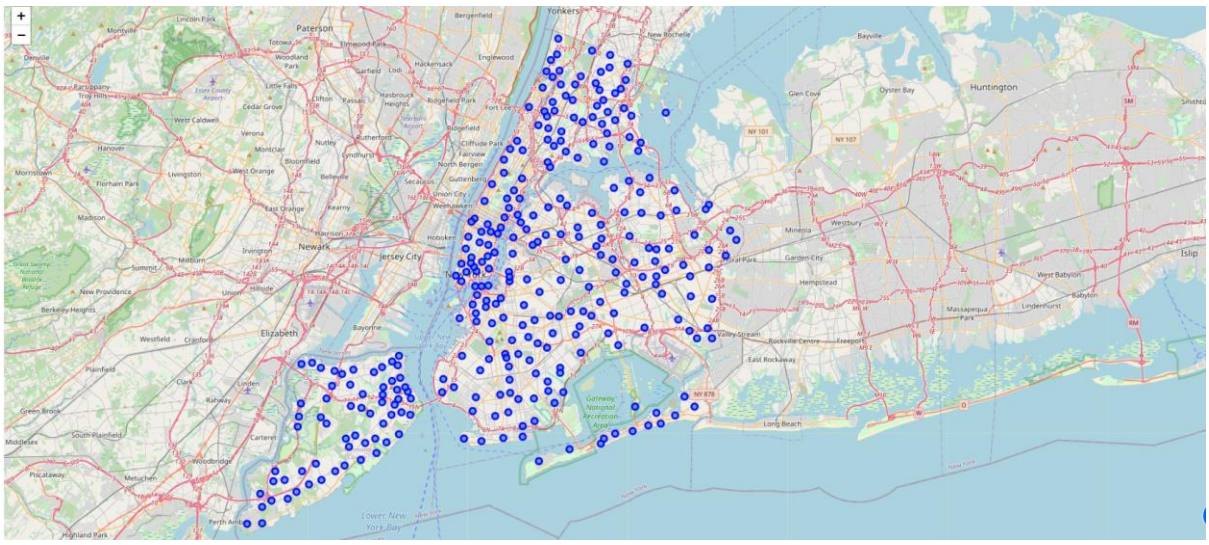
Methodology

We will start off by downloading, loading and exploring the neighbourhood and borough data for New York city.

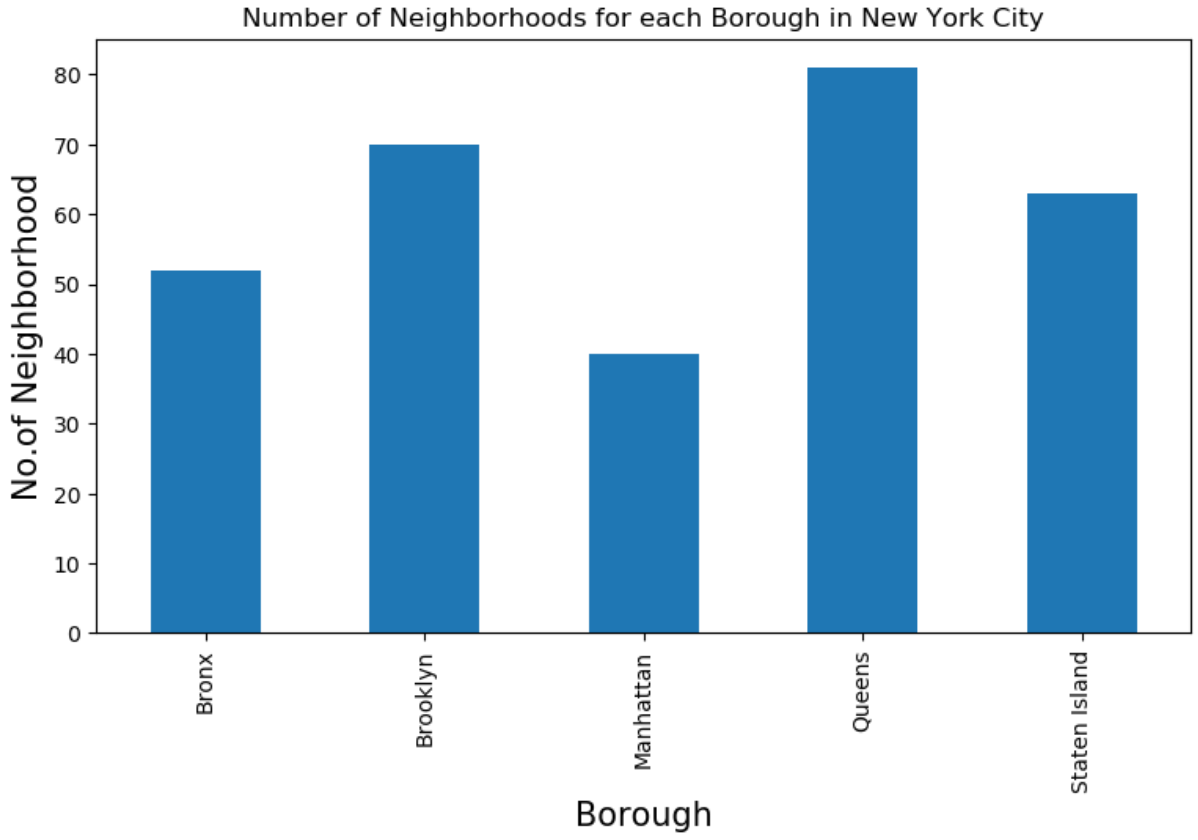
In [25]:
```
print('The dataframe has {} boroughs and {} neighborhoods.'.format(
        len(new_york_data['Borough'].unique()),
        new_york_data.shape[0]
    )
)
```

```
The dataframe has 5 boroughs and 306 neighborhoods.
```

We then Create a map of New York with neighbourhoods superimposed on top. This will help us better visualize the neighbourhoods present in New York City and its distribution.



We also create a bar chart to identify the number of neighbourhoods per Borough in New York City.

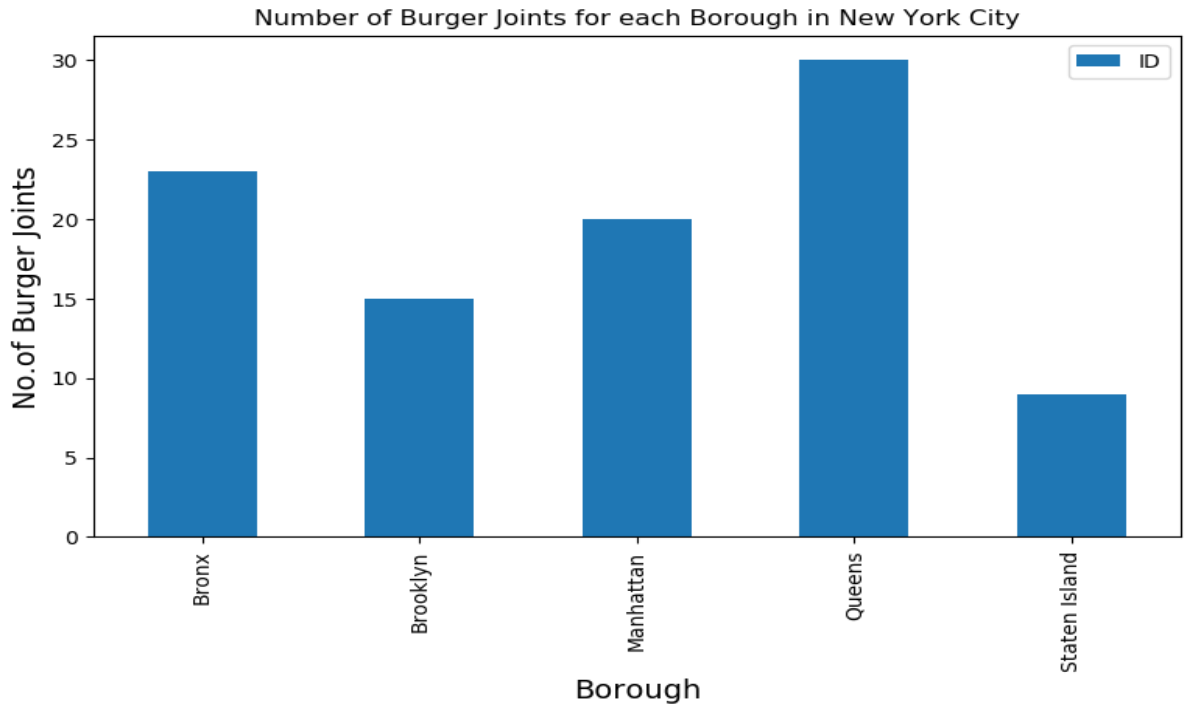


We then move on to identify the number of burger joints in each neighbourhood using the four square API.

Identifying the number of burger joints in each Neighborhood

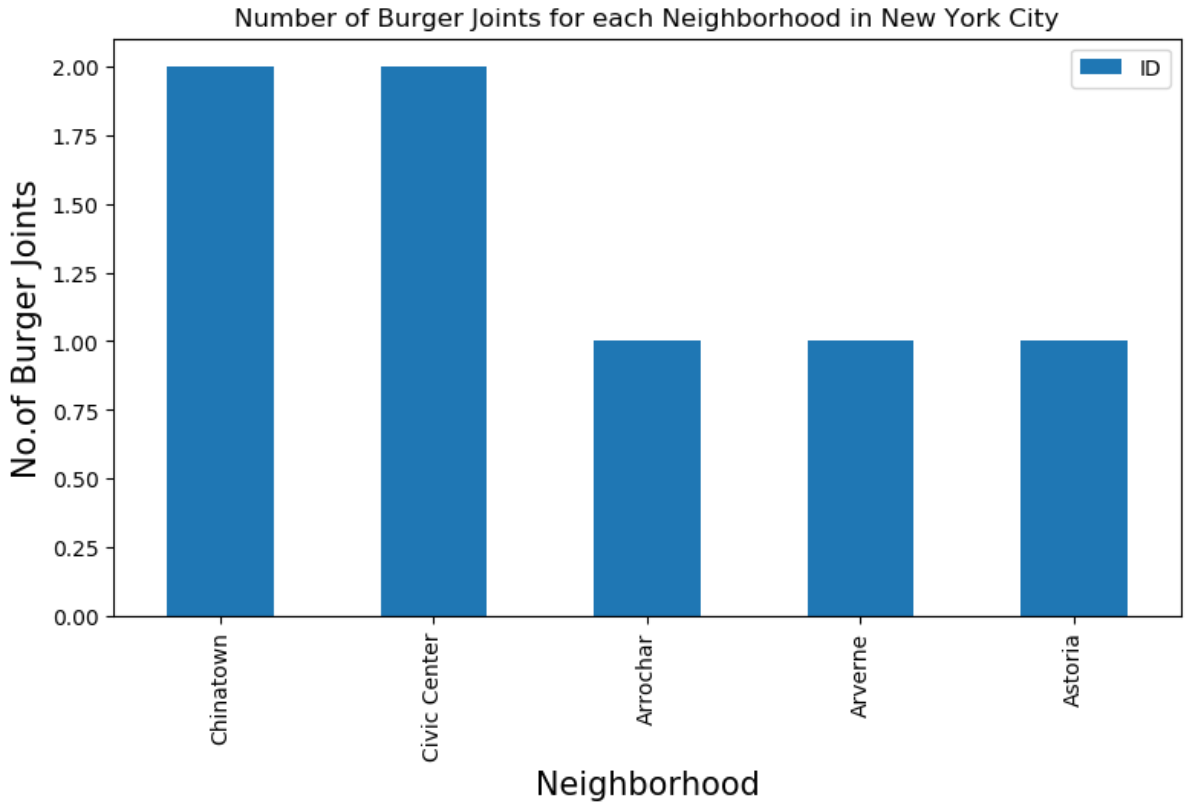
```
In [76]: column_names=['Borough', 'Neighborhood', 'ID','Name']
         burger_joints_ny=pd.DataFrame(columns=column_names)
         count=1
         for row in new_york_data.values.tolist():
             Borough, Neighborhood, Latitude, Longitude=row
             venues = get_venues(Latitude,longitude)
             burger_joints=venues[venues['Category']=='Burger Joint']
             print('(',count,'/',len(new_york_data),')','Burger Joints in '+Neighborhood+', '+Borough+':'+str(len(burger_joints)))
             for resturant_detail in burger_joints.values.tolist():
                 id, name , category=resturant_detail
                 burger_joints_ny = burger_joints_ny.append({'Borough': Borough,
                                                             'Neighborhood': Neighborhood,
                                                             'ID': id,
                                                             'Name' : name
                                                            }, ignore_index=True)
             count+=1
( 282 / 306 ) Burger Joints in Weeksville, Brooklyn:0
( 283 / 306 ) Burger Joints in Broadway Junction, Brooklyn:0
( 284 / 306 ) Burger Joints in Dumbo, Brooklyn:0
( 285 / 306 ) Burger Joints in Manor Heights, Staten Island:1
( 286 / 306 ) Burger Joints in Willowbrook, Staten Island:0
( 287 / 306 ) Burger Joints in Sandy Ground, Staten Island:0
( 288 / 306 ) Burger Joints in Egbertville, Staten Island:0
( 289 / 306 ) Burger Joints in Roxbury, Queens:0
( 290 / 306 ) Burger Joints in Homecrest, Brooklyn:1
( 291 / 306 ) Burger Joints in Middle Village, Queens:1
( 292 / 306 ) Burger Joints in Prince's Bay, Staten Island:0
( 293 / 306 ) Burger Joints in Lighthouse Hill, Staten Island:0
( 294 / 306 ) Burger Joints in Richmond Valley, Staten Island:0
( 295 / 306 ) Burger Joints in Malba, Queens:0
( 296 / 306 ) Burger Joints in Highland Park, Brooklyn:0
( 297 / 306 ) Burger Joints in Madison, Brooklyn:0
( 298 / 306 ) Burger Joints in Bronxdale, Bronx:1
( 299 / 306 ) Burger Joints in Allerton, Bronx:0

( 300 / 306 ) Burger Joints in Kingsbridge Heights, Bronx:0
( 301 / 306 ) Burger Joints in Erasmus, Brooklyn:0
```

We can see that there are 97 burger joints in New York City. We then move on to identify the number of burger joints per borough in New York City.



From the graph above, we can see that Queens has the highest number of burger joints.

We then move on to find out the concentration of the burger joints in each Neighbourhood.



We can see that Chinatown and Civic Centre has the highest number of burger joints of 2.

Now we will get the ranking of each burger joint for further analysis.

```
In [81]: column_names=['Borough', 'Neighborhood', 'ID','Name','Likes','Rating','Tips']
         burger_joints_stats_ny=pd.DataFrame(columns=column_names)
         count=1


         for row in burger_joints_ny.values.tolist():
             Borough,Neighborhood,ID,Name=row
             try:
                 venue_details=get_venue_details(ID)
                 print(venue_details)
                 id,name,likes,rating,tips=venue_details.values.tolist()[0]
             except IndexError:
                 print('No data available for id=',ID)
                 id,name,likes,rating,tips=[0]*5
             print('(',count,'/',len(indian_rest_ny),')','processed')
             burger_joints_stats_ny = burger_joints_stats_ny.append({'Borough': Borough,
                                                     'Neighborhood': Neighborhood,
                                                     'ID': id,
                                                     'Name' : name,
                                                     'Likes' : likes,
                                                     'Rating' : rating,
                                                     'Tips' : tips
                                                    }, ignore_index=True)
             count+=1
```

```
                          ID        Name  Likes  Rating  Tips
0  528d3763498e3be0efe0d555  Breakroom    207     8.3    87
( 67 / 31 ) processed
                          ID         Name  Likes  Rating  Tips
0  5c8bd0606a5950002c45768d  Shake Shack     10     7.6     3
( 68 / 31 ) processed
                          ID          Name  Likes  Rating  Tips
0  5925dfc3d1a4023efec0f7d4  Burger Joint     15     6.3     2
( 69 / 31 ) processed
                          ID       Name  Likes  Rating  Tips
0  552c2d5a498e6e675f548cc8  Five Guys     22     8.2     7
( 70 / 31 ) processed
                          ID          Name  Likes  Rating  Tips
0  5925dfc3d1a4023efec0f7d4  Burger Joint     15     6.3     2
( 71 / 31 ) processed
                          ID         Name  Likes  Rating  Tips
0  5c8bd0606a5950002c45768d  Shake Shack     10     7.6     3
( 72 / 31 ) processed
                          ID         Name  Likes  Rating  Tips
0  5787b68e498efcabbebba4f8  Shake Shack    505     8.7    80
( 73 / 31 ) processed
```

From that, we sought to identify the top-ranking burger joint in terms of 1. Likes 2. Tips 3. Ratings.

Identifying which burger joint ranks first in terms of 'Likes'

```
In [91]: burger_joints_stats_ny.iloc[burger_joints_stats_ny['Likes'].idxmax()]
```

```
Out[91]: Borough                          Queens
         Neighborhood                     Corona
         ID              3fd66200f964a52096e91ee3
         Name                      Corner Bistro
         Likes                              1065
         Rating                              8.3
         Tips                                392
         Name: 49, dtype: object
```

Identifying which burger joint ranks first in terms of 'Tips'

```
In [92]: burger_joints_stats_ny.iloc[burger_joints_stats_ny['Tips'].idxmax()]
```

```
Out[92]: Borough                          Queens
         Neighborhood                     Corona
         ID              3fd66200f964a52096e91ee3
         Name                      Corner Bistro
         Likes                              1065
         Rating                              8.3
         Tips                                392
         Name: 49, dtype: object
```

Identifying which burger joint ranks first in terms of 'Ratings'

```
In [93]: burger_joints_stats_ny.iloc[burger_joints_stats_ny['Rating'].idxmax()]
```

```
Out[93]: Borough                          Brooklyn
         Neighborhood                 Williamsburg
         ID              5787b68e498efcabbebba4f8
         Name                        Shake Shack
         Likes                               505
         Rating                              8.7
         Tips                                 80
         Name: 23, dtype: object
```

We then move on to a more macro view which seeks to identify the boroughs with the highest rating.

Now let us take a look at the boroughs with the highest rating

In [99]:
```
ny_brh_stats=burger_joints_stats_ny.groupby('Borough',as_index=False).mean()[['Borough','Rating']]
ny_brh_stats.columns=['Borough','Average Rating']

ny_brh_stats.sort_values(['Average Rating'],ascending=False).head(10)
```

Out[99]:

	Borough	Average Rating
4	Staten Island	8.200000
1	Brooklyn	7.653333
2	Manhattan	6.945000
3	Queens	6.090000
0	Bronx	3.778261

We then move on to take a look at the Neighbourhoods with the highest rating

Now let us take a look at the Neighborhoods with the highest rating

In [96]:
```
ny_nbh_stats=burger_joints_stats_ny.groupby('Neighborhood',as_index=False).mean()[['Neighborhood','Rating']]
ny_nbh_stats.columns=['Neighborhood','Average Rating']
ny_nbh_stats.sort_values(['Average Rating'],ascending=False).head(10)
```

Out[96]:

	Neighborhood	Average Rating
75	Ridgewood	8.7
91	Williamsburg	8.7
34	Forest Hills Gardens	8.7
68	North Side	8.7
39	Hollis	8.7
6	Battery Park City	8.7
32	Financial District	8.7
29	East Williamsburg	8.7
10	Briarwood	8.7
46	Jamaica Hills	8.7

Conclusion

We will now be able to answer all the previously raised questions.

1. There are 97 burger joints across NYC

2. Borough that have the highest concentration of Burger Joints - Queens, neighbourhood that have the highest concentration of Burger Joints - Chinatown and Civic Center

3. Multiple neighbourhoods are tied at 8.7 rating for the best burger joints

4. The best burger joint in terms of likes and tips is the Corner Bistro located in Corona, Queens while the best burger joint in terms of rating is Shake Shack located in Williamsburg, Brooklyn