

The Battle of Neighborhoods W2

May 12, 2020

1 Introduction

New York is one of the most populous city in the world. With that, also one of the biggest immigrants' population. One of these immigrants is **spanish people**. So as part of this project, I will list and visualize all major parts of New York City that has great **spanish resturants**.

- the initial propose was for brasilian restaurant, but it was found only 9 restaurants in Bronx. So I change to Spanish people and Restaurants

2 Data

Data For this project we need the following data :

- New York City data that contains list Boroughs, Neighborhoods along with their latitude and longitude.
 - Data source : https://cocl.us/new_york_dataset
 - Description : This data set contains the required information. And we will use this data set to explore various neighborhoods of new york city.
- Spanish resturants in each neighborhood of new york city.
 - Data source : Fousquare API
 - Description : By using this api we will get all the venues in each neighborhood. We can filter these venues to get only spanish resturants.
- GeoSpace data Data source : <https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm>
 - Description : By using this geo space data we will get the New york Borough boundaries that will help us visualize choropleth map.

3 Approach

- Collect the new york city data from https://cocl.us/new_york_dataset
- Using FourSquare API we will find all venues for each neighborhood.
- Filter out all venues that are **Spanish Restaurants**.
- Find rating , tips and like count for each **Spanish Restaurants** using FourSquare API.
- Using rating for each restaurant , we will sort that data.
- Visualize the Ranking of neighborhoods using folium library(python)

4 Queries that can be answered using above dataset

- What is best location in New York City for **Spanish Cuisine**?
- Which areas have potential **Spanish Restaurants** Market?
- Which all areas lack **Spanish Restaurants**?
- Which is the best place to stay if I prefer **Spanish Cuisine**?

5 Analysis

5.1 Required Libraries

- pandas and numpy for handling data.
- request module for using FourSquare API.
- geopy to get co-ordinates of City of New York.
- folium to visualize the results on a map

```
[14]: import pandas as pd
import numpy as np
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)
import requests
import folium # map rendering library
import matplotlib.pyplot as plt
import matplotlib.cm as cm
import matplotlib.colors as colors
%matplotlib inline

print('Libraries imported.')
```

Libraries imported.

Now we define a function to get the geocodes i.e latitude and longitude of a given location using geopy.

```
[15]: def geo_location(address):
    # get geo location of address
    geolocator = Nominatim(user_agent="ny_explorer")
    location = geolocator.geocode(address)
    latitude = location.latitude
    longitude = location.longitude
    return latitude,longitude
```

We define a function to interact with FourSquare API and get top 100 venues within a radius of 1000 metres for a given latitude and longitude. Below function will return us the venue id , venue name and category.

FourSquare Credencials

```
[88]: CLIENT_ID = 'QR54HFAZQSHBMLUSSMAMWL4C5EIAAK4LSROZPNEMILKZ3CA1' # your_
      ↪Foursquare ID
      CLIENT_SECRET = 'BVVFSBBLSEG3BZZEGIEEENAVPPP5SJC211WITNRJAPKMJRW' # your_
      ↪Foursquare Secret
      VERSION = '20180605' # Foursquare API version
```

```
[72]: def get_venues(lat,lng):
      #set variables
      radius=1000
      LIMIT=100

      #url to fetch data from foursquare api
      url = 'https://api.foursquare.com/v2/venues/explore?
      ↪&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(
          CLIENT_ID,
          CLIENT_SECRET,
          VERSION,
          lat,
          lng,
          radius,
          LIMIT)

      # get all the data
      results = requests.get(url).json()
      venue_data=results["response"]["groups"][0]["items"]
      venue_details=[]
      for row in venue_data:
          try:
              venue_id=row['venue']['id']
              venue_name=row['venue']['name']
              venue_category=row['venue']['categories'][0]['name']
              venue_details.append([venue_id,venue_name,venue_category])
          except KeyError:
              pass

      column_names=['ID','Name','Category']
      df = pd.DataFrame(venue_details,columns=column_names)
      print("done")
      return df
```

Now we will define a function to get venue details like like count , rating , tip counts for a given venue id. This will be used for ranking.

```
[73]: def get_venue_details(venue_id):

      #url to fetch data from foursquare api
```

```

url = 'https://api.foursquare.com/v2/venues/{}?
→&client_id={}&client_secret={}&v={}'.format(
    venue_id,
    CLIENT_ID,
    CLIENT_SECRET,
    VERSION)

# get all the data
results = requests.get(url).json()
venue_data=results['response']['venue']
venue_details=[]
try:
    venue_id=venue_data['id']
    venue_name=venue_data['name']
    venue_likes=venue_data['likes']['count']
    venue_rating=venue_data['rating']
    venue_tips=venue_data['tips']['count']
    venue_details.
→append([venue_id,venue_name,venue_likes,venue_rating,venue_tips])
except KeyError:
    pass

column_names=['ID','Name','Likes','Rating','Tips']
df = pd.DataFrame(venue_details,columns=column_names)
return df

```

Now we define a function to get the new york city data such as Boroughs, Neighborhoods along with their latitude and longitude.

```

[74]: def get_new_york_data():
    url='https://cocl.us/new_york_dataset'
    resp=requests.get(url).json()
    # all data is present in features label
    features=resp['features']

    # define the dataframe columns
    column_names = ['Borough', 'Neighborhood', 'Latitude', 'Longitude']
    # instantiate the dataframe
    new_york_data = pd.DataFrame(columns=column_names)

    for data in features:
        borough = data['properties']['borough']
        neighborhood_name = data['properties']['name']

        neighborhood_latlon = data['geometry']['coordinates']
        neighborhood_lat = neighborhood_latlon[1]
        neighborhood_lon = neighborhood_latlon[0]

```

```

        new_york_data = new_york_data.append({'Borough': borough,
                                              'Neighborhood': neighborhood_name,
                                              'Latitude': neighborhood_lat,
                                              'Longitude': neighborhood_lon},
                                              ignore_index=True)

    return new_york_data

```

We will call the above function to get the new york city data.

```

[75]: # get new york data
new_york_data=get_new_york_data()
new_york_data.head()

```

```

[75]:  Borough Neighborhood  Latitude  Longitude
0    Bronx    Wakefield  40.894705  -73.847201
1    Bronx    Co-op City  40.874294  -73.829939
2    Bronx    Eastchester 40.887556  -73.827806
3    Bronx    Fieldston  40.895437  -73.905643
4    Bronx    Riverdale  40.890834  -73.912585

```

```

[76]: new_york_data.shape

```

```

[76]: (306, 4)

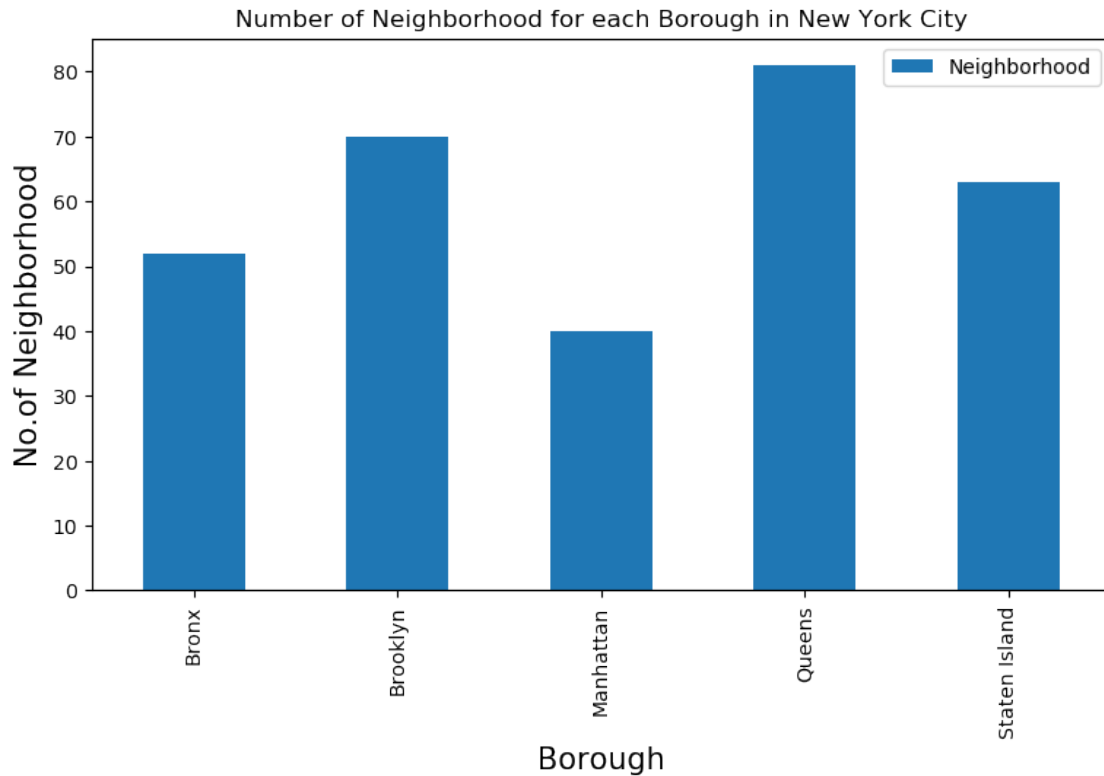
```

So there are total of 306 different Neighborhoods in New York

```

[77]: plt.figure(figsize=(9,5), dpi = 100)
      # title
      plt.title('Number of Neighborhood for each Borough in New York City')
      #On x-axis
      plt.xlabel('Borough', fontsize = 15)
      #On y-axis
      plt.ylabel('No.of Neighborhood', fontsize=15)
      #giving a bar plot
      new_york_data.groupby('Borough')['Neighborhood'].count().plot(kind='bar')
      #legend
      plt.legend()
      #displays the plot
      plt.show()

```



We see that Queens has highest number of neighborhoods

Now we will collect Spanish restaurants for each Neighborhood

```
[78]: # prepare neighborhood list that contains spanish restaurants
column_names=['Borough', 'Neighborhood', 'ID', 'Name']
spanish_rest_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)
    spanish_restaurants=venues[venues['Category']=='Spanish Restaurant']
    print('(',count, '/',len(new_york_data),'),','Spanish Restaurants in_
    ↪'+Neighborhood+', '+Borough+':'+str(len(spanish_restaurants)))
    for resturant_detail in spanish_restaurants.values.tolist():
        id, name , category=resturant_detail
        spanish_rest_ny = spanish_rest_ny.append({'Borough': Borough,
                                                    'Neighborhood': Neighborhood,
                                                    'ID': id,
                                                    'Name' : name
                                                    }, ignore_index=True)

    count+=1
```

done
 (1 / 306) Spanish Resturants in Wakefield, Bronx:0
 done
 (2 / 306) Spanish Resturants in Co-op City, Bronx:1
 done
 (3 / 306) Spanish Resturants in Eastchester, Bronx:0
 done
 (4 / 306) Spanish Resturants in Fieldston, Bronx:0
 done
 (5 / 306) Spanish Resturants in Riverdale, Bronx:0
 done
 (6 / 306) Spanish Resturants in Kingsbridge, Bronx:2
 done
 (7 / 306) Spanish Resturants in Marble Hill, Manhattan:3
 done
 (8 / 306) Spanish Resturants in Woodlawn, Bronx:0
 done
 (9 / 306) Spanish Resturants in Norwood, Bronx:3
 done
 (10 / 306) Spanish Resturants in Williamsbridge, Bronx:1
 done
 (11 / 306) Spanish Resturants in Baychester, Bronx:2
 done
 (12 / 306) Spanish Resturants in Pelham Parkway, Bronx:1
 done
 (13 / 306) Spanish Resturants in City Island, Bronx:1
 done
 (14 / 306) Spanish Resturants in Bedford Park, Bronx:2
 done
 (15 / 306) Spanish Resturants in University Heights, Bronx:3
 done
 (16 / 306) Spanish Resturants in Morris Heights, Bronx:2
 done
 (17 / 306) Spanish Resturants in Fordham, Bronx:5
 done
 (18 / 306) Spanish Resturants in East Tremont, Bronx:2
 done
 (19 / 306) Spanish Resturants in West Farms, Bronx:1
 done
 (20 / 306) Spanish Resturants in High Bridge, Bronx:0
 done
 (21 / 306) Spanish Resturants in Melrose, Bronx:1
 done
 (22 / 306) Spanish Resturants in Mott Haven, Bronx:1
 done
 (23 / 306) Spanish Resturants in Port Morris, Bronx:1
 done
 (24 / 306) Spanish Resturants in Longwood, Bronx:1

done
(25 / 306) Spanish Resturants in Hunts Point, Bronx:1
done
(26 / 306) Spanish Resturants in Morrisania, Bronx:1
done
(27 / 306) Spanish Resturants in Soundview, Bronx:0
done
(28 / 306) Spanish Resturants in Clason Point, Bronx:0
done
(29 / 306) Spanish Resturants in Throgs Neck, Bronx:0
done
(30 / 306) Spanish Resturants in Country Club, Bronx:0
done
(31 / 306) Spanish Resturants in Parkchester, Bronx:6
done
(32 / 306) Spanish Resturants in Westchester Square, Bronx:2
done
(33 / 306) Spanish Resturants in Van Nest, Bronx:2
done
(34 / 306) Spanish Resturants in Morris Park, Bronx:3
done
(35 / 306) Spanish Resturants in Belmont, Bronx:2
done
(36 / 306) Spanish Resturants in Spuyten Duyvil, Bronx:0
done
(37 / 306) Spanish Resturants in North Riverdale, Bronx:0
done
(38 / 306) Spanish Resturants in Pelham Bay, Bronx:0
done
(39 / 306) Spanish Resturants in Schuylerville, Bronx:0
done
(40 / 306) Spanish Resturants in Edgewater Park, Bronx:0
done
(41 / 306) Spanish Resturants in Castle Hill, Bronx:0
done
(42 / 306) Spanish Resturants in Olinville, Bronx:0
done
(43 / 306) Spanish Resturants in Pelham Gardens, Bronx:1
done
(44 / 306) Spanish Resturants in Concourse, Bronx:1
done
(45 / 306) Spanish Resturants in Unionport, Bronx:4
done
(46 / 306) Spanish Resturants in Edenwald, Bronx:0
done
(47 / 306) Spanish Resturants in Bay Ridge, Brooklyn:0
done
(48 / 306) Spanish Resturants in Bensonhurst, Brooklyn:0

done
 (49 / 306) Spanish Resturants in Sunset Park, Brooklyn:2
 done
 (50 / 306) Spanish Resturants in Greenpoint, Brooklyn:0
 done
 (51 / 306) Spanish Resturants in Gravesend, Brooklyn:0
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 (52 / 306) Spanish Resturants in Brighton Beach, Brooklyn:0
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 (53 / 306) Spanish Resturants in Sheepshead Bay, Brooklyn:0
 done
 (54 / 306) Spanish Resturants in Manhattan Terrace, Brooklyn:0
 done
 (55 / 306) Spanish Resturants in Flatbush, Brooklyn:0
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 (56 / 306) Spanish Resturants in Crown Heights, Brooklyn:0
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 (57 / 306) Spanish Resturants in East Flatbush, Brooklyn:0
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 (58 / 306) Spanish Resturants in Kensington, Brooklyn:0
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 (59 / 306) Spanish Resturants in Windsor Terrace, Brooklyn:0
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 (60 / 306) Spanish Resturants in Prospect Heights, Brooklyn:0
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 (61 / 306) Spanish Resturants in Brownsville, Brooklyn:2
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 (62 / 306) Spanish Resturants in Williamsburg, Brooklyn:0
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 (63 / 306) Spanish Resturants in Bushwick, Brooklyn:0
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 (64 / 306) Spanish Resturants in Bedford Stuyvesant, Brooklyn:0
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 (65 / 306) Spanish Resturants in Brooklyn Heights, Brooklyn:0
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 (66 / 306) Spanish Resturants in Cobble Hill, Brooklyn:1
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 (67 / 306) Spanish Resturants in Carroll Gardens, Brooklyn:0
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 (68 / 306) Spanish Resturants in Red Hook, Brooklyn:0
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 (69 / 306) Spanish Resturants in Gowanus, Brooklyn:0
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 (70 / 306) Spanish Resturants in Fort Greene, Brooklyn:0
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 (71 / 306) Spanish Resturants in Park Slope, Brooklyn:0
 done
 (72 / 306) Spanish Resturants in Cypress Hills, Brooklyn:0

done
 (73 / 306) Spanish Resturants in East New York, Brooklyn:1
 done
 (74 / 306) Spanish Resturants in Starrett City, Brooklyn:0
 done
 (75 / 306) Spanish Resturants in Canarsie, Brooklyn:0
 done
 (76 / 306) Spanish Resturants in Flatlands, Brooklyn:0
 done
 (77 / 306) Spanish Resturants in Mill Island, Brooklyn:0
 done
 (78 / 306) Spanish Resturants in Manhattan Beach, Brooklyn:0
 done
 (79 / 306) Spanish Resturants in Coney Island, Brooklyn:0
 done
 (80 / 306) Spanish Resturants in Bath Beach, Brooklyn:0
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 (81 / 306) Spanish Resturants in Borough Park, Brooklyn:0
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 (82 / 306) Spanish Resturants in Dyker Heights, Brooklyn:1
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 (83 / 306) Spanish Resturants in Gerritsen Beach, Brooklyn:0
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 (84 / 306) Spanish Resturants in Marine Park, Brooklyn:0
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 (85 / 306) Spanish Resturants in Clinton Hill, Brooklyn:0
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 (86 / 306) Spanish Resturants in Sea Gate, Brooklyn:0
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 (87 / 306) Spanish Resturants in Downtown, Brooklyn:0
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 (88 / 306) Spanish Resturants in Boerum Hill, Brooklyn:0
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 (89 / 306) Spanish Resturants in Prospect Lefferts Gardens, Brooklyn:1
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 (90 / 306) Spanish Resturants in Ocean Hill, Brooklyn:0
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 (91 / 306) Spanish Resturants in City Line, Brooklyn:0
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 (92 / 306) Spanish Resturants in Bergen Beach, Brooklyn:0
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 (93 / 306) Spanish Resturants in Midwood, Brooklyn:0
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 (94 / 306) Spanish Resturants in Prospect Park South, Brooklyn:0
 done
 (95 / 306) Spanish Resturants in Georgetown, Brooklyn:0
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 (96 / 306) Spanish Resturants in East Williamsburg, Brooklyn:0

done
 (97 / 306) Spanish Resturants in North Side, Brooklyn:0
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 (98 / 306) Spanish Resturants in South Side, Brooklyn:0
 done
 (99 / 306) Spanish Resturants in Ocean Parkway, Brooklyn:0
 done
 (100 / 306) Spanish Resturants in Fort Hamilton, Brooklyn:1
 done
 (101 / 306) Spanish Resturants in Chinatown, Manhattan:1
 done
 (102 / 306) Spanish Resturants in Washington Heights, Manhattan:3
 done
 (103 / 306) Spanish Resturants in Inwood, Manhattan:5
 done
 (104 / 306) Spanish Resturants in Hamilton Heights, Manhattan:1
 done
 (105 / 306) Spanish Resturants in Manhattanville, Manhattan:1
 done
 (106 / 306) Spanish Resturants in Central Harlem, Manhattan:1
 done
 (107 / 306) Spanish Resturants in East Harlem, Manhattan:1
 done
 (108 / 306) Spanish Resturants in Upper East Side, Manhattan:2
 done
 (109 / 306) Spanish Resturants in Yorkville, Manhattan:0
 done
 (110 / 306) Spanish Resturants in Lenox Hill, Manhattan:2
 done
 (111 / 306) Spanish Resturants in Roosevelt Island, Manhattan:1
 done
 (112 / 306) Spanish Resturants in Upper West Side, Manhattan:0
 done
 (113 / 306) Spanish Resturants in Lincoln Square, Manhattan:0
 done
 (114 / 306) Spanish Resturants in Clinton, Manhattan:0
 done
 (115 / 306) Spanish Resturants in Midtown, Manhattan:0
 done
 (116 / 306) Spanish Resturants in Murray Hill, Manhattan:0
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 (117 / 306) Spanish Resturants in Chelsea, Manhattan:0
 done
 (118 / 306) Spanish Resturants in Greenwich Village, Manhattan:1
 done
 (119 / 306) Spanish Resturants in East Village, Manhattan:0
 done
 (120 / 306) Spanish Resturants in Lower East Side, Manhattan:1

done
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 done
 (122 / 306) Spanish Resturants in Little Italy, Manhattan:1
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 (123 / 306) Spanish Resturants in Soho, Manhattan:1
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 (124 / 306) Spanish Resturants in West Village, Manhattan:0
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 (125 / 306) Spanish Resturants in Manhattan Valley, Manhattan:0
 done
 (126 / 306) Spanish Resturants in Morningside Heights, Manhattan:0
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 (127 / 306) Spanish Resturants in Gramercy, Manhattan:1
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 (128 / 306) Spanish Resturants in Battery Park City, Manhattan:0
 done
 (129 / 306) Spanish Resturants in Financial District, Manhattan:0
 done
 (130 / 306) Spanish Resturants in Astoria, Queens:0
 done
 (131 / 306) Spanish Resturants in Woodside, Queens:0
 done
 (132 / 306) Spanish Resturants in Jackson Heights, Queens:1
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 (133 / 306) Spanish Resturants in Elmhurst, Queens:1
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 (134 / 306) Spanish Resturants in Howard Beach, Queens:0
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 (137 / 306) Spanish Resturants in Kew Gardens, Queens:0
 done
 (138 / 306) Spanish Resturants in Richmond Hill, Queens:1
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 (144 / 306) Spanish Resturants in Ridgewood, Queens:0

done
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 (156 / 306) Spanish Resturants in Glen Oaks, Queens:0
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 (157 / 306) Spanish Resturants in Bellerose, Queens:0
 done
 (158 / 306) Spanish Resturants in Kew Gardens Hills, Queens:0
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 (162 / 306) Spanish Resturants in Oakland Gardens, Queens:0
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 (163 / 306) Spanish Resturants in Queens Village, Queens:0
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 (165 / 306) Spanish Resturants in South Jamaica, Queens:0
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 (166 / 306) Spanish Resturants in St. Albans, Queens:0
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 (167 / 306) Spanish Resturants in Rochdale, Queens:0
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 (168 / 306) Spanish Resturants in Springfield Gardens, Queens:0

done
 (169 / 306) Spanish Resturants in Cambria Heights, Queens:0
 done
 (170 / 306) Spanish Resturants in Rosedale, Queens:1
 done
 (171 / 306) Spanish Resturants in Far Rockaway, Queens:0
 done
 (172 / 306) Spanish Resturants in Broad Channel, Queens:0
 done
 (173 / 306) Spanish Resturants in Breezy Point, Queens:0
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 (174 / 306) Spanish Resturants in Steinway, Queens:0
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 (175 / 306) Spanish Resturants in Beechhurst, Queens:0
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 (178 / 306) Spanish Resturants in Arverne, Queens:0
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 (191 / 306) Spanish Resturants in Belle Harbor, Queens:0
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done
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 (194 / 306) Spanish Resturants in Brookville, Queens:0
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 (196 / 306) Spanish Resturants in North Corona, Queens:1
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 (197 / 306) Spanish Resturants in Forest Hills Gardens, Queens:0
 done
 (198 / 306) Spanish Resturants in St. George, Staten Island:1
 done
 (199 / 306) Spanish Resturants in New Brighton, Staten Island:1
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 (201 / 306) Spanish Resturants in Rosebank, Staten Island:0
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 (202 / 306) Spanish Resturants in West Brighton, Staten Island:0
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 (203 / 306) Spanish Resturants in Grymes Hill, Staten Island:1
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 (204 / 306) Spanish Resturants in Todt Hill, Staten Island:0
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 (205 / 306) Spanish Resturants in South Beach, Staten Island:0
 done
 (206 / 306) Spanish Resturants in Port Richmond, Staten Island:0
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 (207 / 306) Spanish Resturants in Mariner's Harbor, Staten Island:1
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 (211 / 306) Spanish Resturants in Travis, Staten Island:1
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 done
 (213 / 306) Spanish Resturants in Oakwood, Staten Island:0
 done
 (214 / 306) Spanish Resturants in Great Kills, Staten Island:1
 done
 (215 / 306) Spanish Resturants in Eltingville, Staten Island:0
 done
 (216 / 306) Spanish Resturants in Annadale, Staten Island:0

done
 (217 / 306) Spanish Resturants in Woodrow, Staten Island:0
 done
 (218 / 306) Spanish Resturants in Tottenville, Staten Island:0
 done
 (219 / 306) Spanish Resturants in Tompkinsville, Staten Island:0
 done
 (220 / 306) Spanish Resturants in Silver Lake, Staten Island:0
 done
 (221 / 306) Spanish Resturants in Sunnyside, Staten Island:1
 done
 (222 / 306) Spanish Resturants in Ditmas Park, Brooklyn:0
 done
 (223 / 306) Spanish Resturants in Wingate, Brooklyn:0
 done
 (224 / 306) Spanish Resturants in Rugby, Brooklyn:0
 done
 (225 / 306) Spanish Resturants in Park Hill, Staten Island:1
 done
 (226 / 306) Spanish Resturants in Westerleigh, Staten Island:0
 done
 (227 / 306) Spanish Resturants in Graniteville, Staten Island:1
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 (228 / 306) Spanish Resturants in Arlington, Staten Island:0
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 (229 / 306) Spanish Resturants in Arrochar, Staten Island:0
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 (230 / 306) Spanish Resturants in Grasmere, Staten Island:0
 done
 (231 / 306) Spanish Resturants in Old Town, Staten Island:0
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 (232 / 306) Spanish Resturants in Dongan Hills, Staten Island:0
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 (233 / 306) Spanish Resturants in Midland Beach, Staten Island:1
 done
 (234 / 306) Spanish Resturants in Grant City, Staten Island:0
 done
 (235 / 306) Spanish Resturants in New Dorp Beach, Staten Island:0
 done
 (236 / 306) Spanish Resturants in Bay Terrace, Staten Island:1
 done
 (237 / 306) Spanish Resturants in Huguenot, Staten Island:0
 done
 (238 / 306) Spanish Resturants in Pleasant Plains, Staten Island:0
 done
 (239 / 306) Spanish Resturants in Butler Manor, Staten Island:0
 done
 (240 / 306) Spanish Resturants in Charleston, Staten Island:0

done
(241 / 306) Spanish Resturants in Rossville, Staten Island:0
done
(242 / 306) Spanish Resturants in Arden Heights, Staten Island:0
done
(243 / 306) Spanish Resturants in Greenridge, Staten Island:0
done
(244 / 306) Spanish Resturants in Heartland Village, Staten Island:0
done
(245 / 306) Spanish Resturants in Chelsea, Staten Island:1
done
(246 / 306) Spanish Resturants in Bloomfield, Staten Island:0
done
(247 / 306) Spanish Resturants in Bulls Head, Staten Island:0
done
(248 / 306) Spanish Resturants in Carnegie Hill, Manhattan:0
done
(249 / 306) Spanish Resturants in Noho, Manhattan:0
done
(250 / 306) Spanish Resturants in Civic Center, Manhattan:0
done
(251 / 306) Spanish Resturants in Midtown South, Manhattan:0
done
(252 / 306) Spanish Resturants in Richmond Town, Staten Island:0
done
(253 / 306) Spanish Resturants in Shore Acres, Staten Island:0
done
(254 / 306) Spanish Resturants in Clifton, Staten Island:1
done
(255 / 306) Spanish Resturants in Concord, Staten Island:1
done
(256 / 306) Spanish Resturants in Emerson Hill, Staten Island:0
done
(257 / 306) Spanish Resturants in Randall Manor, Staten Island:0
done
(258 / 306) Spanish Resturants in Howland Hook, Staten Island:0
done
(259 / 306) Spanish Resturants in Elm Park, Staten Island:0
done
(260 / 306) Spanish Resturants in Remsen Village, Brooklyn:0
done
(261 / 306) Spanish Resturants in New Lots, Brooklyn:0
done
(262 / 306) Spanish Resturants in Paerdegat Basin, Brooklyn:0
done
(263 / 306) Spanish Resturants in Mill Basin, Brooklyn:0
done
(264 / 306) Spanish Resturants in Jamaica Hills, Queens:0

done
 (265 / 306) Spanish Resturants in Utopia, Queens:0
 done
 (266 / 306) Spanish Resturants in Pomonok, Queens:0
 done
 (267 / 306) Spanish Resturants in Astoria Heights, Queens:0
 done
 (268 / 306) Spanish Resturants in Claremont Village, Bronx:0
 done
 (269 / 306) Spanish Resturants in Concourse Village, Bronx:1
 done
 (270 / 306) Spanish Resturants in Mount Eden, Bronx:2
 done
 (271 / 306) Spanish Resturants in Mount Hope, Bronx:1
 done
 (272 / 306) Spanish Resturants in Sutton Place, Manhattan:0
 done
 (273 / 306) Spanish Resturants in Hunters Point, Queens:0
 done
 (274 / 306) Spanish Resturants in Turtle Bay, Manhattan:0
 done
 (275 / 306) Spanish Resturants in Tudor City, Manhattan:0
 done
 (276 / 306) Spanish Resturants in Stuyvesant Town, Manhattan:0
 done
 (277 / 306) Spanish Resturants in Flatiron, Manhattan:1
 done
 (278 / 306) Spanish Resturants in Sunnyside Gardens, Queens:0
 done
 (279 / 306) Spanish Resturants in Blissville, Queens:0
 done
 (280 / 306) Spanish Resturants in Fulton Ferry, Brooklyn:0
 done
 (281 / 306) Spanish Resturants in Vinegar Hill, Brooklyn:0
 done
 (282 / 306) Spanish Resturants in Weeksville, Brooklyn:0
 done
 (283 / 306) Spanish Resturants in Broadway Junction, Brooklyn:0
 done
 (284 / 306) Spanish Resturants in Dumbo, Brooklyn:0
 done
 (285 / 306) Spanish Resturants in Manor Heights, Staten Island:0
 done
 (286 / 306) Spanish Resturants in Willowbrook, Staten Island:0
 done
 (287 / 306) Spanish Resturants in Sandy Ground, Staten Island:0
 done
 (288 / 306) Spanish Resturants in Egbertville, Staten Island:0

```

done
( 289 / 306 ) Spanish Resturants in Roxbury, Queens:0
done
( 290 / 306 ) Spanish Resturants in Homecrest, Brooklyn:0
done
( 291 / 306 ) Spanish Resturants in Middle Village, Queens:1
done
( 292 / 306 ) Spanish Resturants in Prince's Bay, Staten Island:0
done
( 293 / 306 ) Spanish Resturants in Lighthouse Hill, Staten Island:0
done
( 294 / 306 ) Spanish Resturants in Richmond Valley, Staten Island:0
done
( 295 / 306 ) Spanish Resturants in Malba, Queens:0
done
( 296 / 306 ) Spanish Resturants in Highland Park, Brooklyn:0
done
( 297 / 306 ) Spanish Resturants in Madison, Brooklyn:0
done
( 298 / 306 ) Spanish Resturants in Bronxdale, Bronx:2
done
( 299 / 306 ) Spanish Resturants in Allerton, Bronx:1
done
( 300 / 306 ) Spanish Resturants in Kingsbridge Heights, Bronx:1
done
( 301 / 306 ) Spanish Resturants in Erasmus, Brooklyn:0
done
( 302 / 306 ) Spanish Resturants in Hudson Yards, Manhattan:0
done
( 303 / 306 ) Spanish Resturants in Hammels, Queens:0
done
( 304 / 306 ) Spanish Resturants in Bayswater, Queens:0
done
( 305 / 306 ) Spanish Resturants in Queensbridge, Queens:1
done
( 306 / 306 ) Spanish Resturants in Fox Hills, Staten Island:2

```

Now that we have got all the spanish resturants in new york city , we will analyze it

```
[79]: spanish_rest_ny.head()
```

```

[79]:   Borough Neighborhood      ID      Name
0     Bronx   Co-op City  58a9ca678ae363643f8827a2  Sangria Cafe
1     Bronx  Kingsbridge  4ca785a597c8a1cd7e577ba5  El Economico Restaurant
2     Bronx  Kingsbridge  50ea5611e4b044bdeead3ade      Q'Kachapa
3  Manhattan  Marble Hill  4ca785a597c8a1cd7e577ba5  El Economico Restaurant
4  Manhattan  Marble Hill  50ea5611e4b044bdeead3ade      Q'Kachapa

```

```
[80]: spanish_rest_ny.shape
```

```
[80]: (130, 4)
```

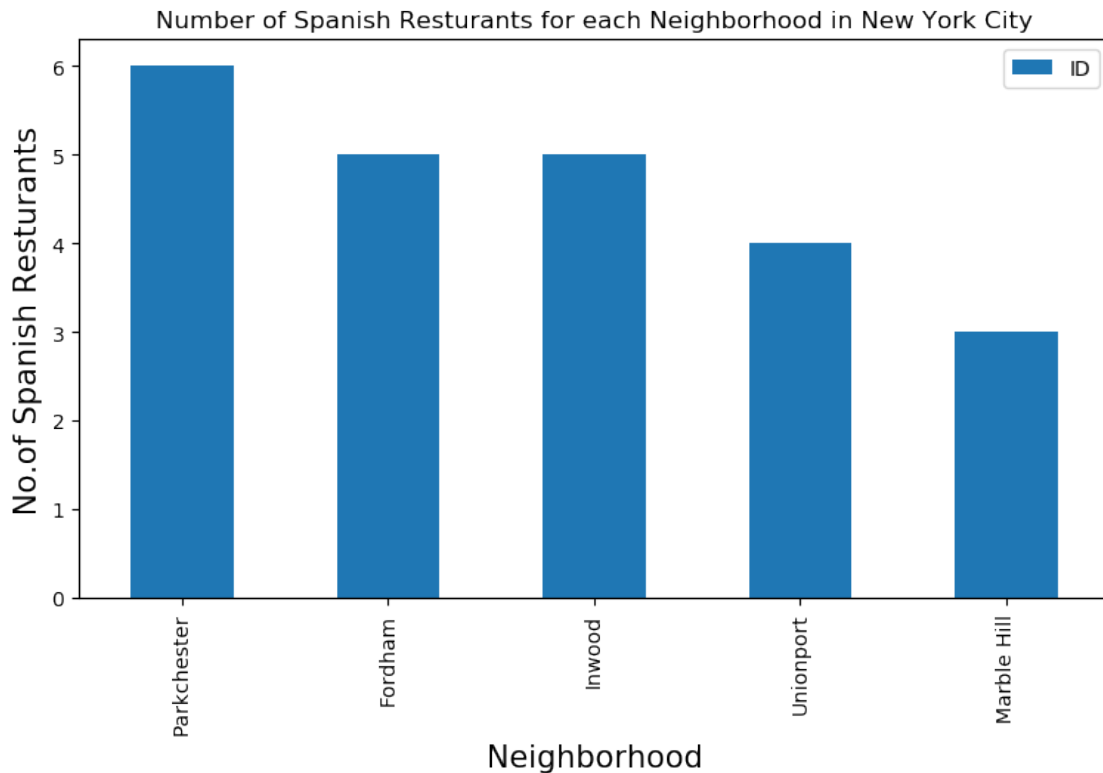
We got 130 Spanish Resturants across New York City

```
[82]: plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('Number of Spanish Resturants for each Borough in New York City')
#On x-axis
plt.xlabel('Borough', fontsize = 15)
#On y-axis
plt.ylabel('No.of Spanish Resturants', fontsize=15)
#giving a bar plot
spanish_rest_ny.groupby('Borough')['ID'].count().plot(kind='bar')
#legend
plt.legend()
#displays the plot
plt.show()
```



We see that Bronx has the largest number of spanish resturants

```
[83]: plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('Number of Spanish Resturants for each Neighborhood in New York City')
#On x-axis
plt.xlabel('Neighborhood', fontsize = 15)
#On y-axis
plt.ylabel('No.of Spanish Resturants', fontsize=15)
#giving a bar plot
spanish_rest_ny.groupby('Neighborhood')['ID'].count().nlargest(5).
    ↪plot(kind='bar')
#legend
plt.legend()
#displays the plot
plt.show()
```



```
[85]: spanish_rest_ny[spanish_rest_ny['Neighborhood']=='Parkchester']
```

```
[85]:
```

	Borough	Neighborhood	ID	Name
35	Bronx	Parkchester	4c8be9fa509e3704e0822e55	Brisas Express
36	Bronx	Parkchester	57c7456a498ef7478ef7fe87	Havana Café
37	Bronx	Parkchester	4b7738e5f964a5203a892ee3	La Cocina Boricua
38	Bronx	Parkchester	4eed3d759a52993fb7108490	Isla Verde Cafe & Express

```

39  Bronx  Parkchester  4c9d47ea46978cfa6244967f        Maestro's Caterers
40  Bronx  Parkchester  53cf4289498e3d63c3888b80        Olivia's

```

So Parkchester in Bronx has the highest number of Spanish Restaurants with a total count of 6.

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

```

[89]: # prepare neighborhood list that contains spanish restaurants
column_names=['Borough', 'Neighborhood', 'ID','Name','Likes','Rating','Tips']
spanish_rest_stats_ny=pd.DataFrame(columns=column_names)
count=1

for row in spanish_rest_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)
        # we will assign 0 value for these restaurants as they may have been
        #recently opened or details does not exist in FourSquare Database
        id,name,likes,rating,tips=[0]*5
    print('(',count,'/',len(spanish_rest_ny),')','processed')
    spanish_rest_stats_ny = spanish_rest_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  58a9ca678ae363643f8827a2  Sangria Cafe      7    7.7    3
( 1 / 130 ) processed
          ID      Name  Likes  Rating  Tips
0  4ca785a597c8a1cd7e577ba5  El Economico Restaurant    18    7.8    8
( 2 / 130 ) processed
          ID      Name  Likes  Rating  Tips
0  50ea5611e4b044bdeead3ade  Q'Kachapa     16    7.3    6
( 3 / 130 ) processed
          ID      Name  Likes  Rating  Tips
0  4ca785a597c8a1cd7e577ba5  El Economico Restaurant    18    7.8    8
( 4 / 130 ) processed
          ID      Name  Likes  Rating  Tips

```

```

0 50ea5611e4b044bdeead3ade Q'Kachapa      16      7.3      6
( 5 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4e3448cd6284ea7e10f38a0f
( 6 / 130 ) processed
      ID      Name  Likes  Rating  Tips
0 4b7435aef964a52042cd2de3 Caribe Restaurant      13      6.2      8
( 7 / 130 ) processed
      ID      Name  Likes  Rating  Tips
0 4cdadbde958f236a337da903 El Presidente II      9      6.0      6
( 8 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4e0a70edb0fb2f349a0d25bd
( 9 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4c01b04fb58376b0159b443c
( 10 / 130 ) processed
      ID      Name  Likes  Rating  Tips
0 4be2ecf6b02ec9b6a5064ec0 Caridad & Louie      66      8.2      27
( 11 / 130 ) processed
      ID      Name  Likes  Rating  Tips
0 58a9ca678ae363643f8827a2 Sangria Cafe      7      7.7      3
( 12 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4d33a27772a8b1f733b4a9d0
( 13 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 531f7ea1498e56210466e0bd
( 14 / 130 ) processed
      ID      Name  Likes  Rating  Tips
0 4e4d0392bd413c4cc66dfde5 Shalon Restaurant      3      7.3      3
( 15 / 130 ) processed
      ID      Name  Likes  Rating  Tips
0 519aae54498ec1fda8c8ae81 La Rola Resturant      3      5.9      1
( 16 / 130 ) processed
      ID      Name  Likes  Rating  Tips
0 4c9fcdcf8afca09381840d16 Liberato      11      7.0      8
( 17 / 130 ) processed

```

```

ID \
0 4c6c82f56af58cfac5248717

                                Name Likes Rating Tips
0 Elsa La Reina Del Chicharrón (Elsa The Queen O...      8    6.6    6
( 18 / 130 ) processed

                                ID          Name Likes Rating Tips
0 4cd21cee1ac7a1cd743b2392 El Nuevo Valle      5    6.4    4
( 19 / 130 ) processed

                                ID          Name Likes Rating Tips
0 4e39863dae60f589a5dc0dcb Yoly Restaurant      5    7.5    3
( 20 / 130 ) processed

                                ID          Name Likes Rating Tips
0 4cd21cee1ac7a1cd743b2392 El Nuevo Valle      5    6.4    4
( 21 / 130 ) processed

                                ID          Name Likes Rating Tips
0 4cf9d4d12d80a14383df40d8 Kasike Mofongo House     13    7.4    6
( 22 / 130 ) processed

                                ID          Name Likes Rating Tips
0 4bb7b71998c7ef3bf03e3002 Three Spanish Restaurant      7    6.7    7
( 23 / 130 ) processed

                                ID          Name Likes Rating Tips
0 4e4d0392bd413c4cc66dfde5 Shalon Restaurant      3    7.3    3
( 24 / 130 ) processed

                                ID          Name Likes Rating Tips
0 4c9fcdcf8afca09381840d16 Liberato      11    7.0    8
( 25 / 130 ) processed

ID \
0 4c6c82f56af58cfac5248717

                                Name Likes Rating Tips
0 Elsa La Reina Del Chicharrón (Elsa The Queen O...      8    6.6    6
( 26 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4d34e4d072a8b1f706c2b4d0
( 27 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4e4e3e62bd4101d0d7a5c976
( 28 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4e4e3e62bd4101d0d7a5c976
( 29 / 130 ) processed

```


	ID	Name	Likes	Rating	Tips
0	4ba52d35f964a52002e838e3	El Valle Restaurant	12	8.0	9
(30 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4ba52d35f964a52002e838e3	El Valle Restaurant	12	8.0	9
(31 / 130) processed					
Empty DataFrame					
Columns: [ID, Name, Likes, Rating, Tips]					
Index: []					
No data available for id= 5335964d498ebe201b917f2b					
(32 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4c096282009a0f479bade7bf	El Valle	7	5.8	6
(33 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4c9ca8fc54c8a1cd9e057c4b	Randall Restaurant	5	7.1	2
(34 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4c096282009a0f479bade7bf	El Valle	7	5.8	6
(35 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4c8be9fa509e3704e0822e55	Brisas Express	9	8.7	6
(36 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	57c7456a498ef7478ef7fe87	Havana Café	12	8.4	1
(37 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b7738e5f964a5203a892ee3	La Cocina Boricua	34	7.8	21
(38 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4eed3d759a52993fb7108490	Isla Verde Cafe & Express	48	8.2	14
(39 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4c9d47ea46978cfa6244967f	Maestro's Caterers	48	5.9	18
(40 / 130) processed					
Empty DataFrame					
Columns: [ID, Name, Likes, Rating, Tips]					
Index: []					
No data available for id= 53cf4289498e3d63c3888b80					
(41 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b7738e5f964a5203a892ee3	La Cocina Boricua	34	7.8	21
(42 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b68b130f964a52071872be3	Caridad Restaurant	8	5.6	8
(43 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b8db810f964a5206a0a33e3	Cafe Colonial	42	7.2	33

(44 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4c9d47ea46978cfa6244967f	Maestro's Caterers	48	5.9	18

(45 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4c9d47ea46978cfa6244967f	Maestro's Caterers	48	5.9	18

(46 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4b68b130f964a52071872be3	Caridad Restaurant	8	5.6	8

(47 / 130) processed

Empty DataFrame

Columns: [ID, Name, Likes, Rating, Tips]

Index: []

No data available for id= 4dcc6d25d1645340037539bb

(48 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4cf9d4d12d80a14383df40d8	Kasike Mofongo House	13	7.4	6

(49 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4bb7b71998c7ef3bf03e3002	Three Spanish Restaurant	7	6.7	7

(50 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4be2ecf6b02ec9b6a5064ec0	Caridad & Louie	66	8.2	27

(51 / 130) processed

	ID	Name	Likes	Rating	Tips
0	531285f5498e27c059004eee	El Gran Valle Restaurant	7	7.7	3

(52 / 130) processed

	ID	Name	Likes	Rating	Tips
0	57c7456a498ef7478ef7fe87	Havana Café	12	8.4	1

(53 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4b7738e5f964a5203a892ee3	La Cocina Boricua	34	7.8	21

(54 / 130) processed

Empty DataFrame

Columns: [ID, Name, Likes, Rating, Tips]

Index: []

No data available for id= 562981f9498e15c3c95c9ef4

(55 / 130) processed

Empty DataFrame

Columns: [ID, Name, Likes, Rating, Tips]

Index: []

No data available for id= 4beaf1366295c9b61a118708

(56 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4e98bc8a722e25a7f58252fb	Mi Castillo Restaurant	5	7.5	2

(57 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4a63ae85f964a52093c51fe3	El Yayo Nuevo	10	7.4	8

(58 / 130) processed

	ID	Name	Likes	Rating	Tips
0	506ef5e6e4b06f9dbb264036	Tropical Coffee Shop	6	6.7	1

(59 / 130) processed

Empty DataFrame

Columns: [ID, Name, Likes, Rating, Tips]

Index: []

No data available for id= 4e14e35f1f6e29fb7d4b7521

(60 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4f6e5ea9e4b086107787908b	La Vara	491	8.6	142

(61 / 130) processed

Empty DataFrame

Columns: [ID, Name, Likes, Rating, Tips]

Index: []

No data available for id= 4da6df516a230db30ecb5955

(62 / 130) processed

	ID	Name	Likes	Rating	Tips	
0	53f686a4498e7b09596566b4	Campo Bello Restaurant	2	4	7.4	2

(63 / 130) processed

	ID	Name	Likes	Rating	Tips
0	57811b1f498e9779eb16f09e	El Castillo de Jagua	10	7.6	4

(64 / 130) processed

	ID	Name	Likes	Rating	Tips	
0	53f686a4498e7b09596566b4	Campo Bello Restaurant	2	4	7.4	2

(65 / 130) processed

	ID	Name	Likes	Rating	Tips
0	59480a78f62e090a3b4d6eb7	Cervo's	102	8.7	21

(66 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4bb8cdb053649c74465847fb	Punto de Sabor Restaurant	10	7.8	5

(67 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4acce300f964a520e2c920e3	Mambi Steak House Bar & Grill	21	7.7	

Tips

0 21

(68 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4b04b9a2f964a5205a5622e3	El Conde Steakhouse	21	7.4	17

(69 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4c043cd3f423a593955dd116	La Reina Del Chicharron	22	8.3	7

(70 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4becab8e0ddaa59385ec1dc3	La Nueva España	20	6.8	13

(71 / 130) processed

	ID	Name	Likes	Rating	Tips
--	----	------	-------	--------	------

0	4ba2b7f2f964a5202f1338e3	Dyckman Express	20	7.1	14
(72 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4bcdd0a6fb84c9b61c98223e	Mamajuana Cafe	171	6.9	94
(73 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4a738810f964a520b6dc1fe3	Albert's Mofongo House	35	6.7	20
(74 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b55274bf964a52006dd27e3	Mofongo del Valle	7	8.1	6
(75 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b55274bf964a52006dd27e3	Mofongo del Valle	7	8.1	6
(76 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4bdb64a82a3a0f471cd8aeb6	Tropical Grill & Restaurant	40	8.0	20
(77 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b9466d7f964a520ee7734e3	El Nuevo Caridad	59	8.0	25
(78 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4bca3ca70687ef3b5ca3dbcc	Pil Pil	232	8.6	68
(79 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	542a0b46498e786c48692618	Boqueria	366	9.1	92
(80 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	542a0b46498e786c48692618	Boqueria	366	9.1	92
(81 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4bca3ca70687ef3b5ca3dbcc	Pil Pil	232	8.6	68
(82 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4cbdec58035d236addb1ed4e	Boulevard Restaurant	7	6.9	5
(83 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	45697387f964a520e53d1fe3	Despaña	887	9.0	288
(84 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	5df85b53439042000874246c	Ernesto's	10	7.7	4
(85 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	45697387f964a520e53d1fe3	Despaña	887	9.0	288
(86 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	45697387f964a520e53d1fe3	Despaña	887	9.0	288
(87 / 130) processed					
	ID	Name	Likes	Rating	Tips

```

0 457ebe82f964a5203e3f1fe3 Casa Mono      615      8.9    202
( 88 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 4d1a631e1683a1437bf37351 La Picada Azuaya      6      8.0     2
( 89 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 4d1a631e1683a1437bf37351 La Picada Azuaya      6      8.0     2
( 90 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 517ebbbce4b0e8b12eb3982e
( 91 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 530e971c498ea305c708a58f Tu Arepa Pizza Cafe      6      7.4     1
( 92 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 4ec1a837722e0f78de974903 Girasol Bakery      2      5.8     8
( 93 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4de9102e1f6e9b53771cd5f5
( 94 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4daa0d7e0cb6a89c6265a89f
( 95 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 530e971c498ea305c708a58f Tu Arepa Pizza Cafe      6      7.4     1
( 96 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 4c39e32e18e72d7f32dc1af5 Libertad Restaurant      6      6.5     4
( 97 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 5669ffe7498edbe082db916f Sangarita's Tapas Wine     10      7.3     0
( 98 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 4bc4abb374a9a5930928d6f6 El Rey Restaurant      28      7.1    15
( 99 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 56bfee38cd10a333b3584fe2
( 100 / 130 ) processed
      ID              Name  Likes  Rating  Tips
0 4ba61a26f964a520b13339e3 Brisas Del Mar      7      7.6     5

```

```

( 101 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4de9102e1f6e9b53771cd5f5
( 102 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4c6d9c0010faa143a863ee68
( 103 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 4c6d9c0010faa143a863ee68
( 104 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4cfc0726c6cca35dcc808f32  Campo Bello Restaurante    32    8.1    7
( 105 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4cfc0726c6cca35dcc808f32  Campo Bello Restaurante    32    8.1    7
( 106 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4b22f935f964a5205a5124e3  Real Madrid Restaurant    24    7.3   15
( 107 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4e4cc369bd413c4cc66bf90c  El Pollo II Restaurant    11    8.1    4
( 108 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4c9bea5954c8a1cd97b3754b  La Candela Espanola     4    6.6    9
( 109 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4b65f266f964a520530a2be3  El Pollo Restaurant    20    8.1   12
( 110 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4b65f266f964a520530a2be3  El Pollo Restaurant    20    8.1   12
( 111 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4b22f935f964a5205a5124e3  Real Madrid Restaurant    24    7.3   15
( 112 / 130 ) processed
Empty DataFrame
Columns: [ID, Name, Likes, Rating, Tips]
Index: []
No data available for id= 55e79326498ede65f9f0da55
( 113 / 130 ) processed
      ID                               Name  Likes  Rating  Tips
0  4c9bea5954c8a1cd97b3754b  La Candela Espanola     4    6.6    9
( 114 / 130 ) processed

```

	ID	Name	Likes	Rating	Tips
0	4e4cc369bd413c4cc66bf90c	El Pollo II Restaurant	11	8.1	4
(115 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4cfc0726c6cca35dcc808f32	Campo Bello Restaurante	32	8.1	7
(116 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b65f266f964a520530a2be3	El Pollo Restaurant	20	8.1	12
(117 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	531285f5498e27c059004eee	El Gran Valle Restaurant	7	7.7	3
(118 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4e39863dae60f589a5dc0dcb	Yoly Restaurant	5	7.5	3
(119 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4cd21cee1ac7a1cd743b2392	El Nuevo Valle	5	6.4	4
(120 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4cd21cee1ac7a1cd743b2392	El Nuevo Valle	5	6.4	4
(121 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	457ebe82f964a5203e3f1fe3	Casa Mono	615	8.9	202
(122 / 130) processed					
Empty DataFrame					
Columns: [ID, Name, Likes, Rating, Tips]					
Index: []					
No data available for id= 4f4d4ab3e4b05dbceb245f85					
(123 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b8db810f964a5206a0a33e3	Cafe Colonial	42	7.2	33
(124 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4c9d47ea46978cfa6244967f	Maestro's Caterers	48	5.9	18
(125 / 130) processed					
Empty DataFrame					
Columns: [ID, Name, Likes, Rating, Tips]					
Index: []					
No data available for id= 4d33a27772a8b1f733b4a9d0					
(126 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4e4d0392bd413c4cc66dfde5	Shalon Restaurant	3	7.3	3
(127 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4cbdec58035d236adbb1ed4e	Boulevard Restaurant	7	6.9	5
(128 / 130) processed					
	ID	Name	Likes	Rating	Tips
0	4b65f266f964a520530a2be3	El Pollo Restaurant	20	8.1	12

(129 / 130) processed

	ID	Name	Likes	Rating	Tips
0	4cfc0726c6cca35dcc808f32	Campo Bello Restaurante	32	8.1	7

(130 / 130) processed

```
[133]: spanish_rest_stats_ny.head()
```

```
[133]:
```

	Borough	Neighborhood	ID	Name \
0	Bronx	Co-op City	58a9ca678ae363643f8827a2	Sangria Cafe
1	Bronx	Kingsbridge	4ca785a597c8a1cd7e577ba5	El Economico Restaurant
2	Bronx	Kingsbridge	50ea5611e4b044bdeead3ade	Q'Kachapa
3	Manhattan	Marble Hill	4ca785a597c8a1cd7e577ba5	El Economico Restaurant
4	Manhattan	Marble Hill	50ea5611e4b044bdeead3ade	Q'Kachapa

	Likes	Rating	Tips
0	7.0	7.7	3.0
1	18.0	7.8	8.0
2	16.0	7.3	6.0
3	18.0	7.8	8.0
4	16.0	7.3	6.0

```
[134]: spanish_rest_stats_ny.shape
```

```
[134]: (130, 7)
```

```
[135]: spanish_rest_ny.shape
```

```
[135]: (130, 4)
```

So we got data for all resturants Now lets save this data to a csv sheet. In case we by mistake modify it. As the number of calls to get details for venue are premium call and have limit of 500 per day, we will refer to saved data sheet csv if required

```
[146]: spanish_rest_stats_ny.to_csv('spanish_rest_stats_ny.csv', index=False)
```

Lets verify the data from saved csv file

```
[147]: spanish_rest_stats_ny_csv=pd.read_csv('spanish_rest_stats_ny.csv')
```

```
[148]: spanish_rest_stats_ny_csv.shape
```

```
[148]: (130, 7)
```

```
[149]: spanish_rest_stats_ny_csv.head()
```

```
[149]:
```

	Borough	Neighborhood	ID	Name \
0	Bronx	Co-op City	58a9ca678ae363643f8827a2	Sangria Cafe
1	Bronx	Kingsbridge	4ca785a597c8a1cd7e577ba5	El Economico Restaurant

2	Bronx	Kingsbridge	50ea5611e4b044bdeead3ade	Q'Kachapa
3	Manhattan	Marble Hill	4ca785a597c8a1cd7e577ba5	El Economico Restaurant
4	Manhattan	Marble Hill	50ea5611e4b044bdeead3ade	Q'Kachapa

	Likes	Rating	Tips
0	7.0	7.7	3.0
1	18.0	7.8	8.0
2	16.0	7.3	6.0
3	18.0	7.8	8.0
4	16.0	7.3	6.0

```
[150]: spanish_rest_stats_ny.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 130 entries, 0 to 129
Data columns (total 7 columns):
#   Column          Non-Null Count  Dtype
---  -
0   Borough         130 non-null   object
1   Neighborhood     130 non-null   object
2   ID               130 non-null   object
3   Name             130 non-null   object
4   Likes            130 non-null   float64
5   Rating           130 non-null   float64
6   Tips             130 non-null   float64
dtypes: float64(3), object(4)
memory usage: 7.2+ KB
```

We see that values like Likes, Tips are string values. We would need to convert them into float for further analysis

```
[99]: spanish_rest_stats_ny['Likes']=spanish_rest_stats_ny['Likes'].astype('float64')
```

```
[101]: spanish_rest_stats_ny['Tips']=spanish_rest_stats_ny['Tips'].astype('float64')
```

```
[102]: spanish_rest_stats_ny.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 130 entries, 0 to 129
Data columns (total 7 columns):
#   Column          Non-Null Count  Dtype
---  -
0   Borough         130 non-null   object
1   Neighborhood     130 non-null   object
2   ID               130 non-null   object
3   Name             130 non-null   object
4   Likes            130 non-null   float64
5   Rating           130 non-null   float64
```

```
6    Tips          130 non-null    float64
dtypes: float64(3), object(4)
memory usage: 7.2+ KB
```

Now the data types looks correct

```
[151]: # Resturant with maximum Likes
spanish_rest_stats_ny.iloc[spanish_rest_stats_ny['Likes'].idxmax()]
```

```
[151]: Borough                Manhattan
Neighborhood                Greenwich Village
ID                45697387f964a520e53d1fe3
Name                Despaña
Likes                887
Rating                9
Tips                288
Name: 83, dtype: object
```

```
[152]: # Resturant with maximum Rating
spanish_rest_stats_ny.iloc[spanish_rest_stats_ny['Rating'].idxmax()]
```

```
[152]: Borough                Manhattan
Neighborhood                Upper East Side
ID                542a0b46498e786c48692618
Name                Boqueria
Likes                366
Rating                9.1
Tips                92
Name: 79, dtype: object
```

```
[153]: # Resturant with maximum Tips
spanish_rest_stats_ny.iloc[spanish_rest_stats_ny['Tips'].idxmax()]
```

```
[153]: Borough                Manhattan
Neighborhood                Greenwich Village
ID                45697387f964a520e53d1fe3
Name                Despaña
Likes                887
Rating                9
Tips                288
Name: 83, dtype: object
```

```
[154]: ny_neighborhood_stats=spanish_rest_stats_ny.
      →groupby('Neighborhood',as_index=False).mean()[['Neighborhood','Rating']]
ny_neighborhood_stats.columns=['Neighborhood','Average Rating']
```

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

```
[155]:
```

	Neighborhood	Average Rating
43	Little Italy	9.00
74	Soho	9.00
34	Greenwich Village	9.00
31	Gramercy	8.90
26	Flatiron	8.90
82	Upper East Side	8.85
42	Lenox Hill	8.85
11	Chinatown	8.70
15	Cobble Hill	8.60
64	Pelham Gardens	8.20

Above are the top neighborhoods with top average rating of Spanish restaurant

```
[156]: ny_borough_stats=spanish_rest_stats_ny.groupby('Borough',as_index=False).
        ↳mean()[['Borough','Rating']]
        ny_borough_stats.columns=['Borough','Average Rating']
```

```
[157]: ny_borough_stats.sort_values(['Average Rating'],ascending=False).head()
```

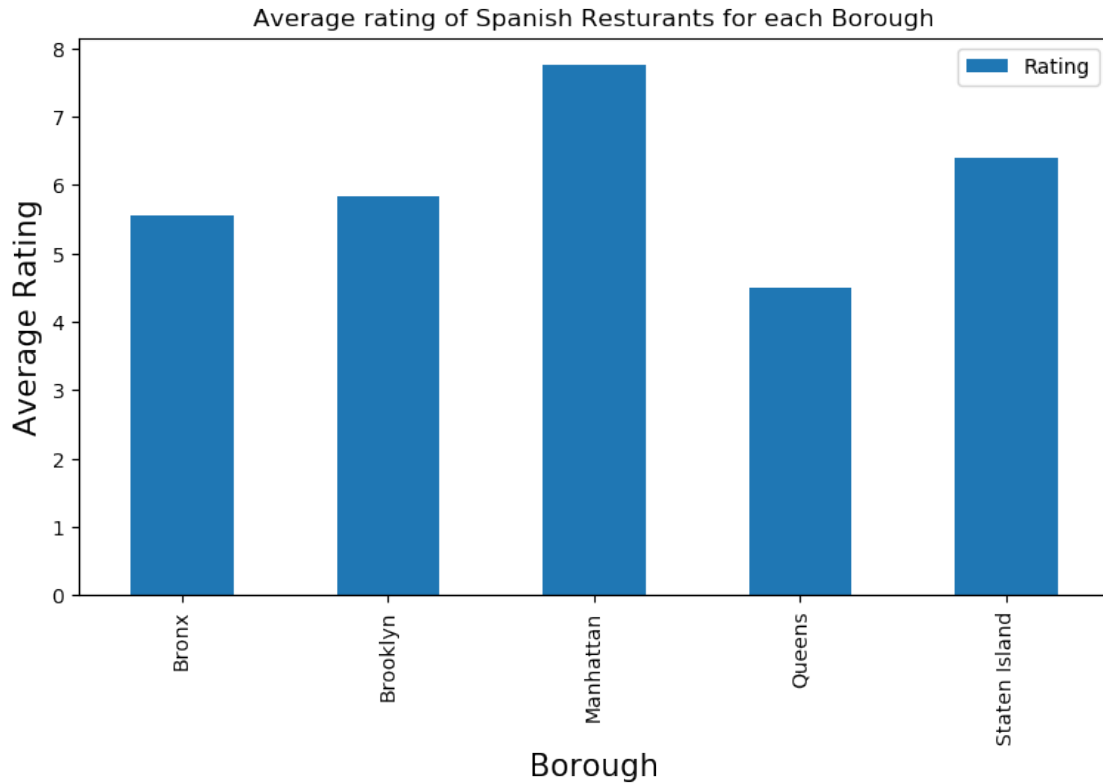
```
[157]:
```

	Borough	Average Rating
2	Manhattan	7.759259
4	Staten Island	6.400000
1	Brooklyn	5.844444
0	Bronx	5.562295
3	Queens	4.500000

Similarly these are the average rating of Spanish Restaurants for each Borough

Lets visualize it

```
[158]: plt.figure(figsize=(9,5), dpi = 100)
        # title
        plt.title('Average rating of Spanish Restaurants for each Borough')
        #On x-axis
        plt.xlabel('Borough', fontsize = 15)
        #On y-axis
        plt.ylabel('Average Rating', fontsize=15)
        #giving a bar plot
        spanish_rest_stats_ny.groupby('Borough').mean()['Rating'].plot(kind='bar')
        #legend
        plt.legend()
        #displays the plot
        plt.show()
```



We will consider all the neighborhoods with average rating greater or equal 8.0 to visualize on map

```
[159]: ny_neighborhood_stats=ny_neighborhood_stats[ny_neighborhood_stats['Average_
↳Rating']>=8.0]
```

```
[160]: ny_neighborhood_stats
```

```
[160]:
```

	Neighborhood	Average Rating
9	Central Harlem	8.00
10	Chelsea	8.10
11	Chinatown	8.70
13	Clifton	8.10
15	Cobble Hill	8.60
16	Concord	8.10
22	East Harlem	8.00
25	Elmhurst	8.00
26	Flatiron	8.90
30	Fox Hills	8.10
31	Gramercy	8.90
34	Greenwich Village	9.00
35	Grymes Hill	8.10
36	Hamilton Heights	8.10

39	Jackson Heights	8.00
42	Lenox Hill	8.85
43	Little Italy	9.00
46	Manhattanville	8.10
49	Melrose	8.00
55	Mott Haven	8.00
62	Park Hill	8.10
64	Pelham Gardens	8.20
74	Soho	9.00
76	Stapleton	8.10
77	Sunnyside	8.10
79	Travis	8.10
82	Upper East Side	8.85

We will join this dataset to original new york data to get longitude and latitude

```
[161]: ny_neighborhood_stats=pd.merge(ny_neighborhood_stats,new_york_data,
↳on='Neighborhood')
```

```
[162]: ny_neighborhood_stats=ny_neighborhood_stats[['Borough','Neighborhood','Latitude','Longitude',
↳Rating']]
```

```
[117]: ny_neighborhood_stats
```

```
[117]:
```

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Manhattan	Central Harlem	40.815976	-73.943211	8.00
1	Manhattan	Chelsea	40.744035	-74.003116	8.10
2	Staten Island	Chelsea	40.594726	-74.189560	8.10
3	Manhattan	Chinatown	40.715618	-73.994279	8.70
4	Staten Island	Clifton	40.619178	-74.072642	8.10
5	Brooklyn	Cobble Hill	40.687920	-73.998561	8.60
6	Staten Island	Concord	40.604473	-74.084024	8.10
7	Manhattan	East Harlem	40.792249	-73.944182	8.00
8	Queens	Elmhurst	40.744049	-73.881656	8.00
9	Manhattan	Flatiron	40.739673	-73.990947	8.90
10	Staten Island	Fox Hills	40.617311	-74.081740	8.10
11	Manhattan	Gramercy	40.737210	-73.981376	8.90
12	Manhattan	Greenwich Village	40.726933	-73.999914	9.00
13	Staten Island	Grymes Hill	40.624185	-74.087248	8.10
14	Manhattan	Hamilton Heights	40.823604	-73.949688	8.10
15	Queens	Jackson Heights	40.751981	-73.882821	8.00
16	Manhattan	Lenox Hill	40.768113	-73.958860	8.85
17	Manhattan	Little Italy	40.719324	-73.997305	9.00
18	Manhattan	Manhattanville	40.816934	-73.957385	8.10
19	Bronx	Melrose	40.819754	-73.909422	8.00
20	Bronx	Mott Haven	40.806239	-73.916100	8.00
21	Staten Island	Park Hill	40.609190	-74.080157	8.10

22	Bronx	Pelham Gardens	40.862966	-73.841612	8.20
23	Manhattan	Soho	40.722184	-74.000657	9.00
24	Staten Island	Stapleton	40.626928	-74.077902	8.10
25	Queens	Sunnyside	40.740176	-73.926916	8.10
26	Staten Island	Sunnyside	40.612760	-74.097126	8.10
27	Staten Island	Travis	40.586314	-74.190737	8.10
28	Manhattan	Upper East Side	40.775639	-73.960508	8.85

Now we will show this data on a map

Install geopy if you need

```
[123]: # !conda install -c conda-forge geopy --yes # install with needed
from geopy.geocoders import Nominatim
```

```
[125]: # create map and display it
ny_map = folium.Map(location=geo_location('New York'), zoom_start=12)
ny_map
```

```
[125]: <folium.folium.Map at 0x7f23d0589cc0>
```

```
[132]: # instantiate a feature group for the incidents in the dataframe
restaurants = folium.map.FeatureGroup()

# loop through the neighborhoods and add each to feature group
for lat, lng, in ny_neighborhood_stats[['Latitude', 'Longitude']].values:
    restaurants.add_child(
        folium.CircleMarker(
            [lat, lng],
            radius=10, # define how big you want the circle markers to be
            color='yellow',
            fill=True,
            fill_color='blue',
            fill_opacity=0.6
        )
    )
```

Lets add a new field to dataframe for labeling purpose

```
[127]: ny_neighborhood_stats['Label']=ny_neighborhood_stats['Neighborhood']+', '
→'+ny_neighborhood_stats['Borough']+'(' +ny_neighborhood_stats['Average_
→Rating'].map(str)+')'
```

```
[128]: # add pop-up text to each marker on the map
for lat, lng, label in ny_neighborhood_stats[['Latitude', 'Longitude', 'Label']].
→values:
    folium.Marker([lat, lng], popup=label).add_to(ny_map)
# add incidents to map
```

```
ny_map.add_child(incidents)
```

```
[128]: <folium.folium.Map at 0x7f23d0589cc0>
```

Now that we have visualized the Neighborhoods. Lets Visualize Boroughs based on average Rating

```
[163]: ny_map = folium.Map(location=geo_location('New York'), zoom_start=12)
ny_geo = r'boroughBoundaries.geojson'

ny_map.choropleth(
    geo_data=ny_geo,
    data=ny_borough_stats,
    columns=['Borough', 'Average Rating'],
    key_on='feature.properties.boro_name',
    fill_color='YlOrRd',
    fill_opacity=0.7,
    line_opacity=0.2,
    legend_name='Average Rating'
)

# display map
# as this is huge map data , we will save it to a file
# ny_map #uncomment to show
ny_map.save('borough_rating.html')
```

```
[163]: <folium.folium.Map at 0x7f23d055ce10>
```

5.1.1 Conclusion

- Gramercy(Manhattan), Flatiron(Manhattan), Greenwich Village(Manhattan) are some of the best neighborhoods for spanish cuisine.
- Manhattan have potential Spanish Resturant Market
- Queens ranks last in average rating of Spanish Resturants.
- Manhattan is the best place to stay if you prefer Spanish Cuisine.

Limitations - The ranking is purely on basis of rating of resturants - The accuracy of data depends purely depends on the data provided by FourSquare