The Battle of the Neighborhoods

Exploring New York Restaurants

Agenda

- Introduction
- Problem Statement
- Methodology Used
- DataSet Used
- Result
- Conclusion

Introduction

- New York City Background
- New York City Population
- New York City average Income
- New York City Business Growth
- Discussion on New York City Neighboorhoods

Knowing all about Restaurants

Problem Statement

- The population of New york has grown considerably over the last decades.With it's diverse culture , comes diverse food items. There are many resturants in New york City, each beloning to different categories like Chinese , Indian , French etc.
- **The real deal is that as much as there are many fine restaurants in New york – Asian, Middle Eastern, Latin,American restaurants and Italian, you can struggle to find good place to start restaurant buisness without analysis by each component.So as part of this project , we will list and visualize all major parts of New York City that has great resturants and population density which will ease to our client for opening restaurant in New York.**

Methodology Used

- Explore three Components
- New York Data
- New York Population
- New York Restaurants

Exploring New York Data

Load New York DataSet

```
!wget -q -O 'newyork_data.json' https://cocl.us/new_york_dataset
print('Data downloaded!')
```

```
Data downloaded!
```

```
with open('newyork_data.json') as json_data:
    newyork_data = json.load(json_data)
```

```
newyork_data['features']
```

```
df_newyork.head()
```

:

	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

```
df_newyork.shape
```

: (306, 4)

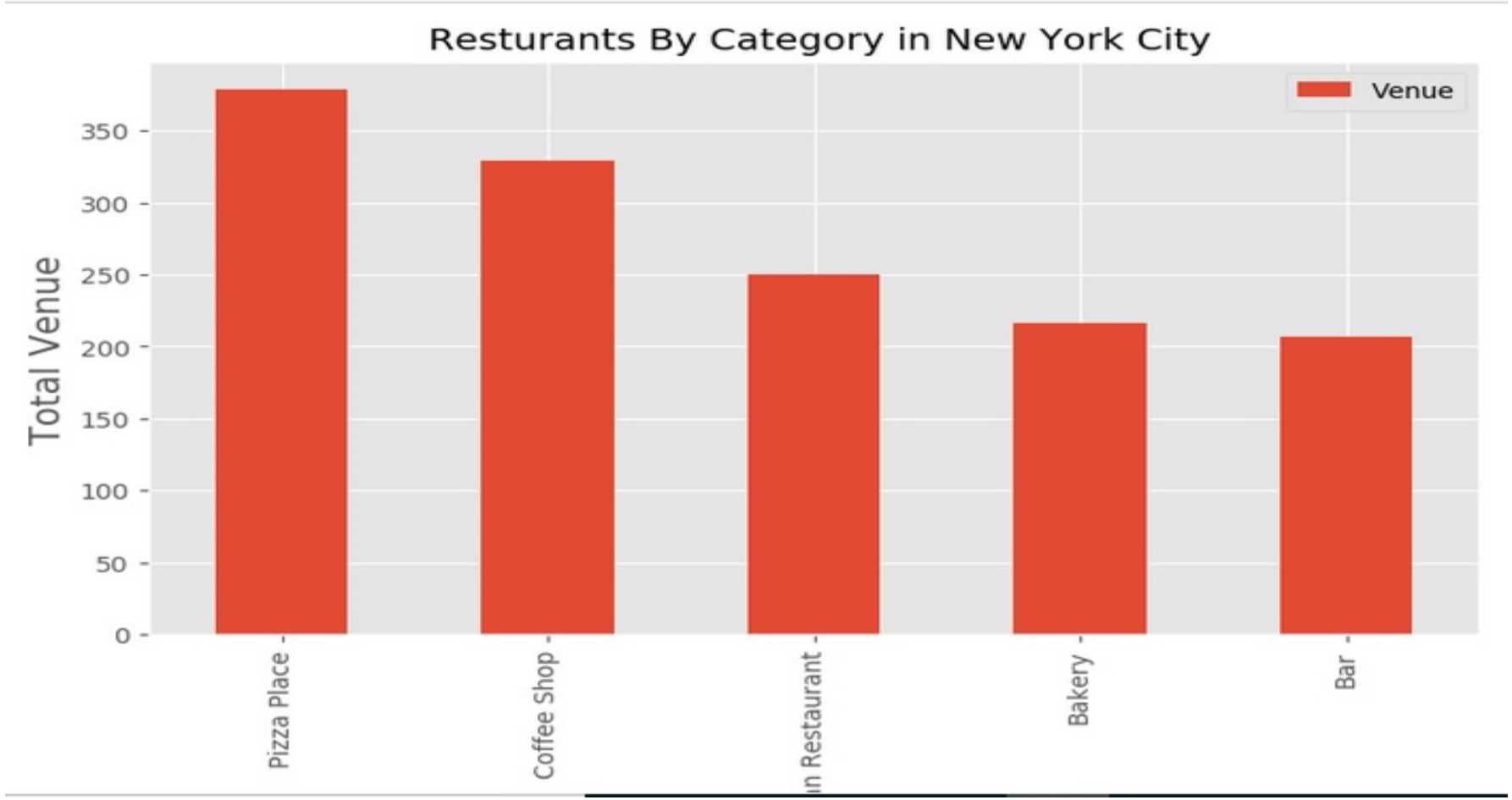
Explore New York Population

```
df_NY_Population
```

:

	Borough	County	Estimate_2017	square_miles	square_km	persons_sq_mi	persons_sq_km
0	The Bronx	Bronx	1,471,160	19,570	42.10	109.04	34,653
1	Brooklyn	Kings	2,648,771	23,900	70.82	183.42	37,137
2	Manhattan	New York	1,664,727	378,250	22.83	59.13	72,033
3	Queens	Queens	2,358,582	31,310	108.53	281.09	21,460
4	Staten Island	Richmond	479,458	23,460	58.37	151.18	8,112
5		City of New York	8,622,698	806.863	302.64	783.83	28,188
6		State of New York	19,849,399	1,547.116	47,214	122,284	416.4

Explore New York Restaurant



Clustering By K Means

Use K means Clustering to Analyze Data

```
# set number of clusters
no_of_clusters = 3


# run k-means clustering
kmeans_model = KMeans(n_clusters=no_of_clusters, random_state=0).fit(df_man_brook_restaurant)

# check cluster labels generated for each row in the dataframe
kmeans_model.labels_
```

```
array([2, 1, 2, 0, 2, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 0, 2, 0, 0, 1, 0, 0,
       2, 0, 1, 0, 1, 2, 0, 1, 0, 1, 2, 1, 2, 0, 0, 0, 2, 0, 1, 0, 0, 0,
       0, 1, 0, 2, 1, 0, 0, 2, 1, 2, 0, 2, 0, 2, 0, 0, 2, 1, 0, 0, 2, 2,
       1, 1, 0, 2, 1, 0, 1, 2, 2, 1, 2, 0, 1, 0, 1, 0, 2, 2, 2, 1, 0, 0,
       0, 1, 2, 0, 2, 1, 0, 2, 2, 0, 2, 2, 0, 2, 1, 2, 0, 2, 2, 0, 1, 2],
      dtype=int32)
```

Data Set Used

- **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.**
- **Data source : https://en.wikipedia.org/wiki/Demographics_of_New_York_City**
- **Description:The Data set contains population growth in New York**
- **Data Source:https://en.wikipedia.org/wiki/Cuisine_of_New_York_City**
- **Description:This data set contains many cuisines belonging to various ethnic groups that have entered the United States through the city.**

Results

- **Cluster0 :** The Total and Total Sum of cluster0 has smallest value. It shows that the cluster0 has few restaurants in NEWYork.
- **Cluster1 :** The Total and Total Sum of cluster1 has Middle value. It shows that the markets are Cluster 1 is growing restaurants business in NEWYork.
- **Cluster2 :** The Total and Total Sum of cluster1 has highest value. It shows that the Cluster2 has high number of restaurants in NEWYork

Conclusion

- Brooklyn and Manhattan has great opportunity of restaurant business.
- Bronx, Queens are growing in restaurant business