

Capstone Project

Battle of Neighborhoods
Korean Restaurant in NYC

Problem & Background

- Following Korea Ministry of Foreign Affairs, as of 2019, there are 2.54 million Koreans living in the United States and about 420,000 Koreans living in New York. This is 2nd largest population after LA
- In New York, where 8.4 million people live, the proportion of Koreans is about 4.2%

(단위: 명)

지역별	거주자격별	재 외 국 민			외국국적동포 (시민권자)	총 계	
		영주권자	일반체류자	유 학 생			
	총계	480,750	586,838	104,401	1,172,060	1,616,662	2,788,722
미 국	뉴욕주(총)	59,268	125,451	15,280	199,999	221,223	421,222
	뉴욕주(대도시권)	113,118	120,044	11,150	238,918	423,101	678,079
	주미국(대)	27,548	4,994	3,297	35,839	143,941	179,780
	주보스턴(총)	11,432	11,561	4,189	27,182	29,169	56,351
	주샌프란시스코(총)	34,635	63,485	14,083	112,203	115,446	227,649
	주시애틀(총)	50,458	6,533	5,890	62,881	97,300	160,181
	주시카고(총)	39,112	67,749	12,427	119,288	205,847	325,135
	주애틀랜타(총)	42,641	82,167	5,614	130,422	112,122	242,544
	주앵커리지(총)	876	113	30	1,019	5,227	6,246
	주하와이(총)	1,800	2,429	243	4,472	2,354	6,826
	주호놀룰루(총)	3,253	20,106	731	24,090	42,734	66,824
	주휴스턴(총)	42,502	49,334	4,777	96,613	81,532	178,145
	소계	426,643	560,566	77,717	1,064,926	1,482,056	2,546,982

Source: http://www.mofa.go.kr/www/wpge/m_21507/contents.do

Change in Population, Census Bureau Estimates April 2010 to July 2018				
	Census 2010	Estimates 2018	Change: Census 2010 and Estimates 2018	
			Number	Percent
New York State	19,378,102	19,542,209	164,107	0.8
New York City	8,175,133	8,398,748	223,615	2.7
Bronx	1,385,108	1,432,132	47,024	3.4
Brooklyn	2,504,700	2,582,830	78,130	3.1
Manhattan	1,585,873	1,628,701	42,828	2.7
Queens	2,230,722	2,278,906	48,184	2.2
Staten Island	468,730	476,179	7,449	1.6
NYC as % of NYS	42.2	43.0	136.3	

Source: 2010 Census; Census Bureau Current Estimates Program

Problem & Background

- Recently, the interest in Korean culture in American society has been increasing as we have seen Korean pop such as Psy and BTS and Korean dramas.
- The purpose of this project is to analyze and visualize information about Korean restaurants to New Yorkers and tourists to provide the following information to citizens and tourists who interested in Korean food.



Source:
<https://www.bbc.com/news/technology-20483087>



Source:
http://economychosun.com/client/new/view.php?boardName=C03&t_num=13607013



<https://www.cj.co.kr/kr/k-food-life/moment-story/25>

Data and Methodology

- https://cocl.us/new_york_dataset for use data source(list of boroughs, neighbourhoods and geographical) from NYC
- Foursquare API for information of Korean restaurants
- The visualization of the neighborhoods will be achieved using folium library with Python.
- The data analysis and results will be done with Python programming using the Jupyter Notebook platform.

Korean restaurants in NYC

- There are 103 Korean restaurants in NYC
- Over 80% are located in Queens and around 40 located in Murray Hill

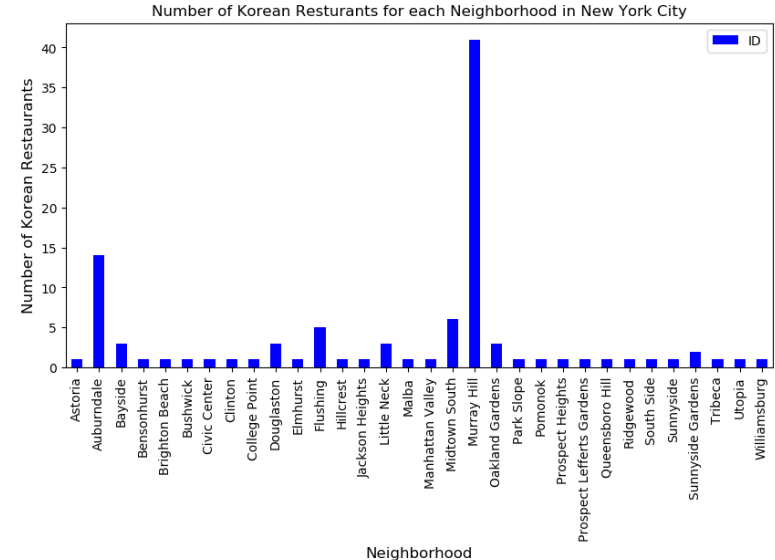
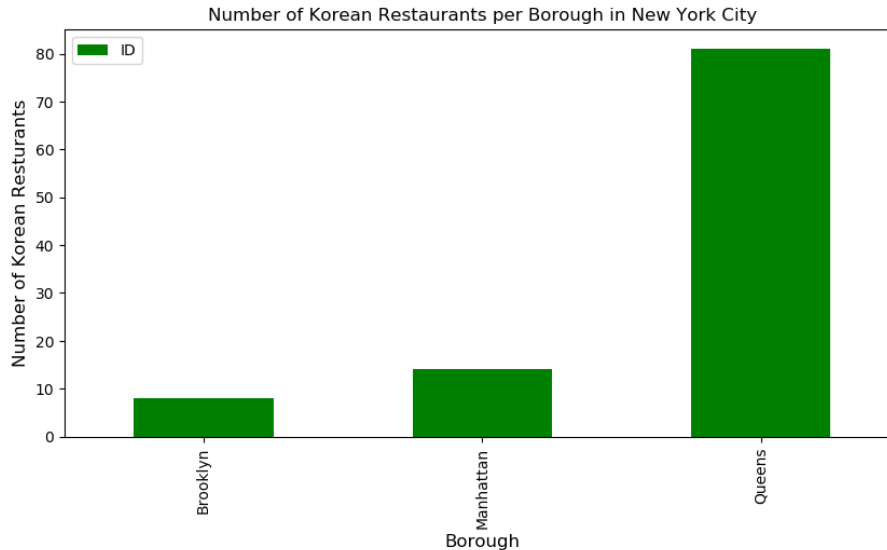
```
# Korean restaurants' analysis
```

```
korean_rest_ny.head()
```

	Borough	Neighborhood	ID	Name
0	Brooklyn	Bensonhurst	57049cb4409efc6b9578c1b	Cafe Lily
1	Brooklyn	Brighton Beach	4c9d5c0303133704a99f5e05	Cafe At Your Mother-in-Law
2	Brooklyn	Prospect Heights	4fa162e0e4b0badc81404a51	Kimchi Grill
3	Brooklyn	Williamsburg	52bf3053498e754b09e440b5	Dotory
4	Brooklyn	Bushwick	5cf40f14d552c7002c6cc481	Kichin

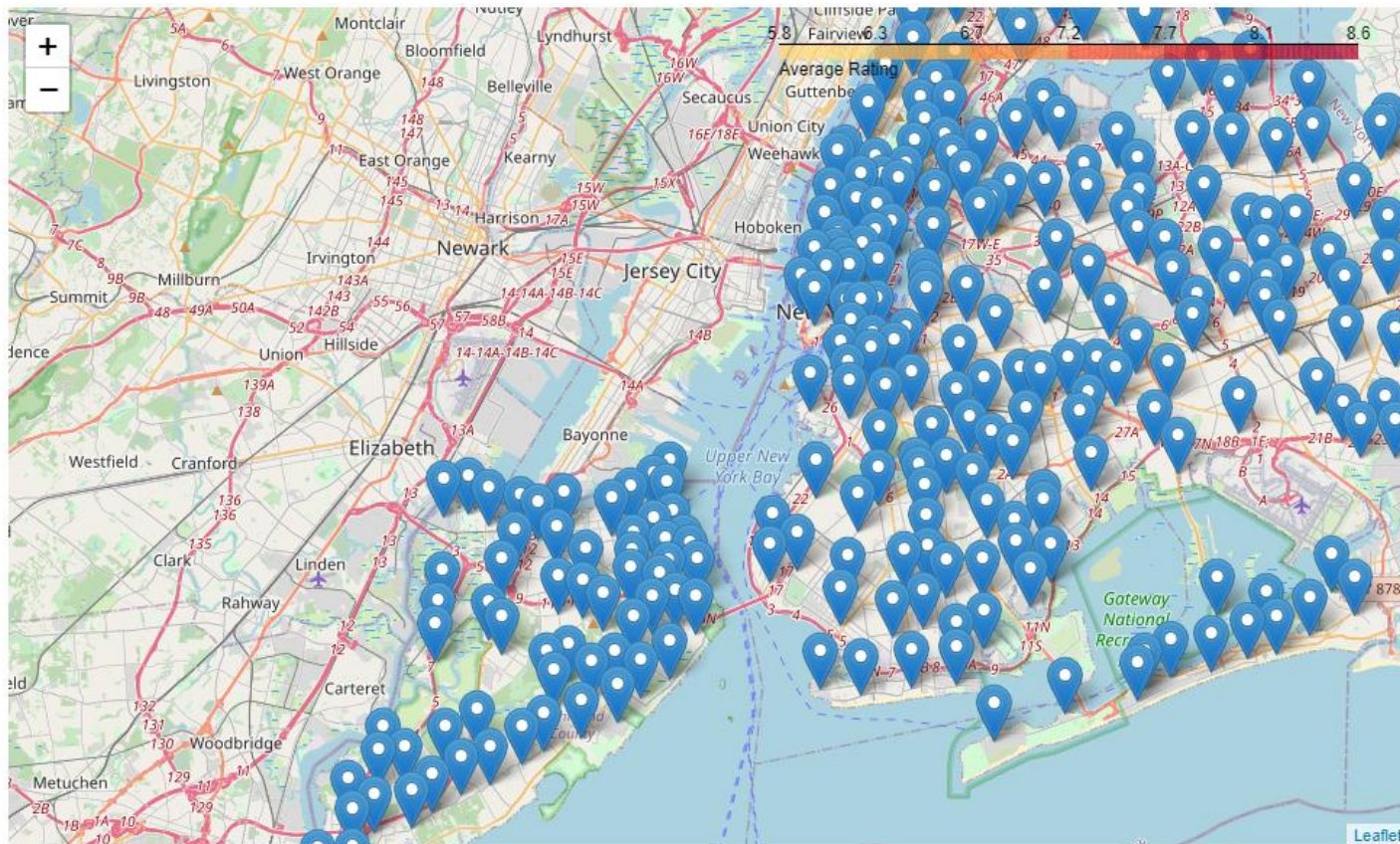
```
korean_rest_ny.shape
```

```
(103, 4)
```



Korean restaurants in NYC

```
# New York Map output  
ny_map = folium.Map(location=geo_location('New York'), zoom_start=11)  
ny_geo = r'C:\anaconda3\nyu_2451_34572-geo\json.json'  
  
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=0.6,  
    line_opacity=0.2,  
    legend_name='Average Rating'  
)  
  
ny_map
```



Best Korean restaurants in NYC

- The best rating restaurant is Kinchin Bushwick, Brooklyn
- The best likes restaurant is BCD Tofu House Murray Hill, Manhattan

```
# Restaurant with maximum Rating
```

```
korean_rest_stats_ny.iloc[korean_rest_stats_ny['Rating'].idxmax()]
```

Borough	Brooklyn
Neighborhood	Bushwick
ID	5cf40f14d552c7002c6cc481
Name	Kichin
Likes	27
Rating	9
Tips	4
Name: 4, dtype: object	

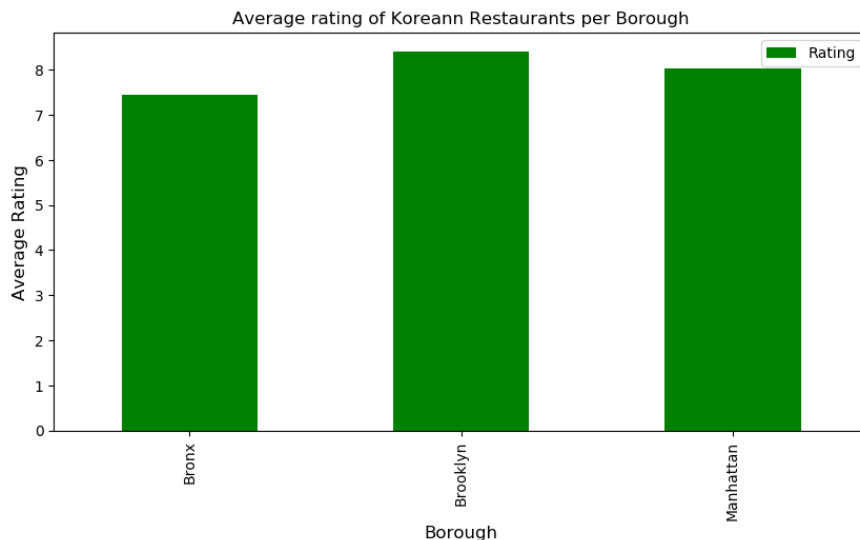
```
# Restaurant with maximum Likes
```

```
korean_rest_stats_ny.iloc[korean_rest_stats_ny['Likes'].idxmax()]
```

Borough	Manhattan
Neighborhood	Murray Hill
ID	517563f9498e0a4859d08fe4
Name	BCD Tofu House
Likes	1228
Rating	8.7
Tips	205
Name: 11, dtype: object	

Rating Korean restaurants in NYC

- The best rating restaurant in borough is Manhattan in Avg rating 8.54
- The best rating restaurant in neighborhoods is Murray Hill, Manhattan
- The lowest rating restaurant in borough is Queens in Avg rating 5.86



```
# Synthesize rating information per Borough
```

```
ny_borough_stats=korean_rest_stats.ny.groupby('Borough',as_index=False).mean()[['Borough','Rating']]  
ny_borough_stats.columns=['Borough','Average Rating']
```

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

	Borough	Average Rating
1	Manhattan	8.542857
0	Brooklyn	8.137500
2	Queens	5.865714

Summary and conclusion

- The objectives of the projects include the visualization and analysis Korean restaurants in New York City
- There are 103 Korean restaurants in New York City. About 80% of these restaurants are located in Queens. This is considered to be related to most Koreans living in New York, Queens. There are many Korean restaurants in Queens Park, but the highest rated restaurant was Kichin in Bushwick, Brooklyn and BCD Tofu House in Murray Hill, Manhattan.
- There are two Murray Hill in NYC, Manhattan and Queens. The regional rating of Murry Hill is very high with 8.8 points, but this is Murry Hill in Manhattan.
- Queens has many Korean restaurants, but has a low rating of 5.8.
- This is likely to be a very frustrating meal if New Yorkers and tourists misunderstand it as a restaurant in Murry Hill, Queens, where many Koreans live. As a result, your chances of lowering your interest in Korean food are very high. In order to use it as a K-food guide, you have to be aware that it is Murry Hill in Manhattan.