

Battle of Neighborhoods



NEW YORK CITY, NY

BY
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Problem Statement

- ▶ To recommend the best neighborhood to live, to buy a house, to rent an apartment or build a restaurant etc in New York.
- ▶ To understand the similarities and differences between the neighborhoods using Unsupervised K-Mean Clustering Algorithm.

Objective

- ▶ Collecting the top trending venues in the using Foursquare API(Beautiful Soup, http request)
- ▶ Forming neighborhood clusters based on venue categories using unsupervised k-mean clustering algorithm(sklearn)
- ▶ Identifying and understanding the similarities and differences between two chosen neighborhoods to retrieve more insights and to conclude which neighborhood wins over other.

Python packages and Dependencies:

- ▶ Pandas - Library for Data Analysis
- ▶ NumPy - Library to handle data in a vectorized manner
- ▶ JSON - Library to handle JSON files
- ▶ Geopy - To retrieve Location Data
- ▶ Requests - Library to handle http requests
- ▶ Matplotlib - Python Plotting Module
- ▶ Sklearn - Python machine learning Library
- ▶ Folium - Map rendering Library

Work flow

- ▶ Web Scraping and Data Wrangling
- ▶ Top Trending Places Extraction and Clustering
- ▶ Decision Making based on the clustered neighborhoods, Population Distribution, School Ratings, Median House Price Analysis

Web Scraping and Data Wrangling

Beautiful Soup

Collecting
Neighborhood/Pos
tal code

<http://seattlearea.com/zip-codes/>

Google Maps API

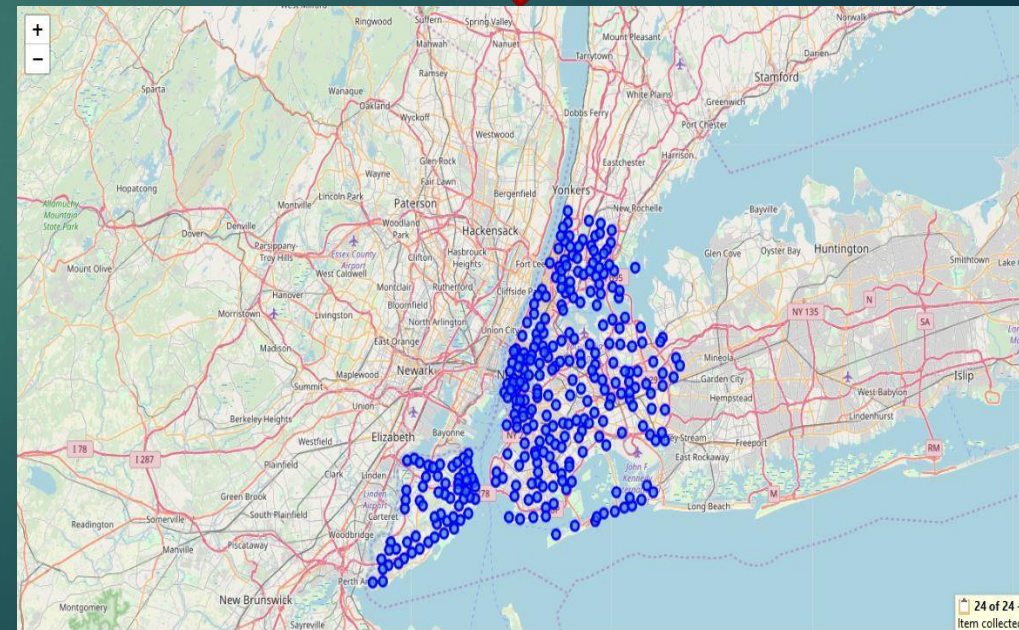
To Collect
Geographical
Data



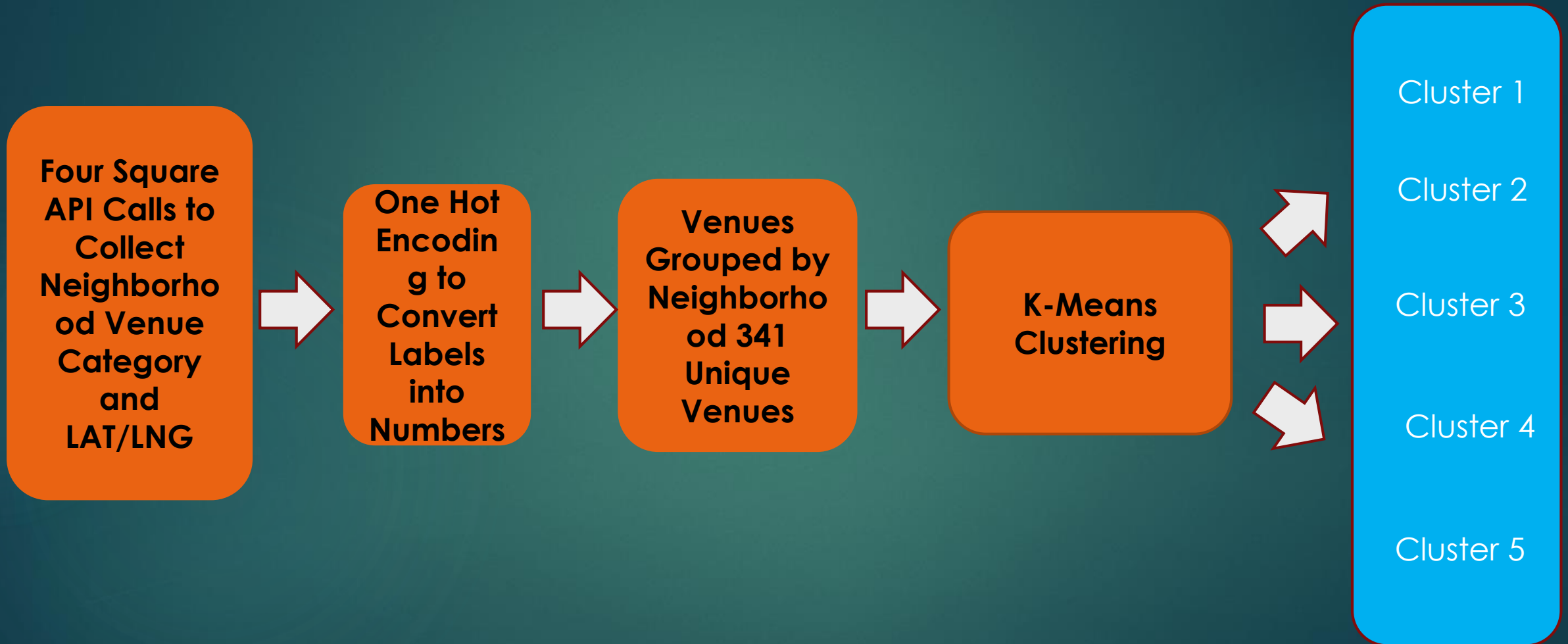
	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

	name	categories	lat	lng
0	Lollipops Gelato	Dessert Shop	40.894123	-73.845892
1	Rite Aid	Pharmacy	40.896521	-73.844680
2	Carvel Ice Cream	Ice Cream Shop	40.890487	-73.848568
3	Dunkin Donuts	Donut Shop	40.890631	-73.849027
4	SUBWAY	Sandwich Place	40.890656	-73.849192

Folium
Visualization for
New York
Neighborhood



Venues Extraction using Four Square API and Clustering



Decision Making



Neighborhood
1

Neighborhood
2

Population
Distribution
Analysis



School
Ratings
Analysis



Median
House Price
Analysis



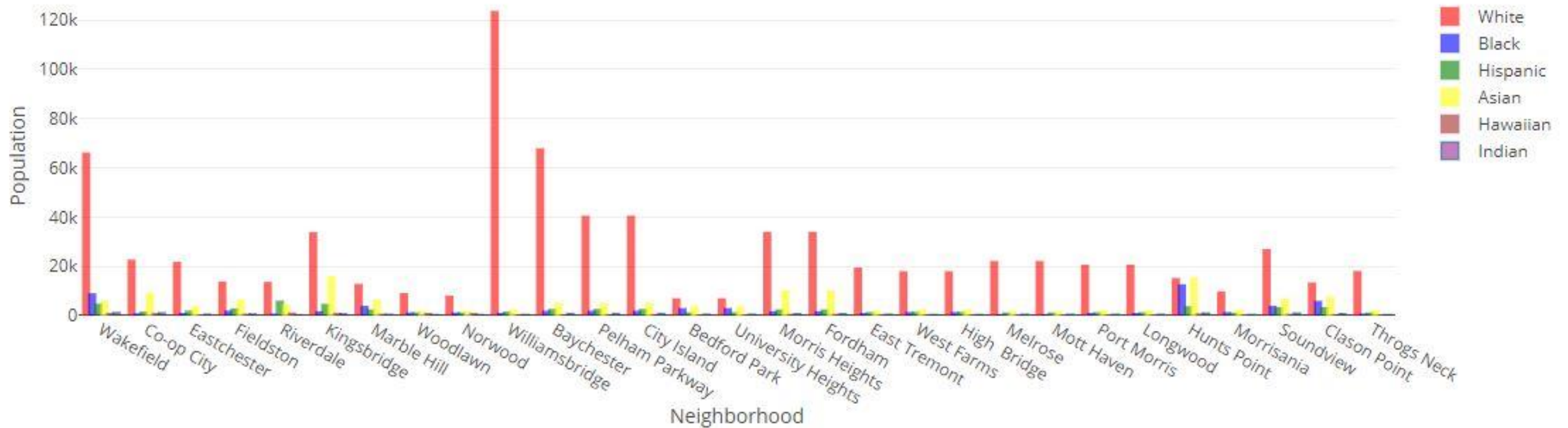
Cluster
Analysis



Winning Neighborhood

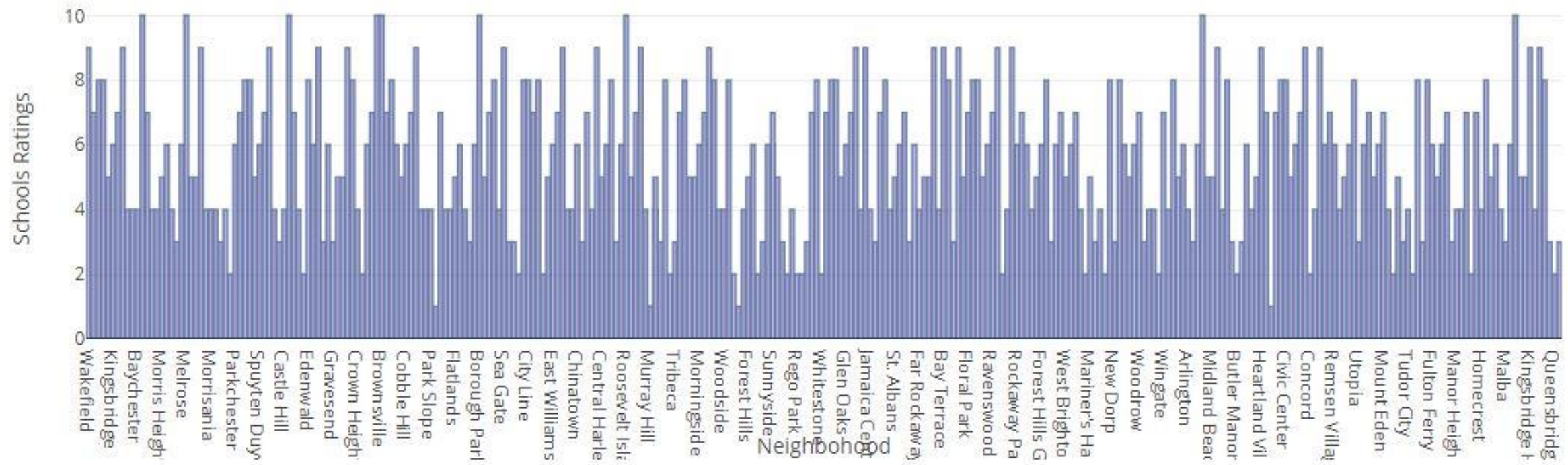
POPULATION DISTRIBUTION

New York Population Distribution Analysis



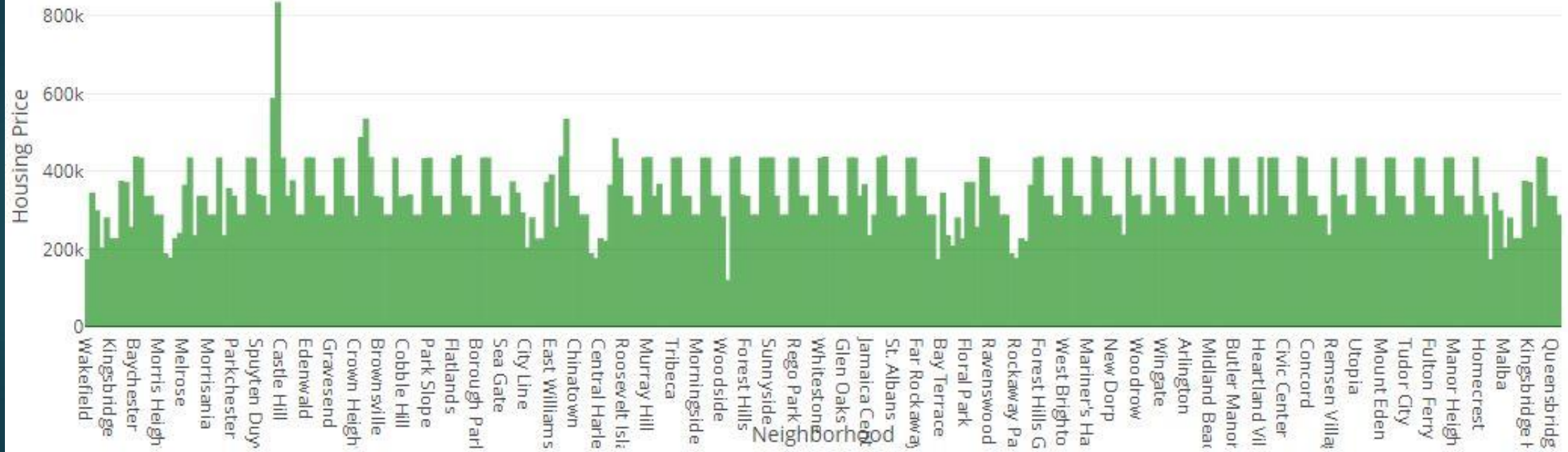
AVERAGE SCHOOL RATINGS

New York Neighborhoods School Ratings Analysis



MEDIAN HOUSE PRICE

New York Neighborhoods Median Housing Price Analysis



Comparison between Neighborhoods – New York

Wakefield and Marble Hill

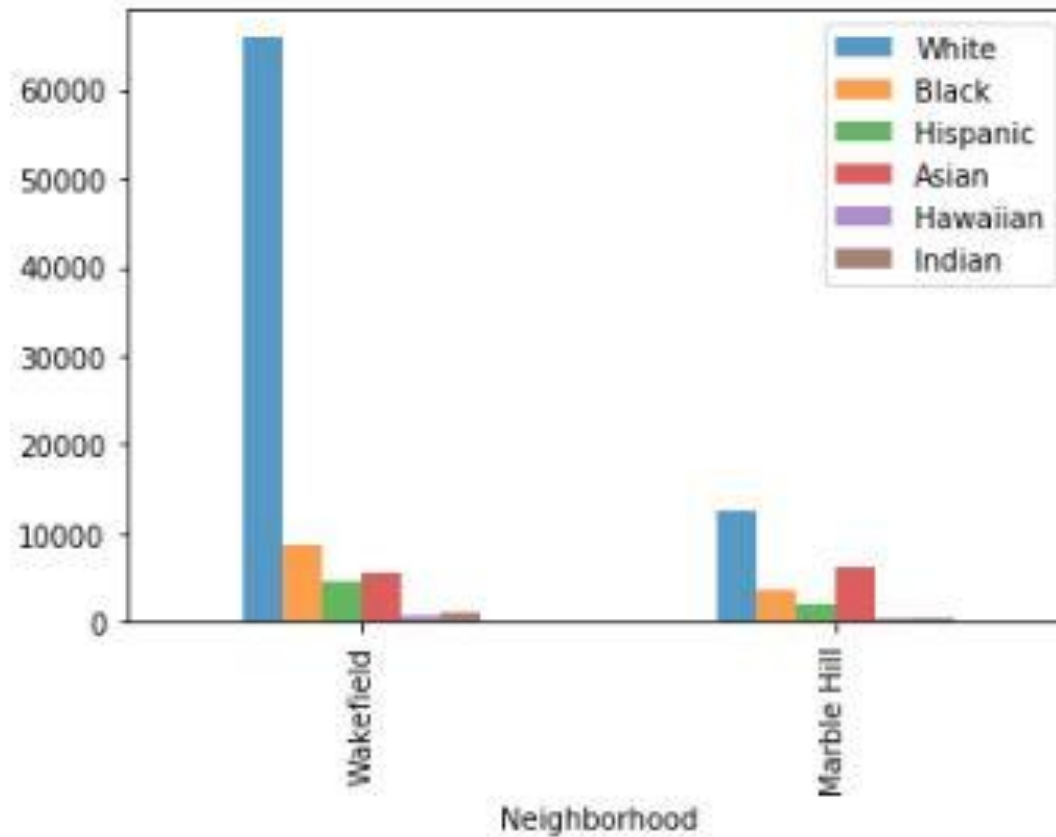
Now lets compare 2 neighborhoods to choose one that best matches our requirements as given below

1. More Indian Population
2. Higher School Rating
3. Reasonable Housing Price in the Range of 150k to 300k
4. Great Amenities
5. Comfortable Neighborhoods

Neighborhood Venues

Neighborhood	Wakefield	Riverdale
Borough	Bronx	Bronx
Latitude	40.8947	40.8908
Longitude	-73.8472	-73.9126
Cluster Labels	0	1
1st Most Common Venue	Laundromat	Bank
2nd Most Common Venue	Food Truck	Plaza
3rd Most Common Venue	Pharmacy	Food Truck
4th Most Common Venue	Donut Shop	Gym / Fitness Center
5th Most Common Venue	Ice Cream Shop	Gym
6th Most Common Venue	Food	Park
7th Most Common Venue	Sandwich Place	Playground
8th Most Common Venue	Pizza Place	Home Service
9th Most Common Venue	Dessert Shop	Event Service
10th Most Common Venue	Falafel Restaurant	Event Space

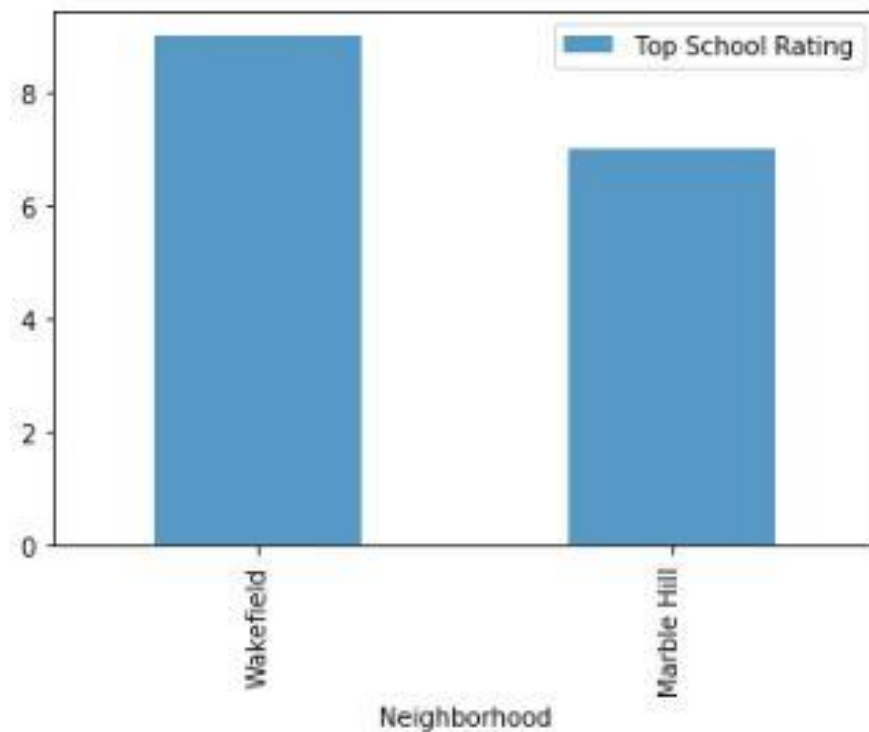
Population distribution



```
Population_Comparison['Indian']
```

```
Neighborhood
Wakefield      1099
Marble Hill     397
Name: Indian, dtype: int64
```

School ratings

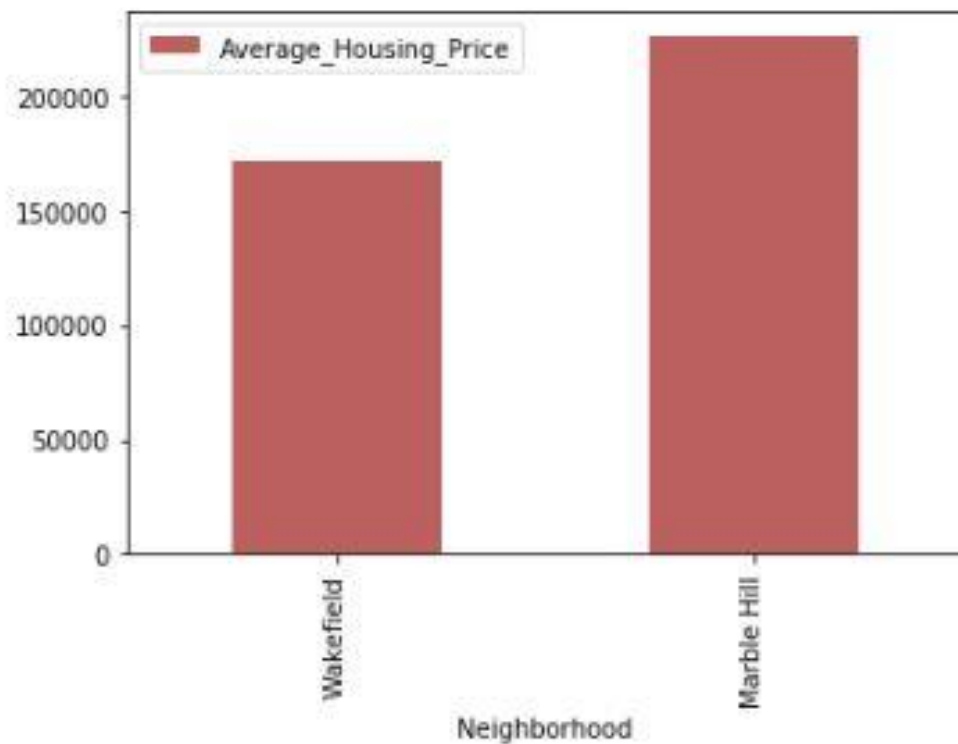


```
?: School_rating_comparison
```

```
?:
```

Top School Rating	
Neighborhood	
Wakefield	9
Marble Hill	7

Average housing price



```
31]: Avg_housing_price_comparison
```

```
31]:
```

Average_Housing_Price	
Neighborhood	
Wakefield	172050.0
Marble Hill	225800.0

Conclusion

- ▶ This Analysis concludes that the two places of New York Wakefield , Marble Hill both has great amenities and locality.
- ▶ Wakefield has the higher number of Indian population
- ▶ Good school rating of 9
- ▶ Reasonable average housing price of around 172k
- ▶ Also top 10 common venues shows Wakefield Laundromat, Pharmacy, Food Truck, Clothing Store , Pizza Place, Donut Shop and many more.

Hence Wakefield wins over Marble Hill!

