

The battle of the Neighborhoods



Derek W.



Introduction

I am owning a consultant company for international students. my job is to offer them reliable analysis based on the neighborhood information and provide appropriate suggestions for them.

we are focusing on the international students who wants to rent an apartment near some outdoor facilities. Thus, the need a home to at least brings them conveniences for their sporting habits.

Data Description

NYC Geodata



Foursquare Data

FOURSQUARE DEVELOPERS

Manhattan Rental

RENTCafé®

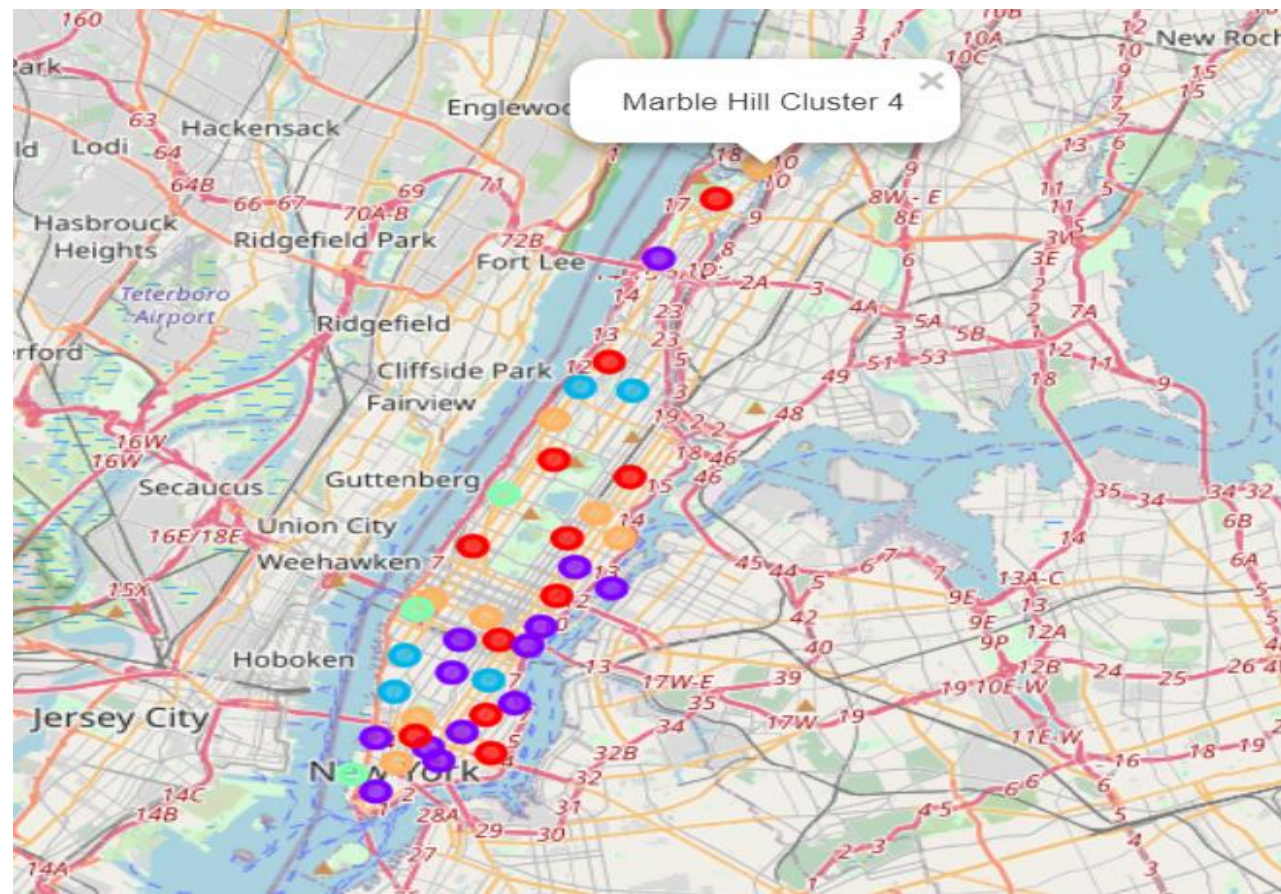
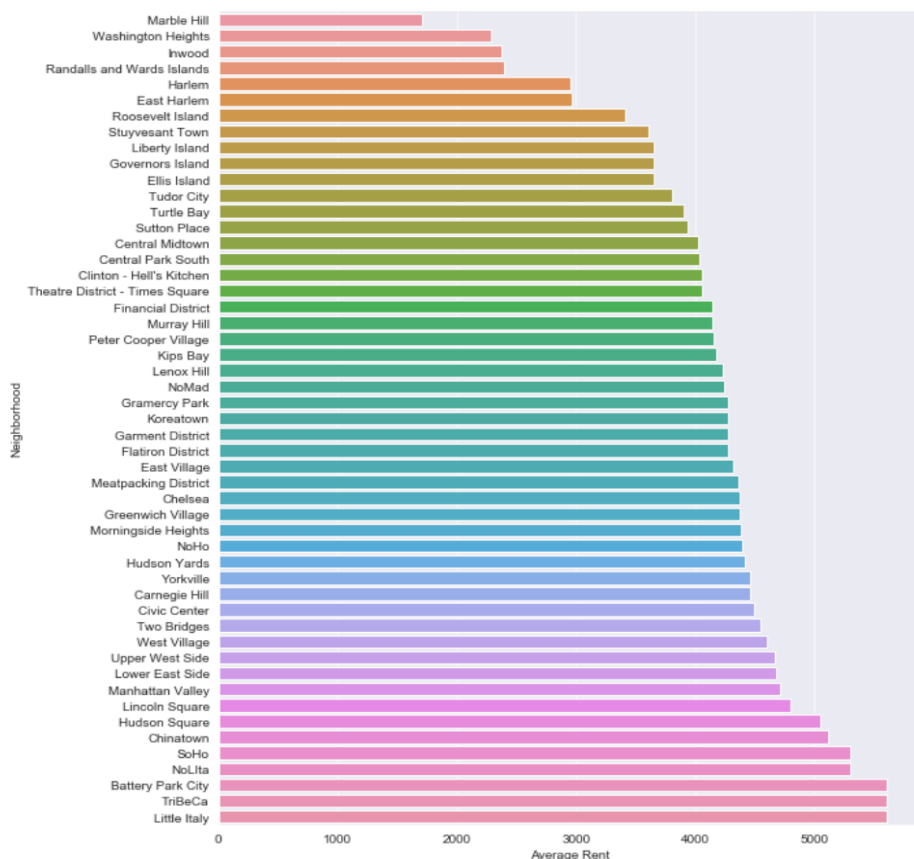


Methodology

Extract the neighborhood information

Scrape the rental data

Analyze the neighborhoods





Results

Cluster 0:

Outdoor parks

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Average Rent
3	Inwood	Park	Playground	Dog Run	Field	Other Great Outdoors	Plaza	Gym / Fitness Center	Athletics & Sports	Skating Rink	Pool	2394.0
4	Hamilton Heights	Park	Playground	Other Great Outdoors	Dog Run	Gym / Fitness Center	Gym	Plaza	Tennis Court	Pool	Athletics & Sports	2948.0
7	East Harlem	Garden	Playground	Park	Other Great Outdoors	Pool	Baseball Field	Field	Market	Beach	Bridge	3611.0
8	Upper East Side	Park	Dog Run	Gym	Garden	Playground	Cemetery	Plaza	Athletics & Sports	Gym / Fitness Center	Baseball Field	3648.0
13	Lincoln Square	Park	Garden	Baseball Field	Field	Gym / Fitness Center	Botanical Garden	Gym	Plaza	Cemetery	Dog Run	3941.0
16	Murray Hill	Park	Playground	Plaza	Gym / Fitness Center	Cemetery	Gym	Garden	Field	Athletics & Sports	Martial Arts Dojo	4053.0
19	East Village	Park	Playground	Other Great Outdoors	Bridge	Gym	Baseball Field	Plaza	Athletics & Sports	Skate Park	Historic Site	4143.0
20	Lower East Side	Playground	Park	Gym	Housing Development	Gym / Fitness Center	Residential Building (Apartment / Condo)	Other Great Outdoors	Garden	Baseball Field	Martial Arts Dojo	4154.0
23	Soho	Park	Playground	Baseball Field	Gym / Fitness Center	Plaza	Garden	Other Great Outdoors	Housing Development	Gym	Paintball Field	4243.0
25	Manhattan Valley	Park	Playground	Garden	Gym	Baseball Field	Residential Building (Apartment / Condo)	Martial Arts Dojo	Campground	Other Great Outdoors	Community Center	4276.0
34	Sutton Place	Park	Garden	Playground	Plaza	Gym / Fitness Center	Field	Athletics & Sports	Scenic Lookout	Botanical Garden	Other Great Outdoors	4416.0



Cluster 1:

Various sports selections

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Average Rent
1	Chinatown	Other Great Outdoors	Park	Baseball Field	Gym / Fitness Center	Playground	Pool	Plaza	Gym	Trail	Bridge	2284.0
2	Washington Heights	Park	Gym	Bridge	Baseball Field	Gym / Fitness Center	Athletics & Sports	Playground	Field	Cemetery	Bus Station	2375.0
10	Lenox Hill	Other Great Outdoors	Playground	Park	Gym / Fitness Center	Garden	Baseball Field	Pool	Plaza	Gym	Athletics & Sports	3648.0
11	Roosevelt Island	Gym	Playground	Other Great Outdoors	Pool	Gym / Fitness Center	Dog Run	Park	Outdoors & Recreation	Garden	Tennis Court	3808.0
21	Tribeca	Baseball Field	Gym	Playground	Park	Bridge	Garden	Other Great Outdoors	Housing Development	Gym / Fitness Center	Pool	4172.0
22	Little Italy	Baseball Field	Bridge	Playground	Park	Gym	Field	Other Great Outdoors	Dog Run	Pool	Garden	4231.0
29	Financial District	Playground	Gym / Fitness Center	Other Great Outdoors	Beach	Dog Run	Scenic Lookout	Bridge	Gym	Park	Pool	4363.0
31	Noho	Baseball Field	Gym / Fitness Center	Playground	Martial Arts Dojo	Other Great Outdoors	Cemetery	Gym	Park	Field	Outdoors & Recreation	4378.0
33	Midtown South	Gym	Playground	Gym / Fitness Center	Other Great Outdoors	Baseball Field	Field	Park	Pool	Cemetery	Outdoors & Recreation	4394.0
35	Turtle Bay	Other Great Outdoors	Scenic Lookout	Park	Gym / Fitness Center	Athletics & Sports	Tennis Court	Bridge	Gym	Dog Run	Playground	4458.0
36	Tudor City	Gym	Playground	Park	Other Great Outdoors	Baseball Field	Garden	Dog Run	Scenic Lookout	Pool	Field	4458.0
37	Stuyvesant Town	Gym / Fitness Center	Other Great Outdoors	Baseball Field	Gym	Playground	Tennis Court	Park	Dog Run	Weight Loss Center	Bridge	4489.0
38	Flatiron	Other Great Outdoors	Gym	Beach	Martial Arts Dojo	Park	Baseball Field	Vineyard	Cemetery	Farm	Building	4544.0



Cluster 2:

Parks!!!

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Average Rent
5	Manhattanville	Park	Gym / Fitness Center	Trail	Scenic Lookout	Dog Run	Plaza	Playground	Gym	Other Great Outdoors	Bridge	2965.0
6	Central Harlem	Park	Scenic Lookout	Other Great Outdoors	Gym / Fitness Center	Bridge	Basketball Court	Dog Run	Playground	Athletics & Sports	Gym	3416.0
17	Chelsea	Park	Other Great Outdoors	Playground	Gym	Basketball Court	Outdoors & Recreation	Trail	Dog Run	Tennis Court	Bridge	4059.0
24	West Village	Park	Other Great Outdoors	Dog Run	Baseball Field	Gym / Fitness Center	Gym	Pool	Plaza	Scenic Lookout	Paintball Field	4275.0
27	Gramercy	Park	Other Great Outdoors	Pool	Trail	Scenic Lookout	Playground	Track	River	Gym	Beach	4276.0

Cluster 3:

Marine Views

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Average Rent
12	Upper West Side	Harbor / Marina	Beach	Park	Other Great Outdoors	Playground	Surf Spot	Pool	Scenic Lookout	Cemetery	Sports Club	3906.0
28	Battery Park City	Other Great Outdoors	Harbor / Marina	Park	Beach	Building	Residential Building (Apartment / Condo)	Tennis Court	Playground	Trail	Martial Arts Dojo	4320.0
39	Hudson Yards	Other Great Outdoors	Beach	Park	Harbor / Marina	Gym	Tennis Court	Farm	Scenic Lookout	Pedestrian Plaza	Building	4598.0



Cluster 4:

Young
folks
Here!

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Average Rent
0	Marble Hill	Playground	Other Great Outdoors	Athletics & Sports	Gym / Fitness Center	Pool	Garden	Track	Scenic Lookout	Park	Financial or Legal Service	1708.0
9	Yorkville	Playground	Park	Other Great Outdoors	Dog Run	Gym	Scenic Lookout	Field	Cosmetics Shop	Plaza	Ski Area	3648.0
14	Clinton	Playground	Park	Garden	Plaza	Gym / Fitness Center	Basketball Court	Gym	Other Great Outdoors	Athletics & Sports	Campground	4022.0
15	Midtown	Playground	Park	Bridge	Other Great Outdoors	Gym / Fitness Center	Basketball Court	Plaza	Garden	State / Provincial Park	River	4038.0
18	Greenwich Village	Park	Other Great Outdoors	Playground	Bridge	Scenic Lookout	Gym	Garden	Dog Run	Residential Building (Apartment / Condo)	Community Center	4142.0
26	Morningside Heights	Park	Playground	Basketball Court	Other Great Outdoors	Dog Run	Gym	Athletics & Sports	Scenic Lookout	Field	Residential Building (Apartment / Condo)	4276.0
30	Carnegie Hill	Playground	Other Great Outdoors	Park	Gym	Plaza	Basketball Court	Dog Run	Martial Arts Dojo	Residential Building (Apartment / Condo)	Campground	4370.0
32	Civic Center	Playground	Park	Other Great Outdoors	Gym	Garden	Zoo	College Gym	Gym / Fitness Center	Housing Development	Office	4388.0



Discussions

Advantages

- We extract the data from the internet so that we can use almost whatever factors we want to consider. For example, we can even take the crime data from NYPD website of traffic convenience into consideration.
- The K Means Clustering methods as a unsupervised learning method can generate the result automatically without any subjective preference.
- The Foursquare API does offers us large amount of geographic information that can help our client for some personalized purposes.



Limitations

- **The data we use are not the recent updated ones, for example the 2016 New York neighborhood data, since the data sources are limited.**
- **Using the K Means Clustering in such contents might lead some issues in cluster explanatory. Sometimes the differences between clusters are not that distinct. So, the method is still a rough one that cannot reach a high precision analytics need.**



Conclusion

By utilizing such method, we can easily extract the useful information from the internet to fit out clients' need. And then, use a simply clustering method to **shrink the scope of their choice** so that they can simply find their ideal position in a relatively small clusters according to the venue features. With the reference of the rental from professional website, our clients can simply being **targeted to focus** on some neighborhoods they like to start their new life. Such analytics do **save their time** on finding a suitable home, especially for those who have limit understanding for the borough of Manhattan. Hope our Client can start an amazing life in the amazing New York City!