

# The Best Location for Living @ New York City



## Introduction: Business Problem

New York City welcomed about *65.2 million* tourists in 2018 year - *51.6 million* domestic and *13.5 million* international visitors

New York City has the largest selection of lodging choices in the country – from the hostels to the luxury hotels. The prices vary from 100\$ till several thousand dollars with average price 292\$ per night.

We believe you have many questions

Price?

Safety?

Near the mall?

Quiet?



## How to select the best location for living?

## Datasets

Accommodation's average price per person by the neighborhood

Number of tourist attractions near the accommodation

Number of crimes nearby the accommodation

New York City apartment listing from the Inside Airbnb site

New York Neighborhoods Tabulation Areas – official NYC neighborhoods names and coordinates

Foursquare API to extract data about venues - food places, museums, galleries, shopping centers

New York Crime data records for 2019 year

# Methodology

## First step:

- Airbnb Accommodations with their NYC Tabulation Area (official neighborhood names);
- Airbnb Accommodation's number of crimes nearby;
- Defined NYC Tabulation Area (official neighborhood name) for each Manhattan's crime case

## Second step:

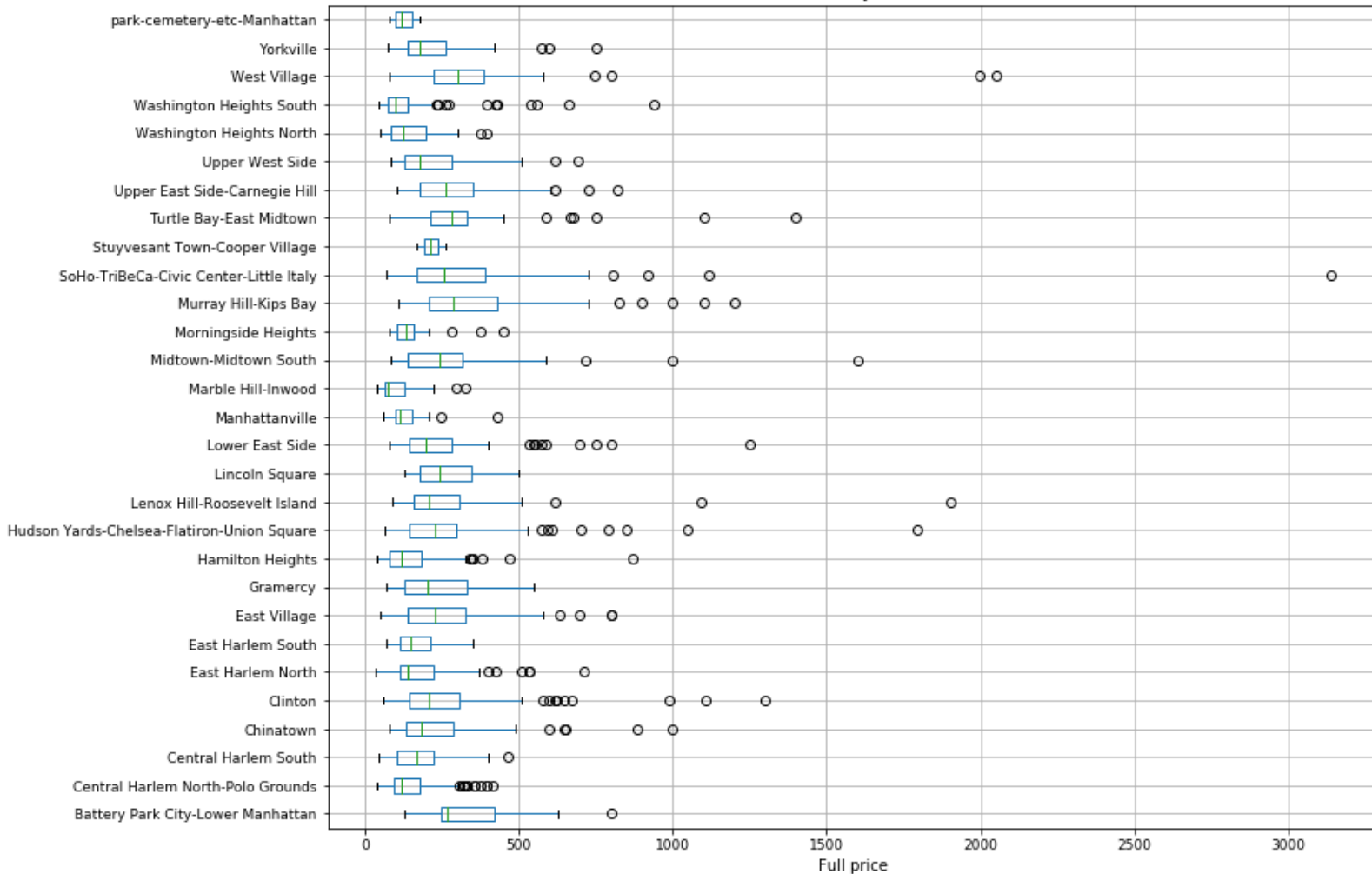
- Number of crimes in the area;
- Average price per person;
- Number of accommodations available.

## Third step:

- Select Top-100 Airbnb accommodations based on summary rating, number of crimes and price per person, and
- Invoke Foursquare API to find Top accommodations' nearby venues;
- Create and investigate clusters (using k-means clustering) for our accommodations to make some recommendations to our tourists.

# Analysis

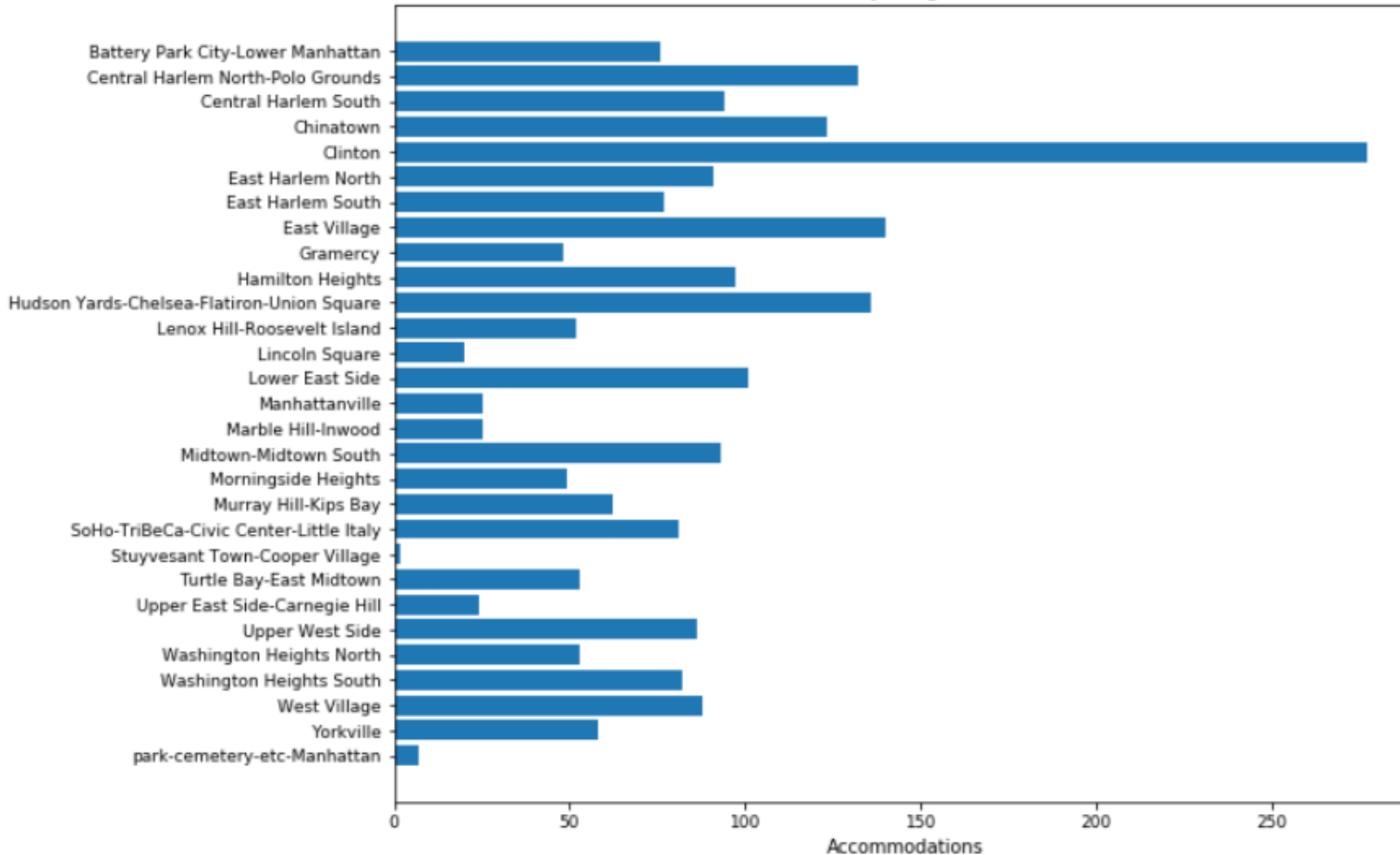
Full Price by District



- Different district shows different full price
- Normally, the full price range from 100-750\$
- But, some hotels/airbnb rooms show very high full price than average (such as > 3000\$ at SoHo-TriBeCa Civic Center)

# Analysis

Accommodations Number Total by Neighbourhood on Manhattan in 2019

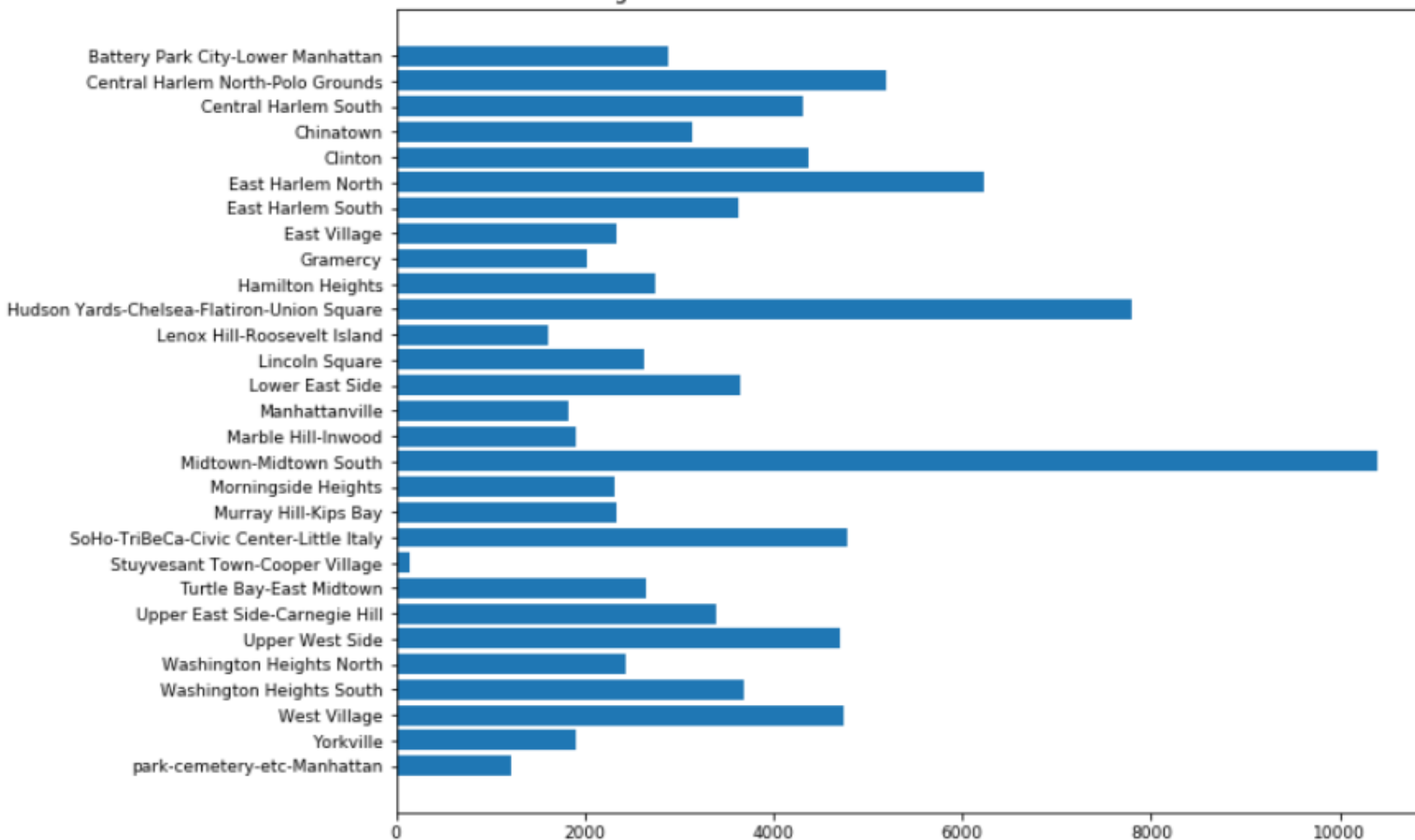


- The larger number of rooms may decrease the price
- But, we know sometimes it's not true
- There are also many luxury & expensive accommodations at Manhattan



# Analysis

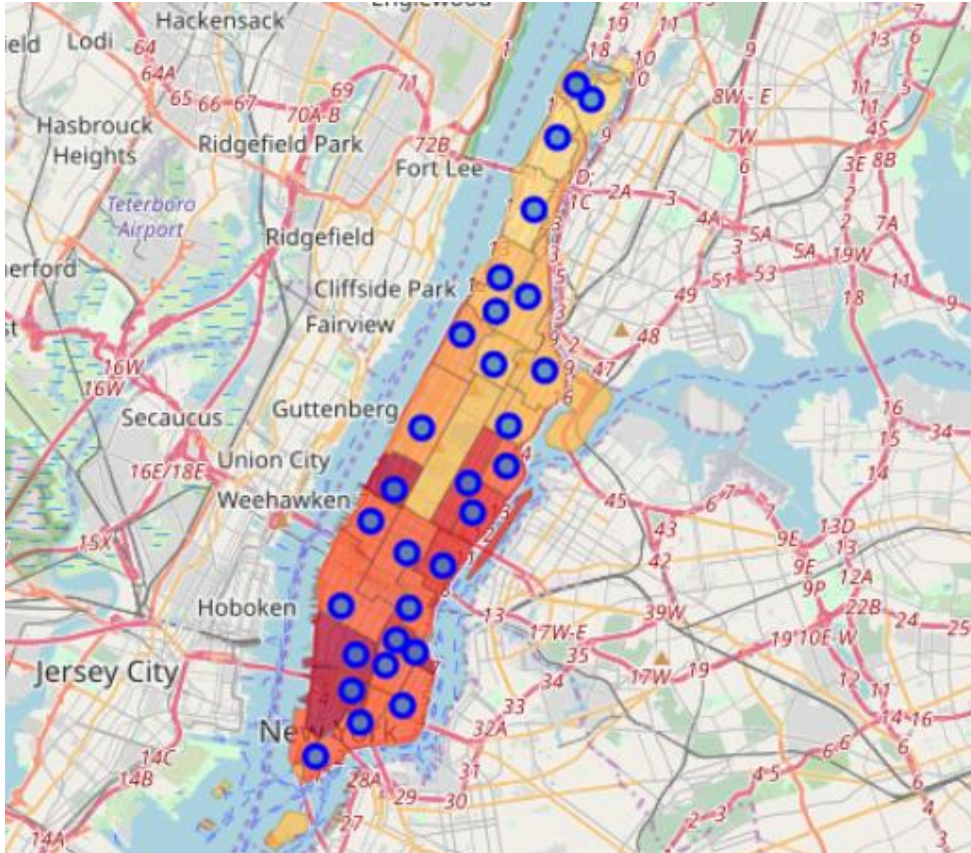
Neighborhoods Total Crimes Records on Manhattan in 2019



- The larger number of crime records may decrease the price
- But, we know sometimes it's not true
- There are also many luxury & expensive accommodations at Manhattan even somewhere the number of crime records is very high than other locations
- Thus, we need to analyze the dataset more carefully to determine the correlations between different characteristics

# Analysis

## Average Prices per Person



### Top-5 Neighborhoods with Highest average Price per Person in 2019 year:

- West Village - 112.85 USD - 88 accommodations
- Lincoln Square - 112.51 USD - 20 accommodations
- Stuyvesant Town-Cooper Village - 107.5 USD - 2 accommodations
- SoHo-TriBeCa-Civic Center-Little Italy - 105.38 USD - 81 accommodations
- Upper East Side-Carnegie Hill - 96.98 USD - 24 accommodations

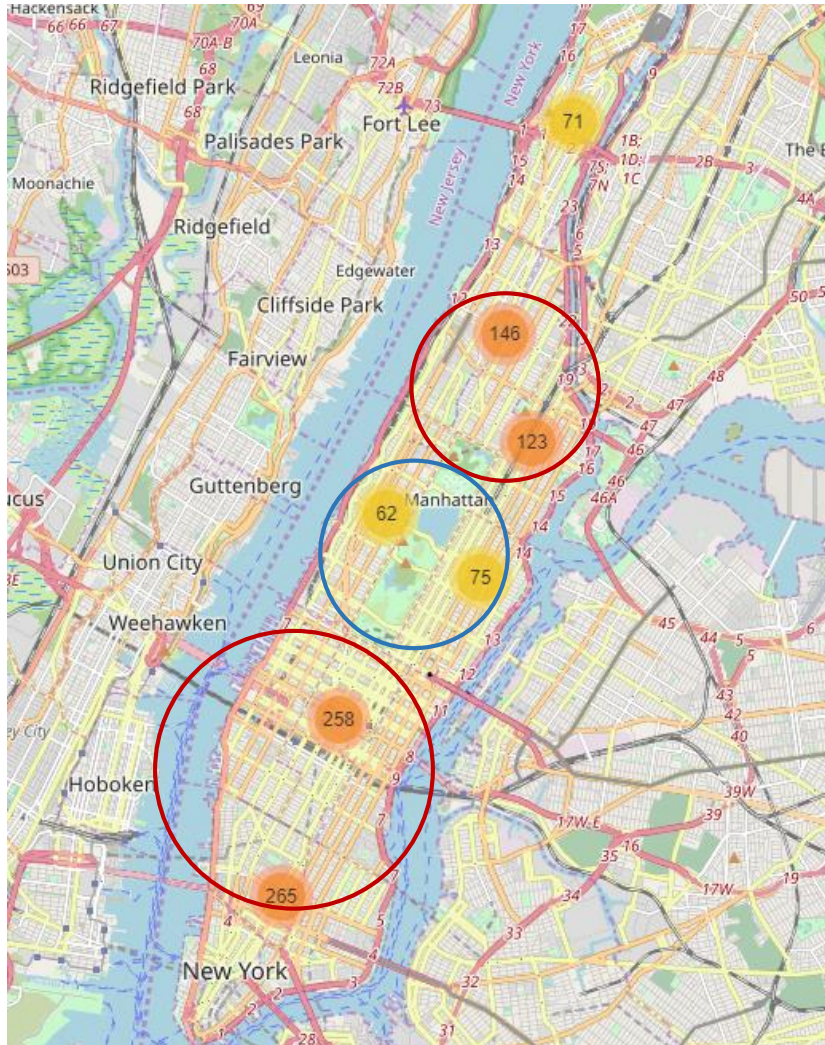
### Top-5 Neighborhoods with Lowest average Price per Person in 2019 year:

- Marble Hill-Inwood - 45.48 USD - 25 accommodations
- Washington Heights South - 46.79 USD - 82 accommodations
- Washington Heights North - 54.74 USD - 53 accommodations
- Central Harlem North-Polo Grounds - 57 USD - 132 accommodations
- Manhattanville - 59.75 USD - 25 accommodations

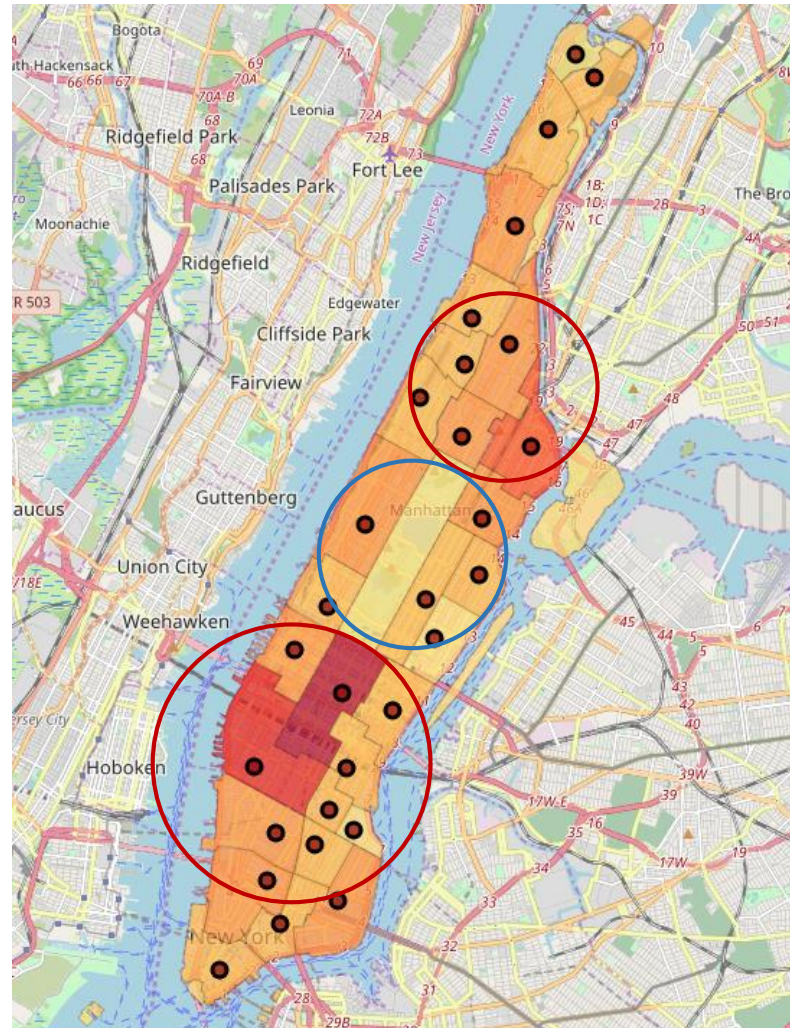


# Analysis

## Crimes Cluster Map



## Summary Crimes by Neighborhoods Map



High risk  
Low risk



# Analysis

## Foursquare API Neighborhoods Analysis

### Cluster 0# – Mix (red dots) characteristics:

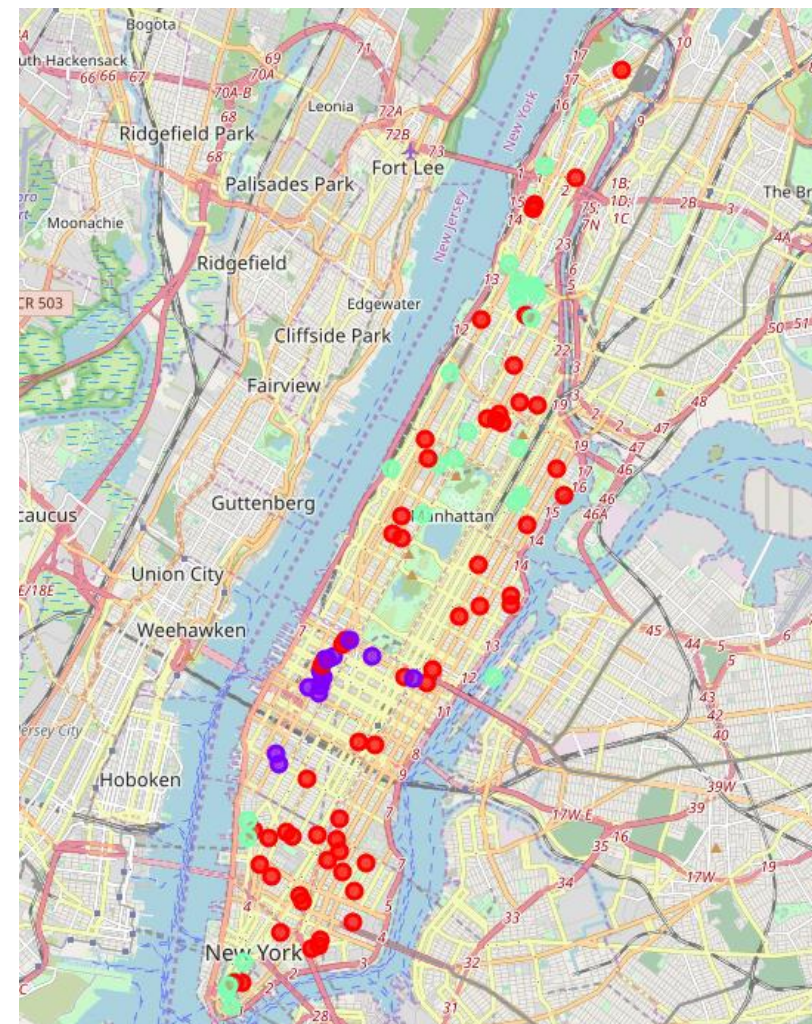
- Average price\_per\_person;
- Average crimes rate;
- Second top Common Venue Category has a Mix of all kind of Categories;
- Contains 58% from all top accommodations

### Cluster 1# – Entertainment (blue dots) characteristics:

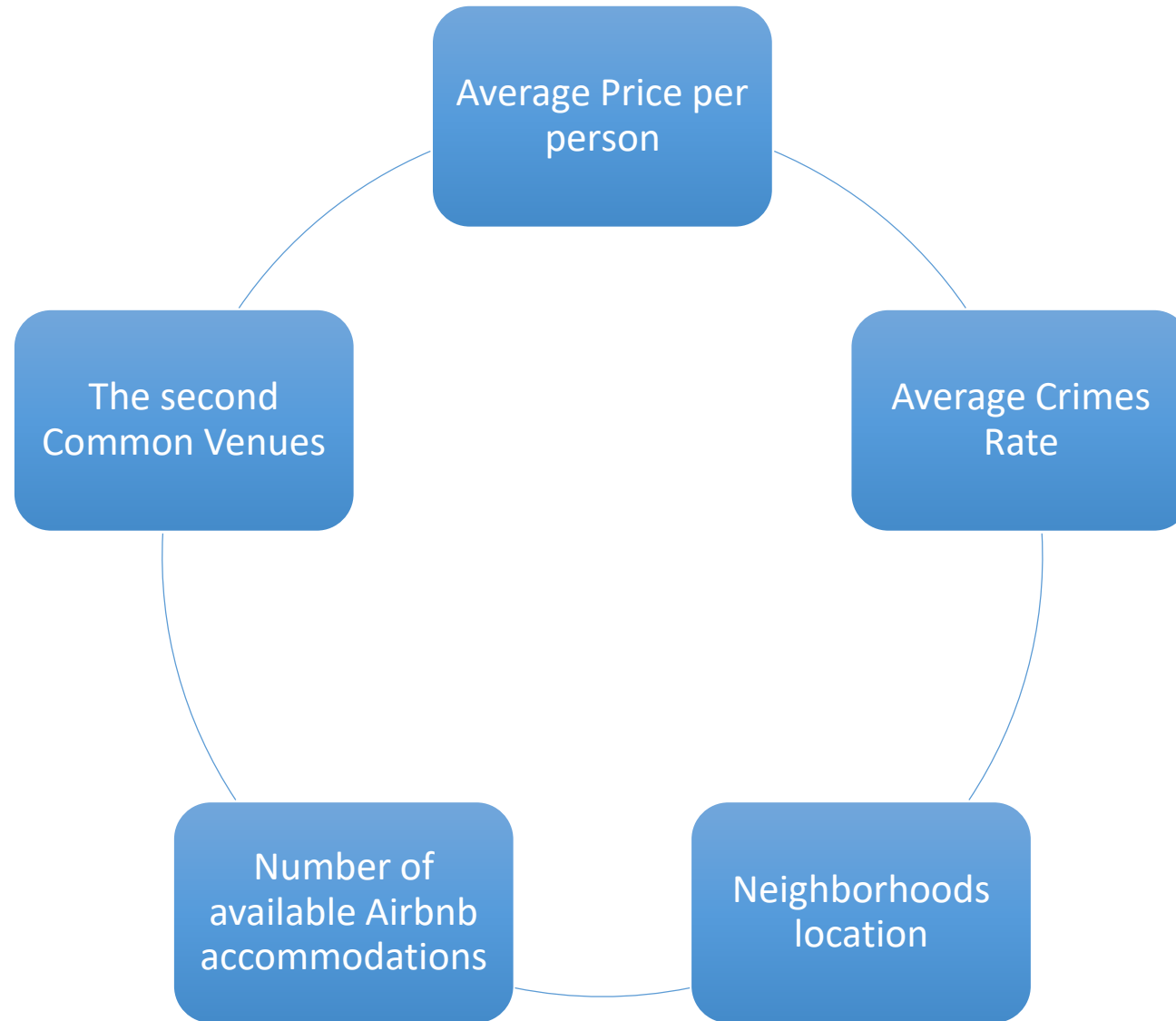
- Highest average price\_per\_person among all clusters;
- Highest average crimes rate among all clusters;
- Entertainment is 1st and the 2nd Top Common Venue Categories;
- Contains 15% from all top accommodations.

### Cluster 2# – Sightseeing (light-green dots) characteristics:

- Lowest average price per person;
- Lowest crimes rate among all clusters;
- Sightseeing is the second top Common Venue Category;
- Contains 27% from all top accommodations.



## Results and Discussion



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### Cluster 0# – Mix characteristics:

- average price per person - \$110;
- average crimes rate - 67 (but very varying - depends on the neighborhood, from 3 to 385 crime cases in radius of 100 meters from the accommodation);
- mix of all Venue Categories (Fine Arts, Shopping, Entertainment);
- contains 58% from all accommodations selected from analysis (Top-100 Airbnb accommodations);
- spreads almost on all Manhattan's areas.

### Cluster 1# – Entertainment (blue dots) characteristics:

- highest average price\_per\_person among all clusters - \$111;
- highest average crimes rate among all clusters – 102;
- Entertainment is 1st and the 2nd Top Common Venue Categories;
- contains 15% from all top accommodations (Top-100 Airbnb accommodations);
- spreads on Chelsea, Hell's Kitchen, and Midtown Airbnb's Neighborhoods.

### Cluster 2# – Sightseeing (light-green dots) characteristics:

- owest average price\_per\_person - \$59;
- lowest crimes rate among all clusters – 65;
- Sightseeing is the second top Common Venue Category;
- contains 27% from all top accommodations (Top-100 Airbnb accommodations);
- spreads on East Harlem, Financial District, Harlem, Inwood, Morningside Heights, Roosevelt Island, Upper West Side, etc.

## Conclusion

The aim of this project is to help Manhattan visitors select the Airbnb neighborhoods where to stay based on the most common venues, price policy, and safety characteristics:

- if a person is interested in entertainment (Nightlife, Pubs, Concerts, Movies) we recommend paying attention for accommodations from the Cluster 1 - Entertainment: Chelsea, Hell's Kitchen, and Midtown Airbnb's Neighborhoods. But the person should take into the consideration the high prices and crime rate for this location;
- if a person is looking for a neighborhood with lower prices and nice views nearby, we recommend looking at Cluster 2 - Sightseeing: Chelsea, Hell's Kitchen, and Midtown Airbnb's Neighborhoods;
- if a person does not have any preferences - investigate proposals from Cluster 0 - Mix. It has average prices and spreads over almost all Manhattan's neighborhood.



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Thanks