

Crime Situation and Distribution of Police Station in NYC

Introduction – Business Problem



1. Introduction

1.1 background

New York City(NYC) is the most populous city in the United States. NYC has been described as the cultural, financial, and media capital of the world. Also, it is an important center for commerce, entertainment, research, technology, art, and fashion. NYC is composed of five boroughs. which are Brooklyn, Queens, Manhattan, the Bronx, and Staten Island. It is estimated that population of about 8.4 million distributed over the city. NYC is considered as the busiest and largest financial centers in the world.

1.2 Problem

According to NYC & Company, 62.8 million tourists have visited New York City, and the number of visitors is increasing. However, not like the beautiful appearance of the city, about five hundred thousand of crimes is occurring, and it is a threat not only to New Yorkers but also to visitors.

So, we are going to explore NYC to find which borough need to increase public security by analyzing the number of crime occurred and distribution of police stations in NYC.

1.3 Interest

Obviously, city officers in New York will be very interested in the result of this analysis. Also, others who are planning to visit New York City will be interested.

2. Data sources and acquisition

2.1 Data sources

Based on definition of our problem, factors that will influence our decision are:

- the number and location of crimes and occurred in NYC
- address of police stations in NYC

Data on was obtained by scraping from NYC government website([here](#)). Crime data can be found in Kaggle datasets ([here](#)). This dataset is composed of almost 7 million rows and 24 columns, but for time-saving purpose, we will use only 100,000 rows for this project.

2.2. Data acquisition

Based on definition of our problem, factors that will influence our decision are:

- the number and location of crimes and occurred in NYC
- address of police stations in NYC

So, let's scrap the crime data from NYC government website! It shows as follow.

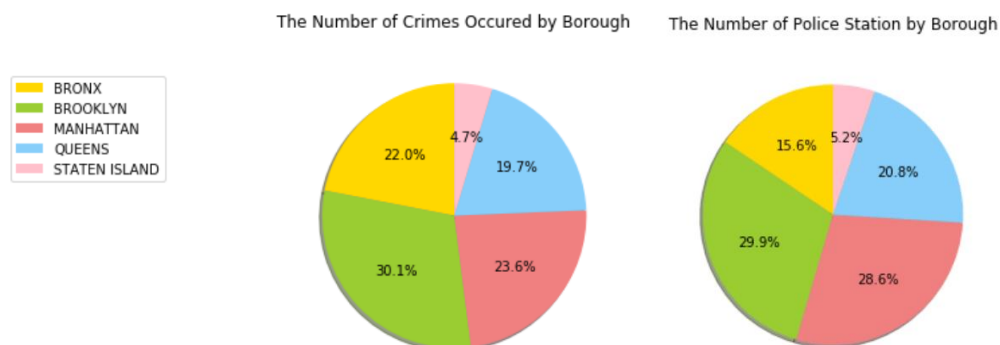
	Level	Borough	Latitude	Longitude
0	FELONY	BRONX	40.828848	-73.916661
1	FELONY	QUEENS	40.697338	-73.784557
2	FELONY	MANHATTAN	40.802607	-73.945052
3	MISDEMEANOR	QUEENS	40.654549	-73.726339
4	MISDEMEANOR	MANHATTAN	40.738002	-73.987891

Also, we need to get police station in NYC data. After dropping unnecessary columns, we get a dataframe containing address, latitude, and longitude of each police station.

	Address	Latitude	Longitude
0	16 Ericsson Pl, New York, NY 10013, USA	40.720369	-74.006969
1	19 Elizabeth St, New York, NY 10013, USA	40.716201	-73.997477
2	233 W 10th St, New York, NY 10014, USA	40.734000	-74.005433
3	19 1/2 Pitt St, New York, NY 10002, USA	40.716497	-73.983989
4	321 E 5th St, New York, NY 10003, USA	40.726538	-73.987820

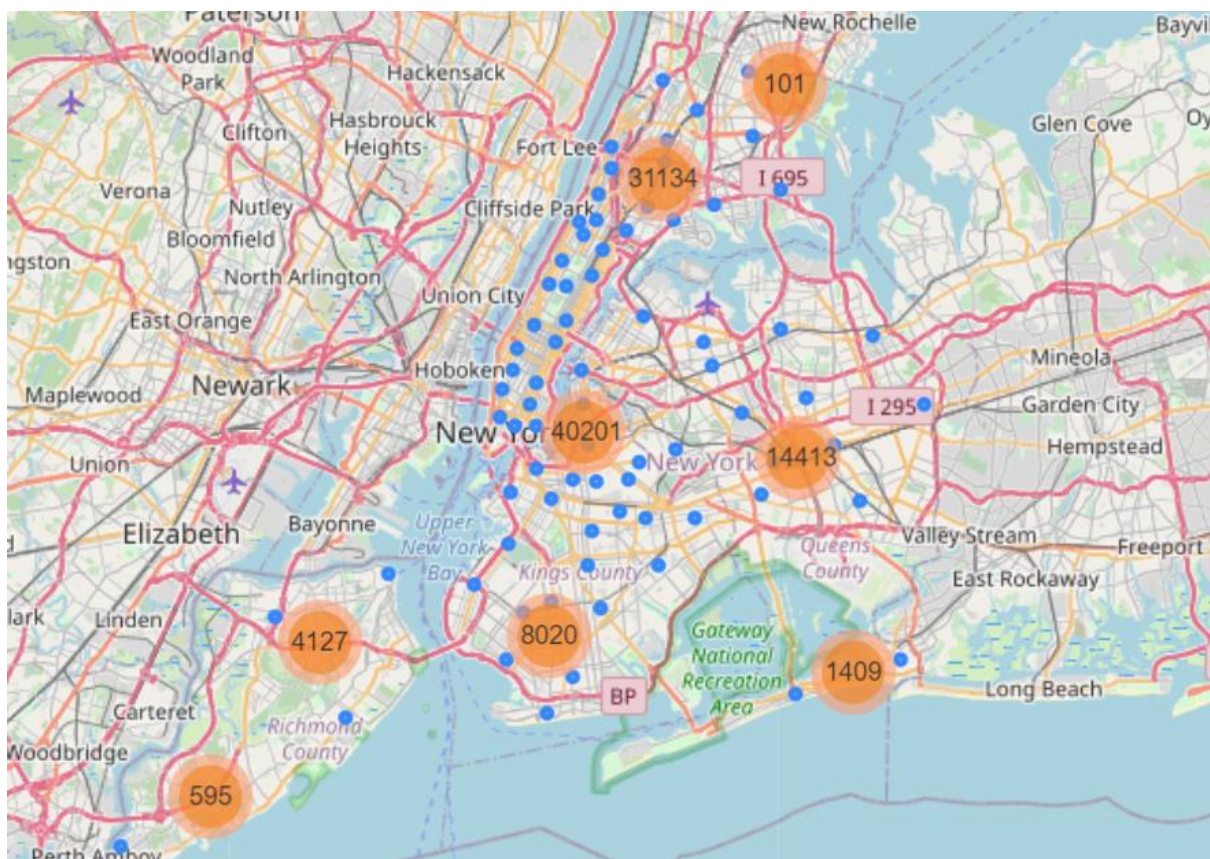
2.3 Data exploration

If we look into the number of crime occurred and police station by borough, it is as follows.



It seems like relatively bronx is not that safe compared to its proportion of police stations. To easily understand, let's visualize this result. We will plot the location of police stations and count each crime case.

2.4 Visualization with Map



The map above shows the distribution of police station and the number of crime occurred by areas. We can see that the majority of crime happens in manhattan and brooklyn, where more than half of police stations are. This seems resonable, because most of police stations are located where they need.

Similar pattern can be found in Staten Island. Like we saw at step2, there were only 4 stations in Staten Island. Here, 4722 crime cases out of 100000, which is less than 5 percent, happened in Staten Island.

3. Results and Conclusion

Our analysis shows that Bronx has less police stations than other boroughs in comparison with crime cases happened in the borough.

As we found from the second step, although most crimes happen in Manhattan and Brooklyn, they have enough facilities for public security. But, Bronx has about a half of them.

Purpose of this project was to figure out boroughs which need more security facilities. Though this analysis, we can provide an idea that Bronx needs more police station with city officials and administrators in NY to choose where to build new facilities for public security. Plus, tourists planning to visit New York City can figure out which spot is relatively safer.