

# NYPD Shootings Analysis

H. Justino

2024-12-09

## NYPD Crime Info

Import Data into variable

Summarize NYPD data

```
## INCIDENT_KEY OCCUR_DATE OCCUR_TIME BORO
## Min. : 9953245 Length:28562 Length:28562 Length:28562
## 1st Qu.: 65439914 Class :character Class :character Class :character
## Median : 92711254 Mode :character Mode :character Mode :character
## Mean :127405824
## 3rd Qu.:203131993
## Max. :279758069
##
## LOC_OF_OCCUR_DESC PRECINCT JURISDICTION_CODE LOC_CLASSFCTN_DESC
## Length:28562 Min. : 1.0 Min. :0.0000 Length:28562
## Class :character 1st Qu.: 44.0 1st Qu.:0.0000 Class :character
## Mode :character Median : 67.0 Median :0.0000 Mode :character
## Mean : 65.5 Mean :0.3219
## 3rd Qu.: 81.0 3rd Qu.:0.0000
## Max. :123.0 Max. :2.0000
## NA's :2
## LOCATION_DESC STATISTICAL_MURDER_FLAG PERP_AGE_GROUP
## Length:28562 Length:28562 Length:28562
## Class :character Class :character Class :character
## Mode :character Mode :character Mode :character
##
##
##
## PERP_SEX PERP_RACE VIC_AGE_GROUP VIC_SEX
## Length:28562 Length:28562 Length:28562 Length:28562
## Class :character Class :character Class :character Class :character
## Mode :character Mode :character Mode :character Mode :character
##
##
##
## VIC_RACE X_COORD_CD Y_COORD_CD Latitude
## Length:28562 Min. : 914928 Min. :125757 Min. :40.51
## Class :character 1st Qu.:1000068 1st Qu.:182912 1st Qu.:40.67
```

```
## Mode :character Median :1007772 Median :194901 Median :40.70
## Mean :1009424 Mean :208380 Mean :40.74
## 3rd Qu.:1016807 3rd Qu.:239814 3rd Qu.:40.82
## Max. :1066815 Max. :271128 Max. :40.91
## NA's :59
## Longitude Lon_Lat
## Min. :-74.25 Length:28562
## 1st Qu.: -73.94 Class :character
## Median : -73.92 Mode :character
## Mean : -73.91
## 3rd Qu.: -73.88
## Max. : -73.70
## NA's :59
```

```
## INCIDENT_KEY OCCUR_DATE OCCUR_TIME BORO LOC_OF_OCCUR_DESC PRECINCT
## 1 244608249 05/05/2022 00:10:00 MANHATTAN INSIDE 14
## 2 247542571 07/04/2022 22:20:00 BRONX OUTSIDE 48
## 3 84967535 05/27/2012 19:35:00 QUEENS 103
## 4 202853370 09/24/2019 21:00:00 BRONX 42
## 5 27078636 02/25/2007 21:00:00 BROOKLYN 83
## JURISDICTION_CODE LOC_CLASSFCTN_DESC LOCATION_DESC STATISTICAL_MURDER_FLAG
## 1 0 COMMERCIAL VIDEO STORE true
## 2 0 STREET (null) true
## 3 0 false
## 4 0 false
## 5 0 false
## PERP_AGE_GROUP PERP_SEX PERP_RACE VIC_AGE_GROUP VIC_SEX VIC_RACE X_COORD_CD
## 1 25-44 M BLACK 25-44 M BLACK 986050
## 2 (null) (null) (null) 18-24 M BLACK 1016802
## 3 18-24 M BLACK 1048632
## 4 25-44 M UNKNOWN 25-44 M BLACK 1014493
## 5 25-44 M BLACK 25-44 M BLACK 1009149
## Y_COORD_CD Latitude Longitude Lon_Lat
## 1 214231.0 40.75469 -73.99350 POINT (-73.9935 40.754692)
## 2 250581.0 40.85440 -73.88233 POINT (-73.88233 40.854402)
## 3 198262.0 40.71063 -73.76777 POINT (-73.76777349199995 40.71063412500007)
## 4 242565.0 40.83242 -73.89071 POINT (-73.89071440599997 40.832416753000075)
## 5 190104.7 40.68844 -73.91022 POINT (-73.91021857399994 40.68844345900004)
```

#Select Columns

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
## filter, lag

## The following objects are masked from 'package:base':
##
## intersect, setdiff, setequal, union

## Longitude Latitude INCIDENT_KEY
```

```
## 1 -73.99350 40.75469 244608249
## 2 -73.88233 40.85440 247542571
## 3 -73.76777 40.71063 84967535
## 4 -73.89071 40.83242 202853370
## 5 -73.91022 40.68844 27078636
```

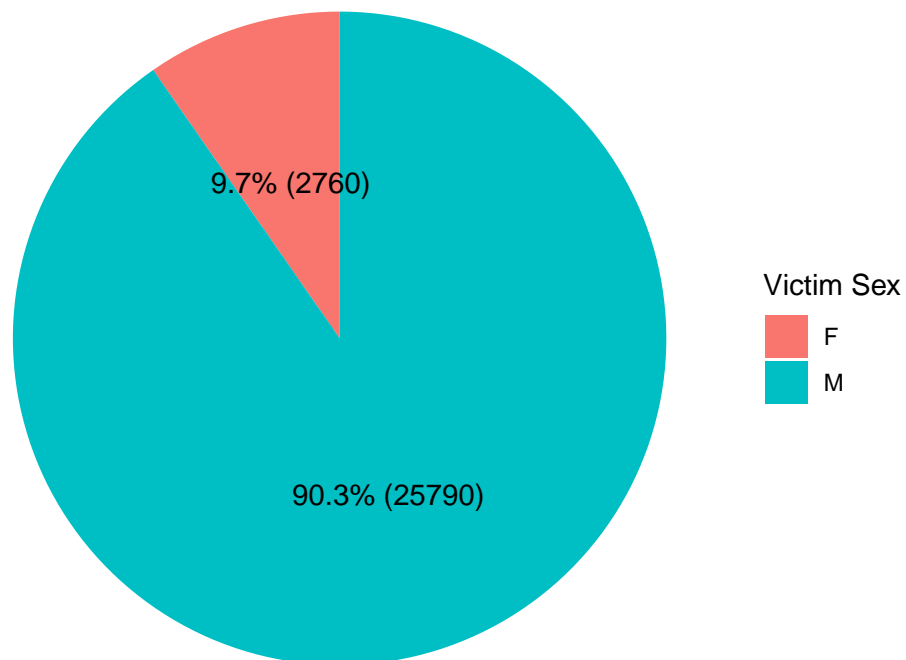
## Plot points on the map

I want to plot where the incidents occur in the city. I used an interactive library.

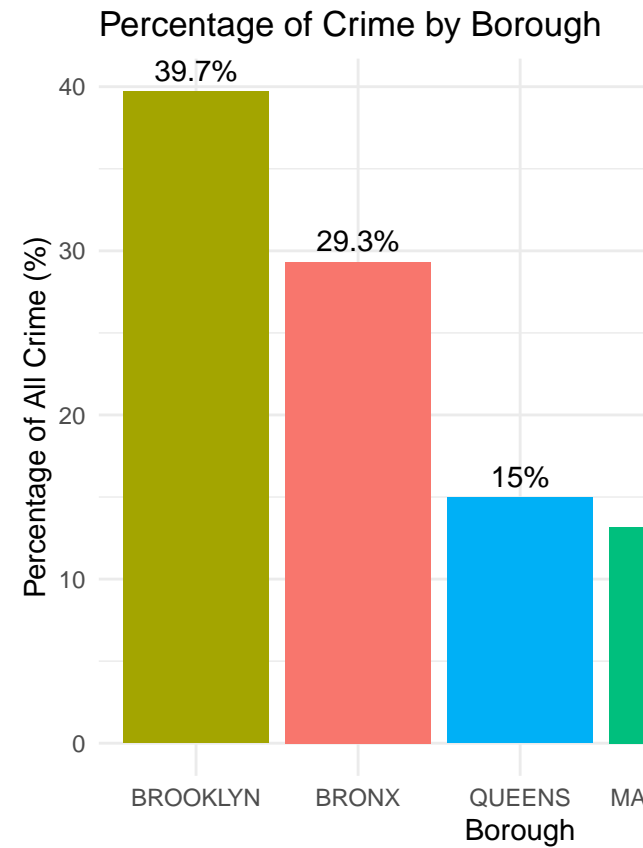
## Pie chart based on Victim Sex

Gender distribution of the victims of crime. Men are the overwhelming participants in crime.

Distribution of Victim Sex



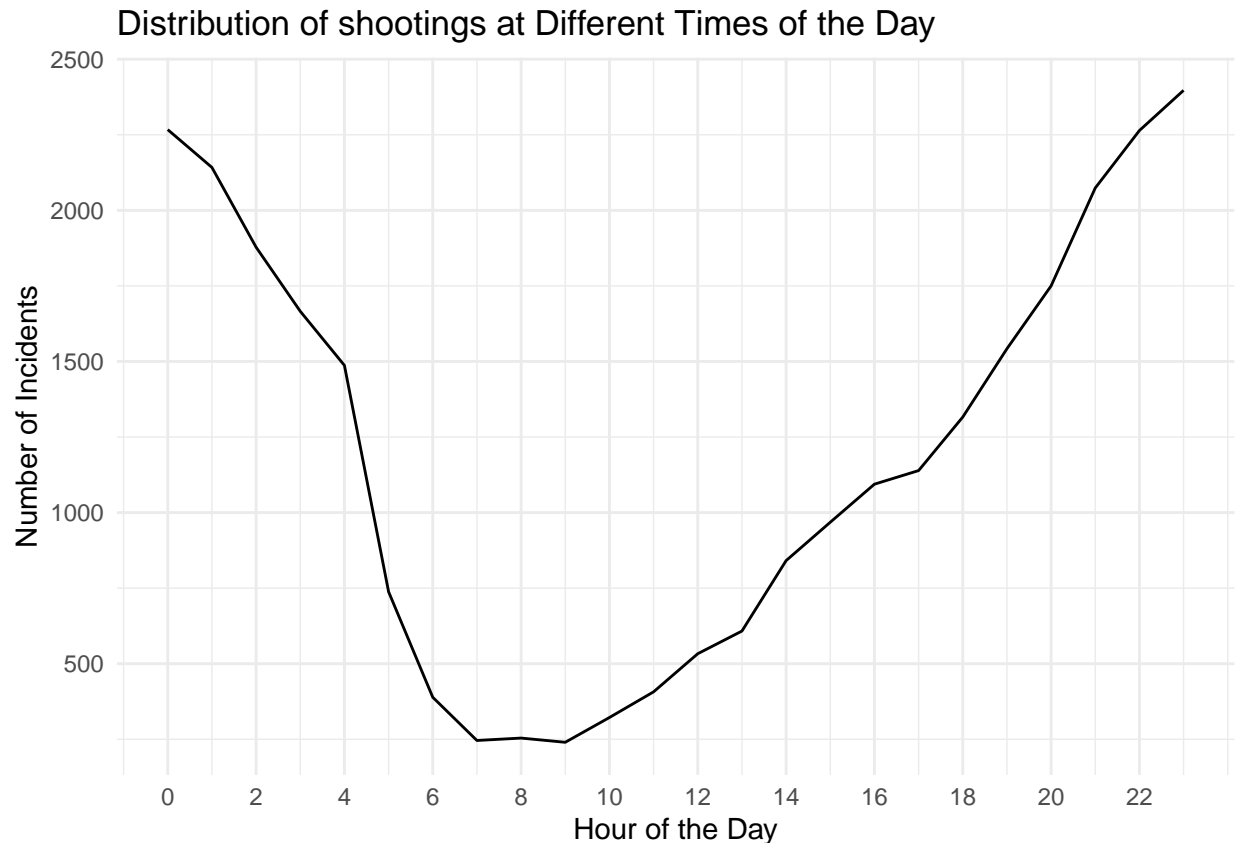
## Display Shooting Rate by Borough



Nearly 40% of all shootings in the city happens in Brooklyn.

## Number of shootings by time of the day.

There is a U-Shaped pattern, where shootings decrease during work hours. They increase in the evening peaking until midnight where they slowly decline until a sharp decrease at 5am.



## Import NYC Census Data

From US Census Bureau: <https://www.census.gov/quickfacts/fact/table/newyorkcountynynewyork,richmondcountynynewyork,kingscountynynewyork,queenscountynynewyork,bronxcountynynewyork,newyorkcitynynewyork/PST045222>

I imported NYC Census data because I want to analyze the rate at which shootings happen by borough. Brooklyn has an exceptionally high number of shootings, but does it match the population?

```
##      Fact      Fact.Note      New.York.County..New.York
## Length:85      Length:85      Length:85
## Class :character Class :character Class :character
## Mode :character Mode :character Mode :character
## Value.Note.for.New.York.County..New.York Richmond.County..New.York
## Mode:logical      Length:85
## NA's:85            Class :character
##                    Mode :character
## Value.Note.for.Richmond.County..New.York Kings.County..New.York
## Mode:logical      Length:85
## NA's:85            Class :character
##                    Mode :character
## Value.Note.for.Kings.County..New.York Queens.County..New.York
## Mode:logical      Length:85
## NA's:85            Class :character
```

```

##                                     Mode :character
## Value.Note.for.Queens.County..New.York Bronx.County..New.York
## Mode:logical                      Length:85
## NA's:85                          Class :character
##                                     Mode :character
## Value.Note.for.Bronx.County..New.York New.York.city..New.York
## Mode:logical                      Length:85
## NA's:85                          Class :character
##                                     Mode :character
## Value.Note.for.New.York.city..New.York
## Mode:logical
## NA's:85
##

```

```

##                                     Fact
## 1                                Population estimates, July 1, 2023, (V2023)
## 2                                Population estimates base, April 1, 2020, (V2023)
## 3 Population, percent change - April 1, 2020 (estimates base) to July 1, 2023, (V2023)
## 4                                Population, Census, April 1, 2020
## 5                                Population, Census, April 1, 2010
## 6                                Persons under 5 years, percent
## 7                                Persons under 18 years, percent
## 8                                Persons 65 years and over, percent
## 9                                Female persons, percent
## 10                               White alone, percent
## 11                               Black or African American alone, percent
## 12                               American Indian and Alaska Native alone, percent
## 13                               Asian alone, percent
## 14                               Native Hawaiian and Other Pacific Islander alone, percent
## 15                               Two or More Races, percent
## Fact.Note New.York.County..New.York Value.Note.for.New.York.County..New.York
## 1                                1,597,451                                NA
## 2                                1,694,250                                NA
## 3                                -5.7%                                NA
## 4                                1,694,251                                NA
## 5                                1,585,873                                NA
## 6                                3.9%                                NA
## 7                                13.5%                                NA
## 8                                18.8%                                NA
## 9                                52.3%                                NA
## 10                               62.9%                                NA
## 11                               (a)                                18.4%                                NA
## 12                               (a)                                1.2%                                NA
## 13                               (a)                                13.6%                                NA
## 14                               (a)                                0.2%                                NA
## 15                               3.7%                                NA
## Richmond.County..New.York Value.Note.for.Richmond.County..New.York
## 1                                490,687                                NA
## 2                                495,752                                NA
## 3                                -1.0%                                NA
## 4                                495,747                                NA
## 5                                468,730                                NA
## 6                                5.2%                                NA
## 7                                21.5%                                NA

```

## 8	17.8%	NA
## 9	51.0%	NA
## 10	70.7%	NA
## 11	11.5%	NA
## 12	0.8%	NA
## 13	14.5%	NA
## 14	0.1%	NA
## 15	2.4%	NA
##	Kings.County..New.York Value.Note.for.Kings.County..New.York	
## 1	2,561,225	NA
## 2	2,736,119	NA
## 3	-6.4%	NA
## 4	2,736,074	NA
## 5	2,504,700	NA
## 6	6.1%	NA
## 7	21.8%	NA
## 8	16.2%	NA
## 9	52.4%	NA
## 10	50.0%	NA
## 11	32.8%	NA
## 12	1.0%	NA
## 13	13.1%	NA
## 14	0.1%	NA
## 15	3.0%	NA
##	Queens.County..New.York Value.Note.for.Queens.County..New.York	
## 1	2,252,196	NA
## 2	2,405,425	NA
## 3	-6.4%	NA
## 4	2,405,464	NA
## 5	2,230,722	NA
## 6	5.1%	NA
## 7	19.1%	NA
## 8	18.7%	NA
## 9	51.2%	NA
## 10	46.4%	NA
## 11	20.7%	NA
## 12	1.5%	NA
## 13	28.0%	NA
## 14	0.2%	NA
## 15	3.2%	NA
##	Bronx.County..New.York Value.Note.for.Bronx.County..New.York	
## 1	1,356,476	NA
## 2	1,472,653	NA
## 3	-7.9%	NA
## 4	1,472,654	NA
## 5	1,385,108	NA
## 6	6.3%	NA
## 7	23.9%	NA
## 8	15.3%	NA
## 9	52.8%	NA
## 10	42.6%	NA
## 11	45.1%	NA
## 12	3.1%	NA
## 13	5.0%	NA

```

## 14          0.4%          NA
## 15          3.9%          NA
##   New.York.city..New.York Value.Note.for.New.York.city..New.York
## 1          8,258,035          NA
## 2          8,804,199          NA
## 3          -6.2%          NA
## 4          8,804,190          NA
## 5          8,175,133          NA
## 6           6.0%          NA
## 7          20.6%          NA
## 8          15.5%          NA
## 9          51.9%          NA
## 10         37.5%          NA
## 11         23.1%          NA
## 12           0.6%          NA
## 13         14.5%          NA
## 14           0.1%          NA
## 15          8.9%          NA

```

### Population of the city (2023 Estimate)

```

##                               Fact MANHATTAN STATEN_ISLAND BROOKLYN
## 1 Population estimates, July 1, 2023, (V2023) 1,597,451    490,687 2,561,225
##   QUEENS    BRONX    NYC
## 1 2,252,196 1,356,476 8,258,035

```

### Summarize Shootings by Borough

Table 1: Number of Shootings by Borough

Borough	Number of Shootings
BROOKLYN	11346
BRONX	8376
QUEENS	4271
MANHATTAN	3762
STATEN ISLAND	807

### Summarize shootings by Borough and Calculate Crime Rates

Table 2: Crime Rates by Borough

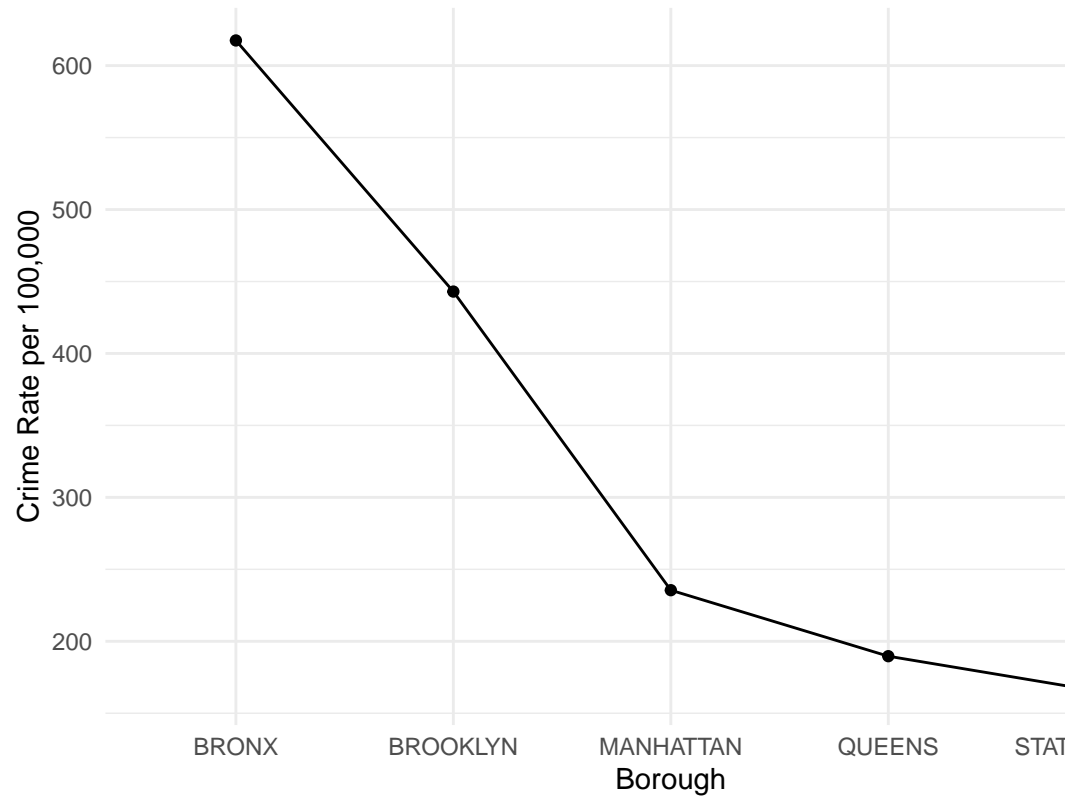
Borough	Number of shootings	Population	Crime Rate per 100,000
BROOKLYN	11346	2561225	442.9911
BRONX	8376	1356476	617.4824
QUEENS	4271	2252196	189.6371
MANHATTAN	3762	1597451	235.5002
STATEN ISLAND	807	490687	164.4633



## Shooting Rate By Borough Graph

We can see the order of the crime rate by borough in the city. Although Brooklyn has the most number of total shootings, it is second to Bronx in crime rate because of its large population. Notably Manhattan has a low crime rate, comparable to the lowest crime rate boroughs

Crime Rates by Borough



Queens, and Staten Island.