

NYPD Shooting Incident Data Report

1. Importing Data

Obtain the NYPD Shooting Incident Data (historic) from Data.gov at the following url:

<https://data.cityofnewyork.us/api/views/833y-fsy8/rows.csv?accessType=DOWNLOAD>

Read using '`read_csv()`'...

```
library(tidyverse)
library(tidyr)
library(stringr)
library(dplyr)
library(ggrepel)
url = "https://data.cityofnewyork.us/api/views/833y-fsy8/rows.csv?accessType=DOWNLOAD"
NYPD_shooting_data = read_csv(url)
```

NYPD_shooting_data

```
## # A tibble: 25,596 x 19
##   INCIDENT_KEY OCCUR_DATE OCCUR_TIME BORO      PRECINCT JURISDICTION_CODE
##   <dbl> <chr>      <time>    <chr>      <dbl>      <dbl>
## 1 24050482 08/27/2006 05:35    BRONX      52          0
## 2 77673979 03/11/2011 12:03    QUEENS     106         0
## 3 226950018 04/14/2021 21:08    BRONX      42          0
## 4 237710987 12/10/2021 19:30    BRONX      52          0
## 5 224701998 02/22/2021 00:18    MANHATTAN  34          0
## 6 225295736 03/07/2021 06:15    BROOKLYN   75          0
## 7 231190175 07/21/2021 00:40    MANHATTAN  32          0
## 8 233429421 09/11/2021 20:20    MANHATTAN  26          2
## 9 227950661 05/09/2021 02:50    BRONX      41          2
## 10 227344198 04/23/2021 13:25    BROOKLYN   67          0
## # ... with 25,586 more rows, and 13 more variables: LOCATION_DESC <chr>,
## # STATISTICAL_MURDER_FLAG <lgl>, PERP_AGE_GROUP <chr>, PERP_SEX <chr>,
## # PERP_RACE <chr>, VIC_AGE_GROUP <chr>, VIC_SEX <chr>, VIC_RACE <chr>,
## # X_COORD_CD <dbl>, Y_COORD_CD <dbl>, Latitude <dbl>, Longitude <dbl>,
## # Lon_Lat <chr>
```

2. Tidy Data

Time to tidy up the data and make it more “R” friendly. I will change the OCCUR_DATE into a “date” object and arrange the data by the following priorities OCCUR_DATE, OCCUR_TIME, BORO, PRECINCT, LOCATION_DESC, VIC_AGE_GROUP, VIC_SEX, VIC_RACE

Additionally, I will remove some columns with data we are not interested in (i.e. INCIDENT_KEY, JURISDICTION_CODE, STATISTICAL_MURDER_FLAG, X_COORD_CD, Y_COORD_CD, Latitude,

Longitude, Lon_Lat). Looking at the location descriptions, there were a lot of observations that were missing this information. If I wanted to use this characteristic in my analysis, the “NA” entries would not serve me much use so I would get rid of them by using the `<na.omit()>` function. For this analysis, I decided to focus on observations as they relate to the Victim’s characteristics.

I started with cleaning up the Victim’s age range column by splitting the column into numeric low and high end points. I also decided to further categorize the location description column since I noticed a common primary location description listed as “MULTI DWELL” and differing secondary location descriptions. This appeared to be a good opportunity to split up that data.

```
library(lubridate)
NYPD_shooting_data = mutate(NYPD_shooting_data, OCCUR_DATE = mdy(OCCUR_DATE)) %>%
  arrange(OCCUR_DATE, OCCUR_TIME, BORO, PRECINCT, LOCATION_DESC, VIC_AGE_GROUP, VIC_SEX, VIC_RACE) %>%
  select(-c(INCIDENT_KEY, JURISDICTION_CODE, STATISTICAL_MURDER_FLAG, X_COORD_CD, Y_COORD_CD, Latitude, Longitude))
  separate(LOCATION_DESC, into = c("Primary_loc", "Secondary_loc"), sep = "-")

NYPD_shooting_data$VIC_AGE_GROUP = sub("65\\+", "65-100", NYPD_shooting_data$VIC_AGE_GROUP)
NYPD_shooting_data$VIC_AGE_GROUP = sub("<", "0-", NYPD_shooting_data$VIC_AGE_GROUP )
NYPD_shooting_data = separate(NYPD_shooting_data, VIC_AGE_GROUP, into = c("VicLowAgeRange", "VicHighAgeRange"))
NYPD_shooting_data$VicLowAgeRange = as.numeric(NYPD_shooting_data$VicLowAgeRange)
NYPD_shooting_data$VicHighAgeRange = as.numeric(NYPD_shooting_data$VicHighAgeRange)
```

```
NYPD_shooting_data
```

```
## # A tibble: 25,596 x 10
##   OCCUR_DATE OCCUR_TIME BORO PRECINCT Primary_loc Secondary_loc VicLowAgeRange
##   <date>      <time>    <chr>    <dbl> <chr>      <chr>          <dbl>
## 1 2006-01-01 02:00     BRONX      48 "NONE"      <NA>           0
## 2 2006-01-01 02:22     MANH~      28 "NONE"      <NA>          25
## 3 2006-01-01 02:34     QUEE~     114 "BAR/NIGHT~ <NA>          25
## 4 2006-01-01 02:34     QUEE~     114 "BAR/NIGHT~ <NA>          25
## 5 2006-01-01 03:30     BROO~      67 <NA>        <NA>          18
## 6 2006-01-01 05:51     BRONX      44 "NONE"      <NA>          18
## 7 2006-01-01 12:30     BROO~      77 "PVT HOUSE" <NA>          25
## 8 2006-01-01 19:00     QUEE~     106 "NONE"      <NA>          18
## 9 2006-01-02 00:49     BROO~      90 "MULTI DWE~ " PUBLIC HOU~ 25
## 10 2006-01-02 03:59     BROO~      70 "BAR/NIGHT~ <NA>          18
## # ... with 25,586 more rows, and 3 more variables: VicHighAgeRange <dbl>,
## #   VIC_SEX <chr>, VIC_RACE <chr>
```

Printing summary of data...

```
summary(NYPD_shooting_data)
```

```
##   OCCUR_DATE      OCCUR_TIME      BORO      PRECINCT
## Min.   :2006-01-01 Length:25596 Length:25596 Min.   : 1.00
## 1st Qu.:2009-05-10 Class1:hms   Class :character 1st Qu.: 44.00
## Median :2012-08-26 Class2:difftime Mode  :character Median : 69.00
## Mean   :2013-06-13 Mode   :numeric Mean   : 65.87
## 3rd Qu.:2017-07-01      3rd Qu.: 81.00
## Max.   :2021-12-31      Max.    :123.00
##
## Primary_loc      Secondary_loc      VicLowAgeRange VicHighAgeRange
```

```
## Length:25596      Length:25596      Min.   : 0.00      Min.   : 18.00
## Class :character   Class :character 1st Qu.:18.00      1st Qu.: 24.00
## Mode  :character   Mode  :character Median :25.00      Median : 44.00
##                                     Mean  :21.33      Mean  : 35.44
##                                     3rd Qu.:25.00      3rd Qu.: 44.00
##                                     Max.  :65.00      Max.  :100.00
##                                     NA's  :60        NA's  :60
## VIC_SEX            VIC_RACE
## Length:25596      Length:25596
## Class :character   Class :character
## Mode  :character   Mode  :character
##
##
##
##
```

As expected, the only numerical data produced from tidying up is the date, the precinct the shootings were reported to, and the victim's age ranges. We can see the data ranges from 2006 to 2020, indicating this data goes back ~14 years. A majority of the data falls under the character category and will require more analysis.

3. Visualizing Data

To start visualizing the data, I decided to group the data 3 different ways: by the boroughs, victim's race, the victim's sex. I was curious to see the count of victims of different races, sexes, and boroughs. I also took the average age low and high end points of the victims. Additionally, I grouped the data ordered by borough then by victim race.

```
total = nrow(NYPD_shooting_data)
NYPD_BORO_analyze = NYPD_shooting_data %>%
  group_by(BORO) %>%
  summarize(countB = n(), perc_shootingB = (countB/total)*100) %>%
  select(BORO, countB, perc_shootingB) %>%
  ungroup() %>%
  mutate_if(is.numeric, round, digits = 2)

NYPD_Race_analyze = NYPD_shooting_data %>%
  group_by(VIC_RACE)%>%
  summarize(countR = n(), perc_shootingR = (countR/total*100) , Avg_LowVicAge = mean(VicLowAgeRange), Avg_HighVicAge = mean(VicHighAgeRange)) %>%
  select(VIC_RACE, countR, perc_shootingR, Avg_LowVicAge, Avg_HighVicAge) %>%
  ungroup() %>%
  mutate_if(is.numeric, round, digits = 2)

NYPD_Sex_analyze = NYPD_shooting_data %>%
  group_by(VIC_SEX)%>%
  summarize(countS = n(), perc_shootingS = (countS/total*100) , Avg_LowVicAge = mean(VicLowAgeRange), Avg_HighVicAge = mean(VicHighAgeRange)) %>%
  select(VIC_SEX, countS, perc_shootingS, Avg_LowVicAge, Avg_HighVicAge) %>%
  ungroup() %>%
  mutate_if(is.numeric, round, digits = 2)

NYPD_BORO_VICRACE_analyze = NYPD_shooting_data %>%
  group_by(BORO,VIC_RACE) %>%
  summarize(countBV = n(), perc_shootingB = (countBV/total*100)) %>%
```

```
select(BORO, VIC_RACE, countBV, perc_shootingB) %>%
ungroup() %>%
mutate_if(is.numeric, round, digits = 2)
```

NYPD_BORO_analyze

```
## # A tibble: 5 x 3
##   BORO          countB perc_shootingB
##   <chr>          <dbl>          <dbl>
## 1 BRONX          7402            28.9
## 2 BROOKLYN      10365            40.5
## 3 MANHATTAN      3265            12.8
## 4 QUEENS        3828            15.0
## 5 STATEN ISLAND  736              2.88
```

NYPD_Race_analyze

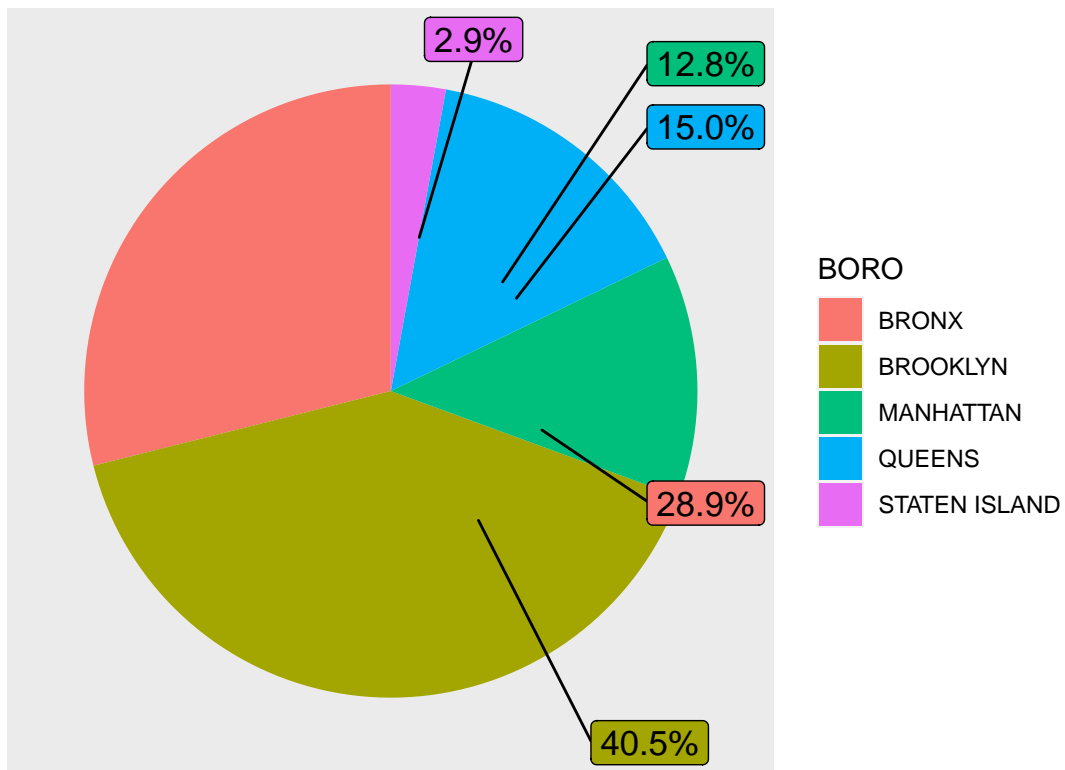
```
## # A tibble: 7 x 5
##   VIC_RACE          countR perc_shootingR Avg_LowVicAge Avg_HighVicAge
##   <chr>          <dbl>          <dbl>          <dbl>          <dbl>
## 1 AMERICAN INDIAN/ALASKAN NA~      9            0.04            16.3            29.3
## 2 ASIAN / PACIFIC ISLANDER      354            1.38             NA             NA
## 3 BLACK      18281            71.4             NA             NA
## 4 BLACK HISPANIC      2485            9.71             NA             NA
## 5 UNKNOWN           65            0.25             NA             NA
## 6 WHITE           660            2.58             NA             NA
## 7 WHITE HISPANIC     3742            14.6             NA             NA
```

NYPD_Sex_analyze

```
## # A tibble: 3 x 5
##   VIC_SEX countS perc_shootingS Avg_LowVicAge Avg_HighVicAge
##   <chr>    <dbl>          <dbl>          <dbl>          <dbl>
## 1 F        2403            9.39             NA             NA
## 2 M       23182           90.6             NA             NA
## 3 U         11            0.04             NA             NA
```

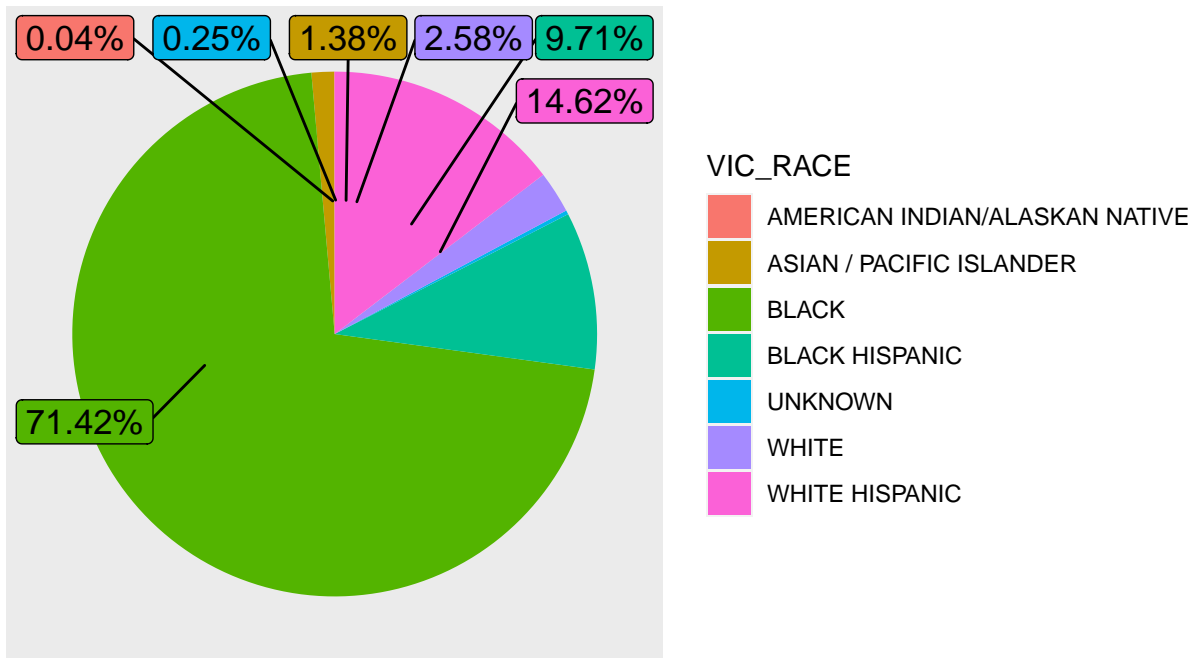
```
bpBoro = NYPD_BORO_analyze %>%
  ggplot(aes(x = "", y = perc_shootingB, fill = BORO))+geom_bar(width = 1, stat = "identity")
bpBoro + coord_polar("y", start = 0) +
  theme(axis.text = element_blank(),
        axis.ticks = element_blank(),
        panel.grid = element_blank()) +
  ggtitle("NYPD reported shootings by Borough") +
  xlab(element_blank()) +
  ylab(element_blank()) +
  geom_label_repel(aes(label = scales::percent(perc_shootingB/100)),
    size = 4.5, nudge_x = 1, show.legend = FALSE)
```

NYPD reported shootings by Borough



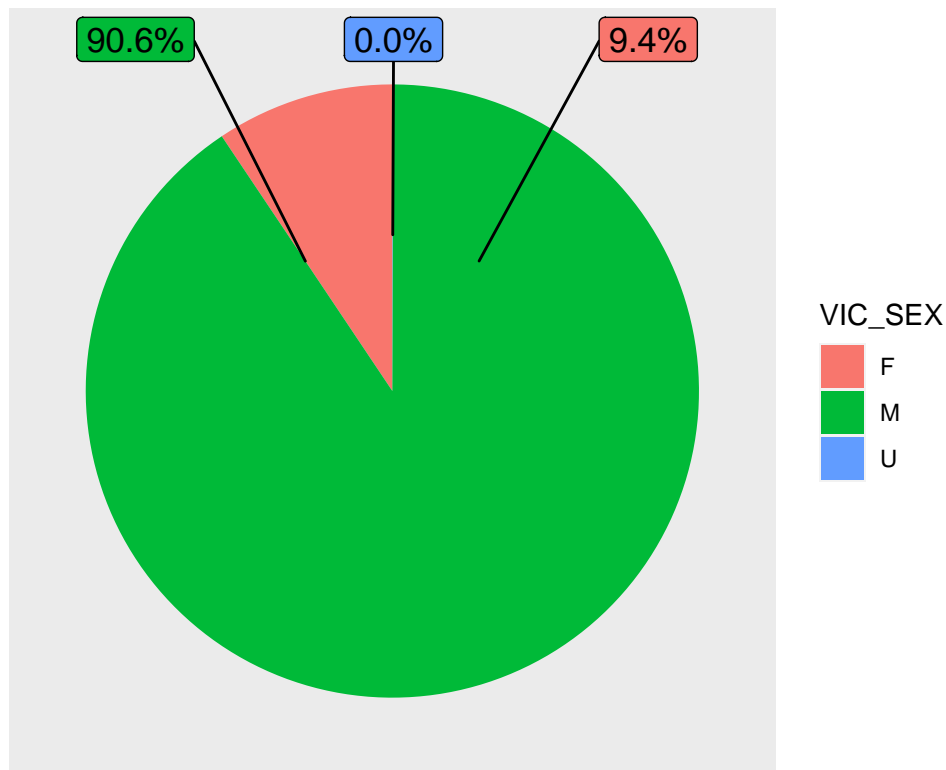
```
bpRace = NYPD_Race_analyze %>%
  ggplot(aes(x = "", y = perc_shootingR, fill = VIC_RACE))+geom_bar(width = 1, stat = "identity")
bpRace + coord_polar("y", start = 0) +
  theme(axis.text = element_blank(),
        axis.ticks = element_blank(),
        panel.grid = element_blank()) +
  ggtitle("NYPD reported shootings by Race") +
  xlab(element_blank()) +
  ylab(element_blank())+
  geom_label_repel(aes(label = scales::percent(perc_shootingR/100)),
                  size = 4.5, nudge_x = 1, show.legend = FALSE)
```

NYPD reported shootings by Race



```
bpSex = NYPD_Sex_analyze %>%
  ggplot(aes(x = "", y = perc_shootingS, fill = VIC_SEX))+geom_bar(width = 1, stat = "identity")
bpSex + coord_polar("y", start = 0) +
  theme(axis.text = element_blank(),
        axis.ticks = element_blank(),
        panel.grid = element_blank()) +
  ggtitle("NYPD reported shootings by Sex") +
  xlab(element_blank()) + ylab(element_blank()) +
  geom_label_repel(aes(label = scales::percent(perc_shootingS/100)),
                  size = 4.5, nudge_x = 1, show.legend = FALSE)
```

NYPD reported shootings by Sex



Now that we have had a chance to see some preliminary visualizations, some questions arise about the different demographics and their relations. I was mainly interested in the relationship of the victim's race as it pertained to the borough in which the shootings occurred. How much did the race distribution of each borough reflect the demographic of the population of each borough or of New York? If they didn't match, does that mean that a particular race is being targeted more frequently in specific boroughs?

Filtering out the data to show one victim race's distribution throughout different boroughs in descending count order yields us...

```
NYPD_BORO_VICRACE_analyze %>% filter(VIC_RACE == "BLACK") %>% arrange(desc(countBV))
```

```
## # A tibble: 5 x 4
##   BORO      VIC_RACE countBV perc_shootingB
##   <chr>      <chr>      <dbl>      <dbl>
## 1 BROOKLYN  BLACK        8640        33.8
## 2 BRONX     BLACK        4269        16.7
## 3 QUEENS    BLACK        2779        10.9
## 4 MANHATTAN BLACK        2078         8.12
## 5 STATEN ISLAND BLACK         515         2.01
```

```
NYPD_BORO_VICRACE_analyze %>% filter(VIC_RACE == "WHITE HISPANIC") %>% arrange(desc(countBV))
```

```
## # A tibble: 5 x 4
##   BORO      VIC_RACE      countBV perc_shootingB
##   <chr>      <chr>      <dbl>      <dbl>
## 1 BRONX     WHITE HISPANIC  1729         6.75
```

```
## 2 BROOKLYN      WHITE HISPANIC      810      3.16
## 3 MANHATTAN     WHITE HISPANIC      608      2.38
## 4 QUEENS        WHITE HISPANIC      499      1.95
## 5 STATEN ISLAND WHITE HISPANIC       96      0.38
```

```
NYPD_BORO_VICRACE_analyze %>% filter(VIC_RACE == "BLACK HISPANIC") %>% arrange(desc(countBV))
```

```
## # A tibble: 5 x 4
##   BORO      VIC_RACE      countBV perc_shootingB
##   <chr>      <chr>      <dbl>      <dbl>
## 1 BRONX      BLACK HISPANIC    1201      4.69
## 2 BROOKLYN   BLACK HISPANIC     529      2.07
## 3 MANHATTAN  BLACK HISPANIC     466      1.82
## 4 QUEENS     BLACK HISPANIC     248      0.97
## 5 STATEN ISLAND BLACK HISPANIC      41      0.16
```

```
NYPD_BORO_VICRACE_analyze %>% filter(VIC_RACE == "WHITE") %>% arrange(desc(countBV))
```

```
## # A tibble: 5 x 4
##   BORO      VIC_RACE countBV perc_shootingB
##   <chr>      <chr>      <dbl>      <dbl>
## 1 BROOKLYN   WHITE        240      0.94
## 2 QUEENS     WHITE        152      0.59
## 3 BRONX      WHITE        121      0.47
## 4 STATEN ISLAND WHITE         79      0.31
## 5 MANHATTAN  WHITE         68      0.27
```

```
NYPD_BORO_VICRACE_analyze %>% filter(VIC_RACE == "ASIAN / PACIFIC ISLANDER") %>% arrange(desc(countBV))
```

```
## # A tibble: 5 x 4
##   BORO      VIC_RACE      countBV perc_shootingB
##   <chr>      <chr>      <dbl>      <dbl>
## 1 QUEENS     ASIAN / PACIFIC ISLANDER    135      0.53
## 2 BROOKLYN   ASIAN / PACIFIC ISLANDER    120      0.47
## 3 BRONX      ASIAN / PACIFIC ISLANDER     55      0.21
## 4 MANHATTAN  ASIAN / PACIFIC ISLANDER     41      0.16
## 5 STATEN ISLAND ASIAN / PACIFIC ISLANDER      3      0.01
```

Filtering out the data to show one boroughs victim racial distribution in descending count order yields us...

```
NYPD_BORO_VICRACE_analyze %>% filter(BORO == "BROOKLYN") %>% arrange(desc(countBV))
```

```
## # A tibble: 7 x 4
##   BORO      VIC_RACE      countBV perc_shootingB
##   <chr>      <chr>      <dbl>      <dbl>
## 1 BROOKLYN BLACK      8640      33.8
## 2 BROOKLYN WHITE HISPANIC     810      3.16
## 3 BROOKLYN BLACK HISPANIC     529      2.07
## 4 BROOKLYN WHITE        240      0.94
## 5 BROOKLYN ASIAN / PACIFIC ISLANDER    120      0.47
## 6 BROOKLYN UNKNOWN        23      0.09
## 7 BROOKLYN AMERICAN INDIAN/ALASKAN NATIVE      3      0.01
```



```
NYPD_BORO_VICRACE_analyze %>% filter(BORO == "BRONX") %>% arrange(desc(countBV))
```

```
## # A tibble: 7 x 4
##   BORO VIC_RACE countBV perc_shootingB
##   <chr> <chr>      <dbl>      <dbl>
## 1 BRONX BLACK      4269        16.7
## 2 BRONX WHITE HISPANIC 1729         6.75
## 3 BRONX BLACK HISPANIC 1201         4.69
## 4 BRONX WHITE      121         0.47
## 5 BRONX ASIAN / PACIFIC ISLANDER 55         0.21
## 6 BRONX UNKNOWN     23         0.09
## 7 BRONX AMERICAN INDIAN/ALASKAN NATIVE 4         0.02
```

```
NYPD_BORO_VICRACE_analyze %>% filter(BORO == "MANHATTAN") %>% arrange(desc(countBV))
```

```
## # A tibble: 6 x 4
##   BORO VIC_RACE countBV perc_shootingB
##   <chr> <chr>      <dbl>      <dbl>
## 1 MANHATTAN BLACK      2078         8.12
## 2 MANHATTAN WHITE HISPANIC 608         2.38
## 3 MANHATTAN BLACK HISPANIC 466         1.82
## 4 MANHATTAN WHITE      68         0.27
## 5 MANHATTAN ASIAN / PACIFIC ISLANDER 41         0.16
## 6 MANHATTAN UNKNOWN     4         0.02
```

```
NYPD_BORO_VICRACE_analyze %>% filter(BORO == "QUEENS") %>% arrange(desc(countBV))
```

```
## # A tibble: 7 x 4
##   BORO VIC_RACE countBV perc_shootingB
##   <chr> <chr>      <dbl>      <dbl>
## 1 QUEENS BLACK      2779        10.9
## 2 QUEENS WHITE HISPANIC 499         1.95
## 3 QUEENS BLACK HISPANIC 248         0.97
## 4 QUEENS WHITE      152         0.59
## 5 QUEENS ASIAN / PACIFIC ISLANDER 135         0.53
## 6 QUEENS UNKNOWN     13         0.05
## 7 QUEENS AMERICAN INDIAN/ALASKAN NATIVE 2         0.01
```

```
NYPD_BORO_VICRACE_analyze %>% filter(BORO == "STATEN ISLAND") %>% arrange(desc(countBV))
```

```
## # A tibble: 6 x 4
##   BORO VIC_RACE countBV perc_shootingB
##   <chr> <chr>      <dbl>      <dbl>
## 1 STATEN ISLAND BLACK      515         2.01
## 2 STATEN ISLAND WHITE HISPANIC 96         0.38
## 3 STATEN ISLAND WHITE      79         0.31
## 4 STATEN ISLAND BLACK HISPANIC 41         0.16
## 5 STATEN ISLAND ASIAN / PACIFIC ISLANDER 3         0.01
## 6 STATEN ISLAND UNKNOWN     2         0.01
```

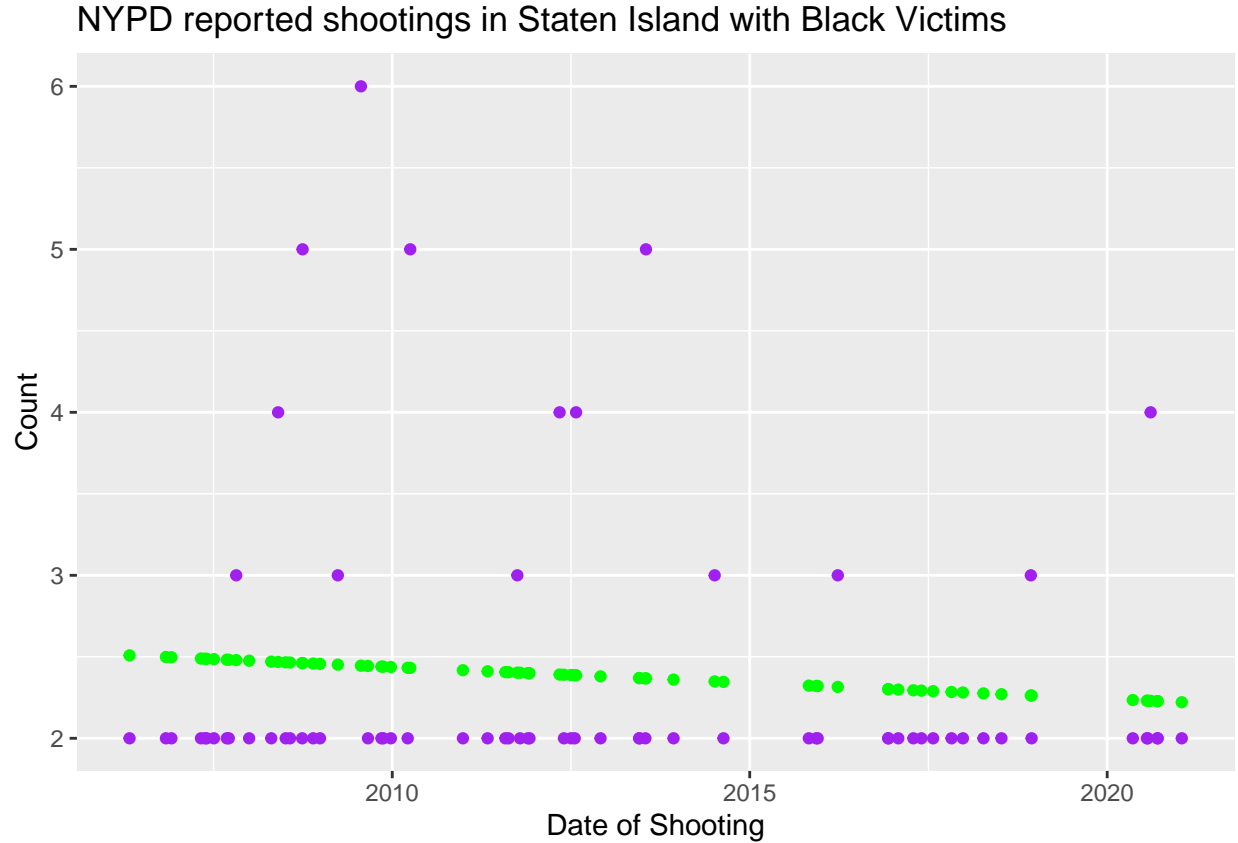
From this analysis, we can see each of the boroughs distribution of victim's races more or less resembles the population distribution, in terms of descending percentages of shootings. Since the shooting population distribution of race across each borough is consistent, it would not seem that any one race is being targeted in a particular borough. That being said, I cannot conclude that one particular race is not being targeted in general because looking across the board, the highest percentage of shootings falls under victims who are black.

Interestingly, when looking at one race across the different boroughs we can see each race has a different borough in which it has the most victims. This again led me to question whether this was reflective of the demographic population of each borough i.e. do more Asian/Pacific Islander people live in Queens vs other boroughs. Those questions would likely need additional New York population data to answer.

4. Model Data

Taking a different perspective, I decided to see if I could model a linear relationship between time and the shootings that occur in each borough. Additionally, since we have seen from our previous analysis that the highest number of victims generally are black individuals, I wanted to further specify this model for shootings with black victims in Staten Island. For this example, I grouped the NYPD shooting data by "OCCUR_DATE", "BORO", and "VIC_RACE". I then filtered out the single boro of interest ("STATEN ISLAND") and the instances when there was more than one shooting to normalize the data set. From there, I calculated a linear model relating the shooting counts and the date and added that column as the "prediction" column to the data set. Finally, I plotted the Staten Island shootings over time with black victims (purple) with its predictive linear model (green).

```
NYPD_modelB = NYPD_shooting_data %>%
  group_by(OCCUR_DATE, BORO, VIC_RACE) %>%
  summarize(countDB = n()) %>%
  select(OCCUR_DATE, BORO, VIC_RACE, countDB) %>%
  ungroup()
NYPD_modelB_SI = NYPD_modelB %>%
  filter(BORO == "STATEN ISLAND") %>%
  filter(VIC_RACE == "BLACK") %>%
  filter(countDB > 1)
mod = lm(countDB ~ OCCUR_DATE, data = NYPD_modelB_SI)
NYPD_modelB_SI = NYPD_modelB_SI %>% mutate(pred = predict(mod))
NYPD_modelB_SI %>% ggplot() + geom_point(aes(x = OCCUR_DATE, y = countDB), color = "purple") + geom_point(aes(x = OCCUR_DATE, y = pred), color = "green")
  xlab("Date of Shooting") + ylab("Count")
```



From this model, there seems to be a downward trend which indicates that the shootings have been going down over time. Additional questions that come out of this analysis include:

- Have new community actions been put in place that could be contributing to less shootings?
- Have new laws restricting gun ownership been implemented in this time frame?
- Is there a significantly larger police presence since earlier in this time frame?
- How have the demographics of the borough changed over time?
- How many of these shootings were police related?

This modeling frame work can be applied to all the other boroughs to see if the trend is consistent throughout NYC.

5. Conclusions

Although there are many additional directions of analysis that one could go with this data set, some conclusions can be drawn with the ones performed. Based on the initial single variable analysis, the highest amount of shootings occur in Brooklyn with black male victims. Breaking down the data set by boroughs, the borough population distribution of victims based on race is consistent with the over all population distribution of victims which would suggest that there isn't a novel targeted race in a particular borough. However, when the data set is broken down by each race and it's distribution throughout the different boroughs, this does not always match the over all population distribution. This could be indicative of the overall demographic of the boroughs (i.e higher percentage of one race reside in a particular borough and therefore have a higher shooting distribution in comparison to the over all population distribution). Additionally, the linear modelling performed on the amount of shootings with black victims over time indicated possible decrease over time in Staten Island, but remained relatively constant when applying that model to any other borough, any

other race, or to the general data set. This indicates the number of shootings has remained pretty consistent over the years.

Some biases could have come straight away from the beginning in what variables I chose to analyze, most notably the victim's race. Especially in the political climate of today, race is a very heavy topic to speak on but I also think that analyzing data knowing this allows us to shed light and give concrete evidence to speak to these topics. Additional biases could have come from the outside influence of the recent media coverage of shooting victims who are black justifying the acceptance of the shooting percentage breakdown by race. This was mitigated by doing multiple modes of analysis to confirm the percentage breakdown by race was consistent and accurate throughout each mode.

```
## R version 4.1.1 (2021-08-10)
## Platform: x86_64-apple-darwin20.4.0 (64-bit)
## Running under: macOS Monterey 12.3
##
## Matrix products: default
## BLAS: /usr/local/Cellar/openblas/0.3.17/lib/libopenblas-r0.3.17.dylib
## LAPACK: /usr/local/Cellar/r/4.1.1/lib/R/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods   base
##
## other attached packages:
## [1] lubridate_1.8.0 ggrepel_0.9.1 forcats_0.5.1 stringr_1.4.0
## [5] dplyr_1.0.7 purrr_0.3.4 readr_2.1.0 tidyr_1.1.4
## [9] tibble_3.1.6 ggplot2_3.3.5 tidyverse_1.3.1
##
## loaded via a namespace (and not attached):
## [1] Rcpp_1.0.7 assertthat_0.2.1 digest_0.6.28 utf8_1.2.2
## [5] R6_2.5.1 cellranger_1.1.0 backports_1.4.0 reprex_2.0.1
## [9] evaluate_0.14 highr_0.9 httr_1.4.2 pillar_1.6.4
## [13] rlang_0.4.12 curl_4.3.2 readxl_1.3.1 rstudioapi_0.13
## [17] rmarkdown_2.11 labeling_0.4.2 bit_4.0.4 munsell_0.5.0
## [21] broom_0.7.10 compiler_4.1.1 modelr_0.1.8 xfun_0.28
## [25] pkgconfig_2.0.3 htmltools_0.5.2 tidyselect_1.1.1 fansi_0.5.0
## [29] crayon_1.4.2 tzdb_0.2.0 dbplyr_2.1.1 withr_2.4.2
## [33] grid_4.1.1 jsonlite_1.7.2 gtable_0.3.0 lifecycle_1.0.1
## [37] DBI_1.1.1 magrittr_2.0.1 scales_1.1.1 cli_3.1.0
## [41] stringi_1.7.5 vroom_1.5.6 farver_2.1.0 fs_1.5.0
## [45] xml2_1.3.2 ellipsis_0.3.2 generics_0.1.1 vctrs_0.3.8
## [49] tools_4.1.1 bit64_4.0.5 glue_1.5.0 hms_1.1.1
## [53] parallel_4.1.1 fastmap_1.1.0 yaml_2.2.1 colorspace_2.0-2
## [57] rvest_1.0.2 knitr_1.36 haven_2.4.3
```