Crime in Minneapolis

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Contents

Analysis of Crime in Minneapolis:

- What types of crimes are most common?
- What crime is committed by each race? Are they proportionate?
- What are the most common force types?
- Which months of the year have the most criminal records?
- Which day of the week has the most crimes or forces used by police?
- Which area has the most crime?
- Is it the same police committing each crime?

```r
knitr::opts_chunk$set(echo = FALSE,
                      cache=TRUE,
                      messages=FALSE,
                      warning=FALSE)
```

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## Parsed with column specification:
## cols(
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##   X = col_double(),
##   Y = col_double(),
##   reportedTime = col_double(),
##   beginTime = col_double(),
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##   centerLong = col_double(),
##   centerLat = col_double(),
##   centerX = col_double(),
##   centerY = col_double(),
##   OBJECTID = col_double()
## )

## See spec(...) for full column specifications.

## OGR data source with driver: ESRI Shapefile
## Source: "/Users/emsheehan/Documents/UNI - POSTGRAD/COLLAB/ETC5513-Assignment-4/data/Police_I
## with 43283 features
## It has 0 fields

## Parsed with column specification:
## cols(
##   .default = col_character(),
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##   PoliceUseOfForceID = col_double(),
##   ForceReportNumber = col_double(),
```

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##    SubjectRoleNumber = col_double(),
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##    TotalPrecinctCallsForYear = col_double(),
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##    CenterLatitude = col_double(),
##    CenterLongitude = col_double(),
##    CenterX = col_double(),
##    CenterY = col_double(),
##    OBJECTID = col_double()
## )

## See spec(...) for full column specifications.
```

1 Introduction

George Floyd was arrested and killed by Derek Chauvin, a U.S. police officer, on the 25th of May in Minneapolis, BBC News (2020). Chauvin knelt on George Floyd's neck for eight minutes and 46 seconds as Floyd gasped for air. His abominable death has sparked outrage on police brutality across America.

For several years, African-Americans have been the subject of racial vilification. In a study by Dottolo and Stewart (2008) students were interviewed and asked about police harassment and crime. Close analysis revealed that the students had stereotyped the criminals to be poor African American men. Another study by ... revealed

This paper hopes to explore and understand crime in Minneapolis. Specifically, the areas where crime is most common, the ethnicity of those committing the crime, and the force used by police.

2 Data

To perform this analysis

3 Methodology

4   Results

4.1   Analysis on neighborhoods with the most crimes

To make the division of crime distribution more detailed, I used Neighborhood instead of Precinct, but due to the quite large number, I only took Top10 neighborhood with the highest crimes and the Top5 most frequent offenses(See Figure 4.1). It is obvious that basically in each neighborhood, theft is still the most frequent occurrence. But Longflow is the only exception, shoplifting is about to reach the number of theft.
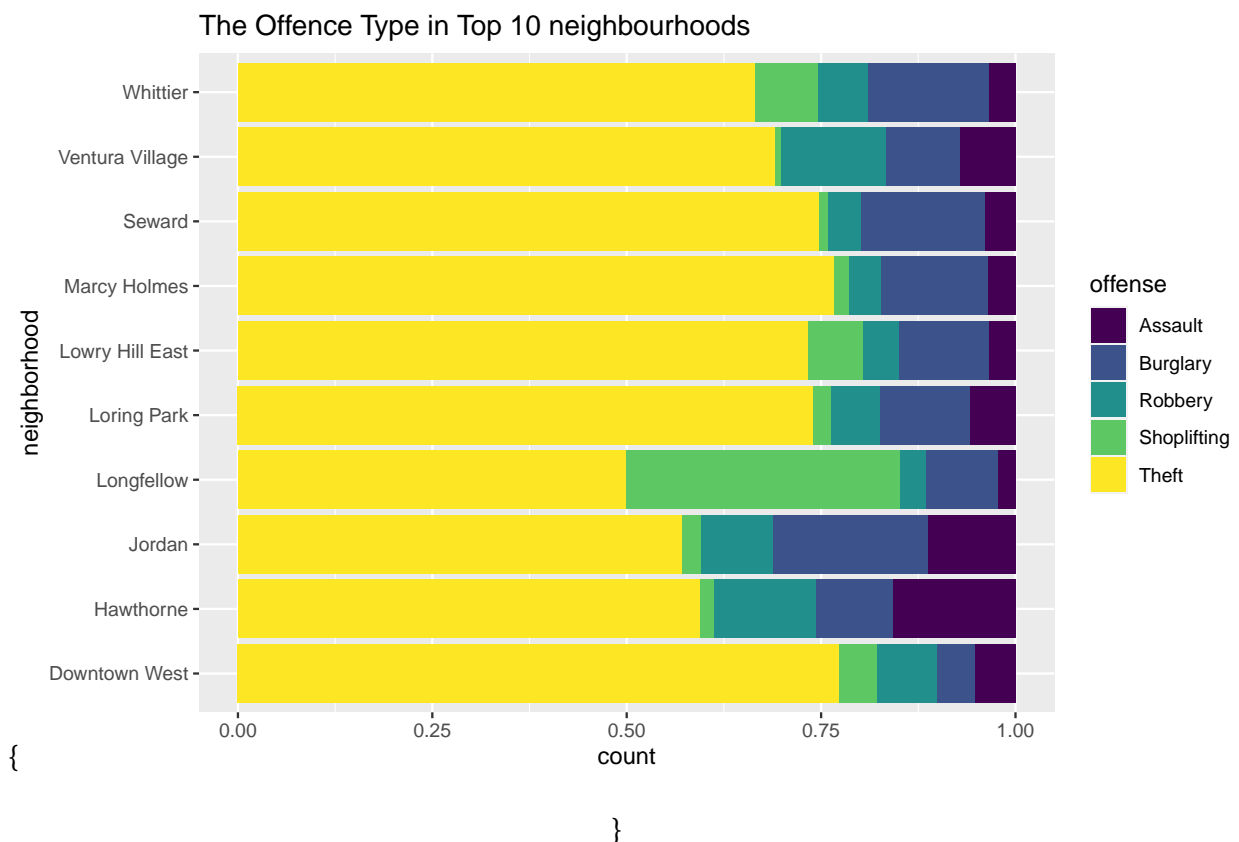
\begin{figure}

The Offence Type in Top 10 neighbourhoods

{

}

Table 1: *Top 20 neighborhood with most cases in 2018*

neighborhood	case
CARAG	194
Cedar Riverside	225
Downtown West	1199
East Phillips	250
Elliot Park	251
Folwell	191
Hawthorne	310
Jordan	305
Longfellow	378
Loring Park	254
Lowry Hill East	381
Marcy Holmes	398
Near - North	254
North Loop	235
Powderhorn Park	227
Prospect Park - East River Road	246
Seward	274
Ventura Village	259
Whittier	490
Willard - Hay	221

\caption{The most common offence type in Top_10 Neighborhoods with the most crimes}

\end{figure}
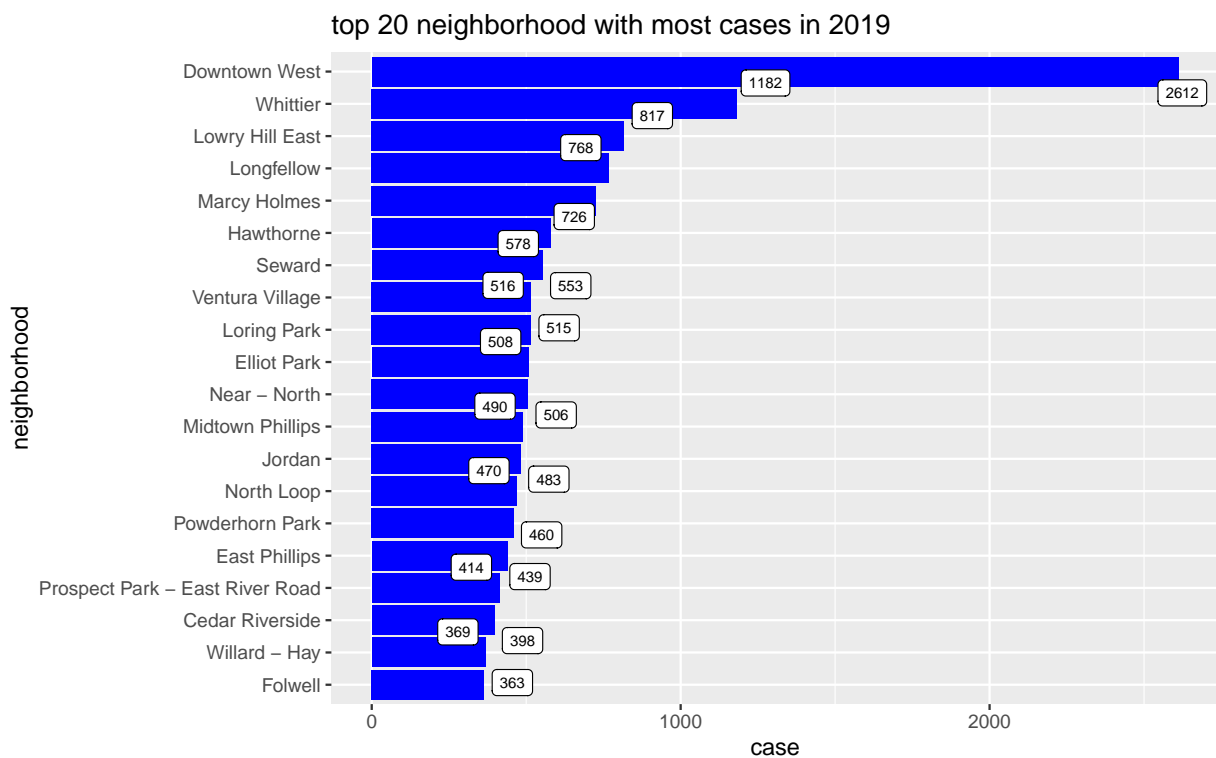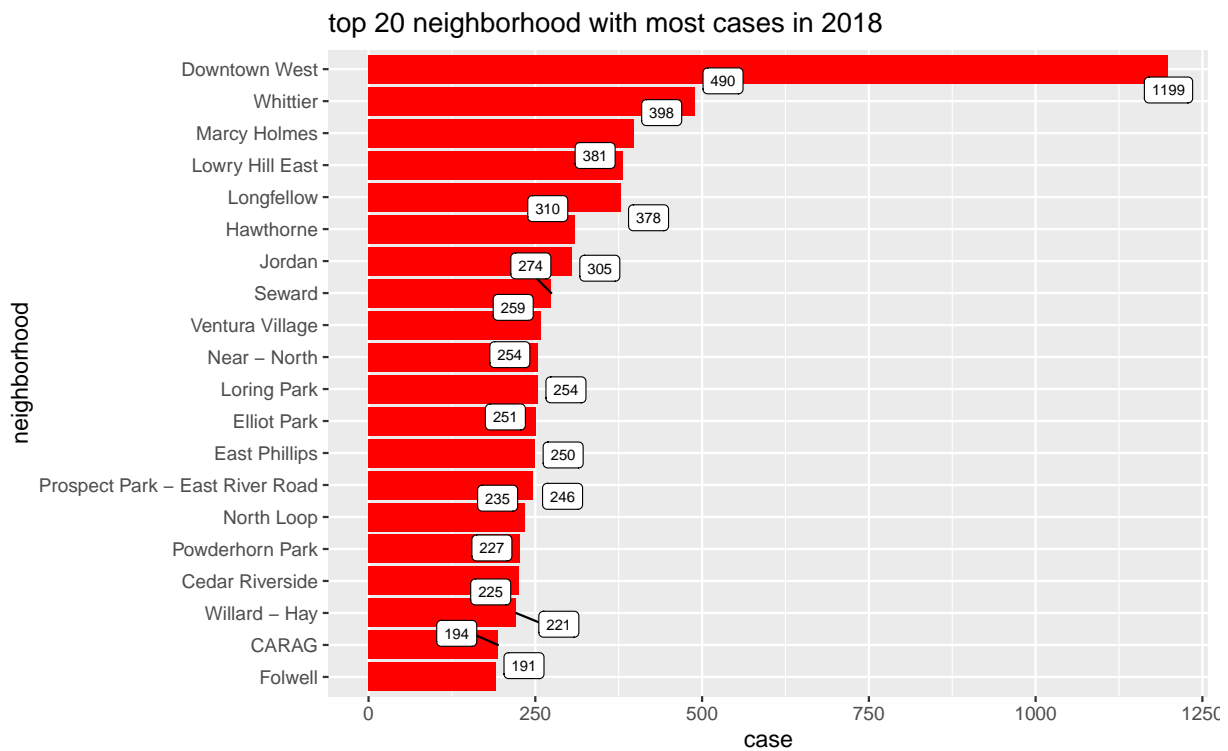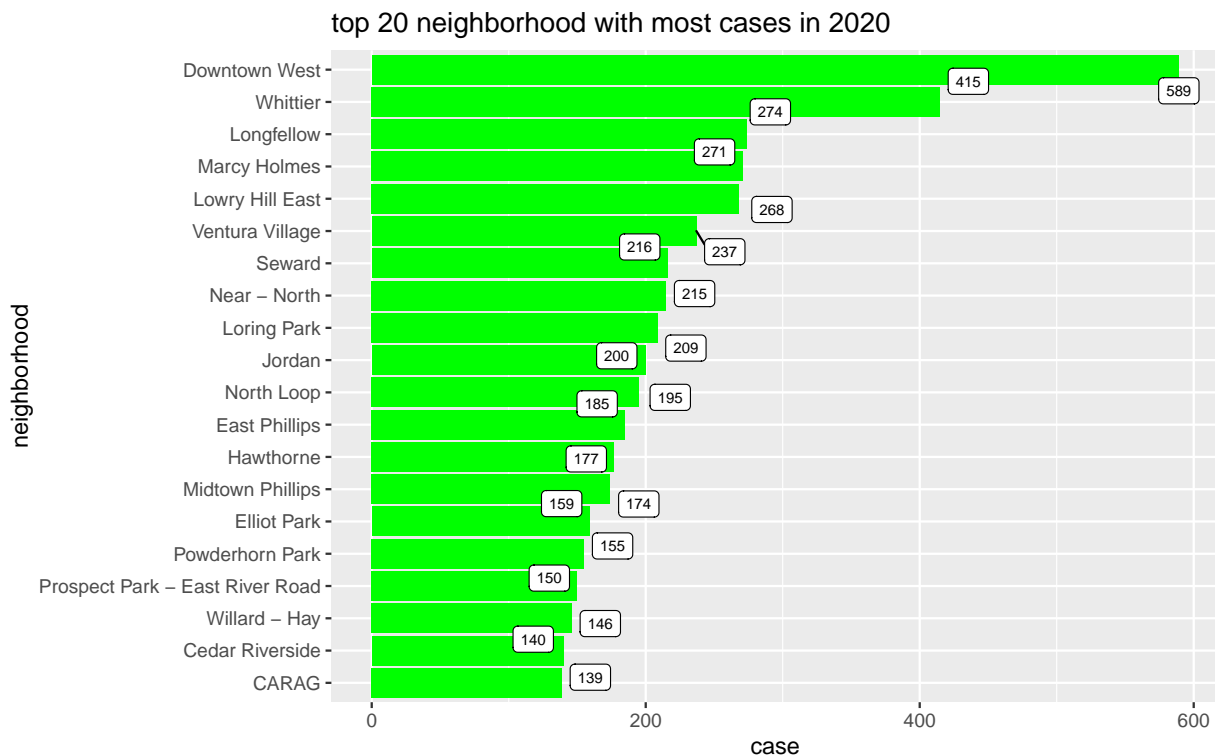
Selecting by case

Selecting by case

Selecting by case

Table 2: *top 20 neighborhood with most cases in 2019*

neighborhood	case
Cedar Riverside	398
Downtown West	2612
East Phillips	439
Elliot Park	508
Folwell	363
Hawthorne	578
Jordan	483
Longfellow	768
Loring Park	515
Lowry Hill East	817
Marcy Holmes	726
Midtown Phillips	490
Near - North	506
North Loop	470
Powderhorn Park	460
Prospect Park - East River Road	414
Seward	553
Ventura Village	516
Whittier	1182
Willard - Hay	369

Table 3: *top 20 neighborhood with most cases in 2020*

neighborhood	case
CARAG	139
Cedar Riverside	140
Downtown West	589
East Phillips	185
Elliot Park	159
Hawthorne	177
Jordan	200
Longfellow	274
Loring Park	209
Lowry Hill East	268
Marcy Holmes	271
Midtown Phillips	174
Near - North	215
North Loop	195
Powderhorn Park	155
Prospect Park - East River Road	150
Seward	216
Ventura Village	237
Whittier	415
Willard - Hay	146

top 20 neighborhood with most cases in 2018

top 20 neighborhood with most cases in 2019

top 20 neighborhood with most cases in 2020

As in Figure**??**, Figure**??** and Figure**??**, **Downtown West** and **Whittier** always be the top areas with the most cases, the following areas would be **Longfellow**, **Lowry Hill East** and **Marcy Holmes** in each year.

The precinct with the most cases contributed to precinct 3 in three years, as shown in the Figure**??**, while the top 2 neigorborhoods located in precinct 1 and 5. There should be more force transferred to the related precinct if it is necessary, and prepare efficient and effective resistance to the neighborhood with most cases as soon as possible.

4.2 Crime   incident   Data

Figure 1 demonstrates that across all years, theft is the most commonly committed crime in Minneapolis. In this instance theft includes; automobile theft, bike theft, coin-operated device theft, gas-station drive off, online theft, petty theft, pocket picking, scrapping-recycling theft, theft from a building, theft from a motor vehicle, theft from a person, other theft, theft by swindle and theft of motor vehicle parts. Burglary and assault are the second and third highest committed crimes, respectively. It should be noted that 2019 is the only complete year, hence the higher incidence.

Figure 2 explores the relationship between precinct and offense type. Across all precincts, theft is the most commonly committed crime, consistent with Figure 1. Interestingly enough, precinct 1 and 2 have a similar incidence of theft, however, precinct 5 has a much higher incidence of bulglary.
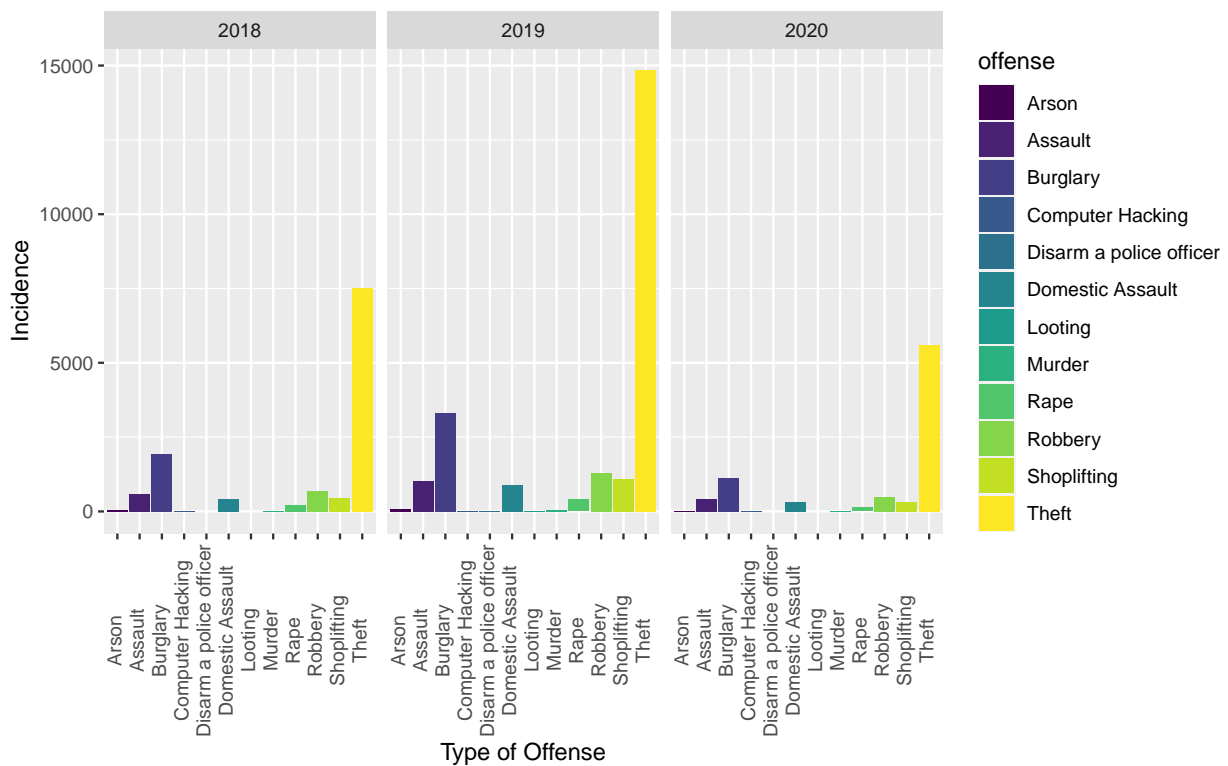
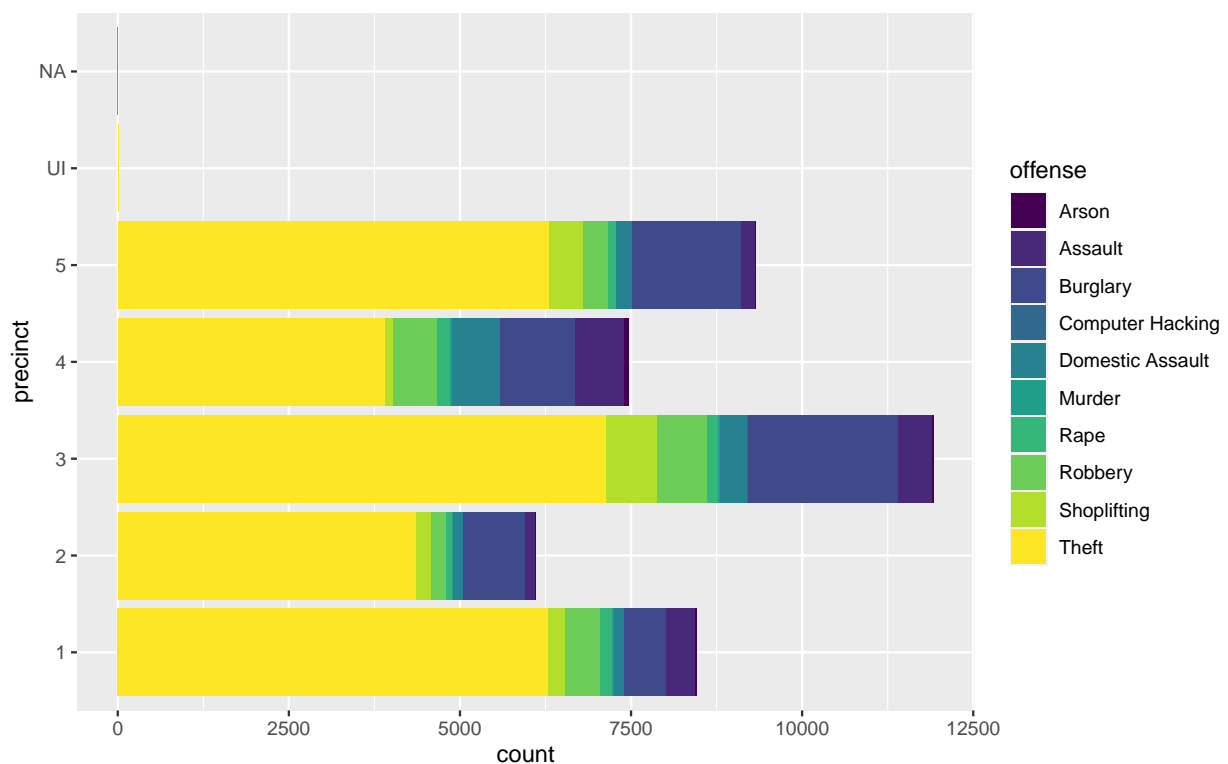**Figure 1:** *Crime incidence according to Year and Offense Type*

Figure 2: *Crimes comparison of different districts*

Table 4: *The Incidence of Crime according to Year and Offense Type*

offense	Year	Incidence
Arson	2018	43
Arson	2019	72
Arson	2020	21
Assault	2018	586
Assault	2019	1019
Assault	2020	404
Burglary	2018	1935
Burglary	2019	3319
Burglary	2020	1133
Computer Hacking	2018	3
Computer Hacking	2019	11
Computer Hacking	2020	3
Disarm a police officer	2019	1
Domestic Assault	2018	416
Domestic Assault	2019	889
Domestic Assault	2020	320
Looting	2019	1
Murder	2018	20
Murder	2019	44
Murder	2020	15
Rape	2018	212
Rape	2019	402
Rape	2020	132
Robbery	2018	696
Robbery	2019	1295
Robbery	2020	478
Shoplifting	2018	444
Shoplifting	2019	1082
Shoplifting	2020	320
Theft	2018	7531
Theft	2019	14842
Theft	2020	5594

4.3 Crime with time

Figure 3 compares the incidence of crimes in each month. As stated above, 2019 is the only complete year in the data set. In 2018, crime peaked in October, and dropped in December. In 2019, crime was very low in the colder months (January, February and March), peaking in the summer months (July and August). Comparitively, the incidence of crime in 2020 was much lower than 2019 and did not increase in May, which is likely due to the stay at home orders resulting from COVID-19.
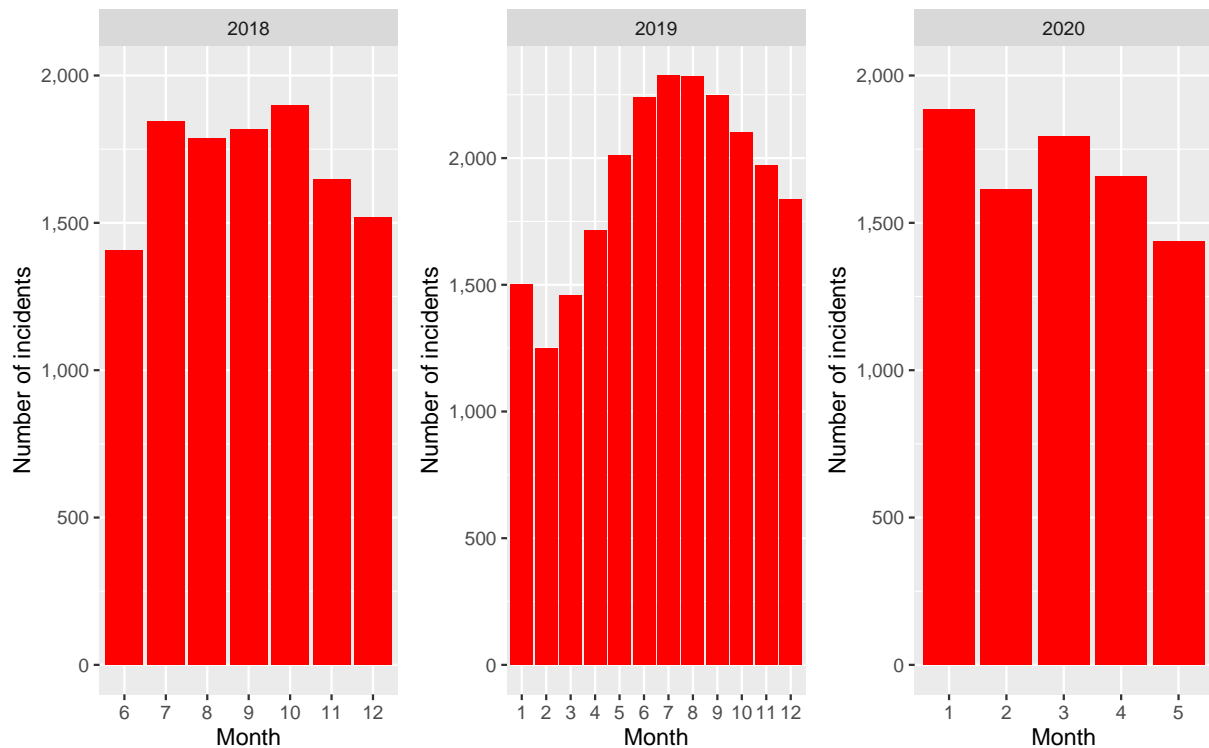
Figure 3: *Comparison of crimes in different months*

4.4 Force Used By Police Data

The following figures show the distribution of crimes and force using every day. It can be seen that there are more crimes on weekdays than on weekends, but the situation of force using by police is just the opposite. It is possible that most people will go to recreation places on weekends, and too many people gather will lead to conflicts, so the times of patrol by police will stay high. And criminals will not commit crimes when there are so many police (See Figure 4).

The last three figures are about the data of force using by police. Figure 5 shows The Different Type of Resistance in Each Precinct. In a sense, it can be seen that the efficiency of the police and the risk of criminals in each precinct. For example, No. 4 precinct is significantly more dangerous than No. 1 precinct, the probability of criminals escaping is greatly increased, while the Commission of crime is too low to be frightening.

Figure 6 shows the relationship between the force type and the type of resistance. The purpose of this figure is to show the effect of the force type used by the police when treating the criminals. I think the content in that figure is obvious, for example, if only using the police dog, the effect is not good and the criminals are easy to escape. If firearm and chemical irritant are combined, better results will be achieved.
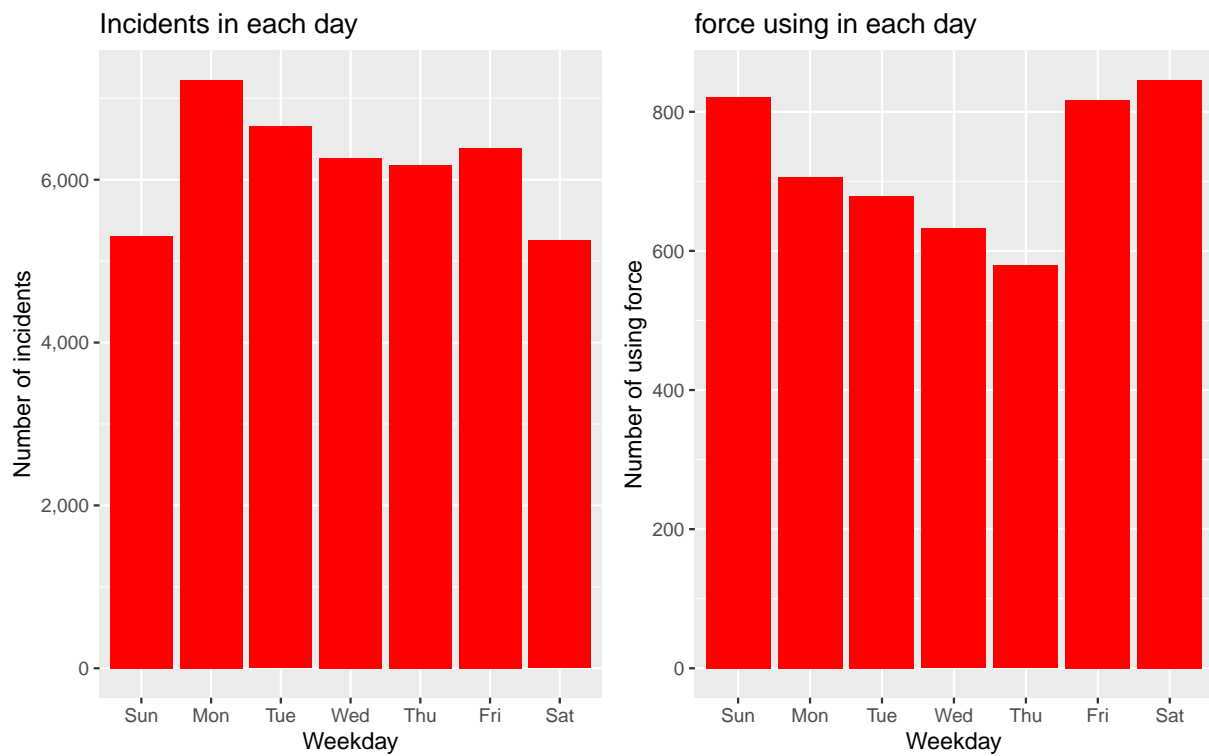
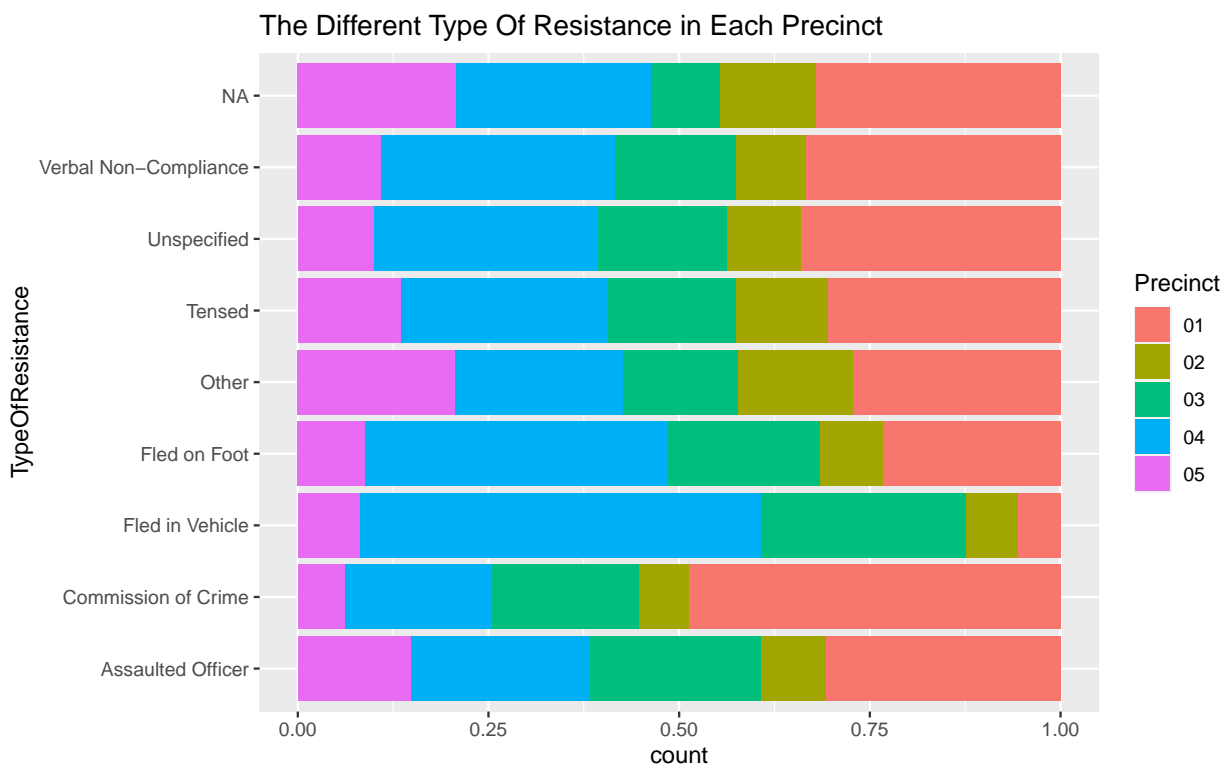**Figure 4:** *The average crimes and force using in a week*

Figure 5: *The different Resistance of criminals in each Precinct*

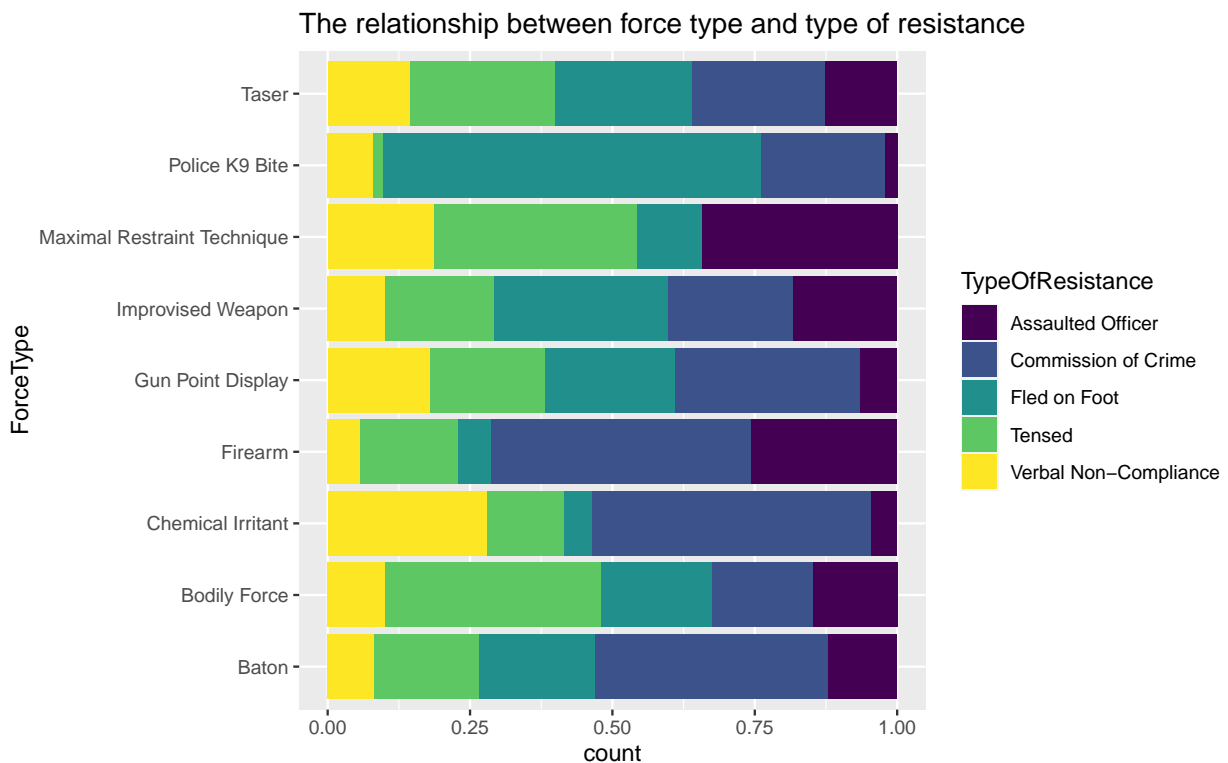The relationship between force type and type of resistance

Figure 6: *The relationship between Force Type adopted by police and type of resistance of criminals*

The last one is the proportion of different Race in the use of force.(See Figure 7) This is a sensitive topic, but it is clear that without the influence of NA, only when police use the less lethal related way to deal with criminals then the incidences of black people will be significantly reduced, otherwise black people accounted for more than 70% in the rest of the various use of force. Our group is not clear about the situation on the ground in Minneapolis, nor clear about other things about black people. Only from this figure alone, is the way the police treat black people too radical?

4.5 Mapping the the Use of Police Force

```
## OGR data source with driver: ESRI Shapefile
## Source: "/Users/emsheehan/Documents/UNI - POSTGRAD/COLLAB/ETC5513-Assignment-4/data/Police_U
## with 30024 features
## It has 28 fields
```

4.6 Police use of force map

```
## Reading layer `Police_Use_of_Force' from data source `/Users/emsheehan/Documents/UNI - POSTG
## Simple feature collection with 30024 features and 28 fields
## geometry type:  POINT
```

Use of Force Type toward Different Race

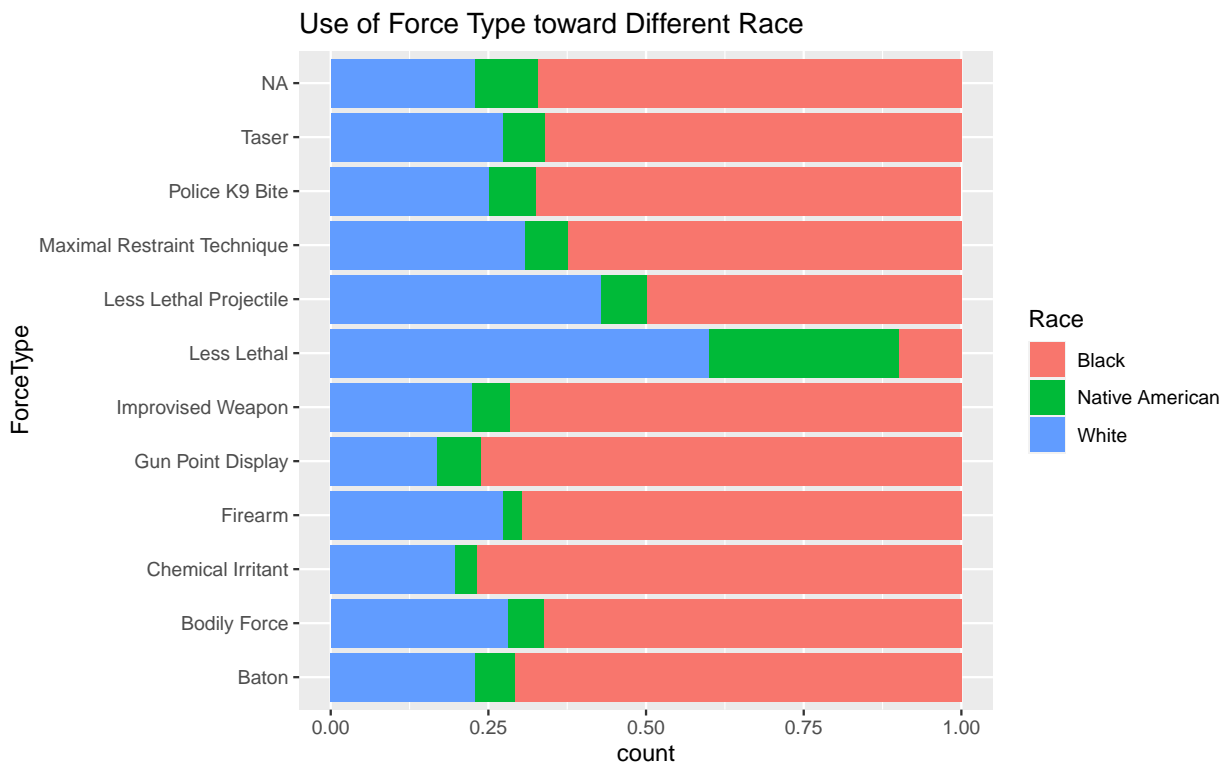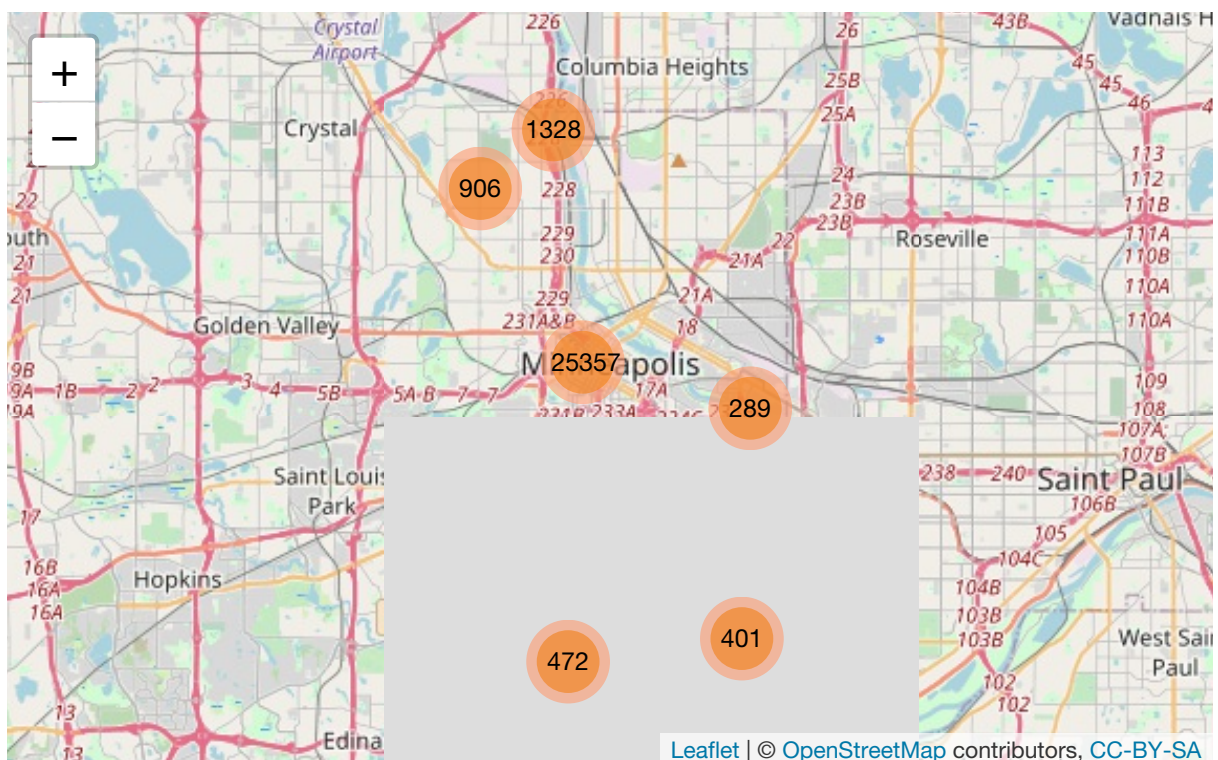**Figure 7:** *Different races are treated differently*

```
## dimension:    XY
## bbox:         xmin: -93.32842 ymin: 0 xmax: 0 ymax: 45.05124
## CRS:          4326
```

References

BBC News (2020). The last 30 minutes of George Floyd's life. *BBC*.

Dottolo, AL and AJ Stewart (2008). "Don't Ever Forget Now, You're a Black Man in America": Intersections of Race, Class and Gender In Encounters with the Police. *Sex Roles* **59**(5), 350–364.