

Alec Brooks

Eriko Sakamura

DATA 101

12 October 2023

Weapon Preference in Homicides: A Gendered Perspective : 1, 3

Homicide is a complex and devastating social issue that has captivated scholars, policymakers, and the public for many years. One fascinating aspect of homicide that merits deep investigation is the role of sex, not only in terms of the perpetrators but the victims as well. This paper aims to explore the relationships between the sex of both perpetrators and victims and how it impacts the weapons used. By looking into the interplay of gender and homicide, we aim to gain valuable insight into emergent patterns seen throughout these tragic incidents.

The Data Source : 2

The data used in this analysis is sourced from publicly available FBI crime statistics collected from County, State, and Tribal police data. In this paper, we will focus on the variables Perpetrator.Sex, Weapon, and Victim.Sex. It's important to note that this dataset includes incidents from all 50 states between the years 1980 and 2014. Variables such as location, age, and ethnicity will not be considered as they do not fall within the scope of this analysis.

The FBI homicide dataset offers a wide array of weapon classifications. Due to the wide variation in popularity, we will simplify these classifications. For instance, in this analysis, the weapons Shotgun, Gun, Handgun, and Rifle have been reclassified as Firearms. This simplification aims to present the categories in a more digestible format. Below is a table detailing all the original classifications and their new designations.

New Classifications:	Firearm	Asphyxiation	Poisoning	Blunt Trauma
Old Classifications:	Shotgun Gun Handgun Rifle	Drowning Strangulation Suffocation	Poison Drugs	Blunt Object Fall Explosives

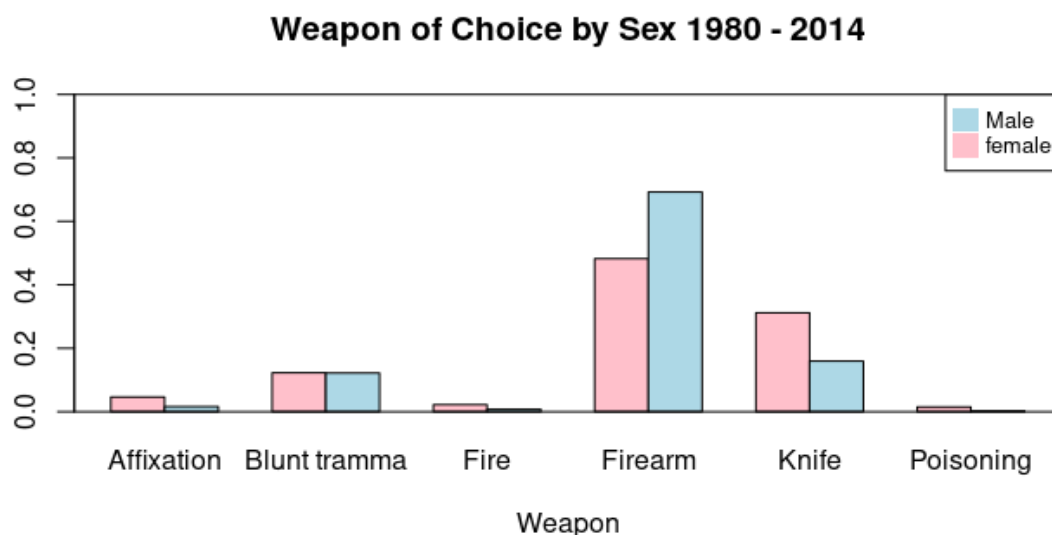
Data Exploration: Perpetrators and their Weapons : 4-8

To begin our analysis, we will initially examine the distribution of homicides based on the sex of the perpetrators and our newly categorized weapon variable. Notably, men account for the majority of recorded incidents, totaling 38,257 cases, while females are associated with 4,480 cases. To delve deeper into the gender-specific nuances of weapon choice, we will investigate the frequency of weapons used by each gender independently. This approach is essential, as it allows us to uncover valuable insights that might be obscured by the simple summation of incidents. Furthermore, a similar observation can be made when examining the combined weapon data for both genders: a prominent preference for firearms with 28,659 incidents.

Once we compare perpetrator gender to the choice of weapons, interesting patterns begin to emerge. Most notably, women appear to be more willing to use alternative weapons to firearms in proportion to their total, in contrast to men who seem much less likely to do so. Furthermore, we can delve deeper into this trend by examining a table that links perpetrator sex to weapon frequency, organized by rows. This table provides us with the total frequency of weapon use for each gender individually.

Perpetrator Sex and Weapon Summation Table	Female 4480	Male 38257	Asphyxiation 814	Blunt Trauma 5208	Fire 386	Firearm 28659	Knife 7499	Poisoning 171
Perpetrator Sex to Weapon Summation Table	Female Male	Asphyxiation 207 607	Blunt Trauma 549 4659	Fire 99 287	Firearm 2161 26498	Knife 1397 6102	Poisoning 67 104	
Perpetrator Sex to Weapon Frequency Table	Female Male	Asphyxiation 0.046205357 0.015866377	Blunt Trauma 0.122544643 0.121781635	Fire 0.022098214 0.007501895	Firearm 0.482366071 0.692631414	Knife 0.311830357 0.159500222	Poisoning 0.014955357 0.002718457	

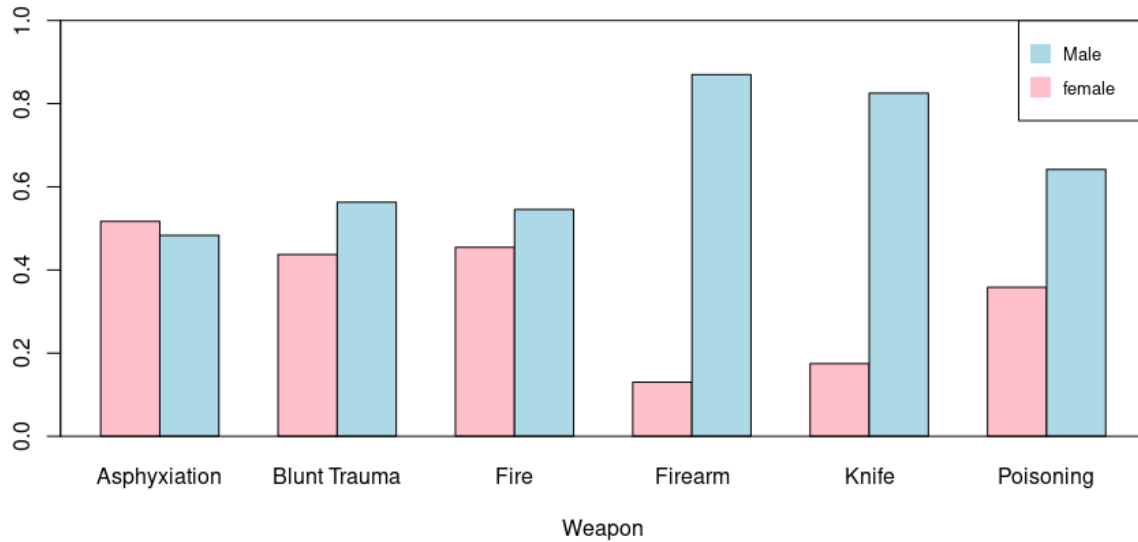
We will proceed by visualizing the frequency table mentioned above in the form of a bar plot. Upon the initial review, the previous trend of both men and women predominantly using firearms in their homicides is visually apparent. However, what stands out is that women appear to be much more willing to use almost all other weapons than men, with the exception of blunt trauma. Notably, women seem to be more likely to use knives than their male counterparts by nearly ten percent. This is a substantial difference, especially considering that nearly half or more of all homicides by both men and women are committed with firearms.



We can take a deeper look at these trends by isolating male and female perpetrators and generating further visualizations using the Victim.Sex variable. It is important to remember that although these charts are visually similar, the way we interpret them is very different. The above graph is generated in a way that allows us to view the frequency of weapons used by the perpetrator's sex, while the below graphs are generated by isolating the gender of the perpetrator and organizing by victim sex. Thus, we should not compare weapons to one another but rather the male and female data for each weapon individually, allowing us to see what victim sex is more likely to be the victim of each perpetrator sex by weapon.

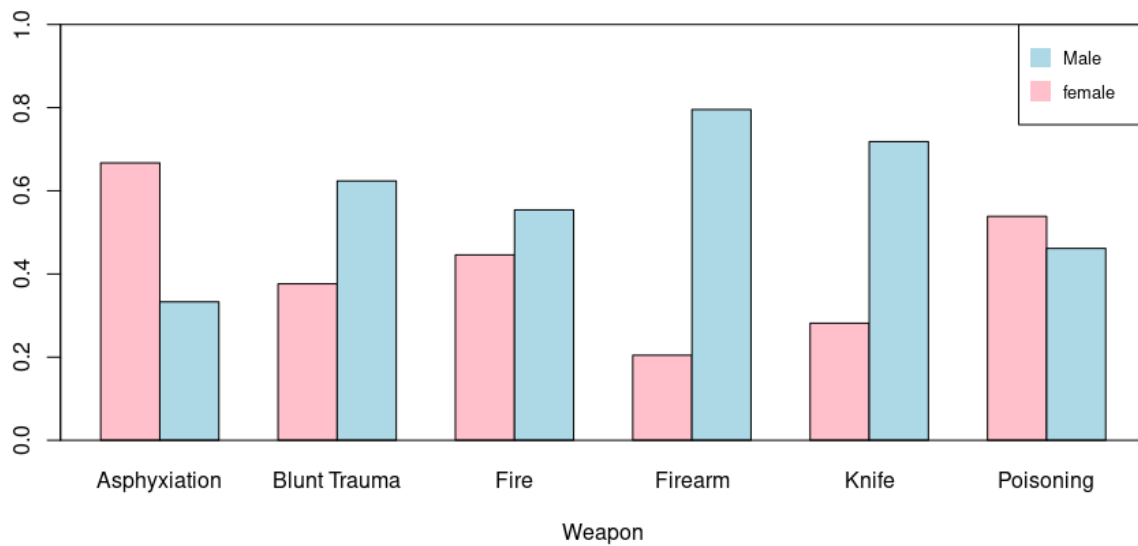
Victim Sex of Female Perpetrators by Weapon.	Asphyxiation	Blunt Trauma	Fire	Firearm	Knife	Poisoning	
	Female	0.5169082	0.4371585	0.4545455	0.1300324	0.1746600	0.3582090
	Male	0.4830918	0.5628415	0.5454545	0.8699676	0.8253400	0.6417910

Weapon of Choice of Female Perpetrators by Victim Sex 1980 - 2014



Victim Sex of Male Perpetrators by Weapon.		Asphyxiation	Blunt Trauma	Fire	Firearm	Knife	Poisoning
	Female	0.6672158	0.3762610	0.4459930	0.2045815	0.2817109	0.5384615
	Male	0.3327842	0.6237390	0.5540070	0.7954185	0.7182891	0.4615385

Weapon of Choice of Male Perpetrators by Victim Sex 1980 - 2014



The above charts reveal some very interesting insights. By first looking at *Weapon of Choice of Female Perpetrators by Victim Sex 1980 - 2014*, we can see that the homicide victims of women are predominantly men in all weapon cases except one: Asphyxiation. Indicating that women are slightly more likely to commit homicide on other women through this method. One could speculate a possible reason for this is that many forms of asphyxiation require the perpetrator to be physically stronger than the victim. Certainly, a more detailed analysis of those cases would need to be made to accurately consider the reason this outlier may exist.

While considering *Weapon of Choice of Male Perpetrators by Victim Sex 1980 - 2014*, we can see a similar yet more exaggerated trend when looking at the Asphyxiation weapon type. Men are much less likely to use this method on other men, yet it is the most common method to be used on women, followed closely by poisoning, an overall very uncommon form of homicide, one that certainly warrants further investigation.

Conclusions and Limitations: 9,10

In conclusion, our analysis yielded the following insights. While men certainly commit the vast majority of homicides, and both men and women do so predominantly with firearms, we discovered a very interesting correlation between female perpetrators' use of asphyxiation on female victims. We also revealed that men are most likely to use asphyxiation and poisoning on women over men. To further this analysis, it may be beneficial to examine these outliers further. Perhaps age, race, or location play an interesting role and can grant us further insights. As always, it is important to acknowledge that this analysis is not exhaustive, and there are many variables that could impact our understanding of sex among both perpetrators and victims of homicide.

Code

```

#Install libraries
#install.packages("readr")
#install.packages("dplyr")

#import libraries
library(readr)
library(dplyr)

df1 <- read_csv("HomicideSample.csv")

#what is the date range in the dataset
min(df1$Year) # 1980

max(df1$Year) # 2014

#who provided the data
table(df1$Agency.Type)

#what locations does this data look at
table(df1$State)

#remove Unknown Weapons/sex
df2 <- filter(df1, df1$Weapon != "Unknown" & df1$Perpetrator.Sex != "Unknown")
df2 <- filter(df2, df2$Victim.Sex != "Unknown")

#simplify categories into new "Wep2" variable
df2$Wep2 <- df2$Weapon
df2$Wep2[df2$Weapon=="Shotgun" | df2$Weapon=="Gun" | df2$Weapon=="Handgun" |
df2$Weapon=="Rifle"] <- "Firearm"
df2$Wep2[df2$Weapon=="Drowning" | df2$Weapon=="Strangulation" |
df2$Weapon=="Suffocation"] <- "Asphyxiation"
df2$Wep2[df2$Weapon=="Poison" | df2$Weapon=="Drugs"] <- "Poisoning"
df2$Wep2[df2$Weapon=="Blunt Object" | df2$Weapon=="Fall" |
df2$Weapon=="Explosives"] <- "Blunt Trauma"

#weapon by sex
table(df2$Perpetrator.Sex)

table(df2$Wep2)

table(df2$Perpetrator.Sex,df2$Wep2)

prop.table(table(df2$Perpetrator.Sex,df2$Wep2), 1)

#above prop table chart
barplot(prop.table(table(df2$Perpetrator.Sex,df2$Wep2), 1), main = "Weapon of
Choice by Sex 1980 - 2014",
        xlab = "Weapon", col = c("pink","lightblue"),beside=TRUE, ylim=
c(0,1))
legend("topright", legend=c("Male", "female"),
       col=c("lightblue", "pink"), pch=15, pt.cex = 2, cex = 0.8)
box()

#isolating perpetrator sex
df2_female <- filter(df2,df2$Perpetrator.Sex == "Female")
df2_male <- filter(df2,df2$Perpetrator.Sex == "Male")

#female Perpetrators: wep by victim sex - prop table and chart
prop.table(table(df2_female$Victim.Sex,df2_female$Wep2), 2)

```

```

barplot(prop.table(table(df2_female$Victim.Sex,df2_female$Wep2), 2), main =
"Weapon of Choice of Female Perpetrators by Victim Sex 1980 - 2014",
        xlab = "Weapon", col = c("pink","lightblue"),beside=TRUE, ylim=
c(0,1))
legend("topright", legend=c("Male", "female"),
      col=c("lightblue", "pink"), pch=15, pt.cex = 2, cex = 0.8)
box()

#male Perpetrators: wep by victim sex - prop table and chart
prop.table(table(df2_male$Victim.Sex,df2_male$Wep2), 2)

barplot(prop.table(table(df2_male$Victim.Sex,df2_male$Wep2), 2), main =
"Weapon of Choice of Male Perpetrators by Victim Sex 1980 - 2014",
        xlab = "Weapon", col = c("pink","lightblue"),beside=TRUE, ylim=
c(0,1))
legend("topright", legend=c("Male", "female"),
      col=c("lightblue", "pink"), pch=15, pt.cex = 2, cex = 0.8)
box()

```