Analysis of Police Shootings in the United States

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1.0   Background

In the United States, a nation often referred to as the land of opportunities and freedom, a pressing concern has demanded global attention: gun violence. Spanning from mass shootings and encounters with law enforcement to the distressing occurrences of school shootings, the higher number of these instances has not been ignored. Over recent decades, the United States has witnessed a concerning rise in the frequency and severity of shootings - particularly the rise of police shootings that has been broadcasted throughout the news. According to The Guardian, law enforcement killed at least 1,176 people in 2022, making it almost a 100 people per month. These shocking numbers reveal the urgency of addressing the root causes of gun violence in the country, specifically in the police force. Yet, examining the roots of this crisis reveals a complex web of societal, cultural, and systemic factors.

Police-involved shootings are a particularly contentious aspect of the broader issue. While law enforcement plays a crucial role in maintaining public safety and keeping peace, instances of police shootings have raised questions about training, use-of-force policies, and systemic issues. The Washington Post's Fatal Force database reported 954 people shot and killed by the police in 2023, emphasizing the persistent nature of this challenge [2]. Examining police training is key to understanding the dynamics of these incidents. In some cases, critiques have been directed towards the adequacy and quality of training received by law enforcement officers and how they choose to follow it. It seems that most have come to the conclusion that the emphasis on de-escalation techniques, cultural competency, and mental health awareness in police training programs is crucial for minimizing unnecessary use of force.

Addressing the multifaceted issue of shootings in America through data analysis is a task that has implementations that affects every corner of the United States. It requires a comprehensive, multifaceted approach that considers all factors that may not be explicitly stated in the data that engages with the complexity of the problem. The ongoing discourse stimulated by movements like Black Lives Matter and the collective call for change provides hope that the nation can collectively work towards a safer and more secure future for all its citizens. By calling attention to the problem at hand, an event study design finds that early BLM protests experienced a 10% to 15% decrease in police homicides from 2014 through 2019, highlighting how important it is to investigate these factors [3]. Through analyzing this data, we can help

identify trends and disparities that could give us better insight to a solution.

Analyzing age, gender, and the use of body cameras in a dataset of American shootings is a crucial step towards understanding trends and disparities within law enforcement interactions. This approach stems from the recognition that law enforcement practices can significantly impact different demographic groups, and investigating these variables can provide valuable insights into potential biases or areas for improvement in policing.

2.0   Methodology
This explains the various processes used in answering the prevailing questions of the project. The approaches used include data collection, data preprocessing, data analysis, and data visualization.

2.1   Data Collection
The dataset on police shootings in the United States of America was obtained from the Washington Post website and consists of recorded events of shootings between police and civilians from 2015 to 2023, encompassing all 50 states and the District of Columbia. The dataset has 8,954 data points and consists of 12 variables. The variables consist of the victims' name, incident date, victims' age, gender, armed status of victim, race, city, state, signs of mental illness, attempt to flee, police department involved, and the status of the officer's body camera.

2.2   Data Preprocessing
Concerning the type of analysis that needs to be conducted, a substantial amount of data cleansing was necessary before it could be utilized. The subsequent steps were executed for data preprocessing.
- Converting data column from object to Pandas Datetime.
- Converting the "signs of mental illness" and "body camera"columns from object to a Boolean datatype.
- Dropped all duplicates and rows with null values.

2.3   Data Analysis
- *Descriptive Statistics*: Computed the mean and summary statistics for the dataset. Additionally, the extent of the dataset's distribution was checked.
- *Comparative Analysis*: Comparing different variables across each other, such as demographics, gender, age, and race.
- *Correlation Analysis*: Calculated the correlation between numerical variables in the dataset.
- *Trend Analysis*: Analyzed the trends of police shootings over time to identify changes in incident rate.

2.4   Data Visualization
Plots such as map plot, histogram, box plot were generated to develop a deeper understanding of the cause and trend of the shooting incidents.

3.0   Results

- ***A total of 8,594 people have been shot and killed by law enforcements***

Between the years 2015 to 2023, a total of 8,594 people have had fatal encounters with several on-duty police officers. Figure 3.1 depicts that the year 2022 has the highest

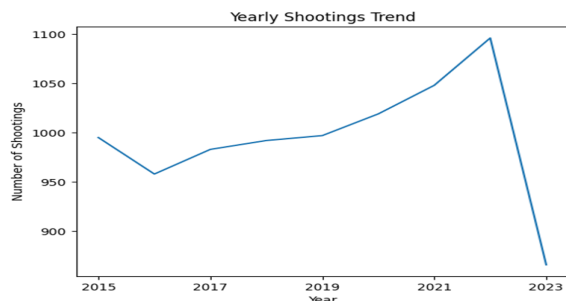number with a record of 1,096 cases. The year 2023 to date has had roughly 866 cases.

Figure 3.1. Yearly trends of police shootings

● *Most of the Victims are young*

More than half of the victims shot and killed by police officers were young people between the ages of 20 and 40 years old. The gender distribution also shows that a lot of the shot victims were male. The female gender only represented about 5% of the total cases.
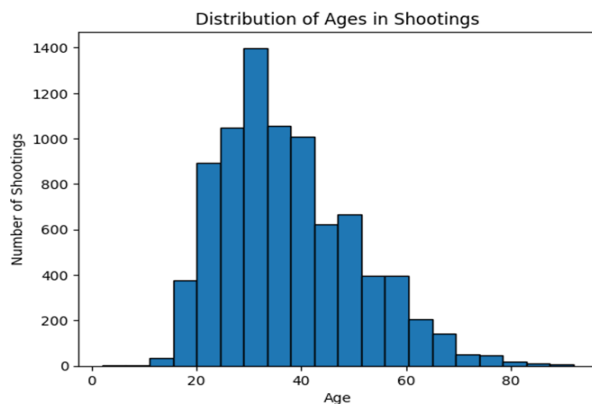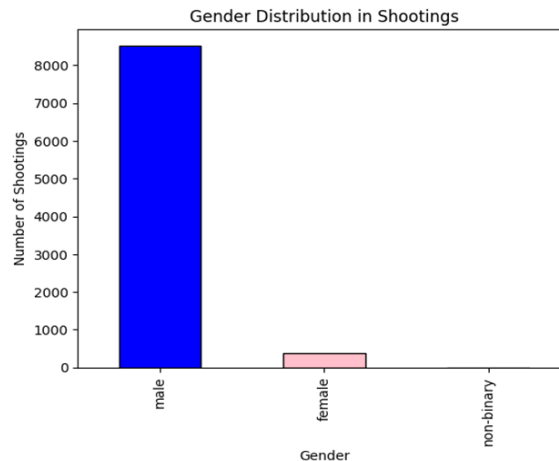

Figure 3.2. Age distribution of police shootings

Figure 3.3. Age distribution of police shootings

● *The White Race is mostly affected*

From 2015 to 2023, the police have shot and killed more whites than blacks, though the blacks are affected at a disproportionate rate.
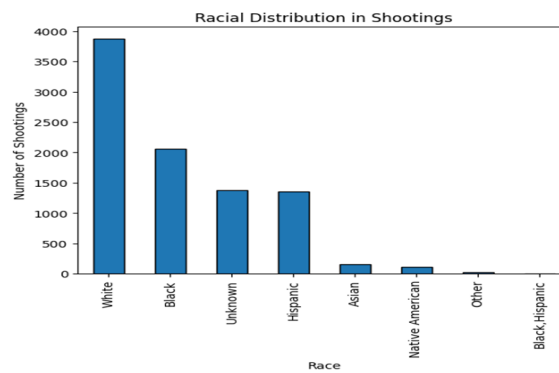

Figure 3.4. Racial distribution of police shootings

● *Majority of the victims were mentally stable*

The mental state of the affected victims is another important feature to consider in the shootings analysis, perhaps it could be a driver on why there is such an alarming number of casualties. However, Figure 3.5 reveals that only about one-third of the victims were mentally unstable, a large majority were mentally healthy.
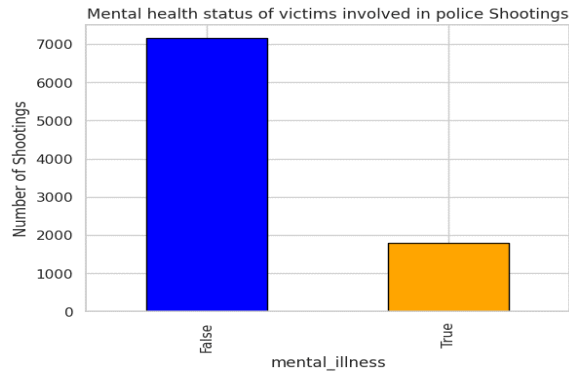
Figure 3.5. Mental health distribution of police shootings

● **States and City distribution of the shootings**

The choropleth map below shows that states like California, Texas and Arizona with lighter color intensity have the most prevalent cases of police shooting, the numbers are in excess of 500. While states like DC, Illinois and Iowa have a number of cases below a 100. A total of 3,420 cities were identified and cities like Los Angeles, Phoenix and Texas are topping the chart. The police departments with the most cases were also localized in the aforementioned cities (Figure 3.7).
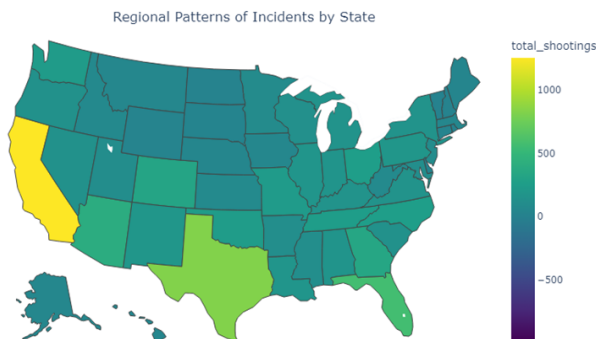

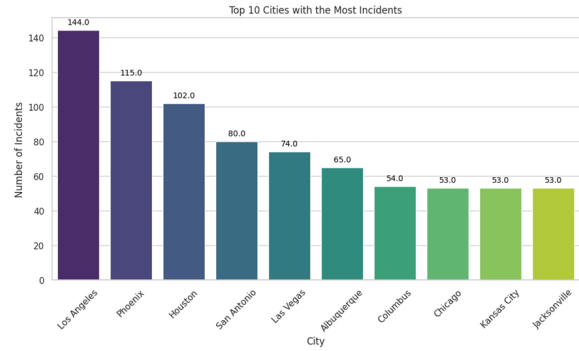Figure 3.6. US States distribution of police shootings
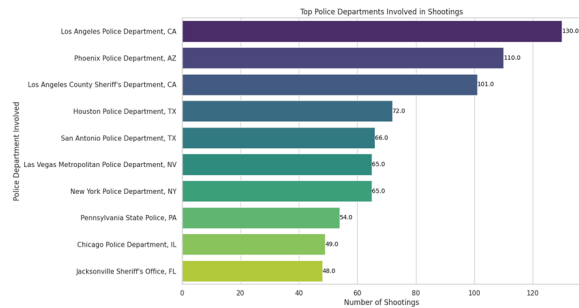

Figure 3.7. Cities distribution of police shootings

Figure 3.8. Distribution across police departments

● **Use of Body Cams**

The data reveal that the majority (84.1%) of the on-duty police officers involved in these shootings had their body cams turned off. This could beg the question on if the use of force was justified by the law enforcements. There was also no racial undertone on the use of body cams.
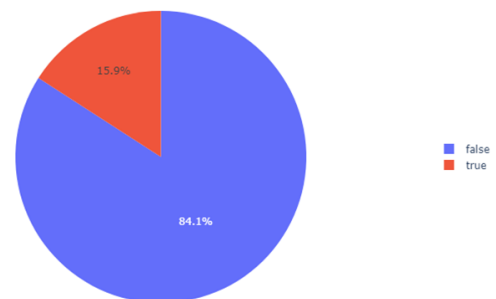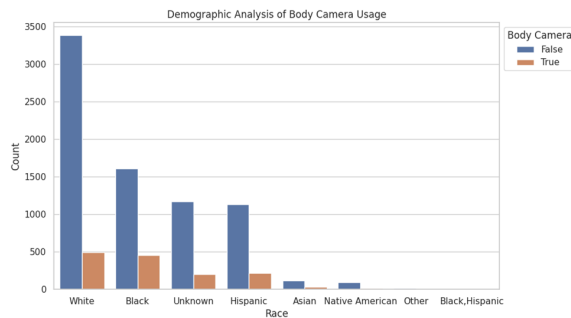

Figure 3.9. Body cams distribution

Figure 3.10. Body cams distribution across race

● ***Majority of the victims were shot on the spot of encounter***

Figure 3.11 reveals that only about a third of the victims were shot in pursuit or other flee actions.
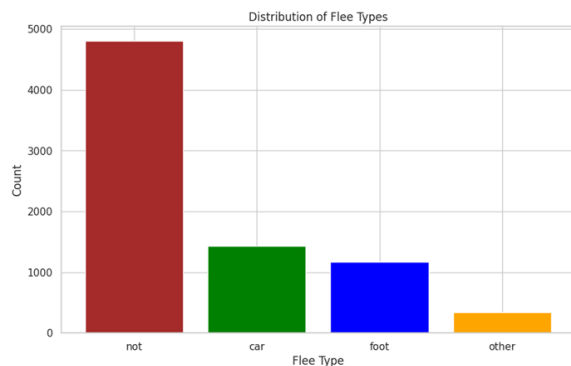

Figure 3.11. Flee conditions of victims

4.0   Conclusion and Recommendation

Analyzing police shootings in the District of Columbia & 50 states in the United States show some troubling trends. Although females and males are both affected by these shootings, males within 25 – 35 years have the most prevalent cases. There are differences in the races of victims, with more white individuals being killed. Mental illness seems to impact victims equally across races. California, being the most populous state, has the highest number of police shootings, particularly in Los Angeles, where a large white population contributes to a significant number of white victims. It's concerning that police body cameras were off in 84% of cases, raising transparency issues and eroding public trust. Most victims were armed with guns, indicating the prevalence of firearms, and fleeing isn't a common reason for victims to be shot.

In order to address these issues, it's suggested to improve data collection on police shootings, focusing on demographics and mental health. Implementing policies for consistent use of police body cameras with clear consequences for non-compliance is crucial. Community policing and mental health support are recommended, emphasizing engagement and de-escalation training. A comprehensive review of use-of-force policies, prioritizing de-escalation, and promoting non-lethal alternatives is suggested. Public awareness campaigns, community forums, and civilian oversight boards can enhance engagement and accountability. Additionally, addressing the prevalence of firearms in police shootings is suggested through comprehensive gun control measures.

References

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