

IE6600_SEC01_GROUP10_HACKATHON

Vishnu Ram Dinesan, Veer Karadia, Shriyah Maringanti

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Introduction and Problem Statement

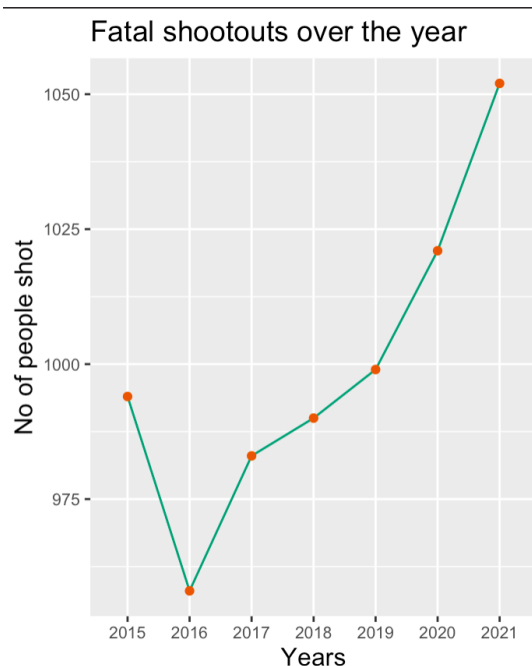
Fatal police shootings have been going on an all-time high all over the United States of America which has stirred outrage among the masses. For Hackathon'22 our group has opted to analyze the topic "Fatal Police Shootings Data" and to visually represent the factors behind each killing - considering the deceased's race, the circumstances of the shooting, whether the individual was armed, whether or not the person was suffering from a mental illness and other details.

The dataset only has records of shootouts from 2015-2022 in which a police officer shoots and kills a civilian in the line of duty — the circumstances that most resemble the 2014 killing of Michael Brown in Ferguson, Mo., which sparked a nationwide protest movement that culminated in Black Lives Matter. The data does not keep track of fatalities in police custody, fatal shootings by off-duty cops, or non-shooting deaths.

The dataset has been cleaned and in the process, the records of 2022 have been removed as there were minimal data available. Exploratory data analysis has been conducted to understand the dataset and the reasons why the killing had occurred. Was the killing really necessary? What instigated the police to shoot the victim? How many victims who fled had possessed weapons and how many of them attacked the police in return. Analysis based on discrimination against race has also been performed along with whether the victims age and gender play a major role.

Section 1: Overview of the fatal shooting incidents in the United States of America

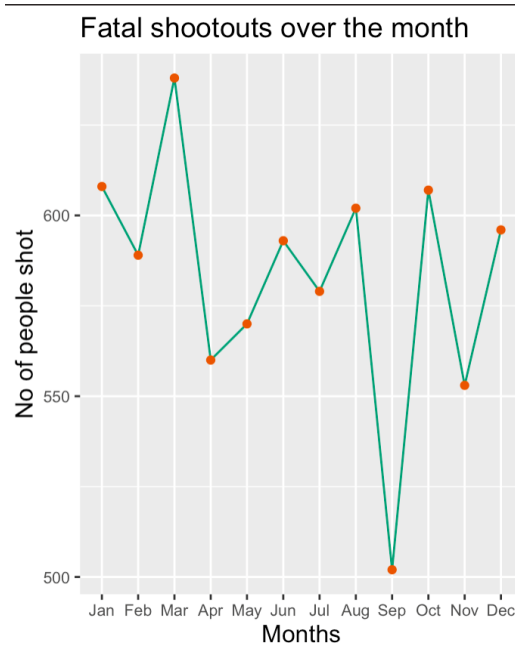
Q1: What was the trend observed in the shootouts over the years?



Insight: Fatal shootouts have been recorded from 2015 until 2021. As we visualized we have found that there has been a drop in the shootings by 3.62% from 2015 to 2016. We suspect the decline was due to fewer crime rates and the citizens fighting back and attacking the policemen. Coming to the years 2016-2019 we can see an incline of 4.27%. Furthermore, from 2019 onwards until 2021, there has been a

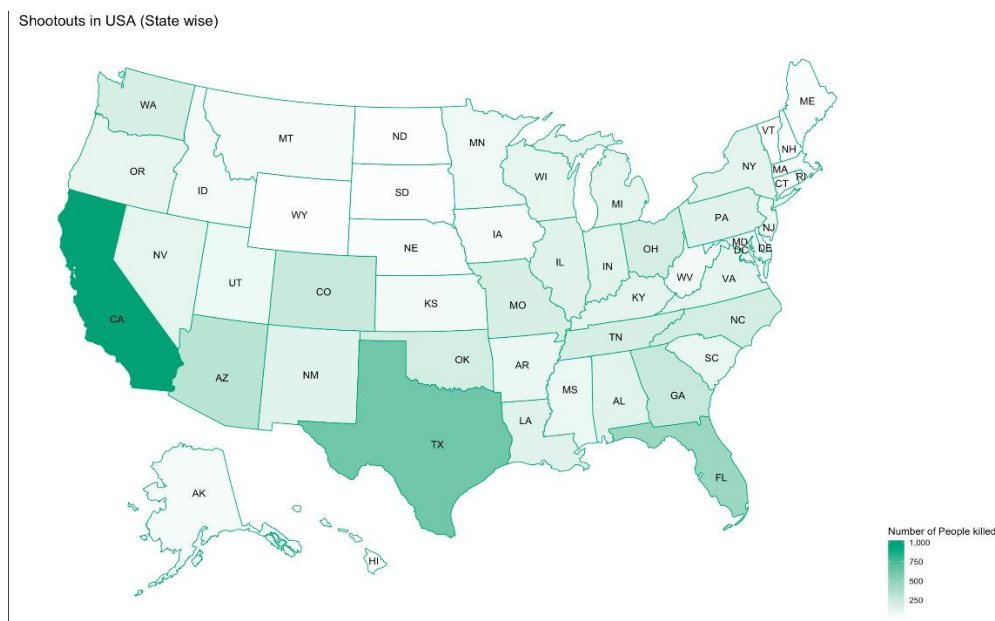
significant rise in the cases which happens to be 5.30% and it can be taken into consideration that the cases will see an upward scale throughout 2022 as well.

Q2: Which months observed the most and the least number of killings from 2015-2021?



Insight: An all-time high of 9.11% of killings has been recorded in the month of March throughout the 6 years with approximately 638 victims being shot. Whereas September has been one such month that has observed the least number of killings with an average of 502 people being struck.

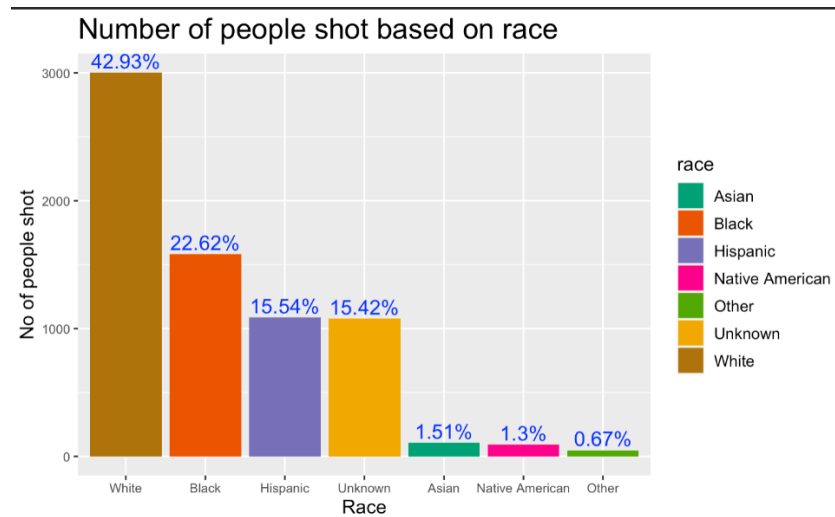
Q3: Which states have recorded the highest and the lowest number of shootouts?



Insight: Being the excessively populated states in the USA- California, Texas and Florida have witnessed the highest number of fatal encounters by the police which accounts for 1027, 621 and 450 shootings respectively. Whereas Rhode Island recorded a mere 5 (0.07%) police shootouts over the period of 6 years.

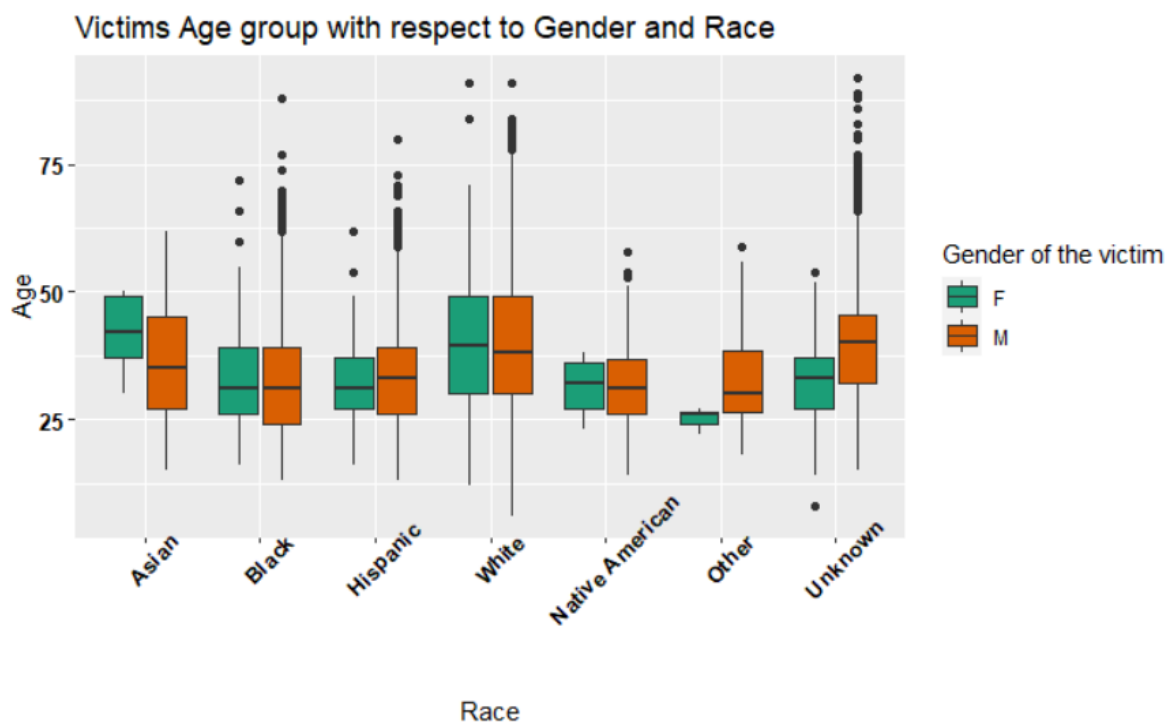
Section 2: Understanding the victim's background and their mental state of being.

Q1: Which races did the victims belong to?



Insight: Race plays a significant role in the United States of America. It spikes many debates and protests which occur due to discrimination based on race. White Americans account for a major share of 42.93% of police shootings followed by Black Race who withhold 22.62%. The Hispanics, Asians, and Native Americans constitute 15.54%, 1.51%, 1.3% respectively.

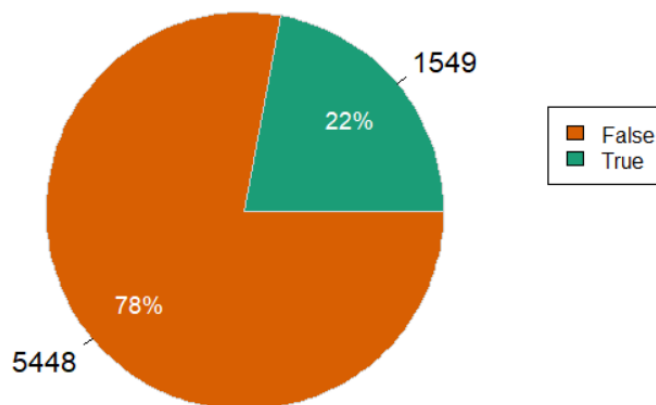
Q2: What's the age group of the victims that were shot with respect to race and gender?



Insight: According to the box plot observations, we have drawn that most of the groups comprising of both male and female have been killed between the age of 28 years and 45 years with the mean age being 37.2 years. 382 null values were replaced by the mean value of the age column with respect to gender and race.

Q3: How was the mental state of the victims?

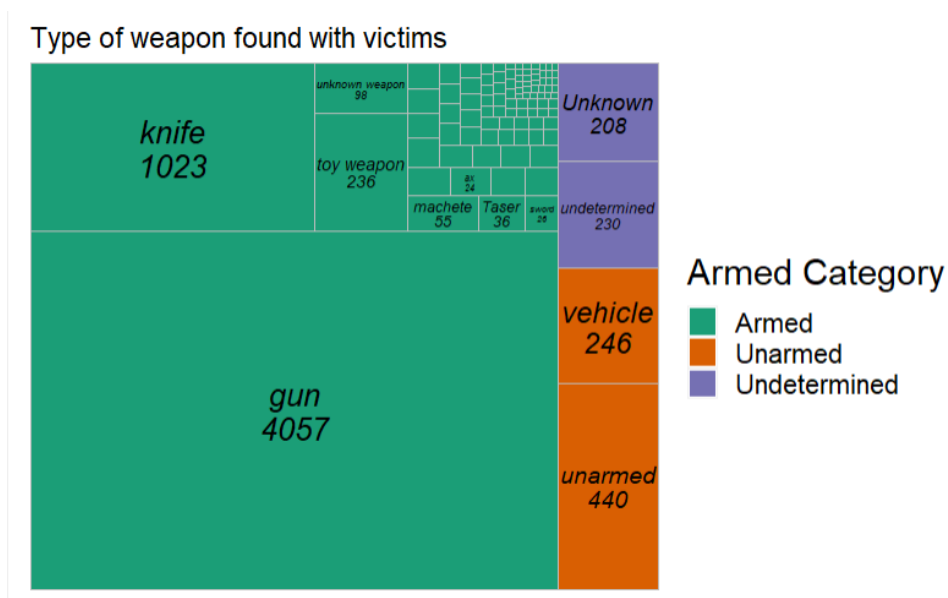
Signs of Mental Illness in Victims



Insight: Out of the recorded 6997 victims, a vast majority of 5448 people account for not having a mental illness which comprises 78% when compared to 1549 victims who were mentally stable and still shot.

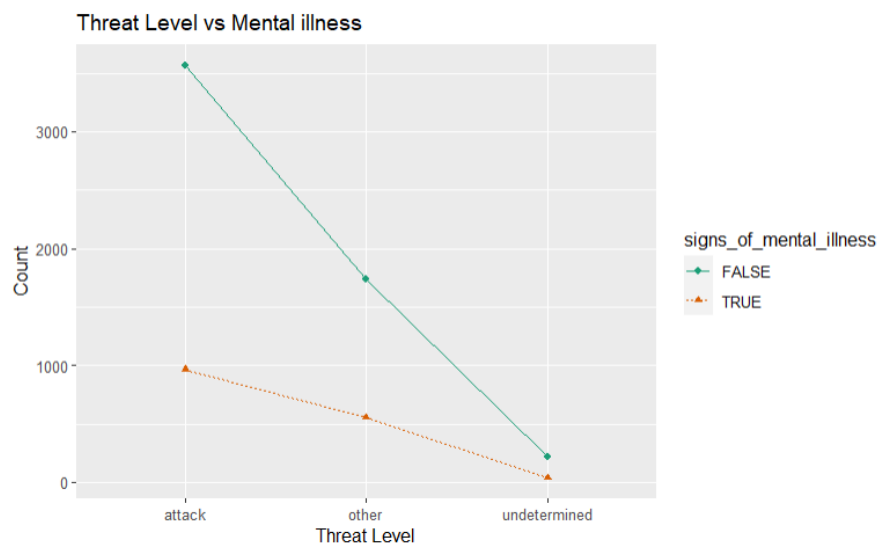
Section 3: Diving into the factors that played a significant role in the shootouts

Q1: Did the victims have any weapon in possession during the shootout?



Insight: The US is popular for its gun culture, and rightly said approximately 84% of the victims possessed weapons with them out of which 4057 of them carried a gun when approached or triggered by the police, followed by knife and toy weapons with 1023 and 236 counts respectively. The unarmed victims are 10% of the total population and the rest 6% are undetermined or unknown.

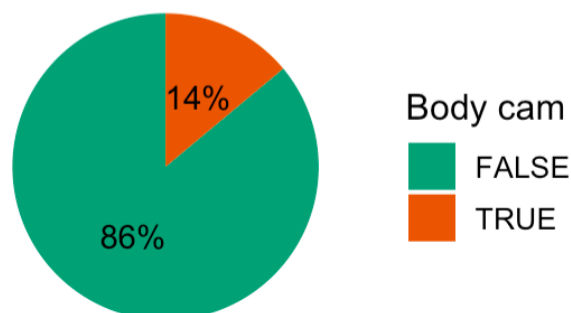
Q2: Are the threat levels of the victim affected by their mental health?



Insight: As depicted in the graph, majority of the people were mentally stable. Around 3,500+ people regardless of being in proper mental health posed a serious threat to the police personnel by attacking them. Other 1000 victims who attacked the police were recorded to be mentally ill.

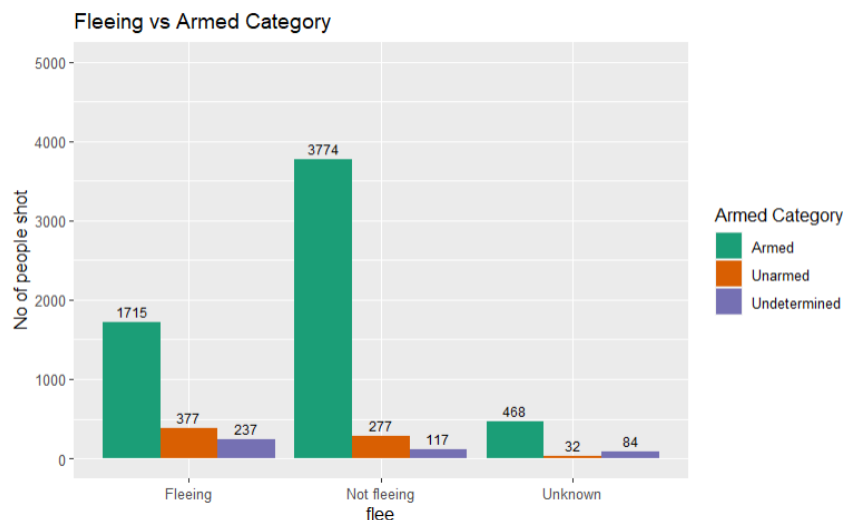
Q3: Did the police have visual proof of the fatal incident?

Usage of body cam by the cops



Insight: Based on the dataset the only possibility of having visual proof of the shootout was by carrying a body camera. However, the cops did not record 86 % of the shootouts that had taken place.

Q4: What impact did the victim's possession of a weapon and fleeing have on the shootout?



Insight: After analyzing the above graph, the majority of the victims had weapons in possession but did not flee which accounts for 54% of the total records. It is then followed by the victims who carried weapons but were trying to escape. Thus possession of arms had a major impact on the shootout.

Summary and Conclusion

To summarize, the following analysis was conducted:

Section 1: Overview of the fatal shooting incidents in the United States of America Q1: What was the trend observed in the shootouts over the years? Q2: Which months observed the most and the least number of killings from 2015-2021? Q3: Which states have recorded the highest and the lowest number of shootouts?

Section 2: Understanding the victim's background and their mental state of being Q1: Which races did the victims belong to? Q2: What's the age group of the victims that were shot with respect to race and gender? Q3: How was the mental state of the victims?

Section 3: Diving into the factors that played a significant role in the shootouts Q1: Did the victims have any weapon in possession during the shootout? Q2: Are the threat levels of the victim affected by their mental health? Q3: Did the police have visual proof of the fatal incident? Q4: What impact did the victim's possession of a weapon and fleeing have on the shootout?

In section 1, we have performed exploratory analysis on the overview of the occurrence of fatal encounters in the United States of America from 2015 – 2021. Based on the visualization we can conclude that 2016 witnessed a significant drop in the shooting incident however there is a steady rise in the shootouts from 2017 to 2021. The inflammation from 2020 to 2021 can be due to the loss of employment during covid-19 pandemic. September observed a dip in the cases and February witnessed a peak. Coming to the state-wise comparison, California, Texas and Florida have the highest number of shootings.

Furthermore, in section 2, we have generated an in-depth analysis based on the background of the victims. The White race Americans tend to be shot more followed by the Black race Americans getting the average to 65.55% of the total races. Hispanics, Asians and Native Americans are a part of the shootings as well. The average age range of all the races and genders can be observed to fall under 28-45 years. Most of the victims who faced the brutality were not mentally unstable.

Finally, in section 3, we deep-dived into the factors that played a major role at the time of the incidents. Turns out a large portion of the victims do possess weapons which majorly include guns and knives. The threat levels of the victims were not affected by their mental health as 3500+ victims who attacked the police

did not record signs of any mental illness. The state requires the police to record and have visual proof in case of any such shootouts however, 86% of the cops did not record the incident.

References

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