The Mass Shootings Crisis Facing the US

Group-15

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Project goal

It seems like every day we hear of an act of gun violence occurring somewhere in the United States, so much so that it has become almost a staple of news reports. A New York Times report recently presented statistics that showed 96 Americans die due by firearms on any given day. This number is absolutely horrifying, and it is especially hard to believe that this is happening in the United States. Since 9/11, there have been only 60 acts of terrorism in the US - contrasting that to mass shootings, there have been **more than 1900** since 2012 alone, averaging more than 1 per day. What is especially terrifying that a large proportion of these take place in places of education, often primary and secondary schools. Why has this trend entrenched itself in the US? Who are the people responsible for this, and what motivates them to commit such heinous acts? We focus our analysis on answering these questions and more. In doing so, we restrict ourselves to mass shootings, i.e., cases where there are 4 or more victims of the shooting so that we may gain an understanding of the factors behind them.

Data Set

We shall be using the Stanford Mass Shootings in America dataset, which can be found here: https://github.com/StanfordGeospatialCenter/MSA/blob/master/Data/Stanford_MSA_Database.csv. The dataset contains data for documented mass shootings that have taken place in the United States from 1966 till 2016.

The attributes that we will be primarily focussing on are:

1. Location, City, State, Latitude, Longitude - Categorical, spatial attributes
2. Number of Fatalities and Injuries (Civilian, Enforcement) - Quantitative
3. Date and Time - Quantitative, Temporal
4. Shooter Attributes (Age, Gender, Race) - Categorical/Quantitative
5. Type of Gun - Categorical
6. Shooting Place - Categorical, Spatial
7. Type of Victims Targeted - Categorical

8. Possible Motive - Categorical

9. History of Mental Illness - Categorical

Analytic Questions

1. Is there a visible trend in the number of shootings that have happened through the years?

2. Where are shootings most concentrated, and which places have more violent incidents?
Proxy tasks:

1. What locations have most frequent shootings?

2. What locations have had the highest numbers of fatalities and injuries?

3.Are there identifiable patterns among the personal attributes of the shooters?

Proxy task:

1. Calculate the number of shooters by age/age-group, gender and race.

4.Was mental illness a factor responsible for the shooter carrying out the act in a majority of the cases?

Proxy Task:

1. Rank the motives of the shooters by frequency.

2. Highlight the cases where “Mental Illness” was listed as a motive behind the incident.

5.What are the most frequently used weapon types and which of them are the most dangerous?

Proxy tasks:

1. Calculate the number of times a weapon type was used in mass shootings.

2. Rank the weapon types by order of greatest fatalities and injuries caused by the weapon.

Data Analysis

1)Is there a visible trend in the number of shootings that have happened through the years?

The trend of distinct count of Case ID for Date Year.

In recent years, cases of mass shootings have spiked at an incredible rate, going from almost 4 or 5 a year to almost one per day. This trend can be easily seen from the visualization above, where the spike can be seen to have started somewhere around 2009.

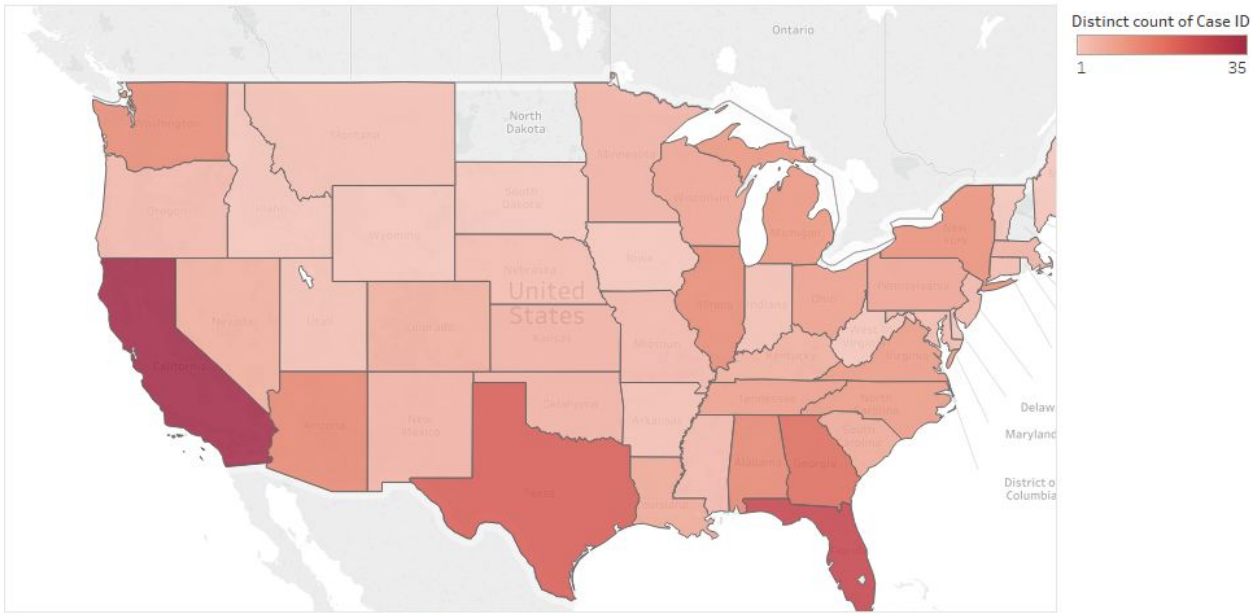
2) Where are shootings most concentrated, and which places have more violent incidents?

Proxy tasks:

1. What locations have most frequent shootings?

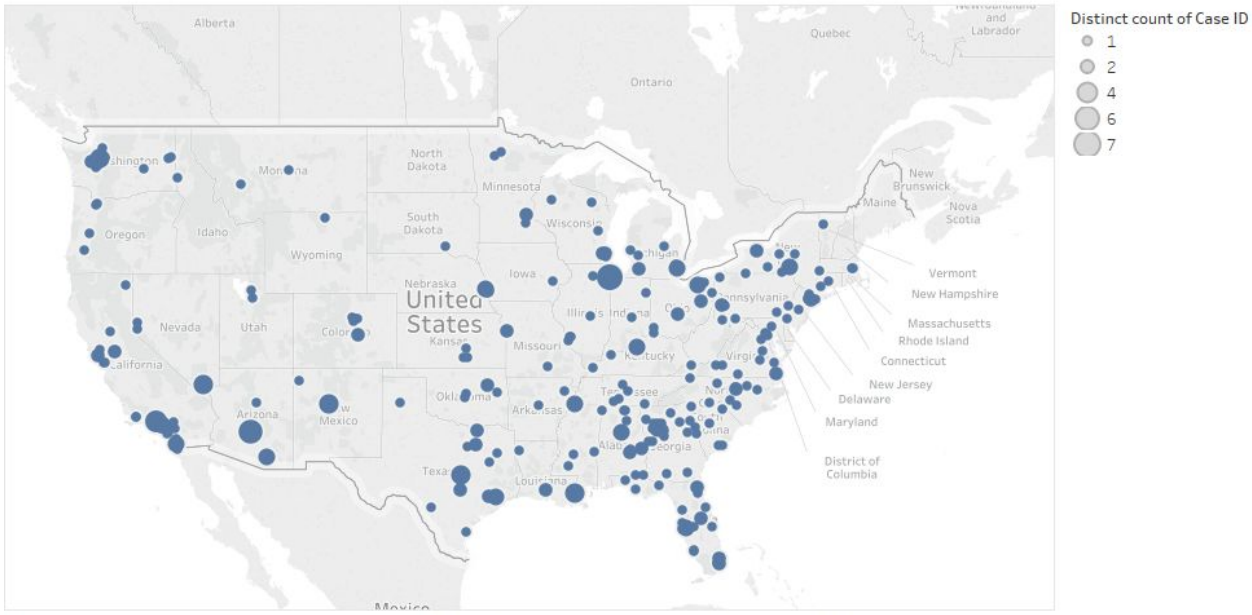
2. What locations have had the highest numbers of fatalities and injuries?

Number of Shootings By State



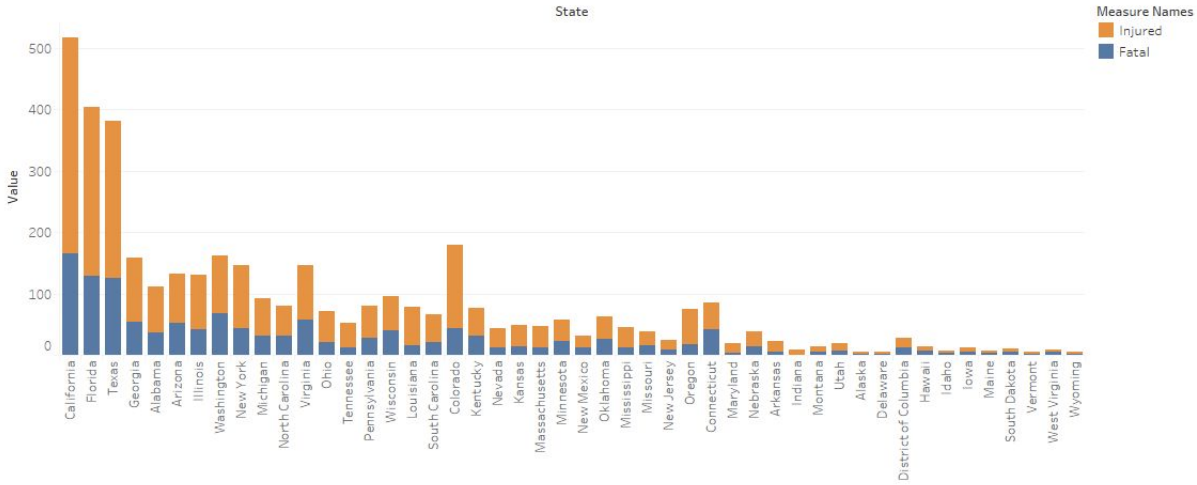
Map based on average of Longitude and average of Latitude. Color shows distinct count of Case ID. Details are shown for State.

Number of Shootings By City



Map based on average of Longitude and average of Latitude. Size shows distinct count of Case ID. Details are shown for City.

Fatalities & Injured Victims By State



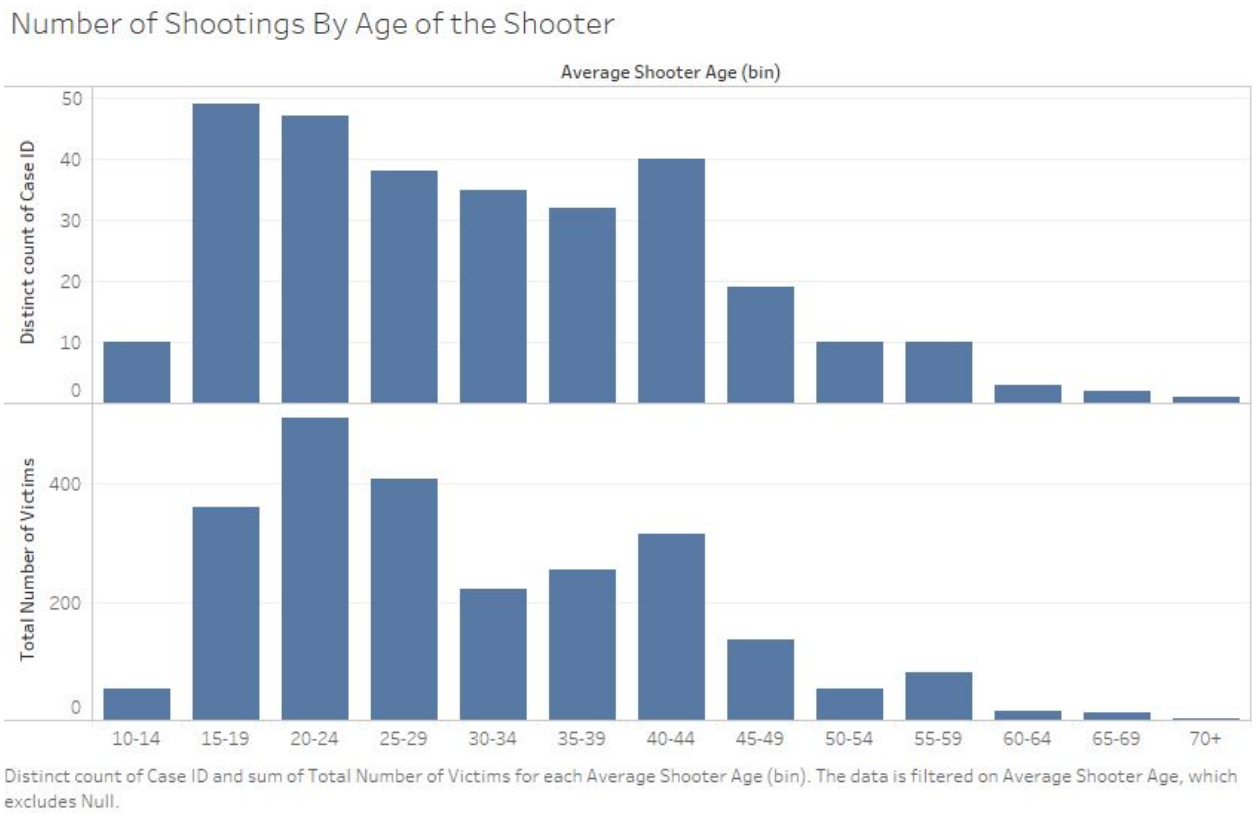
Injured and Fatal for each State. Color shows details about Injured and Fatal.

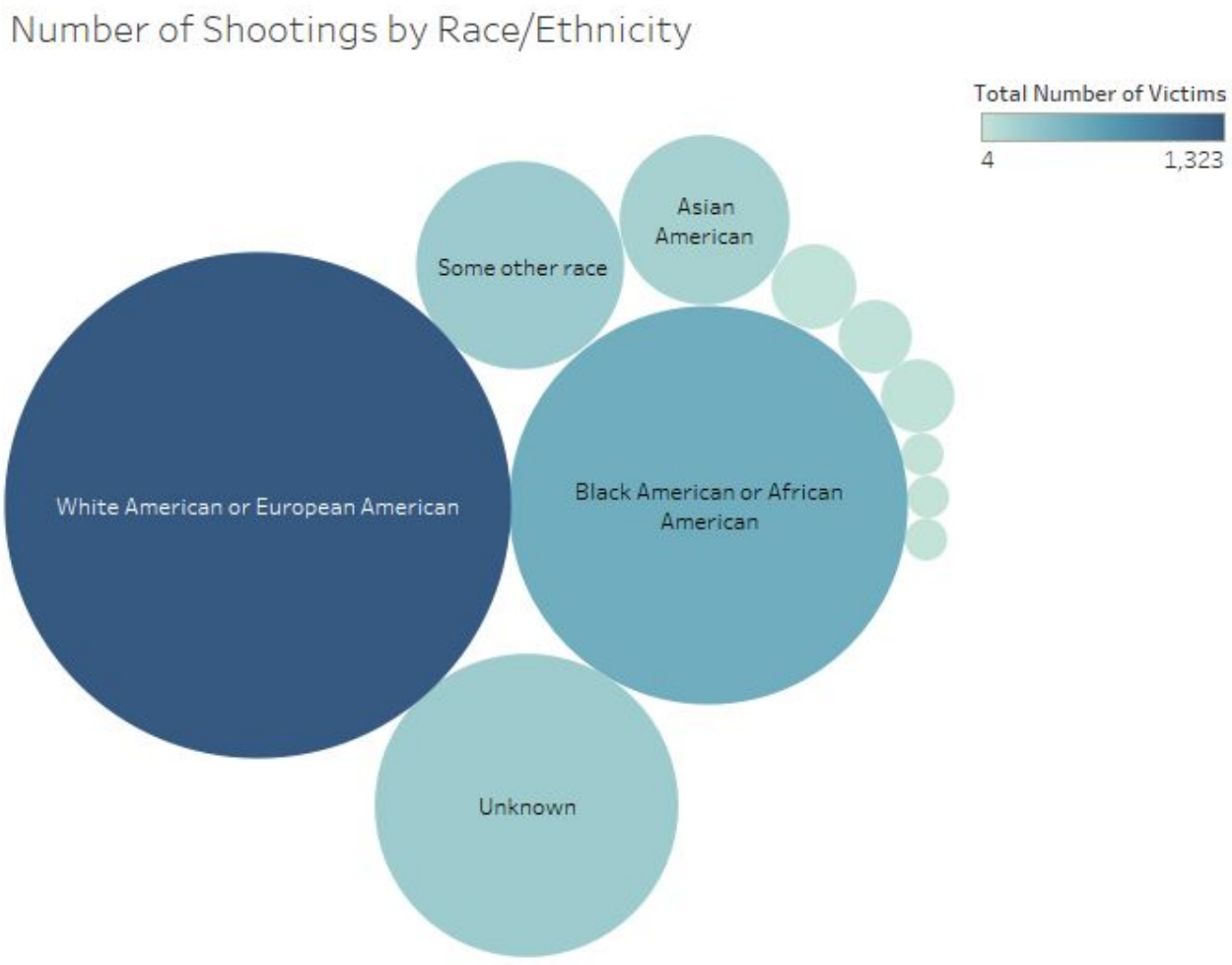
Shootings seem to be heavily concentrated as we go towards the East Coast. However, California, Texas and Florida lead the numbers when we see the total number of victims of mass shootings since 2016. However, considering the fact that these states are also among the heavily populated, it seems understandable that they would also correspondingly have more shootings compared to the Midwest, which has a far lower population.

3) .Are there identifiable patterns among the personal attributes of the shooters?

Proxy task:

1. Calculate the number of shooters by age/age-group, gender and race.



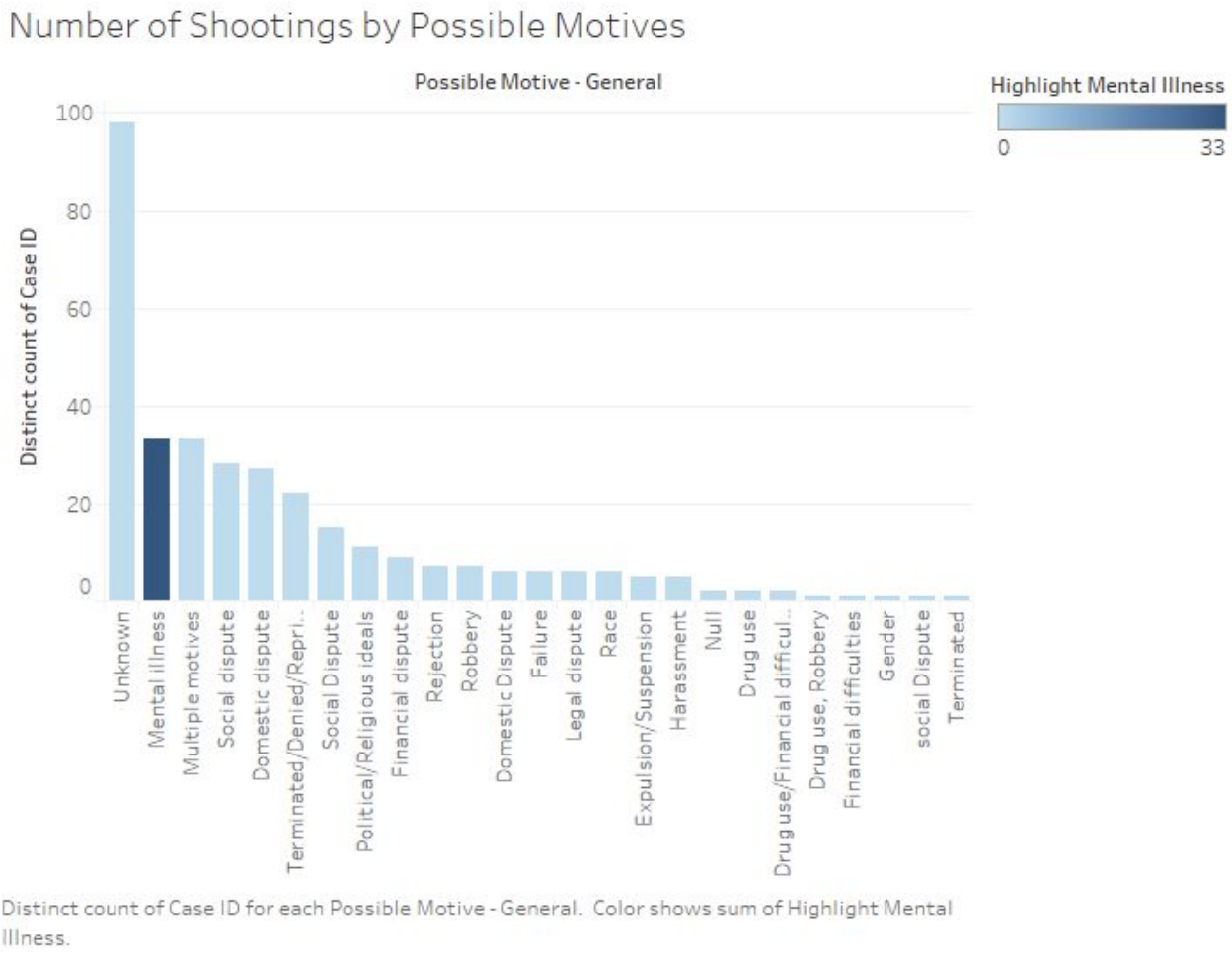


Contrary to conventional belief, most shooters responsible for mass shootings are White Americans, while the proportion of immigrants is actually much lower. Moreover, observing the plots for age groups vs number of shootings/victims, it can be seen that most shooters are aged between 15 and 30.

4)Was mental illness a factor responsible for the shooter carrying out the act in a majority of the cases?

Proxy Task:

1. Rank the motives of the shooters by frequency.
2. Highlight the cases where “Mental Illness” was listed as a motive behind the incident.



Distinct count of Case ID for each Possible Motive - General. Color shows sum of Highlight Mental Illness.

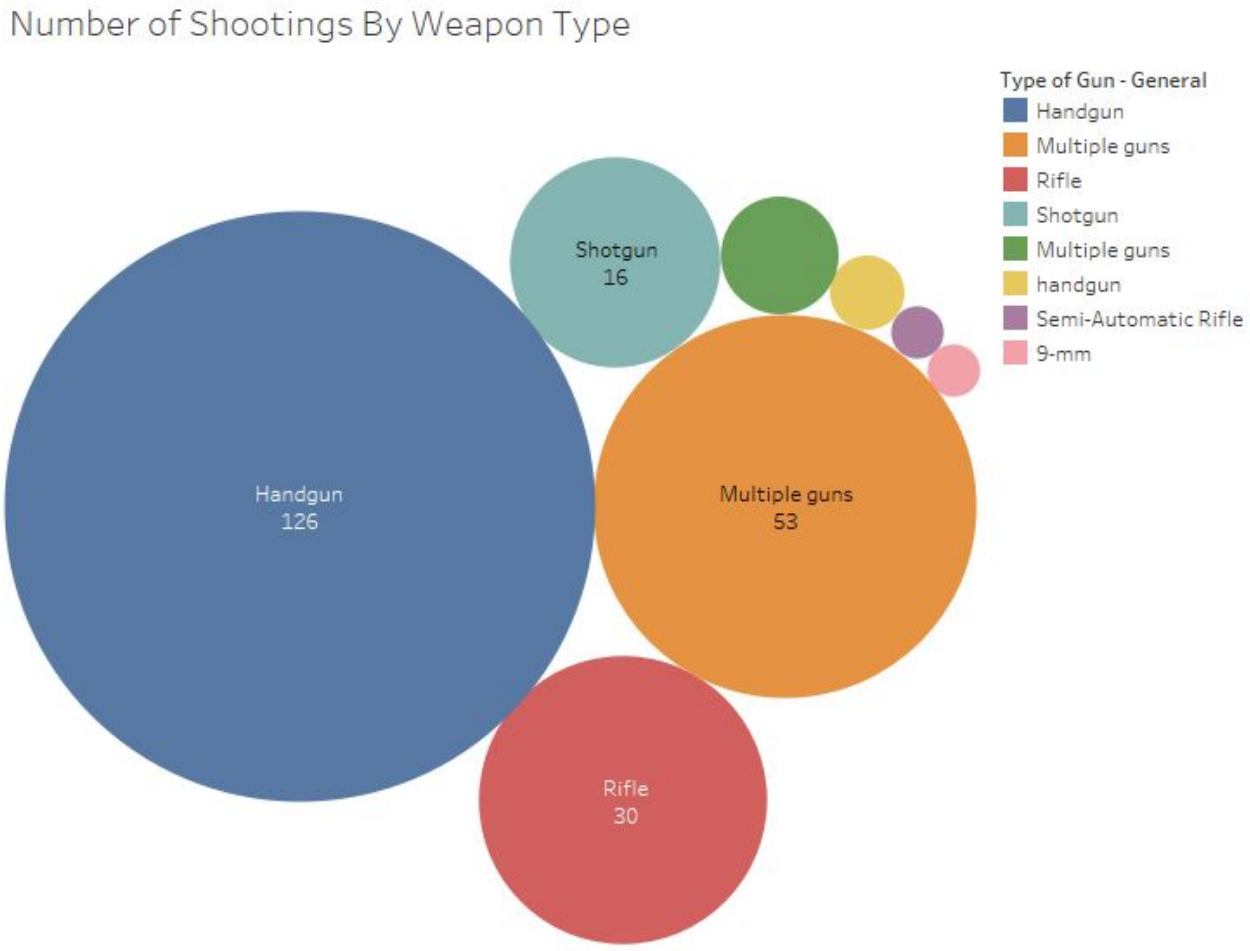
It is easily visible that mental illness is actually not a very major motive behind a person committing such an act of terror, thus disproving claims by groups that having mental checks before allowing gun possession would considerably reduce the number of mass shootings.

5) What are the most frequently used weapon types and which of them are the most dangerous?

Proxy tasks:

1.Calculate the number of times a weapon type was used in mass shootings.

2.Rank the weapon types by order of greatest fatalities and injuries caused by the weapon.



Handguns and rifles, especially of the semi-automatic variety, seem to be most used by shooters, and correspondingly, they are the most dangerous as well. Moreover, these are among the most easy-to-obtain firearms in the United States. Thus, restricting purchase of these military-grade weapons might be an effective measure towards preventing mass shootings.

Implementation

Github Link : https://github.com/NYU-VIS-FALL2018/storytelling-group-15

Demo Link: https://nyu-vis-fall2018.github.io/storytelling-group-15/iv_proj/build/