

Analysis of Gun Violence in America



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Project goal

Gun violence in the US results in tens of thousands of deaths and injuries annually. The motivation behind this project is to highlight the situation of Gun violence in United States and to explore the impact of these incidents. The incident characteristics in the dataset offer a wealth of information which can be used by aspiring data scientists and statisticians to study gun violence and make predictions about future.

Project Description

Everyday, **96 Americans are killed with guns** and hundreds more are shot and injured. The effects of gun violence extend far beyond these casualties—gun violence shapes the lives of millions of Americans who witness it, know someone who was shot, or live in fear of the next shooting. The news stories and statements by political leaders write themselves, with only the location, name of the shooter and number of casualties changing. It all seems so routine. In this project we aim to analyse the dataset available on Gun Violence in America and we intend find out the trend of gun violence in America over the years, number of people killed due to gun violence every year, types of guns used, mass shootings happened till date and various other analysis such as finding out in which US state Gun Violence is most prevalent.

Data Set

The Dataset contains information about the gun violence incidents in US over the years 2013-2018 comprising of over 260k records. In 2013, there were over 70k nonfatal firearm injuries which included homicides, suicides, deaths due to accidental or negligent discharge of a firearm, and deaths due to firearms use with "undetermined intent". The Dataset includes the following attributes,

- Date (2013-2018) - Date of crime (Temporal, Quantitative)
- Location – Location of incident (Spatial)
- Number of fatalities (0-50) – Number of people killed (Quantitative)
- Number of injured (0-53) – Number of people injured (Quantitative)
- Age – Age group of the participant at the time of crime (Categorical)

- Gender – Gender of the participant (Categorical)
- Sources – Incident reporting sources (Categorical)
- Gun Type – Type of gun used in the incident (Categorical)
- Latitude (Spatial)
- Longitude (Spatial)

Dataset Link: <https://www.gunviolencearchive.org/query>

Analytical Questions and Proxy Tasks

In this project, we will perform a deep exploration on the dataset of gun violence incidents reported in US since 2013 and answer the following questions.

1) What is the trend in Gun violence incidents in US over time?

Proxy Tasks: Analyzing the number of gun violence incidents that took place in different states since 2013.

Proxy Value: Trend will translate to the increase or decrease in the number of total incidents. It can be made more specific by visualizing it over the years from 2013-2018.

2) Which are the most serious gun violence incidents known so far?

Proxy Tasks: The most serious can be defined by the total number of victims (killed + injured) for the incidents with the maximum number of victims for different regions.

Proxy Values: We can make the term most serious incident more concrete by taking the incidents with top 10 incidents where the number of victims (killed + injured) are maximum.

3) In which regions is gun violence most prevalent?

Proxy Task: Prevalent can be defined by the total number of gun violence incidents across the states with the maximum number of incidents.

Proxy Value: Prevalent can be defined by the total number of incidents which can be found by summing up the number of incidents for each state. Most gun violence prevalent regions can be known by finding the top 10 regions with the maximum number of incidents.

6) Which age group is involved the most in gun violence incidents?

Proxy Task: We analyze the number of incidents for each age group since 2013.

Proxy Value: We can check the age of the person involved in the gun violence and get the sum for all age groups.

7) Which venue types are targeted the most in gun violence?

Proxy Task: We need to analyze the number of incidents that occur in each venue type.

Proxy Value: Most targeted can be defined as the venue types which has the maximum number of Incidents occurring. Venue types include Parks, Bars, Clubs, Religions Places etc. We can use a threshold for the visualization such as top 10.

8) Does the gun type have any effect on the number of injured or fatalities in the incident?

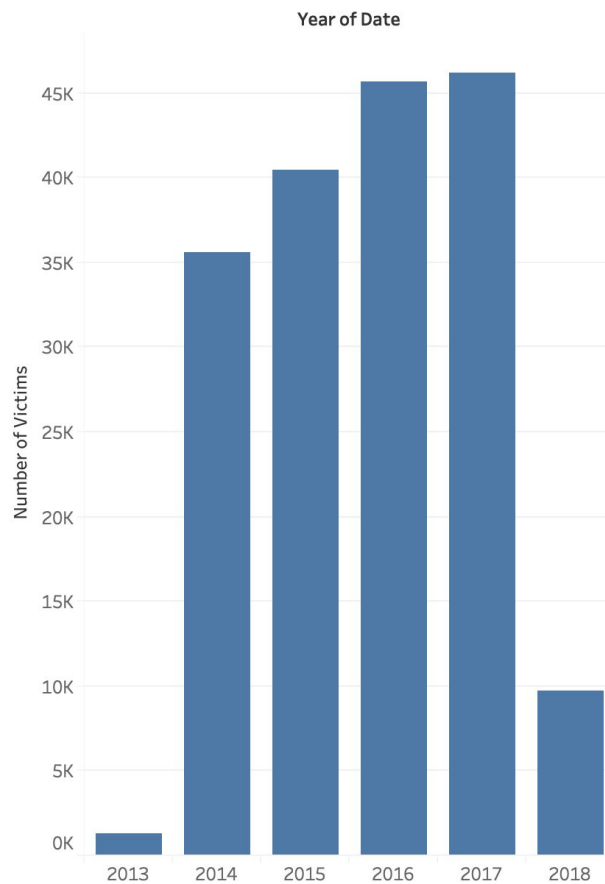
Proxy Task: We analyze the number of victims (killed and injured) for the incidents and check the effect by comparing the sum of victims for all incidents involving each gun type.

Proxy Value: We can visualize the effect of gun types on the number of victims by getting the top 10 for each incident involving that gun type and comparing it for each gun type.

Data Analysis

1) What is the trend in Gun violence incidents in US over time?

People effected by Gun Violence over the years



Sum of Total Peoples Infected for each Date Year.

- The above bar chart shows the number of people injured or killed over the years
- Since 2014, total firearm injuries are up by nearly 50 percent
- Since the dataset contains only half of 2018 incidents, the number of victims is low.

2) Which are the most serious gun violence incidents known so far?

Most serious gun violence incidents

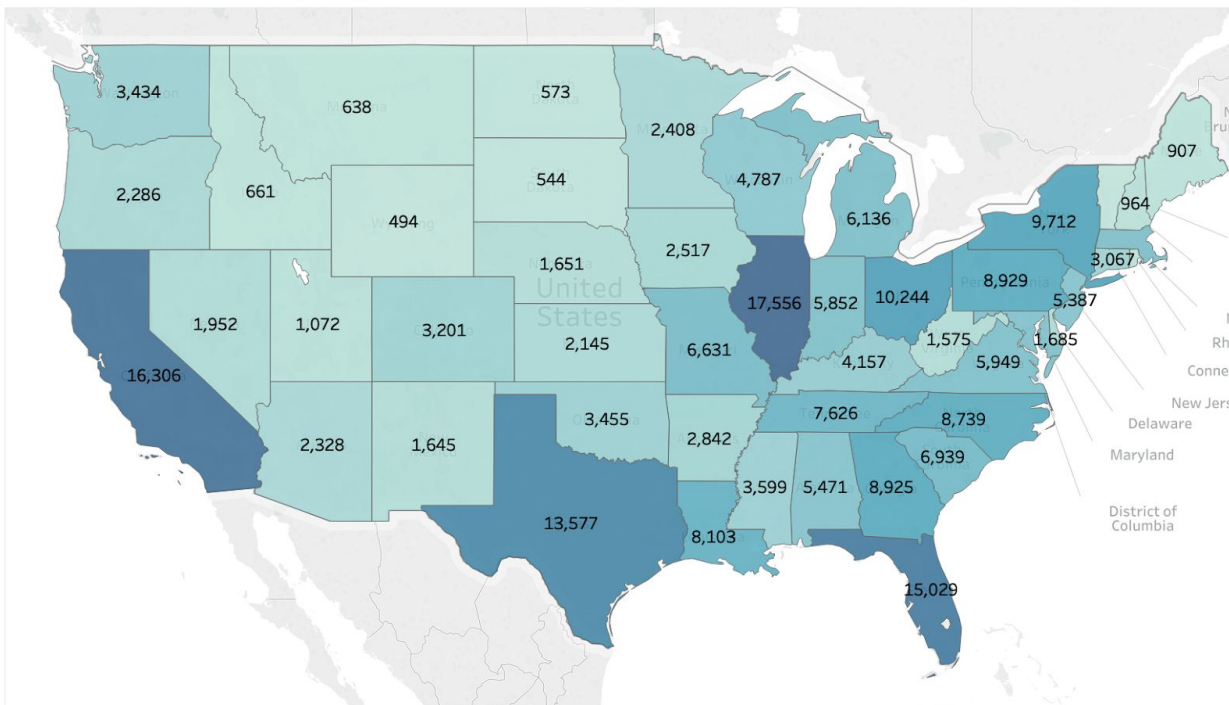
Day of Date	City Or County	Address	Total Peoples Infected
May 12, 2013	New Orleans	Frenchmen Street	19
April 2, 2014	Fort Hood	Motor Pool Road and Tank..	20
May 17, 2015	Waco	4671 S Jack Kultgen Fwy	27
October 1, 2015	Roseburg	1140 Umpqua College Rd	19
December 2, 2015	San Bernardino	1365 South Waterman Av..	35
June 12, 2016	Orlando	1912 S Orange Avenue	103
July 25, 2016	Fort Myers	3580 Evans Ave	21
July 1, 2017	Little Rock	220 W 6th St	25
November 5, 2017	Sutherland Springs	216 4th St	47
February 14, 2018	Pompano Beach (Parkland)	5901 Pine Island Rd	34

Sum of Total Peoples Infected broken down by Date Day, City Or County, Incident Id and Address. Color shows sum of Total Peoples Infected. The marks are labeled by sum of Total Peoples Infected. The view is filtered on Incident Id, which keeps 10 of 239,677 members.

- We measure the seriousness of an incident by calculating the number of victims in that incident.
- The above table shows the top 10 incidents that occurred over the years 2013-2018 based on the maximum number of victims in those incidents.
- The incident that occurred on June 12, 2016 in Orlando had total 103 people injured or killed which is the highest according to our dataset.

3.a) In which region is gun violence most prevalent ?

Regions Most Prevalent to Gun Violence



Top 10

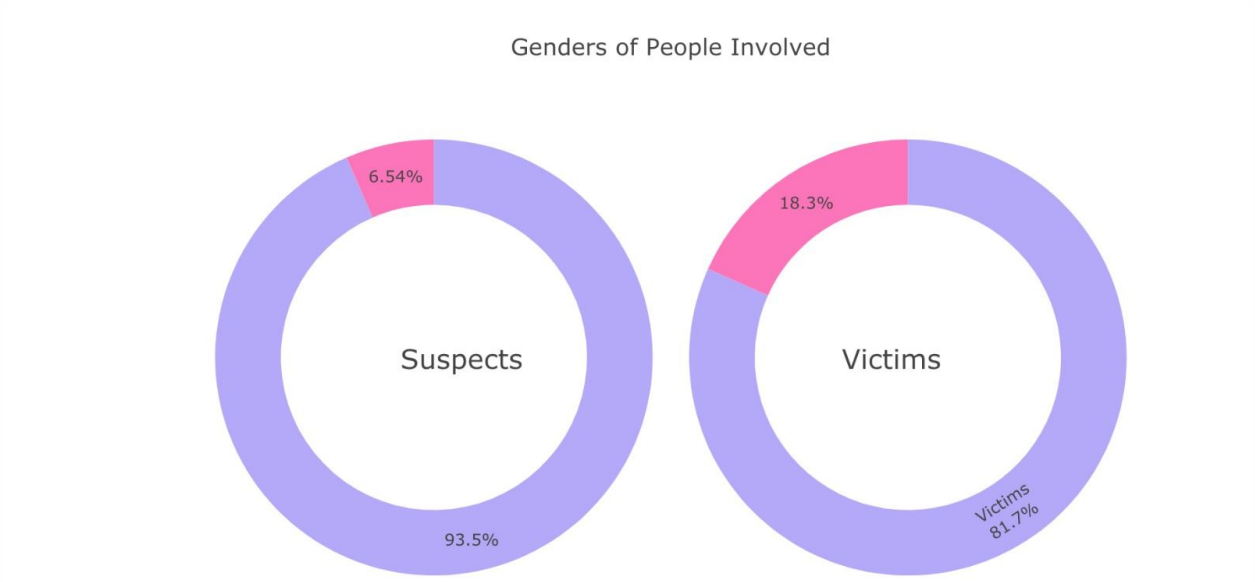
State	
Illinois	17,556
California	16,306
Florida	15,029
Texas	13,577
Ohio	10,244
New York	9,712
Pennsylvania	8,929
Georgia	8,925
North Carolina	8,739
Louisiana	8,103

Guns are expected to surpass car crashes for the number of American deaths caused in 2015. In 2013, there were 33636 Americans killed by guns versus 337832 fatal crashes. With a value of 17,556 its Illinois which had the most number of recorded incidents.

3.b) Which region is least gun violence prevalent ?

With a recorded 494 incidents its wyoming.

4) Which age group is involved the most in gun violence incidents?



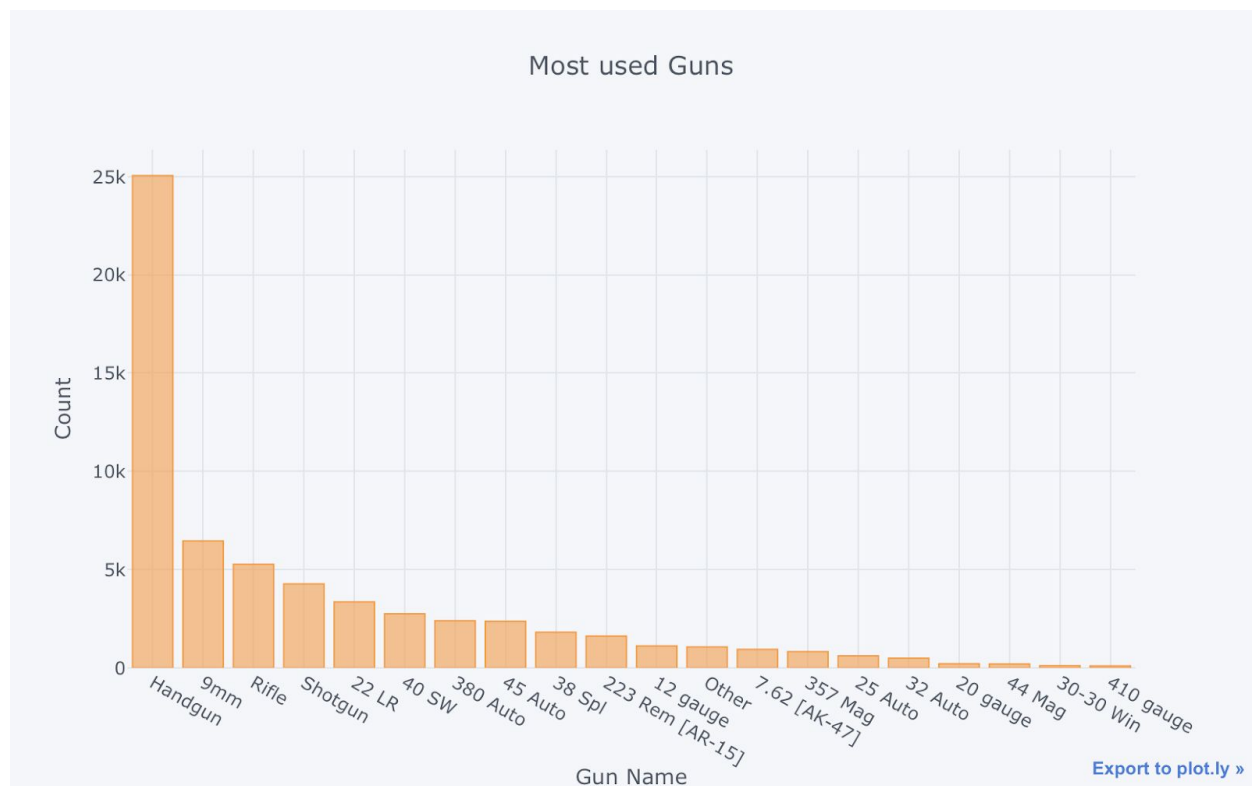
- Data show age-adjusted deaths due to firearms per 100,000 population by gender. These figures are age-adjusted to the total U.S. population in 2000. Since death rates are affected by the population composition of a given area, age-adjusted death rates should be used for comparisons between areas because they control for differences in population composition
- From the chart we can see that, 93.5 % of the suspects were males.
- And 81.7% males were victims.

5) Which venue types are targeted the most in gun violence?



- The word cloud above uses the location description and shows the keywords that occur most in our dataset.
- Most common venue types are Apartment, High School, Park and Clubs.

7) Does the gun type have any effect on the number of injured or fatalities in the incident?

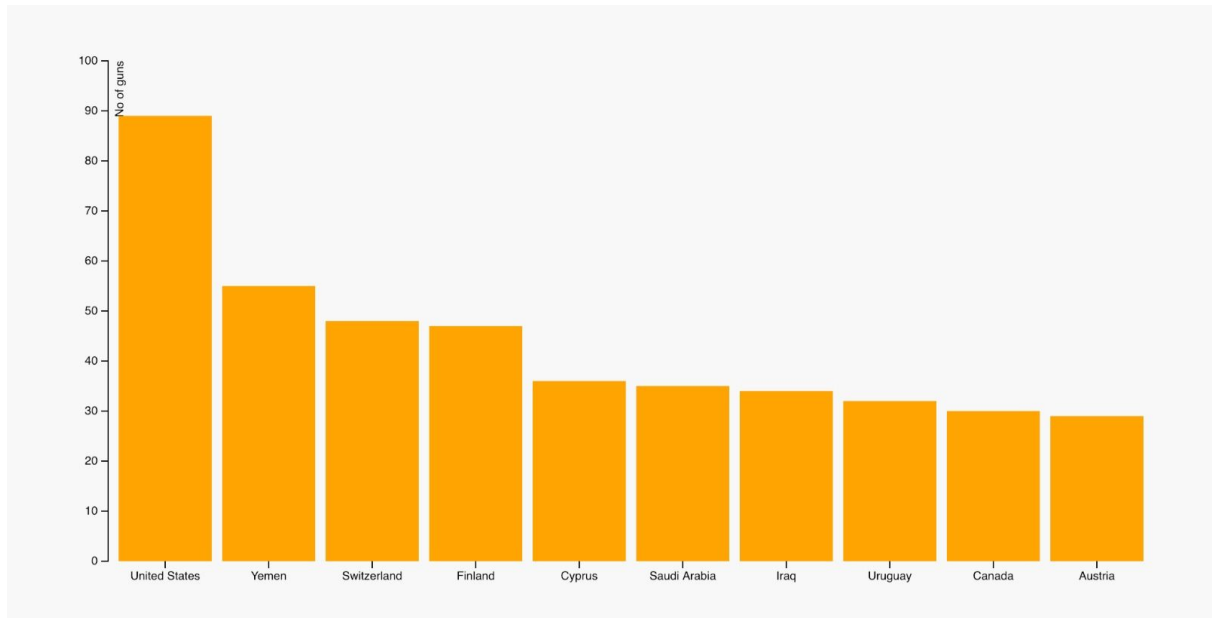


- The above bar chart shows the type of gun used the most in gun attacks over the years 2013-2018.
- Handgun was the most used weapon followed by the 9mm and Rifle.

Sketches

For story board we implemented the following graphs other than those mentioned in the Data Analysis section:

1. Who owns the World's gun?



Here we have visualized the number of guns owned by civilians of each country and showed top 10 countries owning the maximum number of guns on the bar chart. We see America owns the maximum number of guns followed by Yemen and other countries.

Implementation

Github Repository Link: https://github.com/Sneha2302/Info_viz_project

Demo Page link: <https://nyu-vis-fall2018.github.io/Analysis-of-Gun-Violence-in-America/>