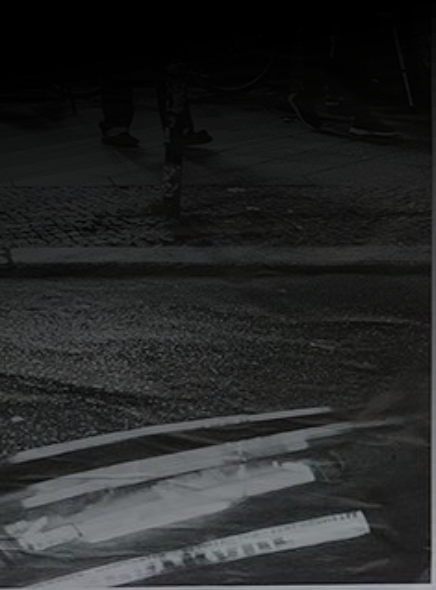


The Truth Behind 「Deadly American Police Force」

Data Visualization Group Project

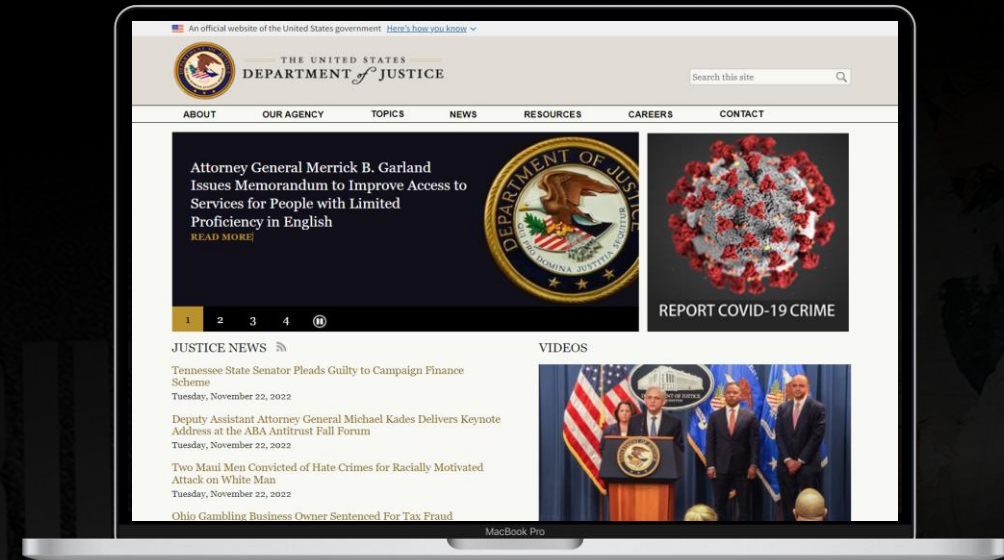
■ Background

- As the 21st Century continues, police abuse of violence has gradually become an increasingly serious and controversial social problem in the United States.
- According to official statistics, about **100 police officers** have been charged with homicide for using deadly force since 2005. Under the shadow of several influential current social incidents, the common stereotypes of 'deadly police violence' in the US appear to be solidly set.



Analytical Goal

- How much of these stereotypes of American domestic law enforcement departments are real?
- Is US police violence truly unsettling fatal and biased as widely and commonly believed?
- In this project, we are aiming to discover and reflect the reality with our efforts.
- We hope that our research and visualization of this dataset will serve as an objective source for thoughtful, fact-based reflection and analysis of this controversial issue.



Import and Analysis The Dataset



Dataset : police_killings_MPV.csv

23

Dimensions

8427

Deaths

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8427 entries, 0 to 8426
Data columns (total 23 columns):
#   Column
---  ---
0    Victim's age
1    Victim's gender
2    Victim's race
3    Date of Incident (month/day/year)
4    City
5    Agency responsible for death
6    State
7    Zipcode
8    Country
9    Cause of death
10   A brief description of the circumstances surrounding the death
11   Official disposition of death (justified or other)
12   Criminal Charges?
13   Symptoms of mental illness?
14   Alleged Weapon (Source: WaPo and Review of Cases Not Included in WaPo Database)
15   Alleged Threat Level (Source: WaPo)
16   Fleeing
17   Off-Duty Killing?
18   Geography (via Trulia methodology based on zipcode population density: http://tedkoelke.com/wp-content/uploads/2015/05/full-CTA-urban-suburban-rural-classification.xlsx)
19   Year
20   Weapon
21   Geography
22   Description
dtypes: float64(1), object(22)
memory usage: 1.5+ MB
```

	Non-Null Count	Dtype
0	8427 non-null	object
1	8415 non-null	object
2	8427 non-null	object
3	8427 non-null	object
4	8421 non-null	object
5	8412 non-null	object
6	8427 non-null	object
7	3291 non-null	float64
8	8413 non-null	object
9	8427 non-null	object
10	8410 non-null	object
11	8416 non-null	object
12	8427 non-null	object
13	8418 non-null	object
14	8427 non-null	object
15	5990 non-null	object
16	5546 non-null	object
17	239 non-null	object
18	8411 non-null	object
19	8427 non-null	object
20	8427 non-null	object
21	8411 non-null	object
22	8410 non-null	object

Data Types



•From incident's basic properties' perspective, this dataset contains 11 different aspects, including date of incident\city\state\zipcode\county\cause of death\geography\year\description\brief description.



•From victim's perspective, this dataset contains 8 different aspects, including age\race\gender\symptoms or mental illness\alleged weapon held\alleged threat level\fleeing or not.



•From police departments' perspective, this dataset contains 4 different aspects, including agency responsible for death\off-duty-killing\criminal charges\official disposition.

■ General Summary of Police Fatalities

1-1 Police Fatalities Counts by Year



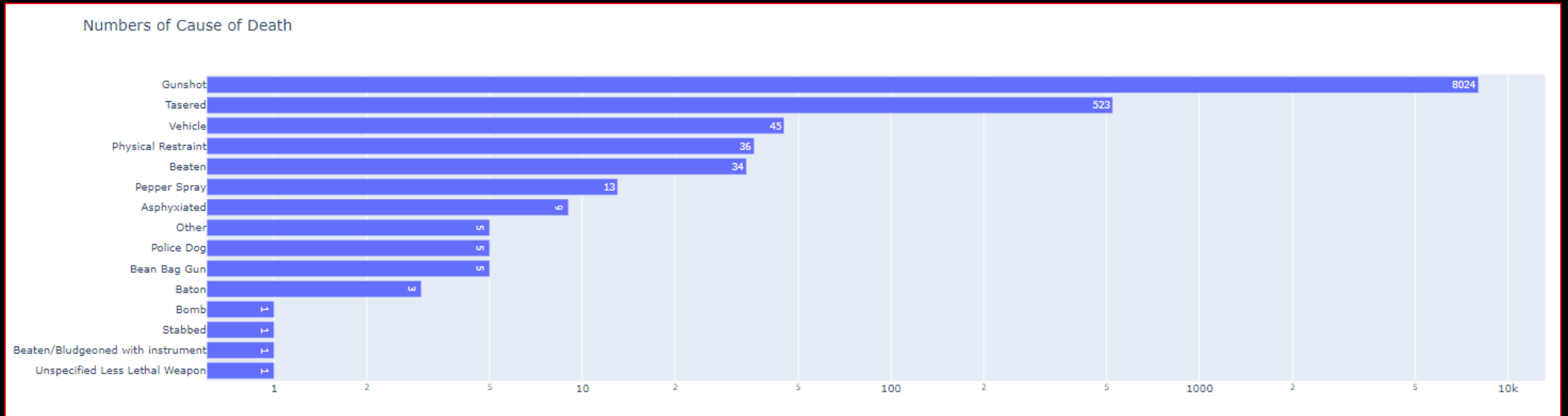
plotly | Graphing Libraries

■ Analytical Conclusion:

- Each year's figure presented an almost identical result of around 1100 deaths per year. 2020's figure is relatively low because this dataset's record reaches no further than Sept 2020.
- Conclusion can be drawn that police fatalities are staying in a relatively stable situation, without any sign of sudden big changes.

General Summary of Police Fatalities

1-2 Bar Chart of Cause of Death

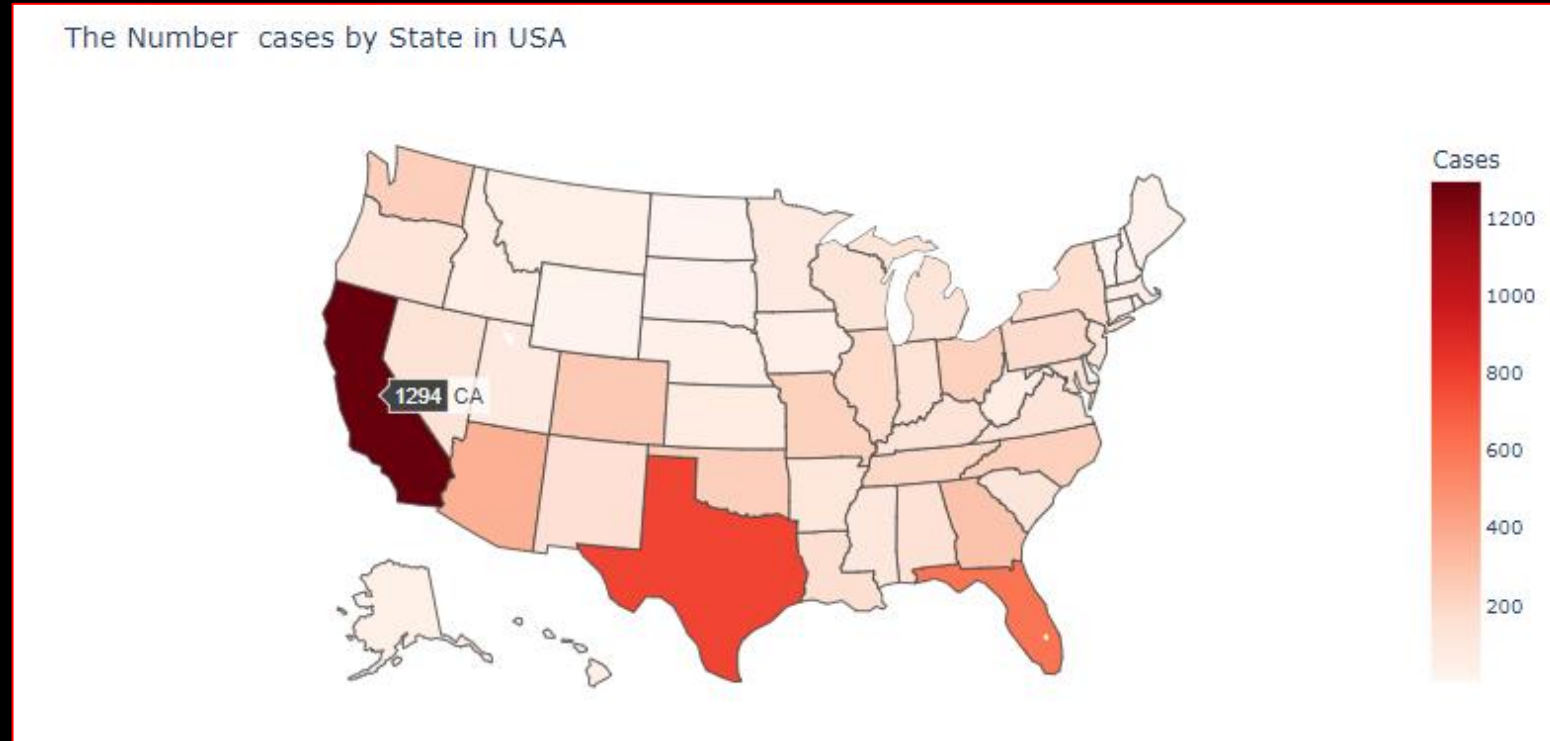


Analytical Conclusion:

- Gun shootings account for the vast majority of deaths.
- It is easy to draw the conclusion that firearms and stun guns are the weapons most used by American police in law enforcement.

Discoveries of Police Fatalities' Patterns

2-1 The Number cases by State in USA



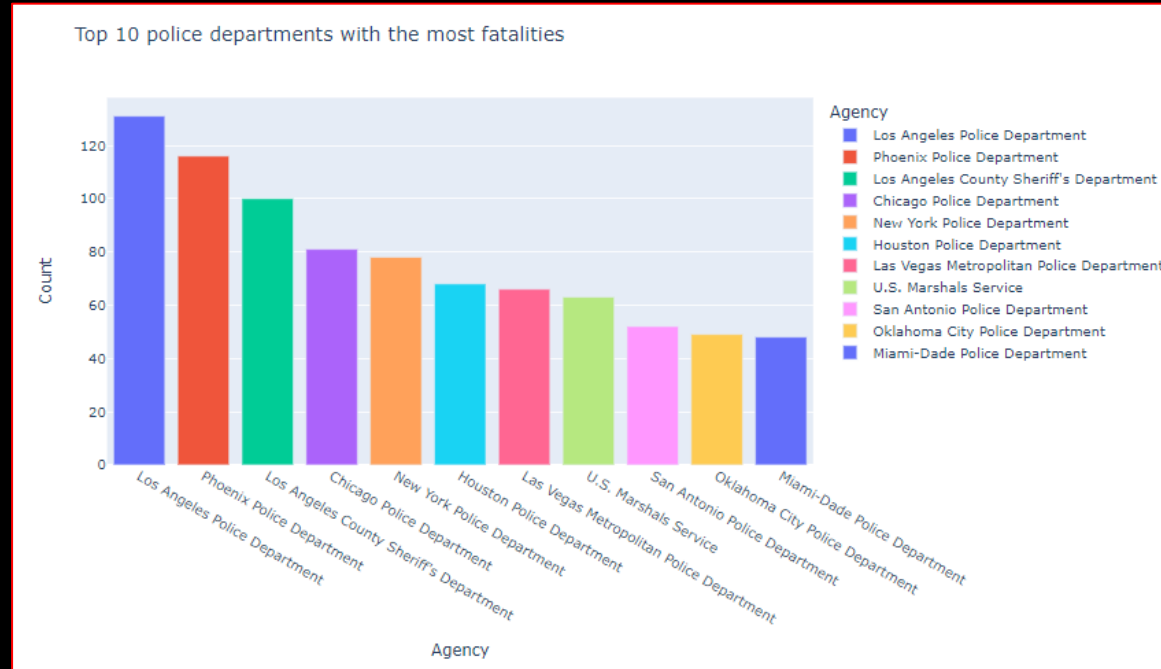
plotly | Graphing Libraries

■ Analytical Conclusion:

- The number of cases shows a trend of less in the north and more in the south, and the number is mainly concentrated in California and Texas.
- California leads nation in number of cases

Discoveries of Police Fatalities' Patterns

2-2 Top 10 police departments with the most fatalities



plotly | Graphing Libraries

■ Analytical Conclusion:

- The picture shows the top 10 police stations with the highest number of fatalities of all police departments, and the police station with the highest number of police deaths is the Los Angeles Police Department (131 deaths)
- However, the number of fatalities does not prove whether a police department has made mistakes, so further filtering of the data is needed to see the distribution of manslaughter deaths

Discoveries of Police Fatalities' Patterns

2-3 Police manslaughter rate

index	Victim's age	Victim's gender	Victim's race	Date of Incident (month/day/year)	City	Agency responsible for death	State	Zipcode	County	...	Symptoms of mental illness?	Weapon (Source: VaPo and Review of Cases Not Included in VaPo Database)	Alleged Threat Level (Source: VaPo)	Pleeing	Off-Duty Killing?	Geography (via three methodology based on zipcode population density: http://jedkolko.com/wp-content/uploads/2015/05/full-2014-urban-suburban-rural-classification.xlsx)	Year	Weapon	Geography	Description	
1	232	25	Female	White	13/06/2020	Sedalia	Pettis County Sheriff's Office	MO	65301.0	Pettis	...	No	no object	other	Not fleeing	NaN	Suburban	2020	no object	Suburban	Around 1 p.m., deputy pulled over woman driving
2	282	22	Female	White	28/05/2020	Columbus	Columbus Police Department	OH	43215.0	Franklin	...	No	no object	other	NaN	NaN	Urban	2020	no object	Urban	Sarah Grossman was reportedly tear gassed during protest
3	303	46	Male	Black	25/05/2020	Minneapolis	Minneapolis Police Department	MIN	55407.0	Hennepin	...	No	no object	other	NaN	NaN	Urban	2020	no object	Urban	Police responded to a call from a grocery store
4	311	28	Male	Black	23/05/2020	Bass River	New Jersey State Police	NJ	8087.0	Burlington	...	No	no object	other	Not fleeing	NaN	Suburban	2020	no object	Suburban	Maurice Gordon was shot and killed by a state trooper
5	345	25	Male	White	12/05/2020	Plainedge	New York Police Department	NY	11735.0	Nassau	...	No	no object	other	NaN	Off-duty	Suburban	2020	no object	Suburban	A fight broke out on a wooded path involving five people
...
149	6171	35	Male	Hispanic	13/02/2015	Reading	Pennsylvania State Police Department	PA	19606.0	Berks	...	No	no object	other	Not fleeing	NaN	Suburban	2015	no object	Suburban	Shot by state police officer who was assisting with protest
150	6209	42	Male	White	29/01/2015	Stillwater	Stillwater Police Department	OK	74075.0	Payne	...	No	no object	other	Foot	NaN	Suburban	2015	no object	Suburban	Authorities responded to a fire at an apartment building

The number of all fatalities by police:

8427

The number of police manslaughters:

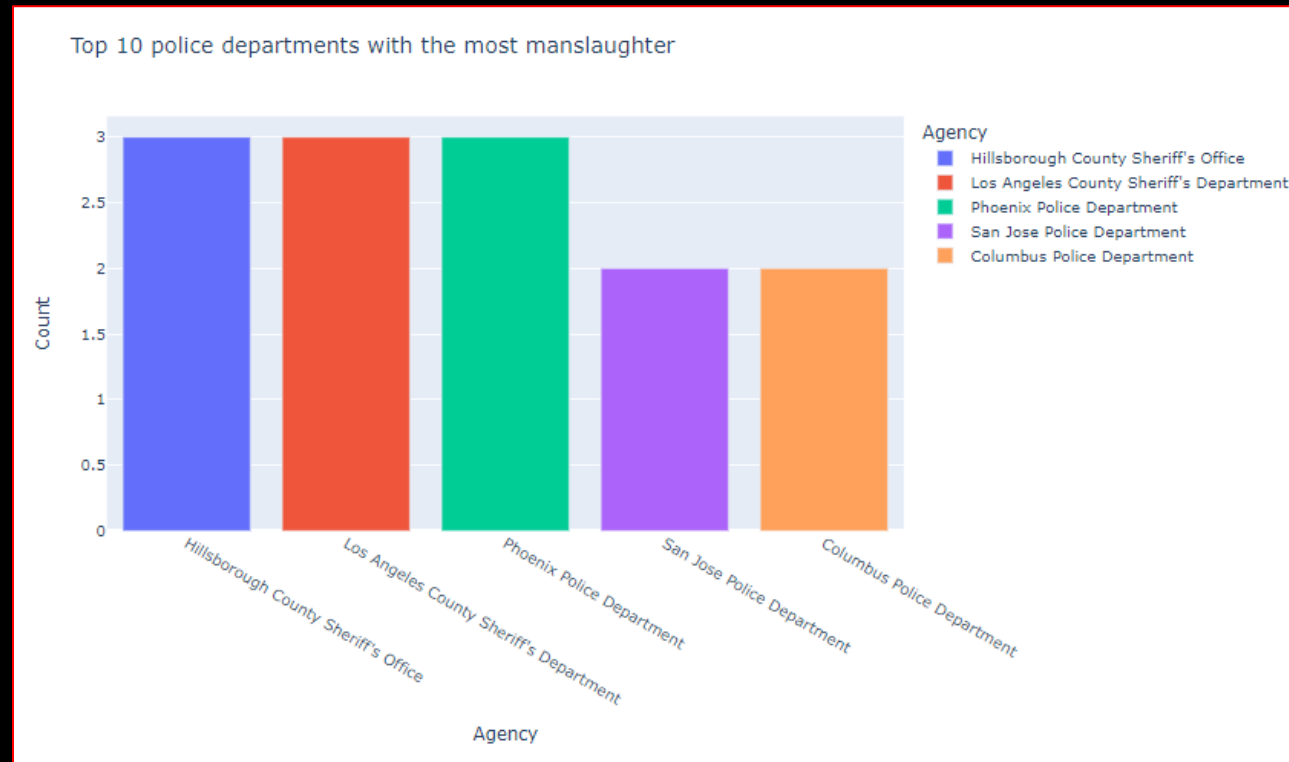
153

Police manslaughter rate percent:

1.82%

Discoveries of Police Fatalities' Patterns

2-4 Top 5 police departments with the most manslaughter



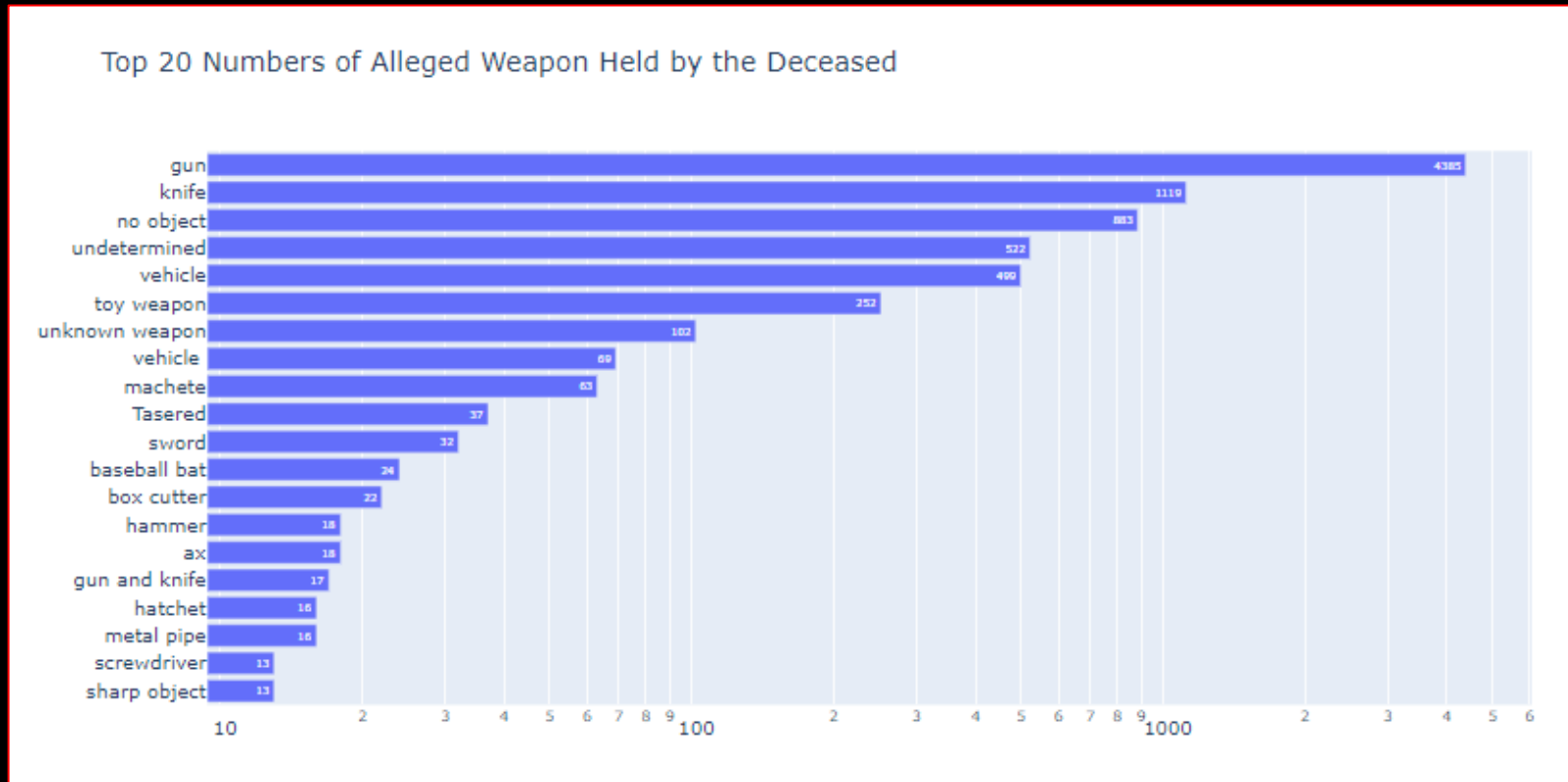
plotly | Graphing Libraries

■ Analytical Conclusion:

- Only 3 police stations with the largest number of police manslaughters
- Los Angeles Police Department with the most fatalities did not enter the top 10 in the number of manslaughters. Although the Los Angeles Police Department has the highest number of fatalities, the police error rate is relatively low.

Portraits of victims' General Characteristics

3-1 Top 20 Numbers of Alleged Weapon Held by the Deceased



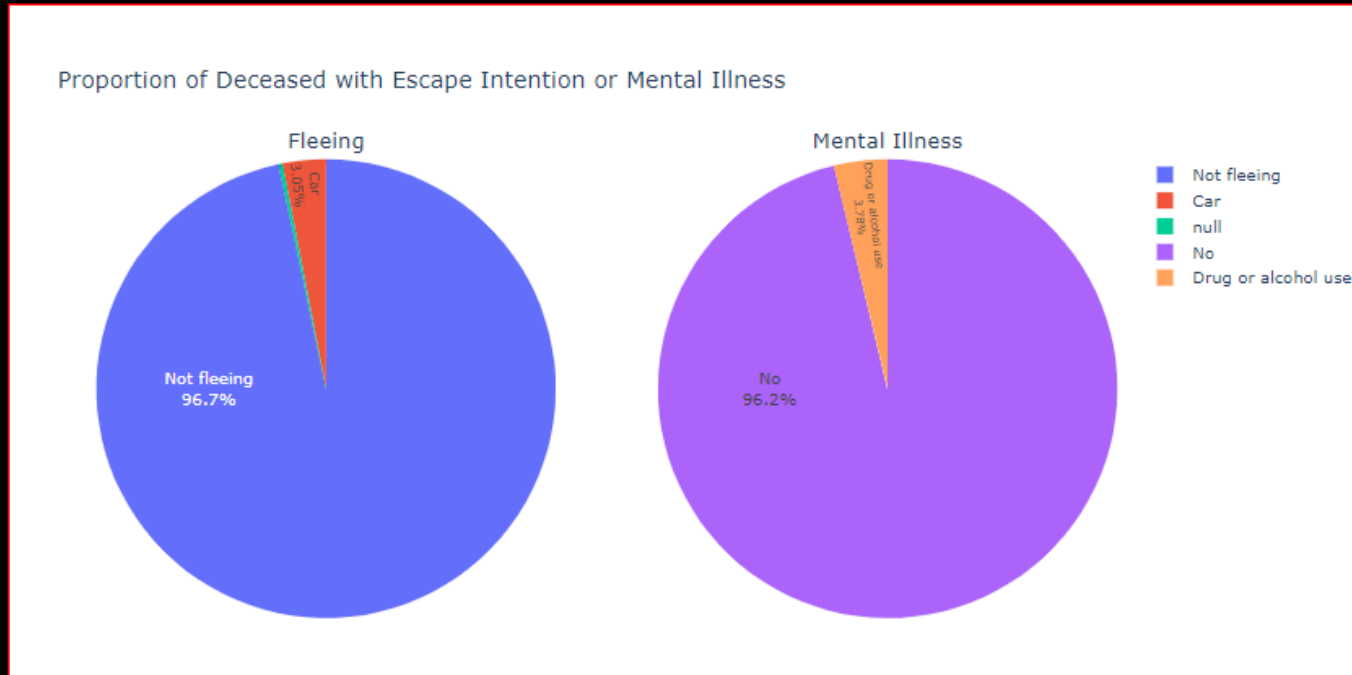
plotly | Graphing Libraries

Analytical Conclusion:

- Almost 90% of the victims showed hostility by holding weapons including guns, knives and other kinds.
- 883 victims were not holding any weapons, and 252 victims were holding toy weapon, whose intention could be misunderstood.

Portraits of victims' General Characteristics

3-2 Proportion of Deceased with Escape Intention or Mental Illness



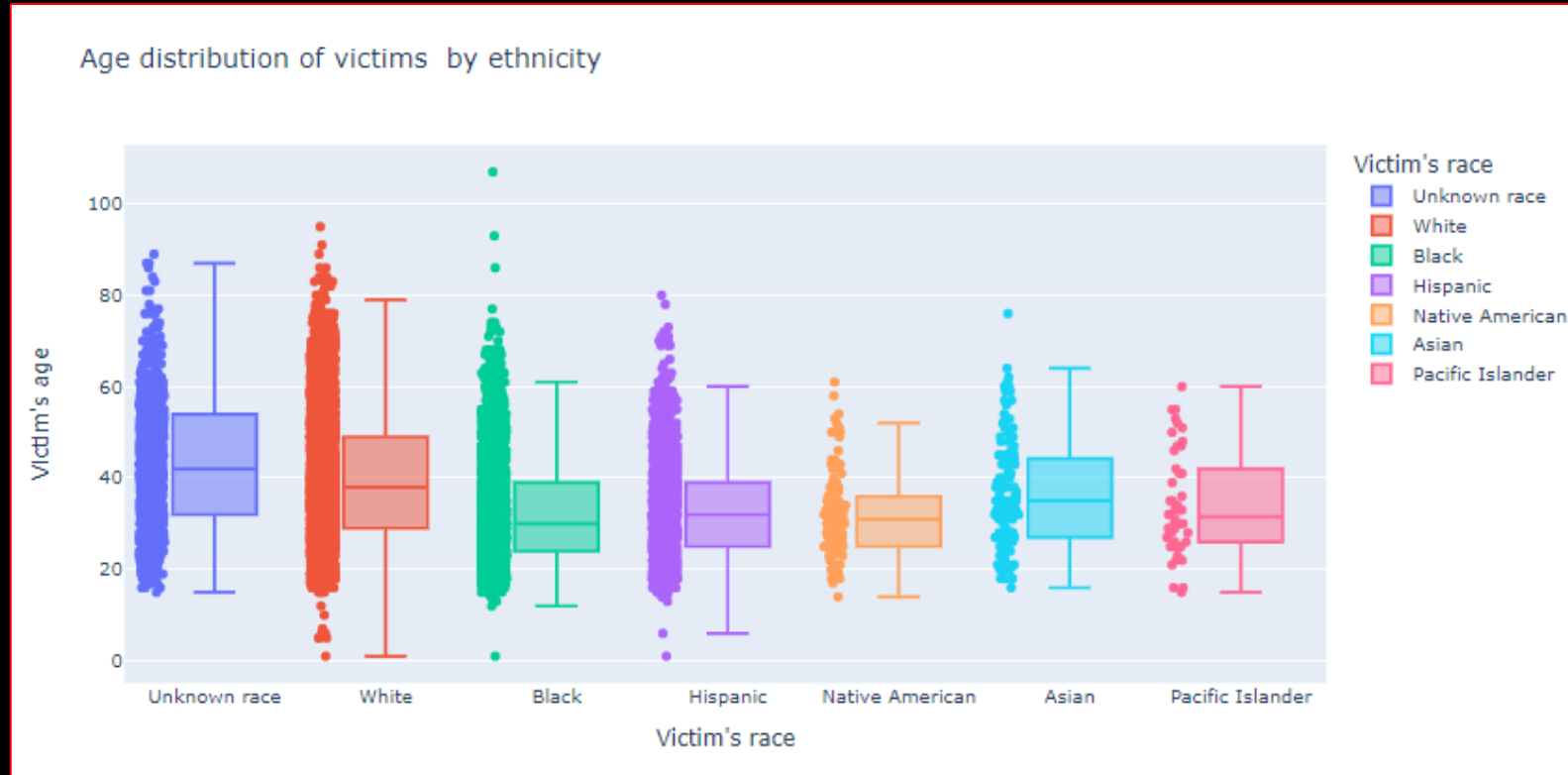
plotly | Graphing Libraries

Analytical Conclusion:

- 96.7% of victims did not take attempts to flee, 3.05% of victims attempted to flee with car, and 0.27% stayed unknown. In conclusion, most of the victims did not take actions to flee.
- From the dimension of drug/alcohol usage, we spot that 96.2% of victims were sober, 3.78% of victims were under the effect of mental disturbance. In conclusion, most of the victims were sober at that moment. In a nutshell, most of the victims did not engage in evasive behavior and were in normal states of minds

Portraits of victims' General Characteristics

3-3 The age distribution of victims



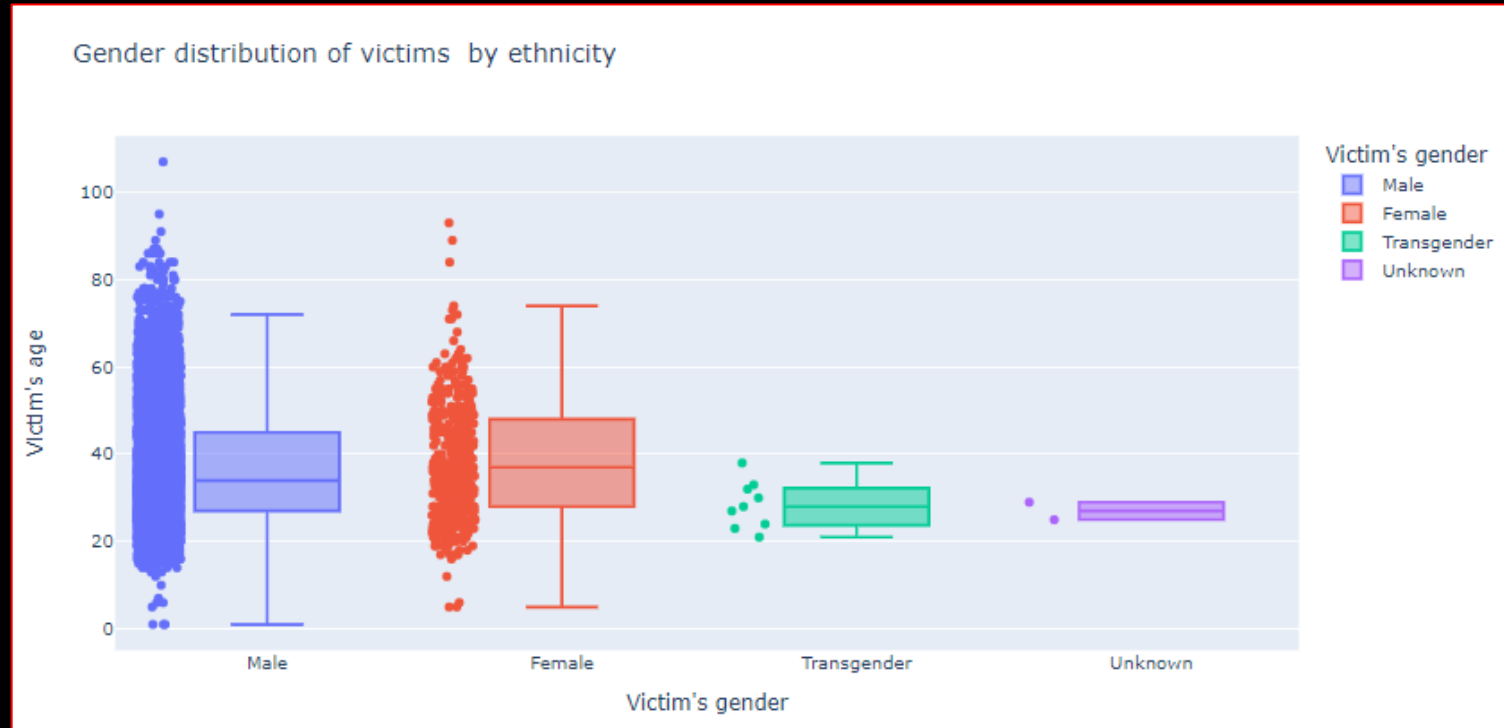
plotly | Graphing Libraries

■ Analytical Conclusion:

- The median age of the above seven races (including unknown races) is between 30–45 years old.
- The Blacks have the largest age range of victims, ranging from 1 to 107 years old, and the black group has the youngest median age of any race at just 30 years old.

Portraits of victims' General Characteristics

3-4 The gender distribution of victims



plotly | Graphing Libraries

■ Analytical Conclusion:

- By dividing the age distribution of victims by the dimension of gender, we can find that the median age of the above four genders (including unknown gender) is between 25-40 years old.
- Male have the largest age range of victims, ranging from 1 to 107 years old. Moreover, it can be seen from the above figure that the male group is younger than the female group

Portraits of victims' General Characteristics

3-5 Police Fatalities Counts by Year and Race



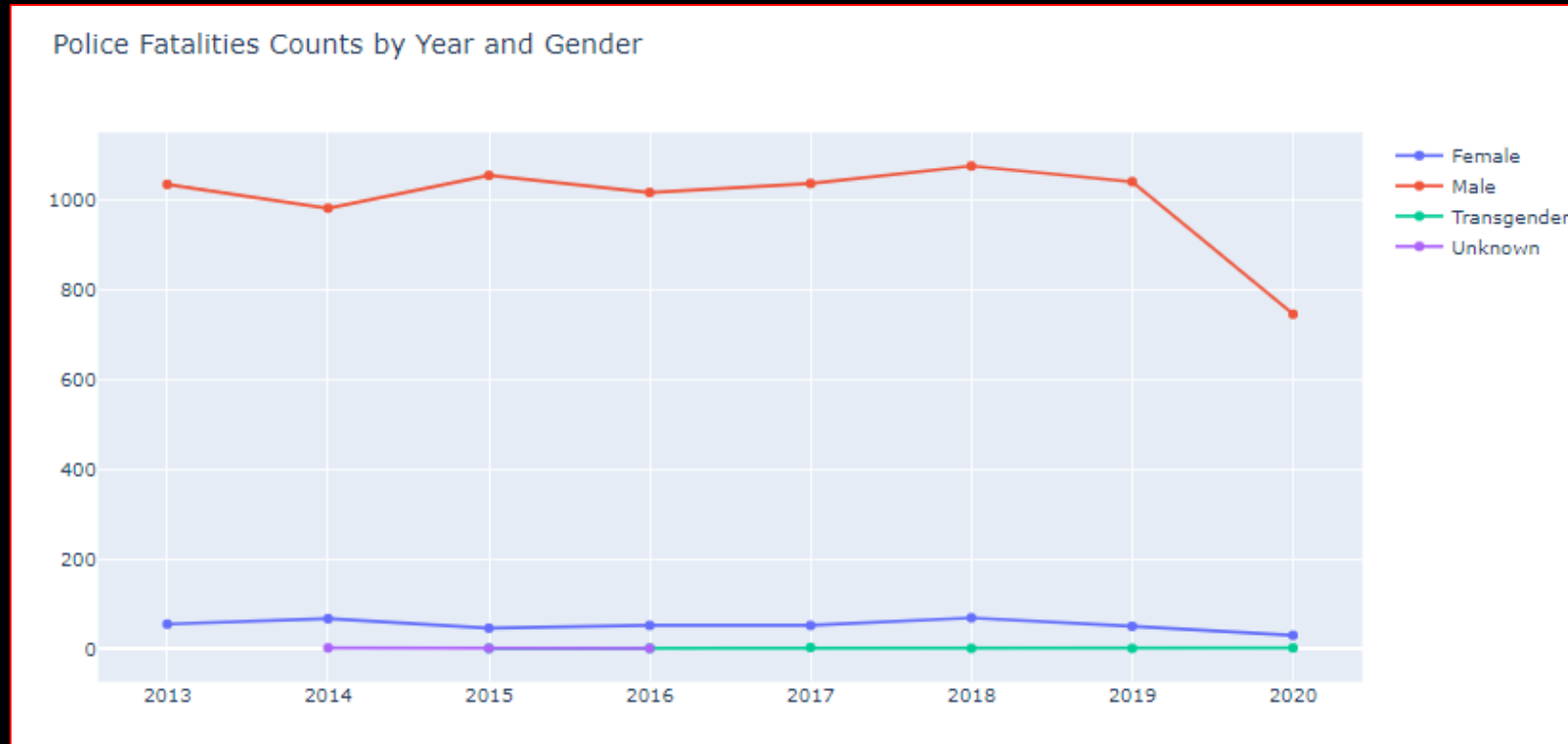
plotly | Graphing Libraries

■ Analytical Conclusion:

- Top races of victims are ranked in this order: White, Black, Hispanic, Unknown race, Asian and Pacific Islander.
- Unknown races' is ushering a steep upward turn (compared with other races), especially from 2017 to 2020.
- The White consistently top the list, but a decreasing trend are shown from 2015 to 2020.
- Black victims' numbers are relatively steady in the second place at around 300 per year.
- Hispanic victims' numbers are also showing steady trend at around 200 per year.
- Numbers of other races including Asians, Pacific Islanders and Native Americans are relatively too small to be counted.

Portraits of victims' General Characteristics

3-6 Police Fatalities Counts by Year and Gender



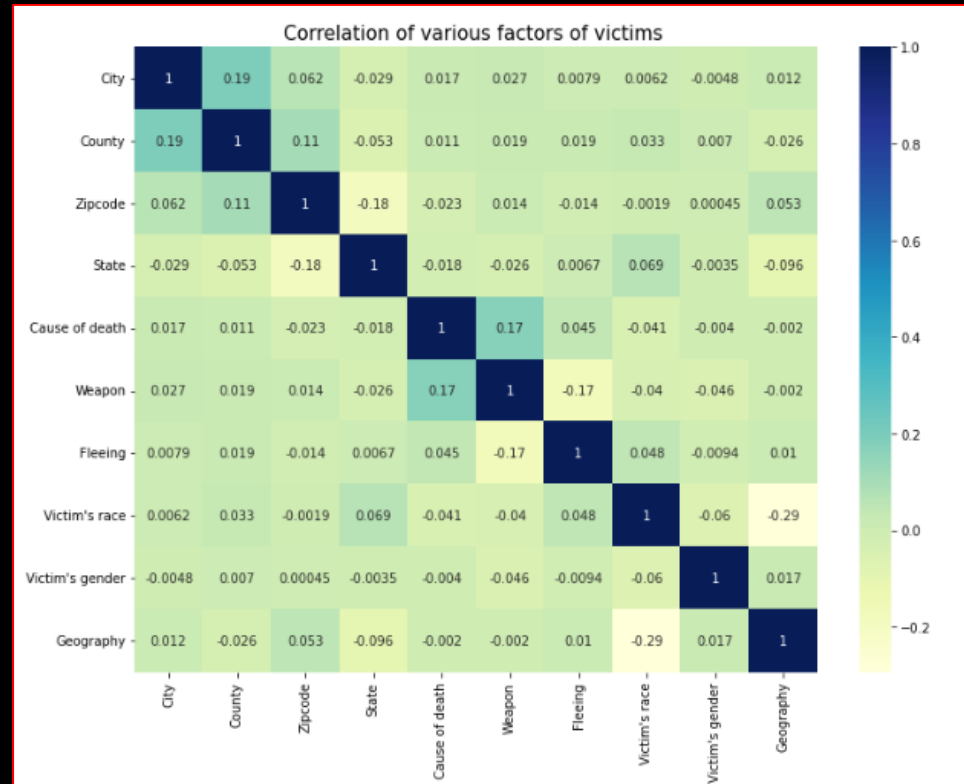
plotly | Graphing Libraries

■ Analytical Conclusion:

- The ratio of male victims to female victims has been fixed at close to 10:1 for almost all time and shows no signs of any kinds of change.
- Transgender victims are also counted and keep 1–3 fatalities per year.

Portraits of victims' General Characteristics

3-7 Correlation heatmap for other elements on police violence

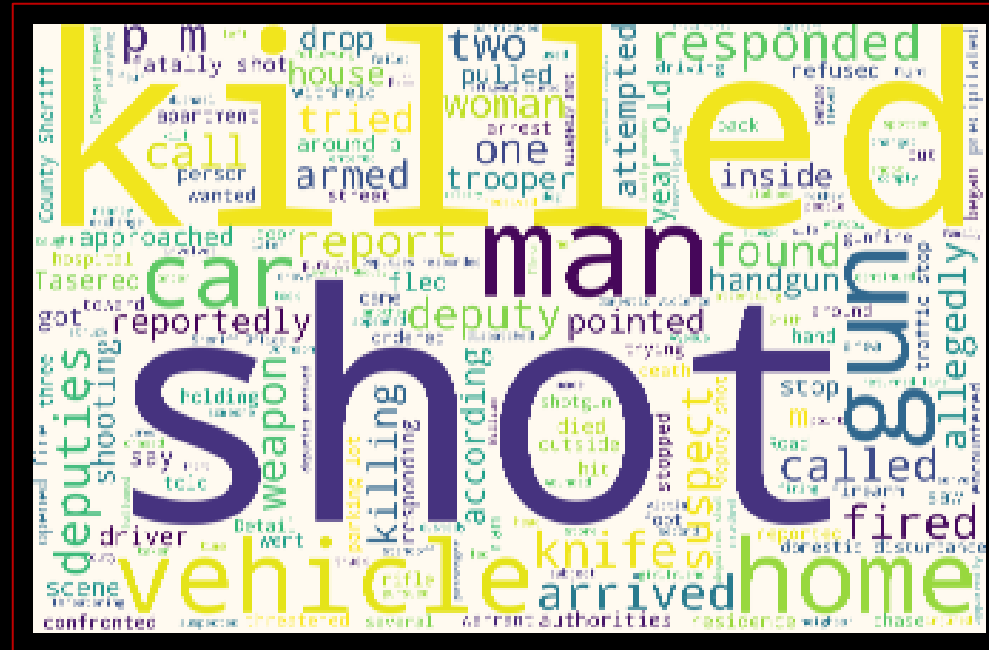


Analytical Conclusion:

- Through the correlation analysis of some elements in the table, we found that the correlation of each element is very low or even non-existent. This data shows that the police's violent law enforcement may not be treated very significantly differently because of the geographical location of the incident, the age of the victim, and the race.

■ Portraits of victims' General Characteristics

3-8 Word cloud of case details description

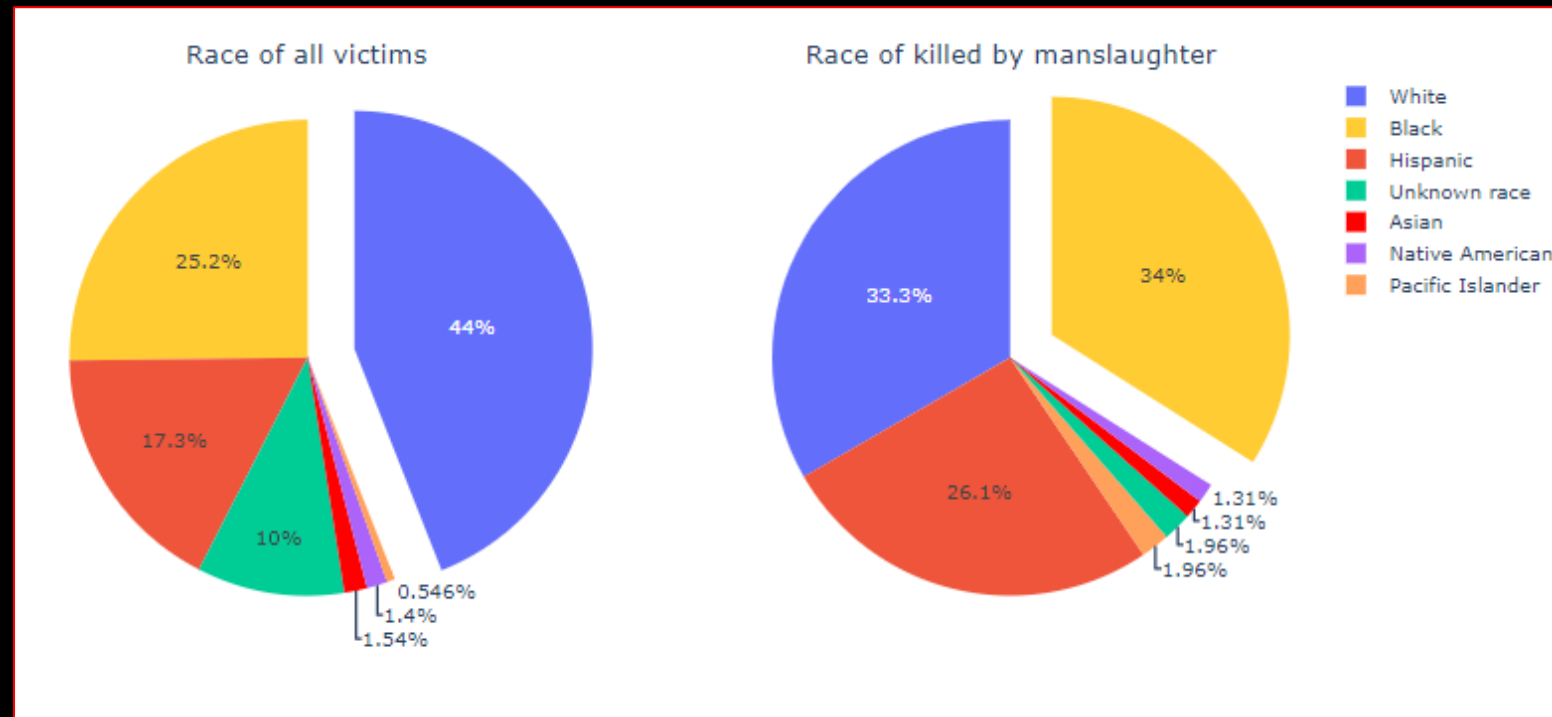


■ Analytical Conclusion:

- Through word cloud map generation, we can learn the most frequently mentioned keywords in the case introduction, such as killed, shot, home, etc.
- At the same time, the most mentioned characters are men, and the most mentioned weapons are gun, knife, etc.
- Word cloud shows the objective law of the case content

■ A More Detailed and Systematic Exploration of Racial Issues of Hot Spot

4-1 Racial Distribution of Police Manslaughter Victims Compared to Racial Distribution of Total Victims



plotly | Graphing Libraries

■ Analytical Conclusion:

- 1. Among all the victims, the death toll of black people is only half that of white people.
- Among all the people who were wrongly killed, the number of black people is the largest, but the number of white people is only one person behind.

■ Total Conclusion

Based on the database we are currently using, the research results are as follows:

- From an overall perspective, in almost all years, regardless of the dimensions of age, gender, race, etc., the overall results of the numbers and proportion of victims do not seem to be calling for any special attention. **The performance of American domestic law enforcement is basically in a steady state, without any tendency to change direction on the surface.**
- **The majority of police fatalities involved victims showing violence or attempt to strike back.** The overall manslaughter rate accounted for about 1.82% of the total. The specific value is shocking and worthy of vigilance by US domestic law enforcement agencies, but it does not reflect any deeper and broader harm; furthermore, analysis from our database did not find any strong evidence enough to support the claim that victims of certain natural characteristics or races suffer more from police manslaughter harm.
- In conclusion, based on the dataset we used, it is difficult to support the current popular stereotypes of 'brutal and biased American police department'.

The Truth Behind

「Deadly American Police Force」

Data Visualization Group Project