"Exploring the impact of socioeconomic factors on police killings in the US."

"An analytical overview of poverty, education and demographic influences on police-related deaths."

"Introduction"

Since January 1, 2015, The Washington Post has tracked every fatal police shooting in the U.S., gathering detailed information such as:

- Race, age and gender
- Armed status
- Mental health status

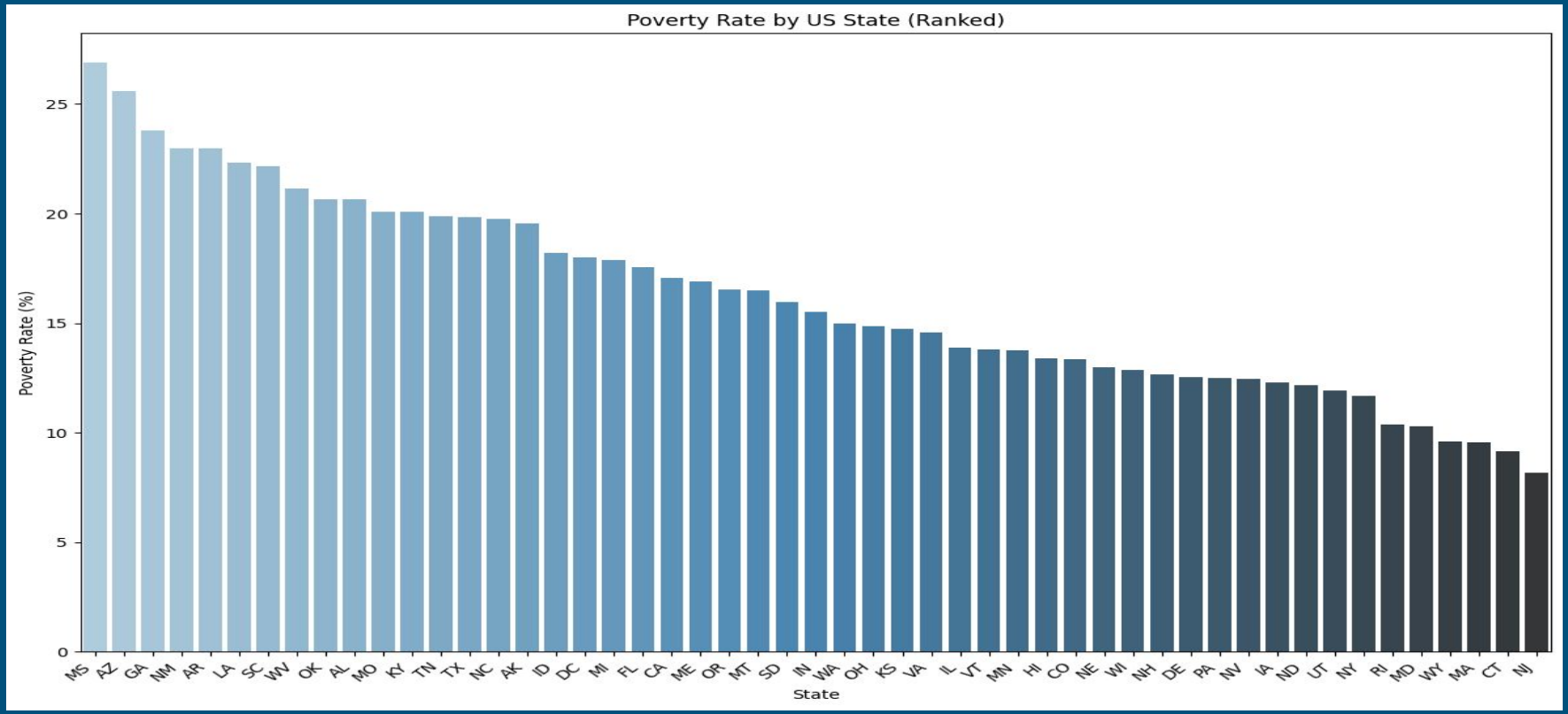
Data sources include law enforcement, news reports, social media and independent databases like "Killed by Police" and "Fatal Encounters."

Additional datasets used in this analysis:

- U.S. Census data on poverty, education, income, and racial demographics

Source: U.S. Census Bureau

Poverty rate in each US state.

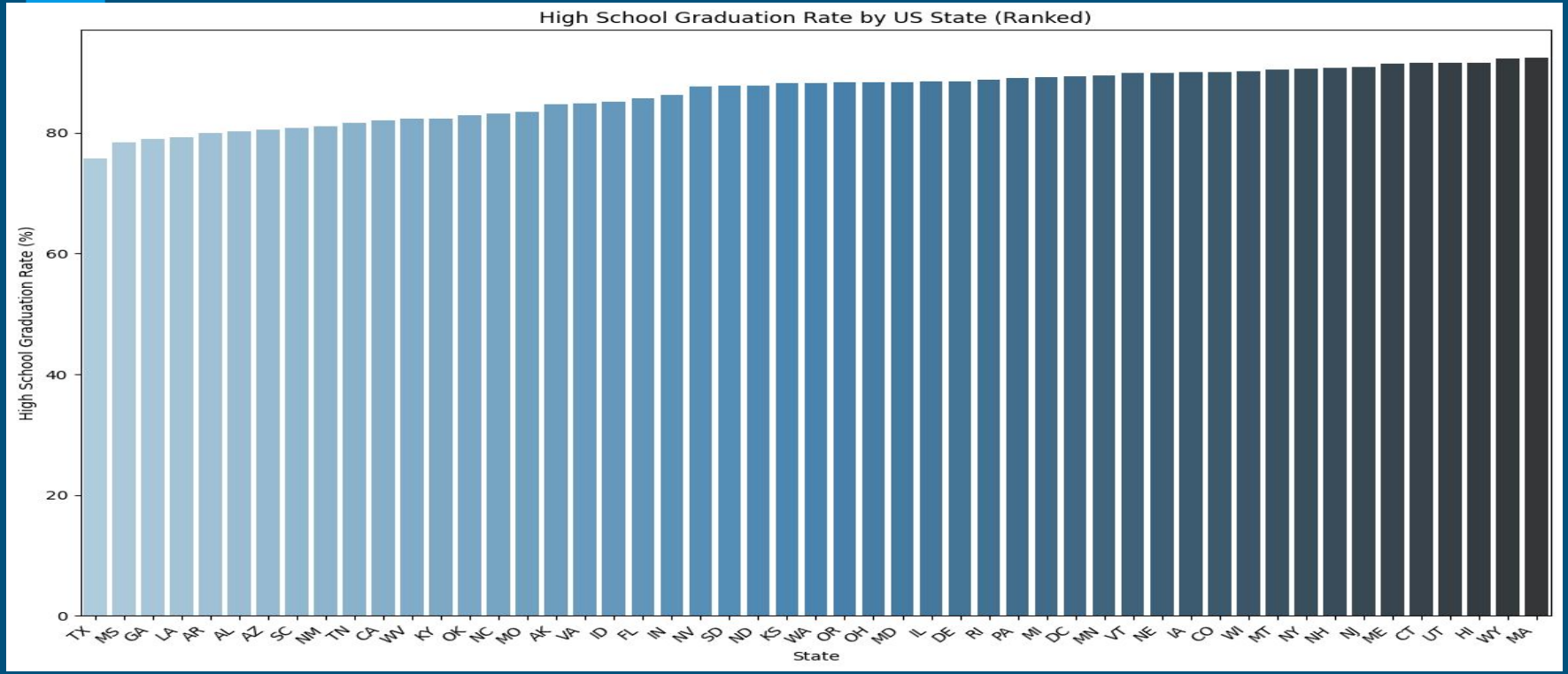


Poverty rate in each US state.

- **State with the highest poverty rate: Mississippi (MS) has the highest poverty rate, approximately 26.88%.**
- **State with the lowest poverty rate: New Jersey (NJ) has the lowest poverty rate, approximately 8.19%.**

These findings are crucial for understanding the disparities in poverty rates across different states in the United States. Mississippi's higher poverty rate may indicate challenges with economic opportunities, education, healthcare access, or other socio-economic factors prevalent in the state. Conversely, New Jersey's lower poverty rate may reflect higher income levels, robust social programs, or better economic conditions compared to other states.

High school graduation rate by US state.



High school graduation rate by US state.

Based on the analysis and visualization of the high school graduation rates across various US states, we can draw the following conclusions:

1. State with the Highest High School Graduation Rate:

- Massachusetts (MA) has the highest high school graduation rate at 92.41%. This indicates that Massachusetts has the most successful high school education system among the states included in the analysis, as measured by the percentage of students who complete high school.

2. State with the Lowest High School Graduation Rate:

- Texas (TX) has the lowest high school graduation rate at 75.79%. This suggests that Texas faces more significant challenges in ensuring that students complete high school compared to the other states analyzed.

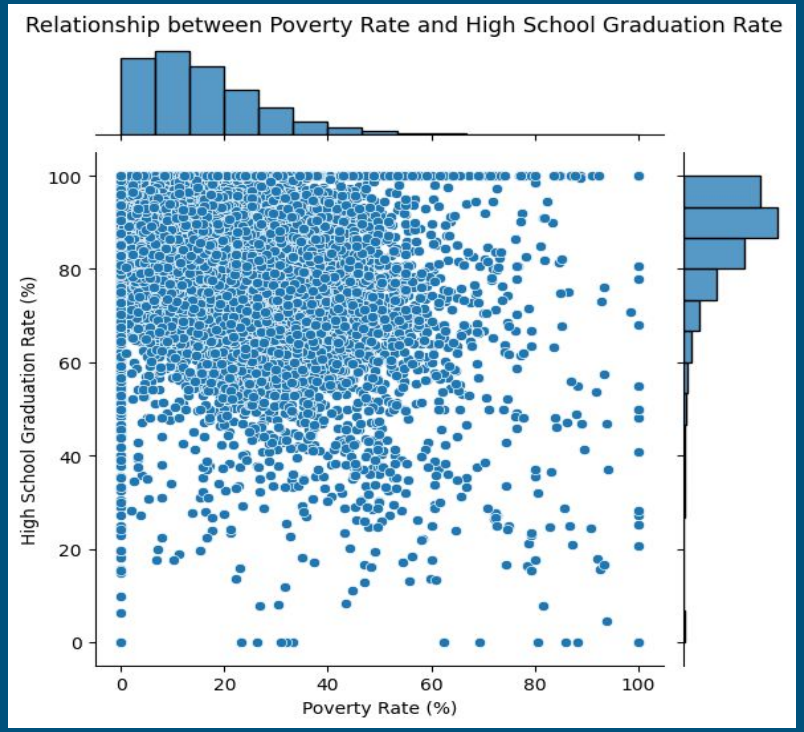
High school graduation rate by US state.

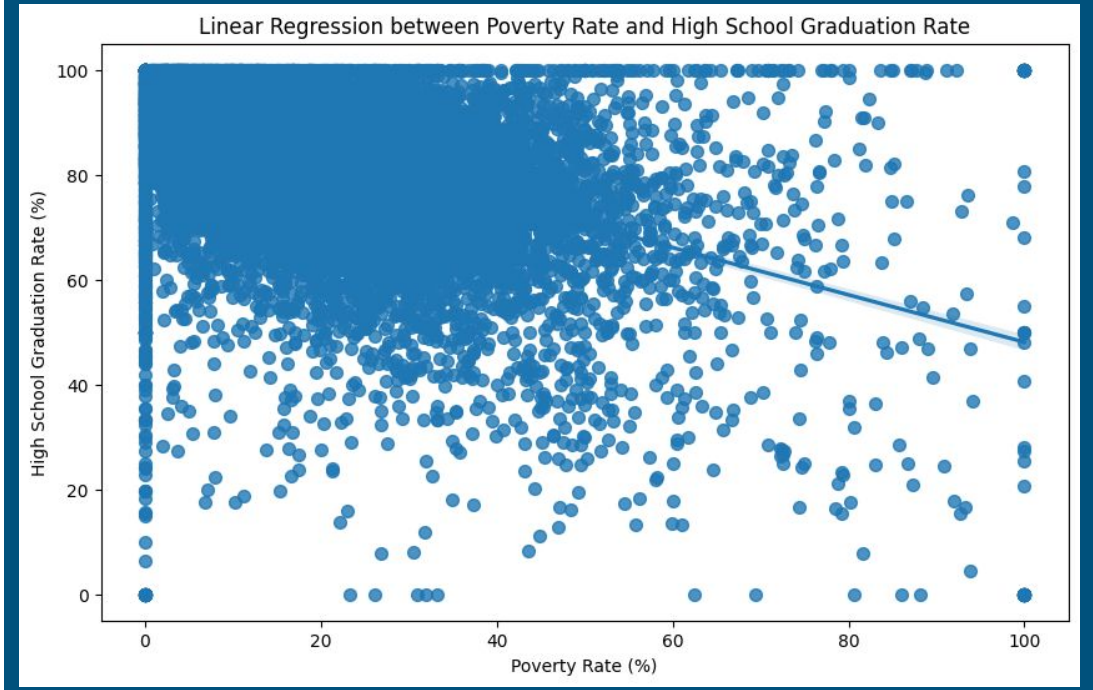
Implications:

- **Educational Policies and Interventions** - States with lower graduation rates, such as Texas, might benefit from investigating the policies and practices of states with higher graduation rates, like Massachusetts. Understanding the strategies that contribute to higher graduation rates can inform educational reforms and interventions.
- **Resource Allocation** - States with lower graduation rates may need to allocate more resources towards education, focusing on support systems, student engagement, and programs designed to prevent dropouts.
- **Further Research** - It would be beneficial to conduct further research to identify the specific factors contributing to the high graduation rates in Massachusetts. These factors could include socioeconomic conditions, educational policies, community support, and school funding.
- **Policy Makers and Educators** - Policymakers and educators can use this data to advocate for changes that address the root causes of low graduation rates. Collaborative efforts between states to share best practices could lead to overall improvements in the national education system.

Overall, the visualization and data analysis highlights the disparities in high school graduation rates across different states, providing a foundation for targeted actions to improve educational outcomes nationwide.

Relationship between poverty rates and high school graduation rates





Relationship between poverty rates and high school graduation rates

Combining the insights from both the jointplot and regplot analyses, we can conclude the following:

- Negative Correlation: There is a significant negative correlation between poverty rates and high school graduation rates. States with higher poverty rates generally have lower high school graduation rates.

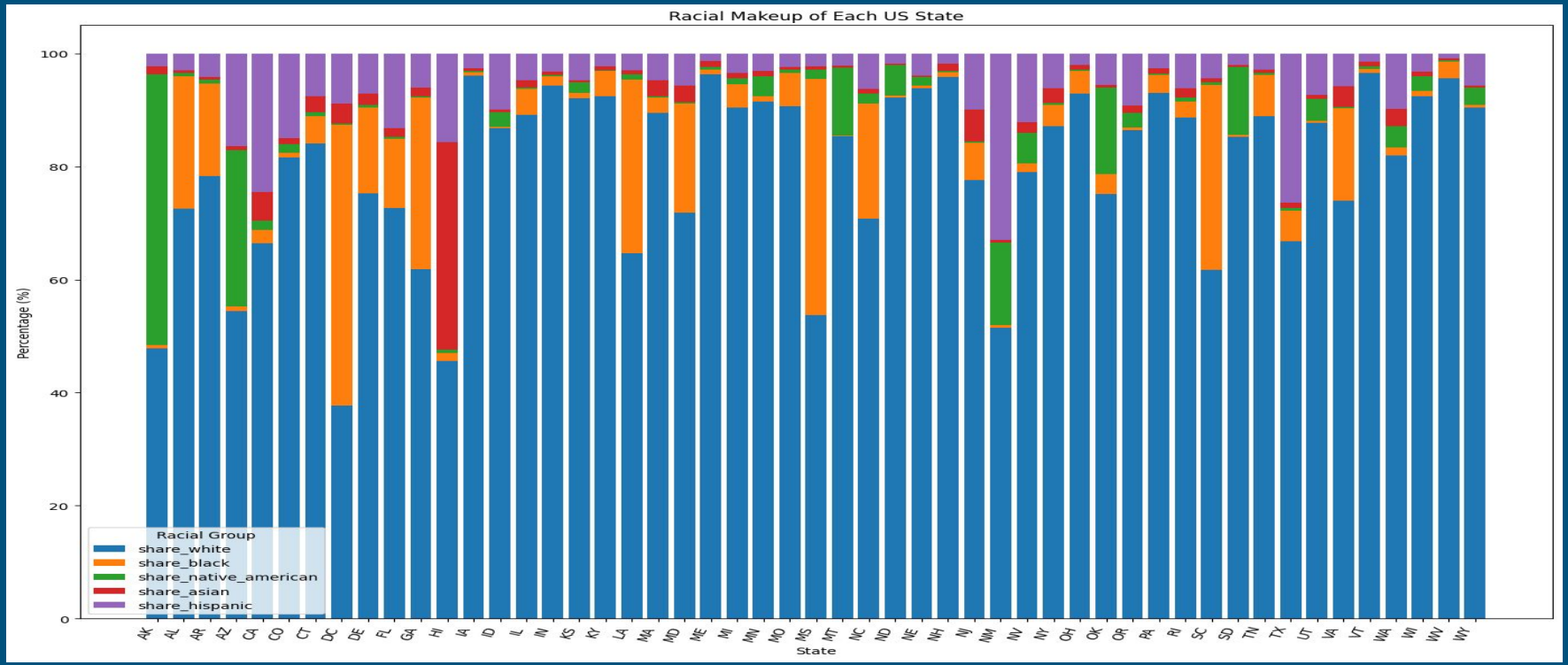
- Educational Impact: High poverty rates can be a strong indicator of educational challenges within a state. This suggests that economic factors play a crucial role in educational outcomes.

- Policy Implications: To improve high school graduation rates, it is essential for policymakers to address poverty. Providing economic support and resources to impoverished areas could help improve educational attainment.

- Further Research: It would be beneficial to explore the underlying causes of this negative correlation further. Factors such as school funding, access to educational resources, family support, and community programs might be investigated to develop more targeted interventions.

- These conclusions highlight the importance of addressing socioeconomic issues to improve educational outcomes and suggest that integrated policies focusing on both economic and educational support are necessary to foster better high school graduation rates.

Racial makeup of each US state.



Racial makeup of each US state.

The bar chart provides a clear visualization of the racial composition across different US states:

- Diversity: California shows significant racial diversity with a relatively balanced distribution among White, Hispanic, and Asian populations.

- Predominantly White States: States like Arkansas and Alabama have a higher percentage of White populations.

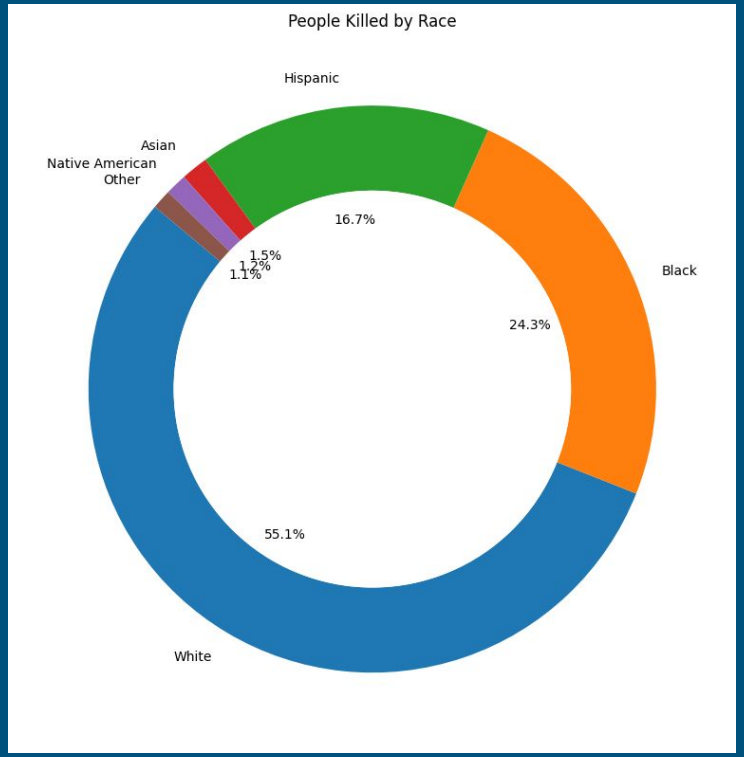
- Black Population: Alabama and Arkansas have a notable share of Black populations compared to other states.

- Native American Presence: Alaska has the highest proportion of Native American populations, reflecting the indigenous demographics of the region.

- Hispanic Population: Arizona and California have substantial Hispanic populations, indicative of their geographical and historical ties to Latin America.

This bar chart helps to understand the racial diversity across states and highlights the unique demographic characteristics of each state.

People killed by race.



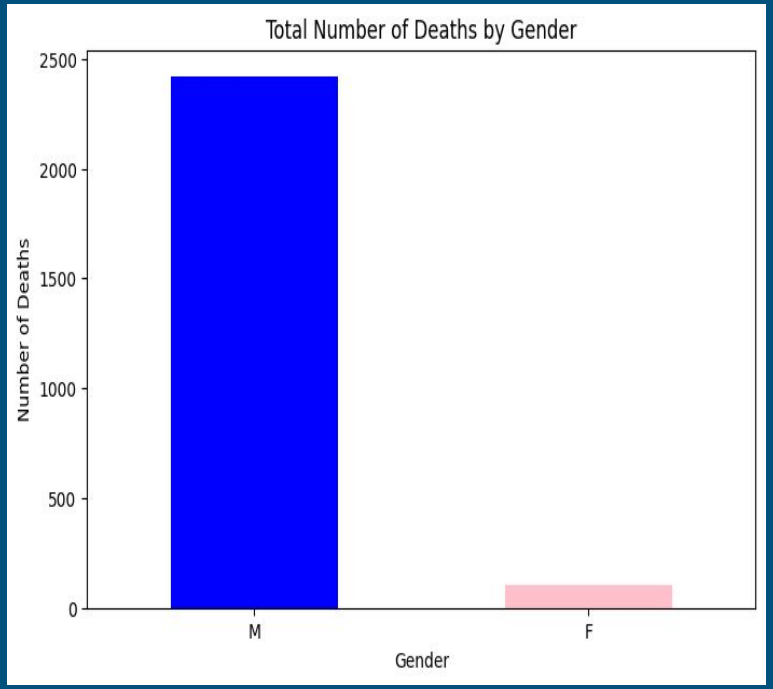
- White (55.0%): The largest proportion of fatalities are White, comprising more than half of the total. This indicates a significant majority in the racial makeup of fatalities.

- Black (24.3%): Following White, Black individuals represent a substantial portion of fatalities, though notably less than White individuals.

- Hispanic (16.7%): Hispanic individuals account for a notable proportion, indicating a significant presence among fatalities but less than both White and Black individuals.

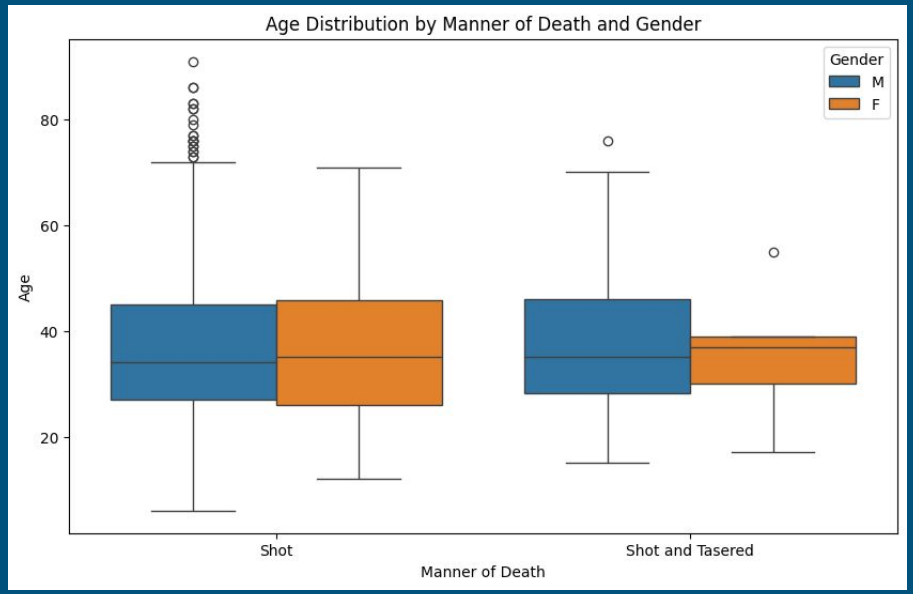
- Asian (1.5%), Native American (1.2%), and Other (1.1%): These racial groups have smaller percentages, collectively making up a relatively minor portion of fatalities compared to White, Black, and Hispanic individuals.

Comparing the total number of deaths of men and women.



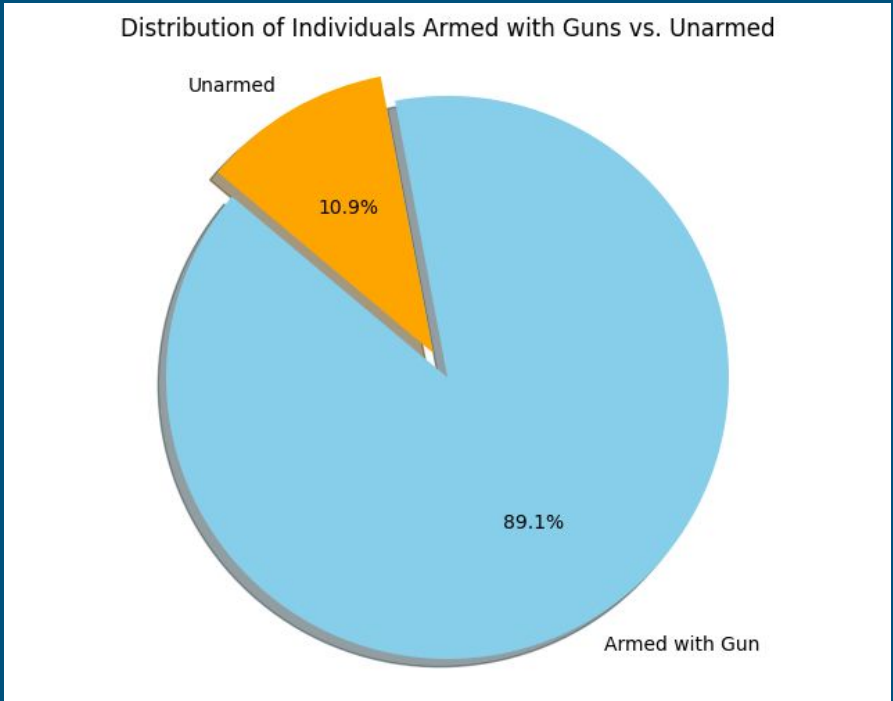
- Among the fatalities recorded, males (2,419 deaths) significantly outnumber females (107 deaths), highlighting a notable gender disparity in mortality.

Age distribution by manner of death and gender.



The age distributions vary slightly between manner of death categories and genders. Generally, males and females who were shot or shot and tasered have comparable median ages (around 35-36 years for females and 34-35 years for males). However, males tend to have a wider age range and slightly higher maximum ages compared to females in both categories.

Were people armed?



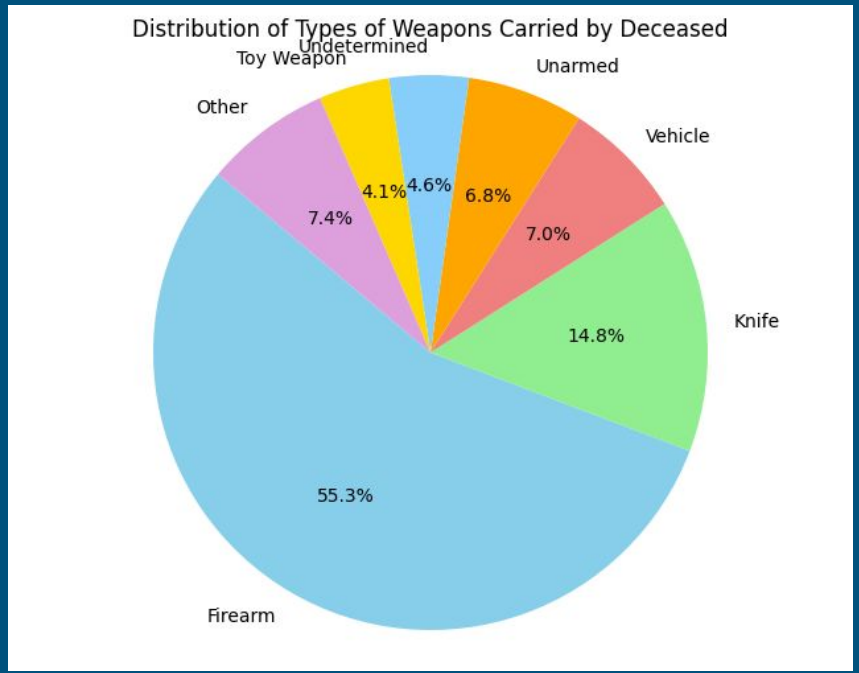
Percentage of police killings where individuals were armed:

93.23%

Number of people killed by police armed with guns: 1398

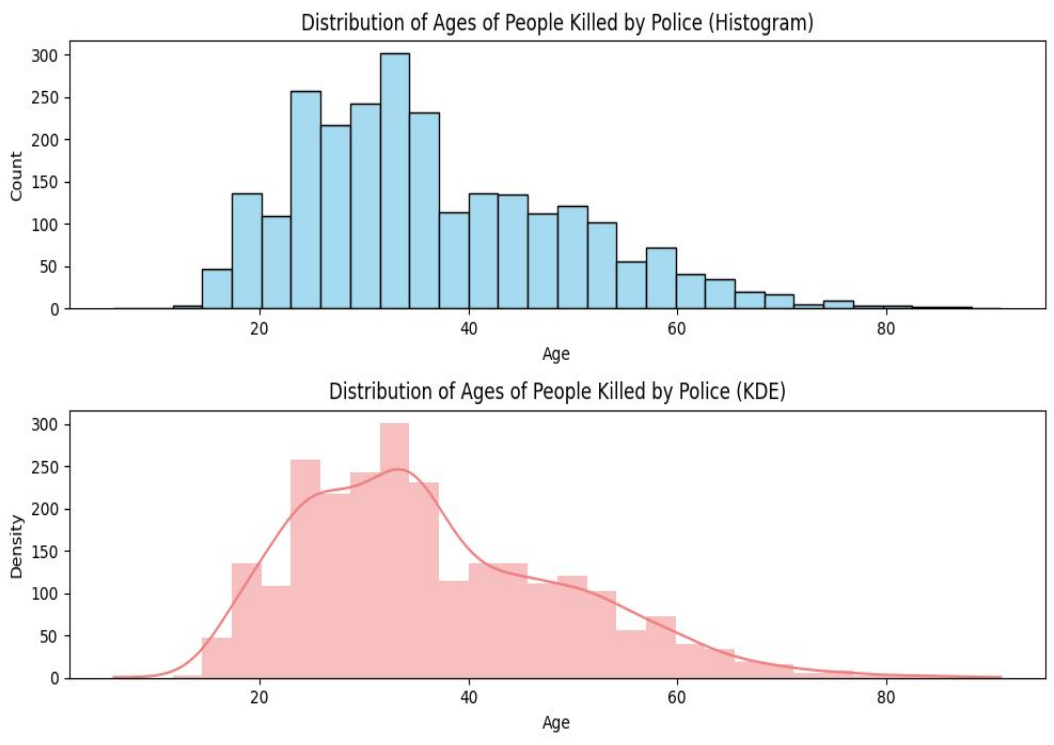
Number of people killed by police who were unarmed: 171

Distribution of types of weapons carried.



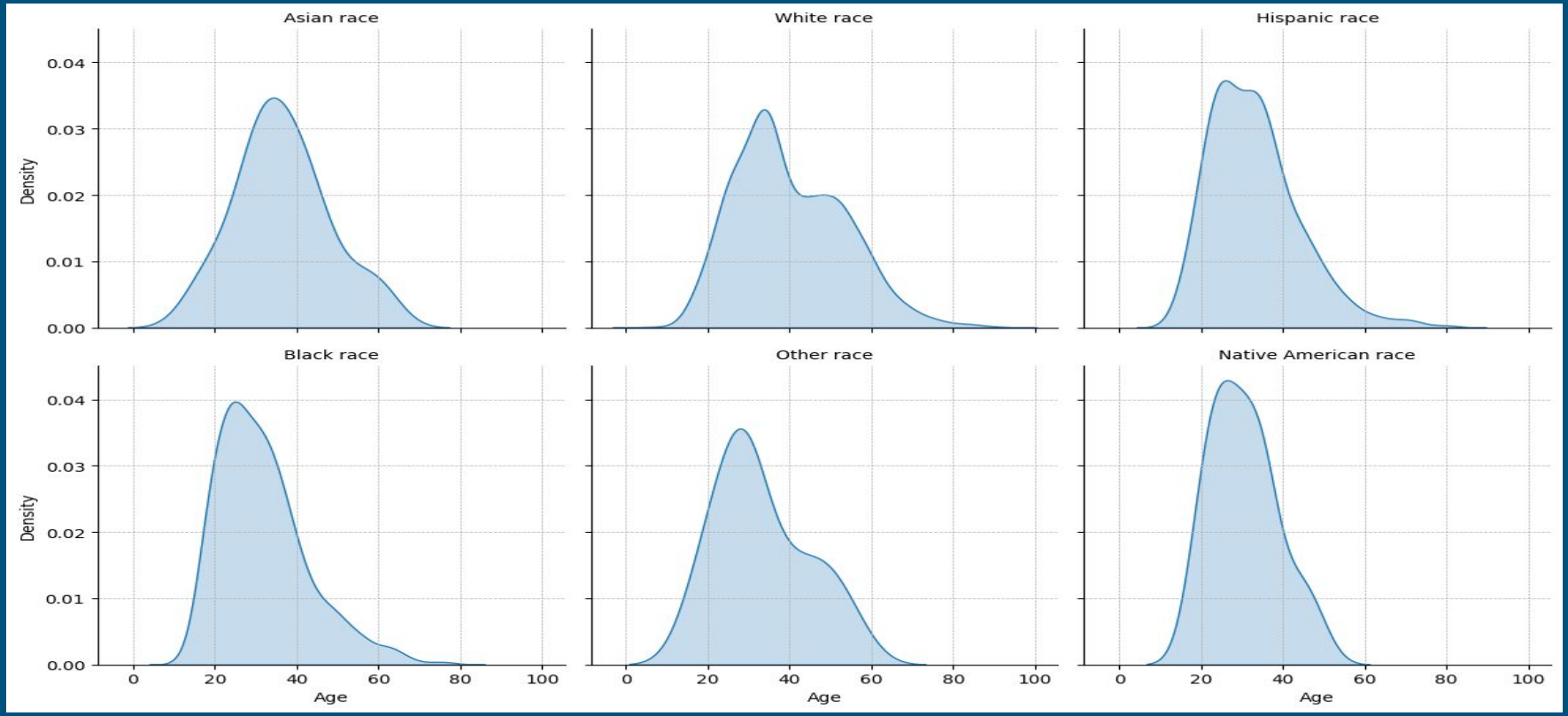
The majority of individuals involved in police killings were armed, with firearms (55.3%) being the most common weapon. Knives (14.8%) and vehicles (7.0%) were also notable. The relatively low percentage of unarmed individuals (6.8%) highlights that a significant majority of incidents involved armed individuals. This data underscores the complex and challenging nature of police encounters, where officers often face situations involving weapons that pose risks to public safety.

How old were the people killed?



The analysis of the KDE plots of ages of people killed by police indicates that the age range of 25-35 has a higher density across different races. This suggests that individuals within this age group are more frequently involved in fatal police encounters. Further investigation into factors contributing to this trend, such as socio-economic conditions, involvement in high-risk activities, or police practices, may provide deeper insights.

Age distribution for each race.



Age distribution for each race.

The age distributions of people killed by police, as visualized through KDE plots for each race, reveal distinct patterns:

- Asian: Ages 20-50, indicating a broader age range with fatalities spread more evenly.

- White: Ages 20-60, showing the widest age range among all races.

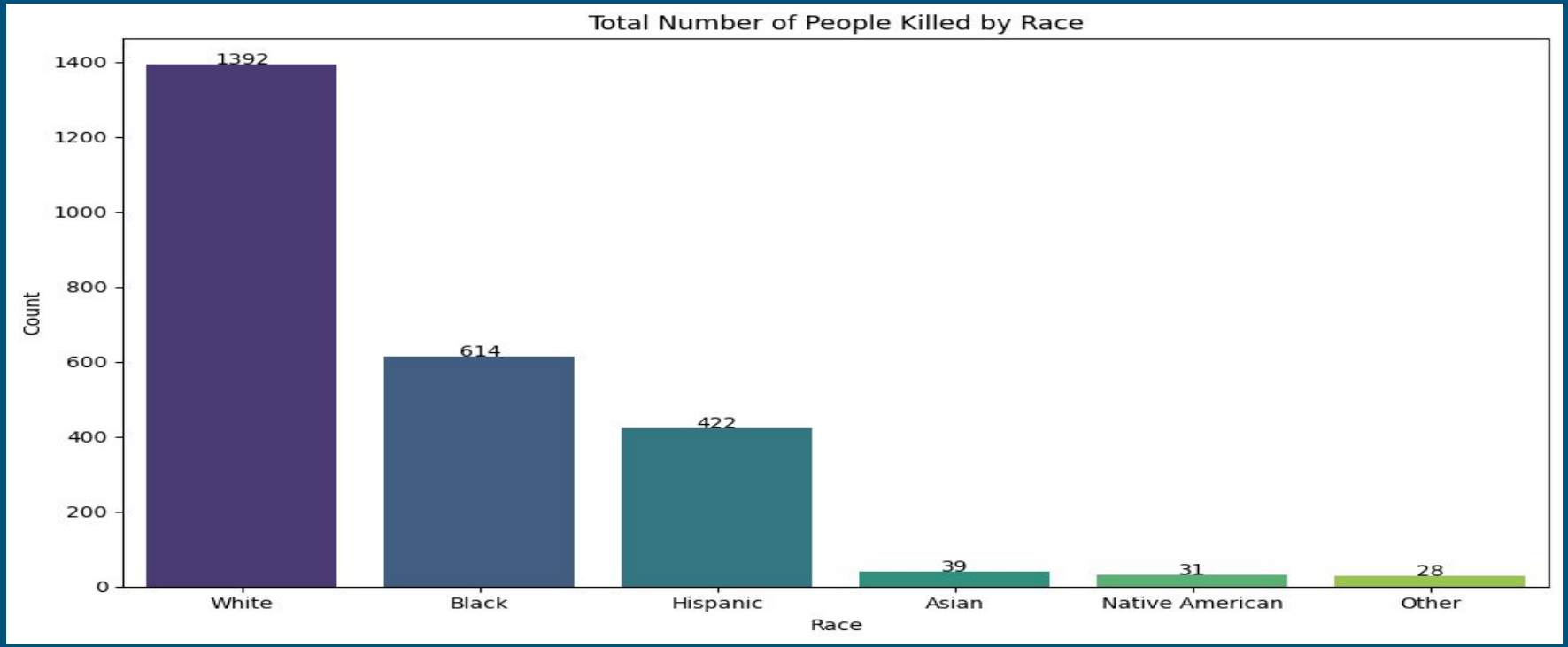
- Hispanic: Ages 20-40, indicating a narrower age range with a concentration in middle-aged individuals.

- Black: Ages 18-38, the youngest age range, indicating younger individuals are more frequently involved.

- Native American: Ages 20-38, similar to the Black age range but slightly older.

These distributions suggest racial disparities in the ages of individuals involved in fatal police encounters, with Black and Native American individuals showing younger age ranges compared to other races. Further analysis could investigate underlying socio-economic and systemic factors contributing to these differences.

Race of people killed



Race of people killed

The total number of people killed by police varies significantly across different races:

- White: 1392 individuals, the highest count among all races.

- Black: 614 individuals, the second highest, highlighting a substantial number of fatalities.

- Hispanic: 422 individuals, also a significant count.

- Asian: 39 individuals.

- Native American: 31 individuals.

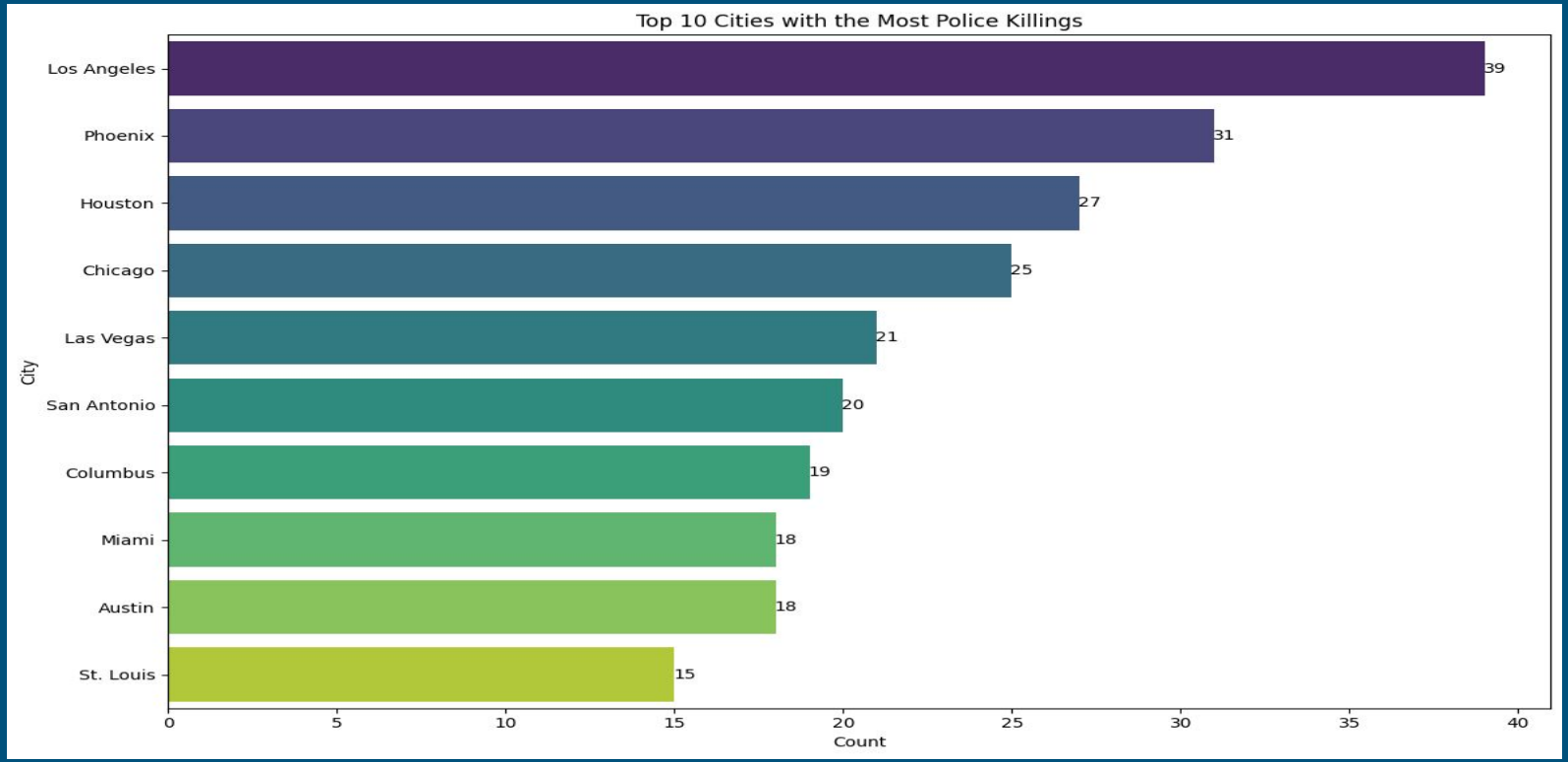
- Other: 28 individuals.

These figures indicate that White individuals account for the largest number of police-related fatalities, followed by Black and Hispanic individuals. The numbers for Asian, Native American, and other races are considerably lower but still notable. This distribution raises important questions about racial disparities and the factors contributing to these fatal encounters.

Mental illness and police killings

Percentage of people killed by police diagnosed with mental illness: 24.98%

In which cities do the most police killings take place?



In which cities do the most police killings take place?

The chart of the top 10 cities with the most police killings reveals significant variations in the number of incidents:

- Los Angeles: 39 incidents, the highest among the cities listed.

- Phoenix: 31 incidents, the second highest.

- Houston: 27 incidents, following Phoenix.

- Chicago: 25 incidents, a notable count.

- Las Vegas: 21 incidents.

- San Antonio: 20 incidents.

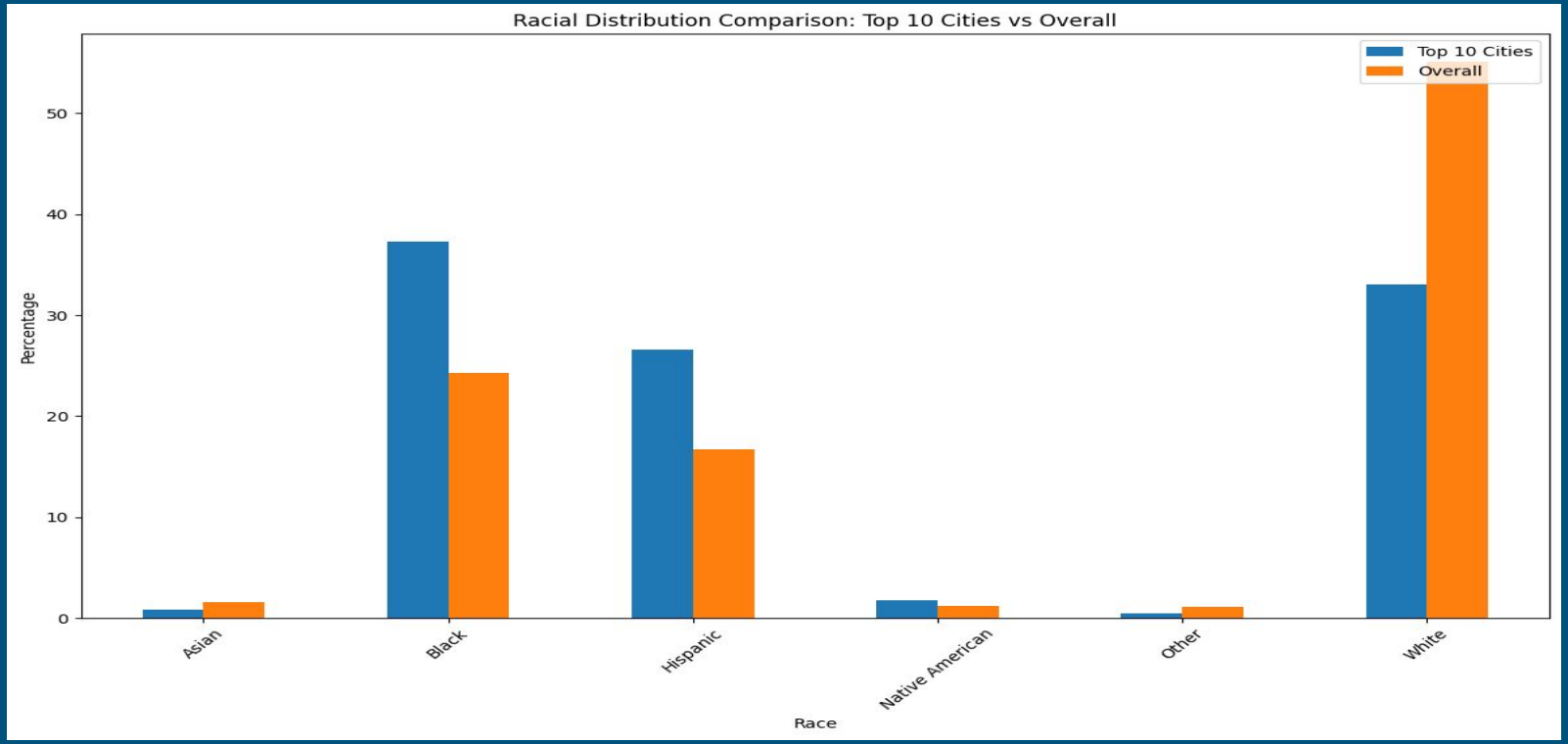
- Columbus: 19 incidents.

- Miami and Austin: Both with 18 incidents.

- St. Louis: 15 incidents, the lowest in this top 10 list.

These figures indicate that larger cities, particularly Los Angeles and Phoenix, experience the highest numbers of police-related fatalities. This concentration suggests that city size and population density might be contributing factors. Further analysis could explore the underlying causes and contributing factors in these cities.

Rate of death by race



Rate of death by race

The racial distribution of police killings in the top 10 cities contrasts notably with the overall racial distribution:

- Black: 37.34% in the top 10 cities vs. 24.31% overall. Black individuals are significantly overrepresented in the top 10 cities.

- White: 33.05% in the top 10 cities vs. 55.11% overall. White individuals are underrepresented in these cities compared to the overall distribution.

- Hispanic: 26.61% in the top 10 cities vs. 16.71% overall. Hispanic individuals are overrepresented in the top 10 cities.

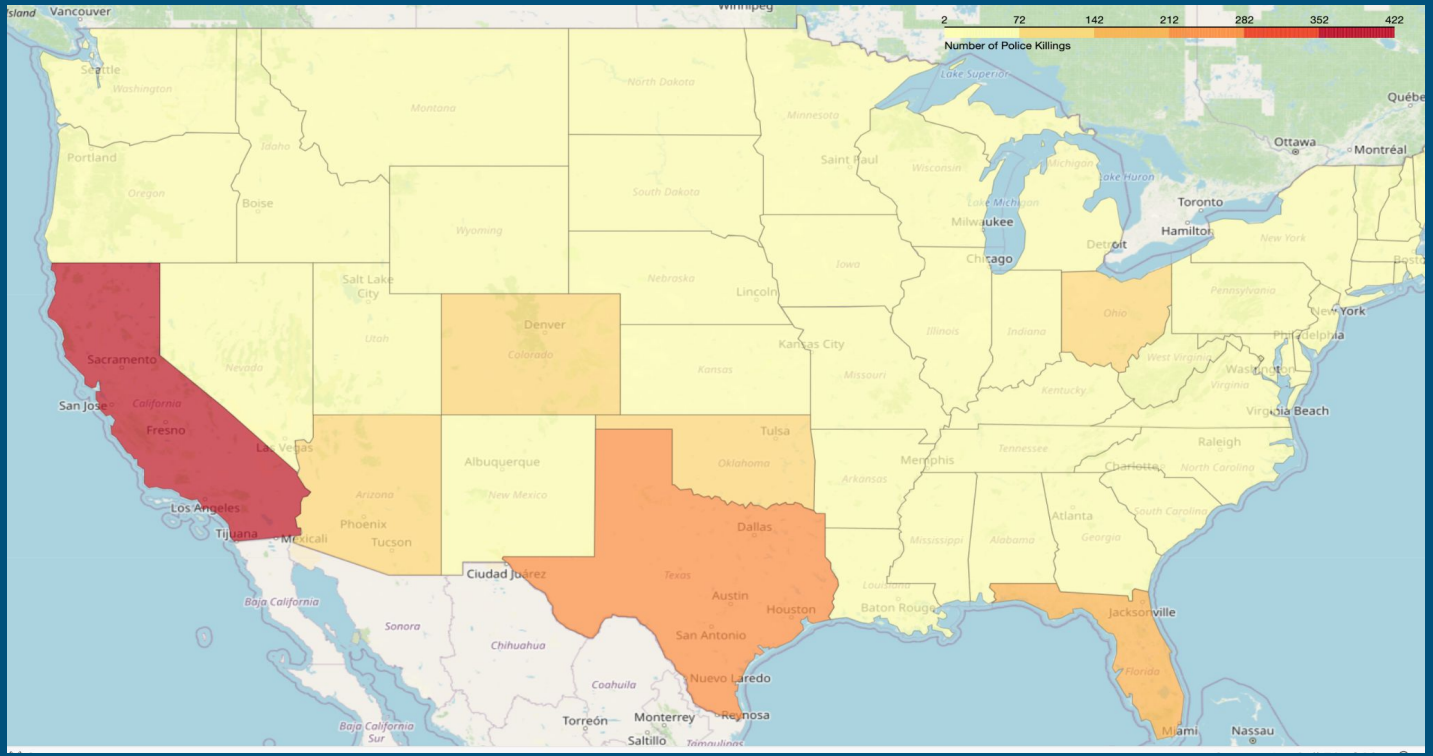
- Native American: 1.72% in the top 10 cities vs. 1.23% overall. Native Americans have a slightly higher representation in the top 10 cities.

- Asian: 0.86% in the top 10 cities vs. 1.54% overall. Asian individuals are underrepresented in the top 10 cities.

- Other: 0.43% in the top 10 cities vs. 1.11% overall. Individuals classified as "Other" are underrepresented in these cities.

These differences suggest that the racial composition of fatal police encounters varies significantly between the top 10 cities and the overall population, indicating potential geographic disparities in police interactions.

Map of police killings by US state



Map of police killings by US state

Which states are the most dangerous?

- Based on the analysis of police killings data, California emerges as the most dangerous state. This conclusion is derived from the data showing that California has the highest number of police killings among all states. This significant number highlights the state's high incidence of these fatal encounters, indicating a critical area of concern regarding law enforcement and public safety in California.

Conclusion on Police Killings in Cities and States

- California is the state with the highest number of police killings, totaling 422 incidents. Los Angeles, a city within California, alone accounts for 39 of these incidents, making it the city with the highest number of police killings.

- Texas ranks second among states with 224 incidents, and two of its cities, Houston and San Antonio, contribute significantly to this total with 27 and 20 incidents respectively.

- Florida is third with 154 incidents, with Miami contributing 18 incidents to this figure.

- Arizona ranks fourth with 118 incidents, driven largely by Phoenix, which has 31 incidents.

- Ohio, Oklahoma, Colorado, North Carolina, Georgia, and Missouri follow, but their contributions from individual cities are less pronounced compared to the top states.

Map of police killings by US state

Key Observations:

- Los Angeles significantly influences California's top position with its high number of incidents.

- Phoenix and Houston also have high numbers of incidents, contributing to Arizona's and Texas's overall rankings.

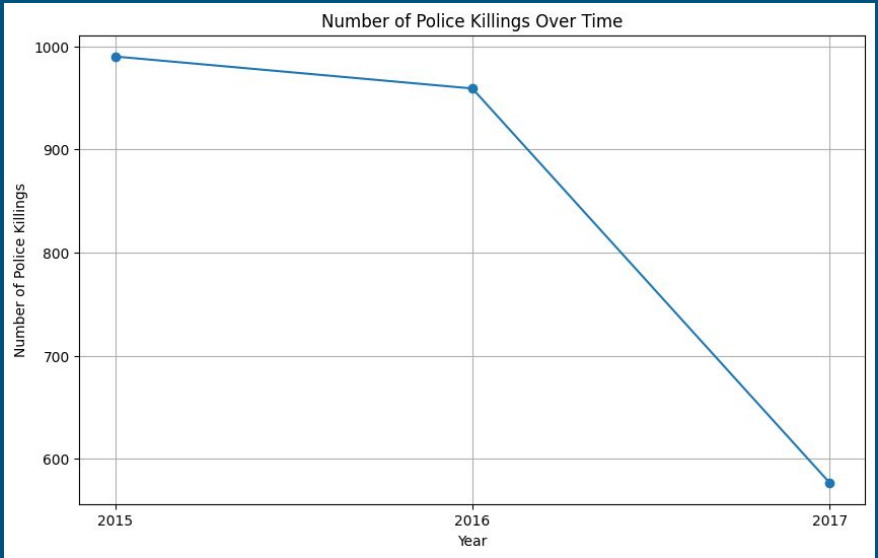
- Cities such as Chicago, Las Vegas, and San Antonio also have notable incident counts, contributing to their respective states' rankings.

- States like Ohio, Oklahoma, and North Carolina appear in the top 10 list due to a more even distribution of incidents across multiple cities rather than a single city's significant contribution.

Conclusion:

California stands out as the most dangerous state in terms of police killings, with Los Angeles being a major contributor. This pattern is consistent with other high-ranking states like Texas and Arizona, where specific cities (Houston and Phoenix) show high incident numbers. This analysis highlights the importance of focusing on both state and city-level data to understand the broader context of police killings.

Number of police killings over time



The line chart depicting the number of police killings over time reveals a notable trend. In 2015, the number of police killings was just below 1,000, marking the highest point in the observed period. In 2016, there was a slight decrease, with the number of incidents dropping to just over 950. However, by 2017, the number of police killings significantly decreased to around 580. This data indicates a downward trend in the number of police killings over these three years, suggesting that the situation has been improving, although the high initial numbers highlight the critical nature of the issue.

The analysis conducted in this project has provided valuable insights into various aspects of police killings in the United States, highlighting critical issues related to poverty, education, race, and mental illness.

Our examination of the data revealed several important findings:

1. Poverty and Education: There is a notable correlation between poverty rates and high school graduation rates across different states. States with higher poverty rates tend to have lower high school graduation rates, suggesting that socioeconomic factors play a significant role in educational outcomes.

2. Racial Disparities: The racial breakdown of police killings indicates significant disparities, with certain racial groups being disproportionately affected. This is further emphasized in the donut chart and the rate of death by race, underscoring the urgent need to address systemic racism and bias in law enforcement practices.

3. Gender Differences: Our analysis showed a higher number of police killings among men compared to women, highlighting gender-based differences in these fatal encounters.

4. Age and Manner of Death: The box plot analysis of age and manner of death revealed patterns that warrant further investigation, particularly the vulnerability of younger individuals in police encounters.

5. Mental Illness: A significant proportion of those killed by police were reported to have mental illness, emphasizing the need for improved training for law enforcement officers in handling situations involving individuals with mental health issues.

6. Geographic Distribution: The choropleth map illustrated the geographic disparities in police killings, with states like California, Texas, and Florida showing the highest numbers. Within these states, cities such as Los Angeles, Houston, and Phoenix were identified as hotspots for police killings.

7. Temporal Trends: The line chart showing the number of police killings over time indicated a peak in 2015, followed by a gradual decline in subsequent years. This trend suggests that while there has been some progress, there is still much work to be done to reduce the number of these fatal encounters further.

Implications and recommendations

The findings from this analysis have several important implications:

- Policy and Training: There is a clear need for comprehensive policy reforms and improved training for law enforcement officers, particularly in areas related to bias, de-escalation techniques, and mental health crisis intervention.

- Community Engagement: Building stronger relationships between law enforcement agencies and the communities they serve can help address some of the underlying issues contributing to police killings.

- Socioeconomic Support: Addressing poverty and improving educational opportunities can have a positive impact on reducing crime and improving overall community well-being, potentially leading to fewer fatal encounters with police.

- Further Research: Continued research and data analysis are essential to monitor trends, identify new issues, and evaluate the effectiveness of implemented reforms.

Conclusion

This project has provided a comprehensive overview of the multifaceted issue of police killings in the United States. By leveraging data analysis and visualization, we have gained a deeper understanding of the factors contributing to these tragic events. It is our hope that these insights will inform policy decisions, drive meaningful change, and ultimately contribute to a safer and more just society for all.