



An Analysis of Police Shootings in the United States from 2015–2021

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Research Question:

How do race, gender, age, and a civilian's armed status affect perceived threat level in fatal police shootings across the US from 2015-2021?

Motivation:

- Rising rates of police shooting, especially for racial minorities (2022: 100 ppl/day)
 - Implicit biases in statistical science (sample vs pop.)
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Guiding Principles:

- Sensitivity of topic
 - Data privacy
 - Mental health status
 - Reporting bias
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CORGIS Dataset: Collected by *The Washington Post*

Contains observations of police-involved fatal shootings in the United States

- Person.Gender
- Person.Race
- Factors.Armed
- Factors.Threat-Level
- Incident.Location.State

Exploratory Data Analysis

Fig. 6: Arms Status of Victims by Race

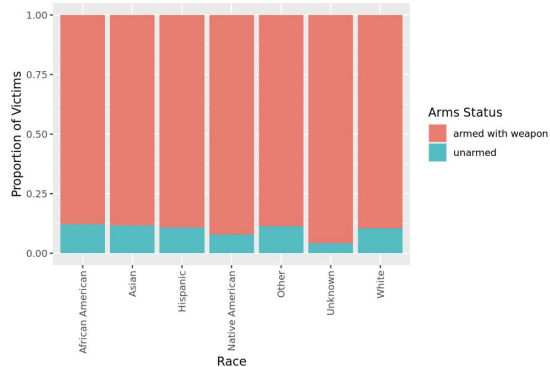


Fig. 4: Relationship between Sex and Age

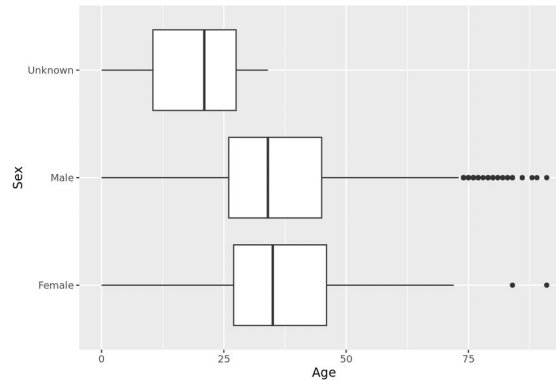


Fig. 3: Relationship between Race and Age

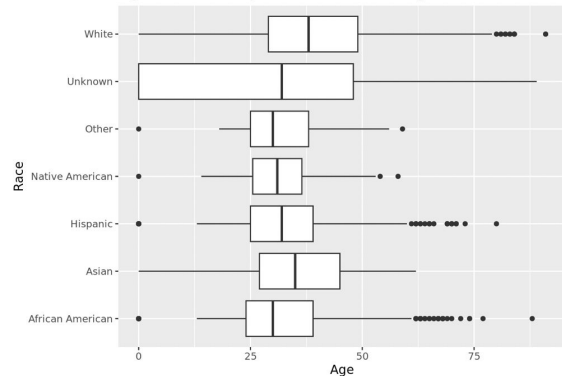
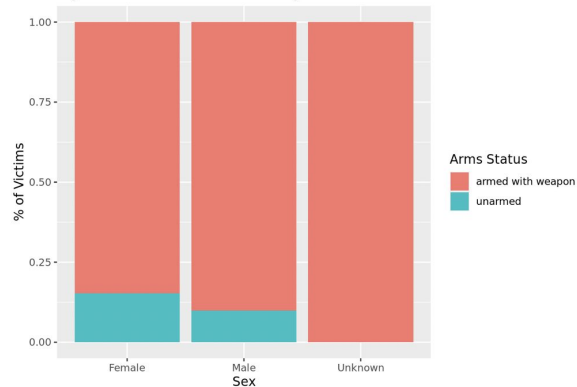


Fig. 2: Arms Status of Victims by Gender

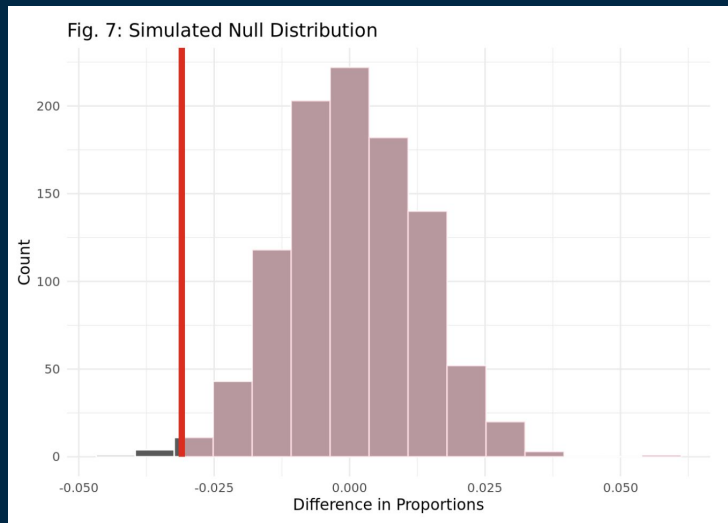


Fitting the Model

$$\log \frac{p}{1-p} = -0.229153274 - 0.114483595 * (\text{race_white}) - 0.244889178 * (\text{Person.Gender_Male}) + 1.038480834 * (\text{Person.Gender_Unknown}) + 0.652516293 * (\text{Factors.Armed.Test_unarmed}) - 0.004189227 * (\text{Person.Age})$$

After using backwards elimination and AIC testing, we found this to be the ideal model.

Hypothesis Testing



P-value: 0.995, therefore we FAIL to reject the null hypothesis.

π_{POC} = the proportion of people who were perceived as an "attack" by the police out of those shot who identify as a POC.

π_{White} = the proportion of people who were perceived as an "attack" by the police out of those shot who identify as White.

$$H_0 : \pi_{POC} = \pi_{White}$$

The proportion of people who were perceived as an "attack" by the police of those shot who identify as a POC is equal to the proportion of people who were perceived as an "attack" by the police of those shot who identify as white.

$$H_A : \pi_{POC} > \pi_{White}$$

The proportion of people who were perceived as an "attack" by the police of those shot who identify as a POC is greater than the proportion of people who were perceived as an "attack" by the police of those shot who identify as white.

Results & Discussion

- Using backwards elimination and AIC, we found race, gender, age, and armed status to be the best additive model/predictor of perceived threat level
- Based on our hypothesis testing, for this sample population we fail to reject the null hypothesis. Therefore, the threat level for the proportion of unarmed POC is equal to the proportion of white unarmed individuals

Limitations with Reliability and Validity:

- Most data collected in California
- Bias on threat level (reported by the police officers)
- Every victim was perceived as mentally ill (demonstrating reporter bias)
- Our data does not take into account the racial percentages of the U.S.

Future Work:

- Analyze by state
- Investigate socioeconomic effect



Acknowledgements

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Sources

<https://www.nature.com/articles/d41586-019-02601-9>

<https://www.washingtonpost.com/graphics/investigations/police-shootings-database/>

Thank You!