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Analyzing relationships between Gun Violence, Mental Health using R and Tableau

Studies have shown that roughly 11,000 people in the US are killed in forearm assaults each year. Many political figures, including President Donald Trump, have pointed to mental health as the root of the problem. However, other experts and media outlets say otherwise. To better understand the relationship between mental health and mass shootings, we developed three questions: (1) Is there a relationship between total victim count of mass shootings, and mental health, (2) are there regional differences between the rates of mass shootings in the U.S, and (3) is mental health classification (by the media) dependent on race? To answer these questions, we used a publicly available gun violence data to conduct various statistical analysis, such as the chi-squared test to decide if any correlations between the observed variables exist. We hypothesize a positive relationship between mass shootings and mental health with killings occurring abundantly in the southern region compared to other regions of the country. This study could help raise awareness to racial, regional and social differences to influence gun reform policy in the US.

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Our findings greatly supported our hypothesis. We found that (1) there are more instances of white shooters being classified as mentally ill (N_{yes} = 32,), compared to their black counterparts (N_{yes} = 14),(2) that the south had more instances of gun violence than other regions,

(N_{south} = 1,412, $N_{Northeast}$ = 36, N_{West} = 18, $N_{Midwest}$ = 64). This suggests a need for increased background checks, or greater restrictions on gun purchases to potentially curb overall instances of gun violence within this region. Futhermore, a chi-squared analysis was conducted to determine if mental health classification was independent of race. Our null hypothesis (H_o: Mental Health = Race) was rejected (χ^2= 74.462, df = 8, p-value = 6.32e-13) in favor of the alternative (mental health is dependent on race). This suggests a racial bias from the media in determining if a shooter is mentally ill. In tandem with the regional findings, this suggests that southern white males are more likely to be diagnosed as mentally ill than their black counterparts.

Due to the nature and complexity of the data, our team was not able to analyze the rates of

Our findings greatly supported our hypothesis. We found that (1) there are more instances of white shooters being classified as mentally ill (n_{yes} = 99, n_{no} = 49, $n_{unclear}$ = 40), compared to their black counterparts (n_{yes} = 35,n_{no} = 19, $n_{unclear}$ = 40), and (2) that the south had more instances of gun violence than other regions,

(n_{south} = 1,412, $n_{Northeast}$ = 36, n_{West} = 18, $n_{Midwest}$ = 64).

This suggests a need for increased background checks, or greater restrictions on gun purchases to potentially curb overall instances of gun violence within this region. Furthermore, a chi-squared analysis was conducted to determine if mental health classification was independent of race. Our null hypothesis (Ho: Mental Health = Race) was rejected (χ2= 74.462, df = 8, p-value = 6.32e-13) in favor of the alternative (mental health is dependent on race). This suggests a racial bias from the media in determining if a shooter is mentally ill.

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Northeast

Number of Incidents- 36

Total Victims- 327

South

Number of Incidents- 712

Total Victims- 1,412

West

Number of Incidents-106

Total Victims- 1,810

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