School-Related vs Non-School Related Mass Shooting in the United States

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INTRO

Mass shootings and gun violence remain a public issue in the United States of America, recently these incidents have been increasing. This results in many social issues and political issues. Across all these incidents of shootings, which are already visibly higher than previous years, school shooting incidents tend to stick out and receive a lot more attention due to their impact on children and places that are supposed to feel safe, and allow our kids to grow. Even though these types of school shootings receive a lot of attention it is still hard to determine whether school shootings are different from regular shootings in terms of how dangerous or severe the damages they cause are and where they occur in the United States. In this paper I will dive into if school shootings differ from non-school shootings in terms of number of victims and the overall geographic distribution and frequency. To answer this question I will explore the shooting.csv dataset from stanford on mass shootings incidents in the united states. To do this I used descriptive statistics and visualizations created in R. I compared school-related shootings to non-school related shootings by mapping their locations to test for frequency and geographic distribution and exploring differences in victim counts. The results I have seen suggest that both school-related and non-school related shootings are widespread across the United States and don't tend to happen at a certain place, like urban or more densely populated. I also discovered that shootings that are school related tend to have a higher average victim count than non-school related shootings, even though school related shootings are more rare.

BACKGROUND

Gun violence and mass shootings are a big issue in the United States, shaping our public image and many different policies and rules changes. Kalesan et al.(2017) shows us that firearm deaths are shaped by policy and structural factors, "31,672 firearm-related deaths occurred in 2010 in the USA (10·1 per 100 000 people; Of 25 firearm laws, nine were associated with reduced firearm mortality, nine were associated with increased firearm mortality, and seven had an inconclusive association"(Kalesan et al,2017) . This has the biggest effect on children, reports from research organizations show that gun violence is one of the leading causes of death for young children. "Annually, more than 4,300 children and teens (ages 0 to 19) are shot and killed, and more than 17,000 are shot and wounded, that's an average of 60 children and teens in the US every day"(Everytown Research & Policy, 2023). Since schools are more densely packed I believe school shootings are assumed to have higher casualty counts. My guess is that school related shooting will be less frequent but more dangerous than regular shootings in terms of casualties.

DATA

This data set used has a total of 307 mass shooting incidents in the United States compiled by Stanford University. Each row is a single shooting and has information such as location, number of victims, and shooter descriptions. This data also provides latitude and longitude coordinates. The dataset covers many years and provides shootings that are not considered gang related shootings rather mass shootings attacks on the public.

KEY VARIABLES

The main variable I used for the analysis in this was Total Number of Victims, which is the total number of people killed/injured by a shooter. Then I created a new variable to use which was created using the place of schooling variable. The new variable/ column which was the same name plus label, was assigned either a 1 or 0 based on if the incident was related to school or not. This grouping variable focused on the relationship to the incident location variable. The binary indicator was created to distinguish the two, and allow for better comparisons. Geographic variables are used to map frequency and geographic distribution, latitude and longitude.

ANALYTIC APPROACH

All missing values were removed. The new variable was created, I generated a table to see immediate differences in the frequency. The descriptive statistics methods follow the code covered in class, to find averages, means, medians, mins, and max for both school-related and non-related cases. The first visualization is created to show the difference in frequency and distributions of two different types of shootings, this is done to get an idea how to distinguish school-related from non-related shootings. The seconds Visualization of the boxplot is done to visually compare the differences between victim counts and summary statistics of both groups. As done many times in class this is done to be able to visualize the differences. Finally the last visual uses animations to plot the same data as the first plot with year added. This is done to again show,compare, and measure the frequencies between the two types of shootings, this type of plot was pulled directly from our final class example code in R on mapping with animation with ggplot and maps packages.

RESULTS

GEOGRAPHIC DISTRIBUTION & FREQUENCY

The visualizations of the first and third map show that incidents are widely distributed, and not focused in a certain part of the United States. Shootings occur across many places such as urban and less populated areas as well. School-related Shootings are way less frequent than non-related shootings, but they also appear across various states. This shows all mass shootings aren't concentrated on a certain area. Overall the spatial patterns of both type shootings represent that this is a nationwide issue of gun violence, rather than a geographical issue. Still the frequency of non related shootings are still way higher.
The data table shows 256 non-related shootings and 51 school related shooting

COMPARISON OF VICTIMS(SUMMARY STATISTICS)

The second figure along with the summary statistics show that on average school related shootings have about ¾ more victims than school related. It also shows us the median number is higher in school related to non related by 1. The min number is the same because to be considered a mass shootings it needs 3 victims. Finally we the max for non related is much higher at 70 than school related which max number of victims is 49. We also see frequency here again 256 non related incidents vs 51 school related incidents. This is then visualized on a boxplot in figure 2. The summary statistics indicate that school shootings are in fact more detrimental to human lives than non related shootings, this evidence supports that school shootings are more severe in terms of victim counts.

CONCLUSION

This paper explored whether school related shootings differ from non related shootings in terms of victim counts, geographic distribution and frequency. The results show school shootings are in fact more severe in terms of avg/median victim counts. Meaning a school shooting is more likely to have more victims than a non related shooting. To add on top of that we see non related shootings are way more common and frequent. The geographic distribution of both shootings show that this is a broader nationwide issue, rather than an area focused on. These findings are important because it supports that school related shootings are in fact less frequent but more dangerous than non related shootings. This study has several limitations such as but not limited to this is only descriptive and does not explain reasoning for shootings or why some incidents include more victims than others. Future research can include these factors to better explore these patterns.

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