**Predictions on US Mass Shootings using Data Mining Techniques**

Terror is rising day by day all over the world, and United States is no exception. There have been mass shootings at schools, shopping malls, music concerts and even at a movie theatre. So far, there have been 398 mass shootings recorded only in the past 50 years which resulted in 1996 deaths and 2488 people injured[1]. According to Van Dorn et al., a history of childhood abuse, binge drinking, and male gender are all predictive risk factors for serious violence[2]. The average number of genocides is 7 per year for last 50 years which took 39 lives and 48 person injuries per year[1]. These incidents affect the society on a high rate which in turn contributes for such situations again indirectly.

There is no denial in the fact that such happenings result in loss of both life and materials. Also, people remain in a state of panic and assume every other race to be a terrorist. This in turn reduces the number of people attending mass gatherings and celebrations. There is also a strong impact on children’s psychology which affects the future generation. For some reason, young individuals are inspired to copy the mass shooters. Lastly, the reputation of a particular area/locality is getting affected badly. All these reasons are enough for the society and government to take some preventive measures for this.

# In the article “Mental Illness, Mass Shootings, and the Politics of American Firearms”[3], authors critically addressed the assumption that “Mental illness causes gun violence”. They suggested that not only mental illness but other factors such as social relationships, firearm access during emotional moments etc also lead to gun violence. However, they failed to cite this with strong facts, numbers etc. Reports suggest that up to 60% of executioners of mass shootings in the United States since 1970 displayed symptoms including acute paranoia, delusions, and depression before committing their crimes[4,5]. In another article “Rates of Household Firearm Ownership and Homicide Across US Regions and States, 1988–1997”[6], the authors emphasized on the “association between rates of household firearm ownership and homicide across the United States, by age group”. In this analysis, they failed to take gender, mental health and other factors into consideration which helps more to analyze that which type of people (mentally ill) and/ or which gender are doing these cruel activities.

The dataset for the project is obtained from kaggle.com.[1] It includes details of about 300 mass shootings that happened in United States in last 50 years (1966-2017). The various attributes included in the dataset are title, location (of mass shooting), summary, fatalities, injured and total victims, mental health issues (of the executioner), race, gender. Association rule mining and classification will be used on some of these attributes in order to come up with expected outcomes. WEKA will be used to do these predictions.

This project aims to predict 1) people of what age groups are mostly involved in mass shootings, 2) states/cities more prone to attacks, 3) probability of shooter being male or female, 4) probability of male shooters having a mental illness, and 5) on which specific date’s attacks are more likely to occur.

**Bibliography**

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