A Visual Representation of the Instances of Gun Violence in Washington State and Contributing Factors in 2016

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**Abstract**

According to the CDC, 38,658 people in the US died from gunshot wounds in 2016. And already there have been more than 13,000 deaths as a result of gun violence in 2018. Yet, there is widespread debate over the factors that contribute to gun violence. Gun violence is blamed on an array of reasons: the community, age, race, gender, mental illness, and the availability of guns. Further, there is a disparity in the way we react to differing instances of gun violence. School shootings in affluent, predominantly white neighborhoods and mass homicides in highly public places provoke outrage, while instances of gun violence in inner city, minority, and low-income communities have come to be seen as expected. This research study aims to answer what factors contributed to instances of gun violence in Washington State in 2016 through a visualization of the contributing factors using GIS mapping software.

**Introduction**

According to the CDC, 38,658 people in the US died from gunshot wounds in 2016. And already there have been more than 13,000 deaths as a result of gun violence in 2018. Yet there is widespread debate over the factors that contribute to gun violence; this study aims to clarify the contributing factors through a visual representation. GIS will be used to map instances of gun violence in Washington State and historically related factors compiled from census data and law enforcement records in order to answer the question “What factors contributed to instances of gun violence in Washington State in 2016?”.

**Background**

*School Shootings*

Following Columbine, The Secret Service was tasked with reviewing 37 school shootings, culminating in a report released in May 2002 that detailed the profile of a typical school shooter (Sanders 2003). The report defined “‘targeted school violence’ as ‘any incident where (1) a current student or recent former student attacked someone at his or her school with lethal means; and (2) where the student attacker purposefully chose his or her school as the location of the attack”. The Secret Service’s report concluded that there was no single profile that fit all school shooters, but they did have two things in common, the perpetrators felt bullied and had access to weapons (Sanders 2003).

While school-related crime has decreased, the number of multiple-victim homicides at schools has increased, and with that student sense of security has also dropped (Redding & Shalf 2001). The rise in multiple-victim homicides at schools is largely due to the increased accessibility of guns to youth (Redding & Shalf 2001).

*The rise of gun violence amongst youth*

Increased divorce rates and children born out of wedlock coupled with decreased affiliation with churches and other social groups left an increasing number of children with less structure, leaving them more susceptible to the appeal of gangs (Blumstein & Cork 1996). The rise of crack cocaine led to an increase in youth involvement in the distribution of drugs. Crack cocaine was cheaper than powder cocaine allowing it to be sold in lower volumes, which increased the frequency of purchase, creating an increasing demand for labor, which led to the recruitment of youth. Youth were targeted for recruitment because they faced a lighter minimum sentence than adults, and tended to have a lower economic standing (Blumstein & Cork 1996; Redding & Shalf 2001).

Drug dealers are motivated to obtain guns as a form of self-protection since they are frequent targets of theft and cannot rely on protection from police because both their product and profit are illegal (Blumstein & Cork 1996). And once one gang acquires guns other gangs feel compelled to acquire guns to be competitive and protect themselves. From there, guns are spread from drug dealers to their peers at their schools or in their neighborhoods who are not involved with drugs but turn to guns for protection or as a status symbol (Blumstein & Cork 1996).

*Age*

“In all US mass shootings over the past 36 years, about 1 out of every 8 victims was injured or killed by a perpetrator aged between 18 and 20 years” (Brown, Pharm & Goodin 2018).

*Race*

Racial minorities are more frequent victims of gun violence, yet instances of gun violence involving racial minorities are often brushed aside and excluded from the public narrative (Parham-Payne 2014). Gun violence in minority and low-income communities is widely accepted as a persistent problem, yet it rarely sparks the public engagement that follows isolated acts of gun violence in more privileged communities. This is in part because the media has historically portrayed racial minorities as criminals, consequently, shootings involving racial minorities are seen as expected, and do not get the equal weight afforded to shootings involving white perpetrators and victims. Further, gun violence in minority and low-income communities is treated as a cultural problem that can be addressed with social programs that emphasize stronger families and individual responsibility instead of legislative approaches (Parham-Payne 2014).

*Gender*

A study examining mass casualty shootings between 1982 and February of 2018 found that only three of the 97 shootings were perpetrated by females (Brown, Pham, & Goodin 2018). Another study found that 95% of juvenile homicides are perpetrated by boys (Feder, Levant & Dean 2007). The American Psychological Association has cited that this may result from either biological factors or socialization shaped by roles of traditional masculinity or a combination of both biology and socialization. Boys are raised to be tough, dominant, and to refrain from displaying their emotions, which leaves boys without the coping skills they need to handle the complex challenges of life. Consequently, boys are more likely to display aggressive behavior than girls (Feder, Levant & Dean 2007).

*Mental Illness*

46% of perpetrators of gun violence in the United States displayed signs of mental illness (Blau, Gorry & Wade 2016). In cases of homicide, mental illness was found to positively correlate with the number of victims and fatalities of a public shooting event, specifically perpetrators using depression medication tended to have an increased number of victims and fatalities (Blau, Gorry & Wade 2016). Additionally, over 60% of gun deaths are suicides, which is largely impacted by mental health (Swanson et al 2016).

*Gun Legislation*

Federal assault weapon bans were found to have no statistically significant effect on the frequency of assault weapons used in public shooting events (Blau, Gorry & Wade 2016). In Australia, broad gun reform that prohibited semi-automatic guns, pump-action shotguns and rifles resulted in a sharp decline in public shootings (Blau, Gorry & Wade 2016).

*Political Attempts to Stifle Gun Research*

Little research has been done to study the correlation between accessibility of firearms and the frequency of acts of gun violence (Kellermann & Rivara 2013). In 1996, pro-gun members of Congress effectively prohibited the Center for Disease Control from promoting gun control by refusing to fund any research advocating gun control. In 1998, Congress extended these restrictions to all Department of Health and Human Services agencies. Similarly alarming, in 2011, Florida Legislature moved to enact a bill that could strip health care professionals of their license if they discussed irrelevant firearm safety information, and the same year National Defense Authorization Act prohibited military commanders and noncommissioned officers from inquiring into what weapons service members privately owned even in cases where they are considered about the service members mental state, despite an increasing suicide rate amongst members of the United States military. Information and education are vastly powerful tools but measures cannot be taken to educate the public on how to reduce gun deaths if politicians prevent the research from taking place in the first place (Kellermann & Rivara 2013).

*Gun Availability*

The high availability of guns makes them the most frequent method of homicide and suicide in the United States (Kaplan & Geling 1998). A comparison between Seattle, Washington, and Vancouver, British Columbia between 1980 and 1986 found that although the two cities have similar demographics, the rate of homicides involving firearms was 4.8 times greater in Seattle (Kaplan & Geling 1998).

*Weapon Type*

Existing research provides conflicting reports over whether the use of assault weapons increases the number of victims in instances of gun violence (Blau, Gorry & Wade 2016; Brown, Pharm & Goodin 2018). However, a direct correlation between high capacity magazines and the number of victims and fatalities in instances of gun violence has been established (Blau, Gorry & Wade 2016).

*Question*

GIS will be used to visualize instances of gun violence in Washington State and historically related factors compiled from census data in order to untangle the contributing factors and answer the question “What factors contributed to instances of gun violence in Washington State in 2016?”.

**Methods**

I will use Arc GIS Pro, a mapping software, to map all documented instances of gun violence in Washington State in 2016, and then overlay that map with the age of the perpetrator, the gender of the perpetrator, and whether the perpetrator had a record of mental illness prior to the shooting from records obtained from the Gun Violence Archive. These points can be overlaid with demographic information of the census tracts.

**Expected** **Results**

The output of this research will be a GIS map that can be published within the GIS software database.

**Conclusion**

Gun violence is a highly prevalent issue with life-altering consequences. Yet, the factors that contribute to gun violence are still publicly debated. This research study aims to clarify the factors that contribute to gun violence through a visual representation created using Arc GIS mapping software. The summation of this work will result in a GIS map that can be published within the program and allow for visual analysis of which factors most strongly correlated to instances of gun violence in Washington state in 2016.

**References**

Blau, B. M., Gorry, D. H., & Wade, C. (2016). “Guns, laws and public shootings in the United

States.” *Applied Economics* 48(49): 4732-4746.

Blumstein, A. & Cork, D. (1996). “Linking Gun Availability to Youth Gun Violence.” *Law and*

*Contemporary Problems,* 59(1): 5-24.

Brown, J. D., Pharm, D., & Goodin, A. (2018). “Mass Casualty Shooting Venues, Type of

Firearms, and Age of Perpetrators in the United States.” *American Journal of Public*

*Health* 108(10): 1385-1387.

Feder, J., Levant, R. F., & Dean, J. (2007). “Boys and violence: A gender-informed analysis.”

*Professional Psychology: Research and Practice* 38(4): 385-391.

Kaplan, M. S., & Geling, O. (1998). “Firearm Suicides and Homicides in the United States:

Regional Variations and Patters of Gun Ownership.” *Social Science Medicine* 46(9): 1227-1233.

Kellermann, A. L., & Rivara, F. P. (2013). “Silencing the Science on Gun Research.” *Journal of*

*the American Medical Association* 309(6): 549-550.

Parham-Payne, W. (2014). “The Role of the Media in the Disparate Response to Gun Violence in

America.” *Journal of Black Studies* 45(8): 752-768.

Redding, R. & Shalf, S. (2001). “The Legal Context of School Violence: The Effectiveness of

Federal, State, and Local Law Enforcement Efforts to Reduce Gun Violence in Schools.” *Law & Policy,* 23(3): 297-343.

Sanders, E. (2003). “The Shooter.” *The Stranger.*

**Budget**

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| **Item** | **Cost** |
| ArcGIS Pro Software | $110.00 |
| Time (40 hours x $11.00 per hour) | $440.00 |
| **Total Cost** | **$550.00** |

**Timeline**

10 hours: acquiring data

10 hours: mapping data

10 hours: data analysis

5 hours: generate layout

5 hours: generate publication