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School Shootings and Gun Control in the U.S. Considerations for Policymakers

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INTRODUCTION

The U.S. has the highest rate of gun ownership in the world with an average of 88 guns per every 100 people (Chalabi, 2012). It is unsurprising that the U.S. also has one of the highest rates of gun-related homicides among developed countries. In fact in 2016, an estimated 27 people died from gun homicides every day of the year, corresponding to a gun homicide death rate of 31 per million people (Quealy and Sanger-Katz, 2016). In addition to high rates of gun homicides, 60% of gun deaths were attributed to gun-suicides (Sanger-Katz, 2015).
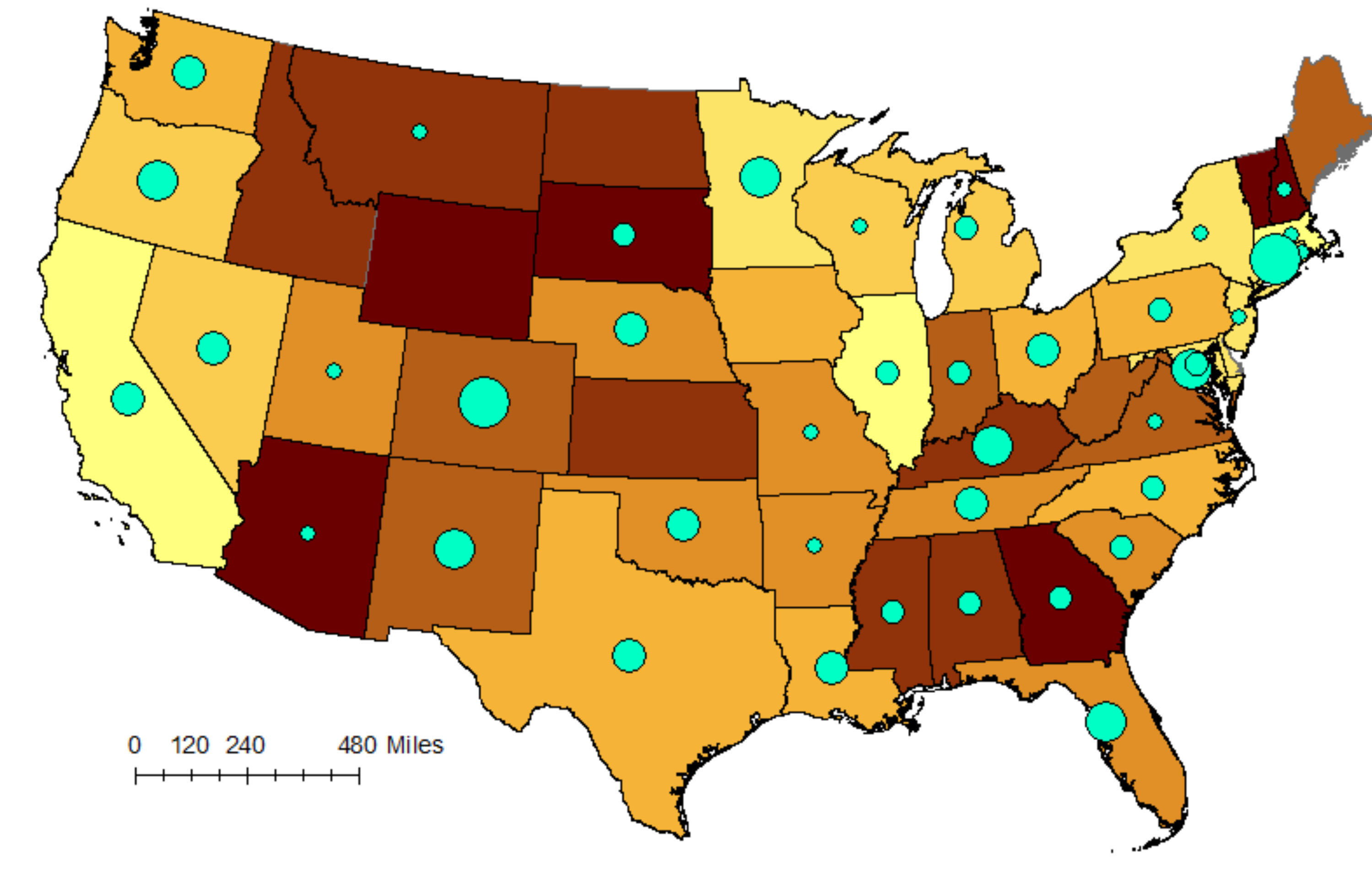
Across the nation with the greatest number of guns and gun-related deaths, Americans have become desensitized in many ways to gun violence. Yet, school shootings consistently shake even the most hardened politicians to recognize the objective evil of exposing school children to gun violence and death in the very places that should protect and educate them. Since the 199 Columbine High School massacre killing 13, there have been 224 school shootings impacting 219,000 students (Cox et al., 2018; see Map 1).

It is undeniable that the U.S. has a gun death problem, but proposing effective policy can be difficult. I explore variation in school shootings to understand related patterns – and whether these patterns are consistent with patterns explaining the wider gun violence issue in the U.S. – and its policy implications.
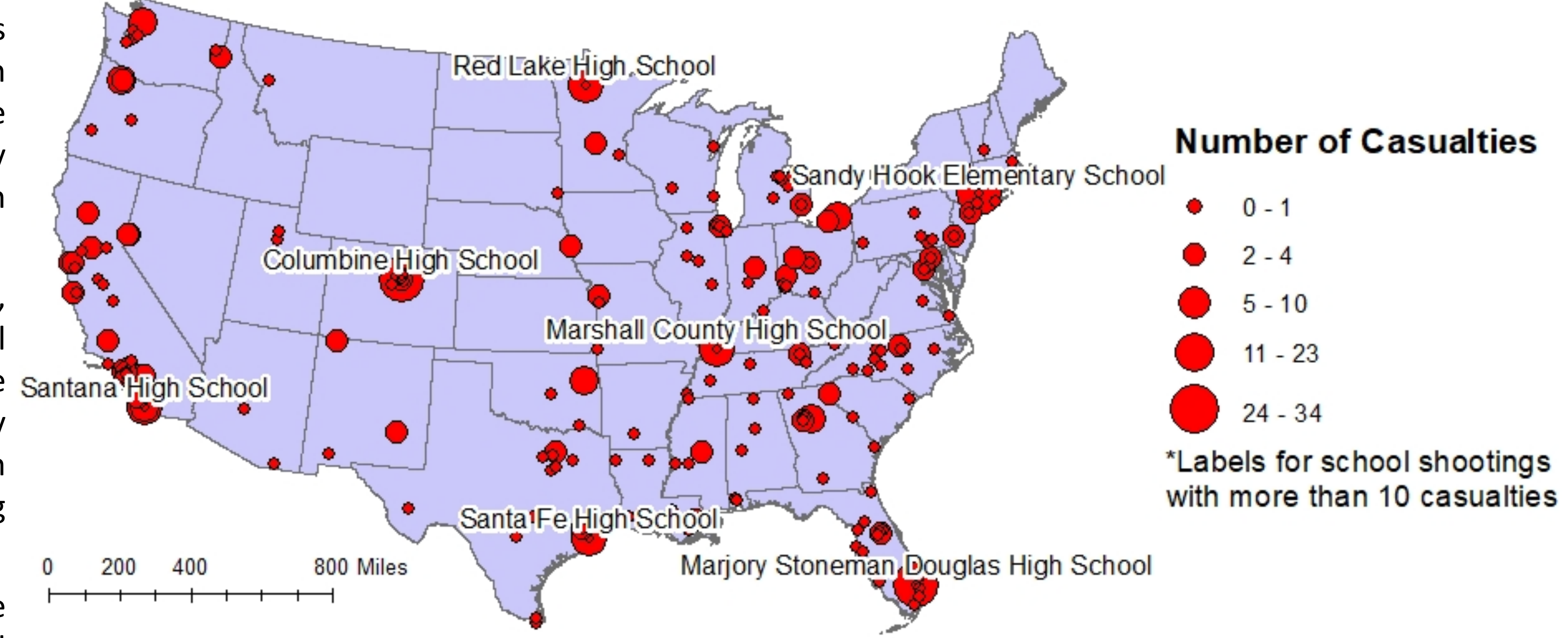
FINDINGS & RESULTS

After viewing the general map of all school shootings in the U.S. since 1999, the research question remained regarding whether there might be any observable patterns or root causes to better understand school shootings. While one hypothesis might be based on the relative strength of each individual state's gun laws, Map 2 shows that there is no observable relationship. There are still many casualties from school shootings in states like California and Minnesota despite their relatively stronger gun safety laws. However, in other states with relatively weaker gun laws like Montana, New Mexico, and New Hampshire there are less casualties from school shootings. Thus if the number and level of severity of school shootings is not related to state gun laws, perhaps there are other related factors? Map 3 explores the relationship between school funding per capita at the county level and school shootings based on racial diversity of the schools. While the evidence is not entirely conclusive, there seems to be a more positive association between school shooting events in more racially diverse schools in counties spending less money on education.

Map 1: School Shootings in the U.S. Since 1999

Red Lake High School
Sandy Hook Elementary School
Columbine High School
Marshall County High School
Santana High School
Santa Fe High School
Marjory Stoneman Douglas High School

Number of Casualties
- 0 - 1
- 2 - 4
- 5 - 10
- 11 - 23
- 24 - 34

*Labels for school shootings with more than 10 casualties

0 200 400 800 Miles

Map 2: State Gun Laws & School Shootings since 1999

Casualties from School Shootings per capita
- 0.0 - 0.00000054
- 0.00000055 - 0.0000014
- 0.0000015 - 0.0000025
- 0.0000026 - 0.0000052
- 0.0000053 - 0.0000088

Strength of state gun laws ranking (weak to strong)
- 1.50 - 8.00
- 8.01 - 14.50
- 14.51 - 21.50
- 21.51 - 27.00
- 27.01 - 30.00
- 30.01 - 34.50
- 34.51 - 44.50
- 44.51 - 50.00

0 120 240 480 Miles

CONCLUSION & POLICY IMPLICATIONS

While there may be some relationship between school funding, racial diversity, and school shootings (there is not enough evidence to say this is a strong relationship, but one can make some inferences based on Map 3), there is definitely no relationship between strength of state gun laws and U.S. school shootings. If Map 2 were redrawn with gun murder rates and homicides, there is a stronger relationship between weaker state gun laws and an increase in gun murders and homicides.

In terms of policy, this suggests that the causes of gun murders and homicides in the context of crime are likely different from the causes of school shootings in particular. While strong gun control laws at the state level can be an effective policy to curb gun crime, they will likely not be an effective policy to curb school shootings. Instead, these maps imply that policies to curb school shootings should focus more on school resource equity and racial diversity of the school. Others have hypothesized that school shootings may be correlated with mental illness. However, studies have found that there is no direct causal link between mental illness and school shootings (Metzl & MacLeish, 2015). Rather, mental illness may just be another factor in a complex puzzle of socioeconomic status, race, propensity for violence, gender, and school resources. Further studies and maps should be explored to discover other trends for school shootings beyond just the state of California.

Ultimately, the issue of gun violence in the U.S. are often spoken about as a monolithic policy issues, but it may be in the nation's best interests to disaggregate policy recommendations geared to address gun crimes in terms of murder and homicide, suicides (which are a growing cause of gun-related deaths), and school shootings.

DATA & METHODOLOGY

Map 1: Data from all 224 school shootings in the U.S. since 1999 were converted to a point layer and geocoded to a U.S. cities layer using an address locator. Number of casualties are represented as graduated symbols for each city point. School shootings with more than 10 casualties were labeled using a new selected layer.

Map 2: School shooting data was spatially joined to a U.S. states layer to aggregate school shootings by state. Then, number of casualties were represented by graduated symbols normalized by state population. Data from the Cato Institute (gun rights supporter) and Everytown (gun control supporter) on state rankings for strength of gun laws were used to create a more objective index for strength of state gun laws from 1 to 50 (weak to strong) following Fivethirtyeight's example. This information was then joined to the U.S. states layer and presented as a choropleth map.

Map 3: County level data for school fiscal services from the California Department of Education was joined to county layer data for the state of California. School shooting data by city was spatial joined to census data including socioeconomic and race data. Data for levels of racial diversity for each school shooting site in California were represented with graduated colors against a county-level layer choropleth map representing school expenditures in USD normalized by population.

Map 3: California School Shootings: race & resources

Percentage Non-White
- 0.14 - 0.20
- 0.21 - 0.48
- 0.49 - 0.74
- 0.75 - 0.91
- 0.92 - 0.98
- 0.99 - 1.00

(2013 Expenditures by County)/(Population 2010)
- 601.2 - 867.1
- 867.2 - 1047
- 1048 - 1169
- 1170 - 1305
- 1306 - 1400
- 1401 - 1530
- 1531 - 1710
- 1711 - 2172

0 35 70 140 Miles

REFERENCES

Spatial Data: U.S. Census Bureau; Washington Post
Other data: Washington Post; Fivethirtyeight; Cato Institute; Everytown; California Department of Education; U.S. Census Bureau
Background information: Chalabi, M. (2012, July 22). *Gun homicides and gun ownership listed by country*; Quealy, K. & Sanger-Katz, M. (2016, June 13). *Comparing gun deaths by country: The U.S. is in a different world.*; Sanger-Katz, M. (2015, October 8). *Gun deaths are mostly suicides*; Metzl & MacLeish. (February 2015). *Mental Illness, Mass Shootings, and the Politics of American Firearms.*

All figures are projected as North America Albers Equal Area Conic.