Is Gun Violence Distinctly an American Problem?

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https://github.com/dmonies/dsc680Portfolio

Abstract
Gun violence is a topic which is widely discussed in the media and is often presented as uniquely an American problem. The United States has one of the most lenient gun regulation strategies in developed nations and is often a topic of contention for if these regulations should be stricter. There are a lot of different options for how to combat the current uptick in gun violence in the United States but there is no consensus on the best current path forward. One potential way to understand how to modify or implement new laws is to look at how other countries of the world have implemented regulations and how successful those regulations have been at curbing gun violence. In this research, I will discuss the varying regulations which exist and contrast those policies with the homicide rates in countries which have implemented these policies. We will also look to see if the number of guns which exist per capita coincides with an increased level of gun related homicides.

Introduction
The objective of this research is to understand if government oversight and regulation of firearms can decrease the number of homicides which occur. The explanatory factors which will be leveraged to conduct the analysis include guns per capita and concealed, semi-automatic rifle, open carry, and concealed carry firearm policies for each nation in the analysis. The countries will be compared based on their policy to understand if there is a clear and well-defined trend in gun homicides per capita based on these features. The expected outcome is to understand what regulations influence the number of homicides and if the United States should implement these regulations as a strategy to curb homicides associated with gun violence deaths.

Data Sources and Cleaning
Homicide Rate - UNODC - https://knoema.com/atlas/topics/Crime-Statistics/Homicide-by-Firearms/Homicide-by-firearm-rate

The data sources which were leveraged to conduct the analysis include international firearm related homicide statistics which were compiled by the United Nations Office on Drugs and Crime (UNODC). The UNODC is the worldwide leader in data collection for statistics on drugs and crime. This provides a reliable source for data collection quality and increases the probability the data which was collected is accurate within high confidence intervals. The data is collected for rates per capita sliced by country for 2005 to 2017. Due to quality issues and extensive missing values for some countries, the analysis omits some countries that do not have any data points. The missing values also impact the timeframe which can be leveraged to have reliable and sufficient data. For this reason, only the years from 2010 to 2016 will be leveraged for purposes of this research.

Guns Per Capita – Wikipedia -
https://en.wikipedia.org/wiki/Estimated_number_of_civilian_guns_per_capita_by_country

The guns per capita data was derived from wikipedia which provides a table of estimates for the number of guns owned per capita by the population of a country. This data source is reliable as it provides references to where the data was collected although the confidence is not as high as the United Nations datasets. For purposes of this analysis, it is within a range which is allowed to estimate the rate of gun ownership to be compared to homicide rates. There was no cleaning required for this dataset other than removing countries which did not exist in the United Nations dataset

Guns Regulations Per Country – Wikipedia -
https://en.wikipedia.org/wiki/Overview_of_gun_laws_by_nation

The gun regulations per country was collect from Wikipedia as well. The data provided links out to reputable resources and as it is not as reliable as the United Nations dataset it still provides sufficient information for purposes of this analysis. When cleaning the data, the data was removed for countries which was not included in the United Nations dataset. There were also assumptions made for missing values indicating that a regulation was not allowed if it was not included within the table. Data values which were set as 'sometimes' were set as allowed considering each country has a different level of enforcement.

Data Preparation

The data was prepared by merging all three datasets into one based on the country key value. The rate of homicides was averaged, by getting the mean of each country from 2010 to 2016 while excluding N/A values to get the proper mean for this time range. This resulted in a column that provided an average rate of homicides for each country. If a country was not greater than zero it was removed from the dataset as the data was determined to be an outlier or of not sufficient quality to not skew the data.

Research Questions

The distinct research questions I wanted to ask after compiling the data is to understand what factors influence the rate of homicides provided the explanatory variables compiled for each country.

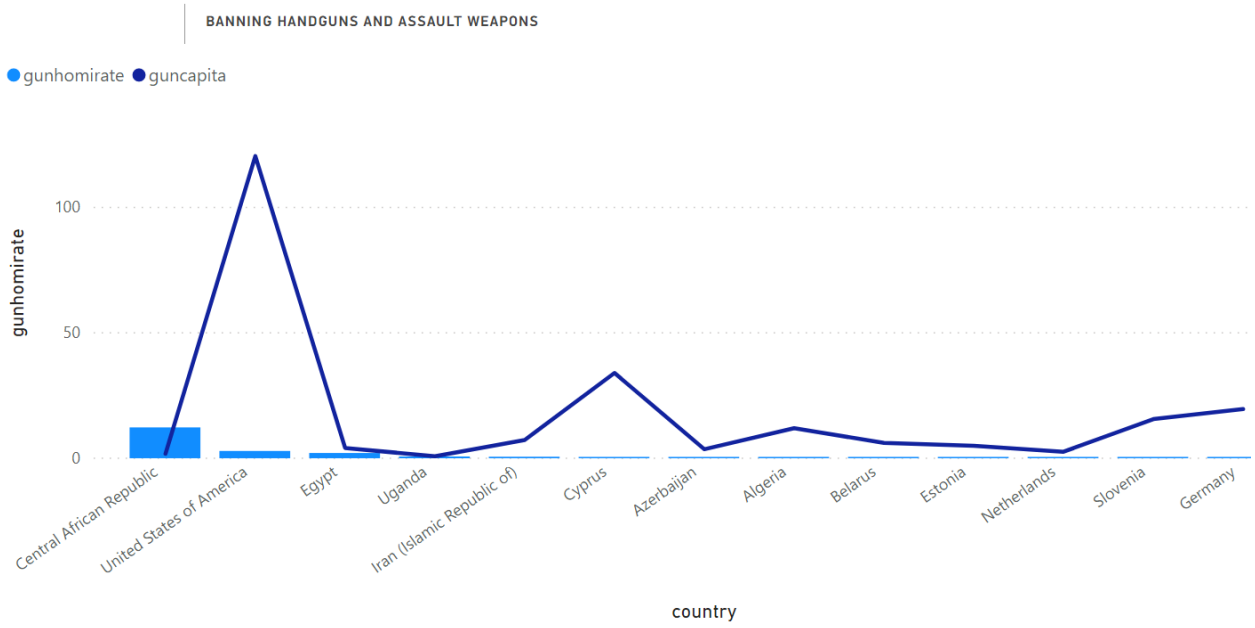
These questions include:

- Are there countries that have a higher rate of homicide while outlawing the use of handguns and Semi-Automatic weapons?
- Does banning open carry and concealed firearms reduce the rate of homicides?
- Do the number of guns which exist per capita directly correlate to the rate of homicides which occur?
- Are gun related homicides distinctly an American problem when compared to other countries with similar policies?

Analysis

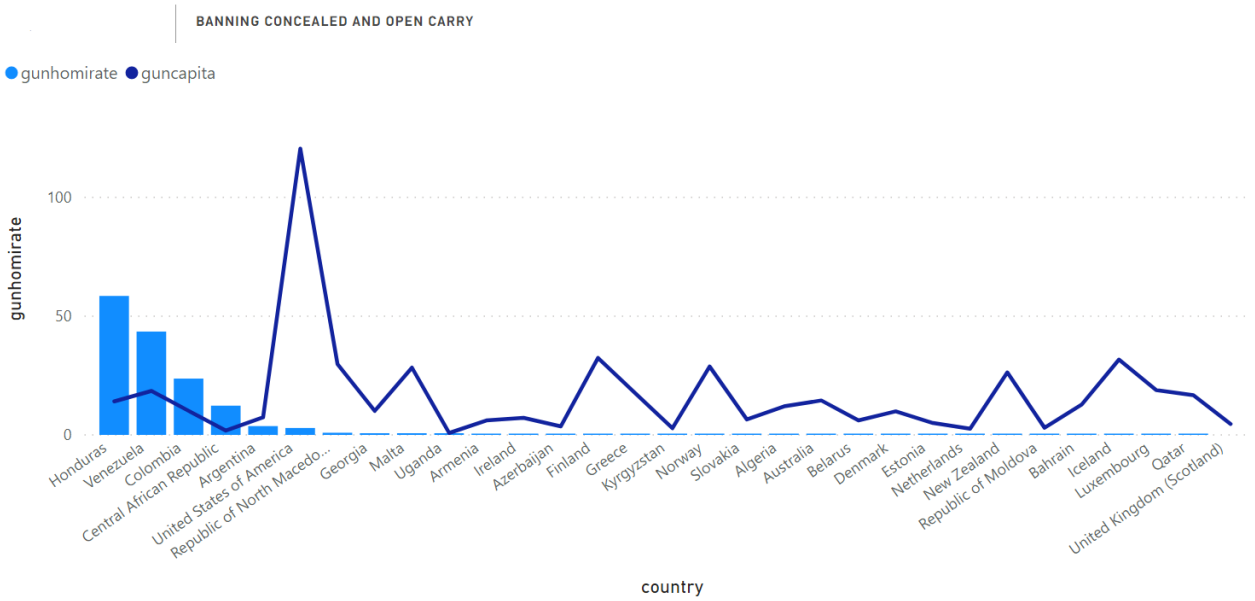
Are there countries that have a higher rate of homicide while outlawing the use of handguns and Semi-Automatic weapons?

To answer this question, we must filter the data for countries which ban both handguns and semi-automatic firearms to understand if this results in less homicides per capita when being compared to the United States. We can clearly observe that the United States has a higher rate of homicides than countries which ban these types of firearms. The one outlier is the Central African Republic which is probably due to an inability of the country to adequately enforce the ban of these weapons on their population.



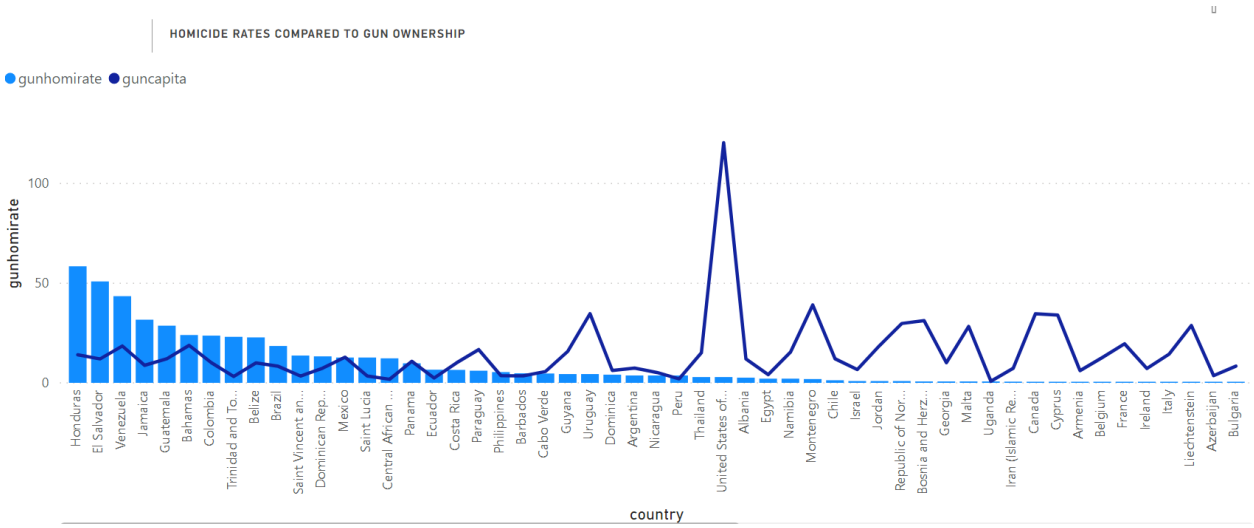
Does banning open carry and concealed firearms reduce the rate of homicides which occur?

There is a much broader pool of countries which have banned open and concealed carry when compared to those which have outlawed handguns and semi-automatic rifles. The analysis indicates that in general, countries with these laws have a lower rate of homicides when compared to the United States. The five countries with a higher rate also likely suffer from the inability to adequately enforce the laws effectively. This could be due to gangs, drug cartels, or opposition militias which control portions of a country, although further analysis is needed to understand what is unique about these countries.



Do the number of guns which exist per capita directly correlate to the rate of homicides which occur?

The number of guns that exist per capita do not correlate with an elevated rate of homicides. There are several countries which have a similar rate of gun ownership yet possess a widely different value for their homicide rate. This concludes that the number of guns that are present in a population does not necessarily influence the rate of homicides. Other factors must be considered including the firearm regulations of the country and other factors which may influence homicide rate.



Are gun related homicides distinctly an American Problem?

Gun related homicides are not distinctly an American problem with several countries having a higher rate of homicides even when considering the additional regulations in other countries and having far less guns than the United States. As can be observed in the geographic map below, the area with the most significant issue with homicides by firearm are countries located in Central and Northern South America.

Considerations

Although this analysis resulted in a recommendation based on the data which was analyzed there are additional considerations which must be made. There were many countries which were omitted from the analysis due to missing homicide rates from the United Nations datasets. This could skew the regions which show an increased rate of homicides such as Africa and Asia where there are several countries which were not analyzed. There are also more factors that may influence homicide rates outside of government regulations and firearm ownership including poverty, government enforcement of regulations, and other demographic factors which were not in scope of this analysis. Another item which must be considered which was not in scope of this analysis, is if homicide rates unrelated to firearms increase when firearms are more strongly regulated as this may not reduce homicides overall but shift the cause of homicide to another method.

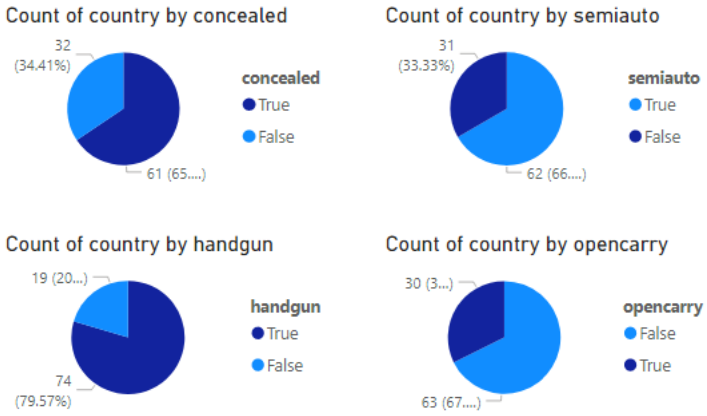
Conclusion

Based on the analysis and answers to the research questions, there does appear to be action the United States can take in amending regulations to reduce homicides associated with gun violence. The clearest approach which appears to be highly successful is banning or restricting the ownership of handguns and semiautomatic rifles. For this to be successful, adequate enforcement of the law would be required as the data also pointed to issues in countries where the government was not adequately able to enforce firearm policies. It is also noteworthy, that the number of firearms which exist in a country does not correlate with an increased rate of firearm related deaths and especially true when the type of firearms that can be owned are restricted.

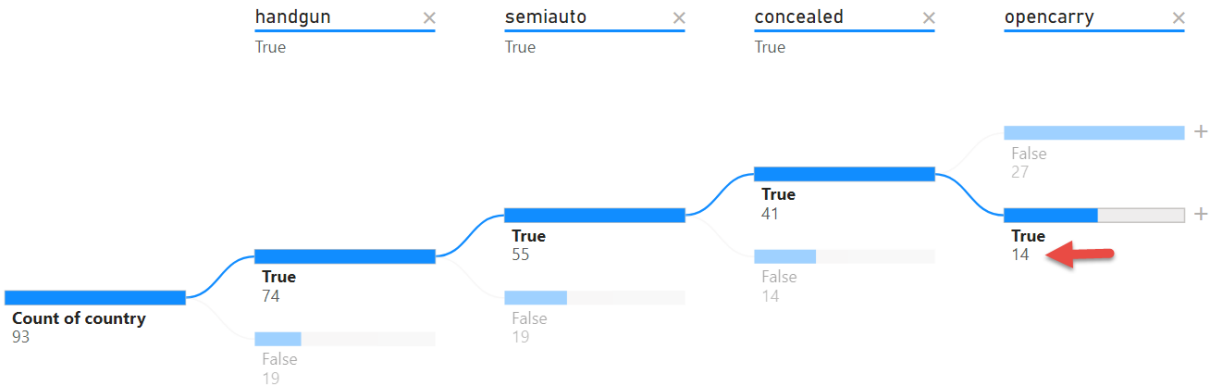
Appendix

The appendix contains additional visualizations regarding the data which were not leveraged for answering the research questions.

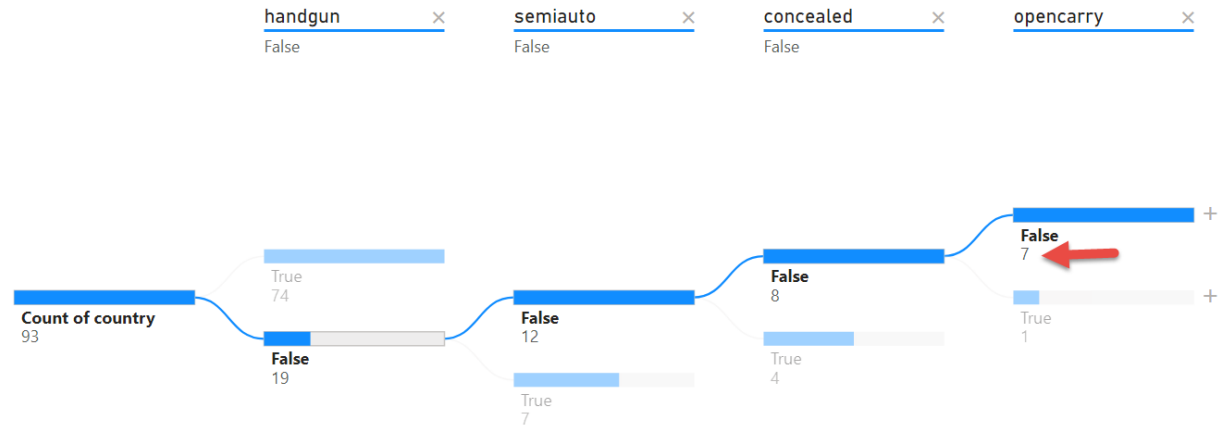
Percentage of Countries with Distinct Regulations



Number of Countries Which Allow All Regulations



Number of Countries Which Do Not Allow All Regulations



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