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Business Fundamentals – Project Proposal

# Data Analysis of Gun Violence in America

Gun laws are referred to laws and regulations related to manufacturing, trading, possession, transporting, record keeping, and destruction of firearms, firearms accessories, and ammunition. These laws are enforced by federal Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) and the state agencies. The objective of this project is to perform Exploratory Data Analysis on gun violence related data to provide insights on this subject matter.

**Client:**

- Who benefits from exploring this question or building this model/system? Who is this work for specifically?

This analysis is to provide demographic insights to federal Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). The ATF and state agencies involved in gun laws can use this information to make more data-driven decisions in proposing and enforcing gun regulations.

**Question/Need:**

- What is the question behind your analysis? What **data science opportunity** and potential **application** do you see? What is the purpose of the EDA you will do and the data science model you will propose?

The motivation behind this analysis is to understand the extend of gun violence in the US; What are the number of gun violence casualties in each state? What type of firearms are mostly used to perform the act of violence? What are the number of mass shootings? How are the offender's demographic statistics (age, gender, race, role of mental health etc.)?

Hopefully after having a better understanding of the data, we can proceed with other data science opportunities such as using Poisson regression modeling to predict the number of casualties based on attributes and events. We can also use unsupervised clustering to group states and locations where more effective regulations are needed.

**Impact:**

- What **impact** are you trying to achieve? In other words, what will your work do for your client?

The impact in mind is to introduce data-driven facts and information in political decisions. Hopefully the government agencies such as ATF will use this analysis and insights to propose more effective gun laws, or better enforcing the laws currently in

place. More effective gun laws can impact thousand of lives of the citizens and law enforcements.

- What is your **impact hypothesis**?

The impact hypothesis is that by understanding the gun violence data, government agencies can better allocate their resources for enforcing gun laws, thus reducing the number of gun violence and casualties.

**Data Description:**

- What dataset(s) do you plan to use, and how will you obtain the data?

Data related to gun violence and mass shootings in the US. The data if from three different datasets and all are obtained from data.world open source.

- What is an individual sample/unit of analysis in this project? What characteristics/features do you expect to work with?

The analysis involves gun violence data sample for each state in the US in general. It will also include data and analysis of mass shootings and demographics of the offender.

**Solution Path:**

- For this project, you need to propose a **data science solution path**. This is a model that will help you to achieve your desired **impact**. What is your **data science solution path**?

The data science solution path is to use Poisson regression modeling to predict the number of casualties in a gun violence incident based on location, offenders' demography, city events, type of arms etc. Also, we can use the unsupervised clustering the segment locations and states that have higher rates of gun violence.

- What other solution paths might be viable? How else could you accomplish your goals if not through data science? (Think practically; you might not even need advanced methods. If this is the case, make a justification for why advanced methods are the preferred solution path.)

Combining this data analysis with other information such as government and states budgets for preventing gun violence, number of arms sold in each state, the extend of educational programs for providing related information and training to citizens etc.

**Criteria for Success:**

- What does success look like? How specifically will you measure your results in order to determine whether your work is successful? Think about the practical goals of your work.

The success would be having ATF to propose new gun laws because of this analysis. Another successful result will be allocating more resources to the gun regulations currently in place according to the result of this analysis.

**Assumptions and Risks:**

- Given what you've said about your desired impact and the solution(s) you will use to achieve it, what are some assumptions you're making?

The assumption is that data collection has been uniform in all states. There might be some discrepancy in reporting the gun violence numbers as each state might have a different definition of what qualifies as "gun violence".

- What are the risks to the approach you've identified?

One is that the proposed actions based on this analysis might be contradictory to the second amendment. In addition, the result this analysis can become canceled-out or neglected due to lobbyist counter activities in regards of providing data and analysis on the impact of owning guns in self-defense across America etc.

**Tools:**

- How do you intend to meet the tools requirement of the project?

Excel or Google sheets will be used for EDA purposes. In addition, Tableau will be use for interactive visualization and reporting.

- Are you planning in advance to need or use additional tools beyond those required?

Python libraries will be used (if permitted) for combining datasets if needed!

**MVP Goal:**

- What would a minimum viable product (MVP) look like for this project?

The MVP provided for the client will include the opportunities and desired impact, solution path, the preliminary data visualization using Tableau having the impact hypothesis in mind.