## **Project Proposal: Analysis of Gun Background Checks and Gun-Related Death Rates Across the United States**

### **Introduction**

In the United States, the relationship between gun ownership and gun violence is a topic of critical public interest and policy debate. This project aims to analyse the impact of gun background checks on gun-related death rates, exploring how effective background checks are in preventing gun-related incidents. Understanding these dynamics is crucial for informing policy decisions and improving public safety measures.

### **Project Objectives**

1. **Analyse the Correlation**: Determine the correlation between the frequency of gun background checks and gun-related death rates across different states.
2. **Geospatial Analysis**: Visualise the distribution of gun background checks and gun-related deaths geographically across the United States to identify any regional patterns or anomalies.
3. **Policy Impact Study**: Examine how different state policies regarding gun control correlate with the frequency of background checks and gun-related death rates.
4. **Recommendations for Policy Makers**: Provide evidence-based recommendations to policymakers on how gun control laws and background check processes might be improved.

### **Background and Rationale**

Recent studies have shown varied results regarding the effectiveness of background checks in reducing gun violence. However, many of these studies do not take into account regional variations and detailed geospatial analysis. By conducting a comprehensive study that considers these factors, this project aims to fill the gaps in current research and provide a more detailed understanding of the issue.

### **Methodology**

1. **Data Collection**:
   * **Background Check Data**: (FBI\_background\_checks\_1999\_2020) - data from the FBI’s National Instant Criminal Background Check System (NICS).
   * **Mortality Data**: (US Gun deaths by County 1999-2019) - data on gun-related deaths from the Centers for Disease Control and Prevention (CDC).
2. **Data Preprocessing:**
   * Clean and preprocess the datasets to handle missing values and align them for temporal and geographical analysis.
3. **Data Analysis**:
   * **Statistical Analysis**: Use correlation and regression analysis to explore the relationship between background checks and death rates.
   * **Geospatial Analysis**: Employ Geographic Information Systems (GIS) to create heat maps and identify geographical trends.
   * **Comparative Policy Analysis**: Analyse the impact of different gun control policies on background checks and death rates.
4. **Tools and Technologies**:
   * Pandas for data processing and statistical analysis.
   * Matplotlib and Seaborn for data visualisation
   * GeoPandas, shapely and Matplotlib for geospatial mapping.

### **Expected Outcomes**

1. **Deliverables**: A GitHub repo containing the project codes, a slide deck, and a comprehensive report detailing the findings from the statistical and geospatial analysis.
2. **Policy Recommendations**: Develop a set of targeted recommendations for policymakers based on the analysis results.

### **Significance**

This project will provide crucial insights into the effectiveness of background checks as a mechanism to reduce gun violence. The findings will help inform policymakers, stakeholders, and the public, potentially leading to enhanced regulatory measures that protect lives without compromising the rights of responsible gun owners.

### **Conclusion**

With gun violence being a critical issue in the United States, this project is timely and essential. The results will provide a data-driven foundation for future discussions and decisions regarding gun control policies and their implementation.