# Process Book: Gun Violence Project

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## Overview and Motivation

This project investigates gun violence trends from 2013 to 2018 in the South Atlantic region of the United States, covering Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia. By focusing on this region, we can leverage its diversity of gun control laws to draw meaningful comparisons and insights.

Our analysis will specifically compare the level of gun control to the number of incidents each year, with a focus on shooter gender. Given that shooters are typically male, we aim to highlight the extreme disparity in gender representation and how it relates to broader patterns, providing insights that may inform policy discussions.

Gun violence remains a critical public safety issue in the United States, and this project seeks to provide a data-driven perspective on its trends in a region with diverse gun control laws. By making this information accessible and visually engaging, our goal is to support well-informed conversations about gun control and its potential impact on reducing incidents.

## Related Work

We discussed a mass shooting dataset in class that was a minor influence into why we chose this topic as our question of interest. This made us realize the type of data we have access to and how we could use it to make visualizations more specific to our region.

## Questions

Initially, our project sought to answer these key questions:

* How do varying levels of gun control correlate with the frequency of gun violence incidents and casualties?
* What are the trends in incidence over time (2014 to 2017)?
* How do shooter demographics, specifically gender, relate to these incidents?

As the project evolved, we had to narrow our focus due to data limitations. While we originally aimed to explore shooter race, firearm type, and acquisition methods, data quality constraints led us to concentrate solely on gun control levels, incident trends, and basic shooter demographics.

From the visualizations, the following insights stand out:

* **State-Specific Casualties**: States like Florida, Georgia, and North Carolina experience the highest number of casualties, indicating a possible relationship between state gun laws and incident severity. Exploring the breakdown of deaths versus injuries within these states could provide further insights into the impact of gun violence and the effectiveness of interventions.
* **Shooter Gender Disparity**: The bar chart showing total casualties by gender reveals a stark disparity, with male shooters overwhelmingly responsible for the majority of incidents and casualties. This extreme difference underscores the need for targeted policy measures and prevention strategies focused on male populations.
* **Trends Over Time**: Incident frequency and total casualties per month highlight the consistency of gun violence across years and the potential influence of gun control ratings, depicted by the scatter plots.
* **Gun Safety Ratings**: Correlations between gun safety ratings and total casualties emphasize the potential effectiveness of stricter gun control laws in reducing the frequency and severity of incidents.

During analysis, we considered additional questions, such as whether specific years or demographic groups were more affected by incidents in areas with stricter or more lenient gun control laws. This shift allowed us to deepen our focus on how demographic factors interact with gun control levels across time, enhancing our understanding of the broader trends within the limits of our data.

## Data

### Data Sources:

### Kaggle Collection of Gun(2013-2018)

* + Preformatting tabular data
  + (See source Section for details)

### Giffords Gun Control Grades

* + Data manually types from source cards across select states and years.
  + (See Source Section for details)

### Files:

### *getting\_gun\_data\_with\_rating.csv*

* + **Used Columns:**
    - incident\_id, date, year, state, n\_killed, n\_injured, participant\_gender, total\_casualties, month, month\_name, rating.
  + **Used for Specific Purposes:**
    - n\_killed and n\_injured: Calculations and tooltips.
    - participant\_gender: Filtering and tooltips.
    - rating: Filtering and tooltips.
    - **Not Used Columns:**
      * city\_or\_county, gun\_stolen, gun\_type, n\_guns\_involved, participant\_age, participant\_age\_group, participant\_name, participant\_relationship, participant\_type, quarter.
* *suspect\_file.csv*
  + **Used as Filter:**
    - incident\_id, date, year, state.
  + **Used for Calculations and Tooltips:**
    - n\_killed, n\_injured: Calculated total\_causalities and displayed as tooltips.
    - total\_casualties: Derived from n\_killed and n\_injured.
  + **Cleaned but Not Used in Final Analysis:**
    - participant\_age, participant\_age\_group, participant\_gender: Cleaned specifically for suspects.
  + **Pulled Data for Specific Use:**
    - participant\_type: Focused only on "Subject-Suspect."
  + **Not Used:**
    - city\_or\_county, gun\_stolen, gun\_type, n\_guns\_involved, participant\_name, participant\_relationship.

### Python Script Files for Cleaning:

### Key Operations:

* Filtered for South Atlantic States.
* Removed unnecessary information.
  + Note: While more data points were initially planned, we prioritized functionality and avoided removing too much data.
* Reformatted the date column for readability.

### Scripts:

* getting\_suspects.py:
  + Cleaned suspect\_file.csv and gun\_data\_with\_rating.csv.

**Methodology:**

**Filtering Data for "Subject-Suspect"**

* The filter\_and\_clean\_subject\_suspect function identifies and processes rows where participants are labeled as "Subject-Suspect."
* It cleans columns like participant\_age\_group and participant\_gender by removing prefixes and retaining only relevant data

**Adding Total Casualties:**

* A new column total\_casualties is created by summing n\_killed and n\_injured for each incident.

**Exporting Cleaned Data:**

* The cleaned dataset, filtered to include only "Subject-Suspect" records, is saved as suspect\_file.csv for further analysis.

**Date Transformation and Monthly Mapping:**

* Added columns for the incident's month, month name, and quarter based on the date column
* Used a dictionary to map month numbers (1–12) to their names (e.g., 1 = January).
* Saved the enhanced dataset as Gun\_violence\_clean3.csv.

**Merging Gun Data with State Ratings:**

* Assigned gun safety ratings (e.g., "F," "B-") to each state for each year.
* Merged the rating data with the main dataset, adding a new rating column.
* Saved the final dataset as gun\_data\_with\_rating.csv

**Notes**

* Intermediate files, such as gun\_violence\_SE\_clean1.csv, Gun\_violence\_clean3.csv, and gun\_violence\_with\_quarter\_month.csv, were created during various stages of the project.
* These files served as checkpoints to prevent data loss and safeguard progress.
* Due to limited experience with GitHub and concerns about overwriting or losing data, creating these intermediate files was necessary.
* While not all intermediate files were used in the final analysis, they were crucial for managing and organizing the workflow effectively.

## 

## Exploratory Data Analysis

The data exploration process began with initial visualizations in Tableau to identify patterns, outliers, and areas requiring refinement. These efforts focused on understanding incident trends, population biases, and the distribution of injuries versus fatalities. By iteratively testing various chart types, we refined our approach to ensure clear and meaningful insights.

**Figure 1: Bar Chart of State Totals Highlighting Population Bias**

A screenshot of a graph

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We began by creating visualizations in Tableau, including bar charts showing state totals. These initial visualizations helped us identify patterns, outliers, and potential areas requiring refinement or additional data cleaning. For instance, we noticed states with higher populations had disproportionately higher numbers of incidents, which highlighted the need for designs that adjusted for population biases. Alongside Tableau, we developed sketches of the dashboard layout to understand how interactions between filters and charts would drive the analysis

**Figure 2: Distribution of Injuries and Fatalities per Incident**

A screenshot of a graph

Description automatically generatedWe analyzed a pie chart to explore the distribution of injuries versus fatalities by state and year. Our goal was to determine if states with lower gun control grades, such as Florida, experienced higher rates of injuries and fatalities. Additionally, we wanted to observe how changes in gun control policies over time influenced these trends, which is why we focused on yearly data.

From the pie chart, it is evident that injuries generally outnumber fatalities. This aligns with the expectation that most incidents, unless classified as mass shootings, typically result in more injuries than deaths. A significant portion of the data did not involve mass shootings; the average number of casualties per incident was around one. The largest recorded value was an outlier at 100 casualties, with the next highest being 25. For most incidents, casualty numbers ranged between one and five. These figures represent the cumulative sum of both injuries and fatalities, rather than isolating one category.

**Figure 3: Gun Violence Trends by Year**

A graph with blue lines

Description automatically generated

Lastly, we created a line chart to examine trends in gun violence over time, with one line representing injuries and the other fatalities, plotted against the x-axis displaying years. This visualization allowed us to observe patterns and changes over time, highlighting general trends. However, the line chart was ultimately replaced with a more interactive scatter plot that provided greater insight into incident-level data and state-specific variations. The scatter plot allowed users to drill down by year or incident and explore notable changes, such as significant drops in incidents.

## Design Evolution

Our initial milestone focused on conceptualizing our dashboard without full implementation. The proposed design included maps showing incidents per location, incidents per state, and a drill-down feature to view city-level data. It also featured stacked bar charts illustrating incidents by rating and a pie chart comparing the proportion of injuries to fatalities to highlight the difference between the number of individuals killed and injured.

**Exploring/Milestone 1**

**Figure 4: Evaluating Spatial Data Representation in Gun Violence**

A map of the united states

Description automatically generated

We explored various visualizations before finalizing the dashboard, particularly for the main "busy" graph, which displayed every row of the dataset. One early idea involved a map plotting the location of each gun incident, with more lethal crimes represented by larger circles. While this design effectively showcased spatial data, it was limited by population-related biases, as states with larger populations dominated the visualization

**Figure 6: Total Incidents by State with Interactive Filtering**

A graph of the state of the united states

Description automatically generated

We created a bar chart to represent the total incidents for each state, sorted from highest to lowest. Initially, this chart was integrated as a filter for other visualizations, particularly the map. While we considered removing it and replacing it with a drill-down feature, we ultimately decided to keep it in the final design. Using a filter allowed for dynamic interactions, making it more efficient and user-friendly. By incorporating a year filter in our scatter plot, the design became more cohesive and intuitive. The filter provided instant, clear updates—such as isolating data for Florida or Georgia—making changes immediately visible and easy to interpret.

**Figure 7: Proportion of Injuries and Fatalities in Gun Violence Incidents**

A pie chart with text on it

Description automatically generated

We initially included a pie chart to show the proportion of injuries and fatalities, carried over from our original drill-down design. However, we ultimately found it to be a waste of space, as there were more effective ways to visualize this information without sacrificing valuable dashboard real estate that could be used for more impactful elements.

**Figure 8: Stacked Bar Chart of Incidents by State and Gun Control Grades**

A graph of the state of the united states

Description automatically generated

The stacked bar chart showing incidents per state based on the letter grade assigned to gun control laws was ultimately deemed redundant and unnecessary. The original idea was to use colors and hues to represent gun control assessments and bar lengths to indicate the number of incidents. However, this approach proved to be overly complicated and confusing, offering little value to the overall analysis. As a result, it was removed for a more streamlined and effective design.

**Prototype**

After revising our original idea and incorporating the feedback received, significant changes were necessary. Initially, understanding the term "busy" in the context of visualization was challenging. We interpreted it as difficulty in viewing all the data but later realized it referred to the overwhelming amount of information displayed without clarity. This issue was particularly evident given the high prevalence of gun violence in the United States compared to other countries, and even more so in states like Florida, which experiences a high number of casualties due to minimal gun safety and control measures. Addressing these challenges became central to achieving our goal of effectively highlighting these trends

**Figure 9: Main Graph of Incident Trends by Date and Gun Control Grades**

A screenshot of a computer

Description automatically generated

In the project prototype, the initial design closely resembled the final implementation. The main graph plotted data by date, allowing users to filter by year and view monthly trends. The y-axis represented gun control grades. During development, it became clear that some grades were either missing or lacked sufficient data, rendering the feature ineffective. As a result, it was removed to maintain clarity and focus on more meaningful insights.

**Figure 10: Scatter Plot of Gun Control Ratings vs. Incident Counts**

A white board with a graph

Description automatically generatedAnother scatter plot was created to compare gun control ratings with the number of incidents. This visualization provided a clearer understanding of the distribution and highlighted distinctions in the data. States with poor grades, such as an "F," showed significantly higher incident counts, while states with better grades generally had fewer incidents, often below 10. Notably, an extreme outlier was observed in the lower grading range, aligning with expectations given the weaker gun control measures in those states.

**Figure 11: Stacked Bar Chart of Shooter Demographics by Gender and Age Group**

A graph of a number of children

Description automatically generated

The original intent was to analyze more demographics, such as race and age, but the dataset either lacked this information or provided insufficient quality data. As a result, the focus shifted to gender, attempting to use a stacked bar chart segregated by age group. However, this approach proved less insightful, as most shooters were adults, which was expected, and a significant portion of data fell into the "unknown" category. This made it less useful for understanding shooter characteristics. Analyzing victims instead might have provided more meaningful insights, but for this project, the focus was on understanding how gun violence affects America. A notable observation was the overwhelming prevalence of male shooters, though the presence of female shooters in some cases added an interesting dimension to the data.

**Figure 12: Prototype Histogram of Total Casualties and Incidents by State**

A graph of a number of blue bars

Description automatically generated with medium confidence

In the prototype, a histogram was used to display the total casualties by state alongside the number of incidents. While it lacked color-coding and advanced filtering seen in the final version, the histogram provided a straightforward foundation for exploring the data. It prioritized accessibility and simplicity, enabling users to quickly view and interact with key information. Although less refined than the final implementation, the prototype established a framework for adding intuitive filters and cohesive visuals to enhance the dashboard's usability and overall impact.

In addition, an initial idea was to include a choropleth map to visualize incident density by state using color intensity. However, it was deemed unnecessary due to its lack of interactivity and overlap with the state filtering provided by the bar graphs. Prioritizing more dynamic and insightful visualizations, the choropleth map was excluded before the prototype phase.

**Final Presentation**

Following the live presentation of the near-final product, additional improvements were identified to make the dashboard more intuitive and interactive. A key enhancement involved linking points between scatter plots to help users explore casualties from individual incidents. While the visuals at this stage offered a solid foundation, they still lacked the level of detail required for deeper insights. These enhancements built on the prototype's framework, focusing on clarity, interactivity, and exploring relationships between variables. The following section delves into how these refinements added depth and functionality to the final dashboard.

From the prototype to the final version, several key enhancements were made to improve clarity, usability, and interactivity. Color-coding was introduced to differentiate states across all visualizations, creating a cohesive design and making comparisons more intuitive. The demographic analysis was simplified by replacing the age-segmented bar chart with a straightforward male-female bar chart, focusing on the most impactful characteristic. The histogram of casualties by state was removed to streamline the dashboard and avoid redundancy. Additionally, a scatter plot was implemented to display incidents in relation to gun control grades, with a year-based filtering feature added to allow users to explore trends over time. These changes significantly improved the dashboard’s ability to present detailed insights while maintaining a clean and user-friendly design.

## 

## Implementation

**Overview of Interactive visualizations**

We designed our dashboard to address the core questions about gun violence trends, gun control grades, and shooter demographics. The primary goal was to present these insights in a user-friendly, interactive format, allowing users to explore and identify patterns effectively. Each visualization plays a specific role, and together they provide a cohesive view of the data.

**Scatter Plot for Gun Incidents and Gun Control Grades**

**Files**:

* **Primary**: script-scattersTM.js
* **Supplementary**: newscat.js, update-charts.js

**Purpose**:

* To visualize the relationship between gun control grades and gun violence incidents across states in the Southeast U.S.
* To highlight trends showing that states with poorer gun control grades tend to have significantly higher incident rates.

**Logic**:

* **Each** **point = one gun incident:**
  + A data point includes information such as the incident's date, state, casualties, and suspect demographics.
* **X-axis logic:**
  + Represents either the incident's date (temporal analysis) or the total number of casualties (severity of the incident).
* **Y-axis logic:**
  + Displays the gun control grade for the state (A = strong gun laws, F = weak or no gun laws). States with better grades are positioned higher on the y-axis, and poorer grades are lower.
* **Point density:**
  + The clustering of points provides a visual cue about incident frequency in each state and grade category.
* **Tooltip logic:**
  + When hovering over a point, the tooltip dynamically pulls details (e.g., "State: Florida," "Casualties: 4," "Suspect Gender: Male") for contextual information.
* **Filter connection:**
  + Applying a state or year filter reduces the visible points to match the selection criteria.

**How It Works:**

* script-scattersTM.js dynamically generates the scatter plot by loading cleaned data from gun\_data\_with\_rating.csv.
* Coordinates (x, y) are calculated from incident attributes (e.g., date, grade).
* newscat.js handles the linking of filters, allowing users to refine visible incidents based on selected criteria.
* Changes triggered by user interactions are processed in update-charts.js to synchronize data across all visualizations.

**Interactivity/Capabilities:**

* Users can hover over points to view details about individual incidents in tooltips.
* Clicking a point highlights it and dynamically filters other visualizations (e.g., the histogram updates to reflect incidents from the same state or year).
* Multiple filters (e.g., year + state) can be applied simultaneously to refine the visualization further.

**Figure 1: Unfiltered Chart of Gun Safety Ratings by Incident Date with State-Specific Color Differentiation**

**A graph showing a number of data

Description automatically generated with medium confidence**

**Figure 2: Drill-Down by Year with Monthly Trends on the X-Axis**

A line chart with different colored dots

Description automatically generated

**Figure 3: Interactive Point Selection with Incident Details and Cross-Filtering**

A graph showing a number of data

Description automatically generated with medium confidence

**Bar Chart for State-Specific Causality Filtering**

**Files:**

* **Primary:** script-stackedbarchart.js
* **Supplementary**: update-charts.js

**Purpose:**

* To allow users to filter gun violence causalities by state.
* To provide a clear comparison of incident counts across states.

**Logic:**

* **Bars = states**:
  + Each bar represents a state, with the x-axis displaying the state name.
* **Bar height = total incidents**:
  + The y-axis represents the total number of gun violence incidents in that state for the selected timeframe.
* **Bar color logic**:
  + Colors may represent an additional dimension, such as the state’s gun control grade or another categorical variable.
* **Tooltip logic**:
  + Hovering over a bar dynamically displays the state's name and the total number of incidents in that state.
* **Drill-down logic**:
  + Clicking on a bar filters other visualizations (e.g., scatter plot, gender bar chart) to show only incidents from the selected state

**How It Works**:

* script-histogram.js aggregates data from gun\_data\_with\_rating.csv by state to calculate the total number of incidents per state.
* Bars are rendered using D3.js, with heights proportional to the total incidents for each state.
* User interactions trigger updates via update-charts.js, ensuring that all visualizations reflect the selected state filter.

**Interactivity/Capabilities**:

* Users can click on a bar (representing a state) to filter other visualizations and focus on incidents from that state.
* Hovering over a bar displays a tooltip with details about the state and its total incident count.
* Filters dynamically update all visualizations to ensure a consistent and integrated exploration experience.

**Figure 3: Unfiltered Bar Chart Showing Total Incidents per State Across All Years**A graph of different colored squares

Description automatically generated

**Figure 4: State-Specific Filtering with Dynamic X-Axis and Casualties Tooltip**

A graph of the states

Description automatically generated

**Bar Chart for Shooter Demographics (Gender)**

**Files:**

* **Primary:** script-stackedbarchart.js
* **Supplementary**: update-charts.js

**Purpose:**

* To filter gun violence incidents by the gender of suspects (Male and Female).
* To highlight the stark disparity in gender representation, with male suspects dominating gun violence incidents.

**Logic:**

* **Bars = gender categories**:
  + The x-axis represents genders (e.g., Male, Female).
* **Bar height = total incidents**:
  + The y-axis shows the total number of incidents involving suspects of that gender.
* **Tooltip logic**:
  + Hovering over a bar dynamically displays the gender and total number of incidents for that category.
* **Filtering logic**:
  + Clicking on a bar filters other visualizations (e.g., scatter plot, histogram) to show only incidents involving that gender.

**How It Works**:

* script-stackedbarchart.js aggregates data from suspect\_file.csv by gender and age group.
* Segments are drawn dynamically using D3.js, with stacking logic applied for age-group visualization.
* Filters for gender and age update the chart to display only matching data.
* script-stackedbarchart.js aggregates data from suspect\_file.csv by gender.
* Bars are rendered using D3.js, with heights proportional to the total incidents for each gender.
* User interactions trigger updates via update-charts.js to synchronize the filters across all visualizations.

**Interactivity/Capabilities**:

* Users can click on a bar (Male or Female) to filter the scatter plot and other charts, focusing on incidents involving suspects of that gender.
* Hovering over a bar displays a tooltip with detailed information about that gender category.
* Filters dynamically update to allow for refined analysis based on gender.

Figure 1: Unfiltered Bar Chart of Total Casualties by Gender, with Males in Blue and Females in Pink

A graph of a person and person

Description automatically generated

Figure 2: Bar Chart Filtered by Male Suspects with Total Casualties Displayed as Tooltip

A graph showing a number of cases

Description automatically generated

**New Scatter Plot Features**

**Files:**

* **Primary:** newscat.js
* **Supplementary**: update-charts.js

**Purpose:**

* Links the scatter plots with other charts for seamless exploration of the data.
* Enhances scatter plot functionality by introducing advanced filtering and interaction capabilities.

**Logic:**

* Adds functionality to filter points by specific attributes, such as grade or casualty range.
* Ensures smooth synchronization between the two scatter plots when filters are applied.

**How It Works**:

* Extends the existing scatter plot logic from script-scattersTM.js.
* Handles user interactions such as clicking, hovering, and filtering, and passes the filtered data to update-charts.js.
* Updates both scatter plots dynamically to reflect changes triggered by user input.

**Interactivity/Capabilities:**

* Allows users to focus on incidents by specific grade, casualty range, or demographic group.
* Filters applied in newscat.js are linked to other visualizations, ensuring consistent updates across the dashboard.

Figure 1: Unfiltered Scatter Plot of Gun Safety Ratings vs. Total Casualties per Incident, Color-Coded by State

A graph of colored dots

Description automatically generated

Figure 2: Scatter Plot with Selected Point Displaying Tooltip for Incident ID, Rating, and Casualties by State

A screen shot of a graph

Description automatically generated

**Total Dashboard**

Figure 1: Unfiltered Dashboard Displaying Comprehensive Data Across All States and Visualizations

A screenshot of a computer screen

Description automatically generated

Figure 2: Dashboard Filtered by Top Chart Highlighting Specific Incidents, Suspect Gender, and State Details

A screenshot of a computer

Description automatically generated

Figure 3: Bar Chart Filtered by Female Shooters, Highlighting All Incidents Involving Female Suspects

A screenshot of a computer screen

Description automatically generated

Figure 7: Filtered View by Incident Date (2016), Highlighting Selected Year Data Across All Visuals

A screenshot of a computer

Description automatically generated

Figure 8: Filtered View by Bar Chart, Highlighting Selected State Data Across All Visuals

A screenshot of a computer

Description automatically generated

**Figure 9: Filtered View by Top Left Scatter Plot, Highlighting Data for the Specific Incident**

A screenshot of a computer

Description automatically generated

From the initial design to the final implementation, the dashboard underwent significant changes, resulting in an almost complete restart. While the process was initially challenging and unclear, the final product is far more intuitive, visually appealing, and user-friendly. The earlier version was cluttered and overwhelming, with too much information presented inefficiently. In contrast, the refined design delivers a wealth of information without being overbearing, making it easier to understand correlations quickly. Features like tooltips further enhance usability by providing immediate insights, contributing to a polished and cohesive dashboard.

## Evaluation

Our visualizations revealed several limitations in the dataset itself. While the dataset contained fields such as gun type and the number of guns involved, these fields often had missing values, rendering them unreliable for analysis. This issue limited our ability to analyze certain patterns, such as trends in the types of firearms used in incidents. Improving the dataset would require seeking alternative sources or combining datasets to fill these gaps, though systemic issues, such as reporting errors or government intervention, might still persist. Despite these challenges, the dataset provided enough detail to analyze state-level trends and gun control grades effectively.

Focusing on the Southeast region allowed us to explore relevant regional trends but posed its own challenges. The states’ gun control grades showed little variation over the four years analyzed, limiting the depth of our findings. The strong pro-gun stance in the Southeast also meant that most states had poor grades (e.g., F or D), reducing diversity in the data. Expanding the analysis to the entire U.S. could have provided more variation, but it would have created a dataset too large to process within our timeline. Alternatively, narrowing the scope to a single year could have worked but would have prevented an analysis of how grade changes impacted incident numbers over time.

Development presented significant challenges due to inconsistencies in the raw data and coding errors. For example, we discovered a major data gap in March 2014 caused by misplaced colons and pipes in the dataset. While this issue was resolved for that section, similar errors may remain undetected elsewhere. One known issue affected the gender bar chart, where certain incidents failed to appear visually but were still correctly filtered by gender. Additionally, the year filter on the scatter plot presented persistent bugs, requiring users to apply the filter twice before changes affected other charts. While this workaround maintained basic functionality, it remains a significant area for improvement.

Despite these limitations, the dashboard successfully answers the core questions of the project. Users can explore relationships between gun control grades, state trends, and demographics interactively, identifying patterns in incident frequency and casualties. For example, users can observe how states with poor gun control grades (e.g., F-rated states) consistently experience higher incident rates, and they can filter incidents by time and gender to explore additional insights. Moving forward, improvements could include implementing more robust data validation, enhancing scatter plot connectivity, and addressing filtering bugs to create a more seamless user experience.

**Data**

* Giffords gun control grades collected across the wanted years sources:
  + <https://giffords.org/lawcenter/resources/scorecard2018/>
  + <https://giffords.org/lawcenter/resources/scorecard2017/>
  + <https://giffords.org/scorecard2016/>
  + <https://giffords.org/scorecard2015/#rankings>
  + <https://giffords.org/scorecard2014/>
  + <https://files.giffords.org/wp-content/uploads/2020/09/2013-Gun-Law-State-Scorecard.pdf>
* Kaggle collection of gun violence in the United States from 2013-2018 sources:
  + <https://www.kaggle.com/datasets/jameslko/gun-violence-data>
  + <https://github.com/washingtonpost/data-school-shootings?tab=readme-ov-file>
  + <https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf>