

Intro	Exploratory Analysis Part 1	Exploratory Analysis Part 2	Linear Regression	Cluster Analysis	Time Series Analysis	Spatial Analysis	Spatial Analysis Part 2	Incidents and Gender
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# U.S. Gun Violence Analysis



## Motivation

To foster gun violence awareness throughout the U.S. and educate the public on gun violence incidents in the U.S. The storyboard will provide insights about gun violence incidents as it relates to States, frequency of incidents over time, and gender.

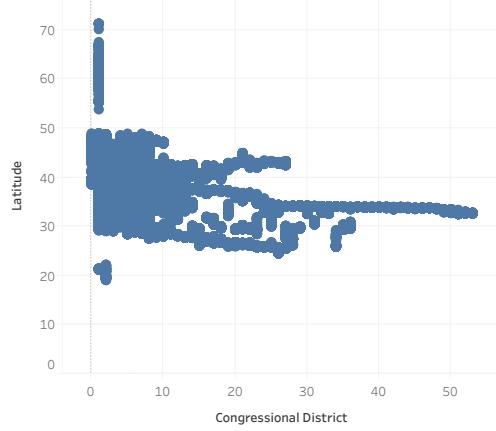
## Data Source and Limitations

This is an external data source accessed via Kaggle. Dataset is originally from gunviolencearchive.org. GVA is a independent collection and research group (with no affiliation to any advocacy organization), and a not-for-profit corporation that formed in 2013 to provide free online public access to accurate information about gun-related violence in the United States. GVA is a trustworthy data source that contains government and local law enforcement data.

Since GVA limits the number of incidents that are returned from a single query, and because the website's "Export to CSV" functionality was missing crucial fields, it was necessary to obtain the dataset using web scraping techniques. Limitations include data for 2013 having limited records, some manually entered data, and dataset only including incidents of gun violence that were reported to law enforcement.

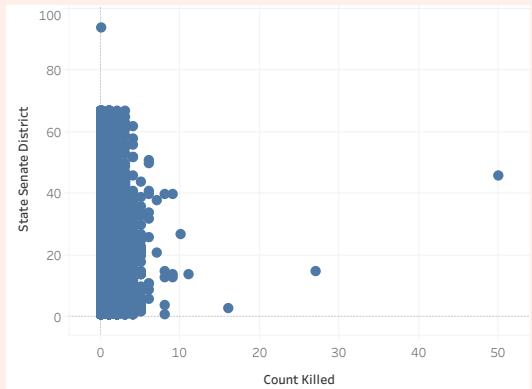
## Exploratory Analysis

Latitude and Congressional District Scatterplot



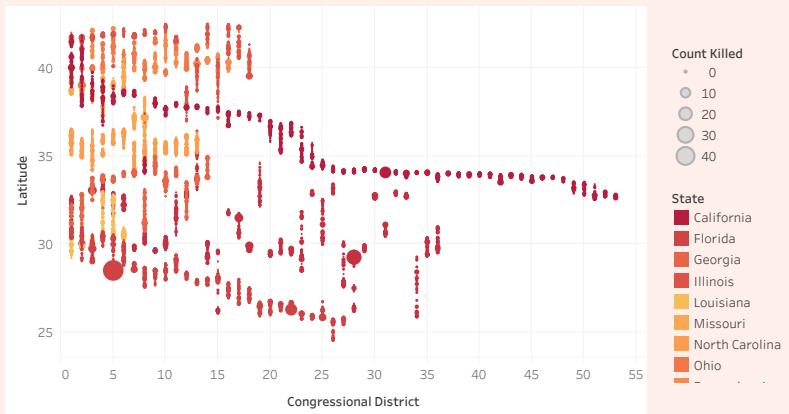
An initial exploratory analysis was completed first to identify relationships between variables. No strong relationships were identified but it is possible that the spatial analysis may reveal more meaningful insights.

State Senate District and Count Killed Scatterplot



## Exploratory Analysis Part 2

Exploratory Analysis Bubble Chart



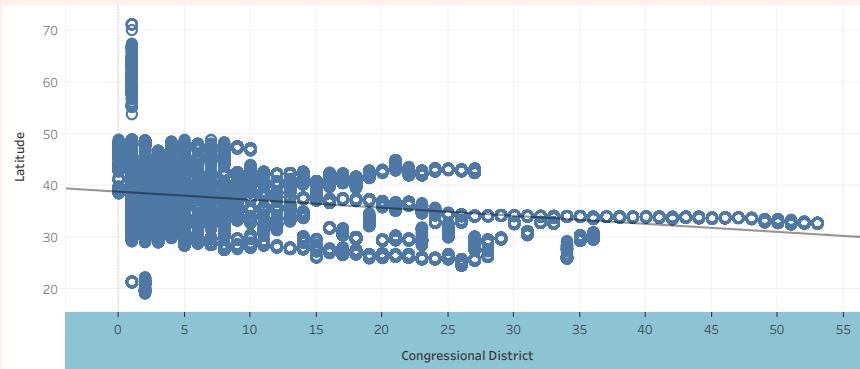
Count Killed  
To Null

As part of exploratory analysis a bubble chart was created to further explore relationships between variables, and hypothesis formation.

**Hypothesis:** High frequency counts of gun violence deaths does not occur across the United States but only in certain states.

## Linear Regression

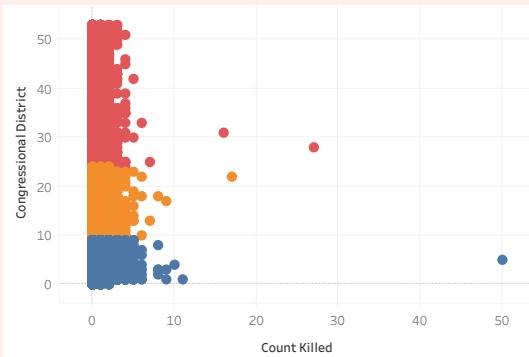
Linear Regression



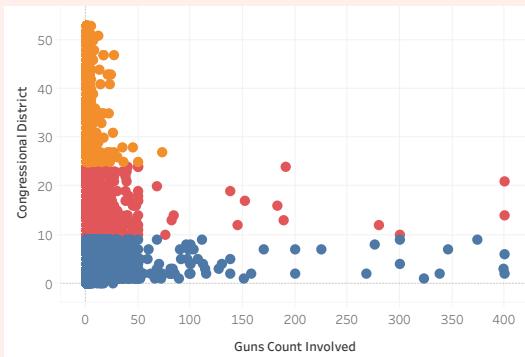
These results of linear regression do not support the hypothesis, as the line does not fit most of the data and there are many data points underneath it.

## Gun Violence Analysis

### Cluster Analysis



Clusters (2)  
Cluster 1  
Cluster 2  
Cluster 3



Clusters (3)  
Cluster 1  
Cluster 2  
Cluster 3

	guns_count_involved		count_killed		congressional_district	
	mean	median	mean	median	mean	median
Cluster 1	1.347983	1.0	0.235850	0.0	8.108890	5.0
Cluster 2	1.250000	1.0	0.257324	0.0	7.830840	5.0
Cluster 3	1.658082	1.0	0.231788	0.0	8.254281	6.0

The results show that the count killed from gun violence incidents is not related to the guns count involved per incident.

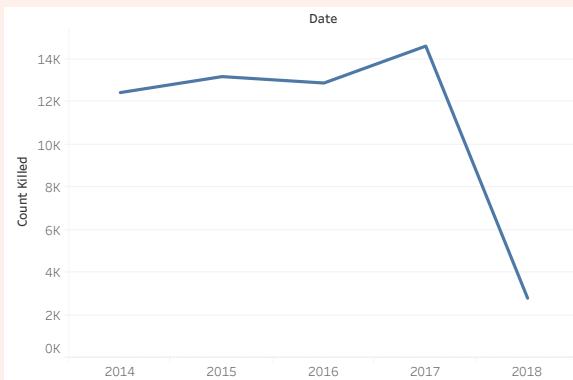
The results confirm that there is a connection between the frequency of deaths resulting from gun violence incidents and congressional districts, and shows that there are casualties from gun violence occurring nationwide. Also, there is variability in guns count across congressional districts.

## Gun Violence Analysis

Exploratory Analysis Part 1	Exploratory Analysis Part 2	Linear Regression	Cluster Analysis	Time Series Analysis	Spatial Analysis	Spatial Analysis Part 2	Incidents and Gender	Final Results and Recommendations
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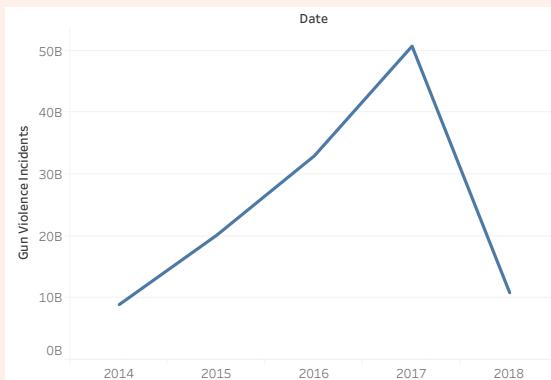
### Time Series Analysis

Count Killed by Year



Total deaths from gun violence incidents has been stable from 2014- 2017, but there was a significant decrease between 2017-2018.

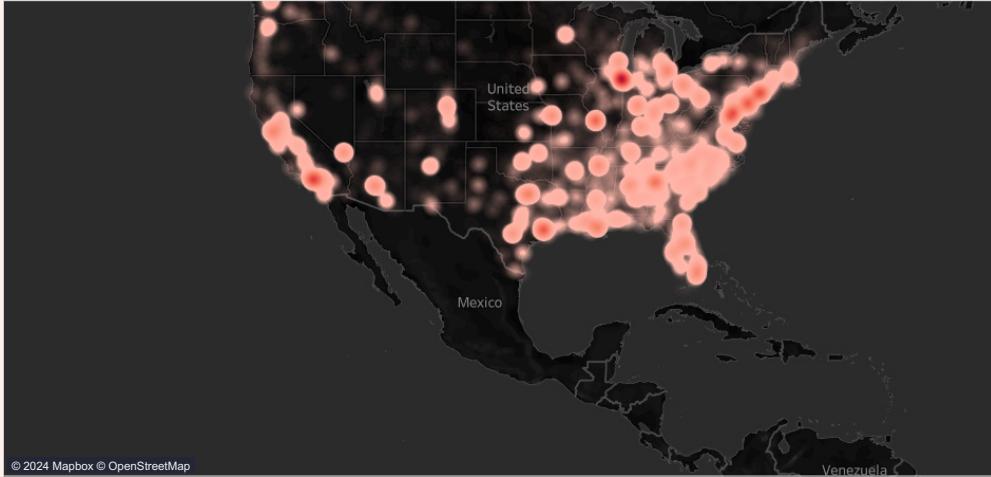
Gun Violence Incidents by Year



The total number of gun violence incidents steadily rose from 2014- 2017, but significantly dropped from 2017-2018.

## Spatial Analysis

### Count Killed Spatial Analysis



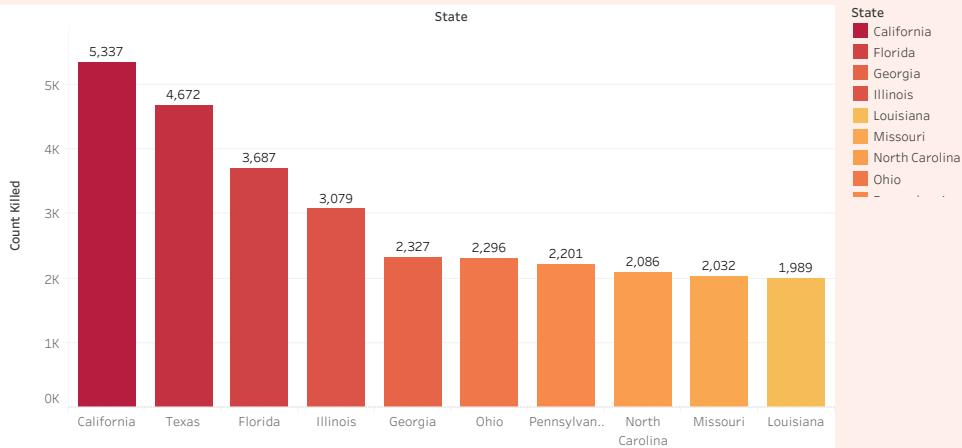
Spatial analysis reveals that gun violence deaths occur in many states but not all throughout the U.S. Furthermore, these deaths are concentrated to certain areas within states as well.

## Gun Violence Analysis

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### States with Highest Gun Violence Deaths

Top 10 States of Highest Count Killed



To supplement the heat map from the previous slide, this bar chart shows the top 10 states with the highest gun violence related deaths.

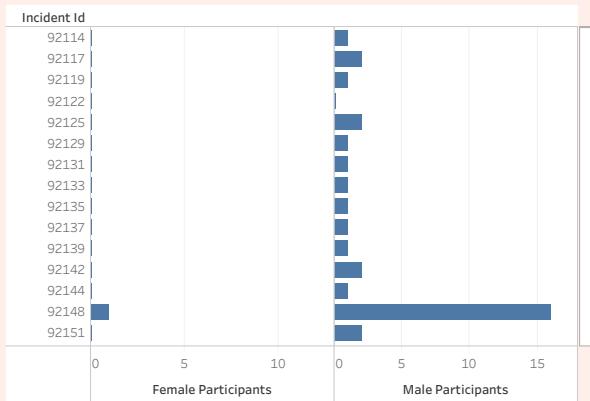
With a total of 56,240 deaths from 2013- 2018, these top 10 states account for 53% of the total deaths, with California accounting for 11% of the total deaths alone.

## Gun Violence Analysis

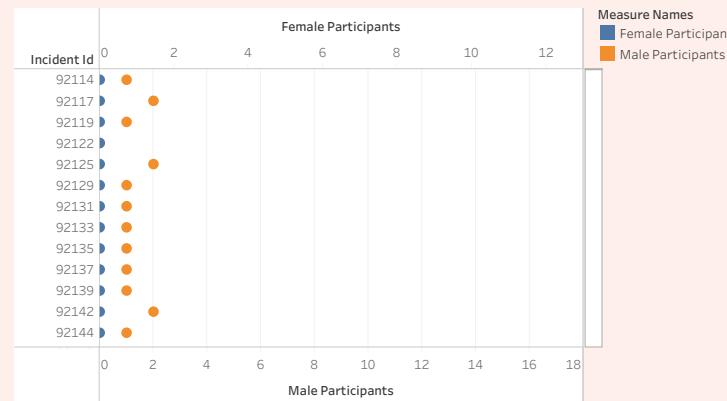
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### Gender and Gun Violence Incidents

Gender and Gun Violence Incidents Bar Charts



Gender and Gun Violence Incidents



These charts show the impact of gender. 88% of individuals involved in gun violence incidents are male.

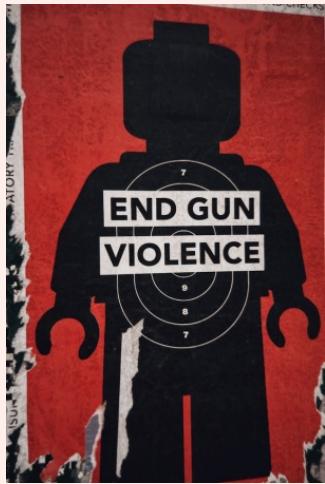
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## Final Results



- Gun violence incidents occur across the United States, in all states.
- Deaths are concentrated to certain states, and certain areas within states as well.
- Casualties of gun violence is not related to the guns count involved per incident.
- There is a connection between the frequency of gun violence deaths and congressional districts.
- Gun violence deaths and incidents have been stable from 2014- 2017, but there was a significant decrease in both between 2017- 2018.
- 88% of individuals involved in gun violence incidents are male...



## Recommendations

- Community engagement and education to foster gun violence awareness in communities most affected.
- Continued research and data collection efforts to cultivate the creation of programs to implement for gun violence prevention.
- Implementation of a collaborative Nationwide Initiative/Strategy to reduce gun violence at local levels.