

# K-12 School Shootings

---

Anagha, Sophia, and Kelly

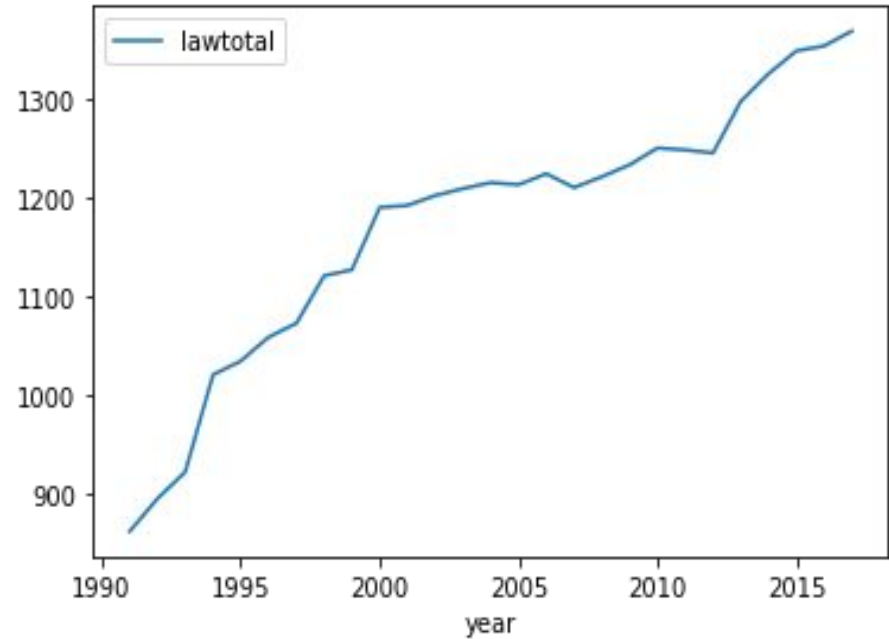
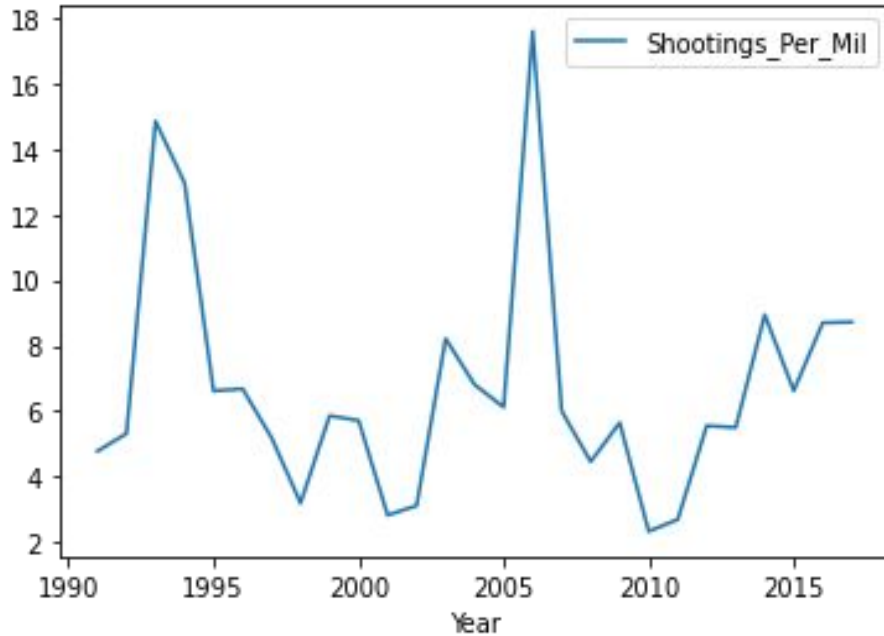
# Datasets- Collection and Cleanup

1. Data on **K-12 School Shootings** 1970-2020 from Center of Homeland Defense and Security (Biggest Data Set)
2. Dataset of **Gun-Related Legislation** Per Year Per State 1991-2017
3. Combined One Dataset with Data from US Census API to get a DataFrame of **US Population by State** 1990-2018

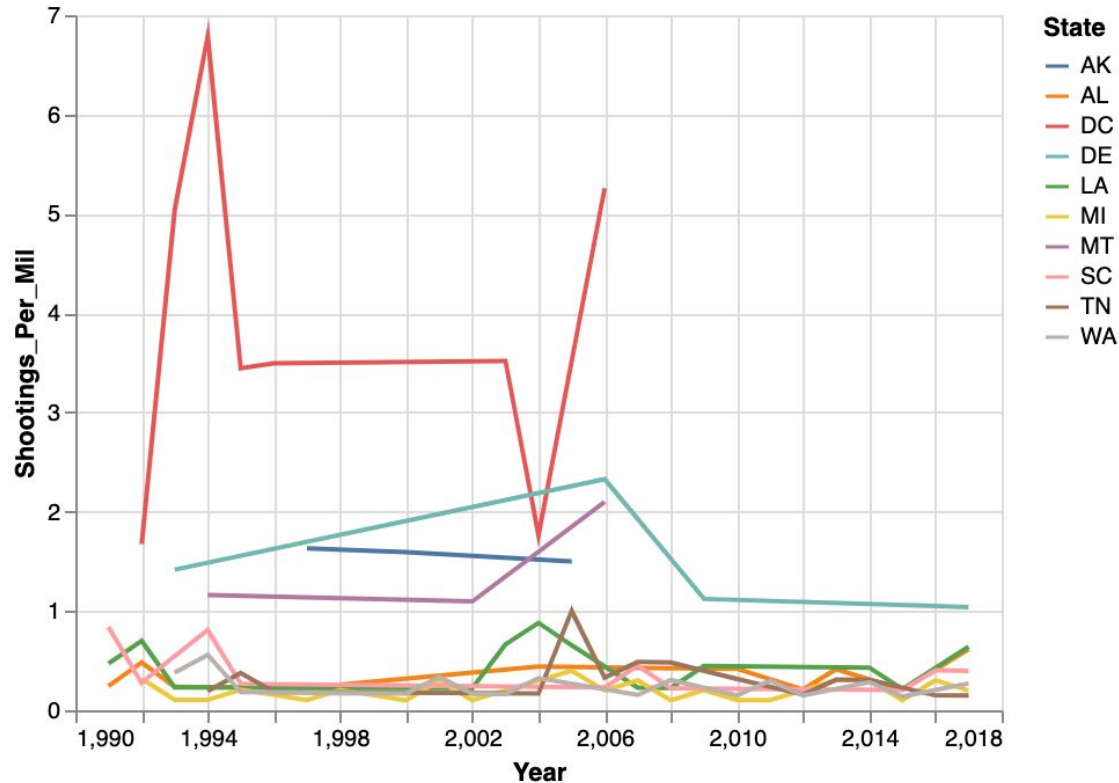
# Data Exploration

---

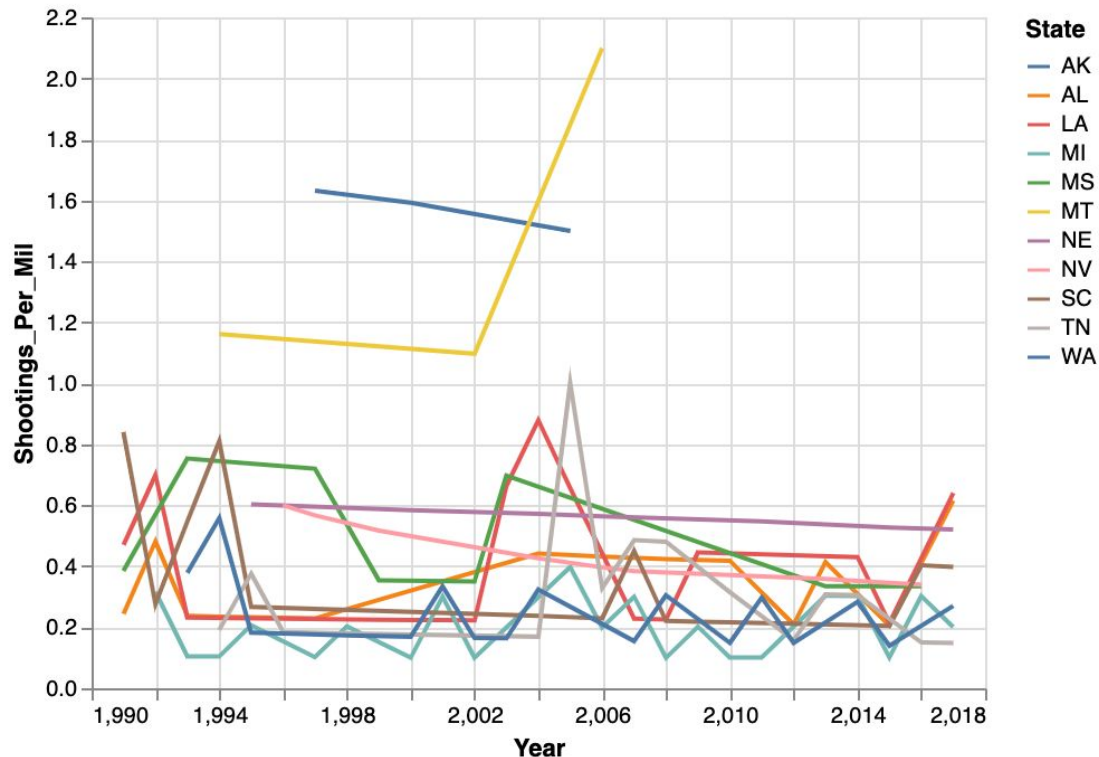
# Rate of School Shootings and Gun Legislation Over Time



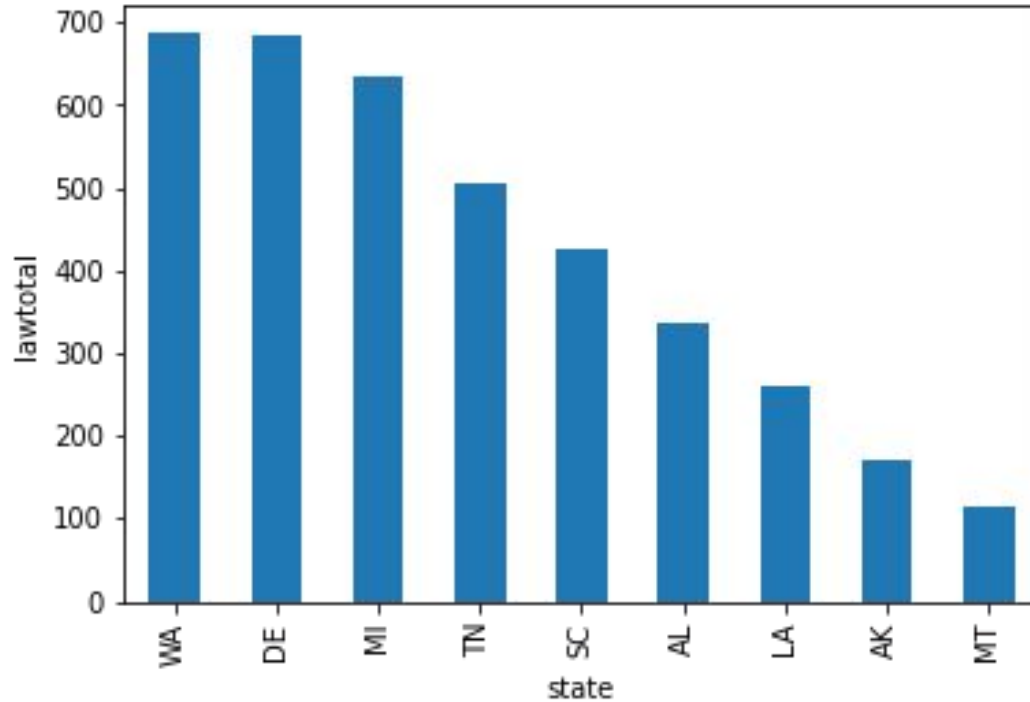
# Rate of School Shootings Over Time from States with Most School Shootings



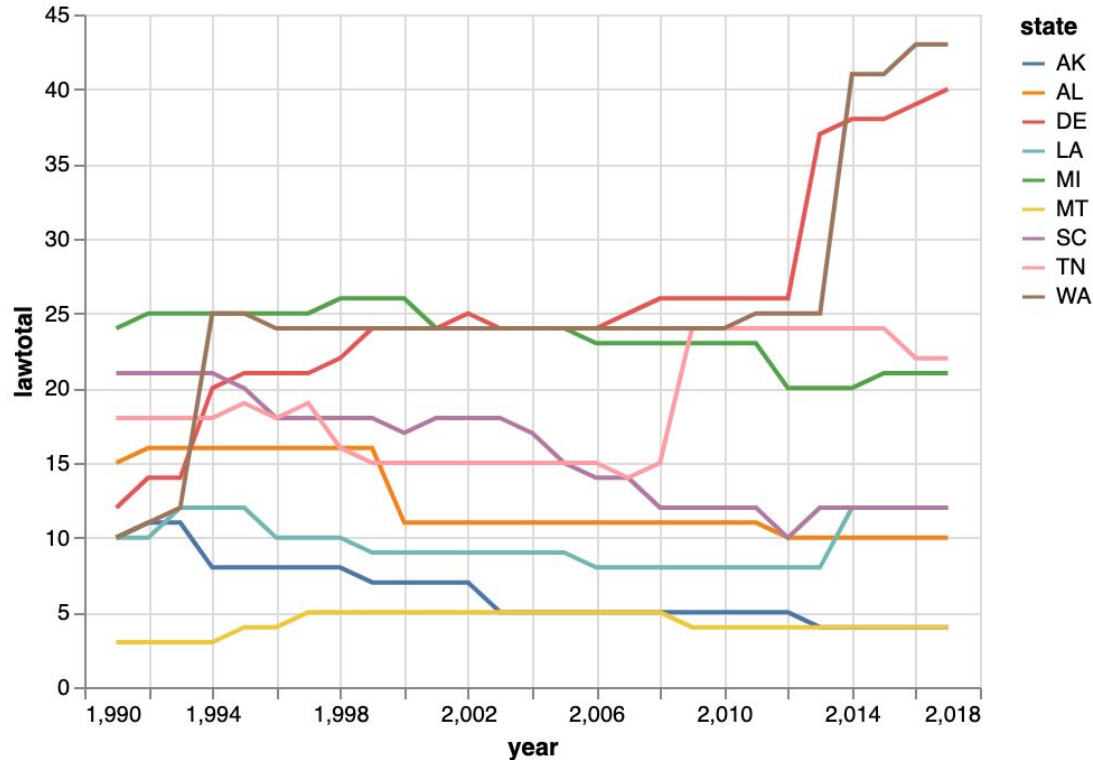
# Adjusted Rate of School Shootings Over Time from States with Most School Shootings



# Number of Gun Laws from the States with the Most School Shootings

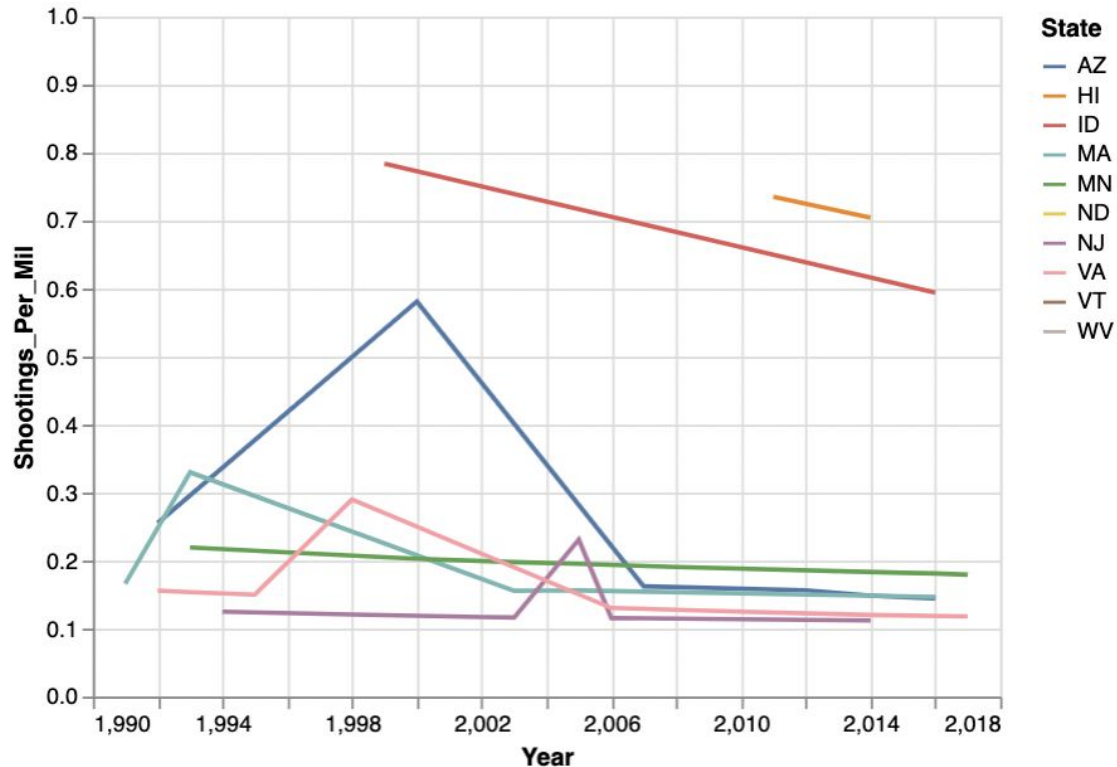


# Gun Legislation Over Time from States with Most School Shootings

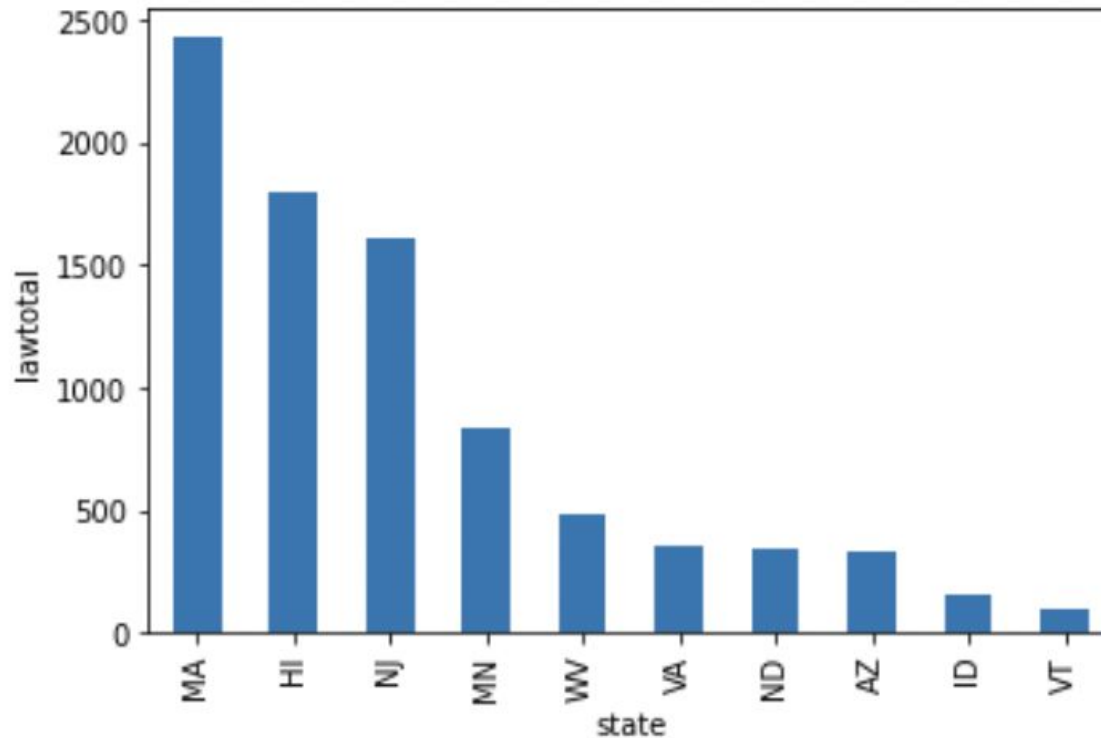




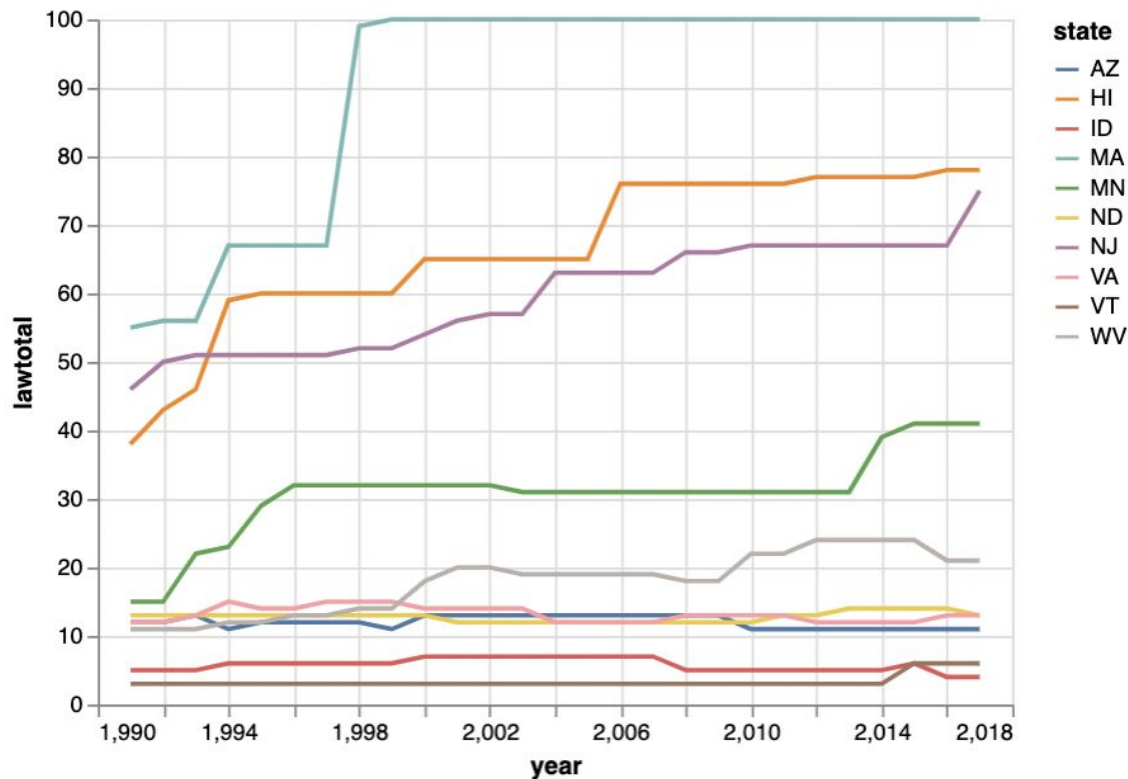
# Rate of School Shootings Over Time from States with Least School Shootings



# Number of Gun Laws from the States with the Least School Shootings



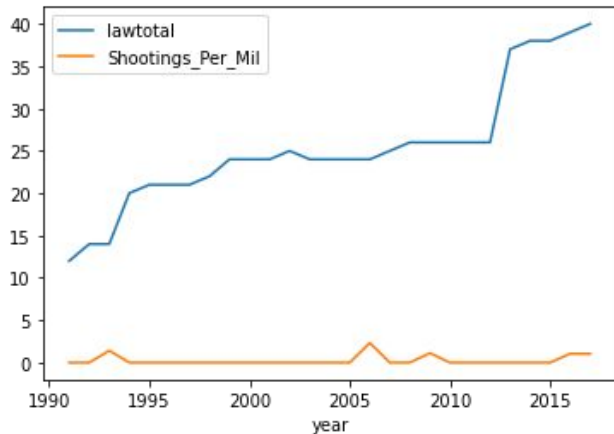
# Gun Legislation Over Time from States with Least School Shootings



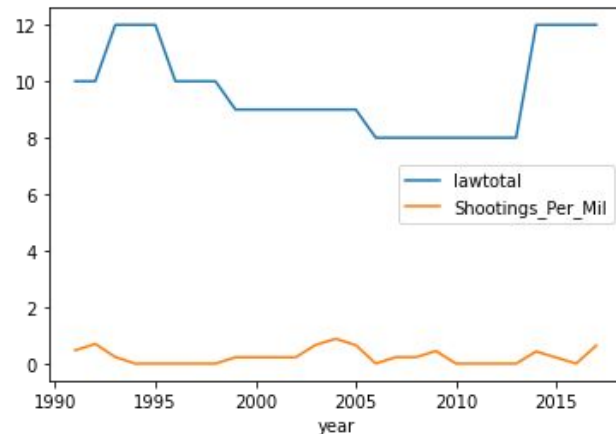
# **School Shootings Compared to the Gun Legislation Over Time**

# States with the Most School Shootings

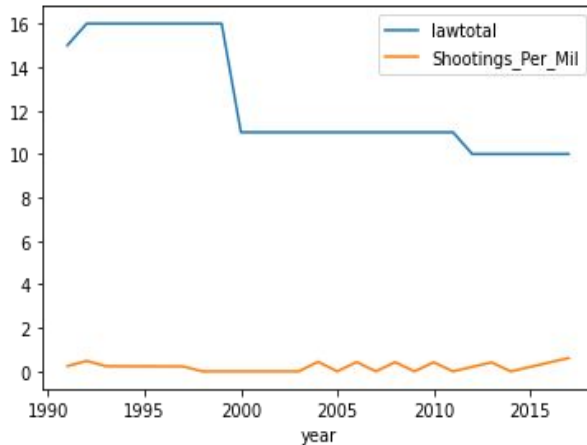
Delaware #1



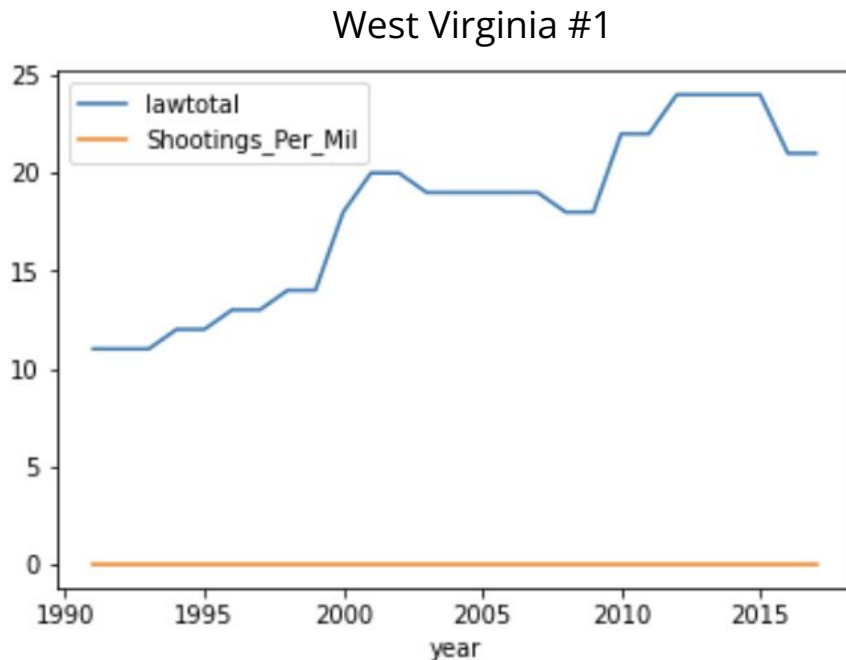
Louisiana #2



Alabama #3



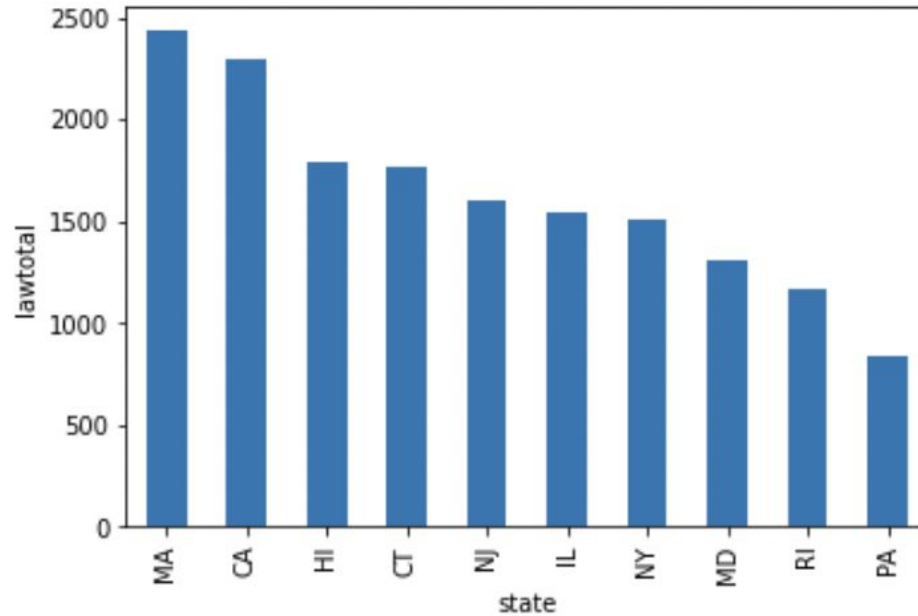
# State with the Least School Shootings



# Number of Laws in Each Category

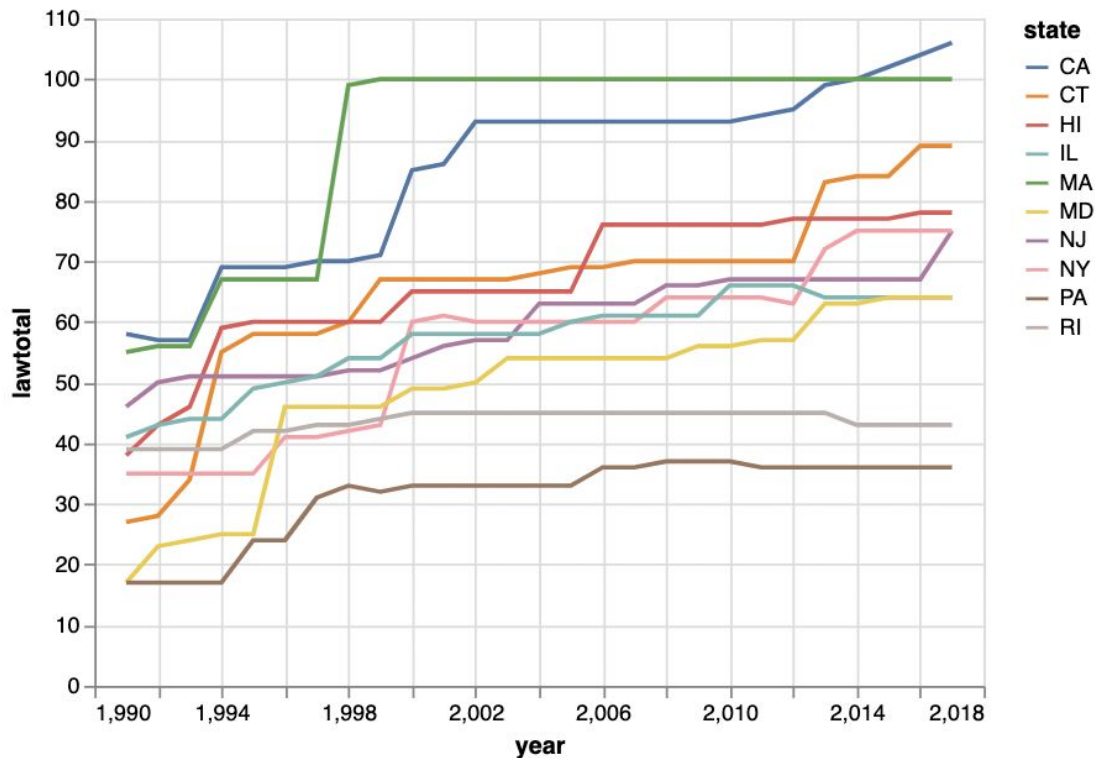
	age	background_checks	buyer_regulations	dealer_regulations		
Laws_Total	1628	2744	2130	3676		
	domestic_violence	buyer_prohibition	possession_regulations	bans	child_safety	
Laws_Total	2627	3529	3009	632	1846	

# States with the Most Gun Laws





# Gun Legislation Over Time for the States with the Most Gun Laws



# Machine Learning

---

# Dataset - Variables

9 Variables: State, School Level, Time Period, During School, Targets, Situation, Bullied, Preplanned, Weapon Type

Variable to Predict: Location

- Parking Lot, Classroom, Beside Building

# Best Model

['State']	0.359158
['School_Level']	0.295463
['Time_Period']	0.506604
['During_School']	0.273958
['Targets']	0.369851
['Situation']	0.487261
['Bullied']	0.274152
['Preplanned']	0.250821
['Weapon_Type']	0.256620
['State', 'School_Level']	0.384582
['State', 'School_Level', 'Time_Period']	0.521860
['State', 'School_Level', 'Time_Period', 'During_School']	0.531650
['State', 'School_Level', 'Time_Period', 'During_School', 'Targets']	0.514971
['State', 'School_Level', 'Time_Period', 'During_School', 'Targets', 'Situation']	0.527483
['State', 'School_Level', 'Time_Period', 'During_School', 'Targets', 'Situation', 'Bullied']	0.553804
['State', 'School_Level', 'Time_Period', 'During_School', 'Targets', 'Situation', 'Bullied', 'Preplanned']	0.551730
['State', 'School_Level', 'Time_Period', 'During_School', 'Targets', 'Situation', 'Bullied', 'Preplanned', 'Weapon_Type']	0.578923
['State', 'School_Level', 'Time_Period', 'During_School', 'Situation', 'Preplanned', 'Weapon_Type']	0.595349
['State', 'School_Level', 'Time_Period', 'During_School', 'Situation', 'Bullied', 'Weapon_Type']	0.564271
['State', 'School_Level', 'Time_Period', 'During_School', 'Situation', 'Bullied', 'Preplanned', 'Weapon_Type']	0.583645
['State', 'School_Level', 'Time_Period', 'During_School', 'Situation']	0.568047
['State', 'School_Level', 'Time_Period', 'Situation']	0.567445

# Test Metrics

**Accuracy of Model: 71.5%**

<b>Parking Lot:</b>	Precision: 79%	Recall: 69.5%
<b>Classroom:</b>	Precision: 74%	Recall: 81%
<b>Beside Building:</b>	Precision: 58.5%	Recall: 65.5%