

# The US Gun Industry: Crumbling Empire or Steady Rock?

## Introduction

As the Democratic primary in the US heats up, one of the central topics on Americans minds come election time will be gun control. Beto O' Rourke drew plaudits amongst many liberal pundits, and uproar from conservatives, when he proudly stated in a debate that "We are going to take your guns!" However, despite this big talk from similarly minded Democrat politicians, the numbers tell a different story. In fact, even in most states that have been held by Democrats for years, [gun purchases have been increasing per capita for decades](#).

In this project, I will analyze the complex dichotomy between the political movement in the United States to increase restrictions on gun sales and the stark reality that gun sales have been increasing in almost every state for years. Through this analysis, I hope to first to shed light on the political and social realities surrounding the issue of gun control in the US, before shifting to a business-minded perspective. Given my findings and the current sociopolitical climate, should investors in gun manufacturers be concerned about their money if Democrats take the White House and Senate? And if the gun industry is indeed still growing despite the current societal divide over the issue of gun control, where are most gun shops located, and where can we expect to see more stores grow in the future?

## Data

The FBI's National Instant Criminal Background Check (NICS) database has data on state background checks for purchased guns spanning decades. I extracted this data for the last 5 years (2015-2019) for the 49 mainland states of the US (Hawaii was excluded due to inconsistent data). It is important to note that this data cannot be used as an exact count of gun sales because many individuals (possibly 40% of gun purchasers) purchase their firearms privately, meaning they do not go through a licensed store that will run a background check. A special thanks to [Buzzfeed New's Github repository](#) on the topic!

I then compared the number of background checks in each state per year to [Gifford's Law Center's Annual Gun Law Rankings](#), a pro-gun restriction lobbying group in Washington DC. Finally, I examined the number of gun shops in the vicinity of the [30 most populous cities](#) in the United States using API FourSquare data.

	year	handgun	long_gun	multiple	total	grade	population	per_capita
state								
Alabama	2019	160667	120258	7868	288793	0	4903185	0.059
Alaska	2019	31943	31090	2476	65509	0	731545	0.090
Arizona	2019	158864	89182	10361	258407	0	7278717	0.036
Arkansas	2019	68549	68773	4947	142269	0	3017804	0.047
California	2019	432239	299161	0	731400	4	39512223	0.019

## Methodology

After importing the data, I made sure to convert the categorical letter grades from Gifford's to quantitative number grades in order to allow easier correlational analysis. Additionally, because US states have widely varying overall populations, it was important to calculate the background checks made per capita and run the correlation between this and Gifford's gun law grades. Thus, I now have controlled the influence of population size when determining the answer to the main question of this project: do stricter gun laws reduce gun purchases?

Additionally, it logically makes sense that states with stricter gun laws should generally sell less guns per person than states with looser gun laws. States with populations more willing to accept stricter gun laws may perhaps be more anti-gun to begin with. So to further examine this issue, I also isolated every case where a state increased their gun laws in meaningful enough ways to raise their gun scorecard grade with Gifford's, and analyzed the relationship between these changes the changes in gun background checks that resulted.

## Results

As expected, there was a moderate negative relationship between stricter gun laws and background checks per capita in the US between 2015 and 2019 ( $r = -0.586$ ,  $p = >.001$ ). The significance of this relationship confirms the claim that there are typically less gun sales in states with stricter gun laws than states with looser gun laws. However, it does not answer whether that relationship is due to the laws themselves, or due to the underlying culture of the state. In fact, there was no statistically significant relationship between increasing gun law stringency and change in background checks per capita ( $r = -0.186$ ,  $P = 0.341$ ). This suggests that perhaps culture plays a more important role in gun sales than laws themselves.

I then used FourSquare API to find all gun shops within approximately a 30 mile radius of the city center of each of the US's 30 most populous cities in order to determine what regions of the country the gun industry appears to be booming. After running k-means clustering on my results, I found 4 distinct regions in the US in terms of gun sales. The US southwest has the cities with the most gun shops, with Denver, Phoenix, Las Vegas, and Fort Worth all having 40 or-more gun shops. The cluster on the east coast tended to have the least amount of gun shops, while the west coast and southern cluster tended to have moderate amounts of gun stores.

	Cluster Labels	City	State[c]	2018estimate	Latitude	Longitude	Gun_Shop_Count
2018rank							
19	2	Denver[j]	Colorado	716492	39.762	-104.881	41
13	2	Fort Worth	Texas	895008	32.782	-97.347	40
28	2	Las Vegas	Nevada	644644	36.229	-115.260	40
5	2	Phoenix	Arizona	1660272	33.572	-112.090	41

	Cluster Labels	City	State[c]	2018estimate	Latitude	Longitude	Gun_Shop_Count
2018rank							
11	0	Austin	Texas	964254	30.304	-97.754	16
9	0	Dallas	Texas	1345047	32.793	-96.766	21
22	0	El Paso	Texas	682669	31.848	-106.427	5
4	0	Houston[3]	Texas	2325502	29.787	-95.391	27
27	0	Oklahoma City	Oklahoma	649021	35.467	-97.514	14
7	0	San Antonio	Texas	1532233	29.472	-98.525	22

	Cluster Labels	City	State[c]	2018estimate	Latitude	Longitude	Gun_Shop_Count
2018rank							
2	1	Los Angeles	California	3990456	34.019	-118.411	24
25	1	Portland	Oregon	653115	45.537	-122.650	19
8	1	San Diego	California	1425976	32.815	-117.135	20
15	1	San Francisco[g]	California	883305	37.727	-123.032	0
10	1	San Jose	California	1030119	37.297	-121.819	8
18	1	Seattle	Washington	744955	47.620	-122.351	16

	Cluster Labels	City	State[c]	2018estimate	Latitude	Longitude	Gun_Shop_Count
2018rank							
30	3	Baltimore[m]	Maryland	602495	39.300	-76.611	10
21	3	Boston	Massachusetts	694583	42.332	-71.020	13
16	3	Charlotte	North Carolina	872498	35.208	-80.831	5
3	3	Chicago	Illinois	2705994	41.838	-87.682	11
14	3	Columbus	Ohio	892533	39.985	-82.985	14
23	3	Detroit	Michigan	672662	42.383	-83.102	15
17	3	Indianapolis[h]	Indiana	867125	39.777	-86.146	18
12	3	Jacksonville[f]	Florida	903889	30.337	-81.662	13
29	3	Louisville[l]	Kentucky	620118	38.165	-85.647	6
26	3	Memphis	Tennessee	650618	35.103	-89.977	9
24	3	Nashville[k]	Tennessee	669053	36.172	-86.785	8
1	3	New York[d]	New York	8398748	40.663	-73.939	8
6	3	Philadelphia[e]	Pennsylvania	1584138	40.009	-75.133	11
20	3	Washington[j]	District of Columbia	702455	38.904	-77.017	12

## Discussion

The data suggests that the US gun industry is fairly resilient to increasingly strict gun laws and that while investors should keep a wary eye out, they should not be preparing to jump ship just yet. There is no strong evidence to suggest that gun sales drop in states when gun laws become stricter, nor when Democrats take power. Gun stores have seen the most success by far in the southwest of the US, with the Colorado, Arizona, and Nevada region being an ideal area for investors to target.