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DO GUN LAWS WORK?

Are they doing any good? We crunch the numbers to find out.

By Julius (Jay) Wachtel. Once again, California is number one! No, we're not talking about smog or traffic jams. In December the Law Center to Prevent Gun Violence (LCPGV) released its annual Gun Law Scorecard, honoring California, as has become customary, as the State with the strongest gun laws. States are graded according to the quantity and quality of their efforts. For example, extending background checks to all gun transfers, including private party and gun-show sales – something that California and eighteen other top-ranked States do – earns lots of points. Allowing concealed carry without a permit – the law in Alaska (44/50, Grade = F), Arizona (47/50, Grade = F) and six other States – draws a major spanking.

Each year the LCPGV compares its rankings to State gun death rates published by the Centers for Disease Control. According to its website, this process reveals "a significant correlation between high gun law scores and low death rates and vice versa."

Everyone who follows this blog's gun control section knows that its author, a retired ATF agent, favors strictly regulating the gun marketplace. Yet as we've often pointed out, so many firearms are already in circulation that the real-world effects of gun laws must be inevitably muted (see, for example, "A Ban in Name Only"). We decided to gather existing data and check things out. Do the numbers really support the notion that stronger gun laws lead to fewer gun deaths? Data was collected for eight variables: four are possible "causes", and four are possible "effects":

Causal factors

- **Law score**: Strength of State gun laws, 1 (weakest) to 50 (strongest). For clarity of analysis we inverted LCPGV's 2016 scorecard, which ranked State with strongest laws as #1, and the weakest as #50.

- **Poverty rate**: 2015 poverty rates, by State. From the U.S. Census.

- **Urbanization**: 2010 urban percentage of population, by State. From U.S. Census (via Iowa State University).

- **Gun ownership**: Proportion of households with guns, 2002. From Pediatrics. (While dated, this is the only national study we found where householders were specifically asked whether they kept guns. More recent attempts tend to rely on

proxy measures of gun ownership, such as the number of Federally-registered "NFA" weapons per State).

Effect factors (consequences)

- **Homicides**: 2015 homicide rates, gun and non-gun, by State. From the FBI's Uniform Crime Reports.
- **Gun homicides**: 2015 firearms homicide rates, by State. From the CDC.
- **Gun deaths, all causes**: 2015 firearms death rates, all causes (accidents, suicides, homicides), by State. From the CDC.
- **Gun suicides**: 2015 firearms suicide rates, by State. From the CDC.

Below is a matrix that displays the correlations between all pairs of variables.

	Causal factors				Effect factors		
	Law score	Poverty	Urban	Gun ownership	Homicides	Gun homicides	Gun deaths
Law score		-.397**	.639**	-.799**	-.248	-.366*	-.737**
Poverty	-.397**		-.144	.198	.462**	.437**	.406**
Urbanization	.639**	-.144		-.751**	-.013	-.290	-.435**
Gun ownership	-.799**	.198	-.751**		.171	.199	.750**
All homicides	-.248	.462*	-.013	.171		.969**	.634**
Gun homicides	-.366*	.437**	-.290	.199	.969**		.641**
Gun deaths	-.737**	.406**	-.435**	.750**	.634**	.641**	
Gun suicides	-.780**	.225	-.553**	.839**	.184	.196	.866**

Dull stuff: Correlation is measured on a scale of -1 to +1. Zero means no association. +1 is a perfect "positive" correlation, meaning that the variables rise and fall together in lockstep. -1 is a perfect "negative" correlation, meaning that the variables rise and fall in opposite directions in lockstep. Intermediate values signify less-than-perfect associations. Asterisks denote statistical significance, meaning that a relationship exceeds what would be expected by chance alone. One asterisk (*) places the likelihood that a relationship is due to chance at less than .05 (five in one-hundred); two asterisks (**) at less than .01 (one in one-hundred.) More asterisks are better; relationships that get at least one are considered "statistically significant."

Is there "a significant correlation between high gun law scores and low death rates"? Moving across the top row, law score, to the effect variables, we find that law scores and homicides from all causes are negatively correlated (-.248), meaning that as law scores go up, homicides go down. This is consistent with LCPGV's claim. However, the correlation is relatively weak and there is no asterisk, so one cannot rule out that the association is caused by chance. However, law scores demonstrate a moderate, statistically significant negative relationship with gun homicides (-.366*), and a strong, statistically significant negative relationship with gun deaths (-.737**) and gun suicides (-.780**).

So can we conclude that stronger gun laws reduce gun deaths? Not yet. Simple bivariate (two variable) analyses never suffice. It often happens that our variable of interest – here, law score – is strongly associated with a third variable that is the real "cause". Poverty has the reputation of going hand-in-hand with violence. Its role as a "cause" is borne out by the table, which shows a strong, statistically significant positive relationship between poverty and gun homicides (.437**), meaning they go up and down together. Poverty is also significantly correlated with law scores (-.397**). Their relationship is negative, meaning that as poverty increases, gun laws get weaker. Could it be that when we measure law scores we're actually mostly measuring poverty? Could poverty be the real culprit?

In the table below we test the effect of law scores on gun homicides, "controlling" for poverty (meaning, removing its influence).

Law score → Gun homicides			
Control variable	Test Variables	Law score	Gun Homicides
Poverty	Law score		-.196
	Gun Homicides	-.196	

That's right – when poverty is taken out, the relationship between law score and gun homicides (-.366*) becomes non-significant (-.196). Now let's do the opposite, testing the relationship between poverty and gun homicides, controlling for law score.

Poverty → Gun homicides			
Control variable	Test Variables	Poverty	Gun Homicides
Law score	Poverty		.319*
	Gun Homicides	.319*	

Removing the effects of law score reduces the relationship between poverty and gun homicides only slightly. Poverty is by far the most important influencer. Law scores, by their lonesome, have at best only a mild effect on gun homicides.

On the other hand, the associations between law scores and gun deaths, and law scores and gun suicides, seem far more robust from the very start. Controlling for poverty only reduces the correlation between law scores and gun deaths from -.737** to -.687**, and between law scores and gun suicides from -.780** to -.772**. Controlling for gun ownership, another variable strongly associated with law scores (-.799**) has a greater impact, reducing the correlation between law scores and gun deaths to -.346*, and between law scores and suicides to -.333*. Still, for each of these relationships the effects of law scores, by their lonesome, remains significant.

Multiple regression analysis was used to assess the cumulative effect of the four causal variables. All together, they explained 28.1 percent of the fluctuation in gun homicides, a modest amount that suggests other important forces are likely at work. However, they did explain a full 75.6 percent of the fluctuation in gun suicides, an impressive result. (We'll leave further number crunching to our intrepid readers. To download the dataset, click here.)

According to the CDC, 63.5 percent of all gun deaths in 2014 (33,599) were from suicide (21,334) and 32.6 percent (10,945) were from from homicide. Our number-crunching confirmed statistically significant associations between gun laws, overall gun deaths and gun suicides, but not between gun laws and gun homicides. While our efforts are admittedly limited, they suggest that gun laws as implemented in the U.S. are far more apt at reducing gun deaths from non-criminal rather than criminal causes.

Still, laws have deterrent value, at least for those who would be deterred. If no laws prohibited, say, gun possession by felons, many more would likely acquire guns, and gun mayhem could get much worse. In the messy, real world, even statistically non-significant effects can prove useful. When your blogger and his ATF colleagues took down gun traffickers, many guns were prospectively kept from flowing to the streets. Were some lives saved? Probably. Yet given the limits of enforcement, the impact on the illicit gun marketplace was limited. Did ATF's Long Beach trafficking group have a statistically significant effect on gun homicide in Southern California? Hardly.

Excuses and explanations aside, the failure of tougher gun laws to demonstrate a statistically significant impact on gun homicide inevitably disappoints. Here are a couple suggestions for making things better:

- Tighten the right screws. As we've repeatedly pointed out (see, for example, "A Ban in Name Only"), assault weapons prohibitions consistently overlook the one factor that's most closely tied to lethality: ballistics. Address that, and you'll have many fewer deaths.

- Laws can't work unless they're vigorously enforced, or if the opportunity to enforce them is lost. In California all gun transfers must go through a licensed firearms dealer where they are subject to a background check. State law also limits handgun purchases to one a month. However, these rules are much less effective if corrupt dealers are left to peddle guns out the back door, or if neighboring States with weak laws (Arizona doesn't limit purchase quantity or frequency) become go-to places for interstate traffickers. (For more about such schemes check out "Where Do They Come From?" and the blogger's journal article about gun sources).

Ideological quarrels have long kept the Federal Government from undertaking and funding gun violence prevention research. Perhaps the last effort of its kind, a meta-analysis published by the CDC in November 2002, concluded that there was insufficient evidence to assess the effectiveness of gun laws in preventing gun violence. With pitifully few scientists tackling the issue, our ignorance about such things is likely to continue. As for fighting gun diversion on the ground, that requires political will and plenty of resources. Why neither is likely to be forthcoming, at least from the Feds, should be readily apparent.