Not all right-to-carry laws are the same,

yet much of the literature keeps ignoring the differences

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Abstract: Right-to-carry laws vary across states. There are variations in the requirements to obtain a permit to carry a handgun, the domains within which one may carry, and other features of the law. In some states no fees or training are required to legally carry. At the other extreme, Illinois charges a fee of $150 and requires 16 hours of training (which one must also pay for). Such rules have measureable effects on the number of people who legally carry. The difficulty of obtaining permits is greater in states that have more recently adopted right-to-carry laws. Some recent studies ignore these facts, and doing so creates a significant bias against finding benefits from right-to-carry laws.

Keywords: gun laws, conceal-carry, right-to-carry, shall-issue, may-issue, crime

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Making more arrests or imposing more severe criminal penalties make it riskier for criminals to commit crimes. Are criminals deterred as well by allowing potential victims better means to defend themselves?[1]

The academic literature assumes that state adoption of so-called "right-to-carry" or "shall-issue" laws results in relatively more people carrying concealed handguns, compared to the states that they are being compared against. Yet, that isn't always the case (Lott, 2000, 2010, and 2012).[2]

Many who have empirically examined the impact of these laws assume that these laws are the same across states and over time. The laws are not the same, however, because states differ widely as to how easily permits can be obtained. The differences affect not only the immediate increase in permits after the laws are adopted, but also the growth in permits over time. Failing to take these differences into account results in inaccurate measurement of the laws' impact on crime.

The problem proves particularly troublesome in recent research by Mark Gius (2014), Carlisle Moody et al. (2014), Paul Zimmerman (2014), and Abhay Aneja et al. (2014), all of whom extended the data past the late 1990s. Gius examines data from 1980 to 2009, Moody et al. from 1977 to 2006, and Zimmerman and Aneja et al. both study the laws in the years from 1999 to 2010. In all these panel data studies, it is assumed that the states that are adopting right-to-carry laws during their sample periods are seeing the biggest increases in concealed handgun permits. The other states – both those that adopted right-to-carry laws prior to the beginning of the sample and those with more

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[1] A literature survey is available in Lott 2010 (ch. 10); see also Lott 2012.

[2] Incidentally, here and elsewhere I include citations to the 2000 (second) edition of my book *More Guns, Less Crime*, to highlight that the main points of the present article are ones that have been made for some time.

restrictive concealed carry laws (so-called "May issue" states) – are assumed to have relatively smaller increases in permits. If that wasn't the assumption, there would be no reason to expect that panel studies would find a drop in crime rates for states that adopted right-to-carry laws during the sample periods. But no explanation is provided for such an assumption about rates of permitting. As we will see, sometimes the opposite is true.

The authors with the shortest time periods have their reasons. Zimmerman uses the period of time he does only because other data that he was using to measure private law enforcement activity were limited to those years. Aneja et al. also exclude the earlier data "to remove the confounding influence of the crack cocaine epidemic" (p. 2), though even the research that they cite indicates that the impact of the epidemic had ended even for blacks by 1995, thus well before 1999.[3] Excluding more than twenty years of data also seems a rather extreme solution to dealing with the impact of cocaine on crime rates, as there are variables and approaches that allow one to directly account for the impact of cocaine.[4]

Here I focus focus on Zimmerman (2014), both because of the short time period that it examines and because it is published. But our discussion applies as well to the

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[3] Fryer, Heaton, Levitt, and Murphy (2013, 1665) note: "After 1995, however, the link between the crack index and these social outcomes for Blacks disappears . . ." Others claim that the epidemic had subsided by the early 1990s. Some have measured the epidemic in other ways, such as news coverage of crack cocaine. In doing so the 'epidemic' is said to have lasted from 1986 to 1992. See Reinarman and Levine 1997 and Musto 2002.

[4] Lott and Mustard (1997, 24n. 50) use cocaine prices as a measure of its impact on crime rates. Bronars and Lott (1998) accounted for the localized effects of crack cocaine by examined the crime rates for neighboring counties on either side of a state border. Lott (2010, 277 and 282) use Fryer et al.'s measure of crack cocaine use over the period from 1980 to 2000.

other papers, though its import varies in each case.[5] Studies with data covering a long time period, such as Gius (2014)[6] and Moody et al. (2014), which found that right-to-carry reduce violent crime, face some bias against finding that result, but it is clearly a much bigger problem for Zimmerman (2014). The same goes for Aneja et al. (2014), an unpublished working paper; that paper provides the only reported claim that right-to-carry laws increase murder rates, a finding that would disappear if they included data prior to 1999.

Evidence that late adopting states issued fewer permits than early adopters

For the states that were early in adopting right-to-carry laws, doing so in the 1980s and 1990s, the adoption of the laws proxied quite well for changes in the number of permits. That is because right-to-carry laws were still relatively rare and there was relatively little change in permit numbers in other states. Even as late as 1986, 21 states still completely banned concealed carry. But the states that adopted right-to-carry in later years were often dragged, reluctantly, into doing so. When people, especially government

[5] Zimmerman's paper seeks to simultaneously account for the crime-rate effects of various private security efforts, including security guards, private investigators, security systems, and locks, in addition to concealed carry. He builds on earlier work by Benson (1998) and Benson and Mast (2001). Obviously, because different types of private protection against crime may be correlated with each other, what appears to be the impact of right-to-carry laws might in fact reflect something else. Benson and Mast provided an early attempt to analyze that problem, and Zimmerman updates that approach. In both Benson and Mast as well as Zimmerman, the question is whether there might be an omitted variable bias, where concealed carry laws might be serving as a proxy for other types of private protection against crime. More recent work by Benson and Meehan (2014), which accounts for variations in state licensing regulations, provides findings different from Zimmerman's. Meehan and Benson (2014) note that concealed handgun licensing regulations vary substantially across states and find that the differences can be explained by whether active private security personnel are in control of licensing.

[6] Gius' approach of using a simple dummy variable to measure the impact of right-to-carry laws is criticized in Lott (2000, 215-7).

authorities, are dragged into doing something, they often find ways of limiting what they are being dragged in to. As shown in Table 1, the late-adopting states tended to impose much more restrictive regulations -- higher fees, longer training requirements, and more restrictions on where people could carry, and slightly higher age restrictions. Table 1 provides comparisons of means, but let me illustrate with the extreme example of Illinois. Illinois started issuing permits only in 2015, only because it was forced to do so as a result of an Appeals Court decision. Illinois requires a permit fee of $150 and 16 hours of training. The fees for 16 hour training classes typically run around $350. Generally, as shown in Table 1, the longer it took states to adopt right-to-carry laws, the more restrictive their permitting rules. Hence relatively few people in the later states obtain permits (Lott, 2010, 178-184 and chapter 10) and those later states have relatively smaller drops in violent crime rates (Lott, 2010, 276-277).

Furthermore, by the late 1990s, right-to-carry laws had been adopted in 31 states. Another 12 states had so-called "may issue" laws where local authorities (e.g., judges or sheriffs) determined whether an applicant had legitimate reasons for a permit. In those discretionary states, rural areas were relatively liberal in granting permits while urban areas were very restrictive. By 1999, only seven states still completely banned the legal carrying of concealed handguns. In examining the 1999-2010 period, Zimmerman thus compared the states that had recently adopted right-to-carry laws to another set of states which consisted in great measure of already-by-1999 right-to-carry states.

What's more, in some of the already right-to-carry states there were changes in the law during the period 1999 to 2010, changes that made their regulations more liberal.

For example, in 2003 Alaska went from a 12-hour training requirement and a $91.50 fee to no training and no fee. Arizona in mid-2010 likewise went from 8-hour training and a $60 fee to no training and no fee. Other states made more modest reductions in training and fee rules, or expanded the number of places where permitted concealed handguns are allowed.

Incidentally, the trend has continued since 2010: In July 2011, Wyoming eliminated a $50 fee and a five-hour training requirement, and in August 2013 Arkansas eliminated a $144.25 fee and five hours of training. In July 2015, Kansas, Mississippi, and Maine also changed their laws. Kansas went from $150 to zero and the training requirement from 8 hours to zero. Mississippi went from $132 permit fee to zero, though it already had no training requirement. Maine eliminated its $35 fee and five-hour training requirement.

Regressions that use an adoption dummy variable to measure the effect of the adoption of right-to-carry laws are, therefore, too simplistic. If dummies are used, they will measure something quite different during the 1980s and the post-2000 periods. Indeed, states that adopted right-to-carry laws between 1998 (or 1999) and early 2011 saw the percentage of their adult populations with concealed handgun permits increase by only about 2.4 percentage points. All the other early adopting right-to-carry states saw a 2.7 percentage point increase (see Table 2, column 2). Unfortunately, data on the number of permits issued aren't available for all states in all years.

Better data are available from early 2007 to late 2011 (column 3). They show an even bigger difference between the later- and earlier-adoption states. The states adopting right-to-carry laws from 2007 to 2011 saw a 1.5 percentage point increase in the share of the adult population with permits versus 2.2 percentage points for all other states. Most of the increase in concealed handgun permits in both sets of states occurred during the

end of this period when national violent crime rates were falling the most (Lott, 2014 and 2015)

In other words, the share of the adult population with permits increased less during the 1999-2010 period in the late adopters than in the states to which they are being compared. Since Zimmerman's test assumes the opposite happened, his test is measuring testing the opposite of what he says that he is measuringtesting. However, since his test is largely comparing the change in states that had recently adopted right-to-carry laws to the change in states that had done so before 1999, the test is not really a general test of right-to-carry laws at all. One might even interpret it as a test of whether the later right-to-carry laws are more restrictive. But since the change in permits in old right-to-carry states are being mixed together with permit changes in more restrictive may-issue states, no simple interpretation is possible.

Zimmerman (p. 71) states that one set of his regressions "may imply that the passage of right-to-carry laws increases the propensity for crime," although he quickly adds that "as the right-to-carry law impact is being identified from only eight state changes in the data, it is difficult to give any strong causal interpretation to these estimates." But his findings (as well as those by Aneja et al.) are actually more consistent with the hypothesis that later right-to-carry states are more restrictive than earlier ones.[7] Zimmerman's later-reported finding (p. 74), using GMM-style instruments, that "while most of the individual coefficient estimates on the shall issue dummy remain positive, none are statistically insignificant [*sic*, actually none are statistically *significant*] at

[7] Because of the large variation in permit issuing rates across states and difficulties in matching up dates, there is not only this systematic bias but also a good deal of measurement error, which biases the estimated impact of right-to-carry laws towards zero.

conventional levels" is best interpreted the following way: Later right-to-carry laws are more restrictive, but the difference between these two sets of states is not statistically significant.

The foregoing points also affect Gius (2014) and Moody et al. (2014). States that adopted right-to-carry laws before 1977 had bigger increases in their permits during either the 1999 to 2011 or 2007 to 2011 periods, showing respectively increases of 3.6 and 2.9 percentage points.

A simple dummy variable for the law creates another problem. It assumes that when a state adopts right-to-carry there is a one-time change in the perceived (or actual) risks facing criminals. Yet, as just shown, the percent of the population with permits increases continually long after the adoption. Elsewhere (Lott 2010, pp. 178-184), I provide evidence that crime drops as the percent of the adult population with permits increases.

The change in the number of permits for the early adopting right-to-carry states is even greater than the 2.2 or 2.7 percentage points shown in Table 2. That is because Arizona and Alaska as changing their laws. All the authors here treat Alaska's right-to-carry law as unchanging in 2003 and Zimmerman and Aneja et al. also assumed that for Arizona over in 2010. But both states changed from traditional right-to-carry laws to so-called "constitutional carry," where permits were no longer required to carry within the state itself (residents of Arizona and Alaska only have to get permits to carry outside of their states). We can only guess what percent of the adult population now legally carries in those two states, but it has undoubtedly increased dramatically.

Conclusion

In sum, the investigations of Gius (2014), Moody et al. (2014), Zimmerman (2014), and Aneja et al. (2014) don't seem to realize that they are comparing right-to-carry states during their sample period to right-to-carry states that had already adopted these laws before the period that they study. For Gius and Moody et al. that doesn't matter too much because those early adopting right-to-carry states are combined with many more states that were very restrictive. It is a much bigger problem for Zimmerman and Aneja et al. where the vast majority of states that had adopted their laws prior to 1999 were right-to-carry states. In addition, none of these authors acknowledge that the most recent right-to-carry laws make it more difficult for people to obtain permits. Fewer permits issued means less of a reduction in violent crime. We should study the impact of concealed handgun laws by measuring by the actual change in concealed permits in different states (Lott 2010, 258-282).

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Table 1: Criteria for permits based on when the right-to-carry laws went into effect			
	Average permit fee in real 2013 dollars	Average training time to qualify for a permit (hours)	Average age at which one can obtain a permit
Prior to 1977	$26.06	0.7	19.3
1980s	$85.07	4.0	20
1990s	$95.52	5.5	20.5
2000s	$113.82	8.6	21

* See Lott (2010, 258) for data for first three periods and partial data for the 2000s

Table 2: Comparing change in percent of the adult population with conceal-carry permits			
	Number of states for which data is available (1)	Percentage point change in permits from 1998 (or 1999) to Late 2011* (2)	Percentage point change in permits from 2007 to Late 2011* (3)
States that adopted right-to-carry laws after 1999	8	2.4	1.5
States that adopted right-to-carry laws before 1999	19	2.7	2.2 **
States that adopted right-to-carry laws before 1977	4	3.6	2.9
All states that we have data for	28	Data not available for other states	2.7

* The data for 2007 are as in Lott (2010, 238-9), and were obtained by contacting individual states; the data for 2011 were from the United States Government Accountability Office, "States' Laws and Requirements for Concealed Carry Permits Vary across the Nation," GAO, July 2012 (http://www.gao.gov/assets/600/592552.pdf). However, the later numbers for Utah as reported by the GAO included a large number of

permits for out-of-state residents so the 2011 number we use for that state excluded permits to nonresidents. The starting numbers for the column that measured the change in permits from 1998 to 2011 used data for 1998 where possible, but usually had to have data from 1999 and in one case from 1997.

** Purely for comparison with the 2.7 percentage point estimate provided in the previous column: The 2.2 percentage point increase is obtained by using just the states for which data were available for the 1998 to Late 2011 period. The 2.7 percentage point number shown in column 3 thus implies that the gap between the 2.4 and 2.7 in column 2 is significantly bigger than shown there. The point here is that using the data for the 2007 to 2011 period implies that 19 states examined in column 2 underestimate the increased permits in the larger set of states.

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