

# **Expert Report of John J. Donohue**

*Flanagan v. Becerra*, United States District Court (C.D. Cal.), Case No. 2:16-cv-06164-JAK-AS

June 1, 2017

## **BACKGROUND AND QUALIFICATIONS**

1. I, John J. Donohue, am the C. Wendell and Edith M. Carlsmith Professor of Law at Stanford Law School. After earning a law degree from Harvard and a Ph.D. in economics from Yale, I have been a member of the legal academy since 1986. I have previously held tenured positions as a chaired professor at both Yale Law School and Northwestern Law School. I have also been a visiting professor at a number of prominent law schools, including Harvard, Yale, the University of Chicago, Cornell, the University of Virginia, Oxford, Toon University (Tokyo), St. Gallens (Switzerland), and Renmin University (Beijing).

2. For a number of years I have been teaching at Stanford a course on empirical law and economics issues involving crime and criminal justice, and I have previously taught similar courses at Yale Law School, Tel Aviv University Law School, the Gerzensee Study Center in Switzerland, and St. Gallen University School of Law in Switzerland. I have consistently taught courses on law and statistics for two decades.

3. I am a Research Associate of the National Bureau of Economic Research, and a member of the American Academy of Arts and Sciences. I was a Fellow at the Center for Advanced Studies in Behavioral Sciences in 2000-01, and served as the co-editor (handling empirical articles) of the *American Law and Economics Review* for six years. I have also served as the President of the American Law and Economics Association and as Co-President of the Society of Empirical Legal Studies.

4. I am also a member of the Committee on Law and Justice of the National Research Council (“NRC”), which “reviews, synthesizes, and proposes research related to crime, law enforcement, and the administration of justice, and provides an intellectual resource for federal agencies and private groups.” (See <http://www7.national-academies.org/claj/> online for more information about the NRC.)

5. My research and writing uses empirical analysis to determine the impact of law and public policy in a wide range of areas, and I have written extensively about the relationship between rates of violent crime and firearms regulation. My complete credentials and list of publications are stated in my curriculum vitae, a true and correct copy of which is attached as Exhibit A.

6. I filed an expert declaration in each of two cases involving a National Rifle Association (“NRA”) challenge to city restrictions on the possession of high-capacity magazines:

*Fyock v. City of Sunnyvale*, United States District Court (N.D. Cal.), January 2014.

*Herrera v. San Francisco*, United States District Court (N.D. Cal.), January 2014.

I also filed an expert declaration in a case involving a challenge by NRA to Maryland’s restrictions on assault weapons and high-capacity magazines:

*Tardy v. O’Malley*, United States District Court (District of Maryland), February 2014.

In all cases, the relevant gun regulations have (ultimately) been sustained in the relevant federal appellate courts.

7. I am charging a total of \$21,250 to the California Department of Justice for preparation of this expert report. I will charge \$850 per hour for deposition testimony, and \$500 per hour for trial testimony, in connection with being an expert witness in the above-entitled case.

## SUMMARY OF CONCLUSIONS

1. A considerable body of credible statistical evidence based on both panel data analysis and the use of synthetic controls finds that the adoption of right-to-carry (“RTC”) laws (sometimes called “concealed-carry laws” or “CCW laws”), permitting individuals otherwise allowed to possess firearms to carry them concealed on their bodies in public places, leads to increases in overall violent crime.<sup>1</sup> Earlier panel data studies that purported to find different results are less reliable because they have not analyzed the full array of data through 2014, which I have analyzed, or because the earlier panel data studies are marred by specification or other econometric problems.<sup>2</sup>

2. Given that the best statistical evidence suggests that the adoption of right to carry laws leads to statistically significant increases in violent crime, it is a sound, evidenced-based, and longstanding crime-fighting strategy for U.S. state and local governments to place substantial limits on the carrying of concealed weapons in public.<sup>3</sup>

3. While the vast bulk of the empirical literature on the impact of gun carrying on crime has focused on laws facilitating the concealed carry of weapons, one can use this literature to draw inferences about the likely consequences of allowing the open carry of guns. In general, there is no reason to think that the social harm from gun carrying imposed by RTC laws that was just referenced would be lower under a regime allowing open carry of guns. Indeed, there are valid reasons to believe that a policy of lawful open carry could impose even greater social costs in terms of further facilitating criminal activity, burdening the police, and elevating citizen fear and anxiety.

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<sup>1</sup> Panel data analysis has been the primary tool for evaluating the impact of law and policy interventions for at least the last 30 years. Synthetic controls is a newer technique designed to better approximate the type of treatment and control analysis that would be found in a randomized study. Further details of both are discussed below.

<sup>2</sup> To generate credible results, panel data evaluations must be conducted according to sound statistical practices. If the models used do not have the appropriate mathematical form or do not capture the appropriate explanatory variables, then they would not be deemed to have an appropriate “specification.” Since much of the development of the elements of modern panel data analysis came from economists who were trying to perfect these tools, any violations of the best practices in conducting such studies are often referred to as “econometric” problems.

<sup>3</sup> All of our estimates of the impact of RTC laws on crime are accompanied by measures designed to gauge whether the results are likely to be caused by chance variations as opposed to a true causal effect of the RTC law. If the estimated effect is large relative to the likely chance variation in crime, then we deem the estimate to be “statistically significant.”

## DISCUSSION

### Background on Panel Data Models

1. There is a very substantial literature on the issue of the impact of laws allowing citizens to carry concealed handguns. My first published article in this literature appeared 18 years ago,<sup>4</sup> and the latest of my 11 articles in this area was just issued as a National Bureau of Economic Research working paper this month (attached as Exhibit B).<sup>5</sup>
2. Virtually all of the published literature on this question has employed an econometric approach referred to as a panel data model with state and year fixed effects. Panel data refers to the fact that the researcher will have crime data over a period of years for many different states (or counties or cities), which can then be analyzed to test whether some legal or policy intervention (such as the adoption of an RTC law) leads to a change in crime that is not seen in states that do not experience that legal or policy intervention (i.e., do not adopt RTC laws).<sup>6</sup>
3. Panel data models can be useful to examine a change adopted by selected states (preferably at different times) so that one can compare what happens in the states that adopt the legal change to the states that do not adopt the legal change. This is an appealing empirical strategy because it allows the researcher to separate the data into the treated group, which is the set of states that adopts the law during the relevant data period, and the set of all other states, which serves as a type of control. Nonetheless, it is now well-known that panel data crime estimates of crime can be inaccurate if they are not undertaken with meticulous care and substantial econometric sophistication.

### The Most Up-to-Date Panel Data Estimates of the Impact of RTC Laws on Violent Crime

4. Despite some initial claims that RTC laws could actually reduce violent crime, the 2004 report of a special committee the National Research Council (“NRC”; with only one dissenter out of 16 committee members) emphatically rejected this conclusion based on the committee’s review of the then-current information with data through 2000.<sup>7</sup> Noting that the estimated effects of RTC laws were highly sensitive to the particular choice of explanatory variables, the report concluded that the evidence was too uncertain to determine the impact of these permissive gun laws on crime. The

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<sup>4</sup> Ian Ayres and John Donohue, “Nondiscretionary Concealed Weapons Law: A Case Study of Statistics, Standards of Proof, and Public Policy,” *American Law and Economics Review* 436 (1999).

<sup>5</sup> John Donohue, Abhay Aneja, and Kyle Weber, “Right-to-Carry Laws and Violent Crime: A Comprehensive Assessment Using Panel Data and a State-Level Synthetic Controls Analysis,” *NBER Working Paper* (“DAW”) May 2017. A true and correct copy of this working paper is attached as Exhibit B. We plan to have the article published in a peer-reviewed journal.

<sup>6</sup> The state fixed effects simply capture the fact that some states have enduringly lower or higher rates of violent crime (for reasons that may not be fully reflected in the explanatory variables that are available to the researcher). The year fixed effects are designed to capture the common movements that occur in all states each year owing to factors that operate nationally (and which again may not be fully reflected in the explanatory variables that are available to the researcher).

<sup>7</sup> National Research Council. *Firearms and Violence: A Critical Review* (Washington: National Academies Press, 2004).

Committee suggested that more data and new and better statistical techniques would be necessary to resolve this uncertainty.

5. Since then, 14 more years of data with 11 more states adopting RTC laws have improved the previous panel data estimates. In addition, new statistical techniques have enabled much more compelling and consistent evidence on the impact of RTC laws on crime to emerge.

6. The best evidence now shows that RTC laws substantially increase violent crime rates, so that, ten years after adoption, an RTC state is estimated to have a 13-15 percent higher rate of violent crime than it would have had if no RTC law had been adopted. A violent crime increase of this magnitude is obviously a major burden on a state and its citizens, and given current estimates of the elasticity of incarceration with respect to crime, a state would need to double its prison population to offset the violent crime increase imposed by RTC laws.<sup>8</sup>

7. Many of the early studies that tried to estimate the impact of RTC laws – typically using panel data for all states across an extended period of time – were undermined by the fact that the period from 1985 through the early 1990s was anomalous. Over that span, violent crime rose sharply in certain areas, such as California, New York, and the District of Columbia, owing to the introduction of crack cocaine. Since all three of those jurisdictions and a number of other states with the worst crack problems did not adopt RTC laws, any panel data analysis that could not properly control for the criminogenic influence of crack would necessarily generate a biased estimate of the impact of RTC laws that would make them appear to be less harmful (or more beneficial) than they actually were in influencing crime.

8. This was a major problem for the original Lott and Mustard study and in fact plagues every panel data analysis of RTC laws, except for those that started after the impact of crack had been fully dissipated (in the very late 1990s or early 2000s).<sup>9</sup>

9. One quick but admittedly crude way to address this problem is to present a difference-in-differences comparison between the 37 states that adopted RTC laws over the period 1977-2014 and the nine states (including the District of Columbia) that did not adopt these laws. By comparing the change in violent crime from a period before crack emerged to a year after its impact had dissipated, one can eliminate the impact of crack on crime (although of course this simple comparison does not control for other influences on crime that differed over this period for the two sets of states).

Figure 1 shows that the nine non-RTC states enjoyed a 42.3 percent drop in their violent crime rate, while the 37 RTC-adopting states had a sharply smaller decline in violent crime over this period (a decline of only 8.7 percent over a 37-year period). The five states that had adopted RTC laws prior to 1977 similarly showed far smaller drops in crimes than the nine never-adopting states. This graphical display provides suggestive evidence that RTC laws tend to exacerbate violent crime (controlling for the influence of crack, albeit not for other explanatory variables).

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<sup>8</sup> Current consensus estimates suggest that doubling the incarceration rate will lead to a roughly 15 percent reduction in crime (which means the elasticity of crime with respect to incarceration is .15). Since RTC laws generate about a 15 percent increase in violent crime, one could offset this increase by doubling the prison population. See generally John J. Donohue, “Assessing the Relative Benefits of Incarceration: The Overall Change Over the Previous Decades and the Benefits on the Margin,” in Steven Raphael and Michael Stoll, eds., *Do Prisons Make Us Safer? The Benefits and Costs of the Prison Boom* 269-341 (2009).

<sup>9</sup> See the discussion of Zimmerman (2015) below, which supports my finding that RTC laws increase crime.