

Letters

RESEARCH LETTER

FIREARM VIOLENCE

Association Between Enactment of a “Stand Your Ground” Self-defense Law and Unlawful Homicides in Florida

Results from our study of the influence of Florida’s “Stand Your Ground” self-defense law on homicide and suicide by firearm¹ have been questioned for not distinguishing between “unlawful” homicide (ie, murder) and “justifiable” homicide (ie, lawful use of lethal force).^{2,3} Using an interrupted time series design, we found “an abrupt and sustained increase in the monthly homicide rate of 24.4%” (31.6% for homicide by firearm) following the effective date of the law.¹ Readers have suggested that if the increase in homicide rates resulted from an increase in homicides that were justifiable, the law may be working as intended. We investigated this possibility by acquiring additional data and conducting new analyses.

Methods | As in our earlier study,¹ we used an interrupted time series design to compare monthly rates of homicide in Florida between 1999 and 2015 before and after October 1, 2005, the effective date of the law. Institutional review board approval was not required. We obtained monthly counts of justifiable homicides, broadly defined as the killing of an assailant or intruder, during the commission of a criminal act, by a civilian, from the Florida Department of Law Enforcement.^{4,5} We subtracted the monthly counts from counts of total homicide collected from the Centers for Disease Control and Prevention’s Wide-ranging Online Data for Epidemiologic Research (WONDER) web portal to create a measure of unlawful homicide in addition to the measure of justifiable homicide. We used segmented Poisson regression models, accounting for seasonal influences by using harmonic terms, to analyze each time series. Where significant residual autocorrelation was detected (2-sided $P < .10$), we generated robust SEs using a sandwich estimator.¹ All analyses were conducted in R statistical software (version 3.3.2; RStudio, Inc) using RStudio (version 1.0.136; RStudio, Inc).

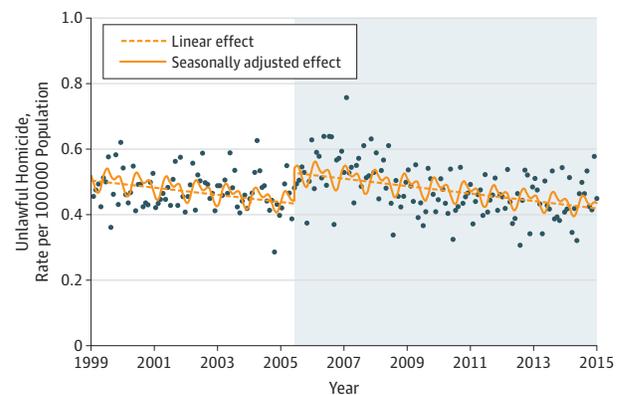
Results | Between 1999 and 2015, the mean monthly count of justifiable homicides in Florida was 6 (6.6% of all homicides).

In the 10 years following the enactment of the self-defense law, the average monthly rate of justifiable homicide increased from 0.02 deaths per 100 000 population (1999-2005) to 0.04 deaths per 100 000 population (Table). Justifiable homicide accounted for a mean of 3.4% of all homicides between 1999 and 2005, and a mean of 8.7% between 2006 and 2015.

Adjusting for underlying trends, we estimated a 75.0% (relative risk [RR], 1.75; 95% CI, 1.24-2.48; $P = .001$) increase in justifiable homicides following the effective date of the law. After removing justifiable homicides from the overall homicide count, we estimated a 21.7% (RR, 1.22; 95% CI, 1.14-1.30; $P < .001$) increase in unlawful homicides (Table and Figure).

Discussion | In response to questions about our previous analysis, we examined changes in justifiable and unlawful homicide after the “Stand Your Ground” law was enacted in Florida.^{2,3} We found that, although both justifiable and

Figure. Changes in Unlawful Homicides Following Enactment of Florida’s “Stand Your Ground” Law



Data points represent monthly rates of homicide and homicide by firearm in Florida between 1999 and 2015. Gray-shaded area depicts the onset of Florida’s “Stand Your Ground” law. Dashed lines represent fitted estimates using a linear step change model. The curved lines represent fitted values for seasonally adjusted models.

Table. Unlawful and Justifiable Homicide Analysis

| Type of Homicide | Mean Monthly Count | | Mean Monthly Rate per 100 000 Population | | Trend Change (RR) (95% CI) ^a | P Value ^b | Step Change (RR) (95% CI) ^c | P Value |
|------------------|--------------------|-----------|--|-----------|---|----------------------|--|---------|
| | Before Law | After Law | Before Law | After Law | | | | |
| Justifiable | 2.80 | 8.50 | 0.02 | 0.04 | 1.00 (1.00-1.01) | .001 | 1.75 (1.24-2.48) | .001 |
| Unlawful | 79.12 | 90.86 | 0.47 | 0.48 | 0.998 (0.998-0.999) | <.001 | 1.22 (1.14-1.30) | <.001 |

Abbreviation: RR, relative risk.

^b P values are 2-sided.

^a Robust SEs are reported following statistically significant Breusch-Godfrey and Seasonal Breusch-Godfrey tests for autocorrelation.

^c Effects adjusted for seasonality using harmonic terms.

unlawful homicides increased substantially after the law took effect in 2005, unlawful homicides accounted for most of the increase.

Some questions remain unanswered. For example, we could not disaggregate the Florida Department of Law Enforcement data to conduct analyses of changes in homicide by firearm or within racial or ethnic groups or by sex. Nonetheless, our findings provide further evidence that Florida's "Stand Your Ground" law has been associated with increases in both unlawful and justifiable homicides.

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