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Disrupting Gun Transfers

Final Summary Overview for National Institute of Justice

2013-R2-CX-0016

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Justice Policy

A JUSTICE, INFRASTRUCTURE, AND ENVIRONMENT PROGRAM

Introduction

Strategies to combat firearm-related violence receive a great deal of attention, including from the national media and policy-makers. In 2007, the Los Angeles City Attorney's Office implemented a pilot study of a gun letter intervention to deter straw purchases and other illegal transfers of firearms (such as gifting to a prohibited possessor), and to increase reporting of lost or stolen firearms (Ridgeway et al., 2008). The intervention involved sending a letter to handgun purchasers during their ten-day waiting periods between purchase and taking possession of the firearm, which advised the purchaser that the new weapon was registered to them and that failure to properly record any transfer or loss of the weapon with California's Department of Justice could result in the owners' liability for any future misuse of the gun. Because studies show that many people who use a gun in a crime (1) do so with a gun recently purchased from a licensed dealer but (2) acquired the gun through the secondary market or by a straw purchase, the idea of the letter program was to deter legal buyers from transferring the weapon to a prohibited possessor who may use the gun in a crime.

A pilot randomized controlled trial of the letter program was conducted in two neighborhoods of the city of Los Angeles from May 2007 to September 2008 (Ridgeway et al., 2011). Results of the trial indicated people who received the letter were twice as likely to report their gun stolen as those who did not receive the letter. Although no difference between groups was found between rates at which guns were recovered at crime scenes, the study follow-up period may have been too short to detect any such effects.

Against this background, the aim of the RAND project was to provide the first evaluation of the long-run outcomes of an experiment aim at reducing straw-purchase-related gun crime by

sending letters to purchasers during the 10-day waiting period in California, and the cost-effectiveness of the strategy. The information could inform Los Angeles County and other jurisdictions in California (and beyond) as to whether the innovative gun letter program was effective and offered ‘good value for money’, and should therefore be considered by the California legislature and the California Attorney General's office for expansion statewide.

Change in Scope of Work: The Challenges of Acquiring Gun-Level Data

The challenges of trying to conduct research on firearms and interventions to reduce firearm-violence have been well-documented. Therefore, during the proposal period, RAND obtained assurances from all relevant agencies that the necessary data would be made available for research purposes. However, RAND worked for 18 months to acquire data on guns purchased in Los Angeles County. We made scores of calls with our CalDOJ POCs tasked with assisting us and the California Attorney General’s office. Our partner, the Los Angeles City Attorney’s office, also repeatedly called CalDOJ as well to help us acquire the data. We received multiple assurances from the Chief of the CalDOJ Firearms Bureau that we would get the data. Despite all these assurances, high-level support, and months of work to acquire the data, we had not yet acquired the data by October of 2015. RAND decided it was time to change the scope of project in order to still have time, with a no-cost extension, to deliver on an impact and cost-effectiveness evaluation of the letter campaign. NIJ agreed and approved this change of scope.

RAND prepared an analytical plan that could still benefit from the experimental design of the original pilot project and the quasi-experimental setting of the larger city-wide implementation. With the help of the University of Pennsylvania and UC Davis, we would analyze the impact of the intervention on lost, stolen, or reportedly transferred guns. RAND would also analyze the wider implementation across Los Angeles in terms of impacts on firearm-involved crimes and cost-effectiveness of the program. Although initially UC Davis believed they could provide state

firearms data for the purpose of this study, they soon reported to us that they did not have access to data that could be used for this purpose. However, the University of Pennsylvania researcher had developed contacts at the Bureau of Alcohol, Tobacco, and Firearm (ATF) who indicated that the ATF would supply the needed gun-level data needed to evaluate the long-term outcomes of the pilot experiment. Once again, University of Pennsylvania worked closely with ATF to secure the necessary permissions, including placing a student intern in the local ATF office to conduct the needed data pull. Although the ATF assured the University of Pennsylvania researchers that the data was imminently available, after working two more years to acquire data on guns purchased, they were still not provided access to the required data. For this reason, and because resources for this part of the project were exhausted on multiple failed attempts to access the needed data, RAND has concluded that this aim of the project can no longer be achieved.

In the end, RAND could complete analysis on the wider impacts of the citywide letter program and a cost-benefit analysis. The background, results, and products of these analyses are discussed here.

Firearm Letter Program in Los Angeles

Five years after the pilot project, Los Angeles launched a citywide gun letter program. Letters were sent to all handgun purchasers residing in zip codes within Los Angeles from January 1, 2013 through September 1, 2015. Once a purchase is made in California, a Dealer Report of Sale (DROS) form for each attempted handgun purchase is sent to the state's Bureau of Firearms. It is the state's receipt of this form that starts the ten-day waiting period mandated by California law. The Los Angeles City Attorney's Office tracked DROS forms for residents in city of Los Angeles zip codes. Based on DROS forms, letters were sent to those living within the Los Angeles boundary

and to individuals residing outside of Los Angeles if they lived in a zip code that extended outside city boundaries.

The letter explained the duty of handgun owners to conduct any sale or transfer through a licensed dealer, and that failure to do so could lead to prosecution. In addition, the letter emphasized other criminal penalties that could be brought against gun owners who knowingly transferred, sold, or lent a firearm to anyone prohibited from possessing one, including someone with a known mental disorder. Furthermore, it emphasized that if a child gained access to the handgun and injured himself, herself, or others, the gun owner was subject to criminal prosecution. Our study expanded on the previous pilot study by investigating the effect of the letter program on firearm violence citywide, and by estimating the costs and benefits of the program to society.

Data

Although the first full month of the program was January 2013, the Los Angeles City Attorney's Office systematically organized aggregated data daily between March 7, 2014, and September 1, 2015, which we present here.

Los Angeles City Gun Letters

Aggregated data were available on the number of attempted and denied purchases, the number of letters sent each working day, and the number of letters returned by the post office as undeliverable for residents with Los Angeles zip codes. As shown in the table below, there were approximately 125 attempted handgun purchases¹ per day by Los Angeles residents² during this period, with one to two purchases denied per day on average (or 1.2 percent). On average,

¹ Attempted purchases refer to every purchase, including those that are denied during the ten-day waiting period.

² More specifically, we are referring to people living in a zip code in the city of Los Angeles.

approximately 218 letters were sent per working day and approximately three (or 1.5 percent) per day were returned as undeliverable.

Summary Statistics of Handgun Purchases and Letters, March 2014–September 2015

Purchase and Program Letter Metrics	Mean	Standard Deviation
Handgun purchases per day	124.9	45.0
Handgun purchases denied per day	1.5	1.6
Letters sent per working day	217.7	173.6
Letters returned per working day	3.3	
Number of purchase days	544	
Number of working days [*]	310	

^{*} On average, approximately four days per week were worked on the program, accounting for holidays, weekends, vacations, and any days not worked on the letter program.

In terms of the trend in purchases over time, the number of attempted purchases each day was relatively stable. However, there was a large spike in purchases on November 28, 2014, the day after Thanksgiving (also known as “Black Friday” and the largest shopping day of the year) when 666 handguns were purchased. This was followed by a steady increase until Christmas, when the number of attempted purchases returned to stable levels. Although this was only a subset of days during the citywide letter program,³ it demonstrated the scale of handgun purchases in Los Angeles and the purchasing pattern during the intervention.

Gun Crime in the City of Los Angeles

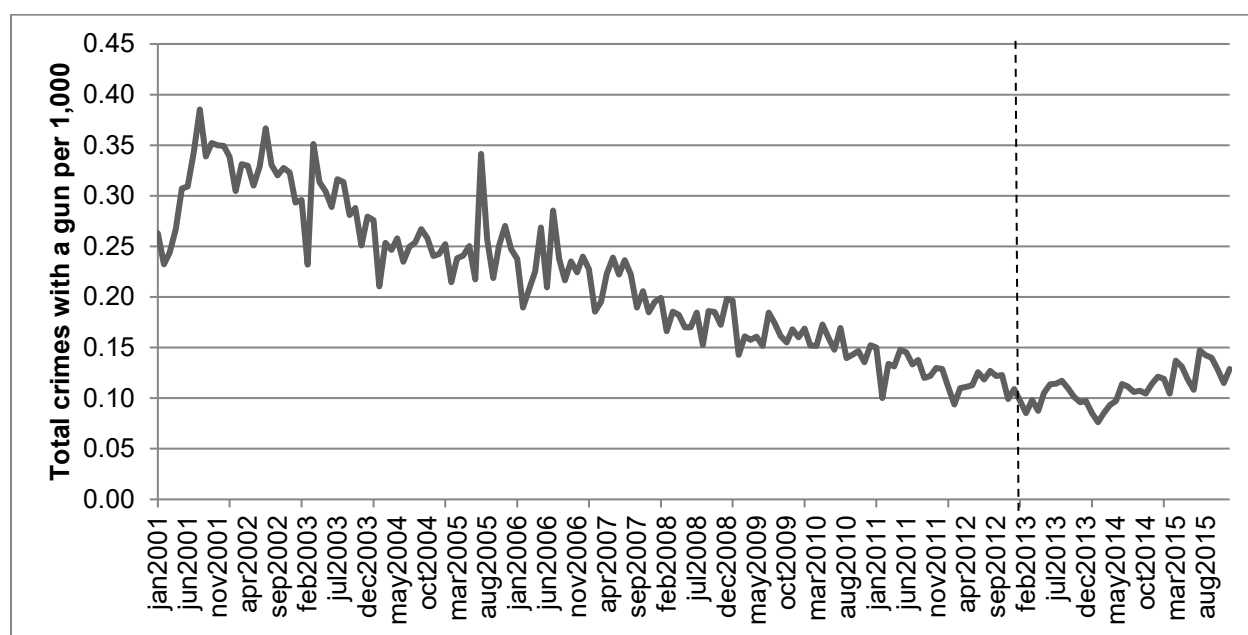
In the city of Los Angeles, between January 2001 and December 2015, an average of 755 violent crimes with a firearm (murder, robbery, and aggravated assault) were reported to police per month (FBI and U.S. Department of Justice, 2014b and 2014a). The bulk of these offenses, 96.5 percent, were robberies (359.5 per month) and aggravated assaults (369.23 per month).

The figure below shows a decrease in the total monthly firearm crime rate in Los Angeles between 2002 and 2013 but leveled off or increased slightly in 2014. The intervention was fully

³ Ideally, we could observe and test purchasing patterns before and after the intervention, but these data were collected during the intervention only.

under way in January 2013 (vertical line), which appears to be before the increase. One possibility is that the letter program slowed the decline of firearm crime. Another possibility is that the growth in firearm crime in 2014 and 2015 would have been even greater without the letter. Our analyses examine whether the introduction of the gun letter intervention affected the trend in gun crimes in Los Angeles, for better or worse.

Trend in Total Crime Rate per Month with a Firearm in Los Angeles, 2001–2015



NOTE: Dashed vertical line signifies start of the letter program.

Methods

Gun Letter Effects on Crime

First, we conducted an Interrupted Time Series Analysis (ITSA) with only a single-unit group to test whether the letter program “interrupted” the gun crime time series in Los Angeles. We used a monthly data set starting in October 2008 and ending in December 2015, and tested whether there was an interruption to the time series starting in January 2013 (when the letter program began). While there were available data between 2001 and September 2008, we did not use months

prior to October 2008 because of concerns that the prior pilot study might affect our analysis. And, we extended the analysis beyond the date of the last letter sent (September 2015) because the intervention could have had lasting effect through December 2015.

Next, we estimated the difference in gun crime between Los Angeles and a synthetic control group, using the Synthetic Control Method (SCM; (Abadie, Diamond, & Hainmueller, 2010)). We constructed the synthetic control using a weighted set of U.S. cities with populations over 500,000 in at least one year since 1980 (control group) on a defined set of pre-intervention outcomes. The SCM used monthly data from 2001 to 2014, where the pre-intervention matching period was from January 2001 to December 2012. Unlike the ITSA, we used data prior to the 2007–2008 pilot study because we were matching Los Angeles to a control group of other cities.

Program Cost Methodology

A second major component of this study focused on the costs and benefits to taxpayers of operating a letter program. For each activity throughout the process, we interviewed staff to determine the direct costs (labor time spent and the equipment used). Additionally, we obtained documentation of indirect costs (overhead expenses) associated to the Los Angeles City Attorney’s Office (Simpson and Simpson, 2015). The information on direct and indirect costs was used to calculate the cost per day and per letter.

Results and Discussion

Cost of the Intervention

Results in the table below show that the cost of the program per day ranges from approximately \$145 to \$428 per day worked, depending on the stage and number of letters sent. Stage 1 was the costliest because this was the most labor-intensive stage. The change from Stage 1 to Stage 2 was the addition of a mail merge, which resulted in a 29-percent to 47-percent decrease in costs (depending on the number of letters sent). Then, contracting out the task of stuffing envelopes and

posting letters that occurred between Stage 2 and Stage 3 resulted in cost increases of 4 percent to 28 percent. As noted earlier, this allowed the Los Angeles City Attorney’s Office staff to spend more time on other activities (e.g., cases). Therefore, Stage 3 was probably more cost-effective to taxpayers and a better use of Los Angeles City Attorney’s Office resources.

Costs per Letter of Operating Letter Program

	Low (Fewer Letters Sent)	Usual (Average Letters Sent)	High (More Letters Sent)
Stage 1	\$1.58	\$1.58	\$1.58
Stage 2	\$1.45	\$1.21	\$1.18
Stage 3	\$1.85	\$1.33	\$1.13

NOTE: Stage1 = Low Automation/Clerical Work Not Contracted; Stage 2 = High Automation/Clerical Work Not Contracted; Stage 3 = High Automation/Clerical Contracted.

Impacts of the Letter Program

We started by using the ITSA method to test whether there were significant changes in the rate of gun crime at the time the letters were sent. Although firearm robberies declined around the same time as the start of the letter intervention, other contemporaneous influences on robberies may have had a greater effect on robberies than the letter program. Because we cannot rule out this possibility, we do not consider this finding particularly strong or compelling evidence for the effectiveness of the program.

We then used the stronger Synthetic Control Method (SCM) of comparing Los Angeles to a weighted group of U.S. cities with populations over 500,000. The synthetic control should have similar gun crime trends to Los Angeles but does not get the letter intervention, which would yield a viable comparison group. Despite a variety of different model specifications, we could not get a high-quality match between Los Angeles and the synthetic control, which was needed to identify the effect of the letter. Because we do not have a good fit between Los Angeles and the synthetic control in the pre-intervention period, any results of the effect of the letter would be statistically biased and we do not conduct inferential analyses.

Lessons Learned

First, although not available to us, a better approach than analyzing aggregate, city-level data would have been to conduct tests that are more sensitive to the effect of the letter intervention, such as gun-level data (where the unit of observation is each gun purchase). A second recommendation would be to study the data over a longer period with a long follow-up for testing the effects on crime, because it takes time for a gun to be used and to be recovered. Lastly, a potentially fruitful avenue of research would be to interview gun dealers and buyers to get to their observations of the effects of the letter.

Impact and Dissemination

These impact and cost results have been distributed through a number of avenues in order to reach a broad audience of policing practitioners and academic researchers alike. We presented this research during the Center for Causal Inference seminar in April 2017, which included an audience of statisticians, economists, criminologists, and PhD students at Pardee RAND Graduate School. A report detailing the impact and cost evaluations of the city-wide intervention was published in May 2017. The report was posted on the RAND website; electronic copies were emailed to a RAND contact list including police practitioners and academic researchers. Key findings were Tweeted multiple times on RAND's corporate Twitter account with more than 100,000 followers.

We find ambiguous evidence on the effects of the letters, in large part because the data and procedures we had to use to conduct the analysis were less powerful than originally planned. For this reason, we cannot draw conclusions about the effects of the letters. Program costs were sufficiently low such that even a small and statistically difficult to measure impact on firearm crime could offer good value for money. Based on this (lack of) evidence, the Los Angeles City Attorney's Office discontinued the letter program, and is now using resources for other activities.