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# REDUCING GUN VIOLENCE IN AMERICA

Informing Policy with  
Evidence and Analysis

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# Preventing the Diversion of Guns to Criminals through Effective Firearm Sales Laws

Daniel W. Webster, Jon S. Vernick, Emma E. McGinty, and Ted Alcorn

## Weaknesses in Federal Gun Laws Which Enable Criminals to Get Guns

Preventing individuals who are deemed too risky or dangerous from obtaining firearms is arguably the most important objective of gun control policies. Many perpetrators of gun violence are prohibited by federal law from purchasing firearms from a licensed dealer due to prior felony convictions or young age. Other contributions to this book provide compelling evidence that existing conditions for disqualifying someone from legally possessing firearms are justifiable and should be expanded (Vittes, Webster, and Vernick, in this volume). Wintemute (chap. 7 in this volume) and Zeoli and Frattaroli

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(in this volume) provide evidence that laws which prohibit firearm possession by persons convicted of violent misdemeanors and those who are subject to restraining orders for domestic violence can reduce violence.

Some prohibited persons will voluntarily refrain from having a firearm in order to avoid criminal sanctions. But policies that enhance firearm seller and purchaser accountability are likely to determine how effectively gun control laws prevent prohibited individuals from acquiring guns. The federal Brady Law serves as a foundation, albeit incomplete, for preventing prohibited persons from acquiring firearms by making firearm purchases from federally licensed firearm dealers contingent upon the prospective purchaser passing a background check (Cook and Ludwig, in this volume). Licensed dealers must check purchasers' IDs, submit purchase applications to the FBI's National Instant Check System (NICS), and maintain records of all firearms acquisitions and sales so that ATF auditors can assess the dealers' compliance with gun sales laws.

Data on guns recovered by police and traced by the U.S. Bureau of Alcohol, Tobacco and Firearms (ATF) have indicated that about 85% of criminal possessors were not the retail purchaser (Bureau of Alcohol, Tobacco and Firearms 2002). This is consistent with our analysis of data from the most recent (2004) Survey of Inmates in State Correctional Facilities (SISCF) to determine the source for the handguns acquired by the 1,402 inmates incarcerated for an offense committed with a handgun. The largest proportions of offenders got their handguns from friends or family members (39.5%) or from street or black market suppliers (37.5%), sales for which there are no federal background check requirements. Licensed gun dealers were the direct source for 11.4% of the gun offenders. One in 10 offenders in our sample reported that they had stolen the handgun that they used in their most recent crime. Handgun acquisitions by offenders at gun shows and flea markets were rare (1.7 %).

It is easy to understand why offenders would prefer private sellers over licensed firearms dealers. Under federal law and laws in most states, firearm purchases from unlicensed private sellers require no background check or record keeping. The lack of record keeping requirements helps to shield an offender from law enforcement scrutiny if the gun were used in a crime and recovered by police. Indeed, of the offenders in the SISCF who were not prohibited from possessing a handgun prior to the crime leading to their incarceration, two-thirds had obtained their handguns in a transaction with a private seller.

That only 11% of handgun offenders reported acquiring their handguns from a licensed gun dealer does not mean that licensed dealers play a negligible role in the diversion of guns to criminals. Federal gun trafficking investigations indicate that corrupt licensed dealers represent one of the largest channels for the illegal gun market (Bureau of Alcohol, Tobacco and Firearms 2000), and a national phone survey of gun dealers found a willingness to make gun sales likely to be illegal relatively common (Sorenson and Vittes 2003). As articulated by Vernick and Webster (in this volume) and Braga and Gagliardi (in this volume), current federal laws provide many protections to licensed firearm sellers, and the Bureau of Alcohol, Tobacco, Firearms and Explosives lacks the resources and political power to serve as a robust deterrent to illegal gun sales.

### Prior Evidence That Better Regulation of Gun Sellers Reduces Diversions of Guns to Criminals

Weaknesses in federal gun sales laws may cause skepticism about whether gun control can work in the United States. However, states vary greatly in the nature of their gun sales laws. For example, many states extend conditions for firearm prohibitions beyond those covered in federal law to include additional high-risk groups and place additional regulations on firearm sales to prevent illegal transfers. Twelve states require retail firearm sellers to be licensed by state or local governments and allow law enforcement to conduct audit inspections of gun dealers (Vernick, Webster, and Bulzachelli 2006). Fifteen states extend firearms sales regulations to sales by private, unlicensed sellers, and two additional states require background checks for firearms sold at gun shows. Nine states have some form of licensing system for handgun purchasers, five require applicants to apply directly with a law enforcement agency and be photographed and fingerprinted, and three allow agencies to use their discretion to deny an application if they deem it to be in the interest of public safety. Additional laws enacted by states to keep guns from prohibited persons include mandatory reporting of loss or theft of private firearms, limiting handgun sales to one per person per month, and banning the sale of low-quality “junk guns” that are overrepresented in crime (Wintemute 1994; Wright, Wintemute, and Webster 2010).

A study which used crime gun trace data from 53 U.S. cities for the years 2000–2002 examined the association between state gun sales regulations and

the diversion of guns to criminals (Webster, Vernick, and Bulzacchelli 2009). Diversion of guns to criminals was measured by the number of guns recovered by police within one year of retail sale unless the criminal possessor was the legal retail purchaser. In addition to examining state laws, this study also surveyed state and local law enforcement officials to ascertain their policies for conducting compliance inspections or undercover stings of licensed dealers. Strong regulation and oversight of licensed gun dealers—defined as having a state law that required state or local licensing of retail firearm sellers, mandatory record keeping by those sellers, law enforcement access to records for inspection, regular inspections of gun dealers, and mandated reporting of theft or loss of firearms—was associated with 64% less diversion of guns to criminals by in-state gun dealers. Regulation of private handgun sales and discretionary permit-to-purchase (PTP) licensing were each independently associated with lower levels of diversion of guns sold by in-state dealers. The finding on private sales regulations is consistent with the results of a systematic observational study of gun sales at gun shows that found anonymous undocumented firearms sales to be ubiquitous and illegal “straw man” sales more than six times as common in states that do not regulate private sales compared with California that does regulate such sales (Wintemute 2007; Wintemute, chap. 7 in this volume).

### Diversions of Guns to Criminals Following Missouri’s Repeal of Permit to Purchase Licensing

The associations between state gun sales laws and diversions of guns to criminals cited above are cross-sectional and therefore do not capture changes in gun diversions following changes in state gun sales laws. The strong association between at least some forms of PTP licensing and lower rates of gun diversions to criminals could potentially be confounded by some variable omitted from the analyses that distinguishes states that enact the most comprehensive firearm sales regulations from those that do not. There have been few noteworthy changes in gun sales laws during a period when crime gun tracing practices were more common and the data were available to track changes over time. An exception is the repeal of Missouri’s PTP law effective August 28, 2007. This law had required handgun purchasers to apply for a PTP through their local county sheriff’s office and required a PTP for all handgun sales, whether by licensed or unlicensed sellers. Following the repeal, handgun



purchasers could purchase handguns without a background check or record keeping if the seller was not a licensed dealer, and licensed gun dealers rather than sheriff’s deputies processed applications to purchase handguns.

Using annual state-level data on crime guns recovered by police in Missouri and traced by the ATF for the period 2002–2011, we examined changes in commonly used indicators of illegal gun diversion—the number and proportion of guns with short sale-to-crime intervals—before and after the state repealed its PTP law. If Missouri’s PTP law had been curtailing the diversion of guns to criminals, the repeal of the law should result in more short sale-to-crime guns recovered by police, and the shift in increasing crime guns should coincide with the length of time between the repeal of the law and a crime gun’s recovery by police.

Such a pattern is clearly evident in the data presented in Table 8.1. The percentage of traced crime with a sale-to-crime interval of less than three months begins to increase from a pre-repeal stable mean of 2.8% to 5.0% in 2007 when the repeal was in effect for four months, and then jumps up to a mean of 8.5% for 2008 through 2011. The percentage of crime guns with sale-to-crime intervals of three to twelve months increased sharply beginning in 2008 from a pre-repeal mean of 6.2% to 14.0% for 2008–2011 when all such guns were purchased after the law’s repeal. If the PTP repeal increased the diversion of guns to criminals, the percentage of crime guns recovered at a

*Table 8.1* Percentage of Missouri Crime Guns with Short Time Intervals between Retail Sale and Recovery by Police for Years 2002–2011

Year	Up to 3 months (%)	3–12 months (%)	1–2 years (%)
2002	2.9	5.2	5.2
2003	3.2	5.3	6.1
2004	2.1	5.6	5.7
2005	3.3	5.1	6.6
2006	3.2	7.5	7.2
2007	4.5	7.9	7.1
2008	9.4	12.6	6.7
2009	8.1	15.0	12.7
2010	7.6	13.7	13.0
2011	8.5	14.3	12.7

one to two years sale-to-crime interval should increase beginning in 2009. Indeed, that is what happened. These guns increased sharply from a mean of 6.4% to 13.0%. The sharp increase in very short sale-to-crime intervals for guns in Missouri was not part of a national trend; in fact, the average sale-to-crime interval increased nationally from 10.2 years in 2006 to 11.2 years in 2011.

Because states with stronger gun sales laws tend to attract guns originating in states with weaker gun laws (Cook and Braga 2001; Webster, Vernick, and Hepburn 2001), we also compared trends in the proportion of Missouri's crime guns that were initially purchased in Missouri versus those that had been purchased outside of the state. Consistent with our hypotheses that Missouri's PTP had been preventing guns from being diverted to criminals, the share of crime guns originating from Missouri increased from a mean of 55.6% when the PTP law was in place to 70.8% by 2011, while the proportion that had originated from out of state gun dealers decreased from 44.4% before the repeal, began dropping in 2008, and was 29.2% in 2011. This is a remarkable change for an indicator that tends to change very little over time.

### Effects of State Gun Sales Laws on the Export of Guns to Criminals across State Borders

In 2009, 30% of crime guns traced by the ATF were recovered in states other than the state where they were originally sold; however, there is great variation across states with respect to the proportion of crime guns which were originally sold by gun dealers in other states. *Mayors Against Illegal Guns* (2010) published a report showing great disparities across states in the number of crime guns exported per capita. Bivariate analyses indicated that each of ten selected gun control laws were associated with exporting fewer guns per capita that were used by criminals in other states. In a National Bureau of Economic Research (NBER) working paper, Knight used an index of eleven laws developed by MAIG to examine the flow of guns to and from states with strong versus weak gun laws and found that states with weak gun laws tended to export guns to states with strong gun laws (Knight 2011).

The present study adds to this literature by using crime gun trace data from the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) to examine the cross-sectional association between state gun laws and the per capita rate of exporting crime guns across the 48 contiguous U.S. states. The following state gun sales laws were considered: strong regulations of retail

gun dealers<sup>1</sup>; permit-to-purchase (PTP) licensing; private sales regulations (mandatory background checks of sellers or valid PTP); handgun registration; mandatory reporting to law enforcement of theft and loss of firearms by private owners; whether the state has criminal penalties for dealers who fail to conduct background checks or has penalties for illegal straw purchasers; one-gun-per-month restrictions; assault weapon bans; and junk gun bans. Three variations of PTP laws were examined: (1) discretionary PTP laws which give law enforcement the discretion to refuse to issue permits; (2) PTP with fingerprinting which requires applicants to appear at the law enforcement agency that issues the permits to be photographed and fingerprinted; and (3) nondiscretionary PTP laws which require a permit to purchase a firearm but do not require applicants to go to agencies to be fingerprinted.

We used negative binomial regression models with robust standard errors to estimate the association between state gun laws and the per capita rate of crime guns exported to criminals in other states after controlling for potential confounders. Key confounders controlled for in the analyses were the prevalence of gun ownership, out-of-state population migration, and the number of people living near the border of states with strong gun laws. State population served as an offset variable so that transformed regression coefficients could be interpreted as incident rate ratios (IRR) and percentage reductions in risk.

Data on crime gun exports were obtained from the 2009 state-level crime gun trace data posted on the ATF's website. ATF defines crime guns as recovered firearms that were "illegally possessed, used in a crime, or suspected to have been used in a crime." In 2009, 61% of the guns that police submitted to ATF were successfully traced to the first retail sale.

Data on state gun laws were obtained through legal research and from ATF and U.S. Department of Justice Publications. Oak Ridge National Laboratory's LandScan global population distribution data was used with arcGIS Version 10 to calculate state border population variables used as control variables in statistical models. These control variables included population within 50 miles of a bordering states with the strongest gun control laws<sup>2</sup> and states with medium level of gun control.<sup>3</sup> Household prevalence of firearm ownership was obtained from the Behavioral Risk Factor Surveillance System 2001 survey (Centers for Disease Control and Prevention 2001), and measures of state migration<sup>4</sup> were obtained from the American Community Survey (ACS) 2005–2009 five-year estimates. Finally, we measured two variables indicating that a state borders Canada or Mexico, respectively.

States that exported the most crime guns per 100,000 population were Mississippi (50.4), West Virginia (47.6), Kentucky (35.0), and Alabama (33.4). Of these four states, three (Mississippi, West Virginia, and Kentucky) had none of the state gun laws we examined. Alabama penalized gun dealers who failed to conduct background checks but had no other laws of interest in place. States that exported the fewest crime guns per capita—New York (2.7), New Jersey (2.8), Massachusetts (3.7), and California (5.4)—each had strong gun dealer oversight, regulated private sales, and handgun registries. New York, New Jersey, and Massachusetts also had discretionary PTP and required reporting of firearm theft/loss.

Data from the regression analysis are presented in Table 8.2. Due to high collinearity (Variance Inflation Factor > 10), assault weapons bans and handgun registration laws were dropped from the final models. Statistically significant lower per capita export of crime guns across state borders was found for

Table 8.2 Estimates of association between state gun laws and crime gun exports

	IRR	Robust SE	<i>p</i> value
State gun laws			
Discretionary purchase permits	0.24	0.10	.001
Purchase permits with fingerprinting	0.55	0.15	.02
Nondiscretionary permits	0.75	0.15	.15
Strong dealer regulation <sup>a</sup>	1.45	0.30	.07
Penalty for failure to conduct background checks	0.76	0.12	.07
Penalty for straw purchasers	1.46	0.30	.07
Junk guns banned	0.68	0.13	.04
Private sales regulated	0.71	0.11	.03
Firearm theft/loss reported	0.70	0.10	.02
One gun per month	0.81	0.26	.51
Covariates			
Household gun ownership	6.05	4.20	.009
Border population in states with strong gun laws <sup>b</sup>	1.00	1.82E-08	.50
Border population in states with medium gun laws <sup>c</sup>	1.00	2.57E-08	.14
Migration out of state	0.99	5.04E-07	.50
Borders Canada	0.68	0.065	<.001
Borders Mexico	0.84	0.19	.43

Note: IRR = incidence rate ratio. Model also includes state population offset term.

<sup>a</sup>States were considered to have strong dealer regulation if they require licensing of gun dealers, allow inspection of dealer records, and penalize dealers who falsify records.

<sup>b</sup>States were considered to have strong gun laws if they have a discretionary permit-to-purchase law.

<sup>c</sup>States were considered to have medium gun laws if they regulate private sales, require licensing of gun dealers, and allow inspections of dealer records.

discretionary PTP laws (IRR = 0.24, lowered risk 76%), nondiscretionary PTP laws requiring fingerprinting at a law enforcement agency (IRR = 0.55, -45%), junk gun bans (IRR = 0.68, -32%), regulation of private sales (IRR = 0.71, -29%), and required reporting of firearm theft or loss by private gun owners (IRR = 0.70, -30%) were each associated with statistically significantly lower rates of crime gun exports. Effects for penalties for gun dealers' failure to conduct background checks (IRR = 0.76) and penalties for straw purchases (IRR = 1.24) approached statistical significance at the .05 level but in opposite directions. Although billed as a deterrent to interstate gun trafficking, one-gun-per-month restrictions were unrelated to trafficking and neither were strong dealer regulations, penalties for failure to conduct background checks, or penalties for straw purchasing. Household gun ownership (IRR = 6.05) was associated with higher crime gun export rates and bordering Canada was associated with lower crime gun exports (IRR = 0.84). States bordering other states where gun laws are relatively strict was unrelated to the rate of exporting crime guns after controlling for gun sales laws and other factors.

## Conclusions and Policy Implications

Data presented here provide compelling evidence that the repeal of Missouri's permit-to-purchase (PTP) law increased the diversion of guns to criminals. The timing of the effects on our indicator of diversion, short intervals between sales, and recovery in crime was in exact correspondence with the timing of the law's repeal. The changes observed in gun diversions in Missouri are likely related to the substantial change in how guns were sold following the law's repeal. Prospective purchasers of handguns being sold by private individuals no longer had to pass a background check and sellers were no longer required to document the sale. Prospective purchasers, including illegal straw purchasers, interested in buying handguns from licensed dealers applied to purchase the gun at the place that profited from the sale rather than at a law enforcement agency. Repealing the PTP law made it less risky for criminals, straw purchasers, and persons willing to sell guns to criminals and to their intermediaries, and these individuals appear to have taken advantage of the opportunities afforded to them by the repeal.

In our study of state gun sales laws in the 48 contiguous states, discretionary PTP laws were the most dramatic deterrent to interstate gun trafficking. This finding is consistent with prior research showing a negative association

between these laws and intrastate diversion of guns to criminals; however, the effects were either mediated by or explained by lower levels of gun ownership in states with these laws (Webster, Vernick, and Bulzachelli 2009). Discretionary permitting procedures such as in-depth and direct scrutiny by law enforcement, longer waiting times, higher fees, and stricter standards for legal ownership may depress gun ownership and reduce opportunities for criminals to find individuals who have guns that they would be willing to sell or who would be targets for gun theft. The strong negative association between nondiscretionary PTP laws and exporting guns to criminals in other states after statistically controlling for gun ownership levels, geography, and other gun laws suggests that PTP laws deter gun trafficking.

Perhaps most relevant to current debates about federal gun policy, we found that states which regulated all handgun sales by requiring background checks and record keeping, not just those made by licensed dealers, diverted significantly fewer guns to criminals in other states. This finding is consistent with the results of a prior study of intrastate diversions of guns to criminals (Webster, Vernick, and Bulzachelli 2009) and the findings of an observational study of sales practices gun shows (Wintemute 2007; chap. 7 in this volume). The importance of fixing this flaw in current gun law is highlighted by data first reported here which indicate that nearly 80% of handgun offenders incarcerated in state prisons reported purchasing or trading for their handgun from an unlicensed seller who, in most states, was not legally obligated to ensure that the purchaser passed a background check or to keep a record of the transaction.

Our examination of state firearms regulations and the interstate diversion of guns to criminals considered a larger array of laws than prior studies. Laws requiring private gun owners to promptly report theft or loss of firearms to police are intended to increase private gun seller accountability and provide law enforcement with a tool to combat illegal straw purchases when such purchasers accept no responsibility for the gun being in the hands of a prohibited person with dubious claims of unreported gun theft. Having this measure of accountability significantly reduced interstate gun trafficking, as did bans of junk guns. Junk guns are the least expensive guns, and their low price enables traffickers to invest relatively little money in guns that can sell for nearly five times more than retail prices on the streets in states with the most restrictive gun laws. Prior research on the effects of Maryland's ban of junk guns found the banned guns used much less in Baltimore, Maryland, than in cities with-

out such bans, seven years after Maryland's law was enacted (Vernick, Webster, and Hepburn 1999), and gun homicides were 9% lower than projected had the law not been enacted (Webster, Vernick, and Hepburn 2002).

Interestingly, a policy designed specifically to deter interstate gun trafficking—one-gun-per-month limits for gun buyers—was not associated with the export of guns to criminals in other states. Strong gun dealer regulations were also unrelated to exporting of crime guns across state lines. A prior study of intra-state trafficking found that strong dealer regulations by themselves were not effective unless law enforcement reported that they had a policy of regular compliance inspections. Unfortunately, we had no measure of enforcement for the current study.

Our assessment of the effects of state gun control laws on the export of guns to criminals in other states had several limitations. First, the cross-sectional study design precludes an assessment of whether changes in gun control laws prompt subsequent changes in crime gun exports. Longitudinal crime gun trace data could not be obtained, as many of the state laws of interest were in place before crime gun tracing become common practice. The sharp increase in diversions of guns to criminals following the repeal of Missouri's law, however, lessens this concern. Second, our outcome data does not include all crime gun exports. Not all crime guns are submitted to the ATF for tracing. In 2009, gun traces could not be completed for nearly 40% of crime guns due to insufficient or incorrect data. Third, although reducing the diversion of guns to criminals is a key objective of some gun control laws, there is currently insufficient research to discern the degree to which reductions in diverted guns affects gun violence, and it appears as though some have had no impact.

In spite of these limitations, our study is the first to estimate independent associations between a number of state gun control laws and crime gun export rates while controlling for confounders, and it is the first longitudinal assessment of the impact of permit-to-purchase licensing that regulates all handgun sales. Our findings on cross-state diversions of crime guns underscores the importance of having more comprehensive federal regulation of firearm sales because lax laws in many states facilitate the arming of criminals beyond state borders. At a minimum, federal law should require background checks and record keeping for all firearms sales. Regulating many private sellers is a challenge, yet the data suggest that it is necessary to deter the diversion of guns to criminals, and requiring gun owners to report theft or loss of firearms provides additional accountability to prevent illegal sales.

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## NOTES

1. Licensing of gun dealers, inspection of dealer records allowed, and criminal penalties for dealers who falsified records.
2. PTP laws or in the District of Columbia with what could be considered a ban on firearm ownership until 2008.
3. Regulate private sales, require licensing of gun dealers, and allow inspections of dealer records.
4. The number of people who moved out of each state between 2005 and 2009.

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