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Effects of a Gun Dealer's Change in Sales Practices on the Supply of Guns to Criminals

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ABSTRACT *Licensed gun dealers are a major conduit for gun trafficking. Prior to May 1999, a single gun store sold more than half of the guns recovered from criminals in Milwaukee, WI, shortly following retail sale. On May 10, 1999, the store stopped selling small, inexpensive handguns popular with criminals, often called "Saturday night specials." The purpose of this study was to estimate the effect of this gun store's changed sales practices on criminals' acquisition of new guns. We used an interrupted time-series design with comparisons to test for changes in the number of guns that police recovered from criminals within a year of retail sale following the gun dealer's new sales policy. The dealer's changed sales policy was associated with a 96% decrease in recently sold, small, inexpensive handguns use in crime in Milwaukee, a 73% decrease in crime guns recently sold by this dealer, and a 44% decrease in the flow of all new, trafficked guns to criminals in Milwaukee. The findings demonstrate the substantial impact that a single gun store's sales practices can have on the supply of new guns to criminals. Proposed anti-gun-trafficking efforts in other cities could benefit from targeting problem retail outlets.*

KEYWORDS *Gun dealers, Gun trafficking, Change in sales practices, Saturday night specials*

INTRODUCTION

In 2003 in the United States, firearms were used in 11,920 homicides and 42,505 non-fatal assaults for which the victims were treated at hospitals.[1] Many offenders in these incidents are prohibited by law from possessing firearms but obtain them through the illicit market.[2] The mayors of New York, Boston, Chicago and other major U.S. cities have recently put combating firearms trafficking near the top of their policy agenda.[3–5]

Licensed firearms dealers are one of the most important channels for diverting firearms from the legal to illegal market.[6] A national survey of gun dealers found a widespread willingness among dealers to make sales of questionable legality.[7] Yet a very small percentage of all licensed gun dealers sell the majority of guns later used by criminals.[8] A study of California gun dealers indicated that the number of guns sold that are subsequently recovered from criminals is only partially explained by sales volume or the demographic characteristics of the communities in which the dealers are located.[9] Dealers' sales practices were not measured in this study and

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may explain why guns sold by some dealers have an unusually high probability of subsequent involvement in crime.

The types of guns a store sells may partly account for differences among gun dealers in the probability that their guns will be diverted to criminals. Small, inexpensive handguns—sometimes referred to as "Saturday night specials" (SNSs) or "junk guns"—are significantly more likely to be used subsequently in crime than are larger, more expensive handguns.[10] Maryland banned the sale of SNSs beginning in 1990. The law was associated with a substantial reduction in the likelihood of criminals using SNSs[11] and a 9% reduction in homicide rates.[12]

On May 10, 1999, a gun store that had been linked to a large proportion of the guns recovered from criminals in Milwaukee[13] announced that it would no longer sell SNSs.[14] This study examines the impact of this gun dealer's announced policy to stop selling SNSs on the flow of new guns to criminals in Milwaukee.

MATERIALS AND METHODS

Design

We used an interrupted time-series research design with comparison groups[15] to estimate the effects of the change in the dealer's sales practices on a measure of the availability of new guns to criminals. Milwaukee was the city that the intervention was hypothesized to affect. Three cities in the Midwest (St. Louis, Cleveland, and Cincinnati) were selected as comparisons to identify temporal changes in gun trafficking within the region that might confound estimates of the effects of the policy change.

Data and Measures

Police in many large U.S. cities have policies of having all of the firearms they recover in criminal investigations (hereafter referred to as "crime guns") traced by the U.S. Bureau of Alcohol, Tobacco and Firearms (ATF) to identify the initial retail seller and purchaser of the firearm.[16] Using these data, researchers have developed indicators of suspected illegal trafficking, including having a relatively brief interval (e.g., <3 years) between retail sale and crime involvement.[17,18] These indicators have been used to track changes over time and place to evaluate anti-trafficking interventions.[19,20] We used trace data for crime guns recovered between July 1, 1996, and December 31, 2002, in Milwaukee and the three comparison cities. Each of these cities participated in a federal initiative in which cities agreed to submit information necessary for tracing to ATF for all crime guns.[21] The number of traces for St. Louis and Cincinnati were significantly lower for the first 8 months of the study period, suggesting that these cities had not yet instituted comprehensive tracing. Thus, these observations were omitted from the analyses.

Because we were evaluating the effect of a change in retail sales practices, we used a fairly restrictive indicator of the diversion of new guns to criminals as our outcome measure—a retail sale-to-crime interval of less than 365 days. The outcome variable, Y_t, is the number of crime guns meeting this definition that were originally sold during a given two-month period and will be referred to as "new crime guns." New crime guns for which the criminal gun possessor was not the retail purchaser we refer to as "new trafficked crime guns."

We also examined changes in new SNS crime guns to focus on the types of guns that the gun dealer decided to no longer sell. SNSs were identified by selecting

handguns manufactured by companies that primarily or exclusively sell small, inexpensive (<$150) handguns. To identify SNS manufacturers, we relied on the work of Garen Wintemute, who has extensively studied the SNS industry[22] and recent consultation with Dr. Wintemute (December 8, 2005). We also referred to lists of guns prohibited under state laws banning SNSs.[11] Finally, we omitted any high caliber (0.357, 0.40, 0.44, 0.45) non-SNS weapons traced for these manufacturers. The primary explanatory variable was dichotomous and indicated whether the dealer's ban of SNSs had occurred during or prior to a given time period, *t*.

The number of crime guns with short sale-to-crime intervals recovered in a given place and time period can also depend on criminal behavior and the degree to which police focus on arresting individuals likely to be in possession of firearms. Therefore, the primary control variable was constructed to reflect the number of crime guns recovered that were unlikely to have been diverted to the illicit market due to gun store practices. We refer to such guns as "older guns." A gun was designated as older if it had a retail sale to crime interval of >3 years, if it was designated as "too old to trace," or if it had been sold by a gun dealer that was out of business by the time the gun was recovered from a criminal. The explanatory variable (X_t) used in regression analyses on Y_t was the number of older guns recovered within the same 365-day period of recovery used to identify new crime guns sold in time period *t*.

The study protocol was approved by the Committee for Human Research of the Johns Hopkins Bloomberg School of Public Health.

Analyses

The analyses tested whether there was a change in the mean of the outcome variable following the gun store's announcement that it would no longer sell SNS handguns. Pre-existing trends, if inadequately explained by covariates in the model, can bias estimates of intervention impact.[23] Therefore, we graphed pre-intervention trends in the outcome variables and then estimated regression models with a linear trend term and the number of older crime guns being recovered as explanatory variables to assess whether there was a significant pre-intervention trend.

To estimate the effect of the store's sales policy change, we used least-squares regression models where the number of newer crime guns sold in a period *t* is a linear function of the overall mean, the store's decision not to sell Saturday night special handguns, the number of older crime guns recovered, and a linear trend when indicated: $Y_t = \beta_0 + \beta_1(\text{no SNS}) + \beta_2\ (\text{older crime guns recovered}) + \beta_3(\text{trend}) + \varepsilon_t$. Tests of statistical significance that there is no difference between effect coefficients and 0 are presented, as are 95% confidence intervals (CI) for the parameter estimates.

To test whether the error terms in our models were serially correlated, we calculated Durbin–Watson statistics[24,25] and examined the auto-correlation function (ACF) and partial auto-correlation function (PACF) of model errors to identify the pattern of serial correlation. When serially correlated model errors were identified, we specified autoregressive integrated moving average (ARIMA) parameters consistent with the pattern of the ACF and PACF for the error terms. To identify outliers that could skew model estimates and model fit, we examined plots of residuals, Cook's distance, and centered leverage values for each model.[26]

RESULTS

A total of 45,201 guns were recovered in crimes in the four cities during the study period. Prior to the Milwaukee-area gun dealer announcing that it would no longer sell Saturday night specials (SNSs), the dealer had sold 21% (1081/5095) of all crime guns in Milwaukee for which a retail seller could be identified. However, the dealer sold 65% (524/806) of the guns later recovered from criminals less than 1 year after retail sale, and 70% (204/290) of the new SNS crime guns.

Figure 1 depicts key changes in trends for crime guns recovered less than a year after retail sale by the gun dealer that announced it would no longer sell SNSs. After fluctuating around a mean of 14.4, the number of new SNS crime guns previously sold by the gun store dropped abruptly in May 1999 to a mean of 0.8 per 2-month period. There was also a substantial reduction in new crime guns that were not SNSs from a pre-intervention mean of 17.9 to a post-intervention mean of 10.2 ($p < 0.001$; Table 1).

Citywide trends are shown in Figure 2 for Milwaukee and in Figure 3 for the three comparison cities. The mean number of SNSs recovered from criminals in Milwaukee within a year of retail sale dropped precipitously from 18.9 for guns sold before May 1999 to 6.4 after May 1999 ($p < 0.001$; Table 1). A marked, though less dramatic, decline can be seen in Figure 2 for all new trafficked guns recovered from criminals in Milwaukee from a pre-intervention mean of 33.5 to a post-intervention mean of 19.1 ($p < 0.001$).

There are no large, abrupt shifts in this indicator of illegal gun trafficking observed in any of the three comparison cities (Fig. 3). There is a gradual drift downward in Cleveland for guns sold prior to 1999, which resulted in a significantly lower post-intervention mean (Table 1), and an upward trend in Cincinnati through the study period.

Estimates of the effect of the Milwaukee-area dealer's change in sales practices from the regression analyses (Table 2) are consistent with the patterns seen in

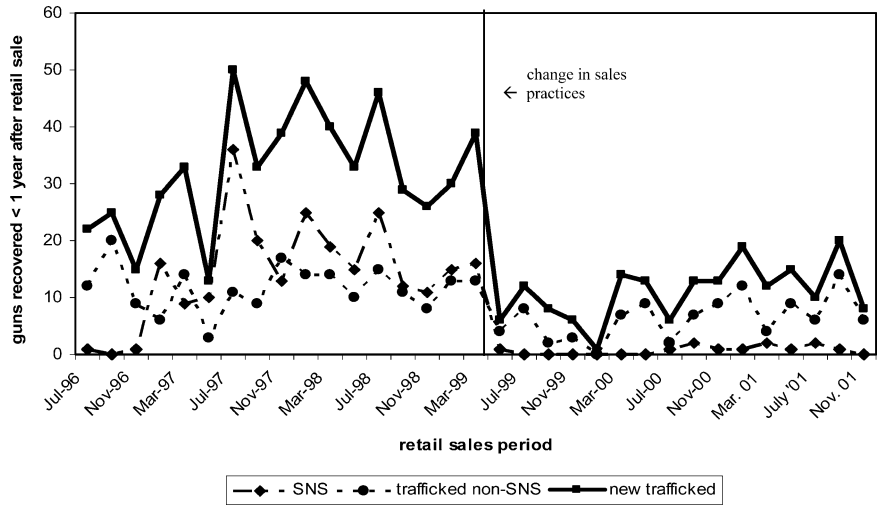

FIGURE 1. Trends in police recovery of guns from criminals in Milwaukee within a year of the original retail sale by a major Milwaukee-area gun store for Saturday night special (SNS) handguns, non-SNS, and all trafficked guns by 2-month sale period.

TABLE 1. Mean number of guns sold during a 2-month period before and after a large Milwaukee-area licensed gun dealer decided to stop selling small, inexpensive handguns (May 1999) and recovered from a criminal less than 365 days after retail sale

City	Before Milwaukee-area gun store changed sales practices bi-monthly mean (SD)	After Milwaukee-area gun store changed sales practices bi-monthly mean (SD)
Milwaukee #1 crime gun dealer		
All new crime guns	32.3 (10.6)	11.0 (5.0)***
All new SNS[1] crime guns	14.4 (9.3)	0.8 (0.8)***
New non-SNS[1] trafficked guns	17.9 (5.9)	10.2 (4.9)***
All trafficked new crime guns	22.1 (7.6)	6.9 (3.9)***
Milwaukee		
All new crime guns	117.4 (13.2)	82.0 (6.6)***
All new SNS crime guns	18.9 (8.3)	6.4 (3.5)***
Trafficked new crime guns	33.5 (7.9)	19.1 (4.8)***
St. Louis		
Trafficked new crime guns	7.8 (3.8)	6.8 (4.6)
Cleveland		
Trafficked new crime guns	8.2 (3.4)	4.1 (2.2)***
Cincinnati		
Trafficked new crime guns	4.7 (3.1)	5.9 (3.7)

***$p < 0.001$.

[1]*SNS* Saturday night special, inexpensive and highly concealable handguns.

Figures 1 and 2. The change was associated with a 96% decrease in new SNS sold by this dealer and later recovered from criminals in Milwaukee (95% CI −97 to −95%). For trafficked guns sold by the dealer that were not SNSs, the change in sales policy was associated with a 42% decrease (−57 to −15%). There was an estimated 73% reduction in guns used in crime when the person arrested with the

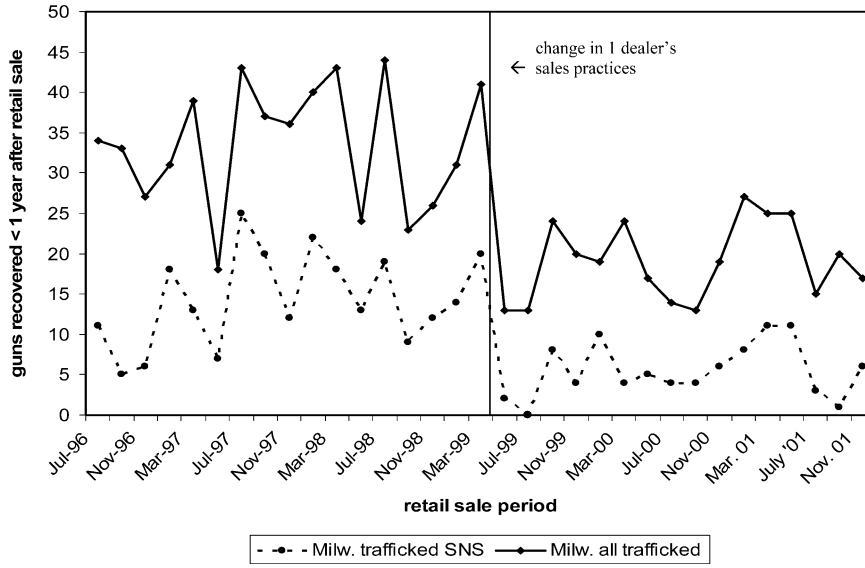

FIGURE 2. Trends in police recovery of guns from criminals in Milwaukee within a year of the original retail sale for Saturday night specials (SNS) and all trafficked guns by 2-month sale period.

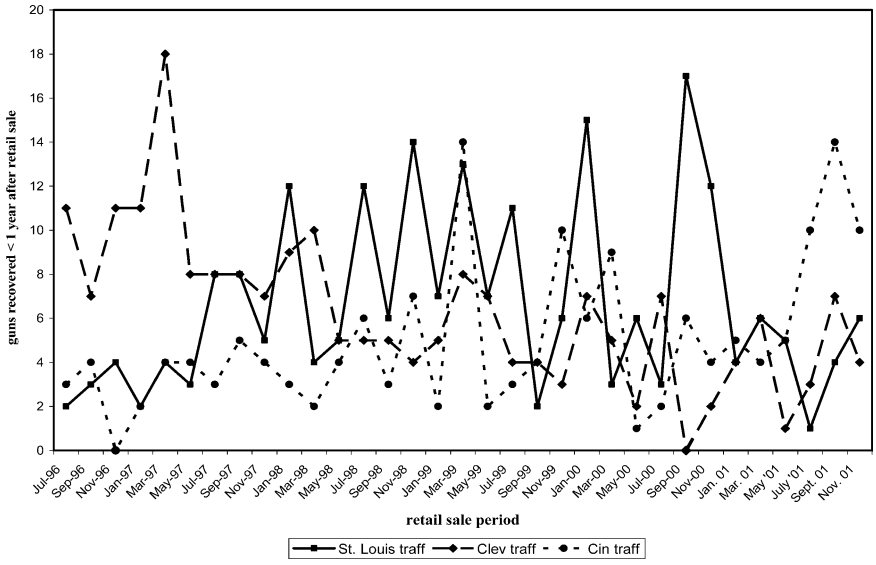

FIGURE 3. Trends in the number of crime guns recovered less than 1 year after retail sale unless the criminal possessor was the legal purchaser by the 2-month period of sale for three comparison cities in the Midwest.

gun was not the retail purchaser (95% CI −77 to −66%) associated with the dealer's change in sales policy.

The effect of the dealer's new sales policy was a 44% reduction in all new crime guns recovered in Milwaukee for which the criminal possessor was not the retail purchaser of record (95% CI −53 to −32%). The multivariable models for trafficked new crime guns for the comparison cities produced one estimate with a negative

TABLE 2. Regression model estimates for the effects on a Milwaukee-area gun dealer's change in sales policy on the number of guns recovered in crimes less than a year after retail sale

Outcome variable	Percentage change after gun dealer's new sales policy (95% CI)	R^2	Durbin–Watson Stat.
New crime guns sold by Milwaukee's #1 gun dealer	−96*** (−97 to −95)	0.66	1.92
All Saturday night specials	−42** (−57 to −15)	0.34	2.22
Trafficked, not Saturday night specials			
All trafficked	−73*** (−77 to −66)	0.67	1.99
New crime guns recovered in Milwaukee			
All Saturday night specials	−71*** (−77 to −62)	0.56	2.19
Trafficked, not Saturday night specials	+13 (−19 to +49)	0.21	2.05
All trafficked	−44** (−53 to −32)	0.56	2.40
St. Louis, new trafficked crime guns	−27 (−48 to +16)	0.12	2.45
Cleveland, new trafficked crime guns	+22 (−46 to +126)	0.48	1.92
Cincinnati, new trafficked crime guns	+10 (−26 to +54)	0.14	2.02

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

sign and two with a positive sign, but none were statistically significant at the 0.05 level of significance (Table 2).

DISCUSSION

Our findings indicate that a single gun dealer's sales practices had a profound impact on the local illicit gun market in Milwaukee. Between July 1, 1996, and April 30, 1999, this dealer sold two-thirds of the guns recovered in crimes in Milwaukee within a year of retail sale and 70% of the new Saturday night special (SNS) crime guns. Our data indicate that the dealer apparently did stop selling small, inexpensive handguns commonly used in crime because SNSs that had been sold by the dealer very rarely showed in crime following the announced change in sales policy.

More important was the net impact of this dealer's change in sales practices on the supply of new guns to criminals in Milwaukee. There is debate about how readily criminals and their gun suppliers might adapt to changes in legal firearm sales practices, with some suggesting that criminals easily shift to other weapons or supply conduits.[27] However, our findings indicate that there was far from equal substitution from SNSs to other new guns sold by the dealer that stopped selling SNSs or to new SNSs sold by other retailers. In each case, the net decline in new crime guns was approximately 70%. It is also noteworthy that there was a 42% decline in new crime guns originally sold by the dealer that were not SNSs, suggesting that the dealer may have adopted other changes in sales practices that reduced the likelihood that the guns would be diverted to criminals. Although there was some modest increase in the number of new crime guns that had been originally sold by other licensed gun dealers, there was a net decrease of 44% for all trafficked new crime guns following the change in sales practices by a single gun store.

It is highly unlikely that these changes could be attributed to unmeasured confounders. The declines in the recovery of new guns from criminals are large, abrupt, and exactly coincident with the announced policy change. The effects can be linked to the specific dealer that made the change and to the specific types of guns that were the focus of the change. There were no significant changes in new trafficked crime guns recovered in other cities in the Midwest that did not experience policy or enforcement changes after adjusting for confounders. A new police commissioner was appointed in Milwaukee in 1999, the year in which the gun dealer changed its sales policies. The new commissioner announced his commitment to reduce police practices that could be construed as racial profiling, and such changes could potentially confound our estimates of the effects of the gun dealer's change in sales practices. However, we found virtually no difference in the racial composition of criminal gun possessors before and after the date the dealer announced his decision to stop selling small, inexpensive handguns.

This study has several limitations. The outcome measures are indicators rather than direct measures of the flow of new guns to criminals that are based on traces of guns recovered by police. If criminals apprehended by police are different from the larger population of criminals in their acquisition of new guns, these measures may be biased. However, we control for changes in police practices for recovering guns from criminals with measures of older guns recovered by police.

We did not directly control for law enforcement interventions undertaken during the study period that could have influenced criminals' acquisition of new guns. However, we searched electronic newspaper archives and press releases to identify information about anti-trafficking initiatives connected with gun dealers

during the study period for cities in the study. There was no evidence of significant enforcement directed at licensed gun dealers from these sources.

Although the supply of new guns to criminals in Milwaukee appears to have been disrupted by the dealer's change in sales practices, this study does not examine whether this led to reduced gun availability to criminals. Are older guns an acceptable substitute for new guns to criminals or to those prone to commit violence? Criminally involved youth prefer new guns over used guns because they recognize that police routinely perform ballistics tests to see if the guns they recover have been used in prior shootings.[28,29] Although firearms can last for many years, criminals need to rearm themselves with some frequency because they discard guns used in shootings, sell guns when they need cash, or have their guns stolen.[30]

Restricting the supply of preferred new guns in the illicit market could increase the real costs of gun ownership among criminals and reduce criminals' use of guns.[31] This theory is supported by prior research indicating that criminal gun availability is lower when criminals must resort to out-of-state sources for their guns[32] and that lower levels of gun trafficking indicators (based on crime gun traces) are associated with fewer robberies committed with guns.[33]

Also supportive of this theory is research on the effects of Maryland's statewide ban of SNSs that found the ban to be associated with reduced criminal access to SNSs,[11] an overall reduction in handgun sales, and a lowered homicide rate.[12] The findings on the effects of Maryland's ban of SNSs provide some reason to think that the decision of a gun dealer that had been the primary source of new SNSs subsequently used by criminals in Milwaukee to stop selling SNSs could have led to a reduction in shootings. Broader legislative bans of SNSs, however, are likely to be more effective since they apply to all licensed gun dealers.

The findings of this study cast doubt upon claims by gun dealers that their sales practices have little impact on criminals' acquisition of firearms. The decision to stop selling a product that is commonly misused and can be dangerous to consumers or to the public at large is a method of counter-marketing used in other industries.[34] If more gun dealers used this and other counter-marketing strategies, they could reduce the likelihood that their products will be used to commit acts of violence.[35]

Although this study examined the effects of a gun dealer's voluntary change in sales practices, external pressures were likely to have influenced the gun dealer's decision to adopt new sales practices. Another area gun dealer had recently been indicted for making illegal sales.[36] Stores linked with large numbers of crime guns in Chicago and Detroit had recently been sued by those cities after undercover police stings revealed illegal sales practices. Just days before the announced changes, the gun store had received bad publicity for having sold more guns subsequently used in crime than any other gun dealer in the nation.[13] Although these conditions may be difficult to replicate, close scrutiny of gun dealers, including frequent audits and undercover stings that have been shown to deter sales of alcohol and tobacco to underage youth,[37–41] could deter sales practices that enable guns to be diverted to criminals.[21]

In many major U.S. cities with high levels of gun violence (Atlanta, GA; Birmingham, AL; Cleveland, OH; Gary, IN; Indianapolis, IN; Louisville, KY; Miami, FL; Minneapolis, MN; Oakland, CA; Philadelphia, PA; Richmond, VA), ten or fewer gun dealers sell the majority of guns later recovered in crime.[17] In such instances, enforcement initiatives can be efficiently directed at a small number of gun dealers that could reduce the availability of new guns to criminals. Enforcement focused on

licensed gun dealers should be evaluated for its effect on illicit gun trafficking as well as its effect on levels of gun violence.

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REFERENCES

1. National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS): Fatal and Non-Fatal Injury Reports. Centers for Disease Control and Prevention, Atlanta, Georgia. Available at: http://www.cdc.gov/ncipc/wisqars/ Accessed February 8, 2006.
2. Decker S, Pennell S. *Arrestees and Guns: Monitoring the Illegal Firearms Market*. National Institute of Justice Research Preview. Washington, District of Columbia: U.S. Department of Justice; 1995.
3. Marks A. New York turns up heat on gun dealers. *Christ Sci Monit*. February 16, 2006; A3.
4. Levenson M. Menino launches national anti-gun-violence initiative. *Boston Globe*. January 26, 2006; B4.
5. Spielman F. Daley takes another shot at gun-control legislation. *The Chicago Sun Times*. January 5, 2006; A8.
6. Bureau of Alcohol, Tobacco and Firearms. *Following the Gun: Enforcing Federal Laws Against Firearms Traffickers*. Washington, District of Columbia: U.S. Department of the Treasury; 2000.
7. Sorenson SB, Vittes KA. Buying a handgun for someone else: firearm dealers' willingness to sell. *Inj Prev*. 2003;9:147–150.
8. Bureau of Alcohol, Tobacco and Firearms. *Commerce in Firearms in the United States*. Washington, District of Columbia: U.S. Department of the Treasury; 2000.
9. Wintemute GJ, Cook PJ, Wright MA. Risk factors among handgun retailers for frequent and disproportionate sales of guns used in violent and firearm related crimes. *Inj Prev*. 2005;11:357–363.
10. Wintemute GJ, Parham CA, Wright MA, Beaumont JJ, Drake CM. Weapons of choice: previous criminal history, later criminal activity, and firearm preference among legally authorized young adult purchasers of handguns. *J Trauma*. 1998;44:155–160.
11. Vernick JS, Webster DW, Hepburn LM. Effects of Maryland's law banning Saturday night special handguns on crime guns. *Inj Prev*. 1999;5:259–263.
12. Webster DW, Vernick JS, Hepburn LM. Effects of Maryland's law banning Saturday night special handguns on homicides. *Am J Epidemiol*. 2002;155:406–412.
13. McBride J. Local store leads U.S. in 'crime guns.' *Milwaukee Journal Sentinel* May 9, 1999. Available at: http://www.jsonline.com/news/may99/0509gun.asp.
14. Gun shop pulls 'Saturday night specials' from shelves. *Associated Press State and Local Newswire*. May 11, 1999.
15. Cook TD, Campbell DT. *Quasi-Experimentation: Design and Analysis Issues for Field Settings*. Boston: Houghton Mifflin; 1979.
16. Bureau of Alcohol, Tobacco and Firearms. *Crime Gun Trace Reports (2000): National Report*. Washington, District of Columbia: Department of the Treasury; July 2002.
17. Cook PJ, Braga AA. Comprehensive firearms tracing: strategic and investigative uses of new data on firearms markets. *Ariz Law Rev*. 2001;43:277–309.
18. Pierce GL, Braga AA, Koper C, McDevitt J, Carlson D, Roth J, Saiz A, et al. The Characteristics and Dynamics of Crime Gun Markets: Implications for Supply-Side

Focused Enforcement Strategies. Final report prepared for the National Institute of Justice, U.S. Department of Justice, Washington, District of Columbia, September 2003.
19. Braga AA, Pierce GL. Disrupting illegal firearms markets in Boston: the effects of Operation Ceasefire on the supply of new handguns to criminals. *Criminol Public Policy*. 2005;4:717–749.
20. Webster DW. Cracking down on corrupt gun dealers in Chicago: Effects on the illicit gun market. Presented at the annual meeting of the American Public Health Association, San Francisco, November 2003.
21. Bureau of Alcohol, Tobacco and Firearms. *Crime Gun Trace Analysis Reports: The Illegal Youth Firearms Market in 27 Communities*. Washington, District of Columbia: Department of the Treasury; February 1999.
22. Wintemute GJ. *Ring of Fire: The Gun Makers of Southern California*. Violence Prevention Research Program, University of California, Davis, Sacramento, California; 1994.
23. Wei WWS. *Time Series Analysis: Univariate and Multivariate Methods*. New York: Addison-Wesley; 1990.
24. Durbin J, Watson GS. Testing for serial correlation in least-squares regression: part I. *Biometrika*. 1950;37:409–428.
25. Durbin J, Watson GS. Testing for serial correlation in least-squares regression: part II. *Biometrika*. 1951;38:159–178.
26. Belsley DA, Kuh E, Welsch RE. *Regression Diagnostics: Identification of Influential Data and Sources of Collinearity*. New York: Wiley; 1980.
27. Jacobs JB. *Can Gun Control Work?* New York: Oxford University Press; 2002.
28. Webster DW, Freed LH, Frattaroli S, Wilson MH. How delinquent youth acquire guns: initial versus most recent gun acquisitions. *J Urban Health*. 2002;79:60–69.
29. Cook PJ, Ludwig J, Venkatesh S, Braga AA. Underground gun markets. Working paper No. 11737, National Bureau of Economic Research, Cambridge, Massachusetts, November 2005.
30. Cook PJ, Molliconi S, Cole TB. Regulating gun markets. *J Crim Law Criminol*. 1995;86:59–92.
31. Cook PJ, Ludwig J. Principles for effective gun policy. *Fordham Law Rev*. 2004;73:589–613.
32. Webster DW, Vernick JS, Hepburn LM. Relationship between licensing, registration and other gun sales laws and the source state of crime guns. *Inj Prev*. 2001;7:184–189.
33. Pierce GL. Impact of illegal gun markets on use of guns in crime. Presented at the American Society of Criminology Annual Meeting, Toronto, November 17, 2005.
34. Kotler P, Levy S. Demarketing, yes demarketing. *Harvard Bus Rev*. 1971;49(4):74–80.
35. Bradford KD, Gundlach GT, Wilkie WL. Countermarketing and the courts: the case of marketing channels and firearms diversion. *J Public Policy Mark*. 2005;24:284–298.
36. Gun store operator facing 7 charges. *Milwaukee Journal Sentinel*. November 20, 1998;6.
37. Lewis RK, Paine-Andrews A, Fawcett SB, et al. Evaluating the effects of a community coalition's efforts to reduce illegal sales of alcohol and tobacco products to minors. *J Commun Health*. 1996;21:429–436.
38. Rigotti NA, DiFranza JR, Chang Y, Tisdale T, Kemp B, Singer DE. The effect of enforcing tobacco-sales laws on adolescents' access to tobacco and smoking behavior. *New Engl J Med*. 1997;337:1044–1051.
39. Grube JW. Preventing the sales of alcohol to minors: results from a community trial. *Addiction*. 1997;92(suppl. 2):S251–S260.
40. Scribner RA, Chohen DA. The effect of enforcement on merchant compliance with the minimum legal drinking age law. *J Drug Issues*. 2001;31:857–866.
41. Centers for Disease Control and Prevention. Enhanced enforcement of laws to prevent alcohol sales to underage persons—New Hampshire, 1999–2004. *Morb Mort Wkly Rep*. 2004;53:452–454.