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The epidemiology of self-defense gun use: Evidence from the National Crime Victimization Surveys 2007–2011

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ABSTRACT

Objectives. To describe the epidemiology of self-defense gun use (SDGU) and the relative effectiveness of SDGU in preventing injury and property loss.

Methods. Data come from the National Crime Victimization Survey for 2007–2011, focusing on personal contact crimes. For property loss, we examined incidents where the intent was to steal property. Multivariate analyses controlled for age, gender of offender and victim, if offender had a gun, urbanicity, and thirteen types of self-protective action.

Results. Of over 14,000 incidents in which the victim was present, 127 (0.9%) involved a SDGU. SDGU was more common among males, in rural areas, away from home, against male offenders and against offenders with a gun. After any protective action, 4.2% of victims were injured; after SDGU, 4.1% of victims were injured. In property crimes, 55.9% of victims who took protective action lost property, 38.5 of SDGU victims lost property, and 34.9% of victims who used a weapon other than a gun lost property.

Conclusions. Compared to other protective actions, the National Crime Victimization Surveys provide little evidence that SDGU is uniquely beneficial in reducing the likelihood of injury or property loss.

Introduction

The main reason Americans own guns is for protection (Pew Research Center for the People and the Press, 2014). Yet little is actually known about who uses guns in self-defense, and in what circumstances. While there has been much debate about self-defense gun use, the conclusion of the National Academy of Sciences Panel still stands: self-defense is an ambiguous term and whether one is a defender or a perpetrator may depend on perspective (National Research Council, 2005).

Virtually all available data on self-defense come from the self-report of victims—either from private one-time surveys or from the National Crime Victimization Survey (NCVS). The private surveys have the disadvantage of being relatively small—the reported self-defense gun uses are too few to provide stable disaggregate estimates about the epidemiology of self-defense gun use. Each NCVS is much larger than any private survey. In addition, the NCVS is conducted twice each year and results from numerous years can be aggregated together.

NCVS data have been used in various studies of protective action. Many of these studies have few self-defense gun uses to analyze as they focus on a single type of crime such as assaults against women (Bachman et al., 2002; Thompson et al., 1999) or robberies (Kleck and DeLone, 1993). Early studies using NCVS specifically to analyze the effect of self-defense gun use on injury were not able to determine whether the injury occurred before or after the victim used the gun (Kleck and DeLone, 1993; Kleck and McElrath, 1991; Southwick, 2000). We only found one study of the effect of self-defense use which focused on injury occurring AFTER (or during) gun use (Tark and Kleck, 2004).

We could not find a basic, thorough, descriptive epidemiologic analysis of self-defense gun use using NCVS data—describing who uses guns, where and in what circumstances. Among relevant studies (Tark and Kleck, 2004; McDowall and Wiersema, 1994), the study (Hart and Miethe, 2009) that comes closest to that target analyzes the data in a manner that is not particularly helpful for policy or individual decision-making. That study by Hart and Miethe divides crime situations into 48 categories, as determined by five variables as follows: (a) sexual assault, non-sexual assault, or robbery; (b) offender armed or not; (c) daytime or not; (d) private or public location; and (e) offender on drugs/alcohol or not. These situations are then ranked by the likelihood that a firearm is used in self-defense. Not surprisingly, very low incident categories have both the highest rates and the lowest rates of self-defense gun use. For example, the highest incident rate of self-defense gun use—17% of the time (1/6)—occurred in sexual assaults, when the offender was armed, in a private location, during the day, when the offender was high on drugs/alcohol; the lowest rate—0% of the time (0/7)—occurred for robberies in a private location at night when the offender was armed and high on drugs/alcohol.

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Our article has two goals. The first goal is to present more fully the epidemiology of self-defense gun use—the demographics of the defensive gun user and the type of situation in which self-defense gun use typically occurs. The second goal is to provide an up-to-date description of the effectiveness of self-defense gun use relative to other forms of protective action, in terms of both injury and loss of property.

Methods

The National Crime Victimization Survey (NCVS) is the primary source of information in the United States on the nature and extent of criminal victimization. The NCVS collects information on nonfatal personal crimes (rape or sexual assault, robbery, aggravated and simple assault, and personal larceny) and household property crimes (burglary, motor vehicle theft, and other theft) both reported and not reported to police. It is conducted by the U.S. Census Bureau for the Bureau of Justice Statistics.

NCVS is a self-report survey in which respondents are asked about victimizations experienced during the prior 6 months. Data are obtained from a sample of about 90,000 households, comprising nearly 160,000 individuals which are weighted to be nationally representative. Response rates are typically over 85% for both households and eligible persons.

Each household is interviewed twice during the year. Household remain in the sample for 3 years, and eligible persons in these household are interviewed every six months for a total of seven interviews. The first interview is typically in-person with subsequent interviews by phone.

The NCVS is administered to household members age 12 or older. Excluded are persons living in military barracks and institutional settings, such as correctional facilities. Victimizations that occurred outside of the United States (less than 1% of all victimizations) are excluded.

Data for the current study come from the NCVS for a five year period, 2007–2011. To examine the epidemiology of self-defense gun use, we examined only incidents that involved some degree of personal contact between the offender and the victim—incidents in which a self-protective action was possible. This includes all assaults (both sexual and non-sexual), robberies, in-person verbal threats and purse snatching, as well as a fraction of burglaries and other thefts. This same subsample of crimes is used to examine the effectiveness of self-defense gun use and other self-protective actions on the likelihood of victim injury. To examine the effect of self-defense gun use on property loss, we examine a different subset of crimes—those where the primary intent was to steal property. This subset includes all robberies, personal contact larcenies and personal contact burglaries, but not assaults, sexual assaults or verbal threats.

Victims are asked, "Was there anything you did or tried to do about the incident while it was going on?" If they say yes, then they are asked "What did you do?" and the answer is classified into one of sixteen types of self-protective action. Victims are then asked "Anything else?" until they have volunteered all the self-protective actions taken. Thus each victim could name many actions. In our analysis, the variable for each action indicates whether the victim did or did not take that particular action. We reduced the sixteen actions to thirteen by combining "Attached offender with a gun" and "Threatened offender with a gun" into "Attacked or threatened with gun" and likewise for "other weapon" and "without weapon."

To ensure that significance tests were not distorted, we used the NCVS "incident weights" but then adjusted them so that the apparent sample size was equal to the actual unweighted sample size. While Lohr and Liu (1994) find that weights are not always necessary when using the NCVS for complex analysis, they also say that weighted estimates are more robust to misspecification of the model and that standard errors are generally higher, leading us to conclude that weighting is the more conservative choice. We used chi-square tests to test for significance. For specific self-defense actions, significant tests compared taking that specific action to not taking that specific action.

We defined "at home" as inside respondent's own lodging (dwelling, attached garage, enclosed porch, detached building on own property, vacation home/second home). The NCVS divides locations into rural and urban; because of the perceived high rates of crime in many large cities, we subdivided the urban group into locations with population < 1,000,000 and with population ≥ 1,000,000 (large urban).

Victims were classified as being injured after they took protective action if they were injured concurrently or after taking protective action. We analyzed the data both including (shown in tables) and not including (not shown) incidents in which the victim did not take any protective action.

We define "crimes of violence" as assaults, sexual assaults and robberies; not included as crimes of violence are verbal threats, pick pocketing and property crimes.

In multivariate analyses we control for age, gender, event occurring at home or away from home, in rural, urban or large urban areas, whether the offender was a male or female, whether the offender had a gun, and thirteen specific self-protective actions the victim might take.

As the NCVS data are publicly available and do not contain personal identifiers, the Harvard School of Public Health Institutional Review Board deemed this study to be exempt.

Results

In the NCVS surveys from 2007 to 2011, there were 14,145 crime incidents in which the victim was present at the incident. The victim used a gun to threaten or attack the perpetrator in less than 0.9% of these incidents (n = 127) (Table 1). Males were more likely to use a gun in

Table 1
Who takes self-protective actions in what type of circumstances.

Characteristics of victim or incident	N	Attacked or threatened offender with gun	Other self-protective action	No self-protective action
All	14,145	0.9%	42.5%	56.6%
12–19 years old	3341	0.0%	43.1%	56.9%
20–29 years old	3563	1.5%	46.1%	52.4%
30–39 years old	2301	1.1%	45.3%	53.6%
40–49 years old	2098	1.1%	44.6%	54.3%
50–59 years old	1596	0.7%	37.4%	61.8%
≥60 years old	1245	1.1%	28.4%	70.5%***
Male	6877	1.4%	44.2%	54.3%
Female	7268	0.4%	40.9%	58.7%***
At home	4357	1.0%	33.8%	65.3%
Away from home	9788	0.9%	46.4%	52.7%***
Rural	2054	1.5%	42.0%	56.5%
Urban	10,892	0.8%	42.8%	56.4%
Large urban	1199	0.4%	40.7%	58.9%**
Male offender	8991	1.3%	52.6%	46.1%
Female offender	2969	0.1%	39.0%	60.9%***
Offender had gun	730	3.3%	42.6%	54.2%
Off didn't have gun	13,415	0.8%	42.5%	56.7%***
Type of crime				
Sexual assault	337	0.0%	62.0%	38.0%
Robbery	1085	1.2%	55.4%	43.5%
Assault (not sexual)	5241	0.9%	59.4%	39.6%
Verbal threats	2634	0.8%	50.5%	48.6%
Purse snatching or pocket picking	315	0.0%	14.8%	85.2%
Property crimes	4531	1.0%	15.6%	83.4%***

** $p < .01$ in chi-squared test.
*** $p < .001$ in chi-squared test.

defense (1.4% of the incidents) than females (0.4%). Self-defense gun use was more common for crimes in rural areas (in 1.5% of the rural crimes the victim reported using a gun in self-defense) compared to crimes in urban areas (0.8%) or large urban areas (0.4%). Victims were more likely to use a gun for self-defense in crimes when there was a male offender (1.3%) rather than a female offender (0.1%), and when the offender had a gun (3.3% of the incidents) than when the offender did not have a gun (0.8%). There was no statistical difference in the likelihood of self-defense gun use for crimes at home vs. away from home. Nor was there any statistical difference in the likelihood of self-defense gun use in robberies vs. assault vs. verbal threats vs. property crimes. There were no gun uses in self-defense reported for either sexual assaults or purse snatching/pick pocketing. Multivariate analyses did not change these major findings (not shown).

Males and females were close to equally likely to be a victim in a criminal incident, while males were three times more likely to use a gun in self-defense in such incidents. Accordingly, about three quarters of self-defense gun uses were by males (Table 2a). Approximately two thirds of personal contact crimes occurred away from home, and gun use in self-defense was equally likely to occur in home or away incidents. Accordingly, about two thirds of all self-defense gun uses occurred away from home. Victims were far more likely to use a gun in self-defense when the perpetrator had a gun, but since the perpetrator had a gun in only 3.3% of the incidents (730/14,415), over 80% of self-defense gun use occurred when the perpetrator did not have a gun. Perpetrators used guns 5.7 times more often than did victims (730/127). Crimes of violence (assaults, sexual assaults, robberies) accounted for 47% of personal contact crimes and 50% of self-defense gun uses.

For males, almost three quarters of their self-defense gun uses occurred away from home (73%), while close to half of female self-defense gun uses occurred at home (48%) (Table 2b). This difference was particularly apparent in terms of (non-sexual) assaults where close to 90% of male self-defense gun use occurred away from home while over 60% of self-defense gun uses by women occurred at home. Most female self-defense gun use (52%) was for protection against property crime, while property crime accounted for only 28% of male self-defense gun use.

Victims were injured in 17.3% of the incidents and younger victims were more likely to be injured than older victims (Table 3a). Victims took some type of protective action 43.4% of the time. Victims were injured in 25.5% of the incidents in which they took protective action and in 11.0% of the incidents in which they did not take action (Table 3b). In the incidents in which victims took self-protective action, in 4.2% they were injured (concurrently or) AFTER they took action.

Of the 127 incidents in which victims used a gun in self-defense, they were injured AFTER they used a gun in 4.1% of the incidents. Running away and calling the police were associated with a reduced likelihood of injury after taking action; self-defense gun use was not. In multivariate analyses (Table 3c), attacking or threatening the perpetrator with a gun had no significant effect on the likelihood of the victim being injured after taking self-protective action.

Victims were significantly less likely to be injured BEFORE they took self-protective action when their self-protective action involved using a gun (6.8% of these 127 incidents) than in incidents in which they took other protective actions (21.3%) (Table 3b). In terms of the likelihood of receiving an injury AT ANY TIME during the incident, using a gun in self-defense was associated with a lower likelihood of injury compared to other self-protective actions, but the likelihood of injury when there was a self-defense gun use (10.9%) was basically identical to the likelihood of injury when the victim took no action at all (11.0%). In the multivariate analysis, compared to all other contact crime incidents, those where a gun was used in self-defense was not associated with a significant reduction in the likelihood of being injured during the crime (Table 3c).

For robbery, burglary and personal contact larceny crimes, when victims took no action they lost property 84.9% of the time (Table 4a). When victims took self-protective action, they lost property 55.9% of the time. When victims used a gun, they lost property 38.5% of the time. When they used a weapon other than a gun they lost property 34.9% of the time. Multivariate analysis (Table 4b) did not substantially alter these results.

Table 2a
Number and percent of self-defense gun uses.

	Number of SDGU	Percent of SDGU
All	127	100%
Male	97	76.2%
Female	30	23.8%
Rural	31	24.6%
Urban	91	71.6%
Large Urban	5	3.8%
At home	42	32.9%
Away from home	85	67.1%
Offender had gun	24	18.8%
Offender didn't have gun	103	81.2%
Type of crime		
Sexual assault	0	0.0%
Robbery	13	10.1%
Assault (not sexual)	49	38.6%
Verbal threats	22	17.1%
Purse snatch/pocket picking	0	0.0%
Property crimes	43	34.1%

Table 2b
Number and percent of self-defense gun uses by gender.

	Males (N = 97)	Females (N = 30)
Rural	18.0%	46.1%
Urban/large urban	82.0%	53.9%
At home	26.9%	52.1%
Away from home	73.1%	47.9%
Property crime	28.0%	53.9%
Verbal threat	20.8%	5.6%
Robbery	9.9%	10.8%
Assault (not sexual)	41.4%	29.7%
At home	4.2%	18.9%
Away from home	37.2%	10.8%

Table 3a
Who is injured?

	Among respondents present at the incident		
	N	Not injured	Injured
All	14,145	82.7%	17.3%
12–19 years old	3341	78.9%	21.1%
20–29 years old	3563	79.0%	21.0%
30–39 years old	2301	82.7%	17.3%
40–49 years old	2098	85.1%	14.9%
50–59 years old	1596	89.0%	11.0%
≥60 years old	1245	91.4%	8.6%***
Male	6877	82.1%	17.9%
Female	7268	83.4%	16.6%*
At home[1]	4357	83.2%	16.8%
Away from home	9788	82.5%	17.5%
Rural	2054	83.6%	16.4%
Urban	10,892	82.6%	17.4%
Large urban	1199	81.7%	18.3%

Table 3b
Effect of self-protective actions on victim injury.

	Among respondents present at the incident			
	N	Not injured	Injured before action	Injured after action
All	14,145	82.7%	15.5%	1.8%
Was there anything you did or tried to do about the incident while it was going on?				
Yes	6139	74.5%***	21.3%***	4.2%
No/took no action/kept still	8006	89.0%	11.0%	–
Specific actions				
Attacked or threatened with gun	127	89.1%***	6.8%***	4.1%
Attacked or threatened with other weapon	121	74.5%	20.2%	5.3%
Attacked or threatened without a weapon	733	59.3%***	33.9%***	6.8%***
Defended self or property (struggled, ducked, blocked blows, held onto property)	1557	47.0%***	44.5%***	8.5%***
Chased, tried to catch or hold offender	256	77.5%	16.5%	6.0%
Yelled at offender, turned on lights, threatened to call police, etc.	1095	73.0%	21.5%	5.5%*
Cooperated or pretended to	150	80.5%	15.9%	3.6%
Argued, reasoned, pleaded, bargained, etc.	890	75.9%	18.8%	5.4%*
Ran or drove away or tried, hid, locked door	1086	79.1%***	18.5%*	2.4%**
Called police or guard	1068	82.7%***	15.2%***	2.2%***
Tried to attract attention or help	245	58.6%***	35.7%***	5.6%***
Screamed from pain or fear	248	27.7%***	66.2%***	6.0%***
Something else	737	86.6%***	10.9%***	2.6%*

For specific actions, each specific action is compared to not taking that specific action among victims who took action (n = 6139).

Discussion

Self-defense gun use is a rare event. Results from the NCVS find that guns are used by victims in less than 1% of crimes in which there is personal contact between the perpetrator and victim, and about 1% in cases of robbery and (non-sexual) assault. There were no reported cases of self-defense gun use in the more than 300 cases of sexual assault.

Who typically uses a gun in self-defense? While the numbers are small (n = 127), we can say that males are far more likely than females to use a gun in self-defense. Indeed, this is not surprisingly since most gun owners are male. This result is consistent with some (Hemenway and Azrael, 2000; Hemenway et al., 2000) but not all (Kleck, 1995; Cook and Ludwig, 1998) of the one-time private surveys, and is consistent with earlier studies using the National Crime Victimization Survey (Schnebly, 2002).

Our results indicate that most self-defense gun uses by males occur in urban areas, most occur away from home, and most occur during an assault or robbery. By contrast, most female self-defense gun uses occur at home and most involve property crimes.

It should be noted that a self-defense gun use requires the presence of a gun. By contrast most of the other self-protective actions, such as running away, arguing, struggling, cooperating, screaming or trying to attract attention, can occur in almost any crime. While the US has many more firearms and allows firearms in many more places than other first world countries, the readily availability of even more guns in more places would likely increase the number of self-defense gun uses.

However, the data provide little evidence that using a gun in self-defense reduces injury. Slightly more than 4% of victims were injured during or after a self-defense gun use—the same percentage as were injured during or after taking all other protective actions. Some self-protective actions were associated with higher probabilities of subsequent injury. The reader must be warned, however, that the sample of those injured after using a gun (5/127) is really too small to warrant strong conclusions. The large majority of crime victims who are injured are injured before they take any action.

Table 3c
Multivariate analysis: effectiveness of self-protective actions on victim injury (odds ratios).

Independent variables	Any injury: compared to all incidents	Injury after self-protective action: compared to incidents where victims took action
Male	0.87+	0.97
Age (omitted category is 12–19 years old)		
20–29 years old	1.00	1.08
30–39 years old	0.85*	0.93
40–49 years old	0.71***	0.65+
50–59 years old	0.53***	0.71
≥60 years old	0.44***	0.40*
Urban area	1.07	0.97
Large urban area	1.17	1.34
At home	1.12*	1.40*
Self-protection actions		
Attacked or threatened with gun	0.67	1.28
Attacked or threatened with other weapon	1.57+	1.52
Attacked or threatened without a weapon	3.19***	1.95***
Defended self or property (struggled, ducked, blocked blows, held onto property)	6.66***	3.22***
Chased, tried to catch or hold offender	1.08	1.53
Yelled at offender, turned on lights, threatened to call police, etc.	1.01	1.42*
Cooperated or pretended to	0.91	1.04
Argued, reasoned, pleaded, bargained, etc.	1.20+	1.58**
Ran or drove away or tried, hid, locked door	1.29**	0.76
Called police or guard	0.87	0.61*
Tried to attract attention or help	1.62**	1.27
Screamed from pain or fear	7.99***	0.85
Something else	1.07	1.05
Constant	0.15***	0.02***
N	10,696	4431
Pseudo R^2	0.14	0.07

For self-protective actions, each specific action is compared to not taking that specific action.
* p < .05.
** p < .01.
*** p < .001.

Where self-defense gun use stands out compared to other forms of self-protection is the low rate of injury that occurs to gun users BEFORE their protective action. Any explanation for this finding must currently be speculative. One of the various possibilities is that gun users are more vigilant, wary and aware than other victims, and able to respond more rapidly to threats. Another possibility is that incidents where guns are used are different; for example they may more likely be the result of mutual hostility such as escalating arguments. Such arguments may end in verbal aggression or physical assaults where the victim is less likely to be taken completely by surprise. Results from private surveys that ask respondents to describe the event in their own words (Hemenway and Azrael, 2000; Hemenway et al., 2000) find that the reported self-defense gun use in these surveys usually occur in escalating hostile interactions.

Most prior claims about the relative effectiveness of self-defense gun use come from evaluations of NCVS data which could not distinguish injury before or after the gun use (Kleck and DeLone, 1993; Schnebly, 2002). As Ullman (1998) states, without information on the sequence of resistance and injury, you cannot draw conclusions about whether the resistance provoked the injury or an injury provoked resistance from previously non-resisting victims. In our study, controlling for the demographics of the incident (i.e., age and gender of victim, whether it occurred at home, and in an urban area), self-defense gun use

Table 4a
Property loss: who loses property in robbery, burglary or personal contact larceny.

Characteristics of victim or incident	N	Something taken
All	6486	82.5%
12–19 years old	630	81.0%
20–29 years old	1468	81.5%
30–39 years old	1218	84.4%
40–49 years old	1197	83.0%
50–59 years old	974	81.2%
≥60 years old	998	83.4%
Male	3128	82.9%
Female	3358	82.1%
At home	5288	83.9%
Away from home	1198	76.6%***
Rural	1124	81.8%
Urban	4729	83.2%
Large urban	633	79.0%*
Male offender	1413	67.4%
Female offender	307	74.1%*
Offender had gun	293	83.3%
Offender didn't have gun	1937	72.8%***

Self-protective actions	N	Something taken
Was there anything you did or tried to do about the incident while it was going on?		
Yes	825	55.9%
No/took no action/kept still	1404	84.9%***
Specific actions		
Attacked or threatened with gun	22	38.5%***
Attacked or threatened with other weapon	21	34.9%***
Attacked or threatened without a weapon	98	48.8%***
Defended self or property (struggled, ducked, blocked blows, held onto property)	252	65.2%***
Chased, tried to catch or hold offender	57	57.9%**
Yelled at offender, turned on lights, threatened to call police, etc.	188	48.7%***
Cooperated or pretended to	40	93.0%**
Argued, reasoned, pleaded, bargained, etc.	91	60.0%**
Ran or drove away or tried, hid, locked door	139	46.6%***
Called police or guard	136	53.1%***
Tried to attract attention or help	51	45.3%***
Screamed from pain or fear	41	56.9%*
Something else	83	62.7%*

For self-protective actions, each is compared to not taking that specific action.

Table 4b
Multivariate analysis: property-loss.

Independent variables	Something taken in a robbery, burglary or personal contact larceny: odds ratios	
	Model 1	Model 2
Male	1.01	0.92
Age (omitted category is 12–19 years old)		
20–29 years old	0.95	0.91
30–39 years old	0.95	0.96
40–49 years old	0.64*	0.56**
50–59 years old	0.90	0.88
≥60 years old	0.70+	0.67+
Urban area	1.66***	1.45*
Large urban area	1.04	0.97
At home	0.66***	0.59***
Self-protection actions		
Attacked or threatened with gun	0.26**	0.30*
Attacked or threatened with other weapon	0.12***	0.17***
Attacked or threatened without a weapon	0.29***	0.38***
Defended self or property (struggled, ducked, blocked blows, held onto property)	0.71*	0.89
Chased, tried to catch or hold offender	0.88	1.26
Yelled at offender, turned on lights, threatened to call police, etc.	0.39***	0.47***
Cooperated or pretended to	7.06**	7.27**
Argued, reasoned, pleaded, bargained, etc.	0.68	0.77
Ran or drove away or tried, hid, locked door	0.25***	0.30***
Called police or guard	0.56**	0.69+
Tried to attract attention or help	0.47*	0.52+
Screamed from pain or fear	1.61	1.38
Something else	0.42***	0.60*
Male offender		0.76+
Offender had gun		1.98***
Constant	4.28***	4.42***
N	1723	1235
Pseudo R^2	0.09	0.10

For self-protective actions, each is compared to not taking that specific action.

(compared to other possible protective actions) was not significantly associated with a reduced likelihood of injury during/after the self-defense gun use. In addition, in multivariate analysis, victims who used a gun in self-defense were not less likely receive an injury during the entire event compared all other contact crime victims.

The evidence suggests that using a weapon in self-defense may reduce the likelihood of losing property during the commission of crime. However, it is not clear that using a gun is better or worse than using other weapons. Unfortunately, unlike what is done for injury, the NCVS does not try to tease out the chronological sequence of events concerning property loss. So we cannot determine whether the property was lost before or after the victim took protective action, nor whether the protective action recovered the victim's property that the offender had taken.

Overall, about half of self-defense gun use occurs in robberies and assaults, about half involves verbal threats or property crimes. The NCVS only asks about major crimes, and so does not provide the possibility for respondents to mention self-defense gun use against trespassing or other minor crimes.

NCVS data report far more criminal gun uses than self-defense gun uses. This result has been found consistently in studies using the NCVS (McDowall and Wiersema, 1994; Cook, 1991; Guns, 1994) and in private surveys asking comparable questions about both offensive and defensive gun use (Hemenway and Azrael, 2000; Hemenway et al., 2000; Hemenway and Miller, 2004; Hemenway, 2006).

Many of our findings relating to the frequency of self-defense gun use and its effect on injury and property loss are similar to those found in an examination of the NCVS for the decade 1992–2001 (Tark and Kleck, 2004). For that decade, of the 27,595 personal contact crimes reported, the victim similarly used a gun in self-defense in less than 0.9% of the incidents. Among the 1119 sexual assaults reported, in only one did the victim report using a gun. There were no significant differences in the likelihood of being injured during or after a self-defense gun use compared to being injured during or after taking other forms of protective action. Self-defense gun use was associated with lower rates of property loss than most other forms of protective action.

Our study has various limitations. As do virtually all studies of self-defense gun use, the NCVS relies on self-report by the victim. There is no external validation of the events, nor is anyone giving the other side of the story about this hostile interaction. Even given the large size of each NCVS, and our use of data from ten surveys, the number of reported self-defense gun uses is relatively small (127), so it is not possible to obtain stable estimates of small subcategories of events (e.g., self-defense gun use by women in rural areas). The number of victims seriously injured after specific protective actions is too small to analyze and (since this a self-report survey) there is no information about crimes that led to the death of the victim (Zimring and Zuehl, 1986). In addition, the focus of the NCVS is on crimes rather than the

response to crime. Respondents are asked twice if they did anything in response to the crime, but there are no specific questions about self-defense gun use, or the use of other weapons. And there are no follow-up questions. Thus there are no details on self-defense gun use regarding the type of gun, whether it was initially loaded and unlocked, how long it took to get, etc. Finally, our analysis is descriptive rather than causal. While we use multiple regression to control for many variables, instances of self-defense gun use may differ in many ways—including ways we could not control for—from instances where the victim used other forms of self-defense or took no self-protective action (Cook, 1986).

While it has limitations, the National Crime Victimization Survey has important strengths. A single NCVS is far larger than any of the one-time private (non-governmental) self-defense gun surveys ever undertaken, and we have combined data from ten surveys. The NCVS also has a much higher response rate than private surveys. In addition, the NCVS effectively eliminates the problem of telescoping of events by dropping the first household survey and on subsequent surveys asking only about events since the previous survey. Most important, it eliminates the large false-positive problem by only asking about protective actions if the respondent has first reported that a crime was attempted against him or her (Hemenway, 1997a; Hemenway, 1997b; Cook et al., 1997).

By contrast, private surveys typically ask first about self-defense gun use and thus allow respondents to report gun uses against suspicious characters, in scary situations or during any hostile interaction (Hemenway, 2006; McDowall et al., 2000; Cook and Ludwig, 1996). Pre-emptive strikes may be reported. The number of self-defense gun uses reported in private surveys is substantially higher than in the NCVS (McDowall et al., 2000; Ikdea et al., 1997), but narratives suggest that most of these incidents are probably gun use in escalating arguments, rather than gun use against clear criminal acts. Such gun use is typically socially undesirable and probably illegal (Hemenway and Azrael, 2000; Hemenway et al., 2000).

Overall, our analyses of the NCVS data indicate that self-defense gun use is very rare, and victims virtually never use guns in sexual assaults. The data also indicate that self-defense gun uses are far fewer than criminal gun uses. Most self-defense gun use is by males and occurs outside the home. Half of the self-defense gun uses occur in what appear to be non-violent crimes (e.g., verbal threats). The NCVS data provide little evidence that self-defense gun use reduces the likelihood of victim injury during a crime. The data do suggest that using a gun may be useful at preventing property loss, but not more effective than protective action using other weapons.

Conflict of interest

The authors declare that there are no conflicts of interests.

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