



National Institute of Justice

Research in Brief

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Issues and Findings

Discussed in this Brief: Results of a nationally representative telephone survey (1994) on private ownership and use of firearms by American adults. The survey provides the most complete data available on the private stock of firearms in the United States.

Key issues: With nearly 200 million guns in private hands, firearms have an important impact on the quality of life in America. What is the size and composition of the Nation's private gun inventory? What are the methods of, and reasons for, acquiring firearms? How are firearms stored? How frequently are guns used against criminal attackers?

Key findings: The survey data and analysis yielded the following results:

- In 1994, 44 million Americans owned 192 million firearms, 65 million of which were handguns. Although there were enough guns to have provided every U.S. adult with one, only 25 percent of adults actually owned firearms; 74 percent of gun owners possessed two or more.
- The proportion of American households that keep firearms appears to be declining.
- Sixty-eight percent of handgun owners also possessed at least one rifle or shotgun.

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Guns in America: National Survey on Private Ownership and Use of Firearms

by Philip J. Cook and Jens Ludwig

The United States is unique among wealthy nations in its vast private inventory of firearms. The nearly 200 million guns in private hands are used in part for recreation, mostly hunting and target shooting. But what engenders the most public controversy over firearms is their use against people during either the commission of or defense against crime.

Gun advocates regard firearms as an important crime deterrent and source of protection, while control advocates denounce guns for the damage they do in the hands of criminals. What both groups can agree on is that widespread ownership of firearms has an important impact on the quality of life in America.

To learn more about the role of firearms, the National Institute of Justice (NIJ) sponsored—through a grant to the Police Foundation—a nationally representative telephone survey in 1994 on private ownership and use of firearms by American adults (see "Firearms Survey Methodology"). This Research in Brief reports some of the survey's more important findings, including the following:

- Size, composition, and ownership of the Nation's private gun inventory.

- Methods of, and reasons for, firearms acquisition.
- Storage and carrying of guns.
- Defensive use of firearms against criminal attackers.

Gun ownership

Prevalence. According to conventional wisdom, about half of American households own guns, a belief affirmed by a long series of national polls dating back to 1959.¹ Yet data from the 1994 telephone survey (National Survey of Private Ownership of Firearms—NSPOF) indicate that just 35 percent (plus or minus 1.3 percent) of households own guns. This estimate may be somewhat off the mark but not by much. Conventional wisdom appears out of date.

The best available survey series on gun ownership is the General Social Survey (GSS), conducted by the National Opinion Research Center. Its estimates have been lower than some others, in the range of 40 to 43 percent during the 1990s. In particular, the GSS estimate for 1994 was just 41 percent. Another telephone survey in 1994 produced a still lower estimate for gun ownership, 38 percent of households.²

Issues and Findings

continued...

- Gun ownership was highest among middle-aged, college-educated people of rural small-town America. Whites were substantially more likely to own guns than blacks, and blacks more likely than Hispanics.
- The most common motivation for owning firearms was recreation. Forty-six percent possessed a gun primarily for protection against crime.
- There were 13.7 million firearm transactions in 1993–1994, including 6.5 million handguns. About 60 percent of gun acquisitions involved federally licensed dealers.
- About 211,000 handguns and 382,000 long guns were stolen in noncommercial thefts in 1994.
- Slightly more than half of all privately owned firearms were stored unlocked; 16 percent of firearms were stored unlocked and loaded.
- In 1994, about 14 million adults (approximately one-third of gun owners) at least once carried a firearm in their vehicles or on their person for protection.

• Evidence suggests that this survey and others like it overestimate the frequency with which firearms were used by private citizens to defend against criminal attack.

Target audience: Criminal justice and public health researchers and practitioners. Legislators and policymakers at all levels of government.

Concentration. Despite enough guns in private hands to provide every adult in America with one, only one-quarter of adults actually own firearms. Those who have one gun usually have several: 74 percent possessed two or more in 1994.

Gun ownership is quite concentrated but not more so than for other durable goods. In marketing circles, the "80/20 rule" suggests that the top fifth of all consumers of a product typically account for four-fifths of all purchases by value. NSPOF data indicate that the top 20 percent of firearm owners possessed 55 percent of privately owned firearms.³ Of gun owners in 1994, 10 million individuals owned 105 million guns, while the remaining 87 million guns were dispersed among 34 million other owners.

Persons owning several guns tended to have varied collections, including rifles, shotguns, and handguns.⁴ We find that 68 percent of handgun owners also owned at least one rifle or shotgun, suggesting some experience and interest in the sporting uses of guns. Exhibit 1 provides additional data on the composition of private gun collections.

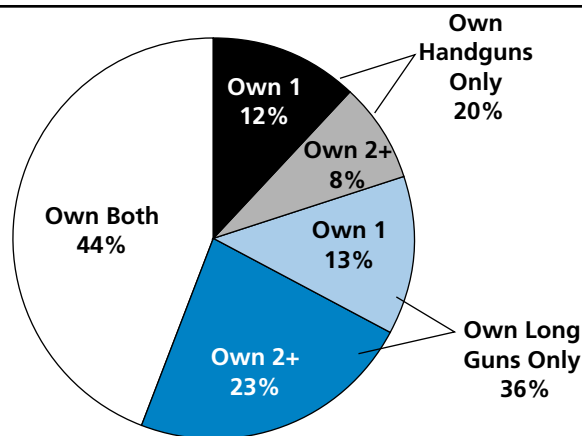
Demographic patterns. In 1994 gun ownership was far from uniformly distrib-

uted across the population, as is evident from exhibit 2. Most striking is the gender gap: 42 percent of men but just 9 percent of women owned guns at the time of NSPOF. (The gap is even wider when the focus is on whether the respondent ever owned a gun.) With respect to race, whites were substantially more likely to own guns than blacks (27 versus 16 percent), and blacks more likely than Hispanics (16 versus 11 percent). But for handguns alone, the ownership rates among blacks and whites were nearly equal (13.1 versus 16.5 percent).

Gun ownership (and handgun ownership) was highest among middle-aged,⁵ college-educated people of rural and small-town America. But one of the best predictors of gun ownership was the presence of firearms in the respondent's childhood home. People whose parents possessed guns were three times as likely as others to own one themselves. In fact, 80 percent of all current gun owners reported that their parents kept a firearm in the home.

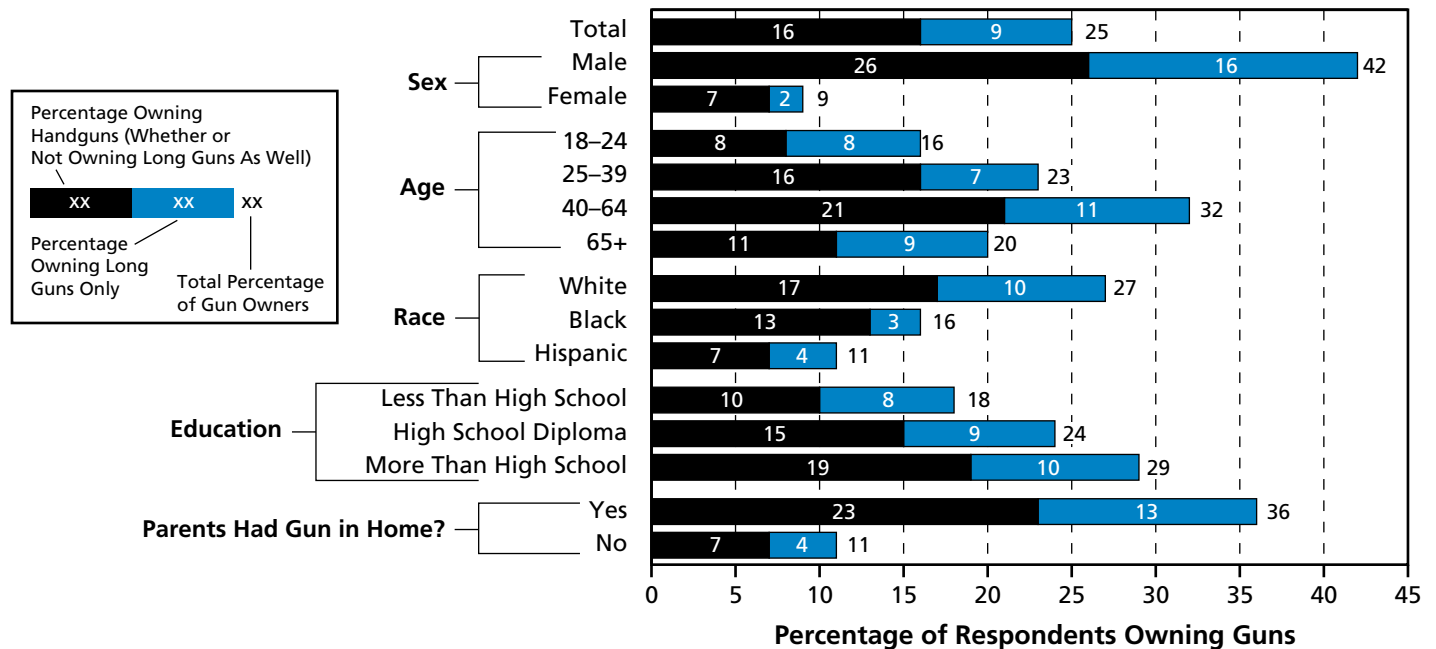
Motivations. The most common motivation for owning firearms was recreation. As shown in exhibit 3, about 35 percent of gun owners (15 million people, 8 percent of the adult public) hunted in 1994, and about an equal percentage engaged

Exhibit 1. Composition of Gun Ownership (1994)^a



a. There were 44 million gun owners in 1994.

Exhibit 2. Gun Ownership Patterns (NSPOF Estimates, 1994)



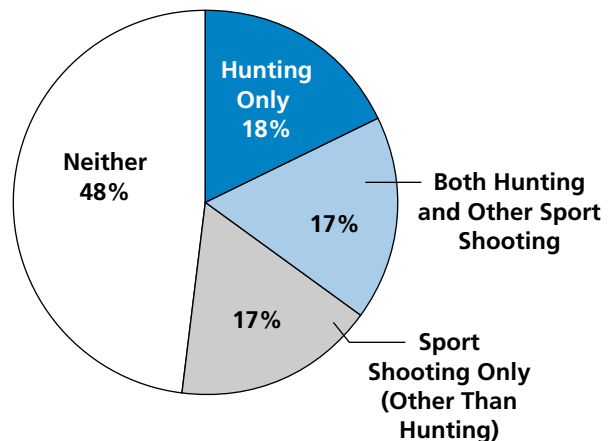
in sport shooting other than hunting. Given the substantial overlap between the two groups, about half (23 million) of the Nation's 44 million gun owners participated in a gun sport during 1994. Of those who owned only handguns in 1994, 40 percent used them recreationally, almost entirely for sport shooting other than hunting.

Another reason cited for firearm ownership was self-protection. Overall, 46 percent of gun owners possessed firearms (usually handguns) primarily for protection against crime (41 percent for males; 67 percent for females). Almost three-quarters of those who owned only handguns kept them primarily for self-protection. Of course, some people seek the protection of a gun because they may be disproportionately likely to lead risky lives or associate with violent people.⁶ Those who had been arrested for nontraffic offenses were more likely to own firearms (37 percent compared to 25 percent in the general population).

But most persons do not own guns, and the NSPOF included several items to find out why. In 1994, about two-thirds of gunless adults were actively opposed to having guns in their homes because they viewed guns as dangerous, "im-

moral," or otherwise objectionable. The remaining one-third were at least open to the possibility of obtaining firearms and might do so if their financial condition or motivation became stronger. For many, the needed moti-

Exhibit 3. Recreational Use of Firearms—Percentage of Gun Owners Who Hunt, Do Other Sport Shooting, Do Neither



Note: The average number of days hunters said they spent hunting in 1994 was 16.4 days. The average number of days sport shooters said they spent sport shooting in 1994 was 18.6 days.

Firearms Survey Methodology

The NIJ-sponsored National Survey of Private Ownership of Firearms (NSPOF) was conducted by Chilton Research Services of Drexel Hill, Pennsylvania, during November and December 1994. Data collected by the survey were analyzed by the authors of this Research in Brief.

The telephone survey employed a list-assisted random-digit-dial sampling method, in which every residential telephone number had the same likelihood of being selected. Each household selected in this fashion was scheduled for as many calls as needed (up to a maximum of six) to make contact with the appropriate person and complete the interview. When a household was first contacted, the interviewer asked to speak with the adult in the household who had the most recent birthday. Because this method randomizes the selection of respondents from among the adults living in the household, the NSPOF was a probability sample of adults in the United States.*

Minimums were established for the number of completed interviews with racial minorities and gun-owning households. Such households were more likely than others to be included in the final sample. Sampling weights were calculated to adjust for this design feature and for other sociodemographic differences between the sample and the U.S. adult population.

Although these adjustments improved the quality of population estimates based on the NSPOF, some types of estimates may still be biased. As in every survey, some sample members refused to cooperate and others were never home when the interviewer called. The concern is that these nonrespondents may tend to differ from the general population (and the completed sample) in relevant ways. The scope of that potential problem is usually indicated by the response rate.

In the absence of a single accepted definition of "response rate," two reasonable

definitions yield figures of 44 and 59 percent for the NSPOF. Thus, nonresponse bias in our estimates is a real possibility. Nonetheless, the response rate for this survey is no lower than for other well-executed telephone surveys, and there is no reason to believe that this survey used a less representative sample than others.**

Most of the estimates contained in this Research in Brief rely on the responses of those who personally owned firearms. The estimates do not rely on the reports of those who did not personally own a gun but lived in a gun-owning household because our analysis of the NSPOF data suggests that the survey respondents were often unwilling or unable to report on guns owned by other adults in the household. For example, we find that in households headed by married couples, women were much less likely to report a gun in the house (which in most cases would belong to their husbands) than were men.

* For details about the GENESYS method employed by Chilton or other survey issues, see Brick, J.M., J. Waksberg, D. Kulp, and A. Starer, "Bias in List-Assisted Telephone Samples," *Public Opinion Quarterly*, 59:218-235. Also: Waksberg, J., "Sampling Methods for Random Digit Dialing," *Journal of the American Statistical Association*, 73:40-46, 1978.

** Kleck, G., and M. Gertz, "Armed Resistance to Crime: The Prevalence and Nature of Self-Defense With a Gun," *Journal of Criminal Law and Criminology*, 86(1):150-187, Fall 1995. They reported a response rate of 61 percent for their national telephone survey of gun ownership and defensive gun use. In calculating this response rate, they excluded all sample members whom they were unable to contact. By their definition, the NSPOF response rate would be higher than 61 percent.

1994 National Survey of Private Ownership of Firearms (NSPOF)

- Objectives:** Provide national estimates for:
- Adult ownership of guns, by gun type.
 - Sources and motivations for gun acquisition.
 - Firearm safety and storage.
 - Defensive use of firearms.
 - Attitudes toward gun control.

Sample: Probability sample of 2,568 noninstitutionalized adults aged 18 and over who are fluent in English or Spanish and live in households with a telephone.

Method: Telephone interview with one randomly selected adult from each household.

Population estimates: Weighted averages of relevant responses. Standard errors for estimates of population-prevalence rates range up to 1.4 percentage points, somewhat higher for prevalence estimates within subpopulations.

vation may have come from an increased concern about crime: nearly 5 percent of respondents reported that they planned to obtain a gun for protection against crime within a year.

The stock of guns in private hands

The NSPOF-based estimate for the total number of privately owned firearms is 192 million: 65 million handguns, 70 million rifles, 49 million shotguns, and 8 million other long guns (exhibit 4). Of the handguns, 48 percent were revolvers, 40 percent semiautomatics, and 12 percent were reported as "some other type of handgun" by respondents.

The millions of guns in private hands included everything from cheap .22-caliber "snubbies" to finely made high-powered rifles worth thousands of dollars. The variety of firearm designs reflects the multiplicity of uses for which they are intended and also influences the weapons' capacities for harm. Firearm regulations place special restrictions on commerce in short-barreled guns (because they are easily concealed and disproportionately used in crime) and on large-capacity magazines.

From our analysis, we find that the magazine capacity of one-fifth of all handguns was 10 or more rounds (exhibit 4B). The barrel of about one in six handguns was 3 inches or shorter (exhibit 4C).⁷ Comparing handguns acquired in 1993 or 1994 with those acquired prior to 1993 permitted examination of changes in the demand for different kinds of handguns over time. Handguns acquired more recently were more likely to have large magazine capacities (37.8 versus 14.1 percent held 10 or more rounds) and were less likely to be of small caliber, defined as .32 or under (28.6 versus 38 percent). (See exhibit 4D.)

Transactions

Acquisitions. To date, little information has been available about gun flows in the United States. The potential importance of this information is its use in evaluating regulation of firearms commerce. For example, the Gun Control Act of 1968 restricts interstate shipments to federally licensed firearm dealers (FFLs), who in turn are required to follow laws regulating retail transfers. Transactions not involving FFLs, known as the "secondary market," typically do not require recordkeeping and are exempt from the Federal requirement (for handguns) of a waiting period and criminal record check.⁸ Moreover, secondary market transactions are not subject to regulatory oversight. Thus, knowing the volume of informal transfers that do or do not involve FFLs would be useful.

The average firearm in circulation in 1994 was acquired by its present owner in 1981, with the average handgun having been acquired in 1983. Persons owning handguns in 1994 acquired about 28 percent of them in 1993–1994, compared with 20 percent of long guns. An estimated 13.7 million transactions occurred during 1993–1994, including 6.5 million involving handguns. Sixty percent of long guns and 68 percent of handguns were new at the time of acquisition by their 1994 owners during the 1993–1994 period.

How do people typically acquire firearms? As shown in exhibit 5, almost all guns acquired during 1993 and 1994 were either purchased by the respondent (73 percent) or received as a gift (19 percent). The remaining 8 percent were obtained through inheritance, a swap of some kind, or other means.

Exhibit 4. Gun Stock Characteristics (1994)

4A. Estimates of Number of Guns

	Number in millions
Handguns	
Revolvers	31
Semiautomatics	26
Other	8
Total	65
Rifles	
Semiautomatics	28
Other	42
Total	70
Shotguns	49
Other long guns	8
Total All Guns	192

4B. Magazine Capacity of Handgun Stock^a

Number of Rounds	Percentage of Handgun Stock
1–9 rounds	79%
10 or more rounds	21%

a. The average number of rounds is 8.1.

4C. Length of Barrel

	Percentage of All Handgun Stock	Percentage of Handguns With Caliber .32 or Under ^b
1–3 inches	17%	37% ^c
4–5 inches	38%	31% ^c
6 or more inches	45%	38% ^c

b. The percentage of all handgun stock having a caliber .32 or under is 34 percent.

c. These percentages are not of all guns but only of those identified in the middle column.

Exhibit 4. Gun Stock Characteristics (1994) (continued)

4D. Magazine Capacity and Barrel Length by Time of Acquisition

Magazine Capacity ^d	Handguns Acquired Prior to 1993 (N=234) Percentage of All Handguns		Handguns Acquired in 1993 or 1994 (N=91) Percentage of All Handguns	
1–9 rounds	85.9%		62.2%	
10 or more rounds	14.1%		37.8%	
Length of Barrel ^e	Percentage of Handgun Stock	Percentage With Caliber .32 or Under	Percentage of Handgun Stock	Percentage With Caliber .32 or Under
1–3 inches	17.6%	40.8%	17.4%	33.7%
4–5 inches	35.9%	30.5%	41.6%	31.1%
6 or more inches	46.5%	43.4%	41.0%	22.6%

d. The average number of rounds for guns acquired before 1993 is 7.6. For guns acquired in 1993 or 1994 it is 9.5.

e. The percentage of all handguns acquired prior to 1993 having a caliber .32 or under is 38 percent. The percentage of all handguns acquired in 1993 or 1994 having a caliber .32 or under is 28.6 percent.

The predominant sources of guns, unsurprisingly, were stores (60 percent). Other important sources included family members and acquaintances. The 3 percent of respondents who indicated that they obtained guns "through the mail" (which is illegal for all but FFLs) may have misremembered or may have referred to a mail-order purchase arranged through an FFL.

The average gun obtained in 1993 and 1994 was worth \$392 at the time of transfer, with little difference between handguns and long guns. Fewer than 1 in 20 guns acquired during those 2 years were valued at less than \$100.

Fifty-seven percent of firearms were obtained from stores, pawnshops, or other sources that the respondents were certain to have been federally licensed firearm dealers. Some respondents

were not sure about whether the source was an FFL. Others indicated that the source was an FFL but then reported that the transaction was a trade rather than a cash sale or that the source was an acquaintance or family member. If those cases are included, the proportion increases to 64 percent.

We conclude that approximately 60 percent of gun acquisitions involved an FFL and hence were subject to

Exhibit 5. Methods and Sources for Gun Acquisition in 1993 and 1994 (NSPOF Estimates)

	Percentage for Long Guns (N=121)	Percentage for Handguns (N=128)	Percentage for All Guns (N=251)
What Best Describes How You Obtained Your Gun?			
Bought it	69	77	73
Received it as a gift	22	16	19
Traded something for it	3	2	3
Inherited it	5	4	5
From What Source Did You Obtain This Gun?			
Gun store	33	55	43
Pawnshop	5	8	6
Other store	18	3	11
Gun show or flea market	4	4	4
Through the mail	3	3	3
Member of the family	22	12	17
Friend or acquaintance	12	13	12
Other	5	3	4

Federal regulations on such matters as out-of-State sales, criminal history checks, and recordkeeping. A somewhat higher percentage of handgun acquisitions than long gun acquisitions involved FFLs. The remaining acquisitions, amounting to about 2 million per year, were off-the-books transfers in the secondary market.

Thefts. A major theme highlighted in a 1986 survey of incarcerated felons was that theft was an important means of obtaining firearms for those with criminal intentions: 32 percent of surveyed felons had stolen their most recently acquired handgun.⁹

Based on the NSPOF, an estimated 0.9 percent of all gun-owning households (269,000) experienced the theft of one or more firearms during 1994. About 211,000 handguns and 382,000 long guns were stolen in noncommercial thefts that year, for a total of 593,000 stolen firearms. Those estimates are subject to considerable sampling error but are consistent with earlier estimates of about half a million guns stolen annually.¹⁰

Gun safety

Gun storage. Of 1,356 accidental deaths by gunshot in 1994, 185 involved children 14 years old and

younger.¹¹ For each such fatality, there are several accidental shootings that cause serious injury. Guns were also the means of destruction in 19,590 suicides, 210 involving children 14 or younger. For these reasons, safe handling and storage of firearms have attracted the attention of the public health community.

We found that 20 percent of all gun-owning households had an unlocked, loaded gun in the home at the time of the survey. This figure was substantially higher among handgun-owning households than among households with long guns only—30 percent versus 7 percent.

Slightly more than half of firearms of either type were stored unlocked, but handguns were much more likely to be loaded. Reflecting their predominant use in self-defense, handguns were likely to be stored in bedrooms or vehicles of owners or even on their person, while most long guns were kept in gun closets or other out-of-the-way places (exhibit 6).

Although training programs usually include suggestions on how to store guns safely, it does not appear that trainees are paying attention. More than half (56 percent) of owners had received some form of "formal" training from the military, law enforcement, National

Rifle Association, National Safety Council, or other source. As a group, owners who received such training were no less likely than others to keep guns loaded and unlocked. This surprising result is consistent with other recent studies.¹²

However, a more detailed analysis of NSPOF data that examined the effects of different formal training programs separately indicated one exception: training programs such as those offered by local affiliates of the National Safety Council were associated with a significant reduction in the likelihood of keeping a gun unlocked and loaded. This result speaks well of that training, the trainees, or both.

Carrying

Carrying a gun outside the home, especially in an urban area, is problematic because the public is at risk if the carrier is reckless or inclined to violence. For that reason, carrying a firearm in a vehicle or on the person is subject to a variety of State and local regulations. In most States, carrying a concealed gun is prohibited or restricted to those who have obtained a special license. At the same time, many States have reacted to public concerns about crime by enacting laws under which most citizens can usually obtain a

Exhibit 6. Storage Method and Location of Firearms (NSPOF Estimates)

	Percentage for Long Guns (N=437)	Percentage for Handguns (N=352)	Percentage for All Guns (N=789)
Storage Method/Location			
Gun loaded	11	55	26
Gun loaded and unlocked	7	34	16
Where Gun Kept			
Bedroom	17	37	24
Gun closet	53	26	44
Other closet	19	11	17
In vehicle or on person	1	16	6
Other	10	8	10

concealed-carry permit. Currently, 31 States have passed such laws.

About 14 million adults (approximately one-third of gun owners) carried firearms for protection at least once during the 12 months preceding NSPOF. Four million of them indicated that they carried guns for protection "in connection with work." Two-thirds who carried guns kept them in their vehicles, while the others sometimes carried them on their person.

The occupations of respondents who report carrying guns in connection with work are quite diverse. Somewhat surprisingly, only a quarter of this group were employed in the protective service field. The questionnaire does not distinguish between those who are required by their employers to carry firearms as part of their occupational duties and those who do so on their own initiative. In any event, an estimated 3 million adults who were not in law enforcement or security carried firearms for protection on the job in 1994.

The majority (56 percent) of those who carried firearms outside of work did so fewer than 30 days per year, but a substantial minority (22 percent) rarely left home without a gun. On any given day, 1.1 million people were carrying guns on their person outside the workplace, while another 2.1 million stored guns in their cars or trucks.

Some correlates of gun carrying are worth noting. Males who carried guns in 1994 were about 2½ times as likely to have been arrested for a nontraffic offense as other men (15 percent versus 6 percent). And a disproportionate share of gun carriers resided in the South, where the prevalence of carrying guns was almost double that of the rest of the Nation.

Defensive gun uses

NSPOF estimates. Private citizens sometimes use their guns to scare off trespassers and fend off assaults. Such defensive gun uses (DGUs) are sometimes invoked as a measure of the public benefits of private gun ownership. On the basis of National Crime Victimization Survey (NCVS) data, one would conclude that defensive uses are rare indeed, about 108,000 per year. But other surveys yield far higher estimates of the number of DGUs. Most notable has been a much publicized estimate of 2.5 million DGUs, based on data from a 1994 telephone survey conducted by Florida State University professors Gary Kleck and Mark Gertz.¹³ The 2.5 million figure has been picked up by the press and now appears regularly in newspaper articles, letters to the editor, editorials, and even Congressional Research Service briefs for public policymakers.

The NSPOF survey is quite similar to the Kleck and Gertz instrument and provides a basis for replicating their estimate. Each of the respondents in the NSPOF was asked the question, "Within the past 12 months, have you yourself used a gun, even if it was not fired, to protect yourself or someone else, or for the protection of property at

home, work, or elsewhere?" Answers in the affirmative were followed with "How many different times did you use a gun, even if it was not fired, to protect yourself or property in the past 12 months?" Negative answers to the first DGU question were followed by "Have you *ever* used a gun to defend yourself or someone else?" (emphasis in original). Each respondent who answered yes to either of these DGU questions was asked a sequence of 30 additional questions concerning the most recent defensive gun use in which the respondent was involved, including the respondent's actions with the gun, the location and other circumstances of the incident, and the respondent's relationship to the perpetrator.

Forty-five respondents reported a defensive gun use in 1994 against a person (exhibit 7). Given the sampling weights, these respondents constitute 1.6 percent of the sample and represent 3.1 million adults. Almost half of these respondents reported multiple DGUs during 1994, which provides the basis for estimating the 1994 DGU incidence at 23 million. This surprising figure is caused in part by a few respondents reporting large numbers of defensive gun uses during the year; for example, one woman reported 52!

Exhibit 7. Defensive Gun Use (DGU) Estimates for 1-Year Recall Period (1994)—Comparison of NSPOF with Kleck and Gertz Estimates

	NSPOF Estimates		Kleck and Gertz
	<i>All DGUs Against Persons (N=45)</i>	<i>DGUs Meeting Kleck and Gertz Criteria* (N=19)</i>	
1 Year			(N=66)
Estimated number of defenders (in millions)	3.1	1.5	2.5
Estimated number of DGUs (in millions)	23.0	4.7	n/a

* In their 1995 DGU study, Kleck and Gertz presented estimates based on only the DGU reports that met certain criteria (see text).

A somewhat more conservative NSPOF estimate is shown in the column of exhibit 7 that reflects the application of the criteria used by Kleck and Gertz to identify "genuine" defensive gun uses. Respondents were excluded on the basis of the most recent DGU description for any of the following reasons: the respondent did not see a perpetrator; the respondent could not state a specific crime that was involved in the incident; or the respondent did not actually display the gun or mention it to the perpetrator.

Applying those restrictions leaves 19 NSPOF respondents (0.8 percent of the sample), representing 1.5 million defensive users. This estimate is directly comparable to the well-known estimate of Kleck and Gertz, shown in the last column of exhibit 7. While the NSPOF estimate is smaller, it is statistically plausible that the difference is due to sampling error. Inclusion of multiple DGUs reported by half of the 19 NSPOF respondents increases the estimate to 4.7 million DGUs.

Some troubling comparisons. If the DGU numbers are in the right ballpark, millions of attempted assaults, thefts, and break-ins were foiled by armed citizens during the 12-month period. According to these results, guns are used far more often to defend against crime than to perpetrate crime. (Firearms were used by perpetrators in 1.07 million incidents of violent crime in 1994, according to NCVS data.)

Thus, it is of considerable interest and importance to check the reasonableness of the NSPOF estimates before embracing them. Because respondents were asked to describe only their most recent defensive gun use, our compar-

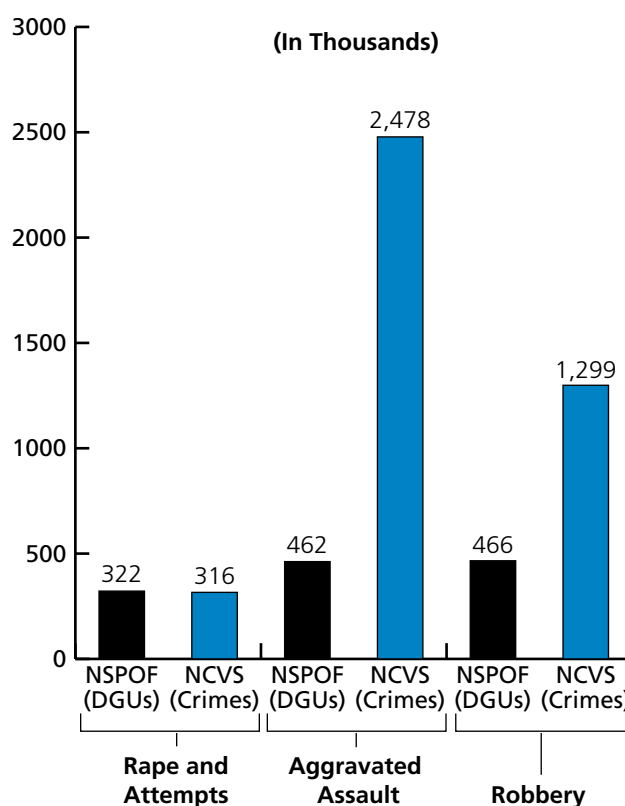
isons are conservative, as they assume only one defensive gun use per defender. The results still suggest that DGU estimates are far too high.

For example, in only a small fraction of rape and robbery attempts do victims use guns in self-defense. It does not make sense, then, that the NSPOF estimate of the number of rapes in which a woman defended herself with a gun was more than the total number of rapes estimated from NCVS (exhibit 8). For other crimes listed in exhibit 8, the results are almost as absurd: the NSPOF estimate of DGU robberies is 36 percent of all NCVS-estimated robberies, while the NSPOF estimate of DGU assaults is 19 percent of all aggravated assaults. If those percentages were close to accurate, crime would be a risky business indeed!

NSPOF estimates also suggest that 130,000 criminals are wounded or killed by civilian gun defenders. That number also appears completely out of line with other, more reliable statistics on the number of gunshot cases.¹⁴

The evidence of bias in the DGU estimates is even stronger when one recalls that the DGU estimates are calculated using only the most recently reported DGU incidents of NSPOF respondents; as noted, about half of the respondents who reported a DGU indicated two or more in the preceding year. Although there are no details on the circumstances of those additional DGUs, presumably they are similar to the most recent case and provide evidence for additional millions of violent crimes foiled and perpetrators shot.

Exhibit 8. Defensive Gun Uses Compared to Total Crime Counts (1994)



False positives. Regardless of which estimates one believes, only a small fraction of adults have used guns defensively in 1994. The only question is whether that fraction is 1 in 1,800 (as one would conclude from the NCVS) or 1 in 100 (as indicated by the NSPOF estimate based on Kleck and Gertz's criteria).

Any estimate of the incidence of a rare event based on screening the general population is likely to have a positive bias. The reason can best be explained by use of an epidemiological framework.¹⁵ Screening tests are always subject to error, whether the "test" is a medical examination for cancer or an interview question for DGUs. The errors are either "false negatives" or "false positives." If the latter tend to outnumber the former, the population prevalence will be exaggerated.

The reason this sort of bias can be expected in the case of rare events boils down to a matter of arithmetic. Suppose the true prevalence is 1 in 1,000. Then out of every 1,000 respondents, only 1 can possibly supply a "false negative," whereas any of the 999 may provide a "false positive." If even 2 of the 999 provide a false positive, the result will be a positive bias—regardless of whether the one true positive tells the truth.

Respondents might falsely provide a positive response to the DGU question for any of a number of reasons:

- They may want to impress the interviewer by their heroism and hence exaggerate a trivial event.
- They may be genuinely confused due to substance abuse, mental illness, or simply less-than-accurate memories.
- They may actually have used a gun defensively within the last couple of

years but falsely report it as occurring in the previous year—a phenomenon known as "telescoping."

Of course, it is easy to imagine the reasons why that rare respondent who actually did use a gun defensively within the time frame may have decided not to report it to the interviewer. But again, the arithmetic dictates that the false positives will likely predominate.

In line with the theory that many DGU reports are exaggerated or falsified, we note that in some of these reports, the respondents' answers to the followup items are not consistent with respondents' reported DGUs. For example, of the 19 NSPOF respondents meeting the more restrictive Kleck and Gertz DGU criteria (exhibit 7), 6 indicated that the circumstance of the DGU was rape, robbery, or attack—but then responded "no" to a subsequent question: "Did the perpetrator threaten, attack, or injure you?"

The key explanation for the difference between the 108,000 NCVS estimate for the annual number of DGUs and the several million from the surveys discussed earlier is that NCVS avoids the false-positive problem by limiting DGU questions to persons who first reported that they were crime victims. Most NCVS respondents never have a chance to answer the DGU question, falsely or otherwise.

Unclear benefits and costs from gun uses. Even if one were clever enough to design a questionnaire that would weed out error, a problem in interpreting the result would remain. Should the number of DGUs serve as a measure of the public benefit of private gun possession, even in principle? When it comes to DGUs, is

more better? That is doubtful, for two kinds of reasons:

- First, people who draw their guns to defend themselves against perceived threats are not necessarily innocent victims; they may have started fights themselves or they may simply be mistaken about whether the other persons really intended to harm them. Survey interviewers must take the respondent's word for what happened and why; a competent police investigation of the same incident would interview all parties before reaching a conclusion.
- Second and more generally, the number of DGUs tells us little about the most important effects on crime of widespread gun ownership. When a high percentage of homes, vehicles, and even purses contain guns, that presumably has an important effect on the behavior of predatory criminals. Some may be deterred or diverted to other types of crime. Others may change tactics, acquiring a gun themselves or in some other way seeking to preempt gun use by the intended victim.¹⁶ Such consequences presumably have an important effect on criminal victimization rates but are in no way reflected in the DGU count.

Conclusions

The NSPOF provides the most complete data available on the private stock of firearms in the United States, including the kinds of guns owned, by whom they are owned, and for what purpose they were acquired. When asked, handgun owners usually gave self-protection as their primary motive for owning guns, while long-gun owners mentioned hunting or target shooting. Other findings support the conclusion that handguns are much more likely than long guns to be kept

unlocked and ready for use in the home and to be carried in public; they are much less likely to be used in sporting activities. Despite those differences, demographic and socioeconomic patterns of firearm ownership in 1994 were similar for handguns and long guns; in fact, most handgun owners also owned one or more long guns.

A fair conclusion is that the more fundamental divide is not between handgun and long-gun owners but between those who own guns and those who do not. Those who like guns, have some experience with them, and have the means to obtain them tend to keep several for various purposes. But most of the adult public turns elsewhere for recreation and protection against crime.

Over time, the relative importance of self-protection and sport as motivations for gun acquisition and use has changed. Perhaps as a result of the increasing urbanization of America, the overall prevalence of gun ownership appears to be declining, as is participation in hunting. Proportionately fewer households owned firearms in 1994 than was true in the 1960s and 1970s, and the younger cohorts are entering into gun ownership at slower rates than previous ones. When people do acquire guns now, the motivation is more likely self-defense than in the past: The mix of new firearms sold in 1994 was equally divided between handguns and long guns, whereas 25 years earlier twice as many long guns were sold.¹⁷

The NSPOF does not provide much evidence on whether consumers who buy guns for protection against crime get their money's worth. The NSPOF-based estimate of millions of DGUs each year greatly exaggerates the true number, as do other estimates based

on similar surveys. Much debated is whether the widespread ownership of firearms deters crime or makes it more deadly—or perhaps both—but the DGU estimates are not informative in this regard.

For other purposes, the NSPOF is a reliable reference. Such information is vital to the evaluation of the ongoing debate over government regulation of gun transactions, possession, and use.

Notes

1. For example, the December 1993 Gallup Poll estimated that 49 percent of households possessed a gun.
2. Kleck, G., and M. Gertz, "Armed Resistance to Crime: The Prevalence and Nature of Self-Defense With a Gun," *Journal of Criminal Law and Criminology*, 86(1):150–187, Fall 1995.
3. For a discussion of the "80/20" rule, see Clotfelter, C.T., and P.J. Cook, *Selling Hope: State Lotteries in America*, Cambridge, Massachusetts: Harvard University Press, 1989. It is possible that if one could adjust for the value of guns, the degree of concentration would be still greater and better fit the rule.
4. Fifty-five percent of all individuals who owned four or more guns had at least one in each of these three categories.
5. The NSPOF offers evidence that gun ownership is declining. Not only were middle-aged people more likely to own a gun in 1994 than those under age 40, but they were also more likely to have acquired a gun by age 21.
6. Surveys of juvenile delinquents and adult felons confirm the importance of self-defense as a motive for gun possession by active criminals. For juvenile de-

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linquents, see Sheley, J.F., and J.D. Wright, *Gun Acquisition and Possession in Selected Juvenile Samples*, Research in Brief, Washington, D.C.: U.S. Department of Justice, National Institute of Justice, December 1993. For adult felons, see Wright, J.D., and P. Rossi, *Armed and Considered Dangerous*, Hawthorne, New York: Aldine, 1986.

7. Of some interest, given the controversy over the "Saturday Night Special," is that most short-barreled handguns were not .22 caliber; two-thirds were in excess of .32 caliber, the same as for longer barreled handguns.
8. Cook, P.J., S. Molliconi, and T.B. Cole, "Regulating Gun Markets," *Journal of Criminal Law and Criminology*, 86(1):59–92, Fall 1995.
9. Wright and Rossi, 1986, 183.
10. The standard error for this point estimate is about four-tenths of a percentage point. Thus, the 95-percent confidence interval ranges from around 0.1 percent to 1.7 percent of gun-owning households. Cook,

Molliconi, and Cole, 1995, use data from the National Crime Victimization Survey for the period 1987–1992 to estimate 511,000 stolen guns per year.

11. Monthly Vital Statistics Report, Department of Health and Human Services, 45(3S), September 30, 1996. Table 16.

12. Hemenway, D., S.J. Solnick, and D. Azrael, "Firearm Training and Storage," *Journal of the American Medical Association*, 273(1):46–50, 1995.

13. Kleck and Gertz, 1995.

14. In 1994 about 17,000 people were shot dead in criminal assaults and justifiable homicides. Given what we know about the case fatality rate, fewer than 100,000 nonfatal gunshot woundings were known to the police. (See Cook, P.J., "The Case of the Missing Victims," *Journal of Quantitative Criminology*, 1985). Presumably, the true number of justifiable shootings was just a fraction of this total.

15. Hemenway, D., "Survey Research and Self-defense Gun Use: An Explanation of Extreme Overestimates," Harvard Injury Control Center Discussion Paper, 1996.

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The Police Foundation has published *Guns in America: Results of a Comprehensive National Survey on Firearms Ownership and Use*, which is based on the full-length report submitted to NIJ by the authors. For ordering information, call 202–833–1460 or write to the Police Foundation, Attn: Publications, 1001 22nd Street N.W., Washington, D.C. 20037.

16. Cook, P.J., "The Technology of Personal Violence." In M. Tonry (ed.), *Crime and Justice: A Review of Research* (Vol. 14), Chicago: University of Chicago Press, 1–71, 1991.

17. Cook, P.J., "Notes on the Availability and Prevalence of Firearms," *American Journal of Preventive Medicine*, 9 Supp:33–38, May/June 1993.

Findings and conclusions of the research reported here are those of the authors and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

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