

## What Do CDC's Surveys Say About the Frequency of Defensive Gun Uses?

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June 11, 2018

### **Abstract**

In 1996, 1997, and 1998, the Centers for Disease Control and Prevention (CDC) conducted large-scale surveys asking about defensive gun use (DGU) in four to seven states. Analysis of the raw data allows the estimation of the prevalence of DGU for those areas. Data pertaining to the same sets of states from the 1993 National Self-Defense Survey (Kleck and Gertz 1995) allow these results to be extrapolated to the U.S. as a whole. CDC's survey data confirm previous high estimates of DGU prevalence, disconfirm estimates derived from the National Crime Victimization Survey, and indicate that defensive uses of guns by crime victims are far more common than offensive uses by criminals. CDC has never reported these results.

## **Introduction**

The debate over gun control in the U. S. heavily revolves around the issue of the costs and benefits. The principle costs are death, injuries, and property loss due to criminal, suicidal, or accidental uses of firearms. The benefits include recreation-related uses of guns, but the most serious and consequential benefits are arguably deaths, injuries, and property loss prevented by defensive use of guns, or deterred by the potential for such use. The magnitude of these benefits are partly a function of how often guns are used for self-protection. Thus, the frequency of defensive gun use (DGU) is an important part of the American gun control debate.

At least 21 national surveys have asked large probability samples of the U.S. adult population whether they had used guns defensively, including 16 private-sponsored surveys up through 2000, surveys conducted by the Centers for Disease Control and Prevention (CDC), and a few private surveys conducted after 2000 (Kleck 2001b; Roper Center 2018). As will be discussed later, the private surveys generally yielded annual estimates of the number of DGUs by adults against other persons in the 1-3 million range, the estimates varying greatly at least partly because they addressed different subsets of the universe of DGUs or pertained to different time periods with differing crime rates (Kleck 2001b).

Gun control advocates assert that DGUs are rare, and cite “estimates” of DGU frequency based on the National Crime Victimization Survey (NCVS). This survey has yielded annual estimates of just 64,615 DGUs (McDowall and Wiersema 1994), only about 3% of the typical result of 20 other surveys. Since the extremely low NCVS estimates are uncritically cited by advocates of stricter gun control, it is worth considering why the NCVS generates such deviant results. First, the NCVS is a nonanonymous survey (the identities of respondents (Rs) are known to researchers). Second, the survey is conducted by an agency of the federal government, the U.

S. Bureau of the Census. Third, respondents (Rs) are told that the information generated by the survey will be provided to the U.S. Department of Justice – the law enforcement branch of the federal government. Fourth, Rs are asked about their self-protective actions only after they have stated where the incident occurred. In most states, for all but the few people who have carry permits, it is illegal to possess a firearm off their own property, and thus most Rs could not report a DGU carried out in a public place without confessing to the crime of unlawful carrying. Under these circumstances, there is a sound basis for doubting whether Rs would be willing to report incidents in which they had pointed a gun, and possibly shot at, another human being, regardless of the justification. Further, while the Rs are asked an open-ended question about what they might have done to protect themselves during a crime incident, no Rs are ever directly and specifically asked about DGU. Such an experience can only be reported in the NCVS if the R chooses to volunteer that specific, controversial detail.

It is less widely known that CDC has conducted surveys in which large representative samples of the adult population were asked about DGU, as part of their Behavioral Risk Factor Surveillance System (BRFSS). The DGU questions were asked of representative samples of adults in various sets of four to seven states as part of a module of firearms-related questions. To my knowledge, CDC never reported the results of those surveys, and does not currently report on their website any estimates of DGU frequency.

I only recently discovered that CDC had ever asked about DGU in their BRFSS surveys, stumbling across the DGU question while searching through the questionnaires used in the surveys for questions on other topics. Once I found the key question in the questionnaire for one year's BRFSS, I searched through the questionnaires for all the other years, from 1984 through 2016, and found the DGU question had been asked in the 1996, 1997, and 1998 surveys. It was

included as part of Optional Module 18 concerning firearms. Individual states could include these questions in their surveys if they wanted to do so. Six states chose to do so in the 1996 survey, seven in the 1997 survey, and four in the 1998 survey.

The timing of CDC's addition of a DGU question to the BRFSS is of some interest. Prior to 1996, the BRFSS had never included a question about DGU, as either a mandatory question asked of the entire sample or an optional one. Kleck and Gertz (1995) conducted their National Self-Defense Survey in February through April 1993, privately circulated their estimates of DGU in 1993 and 1994, formally presented them at the annual meetings of the American Society of Criminology in November 1994, and published the results in the Journal of Criminal Law and Criminology in the Fall of 1995 (Kleck and Gertz 1995). CDC added a DGU question to the BRFSS the very first year they could do so after that 1995 publication, in the 1996 survey. CDC was not the only federal agency during the Clinton administration to field a survey addressing the prevalence of DGU at that particular time. The National Institute of Justice (NIJ) financed a national survey devoting even more detailed attention to estimating DGU prevalence. It was fielded in November and December 1994, just months after preliminary results of the 1993 Kleck/Gertz survey became known (Cook and Ludwig 1996). NIJ and CDC helped co-finance a national survey conducted by David Hemenway and Deborah Azrael, and fielded in the Spring of 1996 (Hemenway and Azrael 2000, pp. 259, 272). CDC then bankrolled a second national survey by Hemenway that attempted to correct some of the errors in his 1996 survey. This one was fielded in the Spring of 1999 (Hemenway, Azrael, and Miller 2000, pp. 263, 267).

Neither CDC nor NIJ had ever financed a single survey asking about DGU before 1994. Perhaps there was just "something in the air" that motivated the two agencies to suddenly decide in 1994 to address the topic in at least six national surveys. On the other hand, fielding of the

surveys could have been triggered by the Kleck/Gertz findings that DGU was common. These Clinton administration agencies may have hoped that new surveys would yield lower DGU prevalence estimates than those obtained by Kleck and Gertz. Low estimates would have implied fewer beneficial uses of firearms, results that would have been more congenial to the strongly pro-control positions of the Clinton administration.

CDC has often been criticized by gun owner organizations like the National Rifle Association (NRA) as being “antigun” and for awarding research grants on firearms and violence only to researchers with strong anti-gun or pro-gun control publication records (see remarks of the NRA chief lobbyist, Cox 2017). Belief in this anti-gun bias was so strong among pro-gun forces that the NRA got Congress to slash CDC’s budget by an amount exactly equal to the budget for its program that studied firearms violence, and to insert a rider in the funding bill that read: “Provided further that none of the funds made available for injury prevention and control at the Centers for Disease Control and Prevention may be used to advocate or promote gun control” (Jamieson 2013). Of particular relevance to the present topic, CDC has helped finance surveys on defensive gun use (DGU) by David Hemenway and others that their authors interpreted as indicating that DGU was rare (Hemenway and Azrael, 2000, p. 272; Hemenway Azrael and Miller, 2000, p. 267).

To the extent that the NRA’s complaints have been widely circulated among gun owners, the CDC’s reputation as “anti-gun” could discourage Rs in surveys sponsored by CDC from reporting firearms-related behaviors, such as the ownership, carrying, or defensive use of guns. There is direct evidence of this concerning estimates of the prevalence of gun ownership. A national poll by Gallup in 1993 found that 49% of households reported gun ownership, and a 1994 Los Angeles Times national poll found the share to be 45% (Roper Center 2018), but only

34% of households reported gun ownership in CDC's 1994 Injury Control and Risk Survey (ICARIS) (Ikeda et al. 1997, p. 366). If Rs feel a reluctance to report DGUs to CDC interviewers that is similar to their reluctance to report gun ownership, CDC surveys may significantly underestimate the prevalence of DGUs.

CDC's 1994 ICARIS included a question on a topic related to DGU but only in connection with what CDC personnel called "intruder-related firearm retrievals." Researchers asked those who reported any guns in their household: "During the past 12 months, how many times did you or any other household member get a firearm because there might be an intruder in or trying to get into your home?" The researchers then established whether those retrieving a gun actually saw an intruder and believed "the intruder was frightened away because of the gun," which presumably implies that the intruder saw the gun and was threatened with it. Of the 34% of Rs reporting household gun ownership, 6% contained at least one person who, in the previous 12 months, retrieved a gun, saw an intruder, and believed the intruder had been scared away because of the gun (Ikeda, Dahlberg, Sacks, Mercy, Powell 1997). The researchers estimated that there were 497,646 incidents in which an intruder was reportedly scared away by a gun. Kleck and Gertz (1995) had found that 20.5% of DGUs were linked with burglaries, implying that the total number of DGUs is 4.88 times the number of burglary-linked DGUs ( $1/0.205=4.88$ ). If CDC's "intruder-related firearm retrievals" are interpreted as burglary-linked DGUs, these survey results indicated that there were about 2.4 million total DGUs in 1994 among persons reporting a gun in their household ( $4.88 \times 497,646 = 2.4$  million). It is, however, unclear how many of these experiences constitute DGUs, since it was only established that the gun user "retrieved" a firearm, but not whether they actually used the gun to attack or threaten the intruder. Consequently, it is debatable whether CDC generated any DGU estimates with this

survey. In contrast, they clearly did generate DGU estimates with their 1996, 1997, and 1998 BRFSS surveys.

### **CDC's Behavioral Risk Factor Surveillance System Surveys**

The BRFSS surveys are high-quality telephone surveys of very large probability samples of U.S. adults, asking about a wide range of health-related topics. Even just the subset of four to seven state surveys that asked about DGU in 1996-1998 interviewed 3,197-4,500 adults, depending on the year. This is more people than were asked about this topic in any other surveys, other than the National Self-Defense Survey conducted in 1993 by Kleck and Gertz (1995), who asked DGU questions of 4,977 people. Sample sizes were much smaller in all the rest of surveys on the topic (Kleck 2001b).

The wording of the DGU question in the BRFSS surveys was also excellent, avoiding many problems with the wording that afflicted the DGU questions used in other surveys. The exact wording was:

“During the last 12 months, have you confronted another person with a firearm, even if you did not fire it, to protect yourself, your property, or someone else?”

Respondents (Rs) had previously been instructed not to report firearm uses associated with an occupation that “requires and authorizes you to use a firearm.” Thus, the question excluded uses by military, police and others with firearm-related jobs. Further, the question appropriately excluded uses against animals (“...another person...”), asked about a specific, recent recall period (“...during the last 12 months...”), covered uses by any type of firearm (not just handguns), covered uses regardless of where they occurred (not just uses in the home), and explicitly told respondents that they should report uses even if they did not fire a gun. In sum,



the surveys used an excellent, carefully worded DGU question, in contrast to the wordings used in so many other surveys (reviewed in Kleck 2001b).

The most important shortcomings of the BRFSS surveys regarding DGUs were that (1) the DGU question was asked only in four to seven of the 50 states, and (2) the DGU question was asked only of Rs who had reported guns in their household at the time of the survey. Therefore, procedures were developed to address these problems.

### **Results - What Did CDC's Surveys Indicate About the Frequency of Defensive Gun Use?**

I downloaded the BRFSS datasets for 1996, 1997, and 1998 from the BRFSS website (CDC 2018a) and obtained frequencies on the DGU question. Three different combinations of states asked the DGU question in the BRFSS surveys in the three years it was asked. Table 1 displays which states asked the DGU question in each of the three years.

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(Table 1 about here)

The weighted and unweighted frequencies used to compute the prevalence of DGU in the three BRFSS surveys and in the NSDS are shown in Table 2. Readers should note that figures derive from the BRFSS surveys cannot be compared across states since they were based on three

different subsets of states. Thus, they reflect the prevalence of gun use in different parts of the nation. Some of the states are places where gun ownership is higher than average and one would therefore expect more defensive uses of guns, while other states are lower in gun ownership and thus presumably lower in DGU. Consequently, it is to be expected that estimates of DGU prevalence can differ radically between one year's BRFSS and another year's. These differences should not be interpreted as either inconsistencies or as necessarily reflecting real changes over time in the national prevalence of DGU.

It is the weighted frequencies in Table 2 that are meaningful because they adjust for differences in the probability of a given person being selected into the sample. Weighted frequencies are based on data weighted by the FINALWT weight (see CDC 2018a for a thorough explanation of the weighting). Nevertheless, unweighted frequencies are shown because less sophisticated readers may be skeptical of weighting procedures and suspect that they could somehow distort DGU estimates.

The unweighted frequencies are, however, also genuinely relevant to the question of how much the BRFSS results are subject to sampling error. As previously noted, the sample sizes used in the BRFSS surveys, even just for the subsets of states that asked the DGU question, are enormous, ranging from 3,197 to 4,500. Such large sample sizes help to minimize the degree to which DGU estimates could be influenced by random sampling error. For illustrative purposes, if we use the unweighted frequencies from the 1996 survey (46 DGUs among 4,500 total Rs) and assume random sampling, the 95% confidence interval estimate of the fraction of adults who had a past-year DGU for the 1996 survey would be 1.022% +/- 0.294%, or 0.73-1.32%. Note that the more meaningful weighted DGU prevalence was 1.329% in the 1996 survey, but readers are

again cautioned that this pertains only to the six states that asked the DGU question and therefore cannot, by itself, be directly compared with estimates for the U. S. as a whole.

Table 2 also includes weighted and unweighted frequencies from the NSDS conducted in the Spring of 1993, for both the continental U. S. as a whole, and for each of the three subsets of states used in the three BRFSS surveys. These figures allow us to estimate how much more common or less common DGU was in the nation as a whole compared to how common it was in each of these subsets of states. Knowing these relative levels in turn allows us to extrapolate the BRFSS estimates of DGU prevalence, based on the subsets of states, up to the nation as a whole. The NSDS-based estimated ratio of nationwide DGU prevalence over DGU prevalence in whatever subset of states asked the DGU question in a given BRFSS survey is shown in the last row of Table 2.

(Table 3 about here)

The numbers needed to estimate the number of U.S. adults who used a gun defensively in each of the years from 1996 to 1998 are shown in Table 3. The estimated prevalence of DGU for these subsets of states, based on the BRFSS, is reported in line (4) of this table. Weighted results must be used because they adjust for different probabilities of selection of persons into the survey sample.

To produce national estimates of the prevalence of DGU from the three BRFSS surveys, however, requires adjusting these prevalence estimates for the effects of two limitations of those surveys. First, they only cover the populations of four to six states (excluding Alaska and Hawaii), not the entire nation. Second, the DGU questions were only asked of people reporting current household gun ownership. Thus, our strategy was to project BRFSS results pertaining

only to some states up to the nation as a whole, and to then adjust for the omission of DGU uses by persons who did not report household gun ownership at the time they were interviewed.

The process of producing adjusted BRFSS-based DGU estimates is summarized in Table 3. We begin by estimating how many adults live in gun-owning households, because this is the population that was asked a DGU question in the BRFSS surveys. Row (1) displays Census Bureau estimates of the size of the U.S. adult (age 18+) residential population for year from 1996 through 1998 (U. S. Bureau of the Census 1999), while Row (2) shows the percent of U. S. households reporting gun ownership in national surveys. Multiplying row (1) (divided by 100) times row (2) yields the estimated number of U. S. adults living in gun-owning households, shown in row (3). (It is assumed that average household size is the same in households with or without guns).

Row (4) reports the weighted percent of adults in gun-owning households who reported a DGU in the various sets of states that asked a DGU question in the 1996, 1997, and 1998 BRFSS surveys (listed in Table 1). Recall that the raw frequencies used to compute these percentages were reported in Table 2.

We cannot directly apply these estimates to the U.S. because the sets of states do not constitute a probability sample of the U. S. The prevalence of DGU could be far higher in some states than in the nation as a whole if the states have higher-than-average rates of gun ownership and/or crime, or could be far lower if the set of states had lower gun ownership or crime rates. The substantial differences in the figures in row (4) are certainly consistent with this view. The NSDS, however, provided information that allows us to roughly extrapolate from the BRFSS figures applying to the various subsets of states to the U.S. as a whole, since the NSDS provides

both an estimate of DGU prevalence in the nation as a whole and its prevalence in any given subset of states.

This NSDS-based ratio of the DGU prevalence for the U. S. as a whole over the prevalence in the subset of surveyed states (seen in the last row of Table 2) is again reported in row (5) of Table 3. This adjustment ratio (row 5) is multiplied times the figures in row (4) to yield BRFSS-based estimates of the percent of adults in gun-owning households with a DGU *in the U. S. as a whole*, shown in row (6) of Table 3.

The BRFSS asked the DGU question only of people living in households that reported guns at the time of the interview. This excludes (1) DGUs by people who used a household gun that was no longer in the household by the time they were interviewed in the BRFSS, (2) DGUs by people who used a gun belonging to a person who was not a member of their household, and (3) DGUs by people who falsely denied having a gun in their household. This is not a trivial matter, since Kleck and Gertz (1995, p. 187) found that 21% of persons who reported a DGU had denied having a gun in their household at the time of the interview. To adjust for this difference, the DGU prevalence estimates based on BRFSS surveys were multiplied by 1.266 ( $1/0.79=1.266$ ). The figures shown in row (7) were therefore multiplied by 1.266, yielding the final BRFSS-based DGU estimates shown in row (8).

These three DGU counts average 1,138,534 per year for the period 1996-1998. This puts the CDC results squarely within the range of DGU estimates typically produced by the many private surveys (Kleck 2001b). This figure, however, is 18 times larger than the number of DGUs supposedly implied by the NCVS (McDowall and Wiersema 1994). Thus, even other federal government surveys indicate that the NCVS “estimate” of DGU prevalence is grossly inaccurate.

What little difference there is between the BRFSS estimates for 1996-1998 and those of earlier surveys could be due to declining rates of violent crime, the crime type that accounts for most DGUs. For example, the U.S. murder rate was 9.3 per 100,000 population in 1992, but just 7.4 in 1996, 6.9 in 1997, and 6.3 in 1998 (Federal Bureau of Investigation 1999, p. 64). Thus, the murder rate declined by 32% from 1992, the period covered by the Kleck and Gertz past-year DGU estimates, to 1998, the year when the last of the three BRFSS surveys with a DGU question was fielded. With fewer occasions for self-defense in the form of violent victimizations, one would expect fewer DGUs. Other things being equal, one would expect that a 32% decline in violence rates would result in a roughly similar proportional decline in DGUs. Some of the difference, however, could also be due to perceptions of the CDC as an “antigun” government agency - perceptions actively promoted among gun owners by the National Rifle Association.

### **The Potential Significance of the “Missing” Responses**

I have presented an intentionally conservative interpretation of the BRFSS results, but it should be noted that the implied DGU prevalence could be considerably higher than indicated in Table 3, depending on how one interpreted “don’t know” and “refused” responses to the DGU question. For example, in the six states asking the DGU question in the 1996 BRFSS, 1.300% answered the DGU question “yes,” but an additional 0.992% refused to answer the question or claimed to not know whether they had used a gun for self-defense.

Given CDC’s clearly worded question about a fairly dramatic sort of experience, it is hard to believe that many adults would not know whether, in just the previous 12 months, they had defended themselves with a gun. A “don’t know” response seems more plausibly interpreted

as an evasive response by someone uncomfortable with discussing such a controversial behavior with a stranger over the phone. Likewise, refusals to even answer the question seem even more likely to be responses by people who had in fact used a gun defensively but did not want to discuss it with a stranger on the phone. If a person had *not* engaged in such an action, responding “No” would be not only be the accurate response, but also the least controversial one. If the truthful answer was the totally uncontroversial “No,” why not say so?

Based on the 1996 BRFSS, if one treated all the “don’t know” or “refused” responses as indications that the respondents actually had DGU experiences, the DGU prevalence would rise from 1.300% to 2.321% - a proportional increase of 79%. Alternatively, even if just half of those giving the “missing” responses actually had a DGU experience, the prevalence would rise to 1.796%. Nevertheless, since we cannot be certain what these “missing data” responses mean, we do not treat any of them as reports of DGUs.

### **Errors in Surveys of Defensive Gun Use**

There is currently no feasible way to measure the prevalence of DGU other than surveys. Certainly police data cannot provide adequate estimates given the unwillingness of most crime victims to even report their victimizations to the police (U.S. Bureau of Justice Statistics, 1999), never mind the controversial fact that they had threatened or attacked another person with a firearm. News accounts are even less useful because news outlets would normally know only about some subset of the DGUs known to the police.

All surveys are flawed, some more than others. The BRFSS surveys, however, are among the better ones, using large probability samples, carefully crafted question wordings, and skilled interviewers. Is it nevertheless possible that even the BRFSS yields DGU estimates that

are too high? This could happen either because BRFSS samples include too many people who had a DGU experience (sample bias) or because too many people reported DGUs who did not actually have such experiences (response errors). CDC's assessment of sample biases, however, indicate that they contribute to an *underrepresentation* of persons likely to have a DGU. Their samples underrepresent both males and nonwhites – groups more likely to become crime victims and thus have occasions to use firearms for self-protection (CDC 1998). This sample bias would tend to make BRFSS-based estimates of DGU prevalence too low.

Any upward bias in the estimate would therefore have to come from response errors – respondents giving, intentionally or unintentionally, inaccurate answers to the DGU question. Critics of DGU surveys like David Hemenway (1997) have speculated about a long series of reasons why respondents in these surveys might give inaccurate answers, but their discussions are misleading because they are so one-sided. They address only sources of response errors that might make DGU estimates too high, while ignoring well-established and serious sources of response errors that would tend to make estimates of controversial behaviors too low. No one disputes that false positive responses occur – some people say “yes” to the DGU question when the accurate answer would have been “no.” Nevertheless, false positive responses cannot lead to an overestimate of DGU prevalence unless they outnumber false negative responses – people saying “no” to the DGU question when the accurate answer would have been “yes.” Hemenway and the other critics of higher DGU estimates have had nothing to say about the frequency of false negative responses, and thus nothing to say about the relative balance of these two kinds of response error (reviewed in Kleck 2001b).

There is no usable empirical evidence bearing directly on response errors in reporting DGUs in particular. There is, however, considerable evidence bearing indirectly on the issue.



We can begin with the fact that most DGUs occur away from the victim's home (Kleck and Gertz 1995, p. 185). In 1993, it was unlawful for anyone to carry a gun off their own property unless they were among the few (under 1% back then – Kleck 1997, Chapter 6) who had a carry permit. Therefore, a survey respondent had to be willing to confess to a crime (unlawful possession of a firearm) if they wanted to report a DGU that occurred in a public place. Likewise, people forbidden to possess guns regardless of location, such as convicted criminals, would have to confess to a crime to report even DGUs that occurred in their own home. The technical literature on self-report surveys of offending consistently indicates that few people report crimes that they did not commit, and many deny committing crimes that they did commit. That is, false negatives greatly outnumber false positives, and consequently response errors in surveys, on net, contribute to the *underestimation* of the prevalence of criminal offending (see the research reviewed in Kleck 2001b).

Regardless of the location of the DGU, in order to report using a gun for protection, one must be willing to admit to possessing a gun. Research on survey reporting of gun ownership has consistently found that large shares of even law-abiding gun owners falsely deny having guns, i.e. give false negative responses. On the other hand, I am not aware of any evidence of any significant numbers of false positive responses regarding gun possession (see the evidence reviewed in Kleck 2001b).

Finally, in order for survey respondents to be willing to report using a gun to protect themselves against crime, they must be willing to report the victimization attempt itself. Without a crime, there can be no defense against crime. Research on the reporting of victimization likewise indicates that substantial numbers of crime victims fail to report the victimization to surveyors (see the evidence reviewed in Kleck 2001b).

To summarize, for a person who had experienced a typical DGU to be willing to report it to a surveyor, she or he must be willing to report (1) a crime they committed (unlawful carrying), (2) possession of a gun, and (3) a crime victimization experience. Research consistently indicates that false negative responses are common in surveys asking about these topics, while false positives are rare. Therefore, as best we can tell at this point, the net effect of response errors in surveys asking about DGU is likely to be the *underestimation* of DGU prevalence.

## **Discussion**

Some cautions about these DGU estimates are in order. First, there is no way to adjust for any reluctance of gun owners to report defensive gun uses to CDC interviews or to even participate in a CDC-conducted survey, since there is no way to calculate how much NRA efforts to characterize CDC as “anti-gun” have influenced the population of gun owners.

Second, the factors we used to extrapolate from results based on four to six states up to the nation as a whole depend on small numbers of persons reporting DGUs in those subsets of states in the NSDS. To be sure, the number of persons residing in those states who were asked the DGU questions was substantial – for 337 to 535 – but the absolute number reporting a DGU in those subsets of the NSDS was small, which makes DGU prevalence estimates in those subsamples sensitive to response error. As previously noted, the dominant response error is likely to be false negatives, which would tend to make all these DGU prevalence estimates too low. This is, however, true for Rs in both the national NSDS sample as a whole, and for Rs in the subsamples of persons residing in states that asked the DGU question in the BRFSS. Thus, it is not clear whether the adjustment ratios shown in the last row of Table 2 would be too high or too low as a result of such response errors.

Third, the raw numbers of Rs reporting a DGU in the BRFSS surveys was just 29-55 in the three surveys. The numbers of persons asked the DGU question was quite large – 3,197 to 5,484 – and this minimized random sampling error, but small absolute numbers of persons reporting a DGU makes the estimates more vulnerable to response error of the sort discussed in the previous paragraph. Given that prior evidence suggests that false negative responses are more common than false positive responses, the effect of response errors is likely to be predominantly one that makes the BRFSS-based estimates of DGU prevalence too low.

Why did the CDC not report their DGU results? The agency routinely reports results of the BRFSS regarding other topics on their website, including results pertaining to subareas of the nation (CDC 2018b) and even individual states (CDC 2018c). The agency clearly regarded DGU as a topic that was sufficiently important to carefully craft DGU questions and make them available to states to use as optional parts of the very expensive BRFSS. On the other hand, CDC personnel evidently did not regard DGU as a topic significant enough to ask about in the full national survey carried out in all states. They may have correspondingly regarded results pertaining to only seven or fewer states as insufficiently important to report.

It is also possible that they decided not to report the DGU results because they believed there were problems with the research generating the results. All research has flaws, but this is not, by itself, a legitimate justification for completely suppressing important results. A better practice is to report the findings, but accompanied by appropriate caveats about limitations and possible problems with the research, since this allows readers to judge for themselves whether the limitations were so severe that the findings should be discounted altogether.

Another factor, however, might also have played a role in the decision to not report the DGU findings. For CDC's own surveys to generate high estimates of DGU prevalence was

clearly not helpful to efforts to enact stricter controls over firearms, since it implies that some strict controls might disarm a significant number of people who otherwise would have been able to use a gun for self-protection. If CDC personnel hold the pro-control sentiments that gun rights organizations attribute to them, high estimates of defensive gun uses could be unwelcome news that they would not care to disseminate widely.

### **CDC Survey-based Estimates Compared to those of Other National Surveys**

How do CDC's survey estimates of DGU prevalence compare with those derived from other national surveys? Table 4 summarizes the results of 21 other national surveys that asked a DGU question. All were based on probability samples of national populations and were conducted by professional survey organizations. All but the Pew 2017 survey were telephone surveys; the Pew survey was an online (Web-based) survey. The surveys differed in their coverage and methods, so their estimates had to be adjusted to make them as comparable as possible. The adjustments are summarized in the notes to Table 4, and detailed rationales for each adjustment may be found in Kleck (2001b). Readers who are skeptical about these adjustments may focus just on the surveys that did not require any adjustments - the Kleck and Gertz survey fielded in 1993 and the NSPOF fielded in 1994. Both yielded unadjusted DGU estimates that fall in the middle of the range of adjusted estimates.

(Table 4 about here)

The three CDC surveys yielded estimates squarely within the range of estimates generated by the 21 surveys summarized in Table 4, and confirm what the other surveys have indicated – defensive use of firearms by crime victims is common in the U. S., and more specifically is far more common than aggressive uses by criminals. For example, the National

Crime Victimization Survey estimated that there were 416,350 violent crime incidents in 2016 (U.S. Bureau of Justice Statistics 2017), while the average of the estimates of annual DGUs based on the 2014 CNN poll and the 2017 Pew survey was 2.5 million (Table 4). In sum, even when an organization perceived to be strongly “anti-gun” devised and conducted the surveys, they imply huge estimates of defensive uses – over a million per year, compared to less than half as many violent crimes in which offenders used guns.

## **Conclusions**

What do these results imply for firearms policy? If one were considering only moderate controls that would not disarm significant numbers of noncriminal Americans, it would imply very little, since such policies would presumably not substantially reduce the number of DGUs by noncriminals. In this light, it is puzzling how vociferous the objection to high DGU estimates is from gun control advocacy groups that profess to favor only moderate “common-sense” control measures and deny that they favor gun prohibition (e. g., Violence Policy Center 2018).

The number of DGUs among the noncriminal majority of the population *is*, however, highly relevant to the relative costs and benefits of prohibitionist controls aimed at disarming everyone, including the noncriminal majority. Organizations like the Brady Campaign to Prevent Gun Violence, the Violence Policy Center, and Everytown for Gun Safety insist that they do not favor prohibition but their denials are always carefully phrased so as to pertain only to the policies that they are currently actively pushing – policies that indeed do not include prohibition. Given current political realities, and public opinion polls indicating that most Americans presently oppose banning guns, or even just handguns, it would of course be futile to lobby for gun prohibition. For example, the October 2017 Gallup poll found that only 28% of

U. S. adults favor banning the possession of handguns (Roper Center 2018). Further, any admission of future prohibitionist ambitions would play into the NRA's argument that proposals for moderate controls must be opposed because they would incrementally lead to banning guns altogether. None of the major gun control advocacy organizations have publicly committed themselves to never favoring prohibition in the future. There is a wealth of evidence that the leaders and activist members of the major advocacy groups do think that banning gun possession in the general civilian population would be a good idea, and that they would favor it if its achievement ever did become politically feasible (Kleck 2001a). To the extent that the fight over guns gradually becomes a fight over gun prohibition, the true incidence of victims using firearms to defend themselves will become increasingly relevant.

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Table 1. Groups of States Analyzed<sup>a</sup>

<u>Group</u>	<u>Survey Year</u>	<u>States Included</u>
A	1996	AK, KY, LA, MD, NH, WV
B	1997	CO, HA, MS, NH, NJ, ND, OH
C	1998	LA, MT, NJ, PA

Note:

- a. Although Alaska asked the DGU question in the 1996 survey, and Hawaii did so in the 1997 survey, these states could not be used in subsequent calculations because the NSDS did not cover Alaska or Hawaii, and including these states would therefore have introduced a source of noncomparability between the BRFSS and the NSDS.

Table 2. Raw Frequencies Used to Compute DGU Prevalence and Relative Prevalence of DGU in U.S. vs. Groups of States

	<u>1996</u>	<u>1997</u>	<u>1998</u>
<b>BRFSS</b>			
Unweighted past-year DGU cases	55	29	33
Unweighted total cases	5,484	4,189	3,197
Weighted (by FINALWT) DGU cases	69,387	51,976	61,360
Weighted total cases	5,336,378	5,835,973	5,869,842
<b>NSDS</b>			
Weighted (by fwt) past-year DGU cases, U .S.	66	66	66
Weighted total cases, U. S.	4,969	4,969	4,969
Weighted % with DGU, U. S.	1.326	1.326	1.326
Weighted past-year DGU cases, group of states	10	8	4
Weighted total cases, group of states	337	535	513
Weighted % with DGU, group of states	2.967	1.495	0.780
Ratio, U. S. % DGU over group of states % DGU	0.497	0.887	1.700

Table 3. Estimating the Frequency of Defensive Gun Use Based on CDC's BRFSS Surveys<sup>a</sup>

	<u>1996</u>	<u>1997</u>	<u>1998</u>
(1) U.S. resident population age 18+ (in 1,000s)	196,044	198,156	200,296
(2) % U. S. households reporting guns (Gallup Poll)	42	42	42 <sup>b</sup>
(3) Number of adults in gun-owning households [(1) x (2)/100]	82,338,480	83,225,520	84,124,320
(4) BRFSS: % of adults in gun-owning households with DGU in group of states asking DGU question (listed in Table 1)	1.330	0.891	1.045
(5) NSDS: Ratio of U. S. DGU rate over rate in group of states (from last row of Table 2)	0.458	0.910	1.744
(6) BRFSS: Estimated % of all U. S. adults in gun-owning households with DGU [row (4) times row (5)]	0.595	0.811	1.822
(7) BRFSS: Estimated number of all U. S. adults in gun-owning households with DGU [row (6) times row (3)]	490,243	674,959	1,532,745
(8) BRFSS: Total U. S. DGUs, all adults [1.266 times row (7)]	620,648	854,498	1,940,455

Annual average of estimates in row (8) = 1,138,534

Notes:

- a. DGU prevalence rate is defined as the estimated percent of U.S. adults (age 18+) who used a gun for self-protection against a person, not including uses in connection with military, police, or security guard duties, in the 12 months before the date of the survey interview. BRFSS= Behavioral Risk Factor Surveillance System, NSDS=National Self-Defense Survey (Kleck and Gertz 1995).
- b. Gallup did not ask a gun ownership question in 1998, so their 1997 figure was used.

Table 4. Other National Surveys of Defensive Gun Use in the U.S. Besides the BRFSS Surveys<sup>a</sup>

Survey:	<b>Cambridge Reports</b>	<b>DMiA</b>	<b>DMiB</b>	<b>Hart</b>	<b>Time/CNN</b>	<b>Mauser</b>	<b>Gallup</b>
Time of Interviews:	April-May 1978	May-June 1978	December 1978	October 1981	December 1989	March-April 1990	May 1991
Sample Size:	1,500	1,500	1,010	1,228	605	344	1,002
Population covered:	Adults	Registered voters	Registered voters	Registered voters	“Firearm owners”	Residents	Adults
Gun Type Covered:	Handguns	All guns	All guns	Handguns	All guns	All guns	All guns
Recall Period:	Ever	Ever	Ever	5 years	Ever	5 years	Ever
Excluded Uses Against Animals?	No	Yes	Yes	No	Yes	Yes	Yes
Excluded Military, Police Uses?	No	Yes	Yes	Yes	Yes	Yes	No
Defensive question asked of:	Protection hgun owners	All	All	All	Gun owners	All	Rs in handgun households
Defensive question refers to:	R	Household	Household	Household	R	Household	R
Unadjusted % Adults with DGU <sup>b</sup>	3	15	7	4	9	3.79	8
Adj. % with DGU	0.45	2.22	1.14	2.01	4.50	1.5	1.20
Implied number of DGUs <sup>d</sup>	0.7 m	1.7 m	0.9 m	1.7 m	2.6 m	1.4 m	0.6m

Table 4. Other National Surveys of Defensive Gun Use in the U.S. Besides the BRFSS Surveys (continued)

Survey:	<b>Kleck &amp; Gertz</b>	<b>Gallup</b>	<b>L.A. Times</b>	<b>Tarrance</b>	<b>CDC</b>	<b>NSPOF</b>	<b>Hemenway &amp; Azrael</b>
Time of Interviews:	Feb.-April 1993	December 1993	April 1994	May 1994	April- Sept. 1994	Nov.-Dec. 1994	May-June 1996
Sample Size:	4,997	1,014	1,682	1,000	5,238	2,568	1,906
Population covered:	Adults	Adults	Adults	Adults	Adults	Adults	Adults
Gun Type Covered:	All guns	All guns	All guns	All guns	All guns	All guns	All guns
Recall Period:	1 year	Ever	Ever	5 years	1 year	1 year	5 years
Excluded Uses Against Animals?	No Yes	No	No	Yes	Yes	Yes	No
Excluded Military, Police Uses?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Defensive question asked of:	All	Gun owners	All	All	Rs in gun- owning households	All	All
Defensive question refers to:	R	R	R	R	R	R	R
Unadjusted % Adults with DGU <sup>b</sup>	1.326	1.1	0.8 <sup>c</sup>	1	2.0	1.44	0.73
Adj. % with DGU	1.326	1.63	3.18	0.36	2.0	1.44	0.29
Implied number of DGUs	2.5 m	0.9 m	6.1 m	0.7 m	3.0 m <sup>d</sup>	2.8 m	0.6 m

Table 4. Other National Surveys of Defensive Gun Use in the U.S. Besides the BRFSS Surveys (continued)

Survey:	Hearst	Hemenway	Gallup	Washington Post	CNN	Pew (Internet)
Time of Interviews:	August 1997	Spring 1999	May 2000	June 2000	Sept. 2014	March 2017
Sample Size:	2,016	2,474	1,031	1,068	1,014	3,844
Population covered:	Adults	Adults	Adults	Adults	Adults	Adults
Gun Type Covered:	All guns	All guns	All guns	All guns	All guns	All guns
Recall Period:	Ever	5 years	Ever	Ever	Ever	Ever
Excluded Uses Against Animals?	Yes	No	No	No	No	No
Excluded Military, Police Uses?	No	Yes	No	No	No	Yes
Defensive question asked of:	All	All	All	All	Gun owners	All
Defensive question refers to:	R	R	R	R	R	R
Unadjusted % Adults with DGU <sup>b</sup>	5	1.15	7	8	20	7
Adj. % with DGU	0.60	0.46	0.84	0.96	0.97	1.04
Implied number of DGUs	1.2 m	0.9 m	1.8 m	2.0 m	2.4 m	2.6 m

Abbreviations:

DMI = Decision Making Information; R = respondent; Hgun = handgun; m = million; DGU = defensive gun use; CDC = Centers for Disease Control and Prevention; NSPOF = National Survey of the Private Ownership of Firearms

Notes:

- a. Table covers surveys of probability samples of the general U.S. population that directly asked Rs about DGU. It excludes the survey reported in McDowall et al. (2000), which was instead based on samples of “commercial lists of likely gun owners” (p. 8), and the NCVS, which never asks Rs specifically about DGU.
- b. This percentage is the share of persons or households who reported a DGU for whatever recall period was used, for whatever subset of gun types or circumstances that happened to be specified in the survey’s original question. Thus, these figures are generally not even minimally comparable across surveys.
- c. This survey inquired only about DGUs outside the home.
- d. Implied DGUs is for DGUs in connection with all types of crimes, projected from the survey’s estimate for burglary-linked DGUs only.

Sources: Kleck (2001); Roper Center (2018) iPoll Databank online database of surveys.

Adjustments Applied to Estimated Percent with DGU:

To make estimates from different surveys more meaningful and comparable, they were adjusted so as to produce standardized estimates of the share of U.S. adults who used any kind of gun defensively against a human (rather than an animal) in the preceding 12 months, not including uses in connection with military, police, or security guard duties. For each deviation from this standard, the following adjustments were applied:

<i>Deviation from Standard Survey</i>	<i>Adjustment – multiply by:</i>
1. Use of 5 year recall period rather than 1 year	0.40
2. Use of “ever” lifetime recall period rather than 1 year	0.1628
3. Failure to exclude uses against animals	0.90984
4. Failure to exclude uses linked with police, military, etc.	125/155
5. Estimate covered only handguns	100/79.7
6. Estimate covered only uses in the home	100/37.3
7. Estimate covered only uses linked with burglary	100/33.8

The rationales for adjustments 1-3 can be found in Kleck (2001). Adjustment 4 was based on the finding in McDowall et al. (2000) that when Rs were not instructed to exclude incidents linked with military, police, or security guard duty, 30 of the 155 Rs who initially reported a DGU were found, after further questioning, to be reporting these kinds of duty-related experiences. Adjustments 5-7 are based on the findings in Kleck and Gertz (1995) that 79.7% of DGUs involved handguns, that 37.3% of DGUs occurred in the user’s home, and that 33.8% of DGUs were linked with burglaries.