American preferences for “smart” guns versus traditional weapons: Results from a nationwide survey

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ABSTRACT

This study examines Americans’ preferences regarding smart guns. The study builds on prior research by including previously unexamined factors, specifically victimization and comfort sharing gun ownership status with a doctor. Further, this study examines differences in preference patterns among gun owners and non-owners. Data were obtained from a nationwide online survey with 524 respondents in February 2016. The study finds that, among non-owners, older respondents and those with pro-gun attitudes are less likely to prefer smart guns to traditional firearms. Among gun owners, those with moderate political views, those with a history of victimization, and those residing in the Northeast are all more likely to prefer smart guns. Males and those with pro-gun attitudes are less likely to prefer smart guns. Education, income, race, marital status, presence of children in the home, and comfort discussing gun ownership with a doctor had no significant association with smart gun preference. Practical implications of these findings are discussed.

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1. Introduction

Across the United States, more than 30,000 individuals are killed by firearms each year; a further 67,000 are injured (Fowler et al., 2015). Although the annual count of unintentional firearm injuries has declined since the early 2000s, the number of nonfatal firearm assaults increased 52% between 1999 and 2012 while firearm suicides increased 17% between 2006 and 2012 (Fowler et al., 2015). Hospital costs alone totaled nearly $700 million in 2010 for these events (Howell et al., 2014). Firearm-related injuries and deaths are not isolated to adults. In 2014, suicide and homicide were the second and third leading causes of death, respectively, for teens ages 15 to 19; more than 80% of these homicides were committed with firearms as were 41% of suicides (Child Trends, 2015). In 2009, an average of 20 U.S. children and adolescents were hospitalized each day due to firearm injuries (Leventhal et al., 2014).

Much debate has centered on how to prevent gun violence, particularly among youth. In January of 2016, President Barack Obama called for more advanced research into “smart” gun technology (Itkowitz, 2016). Smart guns are weapons equipped with a safety feature that allows the weapon to be fired only by an authorized user. The development of this technology has focused on handguns. The Armatix Company, for example, manufactures the iP1 handgun, a weapon that will only fire when held within 10 in. of a matching wristwatch. The wristwatch itself is pin number controlled, allowing the wearer to remotely activate and deactivate the weapon (Armatix, 2015). Firearms like these are only just beginning to enter the gun sales market, though the technology has been in development for some time.

Legislators and special interest groups have pushed for greater availability of smart guns as a safety and crime-reduction mechanism. New Jersey, for instance, passed a Childproof Handgun Law in 2002, specifying that all handguns sold in the state must be smart guns within three years of the weapons becoming available on the market (State of New Jersey, 2002). The law has not yet been implemented, as slow entry into the market and political pressure on gun dealers have prevented the weapons from being sold in New Jersey (Marcus, 2016). Groups including the National Rifle Association (NRA) have opposed laws like these, arguing that the laws may limit availability and accessibility of firearms for consumers (NRA-ILA, 2016). Unfortunately, little is known about the American public’s willingness to purchase smart guns over traditional firearms, nor about the types of Americans who favor one firearm type over another. This paper presents results from a nationwide survey of more than 250 current gun owners and more than 250 current non-owners to address this need in the literature.

2. Brief history of smart gun development

Although debate has recently surged, smart guns are not a new concept. In the 1970s, Magna-Trigger launched. This add-on feature for revolvers was a magnetic attachment inserted into the revolver’s frame. This addition prevented the trigger from returning far enough to fire unless the user was wearing a specially-designed magnetic ring (Giles, 2015). In the 1990s Congress and the National Institutes of Justice funded several gun manufactures and the New Jersey Institute of Technology to support research aimed at developing advanced safety features that would prevent unauthorized use of police-issued handguns.

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In 1998, Colt Industries developed the Z40, a handgun equipped with an RFID chip and matching wristband, similar to the Armatix model in concept (Giles, 2015). The model was so controversial that the project was shelved. By year-end 1998, however, there were more than 100 patents on smart gun related technology (Borrup et al., 2014).

3. Controversy

While prototypes like those noted above have been in existence or in development for decades, controversy has prevented smart gun technology from entering into the mainstream. Debate has centered on several key questions. First, will smart guns fire as reliably and quickly as traditional firearms? One concern is that the delay involved in identifying the bearer as an authorized user may put some individuals at greater risk of death or physical injury. An example would be a police officer, who may need to fire a weapon quickly to protect self or others. A study by Sandia National Laboratories in the 1990s found that the speed of RFID technologies was satisfactory, while biometric-based systems (i.e. fingerprint recognition) did present some speed challenges (Kimberly, 2014). Unfortunately, there has been little systematic study of smart guns otherwise (Kimberly, 2014).

A second question concerns the purpose of smart guns: Do they truly prevent unauthorized users from firing guns? Will they prevent crime or child use? Currently, there are about as many guns as there are people in the U.S. (Hepburn et al., 2007). Smart gun technology will only affect newly purchased weapons. However, the majority of adolescent firearm suicides occur with the weapons of parents and other family members. Smart gun technology may prevent at least some of these adolescents from being able to fire these weapons. Further, between 2005 and 2010, more than 1.4 million guns were stolen from their owners (Bureau of Justice Statistics, 2012). If effective, smart gun technology has the potential to prevent stolen guns from being used in crime. Some smart gun advocates also argue that smart guns will prevent police officers from being killed or injured by their own weapons, a number argued to be roughly one out of every six officers killed in the line of duty (Kimberly, 2014). More research is needed, however, before the effectiveness of smart gun technology is clear. For instance, if a smart gun only requires that an authorized user be close to the weapon, the possibility remains that an unauthorized user may be able to grab and fire the weapon in a close struggle.

A remaining source of debate is cost. Since smart guns, by definition, have to incorporate special technology to match guns and users, smart guns are more costly than traditional weapons. Some sources state that smart guns will cost about twice as much as traditional handguns, when they are available on the market (Kimberly, 2014). The NRA has opposed laws mandating smart guns partially for this reason, arguing that the cost burden for consumers may be unreasonable and bar consumers from purchasing weapons (NRA-ILA, 2016).

Unfortunately, little is known about how today’s public perceives smart guns, how demand varies across demographic groups, or whether Americans would truly choose a smart gun over a traditional firearm. A recent study by Wolfson et al. (2016), for instance, asked respondents about their willingness to purchase a “childproof gun that fires only for authorized users” if they were purchasing a new handgun. Results indicated that most Americans were willing to buy this type of gun, with high interest expressed by liberals, non-owners, and those with children in the home (Wolfson et al., 2016). A previous study by the National Shooting Sports Foundation (NSSF) asked respondents “How likely would you be to purchase a gun with smart gun technology that prevented it from firing except for specific authorized users?” The NSSF study determined that Americans were largely against purchasing smart firearms (Bazinet, 2013). The NSSF poll included more than 1200 Americans, nationwide, as respondents with a margin of error of ±4.1%.

However, the Wolfson (2016) study did not ask whether respondents would choose a smart gun over a traditional firearm. Though many may be willing to consider a smart gun, how many would opt for one if traditional guns remained available? Also, how do factors like victimization affect this choice? Would potential gun owners be willing to discuss the issue with doctors and pediatricians? Does wording of the question make a difference? The NSSF study (Bazinet, 2013) may have inadvertently grouped those unwilling to buy any gun with those unwilling to buy a smart gun. Unlike the NSSF study, the Wolfson (2016) survey included the term “childproof.” More examination is needed to address these important issues. Specifically, this paper examines the views of current gun owners and non-owners, with particular attention to differences in what factors affect the attitudes of each.

4. Methods

This study is based on analysis of a 45-question, online survey with responses collected in February 2016. The survey addressed topics including gun ownership, opinions about guns and their owners, basic demographics, as well as comfort discussing gun ownership with others. In 2015, the Qualtrics survey research company was contracted to locate a nationwide sample of at least 250 gun owners and 250 non-owners to complete this survey. The only other requirement was that respondents be age 18 or over. Qualtrics maintains and contracts with active market research panels consisting of more than six million English-speaking, non-institutionalized adults able to give consent. Typically, respondents join a panel through one of three different processes including a double opt-in process, recruitment, or voluntary sign-up. When an individual qualifies for a survey, they are notified via email and invited to participate. Panelists typically receive small incentives given on a point system: these points can be pooled and later redeemed in the form of gift cards, sky miles, credit for online games, etc.

Qualtrics sent 3003 potential respondents an email invitation in February 2016, informing them that the survey was for research purposes, the title of the study, and how long the survey was expected to take. To avoid self-selection bias, the survey invitation did not include specific details about the contents of the survey. The survey invitation included a link to participate. Potential respondents who clicked this link were asked whether they had a gun in their household and if they were age 18 or older. If eligible (and the target of 250 respondents for a given ownership category not yet met), the respondent was then directed to the survey itself, electronically. Due to budget constraints, the survey was limited to a sample size of approximately 500 valid responses. Survey questions were presented in the same order to all respondents. Respondents took 8.2 min to complete the survey, on average.

From the 3003 survey invitations, 1228 responses (40.89%) were received before quotas were met. Of these, 524 were considered valid and complete responses (17.45% of total invitations). Eleven responses were excluded because the respondent was under age 18. Another 37 responses were excluded because the respondent did not agree to the terms of the informed consent document. Other responses were excluded from analysis because respondents failed data quality checkpoints (i.e. questions asking the respondent to select a specific response to indicate attentiveness) or because respondents completed the survey too quickly (<1/3 of the median response time) to suggest an attentive response. As a result of the low response rate and quotas for gun ownership, the sample is not nationally representative. Descriptive statistics will be used to compare the sample to the overall U.S. population. Due to the budget-required quota of approximately 500 valid responses, survey collection stopped when these responses were attained. Response rates would likely be higher had the survey been allowed to continue, since more individuals would have time to review the survey invitation and participate.

The primary outcome for this study, preferences for smart guns versus traditional guns, can be operationalized as either dichotomous (if undecided answers are excluded) or trichotomous. For this reason,
logistic (for the dichotomous outcome) and ordered logistic regression (for the trichotomous outcome) are utilized. All tables report odds ratios. For the trichotomous outcome, odds ratios indicate the likelihood a respondent will be observed in a higher category versus a lower category, where categories are: preferring a gun without smart technology, being undecided, or preferring a gun with smart technology. These categories are ordered such that odds ratios greater than one reflect greater likelihood of having a preference towards smart gun technology. For the dichotomous outcome, odds ratios refer to one's likelihood of favoring a smart gun over a traditional weapon. Three models are estimated for each outcome. One includes only gun ownership status and political orientation. The second includes all controls except past victimization, attitudes towards guns, and comfort reporting gun ownership to a doctor. The third includes all controls. Estimates for gun owners and non-owners are calculated both separately and jointly to assess substantive differences between groups and across the sample overall. Details on the variables included in each model, and why, are discussed in the Measures section below.

5. Measures

5.1. Smart gun preference

Respondents were asked:

“Smart” firearms are firearms that include a safety feature or features that allow the gun to fire only when activated by an authorized user. If you were purchasing a firearm, and this technology was available, which type of firearm would you purchase?

Response options included a firearm with smart gun technology, a firearm without smart gun technology, unsure, and “would never purchase a firearm.” A dichotomous measure of preference for guns with and without smart guns was created, excluding those who were unsure or unwilling to purchase any gun. A second measure was created and coded as 1 (without smart gun technology), 2 (unsure), and 3 (with smart gun technology) to assess this outcome with uncertain responses included.

5.2. Pro-gun attitudes

Since the gun type preference question noted above does not account for one’s overall opinion of guns, a measure of gun-related attitudes was included as a control. Pro-gun attitudes were measured as a summative score on six attitudinal items (alpha = 0.83), each asking respondents their extent of agreement or disagreement with a given statement. These items each ranged from 1 (strongly disagree) to 4 (strongly agree), with no neutral option. Items included “people who own guns are not as trustworthy as people who do not own guns,” “people who own guns are more violent than people who do not own guns,” “my community would be safer if more people owned guns,” “my community would be safer if more people carried guns in public,” “people who own guns are more patriotic than people who do not own guns,” and “I am more likely to visit a business where weapons are permitted.” Responses were coded such that higher values indicate more pro-gun attitudes.

5.3. Other predictors

Prior research found higher preference for smart guns among liberals, non-owners, and those with children in the home (Wolfson et al., 2016). For this reason, political views (liberal, moderate, conservative), marital status (married, single, divorced/widowed/separated), and presence of children in the home (yes/no) were included as controls. Other predictors were demographics including sex, race (white or non-white), age (18–18, 20–24, 25–29, 30–34, ..., 85–89, 90 or older), region of residence (northeast, west, midwest, south), highest level of education attained (<high school, high school/GED, some college, 2-year degree, 4-year degree, Master’s, Ph.D., professional degree (J.D.)), and household income (<$20K, $20–29K, $30–39K, $40–$49K, $50–$99K, $100K+, and other/decline to answer). Political views were assessed by respondents to self-identify as very liberal, liberal, moderate, conservative, or very conservative. Given number of categories and natural ordering, age, education, and income are treated as continuous variables in analyses and descriptive statistics. These controls are included since gun ownership varies by these demographic characteristics (Gewurz, 2013), and thus may possibly relate to attitudes or preferences related to guns.

Additional controls address other factors known to be related to gun ownership or presenting an avenue for intervention. Victimization, in particular, is included because Americans’ top reason for owning a firearm is personal protection (Swift, 2013). For this measure, respondents were asked “During the past 2 years, did anyone deliberately injure you or threaten to injure you?” with yes or no as response options. A final control, comfort reporting gun ownership status to a doctor, is measured on a Likert scale ranging from (1) very uncomfortable to (6) very comfortable. This predictor is included to assess possible variation in willingness to talk to a doctor about gun ownership, a possible avenue for prevention.

6. Results

Descriptive statistics for the sample are shown in Table 1 for categorical and binary variables. Demographically, the sample consists of more females than is typical of the U.S. population. However, percentage White matches U.S. census estimates for race. Mean age, income, and education level are also on par with U.S. Census estimates for 2014 (U.S. Census Bureau, 2015). Political leaning, region, and pro-gun mean score are consistent with estimates of gun owner demographics from the Pew Research Foundation (Gewurz, 2013). Gun households are slightly overrepresented by design, though Gallup has found that more than 40% of American households own a gun (GALLUP, 2015). Both ownership groups in the sample report a fairly high level of comfort with sharing their gun ownership status with a doctor. Based on these descriptive statistics alone, it appears than non-owners have a stronger preference for smart guns. However, regression analyses are needed to control for important covariates. In terms of non-categorical variables, mean comfort in talking about gun ownership with a doctor was similar across gun owners (mean 4.4, SD 1.68) and non-owners (mean 3.88, SD 1.73). Scores on the pro-gun attitudes scale average 2.8 (SD 0.59) for gun owners and 2.23 (SD 0.55) for non-owners.

Estimates from logistic and ordered logistic regression analyses predicting smart gun preference in the full sample are shown in Table 2. Odds ratios are shown. Conservative is the reference category for political views. South is the reference category for region. Married is the reference category for marital status. Several factors emerge as statistically significant predictors of smart gun preference. Age, income, and education are treated as continuous predictors. First, current gun owners are significantly less likely to favor smart guns over other firearms, as are those with a higher degree of pro-gun attitudes. Second, political moderates are significantly more likely than conservatives to favor smart guns over other firearms. In the dichotomous models, political moderates are roughly three times as likely to favor smart guns as political conservatives. There is no significant difference in preference between liberals and conservatives. Third, males are less likely than females to favor smart guns over other firearms. Lastly, those experiencing victimization in the past two years have a higher likelihood of favoring smart guns; they are nearly five times as likely to do so in the dichotomous models and nearly three times as likely in the trichotomous models. There is no significant variation by region, marital status, race, age, education level, having children in the home, or in comfort reporting gun ownership status to a doctor.

Since Table 2 identifies a significant difference in preference based on gun ownership, exploratory tests for interactions between gun
Table 1

|                      | Non-owners (n = 263) | Gun owners (n = 261) |
|----------------------|----------------------|----------------------|
|                      | Freq. | % (95% CI)  | Freq. | % (95% CI)  |
| **<High school**     | 4     | 1.5% (0.6, 4.0) | 3     | 1.1% (0.4, 3.5) |
| High school/GED      | 59    | 22.4% (17.8, 26.5) | 60    | 23.0% (18.3, 28.5) |
| Some college         | 71    | 27.0% (21.9, 32.7) | 77    | 29.5% (24.3, 34.5) |
| 2-year degree        | 24    | 9.1% (6.2, 13.3) | 39    | 14.9% (11.9, 18.8) |
| 4-year degree        | 74    | 28.1% (23.0, 33.9) | 67    | 25.7% (20.7,31.3) |
| Master's degree      | 26    | 9.9% (6.8, 14.2) | 11    | 4.2% (2.3, 7.5) |
| Ph.D.                | 3     | 1.1% (0.4, 3.5) | 0     | 0.0%          |
| Professional degree  | 2     | 0.8% (0.3, 2.0) | 4     | 1.5% (0.6, 4.0) |

7. Discussion

The present study set out to assess Americans’ preferences regarding smart guns. Specifically, the aim of this paper was to distinguish views of gun owners and non-owners, as well as to assess predictors that have been omitted in prior studies, including victimization and comfort discussing gun ownership with a doctor. The study finds that, among non-owners, older respondents and those with pro-gun attitudes are less likely to prefer smart guns to traditional firearms. Among gun owners, those with moderate political views, those with a history of victimization, and those residing in the Northeast are all more likely to prefer smart guns. Males and those with pro-gun attitudes are less likely to prefer smart guns. Education, income, race, marital status, presence of children in the home, and comfort discussing gun ownership with a doctor had no significant association with smart gun preference.

While popular rhetoric has often phrased the issue as pitiful gun owners against non-owners and conservatives versus liberals, results indicate that these dichotomies mask variation within subgroups and overstate differences along political lines. Rather than finding a substantial difference between liberals and conservatives, this paper finds no significant difference in preference between the two. Instead, the differences lie between those who identify as political moderates and those who identify as political conservatives. Even among gun owners, for example, there is significant variation in smart gun preference by region, attitudes, and gender. Thus, it is not the case that only non-owners of guns will favor smart guns or that only liberals will favor these weapons.

One difference between the present study and prior work is the extent of smart gun preference indicated by the sample. Wolfson et al. (2016) found that 50% of Americans would prefer to purchase a smart gun. In the present study, 52% of respondents expressed a preference for smart guns over traditional firearms. An NSSF study found that only 14% of respondents were very likely or somewhat likely to purchase a smart gun (Bazinet, 2013). Although there is only a small difference in preference between the Wolfson and current study, it may have been influenced by question wording. Wolfson et al. (2016) used the term "childproof" in their survey question. This term was not included in the survey item used by the present study, nor in the NSSF study. The use of the term childproof may lead more respondents to report favoring the weapon type by indicating the possibility of child gun use within the survey question itself. Without this indicator, terms like "authorized user" may not bring to mind the possibility that a child may inadvertently try to use the gun. Though the exact reasoning is unknown, the Wolfson study (2016) found a 10% higher preference for smart guns among those with children in the home; no significant difference was observed in the current study. However, the sample size of the present study is small in comparison.

The results have other implications for public health. A fairly recent gun injury prevention initiative involves pediatrics asking parents about family gun ownership with follow-up education on gun safety if parents answer in the affirmative (Grossman et al., 2000). The results of this study indicate that both gun owners and non-owners feel fairly comfortable sharing gun ownership status with a doctor. Non-owners express feeling somewhat comfortable discussing this issue, on average, while gun owners express greater comfort. Approximately 36% of the overall sample felt uncomfortable discussing gun ownership with a doctor. Results of this study also indicate that there is no difference in smart gun preference by region. Unlike gun owners, prior victimization is not a significant predictor of smart gun preference for non-owners. Unlike gun owners and the sample overall, male gender is also not a significant predictor. Age, however, is negatively associated with smart gun preference for non-owners; older respondents are less likely to favor smart guns than younger respondents among non-owners. There are no significant regional differences such as those observed for gun owners. There are also no significant differences based on self-identified political ideology for non-owners.

Ownership, age, sex, and race were conducted. These tests (not displayed) indicated significant interactions (p < 0.05) for race and sex, suggesting that separate analyses for gun owners and non-owners may be an appropriate assessment. Tables 3 and 4 show the same analyses as Table 2, but separately by ownership status. Table 3 displays results, in the form of odds ratios, for gun owners (n = 261). Again, conservative is the reference category for political views. South is the reference category for region. Married is the reference category for marital status. Age, income, and education are treated as continuous predictors. Results are substantively similar to those for the full sample, with one key difference; the trichotomous models indicate a significant difference by region. Those from the Northeast are more favorable towards smart guns than those residing in the South (the reference category). This regional difference was not apparent in the full sample.

Table 4 displays results for models based on non-owners. Collinearity among region and marital status restricted these analyses to the trichotomous outcome for smart gun preference. Unlike gun owners, prior victimization is not a significant predictor of smart gun preference for non-owners. Unlike gun owners and the sample overall, male gender is also not a significant predictor. Age, however, is negatively associated with smart gun preference for non-owners; older respondents are less likely to favor smart guns than younger respondents among non-owners. There are no significant regional differences such as those observed for gun owners. There are also no significant differences based on self-identified political ideology for non-owners.
gun preference based on comfort discussing gun ownership with a doctor. This has practical implications for doctors using this gun violence prevention strategy. The finding indicates that patients on either side of the smart gun debate may be willing to discuss smart gun technologies as a way to increase home firearm safety.

Another key finding relates to victimization. Among gun owners, those who have been physically victimized or received physical threats of harm in the past two years are more likely to prefer smart guns to traditional firearms. This distinction was not apparent among non-owners. These results indicate that crime victims, particularly those who are already gun owners, may be more receptive to the idea of purchasing a smart gun in the future than others. While most respondents indicated that they did not purchase a gun post-victimization, eight victims reported doing so. Currently, the top reason Americans purchase a firearm is for self-defense (Swift, 2013). However, the reason for victim preferences remains unclear. Are gun-owning victims spotting a need for gun safety that non-owners may miss? Or are gun owning victims making an association between smart guns and crime prevention? More research is needed to determine victim reasoning. Understanding this link between victimization and smart gun preference may help to identify how Americans perceive the weapons' usage and features.

8. Limitations

This study has several limitations that must be kept in mind. First, the sample is not nationally representative, with an overrepresentation of females and gun owners in comparison to the overall U.S. population. Second, the sample is small. Results that may emerge as statistically significant in a large sample may not be apparent in this study. Additionally, the response rate is low, which may be indicative of some degree of self-selection bias given the nature of the survey topic. This limits the generalizability of the results. Lastly, as with any study of this nature, results can only speak to associations between respondent characteristics and smart gun preference. Without a longitudinal study, the origin of or change in smart gun preference over time cannot be determined.

Table 2
Logistic and ordered logistic regression model predicting smart gun preference for full sample (n = 524), odds ratios shown.

|                      | Dichotomous smart gun preference (without versus with smart gun technology) odds ratios shown |
|----------------------|-----------------------------------------------------------------------------------------------|
|                      | Model A                                      | Model B                                      | Model C                                      |
| Gun owner            | 0.44** (0.08)                                | 0.46** (0.10)                                | 0.58* (0.13)                                 |
| Liberal              | 1.51 (0.40)                                  | 1.45 (0.41)                                  | 1.06 (0.32)                                  |
| Moderate             | 1.77** (0.37)                                | 1.83** (0.42)                                | 1.45 (0.35)                                  |
| Age                  | 1.00 (0.04)                                  | 0.97 (0.04)                                  | 1.02 (0.07)                                  |
| Male                 | 0.45** (0.10)                                | 0.39** (0.09)                                | 0.24** (0.08)                                |
| White                | 0.84 (0.22)                                  | 1.00 (0.27)                                  | 0.83 (0.37)                                  |
| Education level      | 0.98 (0.07)                                  | 0.94 (0.08)                                  | 0.91 (0.11)                                  |
| Income               | 1.00 (0.04)                                  | 1.00 (0.04)                                  | 1.07 (0.07)                                  |
| Children in home     | 0.84 (0.18)                                  | 0.82 (0.18)                                  | 0.93 (0.31)                                  |
| Single               | 1.22 (0.31)                                  | 0.98 (0.26)                                  | 1.39 (0.56)                                  |
| Divorced/widowed/separated | 1.01 (0.35)                                | 1.00 (0.37)                                  | 1.58 (1.06)                                  |
| Northeast            | 1.30 (0.38)                                  | 1.46 (0.44)                                  | 2.83 (1.46)                                  |
| Midwest              | 0.68 (0.17)                                  | 0.67 (0.17)                                  | 0.76 (0.30)                                  |
| West                 | 0.99 (0.28)                                  | 0.96 (0.29)                                  | 0.84 (0.38)                                  |
| Past victimization   | 2.32* (0.93)                                 | 2.36* (1.02)                                 | 2.94* (1.27)                                 |
| Pro-gun attitudes    | 0.46** (0.10)                                | 0.46** (0.10)                                | 0.38** (0.11)                                |
| Comfort reporting to doctor | 1.04 (0.06)                               | 1.04 (0.06)                                 | 0.92 (0.10)                                  |

Standard errors of coefficients displayed in parentheses.

** p < 0.01.
* p < 0.05.
+ p < 0.10.

Table 3
Logistic and ordered logistic regression model predicting smart gun preference for gun owners (n = 261), odds ratios shown.

|                      | Dichotomous smart gun preference (without versus with smart gun technology) odds ratios shown |
|----------------------|-----------------------------------------------------------------------------------------------|
|                      | Model A                                      | Model B                                      | Model C                                      |
| Liberal              | 1.54 (0.52)                                  | 1.76 (0.65)                                  | 1.50 (0.60)                                  |
| Moderate             | 2.19** (0.57)                                | 2.36** (0.70)                                | 1.89** (0.60)                                |
| Age                  | 1.12* (0.06)                                 | 1.09 (0.06)                                  | 1.12 (0.08)                                  |
| Male                 | 0.31** (0.09)                                | 0.23** (0.07)                                | 0.24** (0.09)                                |
| White                | 0.52* (0.20)                                 | 0.65 (0.26)                                  | 0.51 (0.26)                                  |
| Education level      | 0.95 (0.10)                                  | 0.90 (0.10)                                  | 0.95 (0.13)                                  |
| Income               | 1.00 (0.06)                                  | 1.00 (0.06)                                  | 1.01 (0.08)                                  |
| Children in home     | 1.11 (0.33)                                  | 1.08 (0.32)                                  | 0.99 (0.37)                                  |
| Single               | 1.82 (0.68)                                  | 1.33 (0.51)                                  | 1.66 (0.77)                                  |
| Divorced/widowed/separated | 0.72 (0.34)                                | 0.74 (0.38)                                  | 0.65 (0.52)                                  |
| Northeast            | 2.36 (0.96)                                  | 2.54* (1.06)                                 | 2.32 (1.27)                                  |
| Midwest              | 0.77 (0.25)                                  | 0.81 (0.27)                                  | 0.77 (0.34)                                  |
| West                 | 0.89 (0.33)                                  | 1.00 (0.40)                                  | 0.82 (0.42)                                  |
| Past victimization   | 3.54 (1.98)                                  | 7.53 (1.61)                                  | 7.53 (1.61)                                  |
| Pro-gun attitudes    | 0.53* (0.14)                                 | 0.41* (0.16)                                 | 0.41* (0.16)                                 |
| Comfort reporting to doctor | 0.97 (0.08)                               | 0.97 (0.08)                                 | 0.90 (0.11)                                  |

Standard errors of coefficients displayed in parentheses.

** p < 0.01.
* p < 0.05.
+ p < 0.10.
This study set out to assess American residents’ preferences regarding smart guns, building on prior studies by adding previously unexamined predictors. Results indicate that preference for smart guns is not as simple as liberals versus conservatives or gun owners versus non-owners. Rather, there is significant variation based on gender, age, region, victimization history, and attitudes. There is no variation in smart gun preference by willingness to speak with a doctor about guns. Results also indicate that wording of survey questions is influential for determining smart gun preference; omission of the term “childproof” appears to be associated with less preference in the sample than in previous studies which used this term. These findings pose several implications for public health including marketing of smart guns and the likelihood that both opponents and proponents will be willing to share their gun ownership status with doctors. As smart guns emerge onto the market, more research is needed to assess purchasing patterns and resulting impact on gun violence and child safety.

Conflict of interest

The author has no conflicts of interest.

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Table 4

Logistic and ordered logistic regression model predicting smart gun preference for non-owners (n = 263), odds ratios shown.

| Trichotomous smart gun preference (without smart technology, no preference, with smart gun technology) odds ratios shown | Dichotomous smart gun preference (without versus with smart gun technology) odds ratios shown |
|---|---|
| Model A | Model B | Model C | Model A | Model B | Model C |
| Liberal | 1.26 (0.55) | 0.90 (0.44) | 0.60 (0.31) | 1.79 (1.63) | 1.79 (1.63) |
| Moderate | 1.10 (0.40) | 1.08 (0.43) | 0.87 (0.36) | 1.97 (1.46) | 1.97 (1.46) |
| Age | 0.83* (0.06) | 0.81** (0.06) | 0.81** (0.06) | 0.81** (0.06) | 0.81** (0.06) |
| Male | 0.79 (0.31) | 0.83 (0.34) | 0.83 (0.34) | 0.83 (0.34) | 0.83 (0.34) |
| White | 1.56 (0.62) | 1.68 (0.71) | 1.68 (0.71) | 1.68 (0.71) | 1.68 (0.71) |
| Education level | 1.03 (0.14) | 1.02 (0.14) | 1.02 (0.14) | 1.02 (0.14) | 1.02 (0.14) |
| Income | 1.04 (0.07) | 1.02 (0.07) | 1.02 (0.07) | 1.02 (0.07) | 1.02 (0.07) |
| Children in home | 0.60 (0.22) | 0.56 (0.21) | 0.56 (0.21) | 0.56 (0.21) | 0.56 (0.21) |
| Single | 0.91 (0.35) | 0.76 (0.31) | 0.76 (0.31) | 0.76 (0.31) | 0.76 (0.31) |
| Divorced/widowed/separated | 2.13 (1.25) | 1.89 (1.14) | 1.89 (1.14) | 1.89 (1.14) | 1.89 (1.14) |
| Northeast | 0.76 (0.35) | 0.89 (0.43) | 0.89 (0.43) | 0.89 (0.43) | 0.89 (0.43) |
| Midwest | 0.63 (0.26) | 0.58 (0.25) | 0.58 (0.25) | 0.58 (0.25) | 0.58 (0.25) |
| West | 1.40 (0.72) | 1.16 (0.63) | 1.16 (0.63) | 1.16 (0.63) | 1.16 (0.63) |
| Past victimization | | | | | |
| Pro-gun attitudes | 0.42 (0.16) | | | | |
| Comfort reporting to doctor | 1.14 (0.12)* | | | | |

Standard errors of coefficients displayed in parentheses.

⁎⁎ p < 0.01.

* p < 0.05.

+ p < 0.10.