Firearm ownership for protection in the United States, 2023: Results from a nationally representative survey

SUPPLEMENTAL MATERIAL

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Appendix 1: Methodological and Technical Documentation for the 2023 National Firearm Attitudes and Behaviors Study

GALLUP®

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2023 National Firearm Attitudes and Behaviors Study (NFABS)

Methodology & Technical Documentation

Overview

This study examines the prevalence, contextual factors, beliefs and perceptions surrounding firearm behaviors (e.g., ownership by gun type, safe storage, training) among a nationally representative sample of U.S. adults. In addition, the survey identifies perceptions and attitudes about both firearm behaviors and healthcare-based firearm safety. The study includes both gun owners and non-owners, as well as people who do not own guns but live in homes where others do. Results will inform firearm safety programs and future studies examining firearm safety.

Participants

Inclusion/Exclusion Criteria

Eligible participants include adults (18 years or older) living in the United States. All participants were recruited from the Gallup Panel.

The Gallup Panel

The Gallup Panel is a probability-based panel of U.S. adults aged 18 and older. Gallup selects potential panel members using address-based sampling (ABS) and Random Digit Dialing (RDD) to contact U.S. households at random multiple times a year to recruit members into the panel. Because Gallup selects households at random, and because all U.S. households have an equal and known probability for selection, the panel is a representative sample of all U.S. households.

Once recruited, most Gallup Panel members choose to receive survey invitations by email and take surveys online. To be nationally representative, the Gallup Panel also includes an "offline" population that does not have, or prefers not to use, internet at home. The offline population receives survey invites by mail, completes a paper survey form, and mails it back to Gallup in a pre-paid envelope. The offline population also includes participants who choose to receive survey invitations and take surveys in Spanish as their main language.

This study sampled from the online population (with the ability to take the survey in both English and Spanish) and the offline English and Spanish speaking populations. For the offline population, we have recorded their preference to receive mailed survey invites and survey instruments in either English or Spanish. Sampled households receive the materials in the language of their choice. Gallup Panel members have already agreed to provide Gallup with their demographics and contact information and to participate in surveys on an ongoing basis.

Recruitment and Incentive — Online Panel Members

For online Gallup Panel members, Gallup emailed invitations for this study to randomly selected members.
The email invitation explains the purpose of the study and informs participants that participation is optional. The survey link is included and presented in both URL and QR scan code. Gallup also sends a series of email reminders throughout the fielding period to

maximize response rates and minimize nonresponse bias. For this study, sampled panel members were sent up to five email reminders to participate in the survey. Participants were emailed no more than two times in one week. A monetary post-paid incentive ($5) was provided to respondents who completed the survey. This is a typical incentive for survey participation, especially among members of a survey panel. While higher incentives can lead to higher response rates, the return on the incentive is smaller as the value of the incentive increases.[1] Gallup has found there is little practical value or increased response rates for panel members above $5, for a typical survey.

Recruitment and Incentive — Offline Panel Members

To recruit offline Gallup Panel members into this study, offline members received up to three physical mailings sent to their home via United States Postal Service first-class mail. The initial mailing included an invitation letter, a $5 pre-incentive, a physical paper copy of the survey that matches the online survey instrument, and a pre-paid return envelope. Pre-paid incentives have been shown to be even more effective than postpaid incentives at producing a survey response to paper survey requests by mail.[2] Using a pre-paid incentive also drastically reduces the administrative costs of tracking and paying out incentives to survey completes only. Two reminder postcards were also sent to the home a few days apart to remind sampled Panel Members to complete and return the survey to Gallup. All recruitment materials and the survey instrument were also translated into Spanish for those who prefer Spanish as their primary language.

Response Goals

The University of Michigan National Firearm Attitudes and Behaviors Study (NFABS) aimed to survey 5,000 households. A secondary goal was to achieve reportability among a few key subgroups: Black gun owners, Hispanic gun owners and parent gun owners. Gallup defines reportability for subgroup analysis at 300 completed surveys, which set the minimum goal for Black and Hispanic gun owning respondents. The goal for parents was a bit higher, at 500, to provide greater analytic power for comparing with previous Gallup and University of Michigan studies on this population. Project minimums for Black gun owners (>300), Hispanic gun owners (>300) and parent gun owners (>500) were all met.

Sampling

Gallup's team of sampling statisticians obtained a random sample of Gallup Panel members living in the United States. Selection from within the Gallup Panel and into the study is done at random and is population representative. Gallup oversampled Black (21.9% of the sample compared to ~14% of the population) and Hispanic (28.6% of the sample compared to ~19%

[1] Singer, E., & Ye, C. (2013). The use and effects of incentives in surveys. *The ANNALS of the American Academy of Political and Social Science*, 645(1), 112–141. https://doi.org/10.1177/0002716212458082
[2] Singer, E., & Ye, C. (2013). *The use and effects of incentives in surveys*. The ANNALS of the American Academy of Political and Social Science, 645(1), 112–141. https://doi.org/10.1177/0002716212458082

of the population) panel members to achieve minimum reportability for Black and Hispanic gun owners. While Gallup maintains demographic profiles on all panel members to conduct sampling by race, Gallup does not maintain a list of panel members who are gun owners. The number of survey invitations sent to members of each subgroup was calculated based on the predicted response rate from each group and the incident rate of members of that group owning a gun. Gallup scientists determined it was not necessary to oversample parents to achieve the goal number of returns for this group.

Consent

The first screen of the web survey for Gallup Panel online participants contained consent language to participate in the survey. This language was displayed on the back of the cover letter that accompanied the paper survey, providing offline Gallup panel members a chance to read the consent statement. In the consent statement, participants were informed that their participation was completely voluntary, that they could choose not to answer any questions or stop their participation at any time, that participation has risks as some survey items are sensitive in nature, that all responses are kept private and confidential, and that no one would be able to identify them as a respondent or how they responded. Participants were also provided contact information with questions and information about IRB approvals. After reading, the participant either clicked next to enter the survey (online) or started taking the paper survey (offline).

Survey Development

Survey Item Selection

The original list of survey items was developed by the University of Michigan research team. Many of the survey items were chosen from existing prevention studies, including the previous University of
Michigan/Gallup FACTS study. To fill gaps in the topics covered by the survey, some custom items were developed in partnership between the Gallup survey scientist and the University of Michigan team. Drawing items from multiple sources can lead to unintended and harmful inconsistencies in item measurement. The final survey standardized items across different measurement sources to ensure a seamless and less burdensome experience for respondents and to limit measurement error. Order and context effects were also taken into account when ordering the survey to limit bias and error.

Survey Review and Approval

Drafts of the survey were reviewed by teams at Gallup and the University of Michigan at multiple points during the development process. The survey was subject to the formal internal survey peer-review process at Gallup, which involves a team of survey

methodologists not on the project team reviewing and recommending edits to the survey. The survey also passed through both Gallup and the University of Michigan IRB processes.

Survey Topics

- **Social cohesion**
- **Anomie: breakdown of social fabric**
- **Perception of distributive and procedural justice**
- **Attitudes toward gun violence**
- **Prosocial behaviors**
- **Social determinism of health**
- **Discrimination**
- Household/Family
    - People and children living in the home
    - Concerns about firearm ownership in households with children
    - Child development, parent laxness, and parent-specific stress
    - Communication between parents
- **Attitudes toward gun safety policies**
- **Firearm training**
- **Healthcare counseling**
- **Fear of, and exposure to, community violence**
- **Firearm injury**
    - Personal gun ownership
    - Ownership and behaviors by type (handgun and long gun/rifle)
    - Motivations for ownership
    - Number of guns owned
    - Purchase in past 12 months
    - Carriage, safety and storage practices
    - Household members' ownership of guns
    - Household members' safety and storage practices
- **Anxiety, depressive and trauma-related symptoms**
- **Non-partner aggression and victimization**
- **Partner status, aggression and victimization**
- **Substance use**
- **Demographics (e.g. military status, income, employment, etc.)**

Skip Patterns

All respondents were asked questions on the topics in **bold** above. Topics that are not in bold were only asked to certain respondents, depending on their situation.

Some respondents were asked added questions in the Household/Family section if they have children living in the home.

The survey also contained multiple sections pertaining to gun ownership. All gun owners were asked a series of questions about their gun ownership in general. They were also asked

if they own handguns, long guns (such as shot guns or rifles) or both. All handgun owners were asked additional questions about the handling and storage of their handguns, while long gun owners were asked about the same for their long guns, and owners of both were asked both sections.

There was also a section that was only asked to respondents who lived in a household where someone else in the home owned a gun and were asked a few questions about those guns and their storage.

Included in this section were a few additional items that were only asked of parents who live in a household with a child who has their own gun. While the adult is likely the owner of the gun until the child is 18, children may be seen as being the possessor of their own gun for hunting or sport.

A few other sections in the survey had simple one-time skip patterns. For example, if a respondent reported experiencing any type of discrimination, a follow-up question would ask them to report why they thought that discrimination took place (for example, because of their race, sexuality, gender, etc.).

Lastly, while the survey asked some demographic questions directly (such as income and military status) Gallup maintains demographic profiles on panel members and used that information to provide standard demographic information such as age, gender and education to reduce the number of items asked on the survey.

To provide a relevant and customized survey experience to participants, the paper survey utilized skip patterns and instructions to prompt respondents to only answer relevant items. For example, instructions told a respondent that if they do not own a handgun, to skip ahead in the survey. The web survey used programming to handle all skip patterns in the background. So, when a respondent reported they did not own a handgun, for example, they automatically skipped the section for handgun owners.

Data Collection

Survey Administration

Surveys for online panel members were administered online. Participants enter the survey platform using a unique, secure link provided via their email invitation. On average, online respondents took 23 minutes to complete the survey. Guin owners, who were asked more survey items, on average took longer (28 minutes) than respondents who did not report having a gun (20 minutes). Participants who live alone and do not own a gun had a short survey covering topics such as their opinions on gun legislation and safety, general behavior and attitude items, and demographics. Participants who own guns, and different types of guns (long guns and handguns), who live in households where other people own guns, or have kids were asked to complete more survey items. At minimum, the survey contained about 80 questions that all participants would be asked to answer. Participants who skip into every skip-pattern situation (which would be rare) could receive up to 100 additional questions.

The National Firearm Attitudes and Behaviors Study web administration was fielded from May 17, 2023 – May 24, 2023, with one reminder email sent on May 22, 2023. The mail administration was fielded from May 23, 2023 – June 30, 2023, with reminder postcards sent on May 26, 2023 and May 31, 2023.

Data Protection and Storage

Gallup stores all panel member information, including contact information, and unique respondent ID, in a secure database on a secure password-protected server. The dataset of survey responses is stored in a separate secure database and only contains the unique identifier. No direct identifiers are ever included in the survey dataset. Participants enter the survey platform using a unique, secure link. The web survey instrument can only be accessed with this unique link.

Data Cleaning, Weighting and Delivery

Cleaning

At the conclusion of the data collection process, Gallup cleaned the dataset and prepared it for delivery to the University of Michigan team. Gallup removed all personally identifiable information (PII) and coded identifiers from the dataset. Blank surveys or cases that did not provide enough data to be included in weighting were also removed from the final dataset (n=11). Partially completed surveys were accepted in the final dataset, as respondents were able to skip any items they did not want to answer. Analysts may want to remove those cases, or include them, depending on the research questions they are exploring and their own analysis methodology.

At the end of data collection, all responses on the web and paper surveys were added together in a single data file. To maintain consistency, all items that were inappropriately answered were also removed. This is necessary because the web survey instrument automatically skips items in a way the paper survey cannot. For example, if a respondent on the web survey said they do not own any guns, they would skip the item asking them if they have a handgun. A paper respondent who reports they do not have a gun may errantly also report they do not have a handgun. This response to the handgun question, even though it is accurately reported, is removed to match the experience of the web survey participant. To make the web and paper surveys comparable, all errantly reported items that should have been skipped in the paper survey were removed from the final dataset.

Weighting

Gallup statisticians weight the survey data to ensure the final sample is representative of the target populations.[3] The weighting process[4] was as follows:

Base weights: Gallup constructed base sampling weight by considering the selection probability of the study.

Post-stratification weights: Due to reasons such as oversampling and nonresponse, the demographic distributions of respondents in the unweighted dataset can be different from their corresponding distributions among the U.S. adult population (aged 18 or older). For example, about 12.8% of the adult population in the U.S. is Black only, according to the Current Population Survey March 2021, while there are 18.75% respondents identifying themselves as Black only in the sample. See the comparison table below for details. To improve the relationship between the sample and the target population, Gallup further calibrates weights to match the sample to known population targets for age by race, gender, education by race, region, ethnicity, population density level, parents and gun ownership using raking. Raking is an iterative process that adjusts the base weights of the cases in the sample so the marginal totals of the adjusted weights, on specified characteristics, agree with the corresponding totals for the population. Considering that there are disparities in age and education levels among different racial groups, we have employed a dual-target approach, taking into account both age by race and education by race factors in our weighting process. This approach is designed to ensure that not only the overall age and education

distribution in our sample aligns with the target population among adults aged 18 and older, but also that it corresponds closely within each specific racial category, including white only, black only, and others.

The post-stratification weights accounted for age by race, gender, region, education by race, ethnicity, population density, parental status and gun ownership. The targets for gun ownership were based on Pew Research Center's 2017 estimates,[5] the targets for population density level were based on Census 2020,[6] the targets for parents was based on ACS five-year estimates 2017-2021, while the target for the others were all based on Current Population Survey March 2021, U.S. Census.[6]

The weights obtained through raking may however exhibit considerable variability, with some sampling units having extremely low or high weights relative to most of the other sampling units. It can lead to inflated sampling variance of the survey estimates. To resolve

[3] All work to create weights, raking, and trimming was done in SAS and R.
[4] Valliant, R., Dever, J., & Kreuter, F. (2018). Practical tools for designing and weighting survey samples. (2nd ed.) Springer.
Statistics for Social and Behavioral Sciences https://doi.org/10.1007/978-3-319-93632-1
[5] https://www.pewresearch.org/social-trends/2017/06/22/the-demographics-of-gun-ownership/ [6] https://www.census.gov/data.html
[6] https://www.census.gov/programs-surveys/cps/data.html

the issue, the weights obtained through the raking step were trimmed within each race group to avoid extreme weights. Trimming points[7] were selected based on the distribution of post-stratification weights within each race group. The trimmed weights were then normalized to make sure they sum up to the number of completed interviews.

With the above weighting approach applied, the differences in demographic distributions between the sample and the target population decrease, making the sample better representative of the adult population in U.S.

Weighting Variables in University of Michigan National Firearm Attitudes and Behaviors Study Dataset:

- Age (group) by Race (white only, black only, and the rest)
- Sex
- Education by Race (white only, black only, and the rest)
- Region
- Ethnicity (Hispanic vs. non-Hispanic)
- Parent %
- Population density
- Gun ownership

The weight variable should be used when analyzing data and will generate nationally representative estimates. This weight should also be used to generate estimates when analyzing sub-groups, such as individuals who are Black, parents, or gun owners. Although the weighting procedures used were designed to improve the estimates of key subgroups (such as parents or gun owners), it is important to note that weighting cannot perfectly eliminate bias for all potential subgroups. This is primarily because reliable population targets are not available for all potential sub-groups that can be considered in analysis (such as gun-owning parents).

To appropriately account for the design effect from weighting, and to obtain accurate standard errors, an analysis package that can take into account the complex study design should be used.

VAR	LEVELS	Unweighted %	Target %	Weighted %
AGE_RACE	White only,18-24	0.87	8.29	6.23
AGE_RACE	White only,25-34	6.78	12.90	12.51
AGE_RACE	White only,35-44	7.88	12.30	13.09
AGE_RACE	White only,45-54	8.50	11.94	11.15
AGE_RACE	White only,55-64	13.69	13.02	13.87
AGE_RACE	White only,65+	29.49	18.22	19.80
AGE_RACE	Black only,18-30	1.08	3.31	2.66

[7] Trimming points used for race groups were: White .256 and 10; Black .128 and 6.83; Other .1 and 5.9; Missing .1 and 5.9.

AGE_RACE	Black only,31-45	3.38	3.41	3.38
AGE_RACE	Black only,46-60	5.41	2.99	3.21
AGE_RACE	Black only,61+	8.88	2.93	3.39
AGE_RACE	Other,18-30	1.33	2.62	2.19
AGE_RACE	Other,31-45	3.30	2.88	3.05
AGE_RACE	Other,46-60	3.49	2.18	2.30
AGE_RACE	Other,61+	4.80	1.92	2.06
AGE_RACE	(Missing)	1.11	1.10	1.10
SEX_GROUP	Male	48.72	48.11	48.00
SEX_GROUP	Female	50.49	51.10	51.13
SEX_GROUP	(Missing)	0.80	0.79	0.86
REGION_GROUP	Northeast	15.12	17.19	16.82
REGION_GROUP	Midwest	20.48	20.63	20.57
REGION_GROUP	South	38.17	38.27	37.56
REGION_GROUP	West	26.22	23.91	25.05
EDUC_RACE	White only, Less than high school	0.65	7.28	4.28
EDUC_RACE	White only, Completed high school	6.42	21.59	18.65
EDUC_RACE	White only, Some college	21.88	20.81	22.82
EDUC_RACE	White only, College graduate & over	38.26	26.99	30.91
EDUC_RACE	Black only, Less than high school	0.60	1.29	1.06
EDUC_RACE	Black only, Completed high school	2.36	4.32	3.85
EDUC_RACE	Black only, Some college	5.90	3.81	3.96
EDUC_RACE	Black only, College graduate & over	9.89	3.22	3.77
EDUC_RACE	Other, Less than high school	0.24	0.93	0.66
EDUC_RACE	Other, Completed high school	1.11	2.10	1.49
EDUC_RACE	Other, Some college	4.33	2.16	2.49
EDUC_RACE	Other, College graduate & over	7.23	4.42	4.95
EDUC_RACE	(Missing)	1.11	1.10	1.10

ETHNIC_GROUP	Hispanic	24.36	16.86	18.32
ETHNIC_GROUP	Non-Hispanic	75.60	83.10	81.64
ETHNIC_GROUP	(Missing)	0.04	0.04	0.04
POPDEN_GROUP	Most Dense	19.22	19.27	18.69
POPDEN_GROUP	Dense	20.52	19.27	19.26
POPDEN_GROUP	Moderate	21.61	19.27	19.94
POPDEN_GROUP	Less Dense	17.69	19.27	19.34
POPDEN_GROUP	Least Dense	17.18	19.27	18.95
POPDEN_GROUP	(Missing)	3.77	3.63	3.83
PARENT_GROUP	Parent	21.05	24.02	23.76
PARENT_GROUP	Not parent	77.56	74.60	74.88
PARENT_GROUP	(Missing)	1.40	1.38	1.36
GUN_OWNER_GROUP	Currently own a gun	33.61	29.10	30.22
GUN_OWNER_GROUP	Do not currently own a gun	63.28	67.89	66.80
GUN_OWNER_GROUP	(Missing)	3.11	3.01	2.98
FCT_RACE	White (Not Multi-Race)	67.22	76.66	76.66
FCT_RACE	Black (Not Multi-Race)	18.75	12.64	12.64
FCT_RACE	Other (Other races/Multi-Race)	12.92	9.60	9.60
FCT_RACE	(Missing)	1.11	1.10	1.10

Delivery

Gallup will deliver the final weighted dataset and a brief technical description of the data collection process via a secure site, Box. The University of Michigan Study team conducting analyses will never access any identifiable data (e.g., name, another identifier or code).

Response Rate

Response rates were calculated following the guidelines established by the American Association for Public
Opinion Research 10th edition Standard Definitions.[8]

Initial Sample:	20,760
Removed (Bad addresses, RTS, etc.):	476
Total invites successfully sent:	20,284
Survey returns (before cleaning):	8,183

[8] https://aapor.org/wp-content/uploads/2023/05/Standards-Definitions-10th-edition.pdf

Response rate (8,183/20,284):	40.3% (AAPOR response rate 2)
Partial completes removed from data:	11
Final cases in the data file:	8,172
Completion rate: (8,172 / 20,284):	40.3% (AAPOR response rate 1)

There are multiple ways AAPOR defines response rates. Two response rate calculations are provided above. AAPOR Response Rate 2 calculates response rate by dividing the number of returned surveys (including partially completed survey) by the total number of deliverable mailings. AAPOR Response Rate 1 removes surveys that were partially completed (and could not be weighted or retained in the data) from the numerator, which in this case, calculates a similar 40.3% response rate.

Looking at response rates by mode, the response rate by mail was 23.1% and by web was 42%, using the AAPOR Response Rate 1 calculation.

It may be useful to conceptualize response rates for panel surveys by considering all stages of selection into the survey, including selection into the panel.[9] Gallup recruits panel members across multiple recruitment efforts throughout the year utilizing both ABS and Random Digit Dialing (RDD) methodologies. Invitations to the Gallup Panel have an approximate average response rate of 8.0%. Accounting for all stages of selection into the panel and the survey the response rate factoring in panel recruitment is 3.2% (.08 (panel invitation response rate) * .403 (study AAPOR RR1)). Note that individuals who were invited, but did not join, the Gallup Panel were not offered the opportunity to participate in this survey, limiting the usefulness of this response rate calculation. Both AAPOR RR1 and RR2 calculations factor I the rate of response to those directly offered the survey.

[9] Callegaro, Mario and Charles DiSogra. (2008). “Computing Response Metrics for Online Panels Get access Arrow.”
Public Opinion Quarterly, Volume 72, Issue 5, Pages 1008–1032, https://doi.org/10.1093/poq/nfn065

Supplemental Tables

Table S1. Included survey items and questions from National Firearm Attitudes and Behaviors Study (NFABS)

Survey topic	Survey item	Survey question	Notes
Sociodemographic characteristics	Age	Panel member age based on the date/time of survey completion	
	Gender	What is your gender?	
	Race	Which of the following describes your race?	
	Education	What is the highest level of school you have completed or the highest degree you have received?	
	Employment status	Which of the following best describes your current employment status?	
	Annual household income	What is your total annual household income, before taxes? Please include income from wages and salaries, remittances from family members living elsewhere, farming, and all other sources.	
	Community of residence	Which best describes the community that you currently live in?	
	Marital status	What is your current marital status?	
	Children (<18y) living in the household	Do you have children, under the age of 18 living in your household?	
	Served in US military	Have you ever served in the U.S military?	
	Religion	What is your religious preference?	
	Political affiliation	In politics, as of today, do you consider yourself a Republican, a Democrat, or an Independent?	
	State	US state panel member is living in	
Contextual factors relating to firearm interactions and societal attitudes	Grew up with a firearm in the home	At any time when you were growing up, were there ever any guns in your home?	
	Know of anyone who has been shot or killed by firearm	Has anyone close to you (such as family or friends) ever been shot or killed by a gun for any reason (such as an accidental injury, self-inflicted injury, or act of violence)?	
	Believe that others' have clear moral standards	In general, I feel that people have clear moral standards that they follow.	Based on measure of anomie[2,3]
	Believe that people know who they	In general, people do **not** know who they can trust and rely on	Reverse coded, based

	can trust/rely on		on measure of anomie[2,3]
Firearm motivations and behaviors	Primary motivation for handgun ownership	What is your most important reason for owning handgun(s) such as a pistol or revolver?	
	Primary motivation for long gun ownership	What is the most important reason for owning a long gun(s), such as a rifle or shotgun?	
	Primary motivation for firearm ownership	What is your most important reason for owning handgun(s) and/or long gun(s) such as a pistol or revolver?	Derived from questions about primary reason for handgun and long gun ownership
	Handgun ownership	Do you personally own at least one handgun?	
	Long gun ownership	Personal ownership: Long guns (such as a rifle, shotgun)	
	Type of firearm owned	Personal ownership: Handgun and/or long gun	Derived from handgun and long gun ownership questions
	Number of firearms owned	Number of handguns and long guns owned	
	Purchased a firearm for the first time in the last 12months	In the last 12 months, have you purchased a gun for the first time?	
	Carried a firearm outside of their home	Not counting hunting, target shooting, or for work, in the past 12 months, how often did you carry a gun anywhere outside of your home, including in your car?	
	Carried for protection	In the past 12 months, not including for work, for what reason(s) did you carry a gun outside of your home (including in your car)?	Answered yes to: I needed it for protection
	Carried for recreation	In the past 12 months, not including for work, for what reason(s) did you carry a gun outside of your home (including in your car)?	Answered yes to: Hunting or target shooting

Table S2. Characteristics of current firearm owners, United States, 2023

Characteristic	N	Firearm owner
All respondents	2,052	30.2 (28.5, 32.0)
Sociodemographics		
Age,y	2,052	50.0 (16.8)
Gender	2,051	
Male		70.2 (67, 73)
Female		29.6 (27, 32)
Transgender		0.2 (0.09, 0.40)
Race	2,049	
White		75.6 (73, 78)
Black		9.7 (8.2, 11)
Hispanic		11.7 (10, 13)
Asian		1.3 (0.77, 2.1)
Other		1.8 (1.4, 2.4)
Education	2,040	
Less than high school		3.3 (1.7, 6.3)
High school		23.9 (21, 27)
Some college		5.2 (4.3, 6.3)
Bachelor's degree or higher		67.5 (64, 71)
Employment status	2,007	
Full- or part-time		67.1 (64, 70)
Not employed		32.9 (30, 36)
Annual household income, $	1,855	
<36,000		13.3 (11, 16)
36,000-59,999		16.2 (14, 19)
60,000-119,999		39.6 (36, 43)
120,000+		30.9 (28, 34)
Community of residence	2,051	
Urban		15.4 (13, 18)
Suburban		49.8 (47, 53)
Rural		34.8 (32, 38)
Marital status	2,050	
Single / never married		18.4 (15, 22)
Married / partnered		69.0 (66, 72)
Divorced / separated / widowed		12.6 (11, 14)
Children (<18y) living in the household	2,029	
Yes		30.0 (27, 33)
No		70.0 (67, 73)
Served in US military	1,619	
Yes		18.2 (16, 21)
No		81.8 (79, 84)
Religion	2,016	
Christian (eg, Protestant, Catholic)		71.6 (69, 75)
Non-Christian (eg, Jewish, Muslim)		2.8 (2.0, 3.9)

	No religion (eg, atheistic, agnostic)		25.6 (23, 29)
Political affiliation		1,954	
	Republican		37.5 (34, 41)
	Democrat		20.1 (18, 23)
	Independent party / other		42.3 (39, 46)
Contextual factors relating to firearm interactions & societal attitudes			
Grew up with a firearm in the home		2,023	
	Yes		81.0 (78, 84)
	No		19.0 (16, 22)
Know of anyone who has been shot or killed by firearm		1,999	
	Yes		34.7 (32, 38)
	No		65.3 (62, 68)
Believe that others' have clear moral standards		2,052	3.8 (1.2)
Believe that people know who they can trust/rely on		2,052	3.1 (1.2)
Firearm motivations and behaviors			
Primary motivation for firearm ownership		1,630	
	Protection		78.8 (76, 81)
	Other (eg, hunting, shooting)		21.2 (19, 24)
Type of firearm owned		1,980	
	Handgun only		28.8 (26, 32)
	Long gun only		14.5 (12, 17)
	Handgun & Long gun		56.7 (53, 60)
Number of firearms owned		1,030	
	1		0.5 (0.18, 1.2)
	2		13.8 (11, 17)
	3		16.9 (14, 21)
	4+		68.8 (65, 73)
Purchased a firearm for the first time in the last 12months		2,052	
	Yes		6.3 (4.4, 8.9)
	No		93.7 (91, 96)
Carried a firearm outside of their home		2,052	
	Never		48.2 (45, 51)
	Once or more		51.8 (49, 55)
Carried for protection		987	
	Yes		4.8 (3.0, 7.6)
	No		95.2 (92, 97)
Carried for recreation		989	
	Yes		64.2 (59, 69)
	No		35.8 (31, 41)

Percentages (%) and corresponding 95% confidence intervals (CI) are given for categorical variables, while mean and standard deviations (SD) are given for continuous variables. N's represent the effective sample size and deviate from unweighted sample sizes.

Table S3. Prevalence of firearm motivations and behaviors by Stand Your Ground (SYG) law status

Characteristic	**N**	**SYG states** (N = 1,797)	**Non-SYG states** (N = 255)	***p* value**[†]
Primary motivation for owning a firearm	1,630			0.5
Protection		79.0 (76, 82)	76.3 (68, 83)	
Other		21.0 (18, 24)	23.7 (17, 32)	
Carried a firearm outside of their home	2,051	50.1 (47, 53)	34.9 (25, 46)	0.009
Carried for protection	987	5.1 (3.2, 8.2)	1.7 (0.48, 5.8)	0.083

Percentages (%) and corresponding 95% confidence intervals (CI). N's represent the effective sample size and deviate from unweighted sample sizes.

[†] Wilcoxon rank-sum test for complex survey samples; chi-squared test with Rao & Scott's second-order correction.

Supplemental Figures

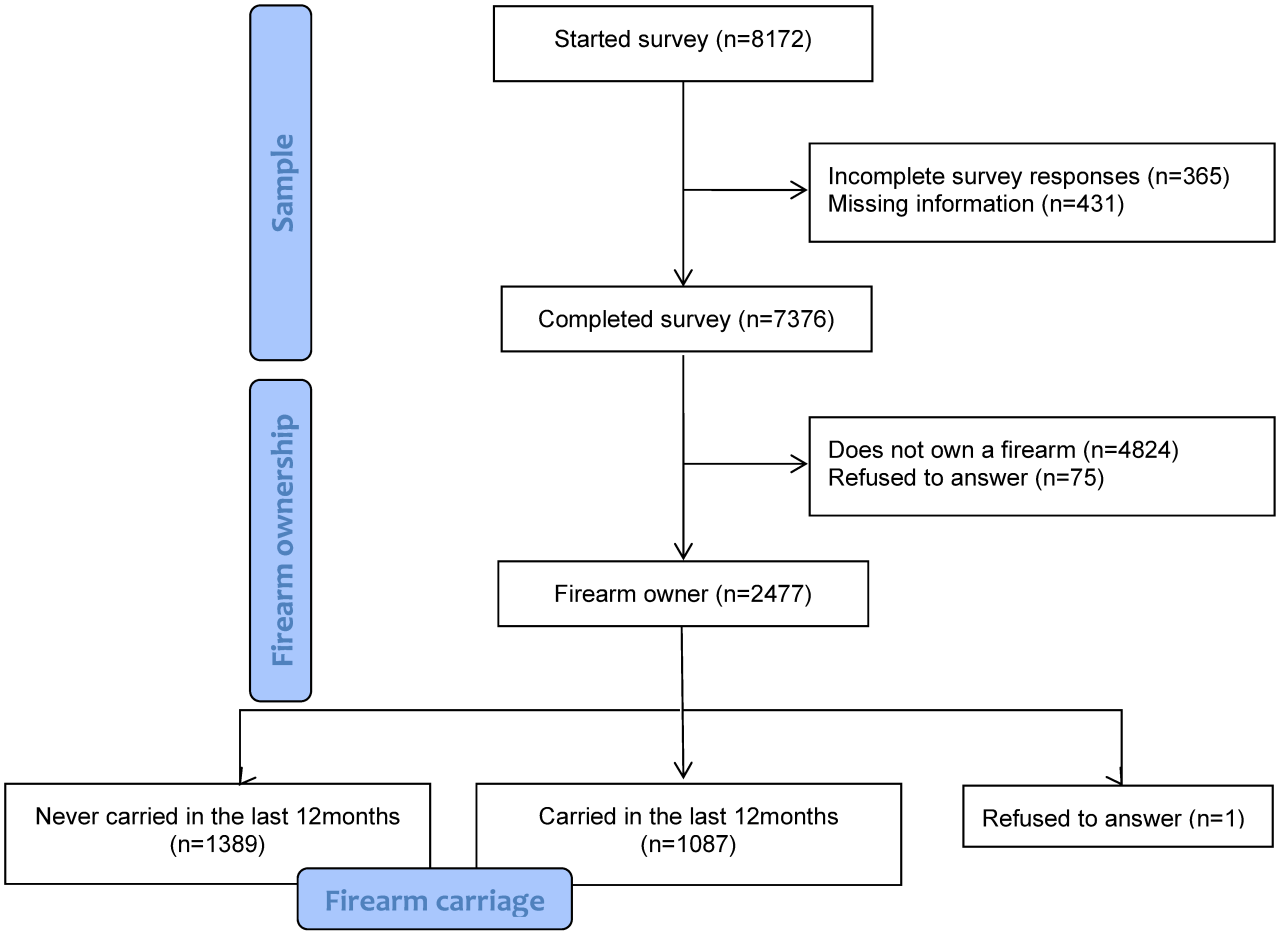

Figure S1. Flow diagram of survey participation in the National Firearm Attitudes and Behaviors Study (NFABS) for firearm owners (n=2477).

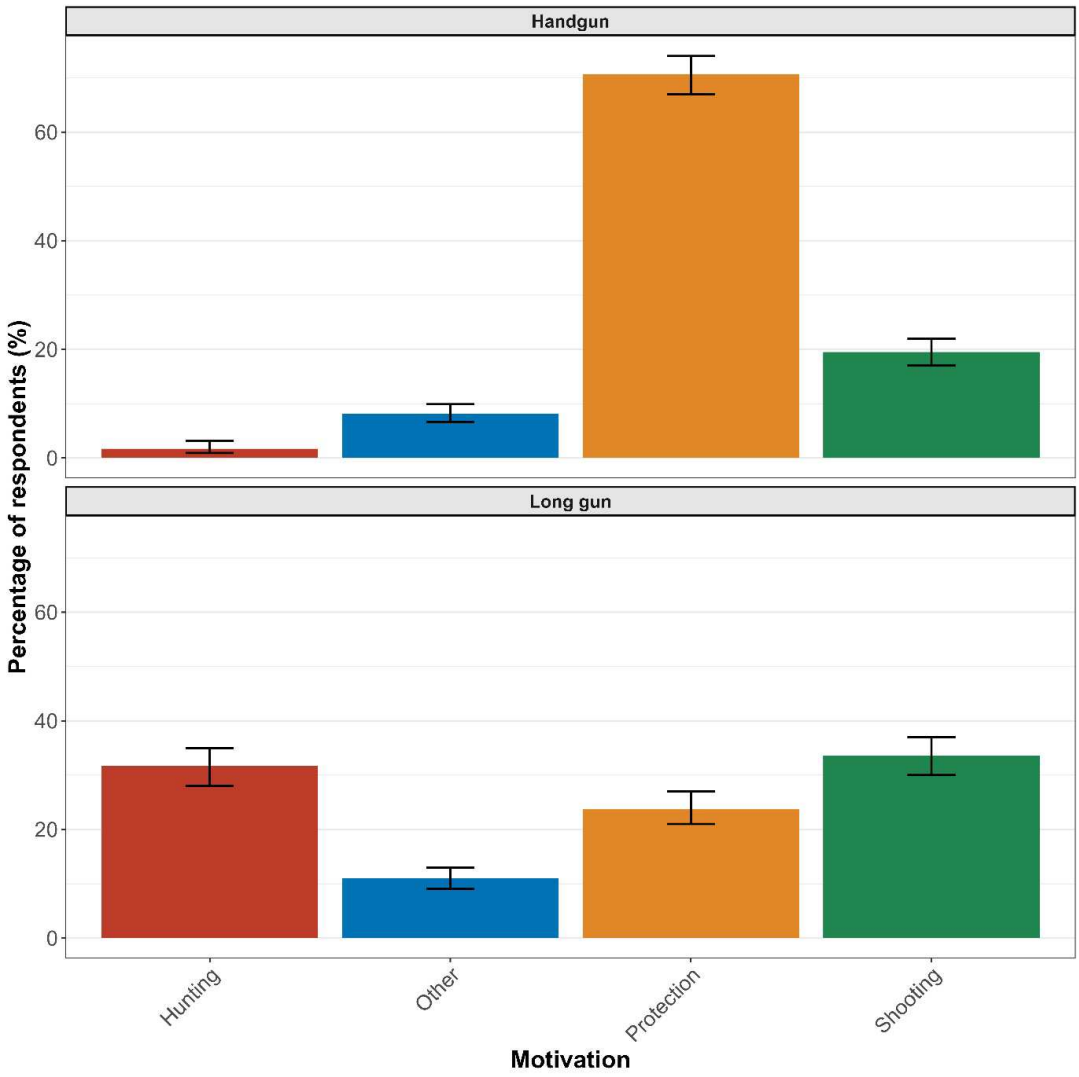

Figure S2. Motivations for owning handguns and long guns in the weighted sample (error bars represent 95% confidence intervals).

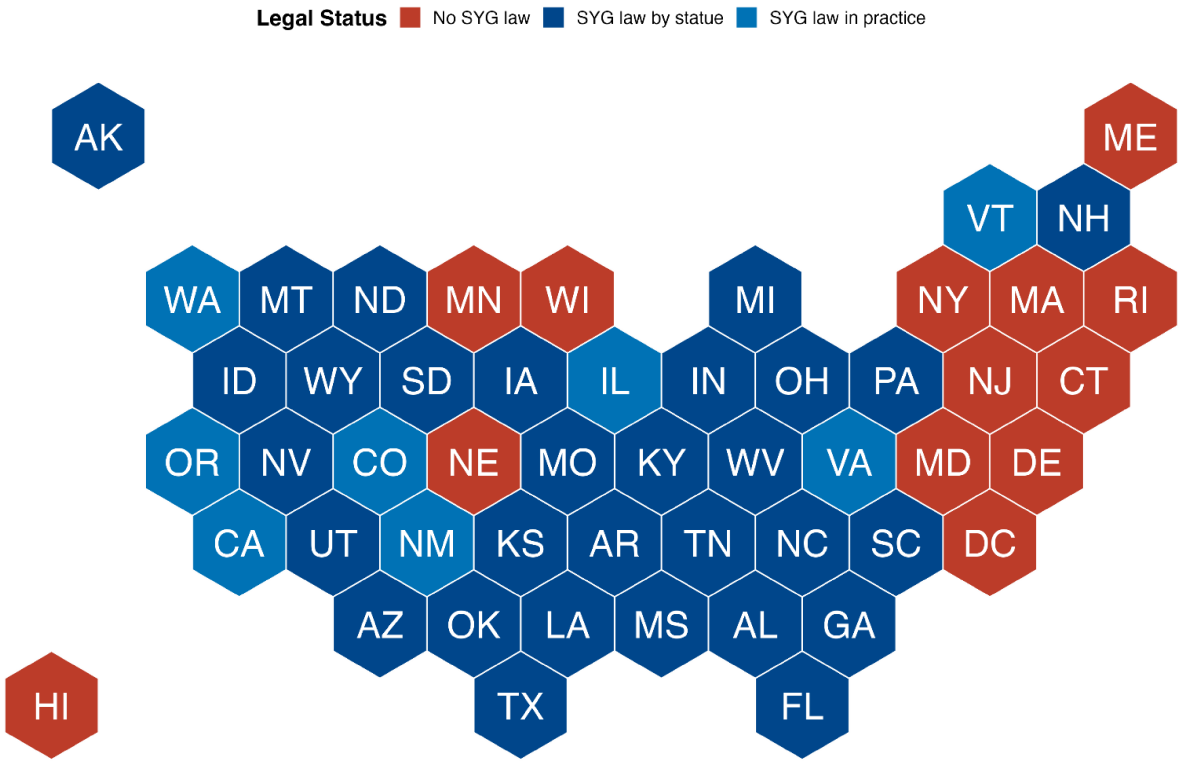

Figure S3. Classification of US states by stand your ground (SYG) laws.

Supplemental References

1. Hothorn T, Hornik K, Zeileis A. ctree: Conditional inference trees. *Compr R Arch Netw*. 2015;8.

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