



Differences in reasons for secure and unsecure firearm storage: Results from a representative cross-sectional study of nine states

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ABSTRACT

Objectives: To examine factors that differentiate firearm owners who endorse specific reasons for secure and unsecure firearm storage.

Methods: A subsample of firearm-owning adults (n = 3,119) drawn from a representative sample of adults (n = 7,785) residing in nine US states participated in an online survey.

Results: The most common reason for not always using a gun safe was concerns that they render firearms too slow to access during an emergency (60.2%). The most common reasons for current firearm storage were ensuring ready access in case of emergency (59.7%) and preventing access by children and adolescents (44.6%). Firearm owners varied on their reasons based upon current storage habits, reasons for ownership, and the presence of firearms in the home.

Conclusions: Firearm owners with children in the home are more likely to select storage methods they feel will prevent access by vulnerable individuals, whereas those who own for defensive purposes and those who store firearms loaded and unlocked are more likely to endorse storing their firearms for quick home defense and convenience and to see gun safes as unnecessary obstacles.

1. Introduction

In 2022, there were over 48,000 firearm deaths in the US (Centers for Disease Control and Prevention., 2023). The presence of a firearm in the home increases the risk for suicide, unintentional shootings, and homicide for every member of the home (Anglemyer et al., 2014). One way to reduce the risk for firearm injury and death is secure firearm storage. Definitions of secure firearm storage vary, but generally refer to storing firearms unloaded, locked, and separate from ammunition. Although it has been associated with a reduction in firearm injury and death (Grossman et al., 2005), many firearm owners do not engage in secure firearm storage (Betz et al., 2023). The primary aim of this study was thus to better understand the reasons why individuals store their firearms as they do and whether those reasons vary across specific groups of firearm owners.

Research examining firearm owners' storage preferences is limited. Existing research indicates that – independent of reasons – firearm owners prefer certain types of secure storage mechanisms. One study examining storage preferences within a representative sample from five

states found firearm owners prefer gun safes relative to cable locks and trigger locks (Anestis et al., 2023). In line with this, a study by Betz and colleagues (2023) using a nationally representative sample found that firearm owners were particularly interested in a coupon for a gun safe. The preference for gun safes over other forms of locking devices may be due to perceived ability to quickly access firearms and the lack of requirement to unload the firearm while it is locked. Indeed, firearm owners ranked speed of access and ease of as the most important features when selecting a secure storage device (Betz et al., 2023). Although previous research has established that gun safes are the most preferred storage mechanism (Buck-Atkinson et al., 2023), only 22 % of firearm owners report storing all their firearms in a gun safe (Crifasi et al., 2018). Research has yet to examine why firearm owners are not utilizing this storage method and the extent to which the reasoning for that decision varies across communities of firearm owners.

Prior research that has examined reasons firearm owners do or do not engage in secure storage broadly has mainly focused on barriers to secure storage. Anestis and colleagues (2023) found that, within a nationally representative sample of firearm owners, many owners report

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not engaging in secure storage due to a concern that locks would prevent quick access. Relatedly, parents who own firearms reported not using trigger locks due to perceived difficulty removing the lock (Aitken et al., 2020), highlighting that ease of access is a barrier to secure firearm storage. Additionally, firearm owners report not utilizing locking devices due to perceptions that they are unnecessary (Anestis et al., 2023) and expensive (Aitken et al., 2019). Although research has determined some barriers to engaging in secure storage, it has largely focused on reasons for not using locks and has yet to examine the reasons why firearm owners utilize a range of storage practices that vary in their degree of security. A more thorough understanding of the motivations for current storage approaches – regardless of whether those methods are secure – can provide vital information with respect to understanding potential mechanisms for promoting increased use of secure storage. Understanding variability in those reasons across subgroups of firearm owners can help ensure such promotion efforts are sensitive to the needs of different consumer bases.

Previous studies of firearm owners' preferences for storage devices have largely treated firearm owners as a homogenous group. However, research indicates there are multiple unique subgroups of firearm owners and that these subgroups differ on many factors, including storage habits (Bryan et al., 2022; Bond et al., 2022). When seeking to understand the reasons firearm owners engage in their current storage practices, it is important to consider factors that may differentiate subgroups of firearm owners. Previous research indicates that having children in the home (Crifasi et al., 2018) and owning a firearm for defensive purposes (Bryan et al., 2020) impact firearms ownership and storage habits. It may be that these groups vary in their priorities and perceptions of risk and thus maintain different reasons for their approaches to firearm storage.

The present study seeks to fill existing gaps by examining reasons firearm owners utilize specific firearm storage approaches. First, among those who report not always using a gun safe – the storage approach endorsed most often as preferred (e.g. Betz et al., 2023) – we aim to understand the rationale for that decision. Next, we aim to better understand the rationale for current storage methods among all firearm owners, whether or not they currently store their firearms securely. In both sets of analyses, we examine whether reasons differ between (1) those with and without children in the home, (2) those who do and do not own firearms for defensive purposes, and (3) those who do and do not report storing at least one firearm both loaded and unlocked. Our findings can help clarify the reasons different subgroups of firearm owners do or do not utilize secure storage. Secure firearm storage messaging and engineering solutions that address concerns around utilizing secure storage can be developed to promote increases in secure firearm storage.

2. Method

2.1. Participants and procedures

A representative sample ($n = 7,785$) of adults living in nine states – New Jersey ($n = 657$), Pennsylvania ($n = 957$), Ohio ($n = 868$), Minnesota ($n = 417$), Florida ($n = 1651$), Mississippi ($n = 205$), Texas ($n = 2027$), Colorado ($n = 429$), and Washington ($n = 573$) – was recruited from KnowledgePanel (KP) by Ipsos. These states were chosen to provide a perspective that differs from nationally representative samples, within which the vast majority of participants reside in specific large states (e.g. California) that may differ meaningfully from smaller states struggling with elevated rates of firearm injury and death. The specific states were chosen to represent areas that vary substantially with respect to culture, political climate, firearm ownership rates, active firearm policies, gun violence rates, demographic composition, and geographic location. KP is a probability-based panel designed to be representative of adults residing within the US. Data were collected between June 13 and July 10, 2023 (63 % completion rate). The Rutgers Biomedical and Health

Sciences Institutional Review Board approved all procedures prior to the onset of the project and all participants provided informed consent.

Data weighting was conducted via three steps. First, design weights for all KP assignees were computed to reflect selection probabilities. Next design weights for screened respondents were raked to the geodemographic distributions of their state of residence, with further adjustments within states. Third, weights were trimmed and scaled to add up to the total number of qualified respondents. Each participant received both a total sample weight and a state weight. Total weights were used for all analyses except those highlighting state level trends in firearm-related variables.

3. Measures

Demographics. Demographic variables were collected via items captured within KP profiles, with two exceptions. Our team adjusted the racial identity item to capture Indo-Caribbean and Caribbean Black identities, which are not coded within KP profiles. Additionally, our team asked participants “How would you characterize your political beliefs?”.

Firearm Access. Firearm access was assessed by asking participants “Is there typically a firearm stored in or around your home?” Those who endorsed “yes” were then asked a variety of other items related to the types of firearms in their homes, reasons for firearm access, and firearm storage tendencies.

Firearm Type(s). To assess type(s) of firearms owned, participants were asked “How many of each type of firearm do you currently have in or around your home?” Participants then selected a number from a dropdown menu for number of handguns, shotguns, and rifles.

Firearm Storage. To assess unsecure firearm storage, participants were asked “Do you ever use the following storage approach on one of your firearms?” They were then presented with “Loaded and unlocked” as an option and could respond with “yes” or “no.”.

Defensive Firearm Ownership. To assess defensive firearm ownership, participants were first asked “What are your reasons for keeping a firearm at home? Choose all that apply.” Selected answers were then carried forward for an additional question, which asked “which of the following is your primary reason for keeping a firearm at home?” Those who selected “Personal safety or protection at home” or “Personal safety or protection away from home” as their primary reason were classified as defensive firearm owners.

Reasons for Not Always Using a Gun Safe. To assess reasons for not using a gun safe, participants were first asked “Please use the following scale to indicate how often you utilize specific firearm storage practices. When answering these questions, consider only times when you are not using your firearm or transporting it to a location for a specific purpose (e.g. driving to the firing range). We are interested in how you store your firearms when they are not in use or about to be in use.” A variety of storage options were presented, including “store all of your firearms in a locked location (e.g. gun safe, lock box)”. Those who did not select “Always (100 %)” were subsequently presented with the following question “Which of the following issues have influenced your decision not to use a gun safe for at least one of your firearms? Select all that apply.” Answers included: “I do not feel gun safes are necessary,” “I am concerned that gun safes would make my firearm difficult to access quickly in an emergency,” “My firearms will not fit in a gun safe,” “Gun safes are too expensive,” “I did not acquire my firearms legally, so I do not want to alert anyone to the fact that I have firearms,” and “I do not know where to obtain a gun safe.” Due to low response rates for the final two options (0.8 % and 2.3 % respectively), results for those items are not included in our analyses.

Reasons for Firearm Storage Tendencies. To assess reasons for current storage practices, participants were asked “what are your reasons for storing your firearms the way you do? Choose all that apply.” Answers included: “To ensure ready access in case it is needed quickly during home invasion,” “To ensure ready access in case it is needed

quickly to diffuse a fight between family members or people in the home,” “To make it more difficult to access the firearm during a suicidal moment,” “To make it easier to access the firearm during a suicidal moment,” “To prevent access by children or adolescents,” “To prevent unauthorized access by someone other than children or adolescents,” “To display them so I can see them regularly,” “For convenience,” “I am not sure what else to do with them,” “I do not have any specific reason for storing my firearms the way that I do,” and “Other (please specify).” Results are only presented for answer options with sufficient response rates.

4. Data analytic plan

To examine between group differences on the percentage of individuals who endorsed specific reasons for not using gun safes and specific reasons for storing their firearms as they currently do, we utilized a series of chi-squared analyses. In these analyses, we made comparisons between three sets of groups: (1) those who do and do not typically store at least one firearm loaded and unlocked (2) those who do and do not have children in the home and (3) those who do and do not endorse defense as their primary reason for possessing firearms. For each set, we compared the groups on the percentages that endorsed each of five reasons for not using a gun safe and each of five reasons for their current firearm storage practices. Phi served as a metric of effect size (small = 0.1; medium = 0.3; large = 0.5).

5. Results

Demographic characteristics of the full sample and the subsample of firearm owners can be found in Table 1. Those with firearm access were predominantly White (84.3 %), with a fairly equal mix of men (51.1 %) and women (48.9 %) and most endorsing moderate or conservative political beliefs (80.7 %). Firearm access and storage characteristics across the nine states can be found in Table 2. Firearm access was most common in Mississippi (63.4 %) and least common in New Jersey (14.8 %). Nearly one-third (28.2 %) of firearm owners endorsed typically storing at least one firearm loaded and unlocked.

Reasons for Not Always Using a Gun Safe. Results for these analyses can be found in Table 3. Individuals who do and do not typically store at least one firearm loaded and unlocked differed on their likelihood of endorsing four of the five reasons for not always using a gun safe. Those who tend to store a firearm loaded and unlocked were more likely to indicate they view safes as unnecessary (22.3 % vs 17.3 %; $\Phi = 0.06$) and fear their firearm would be too slow to access in an emergency (78.1 % vs 51.4 %; $\Phi = 0.26$) and were less likely to indicate that they have no room for a safe (14.1 % vs 24.2 %; $\Phi = -0.12$) and that safes are too expensive (20.2 % vs 25.6 %; $\Phi = -0.06$).

Those who do and do not have children living in their home only differed on one reason for not always using a gun safe. Those with children in the home were less likely to indicate that they view safes as unnecessary (11.6 % vs 22.0 %; $\Phi = -0.12$).

Defensive and non-defensive firearm owners differed on three reasons for not always using a gun safe. Defensive firearm owners were more likely to indicate that they fear their firearms will be too slow to access in an emergency (63.6 % vs 22.3 %; $\Phi = 0.23$) and less likely to endorse not having room for a safe (19.4 % vs 37.9 %; $\Phi = -0.13$) and that safes are too expensive (23.0 % vs 32.6 %; $\Phi = -0.06$).

Reasons for Current Firearm Storage Practices. Results for these analyses can be found in Table 4.

Individuals who do and do not typically store at least one firearm loaded and unlocked differed on their likelihood of endorsing all five reasons for current firearm storage practices. Those who typically store at least one firearm loaded and unlocked were more likely to indicate they store their firearms as they do to ensure ready access in case of home invasion (90.0 % vs 47.4 %; $\Phi = 0.39$) and for convenience (28.0 % vs 12.3 %; $\Phi = 0.19$) and less likely to prevent access during a suicidal

Table 1
Demographic characteristics of the full sample of adults in nine US states and of participants who endorsed typically keeping a firearm in or around their homes (2023).

	Full Sample % (n)	Firearms In/Around Home % (n)
Racial Identity		
AIAN	3.4 (268)	4.4 (137)
Asian	5.1 (399)	2.8 (87)
Black	11.9 (929)	8.6 (268)
Caribbean Black	1.0 (80)	0.8 (26)
Indo Caribbean	0.5 (42)	0.7 (23)
Native Haw/Paci. Islander	0.4 (33)	0.2 (6)
White	76.3 (5937)	84.3 (2610)
Other	6.9 (539)	5.9 (183)
Sex		
Male	47.1 (3669)	51.1 (1584)
Female	52.2 (4067)	48.9 (1518)
Age		
18–29	16.7 (1304)	13.0 (407)
30–44	26.8 (2086)	25.9 (808)
45–59	25.1 (1952)	27.6 (861)
60+	31.4 (2443)	33.5 (1043)
Education		
Less than High School	5.2 (408)	5.2 (161)
High School Degree	31.0 (2412)	30.5 (951)
Some College	29.4 (2291)	32.5 (1015)
Bachelor’s Degree	19.9 (1546)	19.1 (596)
Advanced Degree	14.5 (1127)	12.7 (396)
Kids in Home (Age 0–17)		
Yes	31.6 (2463)	32.1 (1002)
No	68.4 (5321)	67.9 (2117)
Political Beliefs		
Highly Conservative	10.5 (815)	14.6 (455)
Somewhat Conservative	21.7 (1692)	27.9 (870)
Moderate	40.1 (3119)	38.2 (1191)
Somewhat Liberal	17.6 (1369)	12.9 (403)
Highly Liberal	9.3 (728)	5.2 (192)
State of Residence		
New Jersey	8.4 (657)	3.1 (97)
Pennsylvania	12.3 (957)	13.2 (412)
Ohio	11.2 (868)	11.7 (365)
Minnesota	5.4 (417)	6.2 (194)
Florida	21.2 (1651)	18.7 (583)
Mississippi	2.6 (205)	4.1 (128)
Texas	26.0 (2027)	30.0 (934)
Colorado	5.5 (429)	5.6 (174)
Washington	7.4 (573)	7.5 (233)

Note: All percentages are weighted.

moment (2.5 % vs 5.4 %; $\Phi = -0.06$), to prevent access from children or adolescents (20.1 % vs 54.4 %; $\Phi = -0.31$), and to prevent unauthorized access by someone other than children and adolescents (15.9 % vs 39.5 %; $\Phi = -0.23$).

Individuals who do and do not have children living in the home differed on all five reasons for storing firearms as they currently do. Those with children in the home were more likely to endorse storing their firearms as they do to prevent access during a suicidal moment (8.0 % vs 3.0 %; $\Phi = 0.11$), to prevent access by children or adolescents (65.4 % vs 35.0 %; $\Phi = 0.29$), and to prevent unauthorized access by someone other than children or adolescents (43.8 % vs 27.7 %; $\Phi = 0.16$) and less likely to endorse storing as they do to ensure ready access during a home invasion (55.3 % vs 61.7 %; $\Phi = -0.06$) and for convenience (14.3 % vs 18.0 %; $\Phi = -0.05$).

Defensive and non-defensive firearm owners only differed on one reason for current firearm storage practices. Defensive firearm owners were more likely to endorse storing firearms as they do to ensure ready access during a home invasion (62.7 % vs 25.8 %; $\Phi = 0.20$).

6. Discussion

Using a representative sample of nine US states, we analyzed

Table 2

Firearm access and firearm storage characteristics for the full sample of adults in nine US states and broken down by participants' state of residence (2023).

	Total % (n)	NJ % (n)	PA % (n)	OH % (n)	MN % (n)	FL % (n)	MS % (n)	TX % (n)	CO % (n)	WA % (n)
Firearm Access	40.1 (3119)	14.8 (76)	43.9 (420)	42.8 (440)	47.3 (285)	36.1 (570)	63.4 (116)	47.1 (835)	41.6 (167)	41.7 (247)
Loaded & Unlocked	28.2 (794)	13.6 (9)	26.3 (98)	23.3 (90)	14.5 (38)	34.8 (177)	36.9 (38)	30.1 (234)	23.8 (34)	30.5 (69)
Handguns										
0	10.8 (299)	10.4 (7)	9.7 (34)	12.9 (48)	27.8 (68)	10.9 (56)	7.8 (8)	9.0 (69)	9.0 (13)	6.0 (13)
1	42.7 (1181)	59.7 (40)	41.3 (145)	41.2 (153)	39.6 (97)	43.8 (226)	46.6 (48)	40.1 (309)	51.0 (74)	42.7 (93)
2-3	31.1 (858)	20.9 (14)	27.1 (95)	33.4 (124)	17.6 (43)	34.5 (178)	25.2 (26)	34.0 (262)	29.7 (43)	32.6 (71)
4+	15.4 (427)	9.0 (6)	21.9 (77)	12.4 (46)	15.1 (37)	10.9 (56)	20.4 (21)	16.9 (130)	10.3 (15)	18.8 (41)
Shotguns										
0	38.3 (946)	58.2 (32)	27.7 (94)	36.4 (117)	32.0 (80)	53.3 (233)	27.2 (25)	37.3 (249)	39.9 (55)	31.2 (63)
1	35.3 (870)	30.9 (17)	29.2 (99)	35.5 (114)	29.6 (74)	28.6 (125)	44.6 (41)	28.5 (257)	42.8 (59)	44.6 (90)
2-3	18.2 (449)	9.1 (5)	24.8 (84)	20.6 (66)	24.4 (61)	15.6 (68)	20.7 (19)	16.9 (113)	10.1 (14)	17.8 (36)
4+	8.2 (203)	1.8 (1)	18.3 (62)	7.5 (24)	14.0 (35)	2.5 (11)	7.6 (7)	7.2 (48)	7.2 (10)	6.4 (13)
Rifles										
0	33.7 (834)	53.7 (29)	22.5 (75)	35.1 (114)	19.8 (49)	47.7 (205)	21.7 (20)	36.0 (246)	33.3 (47)	20.7 (42)
1	29.2 (723)	31.5 (17)	20.4 (68)	36.3 (118)	32.0 (79)	28.8 (124)	27.2 (25)	28.9 (198)	33.3 (47)	30.5 (62)
2-3	22.3 (553)	9.3 (5)	29.3 (98)	22.2 (72)	28.7 (71)	15.6 (67)	28.3 (26)	21.5 (147)	20.6 (29)	27.1 (55)
4+	14.9 (368)	5.6 (3)	27.8 (93)	6.5 (21)	19.4 (48)	7.9 (34)	22.8 (21)	13.6 (93)	12.8 (18)	21.7 (44)

Note: Firearm Access = 1 + firearm typically stored in or around home; Loaded & Unlocked = 1 + firearm typically stored loaded and unlocked; NJ = New Jersey; PA = Pennsylvania; OH = Ohio; MN = Minnesota; FL = Florida; MS = Mississippi; TX = Texas; CO = Colorado; WA = Washington; All percentages are weighted.

Table 3

Chi-squared analyses examining differences between firearm-owning groups in nine US states – those who do and do not typically store firearms loaded and unlocked, those who do and do not have children living in the home, and those who do and do not primarily own firearms for defensive purposes – on reasons for not always using a gun safe (2023).

	Unnecessary % (n)	Slow Access In Emergency % (n)	Firearms Will Not Fit % (n)	No Room For A Safe % (n)	Safes Are Too Expensive % (n)
All Firearm Owners	19.0 (341)	60.2 (1082)	6.1 (109)	20.9 (376)	23.8 (429)
Loaded & Unlocked					
Yes	22.3 (131)	78.1 (459)	5.2 (30)	14.1 (83)	20.2 (119)
No	17.3 (210)	51.4 (623)	6.5 (79)	24.2 (293)	25.6 (310)
X ²	6.37	118.05	1.39	24.32	6.26
p	0.012	0<.001	0.239	0<.001	0.012
Φ	0.06	0.26	-0.03	-0.12	-0.06
Children in Home					
Yes	11.6 (60)	58.4 (304)	6.2 (32)	22.0 (114)	25.8 (134)
No	22.0 (281)	60.9 (779)	6.0 (76)	20.5 (262)	23.0 (295)
X ²	26.12	0.89	0.03	0.47	1.51
p	0<.001	0.346	0.857	0.491	0.219
Φ	-0.12	-0.02	0.00	0.02	0.03
Defensive Ownership					
Yes	19.0 (313)	63.6 (1049)	5.8 (96)	19.4 (320)	23.0 (380)
No	19.2 (28)	22.3 (33)	8.5 (13)	37.9 (56)	32.6 (48)
X ²	0.00	96.77	2.09	27.89	6.60
p	0.982	0<.001	0.148	0<.001	0.010
Φ	0.00	0.23	-0.03	-0.13	-0.06

Note: Loaded & Unlocked = 1 + firearm typically stored loaded and unlocked; Defensive Ownership = Protection at or away from home endorsed as primary reason for having a firearm; All percentages are weighted.

differences in reasons for firearm storage practices across three groups of firearm owners: those who report storing a firearm (loaded and unlocked), those who report living with children in the home, and those who report owning firearms primarily for defensive purposes. Prior research has examined the prevalence of various storage methods (Anestis et al., 2023; Johnson et al., 2004) – the current study was motivated to understand the reasons behind current firearm storage practices. Our analyses produced two main findings. First, we detected significant group differences in reasons for not using a gun safe, despite research suggesting firearm owners prefer gun safes over other methods of storage (Anestis et al., 2023; Betz et al., 2023). Second, we found differences in the reasons for firearm owners' current storage methods more broadly, particularly among firearm owners who store a firearm unsecured and those with children in the home.

A clearer understanding of why firearm owners choose not to use a

gun safe is vital. Identifying barriers to uptake among subgroups of owners can inform tailored messaging while addressing the consumer concerns that prevent secure storage (Anestis et al., 2022; Semenza et al., 2023 Jun). Those who reported storing their firearms loaded and unlocked were more likely to deem safes unnecessary and to indicate safes impede speed of access to firearms in emergencies. At the same time, owners storing a firearm loaded and unlocked were less likely to be concerned with having enough room for a safe or the expense of safes. Those who owned a firearm primarily for defensive purposes were similarly more likely to say safes slow down access to firearms in emergencies.

Together, these findings imply that messaging focused on the technological utility and ease of access of a gun safe may encourage those currently storing their firearm unsecured to purchase and use a safe. On the other hand, messaging about the size or expense of a gun safe may

Table 4

Chi-squared analyses examining differences between firearm-owning groups in nine US states – those who do and do not typically store firearms loaded and unlocked, those who do and do not have children living in the home, and those who do and do not primarily own firearms for defensive purposes – on reasons for current firearm storage practices (2023).

	Ensure Ready Access (Home Invasion) % (n)	Prevent Access (Suicidal Crisis) % (n)	Prevent Access (Child/Adolescent) % (n)	Prevent Access (Not Child/Adolescent) % (n)	Convenience % (n)
All Firearm Owners	59.7 (1671)	4.6 (128)	44.6 (1250)	32.8 (918)	16.8 (471)
Loaded & Unlocked					
Yes	90.0 (709)	2.5 (20)	20.1 (158)	15.9 (125)	28.0 (222)
No	47.4 (958)	5.4 (108)	54.4 (1090)	39.5 (791)	12.3 (246)
X ²	417.62	10.53	270.20	143.19	102.32
p	0<.001	0.001	0<.001	0<.001	0<.001
Φ	0.39	−0.06	−0.31	−0.23	0.19
Children in Home					
Yes	55.3 (492)	8.0 (71)	65.4 (582)	43.8 (389)	14.3 (127)
No	61.7 (1179)	3.0 (58)	35.0 (668)	27.7 (529)	18.0 (344)
X ²	10.18	33.89	228.56	71.15	5.96
p	0.001	0<.001	0<.001	0<.001	0.015
Φ	−0.06	0.11	0.29	0.16	−0.05
Defensive Ownership					
Yes	62.7 (1614)	4.6 (118)	45.0 (1159)	33.2 (855)	17.2 (442)
No	25.8 (57)	4.7 (10)	40.3 (89)	28.2 (62)	12.7 (28)
X ²	113.82	0.00	1.69	2.30	2.85
p	0<.001	0.981	0.194	0.130	0.092
Φ	0.20	0.00	0.03	0.03	0.03

Note: Loaded & Unlocked = 1 + firearm typically stored loaded and unlocked; Defensive Ownership = Protection at or away from home endorsed as primary reason for having a firearm; All percentages are weighted.

not resonate. This highlights that, although firearm owners have indicated interest in receiving coupons for meaningful discounts on high price firearm storage options (Betz et al., 2023), there is meaningful variability in the extent to which such approaches would resonate among those not currently using gun safes. In fact, marketing focused only on size or expense could deter certain firearm owners from considering safes if they feel that their concerns about access and necessity are not adequately reflected.

A notable pattern in the results relates to differences in reasons for choosing firearm storage practices. Those who store a firearm loaded and unlocked were most concerned about easy access and convenience, whereas preventing access to people that might harm themselves or others was less of a priority. Similarly, those who indicated primarily owning a firearm for defensive purposes were more likely to endorse ready access as an important factor. The opposite was true among those with children in the home – those owners were much more likely to say preventing access for others was a reason for current firearm storage practices and less likely to endorse reasons related to ease of access and convenience.

This discrepancy further underscores that messaging about firearm storage must be tailored to different groups depending on their motivations for owning a firearm and the context of their everyday lives. Marketing secure storage methods to prevent firearm access for children and those in suicidal crisis may most effectively connect with parents, grandparents, or firearm owners with young siblings. However, preventing family access may not be as important to those without children in the home or those currently storing firearms unsecured. Emphasizing ease of access and convenience for secure methods like gun safes may be more impactful among this subgroup (Rowhani-Rahbar, 2023). Alternatively, messaging that effectively conveys the risk of unsecured firearms in the home with respect to injury and death relative to the potential value of unsecured firearms in thwarting a home invasion may impact the cost-benefit analysis of firearm owners as they determine how to store their firearms.

There are limitations to this study. First, our data were limited to a sample of nine states. Although these states represent each major region in the country, future research should leverage national data to test generalizability. Second, the cross-sectional nature of our data means we could not identify causal relationships. Third, we were unable to

examine other reasons for not using a gun safe that could influence storage decisions, such as whether the gun safe uses a biometric lock or whether owners are already familiar with how these safes operate. Lastly, we did not examine reasons for storing firearms in a vehicle, limiting our understanding of the extent to which our results apply to storage within the home versus within property kept near the home.

This study demonstrates significant group differences in motivation for firearm storage and the use of gun safes among those who already store their firearm unsecured, report having children in the home, and own a firearm primarily for defensive purposes. Secure storage can meaningfully reduce firearm injury and death (Grossman et al., 2005; Rowhani-Rahbar et al., 2016) but public communication regarding the benefits of secure methods must be effectively tailored to subgroups of firearm owners based on their reasons for firearm ownership and the context of their daily lives. A one-size-fits-all approach to messaging is unlikely to be effective and may, in fact, serve to alienate groups of firearm owners.

CRedit authorship contribution statement

Michael D. Anestis: Writing – review & editing, Writing – original draft, Supervision, Funding acquisition, Formal analysis, Conceptualization. **Allison E. Bond:** Writing – original draft, Conceptualization. **Daniel C. Semenza:** Writing – review & editing, Writing – original draft, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Dr. Anestis reports personal income in the form of book royalties, speaking fees, consulting fees, and training fees related to secure firearm storage. Dr. Anestis also reports grant funding on separate projects

related to the understanding of secure firearm storage.

Data availability

Data will be made available on request.

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