



Firearm Perceptions and Storage Practices at Home: A Missouri Firearms Survey Report



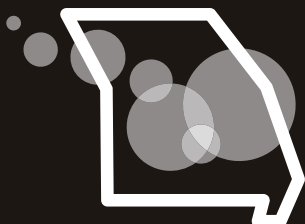
**INSTITUTE FOR FIREARM
INJURY PREVENTION**
UNIVERSITY OF MICHIGAN

August 2023

**Prepared by the University of Michigan
Institute for Firearm Injury Prevention and
Missouri Foundation for Health**

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*Missouri Foundation
for Health*

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About the University of Michigan's Institute for Firearm Injury Prevention: The Institute for Firearm Injury Prevention at the University of Michigan fosters collaboration among researchers in disciplines ranging from the social sciences and the arts to engineering and public health to formulate and answer critical questions about firearm injury prevention. Learn more at firearminjury.umich.edu.

About Missouri Foundation for Health: Missouri Foundation for Health is building a more equitable future through collaboration, convening, knowledge sharing, and strategic investment. Working in partnership with communities and nonprofits, MFH is transforming systems to eliminate inequities within all aspects of health and addressing the social and economic factors that shape health outcomes. Learn more at mffh.org.

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EXECUTIVE SUMMARY

In July 2020, Missouri Foundation for Health (MFH) conducted the Missouri Firearms Survey (MFS) of over 1,000 Missouri adults to understand firearm-related beliefs, attitudes, perceptions, and behaviors within the state to inform the design and implementation of firearm injury prevention programs. The MFS included questions regarding beliefs around suicide risk in the home, who should talk to firearm owners about the risks of firearms and storing their firearms, and firearm suicide prevention training. The purpose of this report is to summarize the results of these questions, provide a national context for the results, and outline the next steps for practice and research. We identify **key trends and implications for research and practice** below:

Key Trends Related to Firearm Attitudes and Behaviors

- An overwhelming majority of firearm owners and non-firearm owners living in households with firearms believe that firearms make the home a safer place to be (85.9% and 78.6%, respectively). Of firearm owners that purchased their firearm for protection, 93% believe that their firearm(s) make the home a safer place to be. Groups more likely to agree with this statement included those who grew up with firearms in the home, have received formal firearms training, are suburban or rural residents, and are afraid of community violence.
 - **Implications:** Firearm injury prevention programs need to identify ways to promote beliefs and practices that minimize the risks of having a firearm in the home while acknowledging firearm owners' motivations for self-protection. Research is needed to understand the risk and benefit perceptions of firearm owners to address misconceptions and introduce alternative perspectives concerning the risks and benefits of firearm ownership at home.
- 38.5% of firearm owners agreed that firearms should be stored locked and unloaded with the ammunition stored separately when not in use. However, only 43.4% of the firearm owners that agreed with the statement stored their firearms locked and unloaded. 71.7% of non-firearm owners living in households with firearms agreed with that statement. Groups less likely to agree with the statement included suburban residents and those that believed firearms make the home safer.
 - **Implications:** Perceived disconnects between attitude and practice may reflect differences in how people think about what it means for a gun to be "in use." Understanding how firearm owners think about firearm use and storage is essential to moving toward storage practices that minimize the risk for unintentional and self-harm.
- Just over half (52.4%) of Missouri firearm owners stored at least one firearm unlocked and loaded. The most common storage location by far was in the home and the most utilized storage device was a lock box or safe. Of those utilizing a lock box or safe, most used a key or punch code to access their firearm.
 - **Implications:** When promoting safe storage, a harm reduction strategy may be useful. Harm reduction strategies seek to minimize risk while still respecting individual choice; for example, while a firearm owner may not want to remove firearms from the home completely, they may be open to storing firearms in lock box. In addition to recommending that firearms be stored locked and unloaded, practitioners should present a variety of options for firearm storage, including the benefits and risks associated with each storage option. To promote a widespread adoption of locked and unloaded firearm storage, offering a variety of options to accomplish this may be better accepted by firearm owners.

DATA CONSIDERATIONS

Firearms and firearm ownership are highly divisive topics in the United States. As a result, some survey respondents may feel pressure to respond in a way that they think is socially acceptable. Lack of trust and skepticism may also prevent people from disclosing that they own firearms. Despite this limitation, questions were asked using a web-based platform and confidentiality was assured to enhance the likelihood of respondents providing truthful answers to the survey questions. Caution should be used when interpreting results of the MFS, as they reflect the views of respondents and may not fully capture the nuance of experiences, attitudes, and beliefs of other Missourians.

INTRODUCTION

Understanding the role of firearms in the home and storage practices holds significant relevance for informing the development of firearm injury prevention programs. MFH and its key stakeholders are dedicated to understanding perceptions of safety, attitudes about firearm storage practices, and firearm storage practices when firearms are present in the home. These results have the potential to inform the development of effective firearm injury prevention programs within the home. This report highlights key trends related to perceptions of firearms, home safety, and storage behaviors from MFH's statewide firearm survey to inform meaningful firearm injury and death prevention strategies and identifies specific demographic and community-level variations in beliefs and behaviors, which is critical to ensuring that firearm injury prevention efforts are both effective and equitable. As presented in the [introductory report](#) and as determined by other national studies,¹ the primary reason Missourians own firearms is for protection against people. This report builds on previous studies by examining attitudes about safety when firearms are present in the home, as well as attitudes and practices related to firearm storage within the home. The results will be synthesized to generate recommendations for further research and practice.

METHODS

Results presented in this report come from the MFS which was conducted by Ipsos on behalf of MFH in July and August of 2020. The MFS was an online survey of 1,045 Missouri adults; 37% of whom reported personally owning firearms. Statistical weighting was used to ensure that the survey data and trends represent firearm-related beliefs, attitudes, and behaviors of Missouri adults (age 18 or older). Additionally, firearm-owning and rural Missourians were oversampled to generate reliable insights about their firearm-related beliefs, attitudes, and behaviors. Specifically, 388 Missouri adults identified as a firearm owner, 158 identified as non-firearm owner living in a household with a firearm, and 499 identified as a non-firearm owner living in a household without a firearm. While most survey questions were close-ended (multiple choice), a few open-ended questions (written answers) were also utilized in the survey to gain deeper insights into firearm-related beliefs and practices among Missourians. Data analysis involved summarizing whether Missourians believe that firearms make the home a safer place to be. We also summarized attitudes and behaviors related to firearm storage. To provide context to the survey results, we also examined whether attitudes and behaviors varied based on individual (e.g., veterans vs. non-veterans), family (e.g., people who grew up with firearms in the home), and community characteristics (e.g., perceptions of neighborhood safety). Additional information about sampling, weighting, and data analysis is included in Appendix A in the [introductory report](#).

Regardless of personal firearm ownership, a majority of respondents believe firearms make a home safer.

PARTICIPANTS' FIREARM-RELATED BELIEFS AND PRACTICES

Firearms and Perceptions of Safety in the Home

An overwhelming majority of handgun owners (95.7%) and long gun owners (90.4%) indicated that they store their firearms within their home. Moreover 69.7% of participants believed that having a firearm in the home made it a safer place to be. As shown in Figure 1, the vast majority of firearm owners (85.9%) and of non-firearm owners living in households with a firearm (78.6%) expressed that having a firearm in the home makes it a safer place to be, as opposed to making it more dangerous. Nearly 54% of non-firearm owners who do not live in a household with a firearm also reported that having firearms makes their homes a safer place.

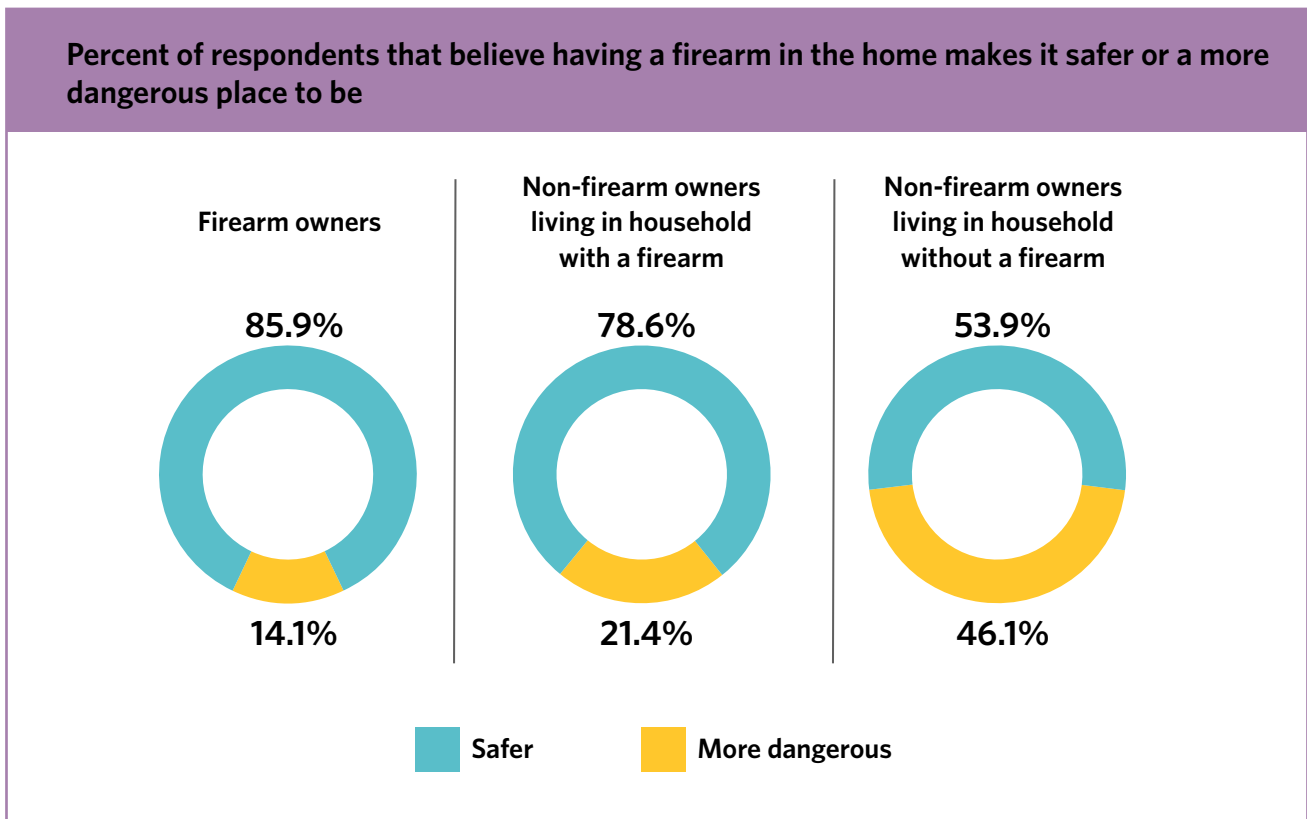


Figure 1

As shown in Figure 2, the vast majority of firearms owners who purchased a firearm to protect themselves against others perceived that having a firearm in the house made it a safer place to be. Generally, people who reported owning a firearm for another reason (e.g., hunting, shooting sport) also believed that firearms make homes safer, just under half believed they make homes more dangerous.

Firearm owners who purchased a firearm to protect themselves against others perceived their house to be safer rather than a more dangerous place to be.

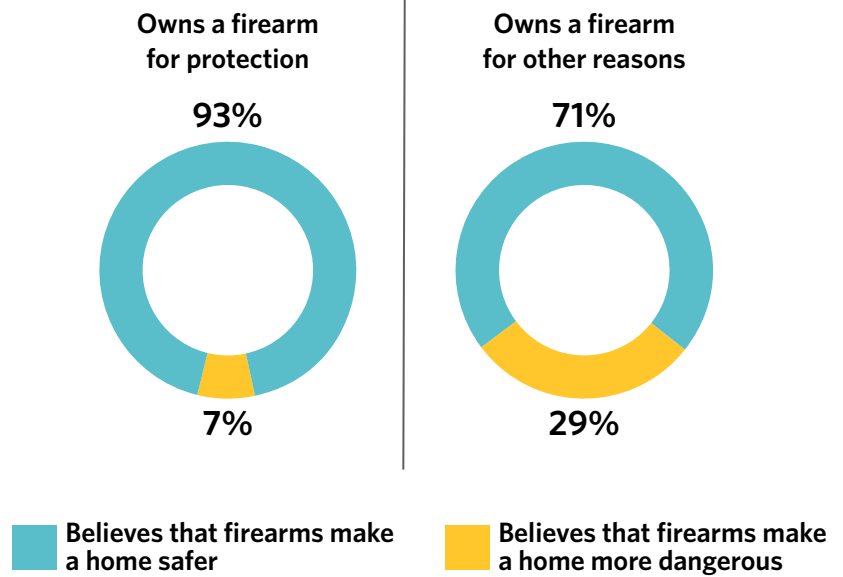


Figure 2

We also examined individual, family, and community level factors related to beliefs about firearms in the home (see Table 1).^{*} Firearm owners, non-firearm owners who lived in a household in a firearm, those who received formal firearms training, those who grew up with a firearm in the home, and those who live in rural or suburban areas were more likely to report that firearms made their home a safer place to be. In contrast, individuals who earned a bachelor's degree or higher were less likely to report that firearms made the home a safer place to be. No other variables were statistically significant.

Do you think having a gun in the house makes it a safer place to be?*

Less likely to agree	More likely to agree
<ul style="list-style-type: none"> Bachelor's degree or higher 	<ul style="list-style-type: none"> Grew up with firearms in home Received firearms training with or without a suicide prevention training Firearm owner Non-firearm owner, but firearm present in household Lives in a suburban or rural area

Table 1

^{*}Note: For all logistic regression models in this report, predictors included factors including gender (0 = female, 1 = male), age groups (0 = 18-29 years old, 1 = 30-44 years old, 2 = 45-59 years old, 3 = 60+ years old), racial/ethnic group identity (0 = White, 1 = Black, 2 = Hispanic and races/ethnicities other than white), educational attainment (0 = high school degree or less, 1 = some college, 2 = completed a Bachelor's degree or higher), veteran status (0 = not a veteran, 1 = veteran), firearm ownership status (0 = not a firearm owner, 1 = firearm owner), firearm at home (0 = no firearms at home, 1 = firearm(s) at home), suicide prevention firearm training (0 = No training, 1 = formal training with suicide prevention training), other formal firearm training (0 = No training, 1 = formal training without suicide prevention training), community type (0 = suburban, 1 = rural, 2 = urban), grew up with a firearm in the home (0 = no, 1 = yes), fear of community violence (0 = never afraid to 4 = always afraid), and children present in the household (0 = no, 1 = yes). For predictors with more than 2 categories (e.g., community type, educational attainment), variables were dummy-coded and the category corresponding to "0" was the reference group. For models estimated on firearm owners only, we did not include firearm ownership or firearm at home as a predictor as these variables have a variance of zero.

Examining the influence of these factors among firearm owners only, we found that individuals older than age 60, those who identify as non-Hispanic, Black Missourians, and those who earned a bachelor’s degree or higher were less likely to report that firearms made home a safer place to be. In contrast, firearm owners who grew up with a firearm in the home, those who had formal firearms training that included suicide prevention content, participants who live in suburban or rural areas, and those who expressed fear of violence in their neighborhood were more likely to report that firearms made home a safer place to be.* (See Table 2) No other variables were statistically significant.

Do you think having a gun in the house makes it a safer place to be (among firearm owners)?*

Less likely to report safer	More likely to report safer
<ul style="list-style-type: none"> ▪ Age 60+ ▪ Non-Hispanic Black ▪ Bachelor’s degree or higher 	<ul style="list-style-type: none"> ▪ Grew up with firearms in the home ▪ Received firearms training with suicide prevention content ▪ Suburban or rural ▪ Expressed fear of neighborhood violence

Table 2

Among those who believe guns make homes safer, some circumstances, such as children accessing guns, made it more dangerous.

Many participants who believed firearms make homes safer articulated that there are some situations in which having a gun in the home might make it more dangerous (Figure 3). Over half of the responses focused on the dangers of children accessing firearms. Others mentioned dangers related to not storing firearms safely, lack of firearm safety education, mental health crisis, and home invasion.

“Having a gun in the home may make things more dangerous if there are small children that could potentially get access to that gun, small children do not understand what a gun can do and could hurt themselves and others.”

“A thief could break in and use your own weapon against you.”

“A gun in the home can be more dangerous if the gun isn’t locked up properly or if there is a suicidal or depressed person in the home.”

“I feel that not properly training everyone in the home about gun safety, not locking your gun, or allowing children access to a gun makes it extremely dangerous.”

Firearms make the home more dangerous: Themes from written responses

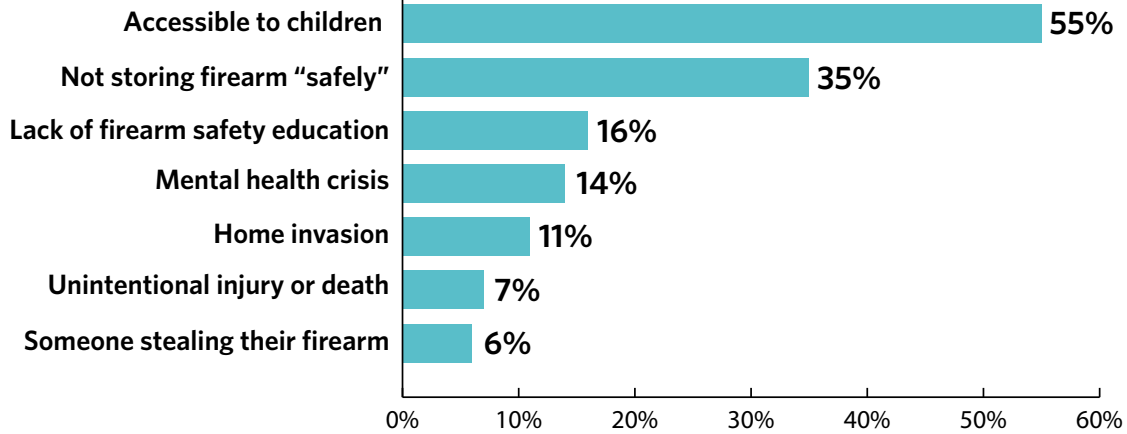


Figure 3

When participants who believed firearms make homes more dangerous were asked, "Are there circumstances in which you could imagine that a gun in the home might make it safer?", responses almost exclusively focused on home, personal, or family protection and fear of violence, though some respondents acknowledged that knowing how to properly use a firearm made it safer (see Figure 4).

"You might feel safer with a gun in your home if there was a reasonable possibility of violence directed at yourself or your family. The gun might be a deterrent for others to commit a violent act or serve as a self-defense option."

"In child-free homes in higher-crime areas or areas where large predators are present (think bears), loaded firearms can be used for protection."

"If we were trained and the gun were where we could get to it easier, it might be safer to be able to protect ourselves in the event of an intruder."

Firearms make the home safer: Themes from written responses

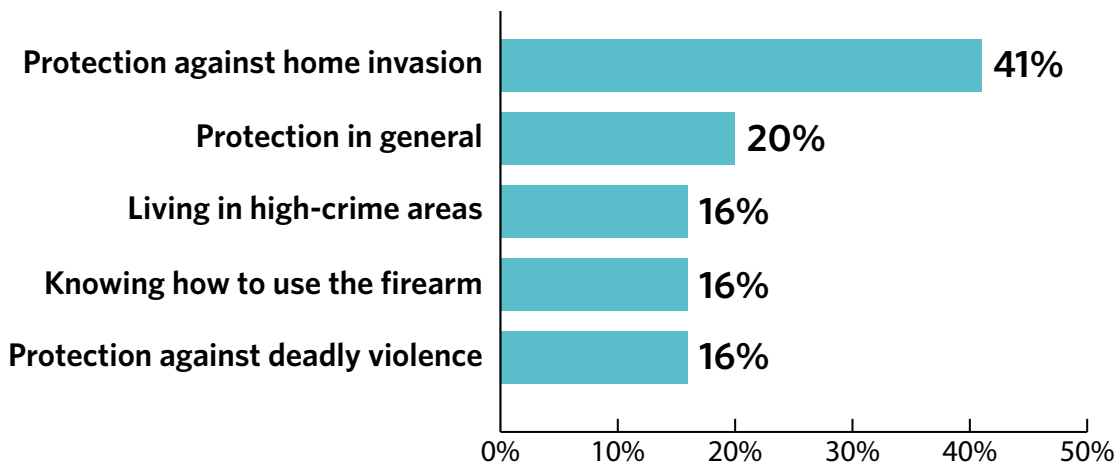


Figure 4

Lastly, more firearm owners than non-firearm owners agreed with the following statement: "People focus too much on the harms caused by firearms and not enough on the benefits of gun ownership." (see Figure 5)

People focus too much on the harms caused by firearms and not enough on the benefits of gun ownership

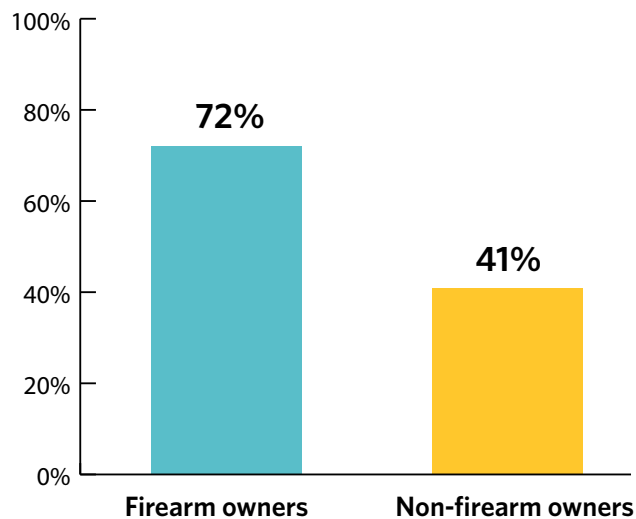


Figure 5

Missouri Data in Context: Regardless of whether they own a firearm or live in a home with firearms, the majority of Missourians perceive firearms to make homes safer. This may reflect the pervasiveness of firearms within the state and associated cultural values about self-protection. Beliefs about firearms in the home among Missouri firearm owners are consistent with a nationally representative study that found 60% of firearm owners believe firearms make the home safer.² Firearm owners, especially veterans and those with firearm training, were more likely to believe that firearms made their home safer. Familiarity with firearms and firearm culture is associated with decreased perceptions about risks that firearms might pose in the home.³ This may reflect that feeling a sense of familiarity with firearms (e.g., growing up around guns, being a long-time firearm owner). For firearm owners with concerns about violent or nonviolent crime, the emphasis on safety from external threats may overshadow other potential safety risks associated with having a gun in the home, such as risk of unintentional or self-harm.^{3,9} The qualitative responses further validate the notion that people believe that firearms can make homes safer by providing protection in the context of violent and non-violent crime.

Researchers have also observed that firearm owners may not connect the risk of suicide by firearm and perceptions of safety - a national study found that many US adults were not aware that suicide is the most common mechanism of firearm death.⁶ A similar study among veterans found that only 5% of respondents believed that a firearm increases household suicide risk.⁵ Placed in the context of other research, the MFS findings suggest that Missouri firearm owners may not be considering the risk of death by suicide associated with having lethal means such as firearms when they are thinking about home safety especially with regard to suicide by a firearm. Of note, Missouri firearm owners, similar to other qualitative studies of firearm owners, believe that people focus too much on the harms of owning a firearm rather than the benefits.²⁰ Additional research is needed to identify the types of misconceptions adults, including firearm owners, have about possessing firearm in the home. It is also critical to examine whether raising awareness about these misconceptions can effectively promote firearm practices that reduce the likelihood of injury.

Implications for research and practice: Firearm owners generally believe that firearms make a home safer, especially in the context of external threats. However, many also recognize that firearms can make a home more dangerous if firearms are stored unlocked and loaded, if they are accessible to children, or if there are individuals experiencing a mental health crisis living in the home. It is important for firearm injury and death prevention programs to focus on finding ways to promote firearm beliefs and practices that minimize the risks of having a firearm in the home while also acknowledging and addressing firearm owners' beliefs about the benefits of having a firearm in the home, such as the desire for self-protection. Researchers should explore how people think about "safety" and the perceived trade-offs around safety that firearm owners make consciously and unconsciously to identify strategies for preventing intentional and unintentional firearm injury in and outside the home. Firearm owners make up the majority of people who believe that people focus on the harms of firearms rather than the benefits; since this belief is so commonly held, entering into conversations with an initial focus on harms and risk may not be as productive as first recognizing the benefits and reasons people own a firearm. For that reason, hearing from firearm owners about their reasons for ownership may make them more receptive to discussing the potential risks that come with owning a firearm.

Additionally, firearm training has the potential to cultivate awareness about the risks of having a firearm in the home. Public health-oriented firearm training could build awareness about the multiple risks of having a firearm in the home (e.g., unintentional injury, self-harm) and provide strategies for mitigating these risks. While firearm training programs play an important role in reducing firearm injury, there is a lack of standardization across training programs and the training objectives and curriculum may differ drastically across training programs. For instance, while some training programs focus on strategies for preventing suicide by a firearm, other programs focus primarily on self-protection and defensive firearm use. Practitioners should work with firearm owners and training providers to identify and integrate risk messaging that will resonate with firearm owners and those more likely to believe firearms make homes safer. Pairing risk and safety information with information about potential benefits of firearm ownership may increase the appeal and credibility of messaging. Further research is needed to test this hypothesis.

Fewer firearm owners believed guns should be stored locked and unloaded when not in use compared to other respondents.

Firearm Storage Attitudes

The majority of participants (58.11%) agreed that firearms should be locked and unloaded with ammunitions stored separately when the firearm is not in use. However, fewer firearm owners (38.51%) agree on locked and unloaded storage with separate ammunition, compared to non-firearm owners who do (71.71%) and do not (68.22%) live in a home with firearms present (Figure 6).

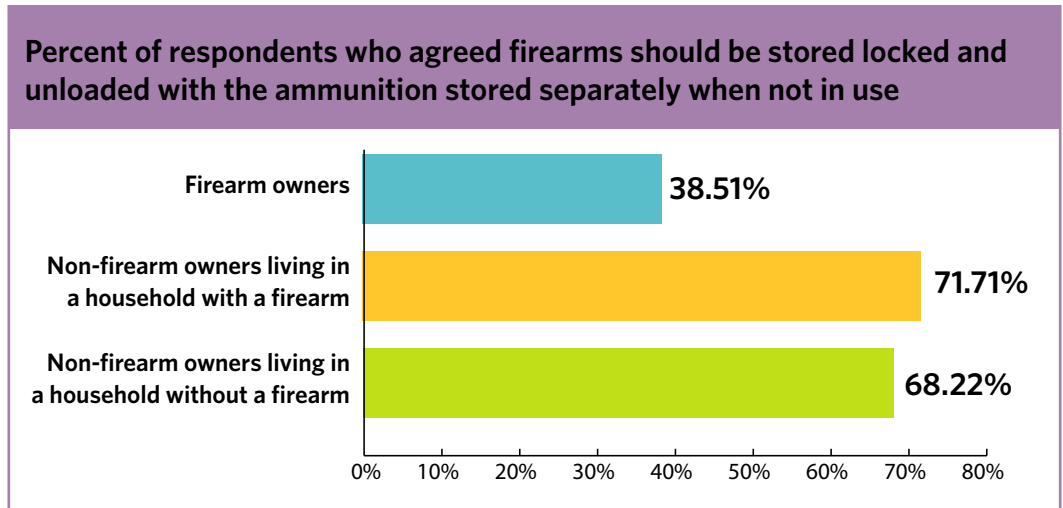


Figure 6

When examining individual, family, and community level factors related to beliefs about storing firearms locked and unloaded with ammunitions stored separately (see Table 3),[†] we found that individuals who identified as male, those who owned a firearm, those who received prior firearms training that did not include suicide prevention training information, participants who live in suburban areas, and those who expressed fear of neighborhood violence were significantly less likely to agree that firearms should be stored locked and unloaded with ammunitions stored separately when not in use. Alternatively, individuals aged 30+, those who completed some college or more, and those do not own a firearm but live in a household with a firearm were significantly more likely to agree. No other individual, family, or community characteristics were found to significantly influence responses.

Guns should be stored locked and unloaded with the ammunition stored separately when they are not in use [†]

Less likely to agree	More likely to agree
<ul style="list-style-type: none"> Male Firearm owners Received firearms training without suicide prevention Lives in a suburban area Expressed fear of violence in their neighborhood Believe firearms make a home safer 	<ul style="list-style-type: none"> Aged 30+ Some college or higher Non-firearm owners

Table 3

[†]Please refer to the footnote on Table 1 for predictors included in this model. An additional predictor was included in this model: Perceptions of firearms in the home (0 = more dangerous, 1 = safer)

Among firearm owners, those who lived in suburban areas and those who agreed that firearms make the home safer were significantly less likely to believe firearms should be stored locked and unloaded with ammunition stored separately. In contrast, firearm owners who grew up with a firearm were significantly more likely to agree. No other variables were statistically significant.

Guns should be stored locked and unloaded with the ammunition stored separately when they are not in use (firearm owners only).†

Less likely to agree	More likely to agree
<ul style="list-style-type: none"> ▪ Lives in a suburban area ▪ Believe firearms make a home safer 	<ul style="list-style-type: none"> ▪ Grew up with firearms in home

Table 4

Missouri Data in Context: Nearly 60% of Missourians surveyed agreed that firearms should be stored locked and unloaded with the ammunitions stored separately when not in use. This is slightly lower than represented in national data. In a 2017 Pew Survey, 69.9% of national respondents believed it was essential to keep all guns locked.⁷ Moreover, 55.4% believed it is essential to keep all firearms unloaded, and 51.8% believed it is essential to store firearms and ammunition separately.⁷ Firearm owners were generally less in agreement with locked, unloaded storage. National studies have found that people who own a firearm for self-protection are more likely to store their firearms unlocked and loaded.¹⁶⁻¹⁸ Firearm owners who are motivated to own for self-protection may prefer ready access to firearms over storage practices perceived to impede quick access, which may explain storage attitudes among firearm owners, especially those who primarily own a firearm for protection.¹⁹

Implications for research and practice: Although many firearm owners agree that firearms should be stored locked and unloaded with ammunition stored separately when not in use, many do not practice this. This may indicate a disconnect between commonly promoted secure storage practices (i.e., locked and unloaded, with ammunition stored separately) and the priorities of firearm owners (in most cases, quick access for defensive purposes). This disconnect may, in turn, undermine the effectiveness of firearm injury prevention programs; for example, changing attitudes may not result in an actual change in practice. Rather than trying to change attitudes about firearm storage, interventions could prioritize promoting firearm storage practices that reduce the likelihood of unauthorized access or self-harm and address firearm owners’ desire for access for self-protection. Working with firearm owners to identify a range of practices that reduce risk and meet firearm owners’ needs is essential for shifting storage practices.

Firearm Storage Behaviors

Next, we examined specific firearm storage practices and their alignment with storage attitudes. Over 90% of handgun and long gun owners store a firearm at home, while roughly 8% of handgun owners store a firearm in their car. Among firearm owners, 52.4% stored a firearm unlocked and loaded, 57.8% stored a firearm unlocked and unloaded, and 42.9% stored a firearm locked and loaded (see Figure 7).

Firearm owners who own a gun for protection were more likely to report storing at least one firearm unlocked and loaded compared to those who primarily owned guns for other reasons.

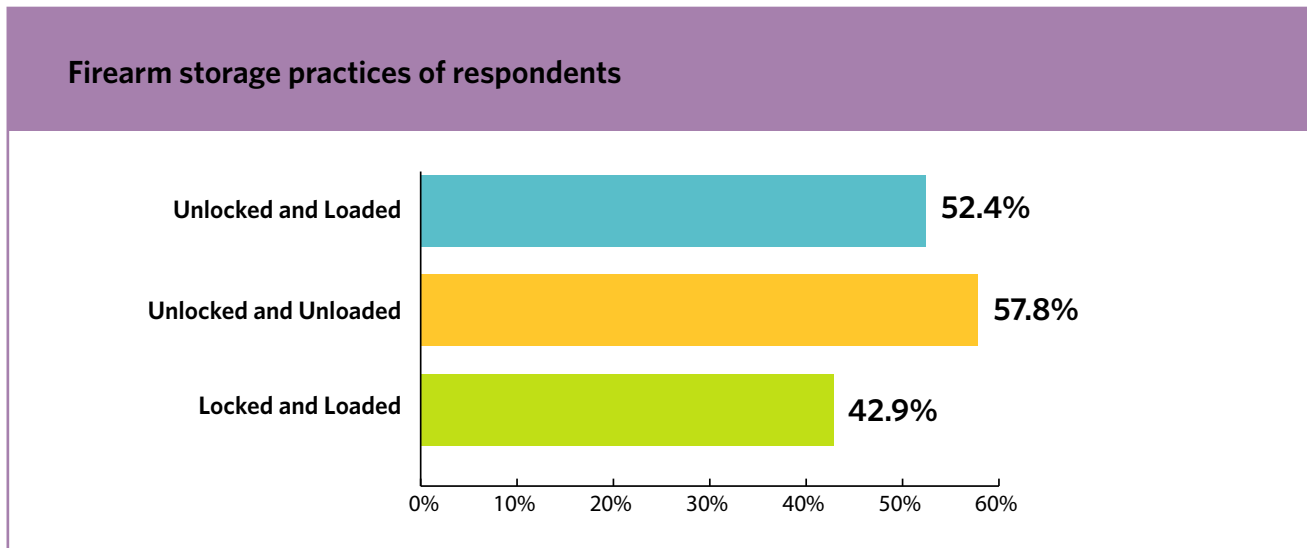


Figure 7

Moreover, Missouri firearm owners indicated that it would, on average, take 1 minute and 34 seconds to access the firearm (including loading the firearm) that they own for protection against other people. Of note, no statistical differences in time to access were observed between respondents who store their firearms locked and unloaded versus those who don't.

Missouri firearm owners indicated that it would, on average, take 1 minute and 34 seconds to access the firearm (including loading the firearm) that they own for protection against other people.



Findings on storage practices were similar, regardless of the type of firearm a person owned. Around 53% of handgun owners and 49% of long gun owners reported storing at least one firearm unlocked and loaded. However, the primary reason for owning a gun influenced storage practices. Firearm owners who reported owning a firearm for protection against others were more likely to store at least one firearm unlocked and/or loaded (58.8%), compared to firearm owners who own firearms for other reasons such as hunting or sports shooting (37.7%). Of firearm owners who stated that they believe firearms should be stored locked and unloaded when not in use, 43.42% reporting storing at least one firearm unlocked and loaded (see Figure 8).

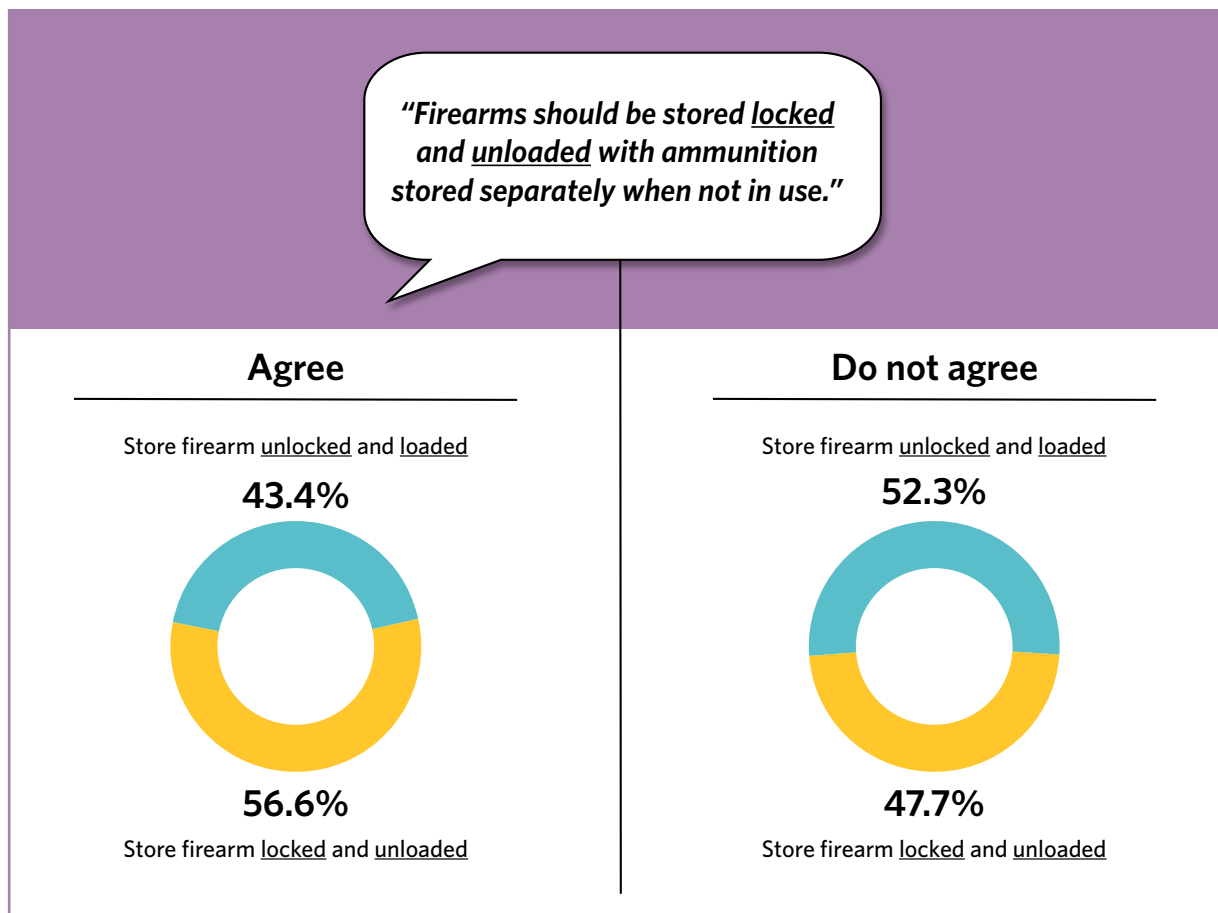


Figure 8

We also examined individual, family, and community level factors related to storing firearms locked and unloaded (see Table 5). We found that individuals older than age 60, non-Hispanic Black respondents, and those who grew up with firearms in the home are less likely to store their firearm locked and/or unloaded. No other variables were statistically significant.

Factors related to storing firearms locked and loaded (firearm owners only)†

Less likely to store firearm locked and unloaded	More likely to store firearm locked and unloaded
<ul style="list-style-type: none"> ▪ Ages 60+ ▪ Non-Hispanic, Black ▪ Grew up with a firearm in the home 	<ul style="list-style-type: none"> ▪ no significant predictors

Table 5

When considering the use of different firearm storage devices, storing a firearm in a lock box or safe was the most utilized method of firearm storage (48.8%). The next commonly used firearm storage devices entailed trigger locks (28.3%), cable locks (26.0%), other locks or storage containers (14.2%), and an intrinsic lock (9.8%) (see Figure 9).

Lock boxes and safes were the most commonly used storage device.

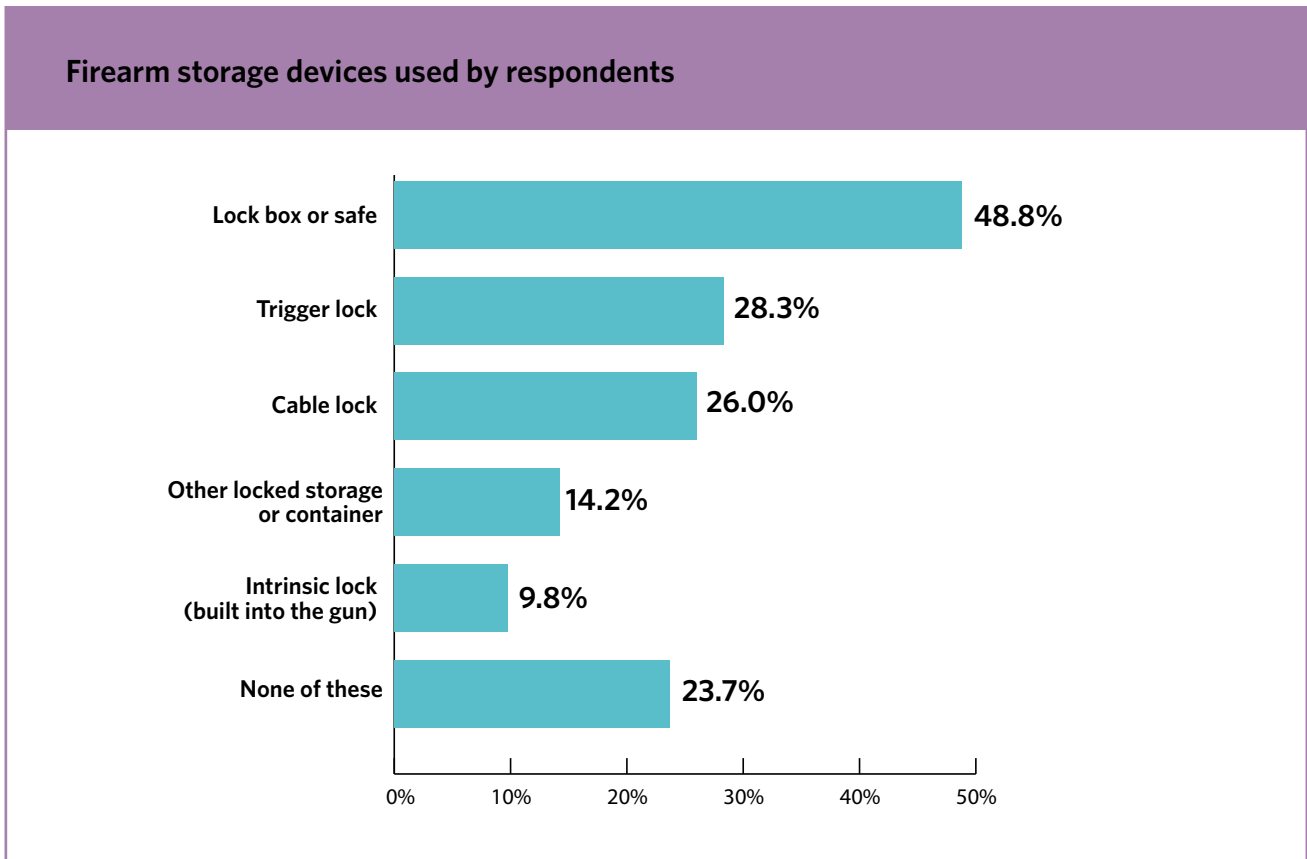


Figure 9

Of the firearm owners who stored a firearm in a lock box or safe, 41.7% access their lock box or safe with a key, 45.4% with a punch code, and 12.9% with fingerprint recognition (see Figure 10).

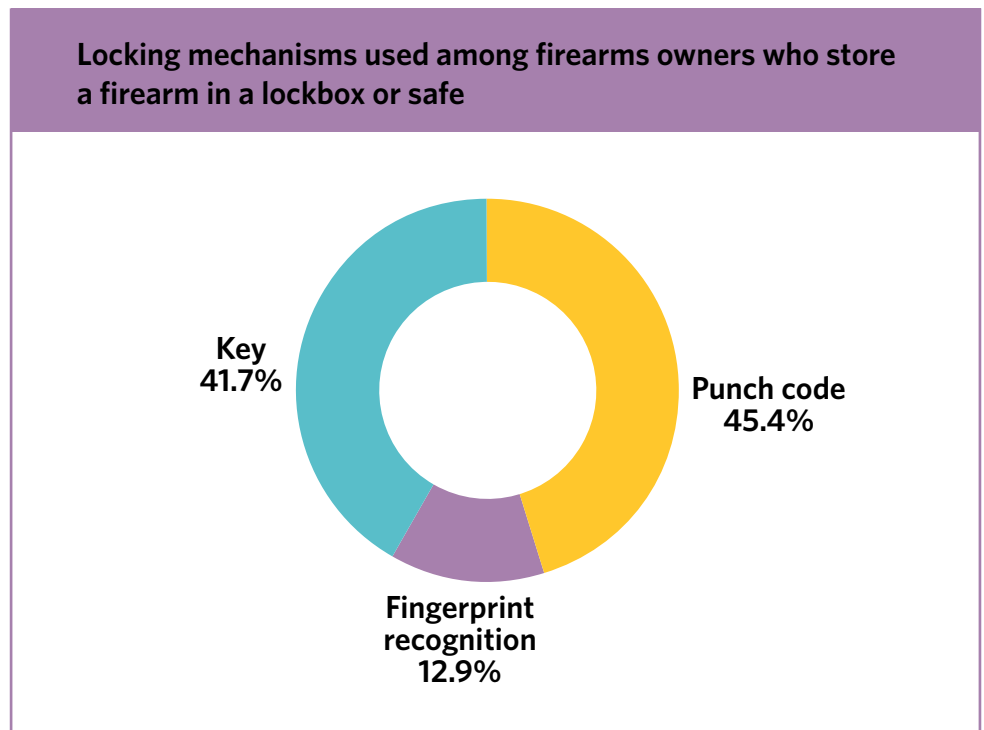


Figure 10

Finally, nearly half of the respondents (48.5%) agreed that a firearm is not good for self-protection if they need to take time to unlock or load their gun, whereas 51.5% did not agree. Moreover, firearm owners were more likely to agree with this statement (48.5%) than non-firearm owners (31.8%).[‡]

Missouri Data in Context: Missouri firearm storage patterns are consistent with those found nationally, with most storing their firearms at home or in their car.¹³ Missouri firearm owners report low rates of biometric storage (e.g. fingerprint access).¹⁰ These locking mechanisms are effective but can be cost prohibitive. Although not collected in the MFS, survey participants who reporting using “other locking storage or containers”, may be referring to less formal storage approaches, such as a locking drawer or closet in their home. In a systematic review of research around storage preferences, the speed of being able to unlock and lock a device was considered essential by a majority of firearm owners.¹⁴ When presented with secure yet quick options, such as biometric safes, firearm owners brought up potential hacking of the devices or potential malfunction when they need to access the firearm quickly.²¹ A more comprehensive understanding of these storage practices and preferences can inform interventions that address unintentional injury and firearm suicide, as storage mechanisms are associated with lower risk.²²

Although research has demonstrated that storing a firearm locked and unloaded reduces risk of injury and death,⁸ firearm owners may choose to store their firearms unlocked and/or loaded for a variety of reasons. For example, if the primary motivation for firearm ownership is for the purpose of protection, an individual may believe storing that firearm loaded and unlocked provides a greater sense of safety or security.⁹ Disconnect between stated attitudes and behaviors may also reflect nuances in how firearm owners think about firearm “use.” It may be that a firearm owned for self-protection is considered to always be “in use,” even if there is no immediate threat.

Implications for research and practice: Research shows that easy access to a firearm increases the risk of unintentional injury and death, homicide, and suicide.^{11,12} A common recommendation for firearm injury and death prevention is the use of locked and unloaded firearm storage practices. Although many firearm owners’ attitudes about storage align with this recommendation, their behaviors may not reflect this attitude. Further understanding of these trends is needed to understand why attitudes are not consistent with practice. Exploration of how firearm owners think about “safety,” “risk,” and firearm “use” may yield helpful insight into storage behaviors regarding different types of firearms and different reasons for ownership. There may be a clearer distinction between in use and not in use for different purposes, such as with hunting versus defense.

The disconnect between expressed storage attitudes about locked and unloaded storage and actual storage practices may also indicate that relying on storage attitudes alone is insufficient to explain behavior or inform intervention success. When developing interventions around firearm storage, it is important to consider the various storage mechanisms firearm owners use and why they choose to store some or all of their firearms in a particular way. Locked and unloaded storage may be unappealing for those who own at least one gun for protection, which may make traditional “safe storage” interventions unlikely to succeed. Several studies found that many who own a firearm do so for self-protection, implying that quick access is crucial.¹⁴ Further research on informal firearm storage practices (e.g., storing firearms on high shelves, in locked closets, under mattresses, or in other locations) and what drives decisions to store firearms in particular ways could also be beneficial for identifying additional storage solutions that meet firearm owners needs while reducing potential for unintentional and self-harm. Those working to prevent firearm injury and death should work with firearm owners to understand the motivations for firearm storage practices and preferred methods for communicating that safe storage can be a spectrum of options that range from “safer” to “safest.” Adopting a more nuanced approach to thinking about “safe firearm storage” may be critical for developing successful firearm storage interventions and practices.

[‡]An adjusted chi-square test (Rao & Scott, 1984) was conducted to evaluate the association between firearm owners (0 = no, 1 = yes) and agreeing with the following attitude: If a gun owner has to take the time to unlock or load their gun, it’s no good for self-protection. The test was significant, $F(1.998, 2085.911) = 9.4402, p < .0001$.

FUTURE DIRECTIONS FOR RESEARCH & PRACTICE

Firearm storage is a crucial piece of comprehensive firearm injury prevention. Successfully implementing firearm storage interventions requires cultural and demographic tailoring, combating misinformation, promoting strategies that are evidence-based, and continuing to research and evaluate existing efforts. The MFS provides a snapshot of Missourians' attitudes, beliefs, and practices related to the interaction between perceptions of firearm safety and firearm storage. To advance evidence-based firearm storage interventions and communications, the following is needed:

- Identify firearms owners' perceptions and misconceptions related to firearm safety within the home and firearm "use" in order to gain a deeper understanding of the factors (e.g., media, cultural messages) that drive these.
- Investigate whether firearm storage practices vary based on specific reasons for firearm ownership, especially among those who express desire for easy and quick firearm access. This investigation can help advocates tailor intervention strategies that resonate with firearm owners' specific needs and motivations.
- Leverage participatory and community-engaged research practices to develop more nuanced insights into firearm owners' safety priorities to work with firearm owners to identify a diverse range of firearm storage options, along with other harm reduction strategies (e.g., improved training, storing firearms outside of the home), to reduce the likelihood of firearm injury in a more personalized manner. In particular, it could be helpful for practitioners to know which safe storage options allow for quickest access; these findings could inform conversations with firearm owners that own for protection.

LIMITATIONS

Limitations related to overall survey methodology are included in the [introductory report](#). Nevertheless, this report also has several limitations that could be developed for future research.

1. Several survey items assessed multiple concepts using a single question. For example, the question "Guns should be stored locked and unloaded with the ammunition stored separately when they are not in use" could be broken down into three separate questions, each addressing locking, unloading, and separate ammunition storage. Additionally, it might be beneficial to address the phrase "...when not in use" as a separate item to better comprehend the owner's perceptions of whether the firearm is considered to be "in use" or not.
2. Respondents were required to choose whether firearms made their homes safer or more dangerous. However, it is important to acknowledge that individuals might perceive both safety and danger simultaneously, and there could be a trade-off between the two. To explore this trade-off between the risks and benefits of firearm ownership, research should apply a more nuanced approach that accounts for risk and benefit perceptions, which a single survey item cannot capture effectively.
3. Owning a firearm for protection may signal that the respondent needs protection from a specific threat (e.g., intimate partner threats), whereas others may own for non-specific threats (e.g., generalized ideology that world is dangerous). As a result, the relationship between owning a firearm for protection and firearm storage methods may depend on perceptions about the nature and source of the perceived threats. Understanding these perceptions is crucial for developing effective strategies to promote responsible firearm storage practices.
4. More than 10% of respondents responded "other" when asked about how they store their firearms. Future research needs to identify what the "other" storage practices are to gain a comprehensive understanding of the diverse ways individuals store firearms.

REFERENCES

1. Berrigan, J., Azrael, D., Hemenway, D., & Miller, M. (2019). Firearms training and storage practices among US gun owners: A nationally representative study. *Injury Prevention*, 25(Suppl 1), i31. <https://doi.org/10.1136/injuryprev-2018-043126>
2. Mauri, A. I., Wolfson, J. A., Azrael, D., & Miller, M. (2019). Firearm Storage Practices and Risk Perceptions. *American Journal of Preventive Medicine*, 57(6), 830-835. <https://doi.org/10.1016/j.amepre.2019.06.017>
3. Warner, T. D., & Ratcliff, S. (2021). What Guns Mean: Who Sees Guns as Important, Essential, and Empowering (and Why)? *Sociological Inquiry*, 91(2), 313-346. <https://doi.org/10.1111/soin.12408>
4. Anestis MD, Butterworth SE, Houtsma C. Perceptions of firearms and suicide: The role of misinformation in storage practices and openness to means safety measures. *Journal of Affective Disorders*. 2018;227:530-535. doi:10.1016/j.jad.2017.11.057
5. Simonetti JA, Azrael D, Miller M. Firearm Storage Practices and Risk Perceptions Among a Nationally Representative Sample of U.S. Veterans With and Without Self-Harm Risk Factors. *Suicide and Life-Threatening Behavior*. 2019;49(3):653-664. doi:10.1111/sltb.12463
6. Morgan ER, Rowhani-Rahbar A, Azrael D, Miller M. Public Perceptions of Firearm- and Non-Firearm-Related Violent Death in the United States: A National Study. *Ann Intern Med*. 2018;169(10):734-737. doi:10.7326/M18-1533
7. Parker K, Menasce Horowitz J, Igielnik R, Oliphant JB, Brown A. America's Complex Relationship With Guns. Pew Research Center's Social & Demographic Trends Project. Published June 22, 2017. Accessed November 3, 2022. <https://www.pewresearch.org/social-trends/2017/06/22/americas-complex-relationship-with-guns/>
8. Monuteaux, M. C., Azrael, D., & Miller, M. (2019). Association of Increased Safe Household Firearm Storage With Firearm Suicide and Unintentional Death Among US Youths. *JAMA Pediatrics*, 173(7), 657-662. <https://doi.org/10.1001/jamapediatrics.2019.1078>
9. Siegel, M. B., & Boine, C. C. (2020). The Meaning of Guns to Gun Owners in the U.S.: The 2019 National Lawful Use of Guns Survey. *American Journal of Preventive Medicine*, 59(5), 678-685. <https://doi.org/10.1016/j.amepre.2020.05.010>
10. Anestis MD, Mocerri-Brooks J, Johnson RL, et al. Assessment of Firearm Storage Practices in the US, 2022. *JAMA Network Open*. 2023;6(3):e231447-e231447. doi:10.1001/jamanetworkopen.2023.1447
11. Miller, M., Azrael, D., Hemenway, D., & Vriniotis, M. (2005). Firearm storage practices and rates of unintentional firearm deaths in the United States. *Accident Analysis & Prevention*, 37(4), 661-667. <https://doi.org/10.1016/j.aap.2005.02.003>
12. Anglemeyer, A., Horvath, T., & Rutherford, G. (2014). The Accessibility of Firearms and Risk for Suicide and Homicide Victimization Among Household Members. *Annals of Internal Medicine*, 160(2), 101-110. <https://doi.org/10.7326/M13-1301>
13. Crifasi CK, Doucette ML, McGinty EE, Webster DW, Barry CL. Storage Practices of US Gun Owners in 2016. *Am J Public Health*. 2018;108(4):532-537. doi:10.2105/AJPH.2017.304262
14. Buck-Atkinson, J., McCarthy, M., Stanley, I.H. et al. Firearm locking device preferences among firearm owners in the USA: a systematic review. *Inj. Epidemiol*. 10, 33 (2023). <https://doi.org/10.1186/s40621-023-00436-7>
15. Stroebe, W., Leander, N. P., & Kruglanski, A. W. (2017). Is It a Dangerous World Out There? The Motivational Bases of American Gun Ownership. *Personality and Social Psychology Bulletin*, 43(8), 1071-1085. <https://doi-org.proxy.lib.umich.edu/10.1177/0146167217703952>
16. Butterworth, S. E., Daruwala, S. E., & Anestis, M. D. (2020). The Role of Reason for Firearm Ownership in Beliefs about Firearms and Suicide, Openness to Means Safety, and Current Firearm Storage. *Suicide and Life-Threatening Behavior*, 50(3), 617-630. <https://doi.org/10.1111/sltb.12619>
17. Carter, P. M., Losman, E., Roche, J. S., Malani, P. N., Kullgren, J. T., Solway, E., Kirch, M., Singer, D., Walton, M. A., Zeoli, A. M., & Cunningham, R. M. (2022). Firearm ownership, attitudes, and safe storage practices among a nationally representative sample of older U.S. adults age 50 to 80. *Preventive Medicine*, 156, 106955. <https://doi.org/10.1016/j.ypmed.2022.106955>
18. Simonetti, J. A., Azrael, D., Rowhani-Rahbar, A., & Miller, M. (2018). Firearm Storage Practices Among American Veterans. *American Journal of Preventive Medicine*, 55(4), 445-454. <https://doi.org/10.1016/j.amepre.2018.04.014>
19. Anglemeyer A, Horvath T, Rutherford G. The Accessibility of Firearms and Risk for Suicide and Homicide Victimization Among Household Members. *Ann Intern Med*. 2014;160(2):101-110. doi:10.7326/M13-1301
20. Pallin R, Siry B, Azrael D, et al. "Hey, let me hold your guns for a while": A qualitative study of messaging for firearm suicide prevention. *Behavioral Sciences & the Law*. 2019;37(3):259-269. doi:10.1002/bsl.2393
21. Crifasi CK, O'Dwyer JK, McGinty EE, et al. Desirability of personalized guns among current gun owners. *Am J Prev Med*. 2019;57(2):191-96. <https://doi.org/10.1016/j.amepre.2019.02.024>.
22. Monuteaux MC, Azrael D, Miller M. Association of Increased Safe Household Firearm Storage With Firearm Suicide and Unintentional Death Among US Youths. *JAMA Pediatrics*. 2019;173(7):657-662. doi:10.1001/jamapediatrics.2019.1078