

Journal of Applied Research on Children: Informing Policy for Children at Risk

Volume 12
Issue 2 *Child Firearm Injury and Fatalities*

Article 6

2021

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Recommended Citation

McKay, Sandra; Bagg, Michael B.; Tallackson, Zachary; Donthula, Deepanjli; Russell, Bethany; Sha, Nidha; Petronzio, Allison; and Henson-Garcia, Mike (2021) "Temporary Firearm Storage and Safe Firearm Storage Counseling at Gun Retailers and Ranges in the Greater Houston Area: A Potential New Partner in Addressing Child and Youth Firearm Injury?," *Journal of Applied Research on Children: Informing Policy for Children at Risk*: Vol. 12: Iss. 2, Article 6.

DOI: <https://doi.org/10.58464/2155-5834.1480>

Available at: <https://digitalcommons.library.tmc.edu/childrenatrisk/vol12/iss2/6>

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Temporary Firearm Storage and Safe Firearm Storage Counseling at Gun Retailers and Ranges in the Greater Houston Area: A Potential New Partner in Addressing Child and Youth Firearm Injury?

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Background:

Firearm-related injuries are the leading cause of death among US children between ages 1-18 years.^{1,2} Additionally, firearms are utilized in nearly half of suicides among young people (ages 10-19 years),³ with more than one-third of adolescents in gun-owning households nationwide reporting that they can access a loaded firearm within five minutes.⁴ Moreover, in 2018, scholars estimated that about 4.6 million children live in a home with a firearm that is stored unlocked and loaded.⁵ The unsafe storage of firearms puts the children living in these homes at risk of becoming one of the nearly 6,000 children treated in the emergency department because of firearm injury⁶ or the more than 3,000 pediatric firearm deaths per year.^{1,2} Studies suggest that universal safe storage would reduce youth suicide and unintentional injury by one-third.⁷ Within the Greater Houston area, Harris County had a 70% increase in child and adolescent suicide from 2008 through 2018, with use of a firearm as the most prevalent method, utilized in 45.0% of cases⁸. This exhibits a need for more effective suicide prevention measures as it pertains to firearm access.

Unsafe storage practices have been implicated in homicides, suicides, and unintentional injuries related to firearms.^{9,10} While suicide is the second leading cause of death in children ages 15 to 19 years,¹¹ scholars report that safe firearm storage is associated with reduced self-inflicted firearm injury or death in this teenage population.¹² Regarding suicide prevention, it has been recommended that suicidal individuals — and their families — be counseled to remove firearms temporarily from their homes while the risk is elevated, given the evidence suggesting that firearm access is a major risk factor for completing suicide.¹³ A comprehensive review of death records across the United States found that if a descendant

has access to firearms in the home their chance of suicide by firearm increases 18-fold compared to the chance of death by any other cause.¹⁴ Though many parents or family members tend to perceive their firearm storage as effective¹⁵, there is a need for solutions that reduce the number of suicides by firearm for children and adolescents in the Greater Houston area. Temporary storage interventions — or, those programs providing firearm storage space for individuals temporarily (usually for less than 30 days) — have been discussed as potential community-oriented solutions to ensure safe storage.¹⁶

In their practices, pediatricians routinely counsel patients and families on a variety of safety concerns, including car seat safety, drowning prevention, and home safety.^{17,18} The American Academy of Pediatrics (AAP) provides guidelines for safe firearm storage. The AAP recognizes the safest home is one without a firearm, but if a firearm is kept in the home, it should be locked up, unloaded, and ammunition should be locked up separately.¹⁹ These recommendations have proven to be efficacious in the prevention of unintentional firearm injuries among the pediatric population.^{11,20,21} Counseling related to safe firearm storage can include discussions around what mechanisms are best to secure a firearm, the risks of unintentional injury or death from young children handling firearms, and the increased risk of suicide when a firearm is present within the home.^{4,12,22} However, pediatricians are limited in their counseling efforts in that children may not present to well visits routinely, or may not have regular access to a primary care physician.

Engaging community stakeholders, including the perspectives of firearm retailers, is critically important in the promotion of firearm injury prevention efforts. For instance, retailers are regarded as firearm safety experts²³ which likely bolsters their credibility as trustworthy messengers of safety information. In 2021, an investigation aiming to understand preferred messengers of suicide-related firearm safety messages determined that people preferred to receive messages from those who regularly handle and have experience with firearms, such as law enforcement, current military personnel, and military veterans, compared to other groups like celebrities, casual acquaintances, or medical providers.²⁴ These results indicate that

safe firearm storage counseling interventions should be implemented within contexts besides the clinical setting and engage a variety of stakeholders as a more robust strategy in curbing firearm-related suicides.

In accordance with Federal Firearms Laws (18 USC. § 922(z)(1); 18 USC. § 921(a)(34)), licensed retailers must provide a secure gun storage or safety device with all handgun sales. However, the degree to which safe firearm storage counseling has been employed at the point-of-sale within the retail environment (i.e., local firearm shops, shooting ranges that sell firearms) has yet to be empirically assessed. To our knowledge, only one study has attempted to determine the feasibility of these unique firearm safety efforts¹⁶, however, this effort was conducted in a geographically different region from our area which has considerable implications given evidence suggesting that significant geographical variation exists surrounding firearm-related suicides.^{25,26,27} This regional variation in firearm-related suicide rates may influence community beliefs about the necessity of community based firearm safety interventions which has implications for the perceived feasibility of programs in this space.

To address our unique community, we conducted a descriptive study in a large metropolitan city to explore the safety counseling practices provided at the point of firearm sale. This exploratory study had the primary goal of determining the availability of temporary firearm storage options at gun retailers and ranges. We also had three secondary objectives including: (1) to evaluate the frequency and type of safe firearm storage counseling performed at the point of sale; (2) to assess the most frequently purchased safety device with new firearm sales, as reported by the retailer; and (3) to determine the rate of suicide prevention materials distributed at the point of sale.

Methods:

We employed a variety of systematic strategies to identify firearm retailers and ranges. For retailer shops, we accessed the National Shooting Sports Foundation (NSSF)²⁸ website in the month of June 2020. We searched for licensed firearm retailers within a 50 mile radius around the city of Houston, Texas. We excluded manufacturers and collectors, or

anyone who was not engaged in selling to the general public. For ranges, we accessed the website “wheretoshoot.org” (which is also managed by the NSSF) in June 2020 to identify active firearm ranges, again using the 50 mile radius. We excluded any range that was not open to the general public (i.e. only available for private events). Team members (7 in total) were trained in identification of self in initial contact, obtaining verbal informed consent from the participant, questions to be asked and how to respond to questions from the participants. They were trained to identify themselves as researchers from the University of Texas, not affiliated with any political party, inviting them to participate in a voluntary survey about temporary storage and safety. Training was done via a virtual platform with the PI and in consultation with researchers who had previously developed temporary storage maps in other states. See Table 1 for the list of questions.

Overall, 130 firearm retailers and 31 firearm ranges in the Greater Houston Area (n=161) were contacted. The survey participation rate was 51% (n=66) for retailers and 61% (n=19) for ranges. We contacted each retailer and range a maximum of three times by phone, varying contact by time and day of week, and asked to speak to the supervisor, manager on duty, or owner. Surveys were performed with study participants after obtaining informed consent, and they could terminate participation at any point. Team members asked the questions in series (see Table 1), starting with least invasive, and moving to more invasive, recording responses of the participant throughout on a secured spreadsheet. Question 1 focused on the main goal of the study, asking if the shop or range provided temporary emergency storage of firearms. We used the qualifier “for example, if there was a suicidal teenager in the home” if the participant expressed confusion or hesitation with the question. If they offered temporary emergency storage, the follow-up question was to discover if and how much of a fee was associated with the service. The next question block evaluated safety devices by initially inquiring about types of safety products available for purchase, and then asking which product was most commonly purchased by customers, not including the safety device that is provided by the manufacturer. Following this, the question block expanded to ask about which forms of safety information are potentially provided. The final question evaluated if suicide prevention materials were provided. Given phone

conversations could not be recorded, direct quotes were transcribed by team members during the conversation and repeated back to participants to ensure the accuracy of the information received.

Univariate, descriptive analyses were conducted on items with a binary response choice format. Furthermore, on items where an open response was elicited by data collectors, data were analyzed qualitatively by two investigators (SM and MB). Qualitative analyses were performed separately by investigators. Responses were examined and the most salient concepts that emerged for each question were then categorized to report frequencies of responses for each of our qualitative items. SM and MB met to discuss similarities and reconcile differences in the categorization of data. Furthermore, thematic analysis was employed via an inductive process and emergent themes were generated. All discrepancies that arose in both the categorization of concepts and thematic analysis were discussed between analysts until consensus was reached. This study was deemed exempt by the Institutional Review Board at the University of Texas Health Science Center at Houston.

Results:

Among the 66 retailers and 19 ranges surveyed, 2 (11%) ranges and 6 (9%) retailers offer temporary storage. Two additional ranges (11%) offered temporary storage for their members only. Fees were associated with all options, ranging from \$8-\$40 per month, although most retailers and ranges reported that fees would vary with type of firearm and circumstance. Additionally, 36 (55%) retailers and 15 (79%) ranges reported selling firearm safety devices.

Figure 1 displays the frequency of most common firearm safety devices that are sold separately from handgun sales, as reported by retailers and ranges. In terms of safety devices, retailers reported that the most commonly purchased safety devices were locks and small safes. On the contrary, vaults and cases were less often reported by retailers during the surveys. Among ranges, cases, safes and locks were all common safety devices sold to customers.

Figure 2 displays the frequency of firearm safety informational mechanisms provided by retailers and ranges. In the provision of safety information, the overwhelming majority of retailers and ranges reported providing firearm safety informational materials via a wide variety of communication mechanisms including handouts, posters, verbal counseling, videos and referrals to safety classes. Retailers most commonly reported engaging in verbal firearm safety counseling and providing handouts whereas ranges reported providing more formal firearm safety training courses.

Eight retailers reported answers to providing safety information that were outside of the expected options. In general, responses reflected two main themes: primary safety and legal concerns. In terms of safety, retailers expressed their practices of discussing safety with customers in a variety of settings, as demonstrated in the comments below:

"If someone doesn't know anything, we do warn them and refer them to the training that is mainly focused on safety."

"Yes, we talk to our customers about what to do in particular situations if found under attack from somebody"

"[we discuss] how to prevent children from getting hurt when they are learning how to hunt."

In terms of legal concerns, retailers reflected statements including:

"We always answer additional questions and use our right to refuse service"

"We use what is required by law"

"There is a pamphlet that is handed out with every purchase with handguns, but we can hand it out with others too."

In addressing the final question on providing suicide prevention materials, one range and 15 retailers (20%) provided any suicide prevention materials at point of sale (out of 17 range respondents and 64 retailer respondents). Additionally, 49 survey participants expressed interested in providing more safety and suicide prevention information to their customers and 6 (4 ranges and 2 retailers) reported being interested in helping to develop materials in safe firearm storage counseling. This information was offered to the team members during the interview process or when asked if they had other comments at the end of the interview.

Discussion:

Removal of firearms from the home is a key part of addressing suicidality because firearm access increases the likelihood of fatal suicide attempts. It is important for families to have access to safe firearm storage options outside the home during times of crisis. Within the Greater Houston area, the fourth largest city in America, only 8 retailers or ranges offered temporary storage. As of 2016, it was estimated that half of Texan households contain firearms.²⁹ Since 2015, Texas has continued to see a steady increase in teen suicide rates; in 2019 there were 12.3 deaths by suicide per 100,000 adolescents aged 15-19 in Texas, exceeding the national average of 11.2.³⁰ Given the high prevalence of firearm ownership and increasing suicide rates in Texas, temporary firearm storage may be a venue to address this problem. In the Mountain West Region, Kelly and colleagues found that 47.6% of their retailers offered temporary emergency storage³¹, which is significantly higher than those in the Houston area. This may be reflective of regional and cultural differences between states, given that Texas is a traditionally politically conservative state pertaining to firearm legislation. Suicide prevention materials were rarely offered at retailers and ranges as well, with only 16 total reporting providing any suicide prevention materials. This could represent a new opportunity for suicide prevention via dissemination of materials to a new audience.

This study demonstrated an opportunity for increased temporary storage options for the Houston area, but also discovered a potential venue for enhanced distribution of firearm safety and suicide prevention

information in the firearm retail and range environments. Interestingly, just over half of retailers reported selling safety devices. This may be reflective of dealers feeling that the safety device distributed with the firearm by the manufacturer is sufficient, or may represent an underlying cultural or infrastructural issue, and would benefit from further investigations. Additionally, our qualitative findings revealed a vagueness in the retailer reply, in that they warn customers, or talk about safety, which may indicate a potential ambiguity in how retailers address safety information with consumers. Emerging evidence suggests that targeted counseling interventions to prevent injury may be effective in changing caregiver's behavior. Barkin and colleagues demonstrated in a clinic-based randomized controlled trial that increased safe firearm storage resulted from a brief clinic-based motivational interviewing program on violence prevention.³² Thus, when families receive counseling on injury prevention, they can adapt behaviors. However, there is little known about safe storage counseling practices outside of the healthcare encounter. In accordance with the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) regulations (Title 27, Code of Federal Regulations § 478.103) licensed retailers must provide written child safety information with all handgun sales. Our findings suggest that gun ranges and shops in Houston provide a wide variety of firearm safety information, utilizing ATF or NSSF handouts as the predominant form of child safety information. However, little is understood about how extensive safety discussions are with consumers, or if safety discussions are aligned with current recommendations by the American Academy of Pediatrics. This may represent an opportunity for partnership with health care providers to align messaging from point of sale to the clinical encounter.

While research suggests that the majority of parents (75%) believe pediatricians should counsel about safe firearm storage,^{33,34,35} there are few studies examining the impact of the counseling on safe storage practice patterns.³⁶ This could be reflective of the constraints of pediatricians within the clinical encounter for well child visits, or perhaps the intermittent nature of the well child visit. The firearm owner may interact more with their range or retailer to provide a venue for shared messaging. Additionally, in our study, firearm retailers and ranges reported locks and safes as the most

common devices purchased; however, it is not known if these are purchased at the same time as the firearm or separately. Partnership with firearm retailers may be an opportunity for addressing safe firearm storage and ultimately impacting pediatric firearm injury and death.

Limitations:

There were several limitations to the present study. First, not all retailers or ranges participated. This was due to a combination of unanswered phone calls, lack of personnel available to answer questions, and those declining to participate. We received many clarifying questions in the consent process, asking if we were affiliated with a political organization. In an attempt to overcome this hesitation, our team made clear attempts to emphasize that this was a research study. Another limitation to our study was the decision to only call participants. It is plausible that utilizing other data collection mechanisms would have resulted in increased participation in the study. We also relied on self-report from the retailers, as our team was not able to visit locations in person. Also, not all participants completed the survey. This could be related to either survey fatigue due to the length of the survey, or that the final question was relating to suicide materials, which may have been more distressing to the participant. Finally, we were unable to include law enforcement agencies, colleges, and universities in the study, which represents a missed opportunity given there may exist temporary storage programs in these organizations. Future studies should expand the sampling frame to ensure temporary storage options are assessed in a more comprehensive manner.

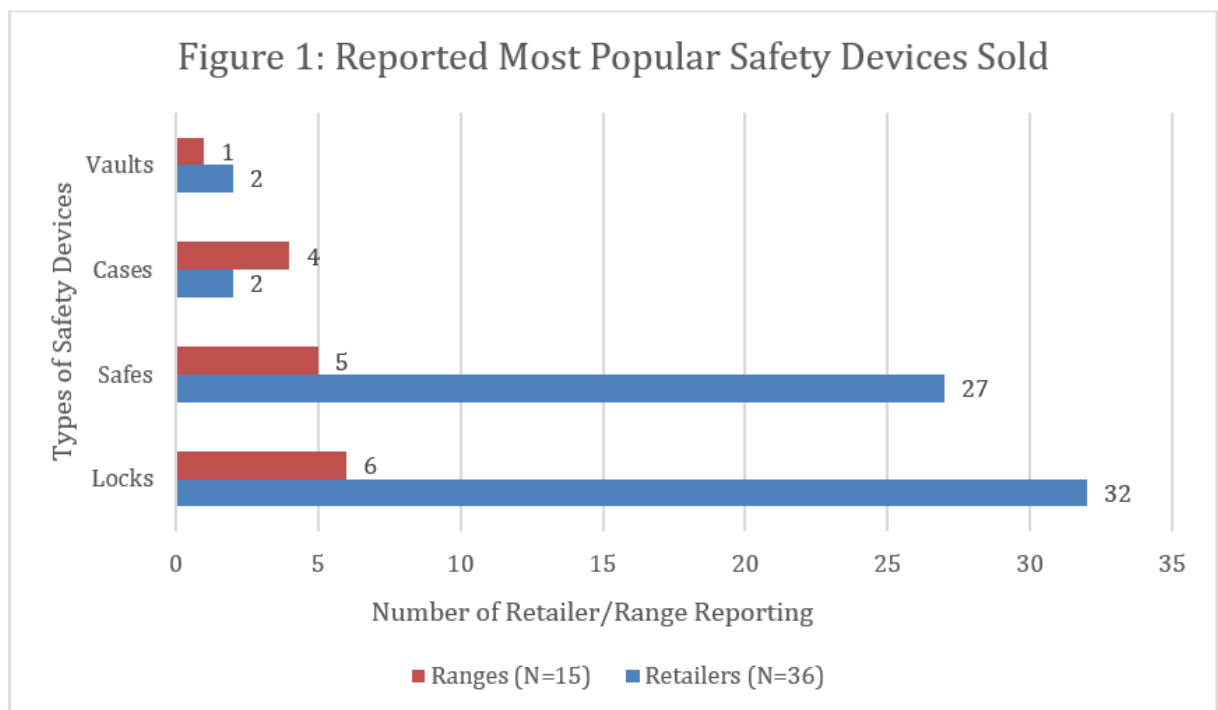
Strengths:

Despite several limitations to this exploratory feasibility study, there are several facets of the investigation which make the effort unique. To our knowledge, this is the first study to attempt to assess the landscape of temporary storage interventions in a large, metropolitan area in the South. Secondly, to our knowledge, this study represents the first systematic attempt to evaluate the extent at which firearm safety and suicide prevention information is being provided at point-of-sale. The retail environment has been identified as a critical ecosystem in the study of other public health

issues including smoking³⁷ and nutrition³⁸; thus, this study highlights an innovative approach to firearm injury and suicide prevention.

Conclusion:

Findings from this study suggest that it is rare for a retailers and ranges in the Greater Houston area to offer temporary storage of firearms for gun owners in times of crisis, and few provide any suicide prevention materials. The vast majority of firearm retailers and ranges provide firearm safe storage information at the point of sale; however, there is no consistent approach in the delivery of this information. Temporary emergency storage is not a widespread option currently in the Greater Houston area, however can be considered as a potential intervention in future community based programs. Future studies should focus on development of improved firearm safe storage counseling at point of sale. Additionally, the integration of suicide prevention materials at point of sale should be further explored.



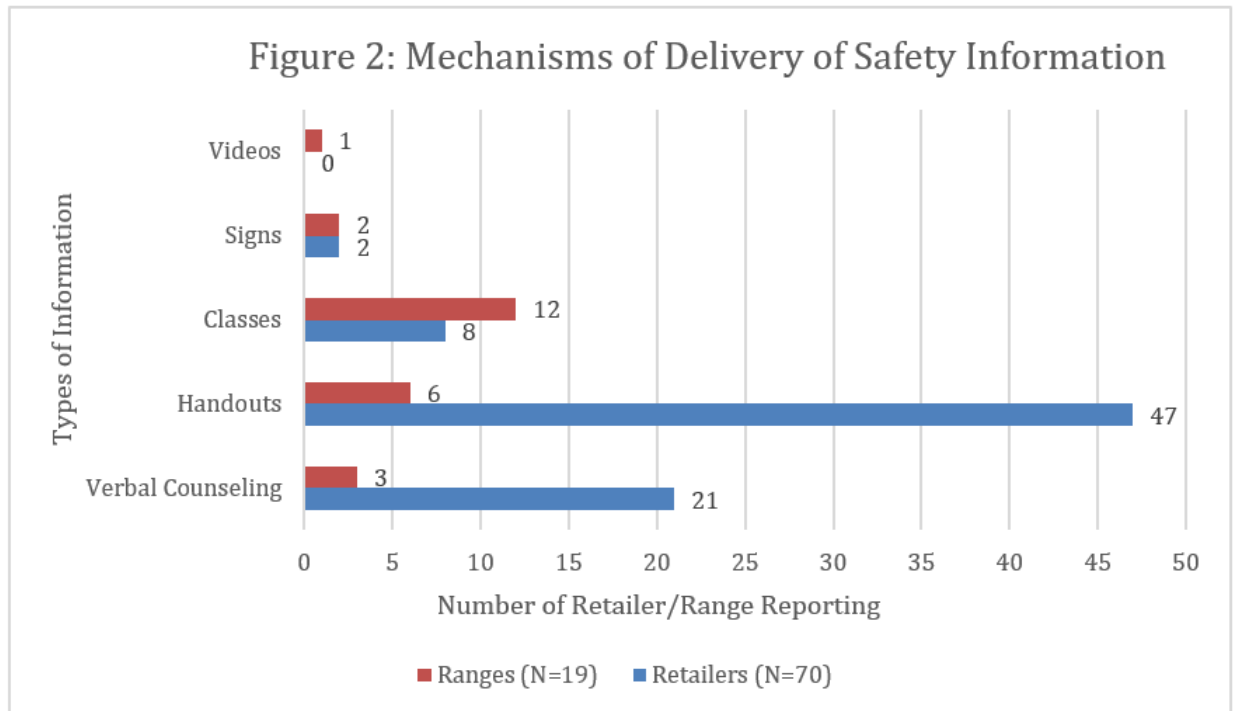


Table 1: Questions Asked of Firearm Ranges and Stores

Table 1. Questions Asked of Firearm Ranges and Stores.		
Item		Response format
Question 1a	Do you allow gun owners to temporarily store firearms in the event of an emergency, for example if there was a suicidal teenager at home? (Yes/No)	Binary (Yes/No)
Question 1b	If yes to Q1a: Is there a fee associated with gun storage?	Open-ended
Question 2	Do you sell firearm safety devices? (Yes/No)	Binary (Yes/No)

Question 2b	Which safety devices that people are purchasing separately from new gun sales are most popular?	Open-ended
Question 3	What type of gun safety information do you offer?	Open-ended
Question 4a	Do you provide suicide prevention information?	Binary (Yes/No)
Question 4b	If yes to Q4a: What type of suicide prevention materials?	Open-ended
Question 5	Do you have any other comments you would like to share with us?	Open-ended

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