

# Effect of Veteran-Focused Suicide Prevention Public Messaging on Help-Seeking Behavior and Secure Firearm Storage

OMEGA—Journal of Death and Dying  
2024, Vol. 0(0) 1–19

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DOI: 10.1177/00302228241297553

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Bertrand D. Berger<sup>1,2</sup> , Sara A. Kohlbeck<sup>1</sup>,  
Kristen P. Howard<sup>1,2</sup>, Denis G. Birgenheir<sup>1,2,\*</sup>,  
Rachel S. Chavin<sup>2,\*</sup>, Graham G. Knowlton<sup>2,\*</sup>,  
Sadie E. Larsen<sup>1,3,\*</sup>, Eric R. Larson<sup>1,2,\*</sup>, Heather M. Smith<sup>1,2,\*</sup>,  
Rachael L. Spalding<sup>1,2,\*</sup>, Katie B. Thomas<sup>1,2,\*</sup>,  
Leticia G. Vallejo<sup>2,\*</sup>, Dan Buttery<sup>4</sup>, and Stephen W. Hargarten<sup>5</sup>

## Abstract

Suicide is a major public health concern in the United States. Veterans are among those at higher risk for death by suicide. Firearm ownership is one factor that contributes to veterans' elevated suicide risk. The current study sought to determine the effectiveness of an evidence-based, multi-media advertising campaign with a specific focus on veterans related to secure storage of firearms and general help-seeking attitudes during a mental health crisis. Results indicated positive changes in (a) attitudes toward seeking help from a health care provider or a friend/loved one during a mental health crisis, (b)

<sup>1</sup>Department of Psychiatry and Behavioral Medicine, Medical College of Wisconsin, Milwaukee, WI, USA

<sup>2</sup>Mental Health Division, Clement J. Zablocki VA Medical Center, Milwaukee, WI, USA

<sup>3</sup>National Center for PTSD, White River Junction VA, White River Junction, VT, USA

<sup>4</sup>War Memorial Center, Milwaukee WI, USA

<sup>5</sup>Division of Emergency Medicine, Medical College of Wisconsin, Milwaukee, WI, USA

\*These authors contributed equally to this work.

## Corresponding Author:

Bertrand D. Berger, Clinical Psychologist, Medical College of Wisconsin, Department of Psychiatry and Behavioral Medicine, Tosa Health Center, Third Floor, 1155 N. Mayfair Rd, Milwaukee, WI 53226, USA.  
Email: [Bberger@mcw.edu](mailto:Bberger@mcw.edu)

attitudes toward firearm storage during a crisis, and (c) self-reported secure firearm storage behaviors post-advertising, particularly among veterans. Implications for future advertising campaigns, clinical interventions, and research investigations are discussed.

### **Keywords**

suicide prevention, firearm storage, veterans, public safety messaging

## **Introduction**

Suicide is a major public health burden in the United States. In 2022, the suicide rate reached its highest since 1941, with 15.3 suicide deaths per 100,000 people according to the [Centers for Disease Control and Prevention \[CDC\], \(2023\)](#). The number of individuals who died by suicide increased by 2.6% between 2021 and 2022, with 49,449 documented deaths by suicide. Certain groups are at higher risk for suicide. According to [CDC \(2023\)](#) data, the two racial/ethnic groups at highest risk for suicide are non-Hispanic American Indian/Alaska Natives and non-Hispanic Whites. Other higher-risk populations include members of the LGBTQ + community, older White males who live alone, residents of rural areas, mining and construction industry employees, and veterans. In 2021, suicide was the 13th leading cause of death among veterans overall and the second leading cause of death among veterans under age 45 ([U.S. Department of Veteran Affairs \[VA\], 2023](#)). Relative to civilians, veterans who die by suicide are more likely to use a firearm, to have physical health problems, and to have experienced a recent death of a friend or family member ([Cortero et al., 2022](#)).

One of the factors contributing to veterans' elevated suicide risk is access to lethal means: firearm ownership. Firearms have the highest case fatality rate for any suicide method ([Cai et al., 2022](#)). In a study of the association between firearm ownership and suicide, firearm ownership predicted statewide overall suicide rates ([Anestis & Houtsma, 2018](#)). Moreover, access to firearms, particularly in the home, is associated with an increased risk of death by suicide across age groups ([Kellermann et al., 1992](#)).

Red-flag laws and other means restriction efforts appear to be helpful to reduce suicide by firearms. Firearm violence restraining orders, or "red-flag" laws, are risk-based, temporary, and preemptive protective orders that authorize the removal of firearms from individuals determined to be at risk for committing firearm violence against others or themselves ([Swanson et al., 2017](#)). Studies have shown that the interval between deciding to act and attempting suicide can be as brief as 10 minutes, and that persons tend not to substitute a different method when a highly lethal method (e.g., a firearm) is unavailable or difficult to access ([Allchin et al., 2018](#)). Empirical evidence supports means restriction, particularly of firearms, as one of the few strategies that can substantially reduce the number of deaths by suicide ([US Department of Health and Human Services \[HHS\], 2012](#); [Stone et al., 2017](#)). Indeed, successful firearm control efforts in

Switzerland, Australia, Canada and New Zealand resulted in decreased suicide rates (Mann & Michel, 2016). However, firearm control efforts have been historically difficult to duplicate in the United States due to concerns about Second Amendment rights, variation in state laws and regulations, and the opposition of firearm rights advocates. Research reveals that veterans, particularly those at mid-life, often have rigid beliefs around treatment, help-seeking, and firearm safety behaviors (Karras et al., 2018). However, investigations of a VA firearm lock distribution initiative found that veterans were agreeable to receiving firearm locks from medical and mental health providers, and that they approved of VA providers addressing firearm access concerns with their patients (Walters et al., 2012). These findings suggest that veterans' views towards firearm safety may be flexible and amenable to means restriction recommendations from trusted providers and other sources.

Public messaging campaigns can be an effective method to encourage means restriction. Such campaigns have been useful for shifting attitudes towards other public health concerns. Research indicates that public messaging such as social media campaigns can improve health awareness and engagement in health behaviors (e.g., smoking cessation, healthy eating, reduction of or abstinence from substances; De Leon et al., 2014; Gough et al., 2017; Stead et al., 2019). In light of the benefits of public messaging, suicide prevention strategic plans by numerous organizations including the VA (2023), CDC (2022), and U.S. Department of Health and Human Services, (2021) now recommend societal interventions which involve the use of public messaging and social media to reduce suicides. Specifically, multicomponent suicide prevention strategies involving repeat exposure and community engagement appear more beneficial than standalone campaigns, which are primarily useful for increasing suicide literacy (Torok et al., 2017). When constructing public health and safety messaging, harm reduction framing approaches appear most effective to encourage attitudinal and behavioral change without stigmatizing or alienating viewers. For instance, in the context of the opioid epidemic, messaging interventions incorporating both factual information and sympathetic views towards individuals who use drugs were found to enhance public support for harm reduction interventions of naloxone distribution and safe usage sites (Bachhuber et al., 2015; Sumnall et al., 2020). This is particularly valuable to consider when designing firearm messaging directed towards the veteran population, who often possess a special connection to their firearms from being trained with firearms during their service experience and may be unlikely to follow recommendations to eliminate firearm possessions entirely. To adapt this approach to the issue of firearm safety behaviors, messaging can encourage maintaining firearm access while enhancing safety mechanisms, particularly in periods of higher stress or instability.

The primary aim of this study was to evaluate the effect of a Wisconsin-based public multi-media advertising campaign aimed at promoting veterans' awareness and attitudes as they relate to the impact of firearm possession on suicide and encouraging veterans to consider behavior change through more secure firearm storage options and help-seeking behaviors. The effect of the advertising was measured by surveying Wisconsin residents, before and after advertising exposure, on their intent to seek help

and to securely store their firearms. The following research questions directed the project: (1) Was advertising effectively distributed to viewers, and did more veterans see the advertising than non-veterans? (2) Did viewers' willingness to seek help change after viewing the advertisement? and (3) Did viewers' willingness to store firearms more securely change after viewing the advertisement?

## **Methodology**

### *Message Development*

To guide message design, we used components of the evidence-based strategy noted in CDCynergy lite (CDC, 2010) to create our social marketing plan. Focus groups were conducted with key stakeholders, including a diverse group of veterans, veteran family members, and friends of veterans. Focus groups were conducted in virtual sessions due to COVID-19 restrictions. We followed four iterative steps from focus group post-interviews: (a) creative development, (b) concept testing, (c) message testing, and (d) expert review. The focus groups reviewed a draft of the advertising concepts, followed by open-ended discussions that were transcribed for content to determine common themes. Based on feedback from the focus groups, we featured women and veterans from various cultural and racial backgrounds as messengers in the advertising campaign. Video, audio and images of the messages were of or by veterans and included a reference or a direct link to the project's website.

### *Delivery of Advertising*

The project received \$178,480.00 in dedicated funding to provide paid advertising, and the project obtained donated and news story (i.e., "earned") advertising worth \$292,121.00 for a total of \$470,601.00. Advertising was implemented through statewide venues in television (45% of total advertising funds with 3925 airings in seven state-wide zones), radio (35% of total funds), and online digital ads (20% of total funds, with a reach of 3,692,829 impressions, 3966 clicks in all Wisconsin counties and 818 Zip codes). Radio advertising included a veteran who was also a former Green Bay Packer football player. The digital campaign focused on veteran audiences with a blend of audio (6%), pre-roll video (89%), and connected TV (5%). Combined, these ads appeared on over 50,000 unique placements, including websites, apps, television, and YouTube channels. A significant amount of television advertising was through Spectrum News Networks and Bally Sports during Milwaukee Brewers baseball games. The focus and placement of the advertising was determined by the research team's marketing and advertising consultant and team with expertise in marketing with the veteran population.

## *Participants*

Participant sampling was attempted to match the Wisconsin general population; veterans were intentionally oversampled (30%; veterans are 8% of the population) to ensure sufficient representation. Initially the survey was made available to the public through an email newsletter distributed by the Wisconsin Department of Veterans Affairs (with an initial plan to use \$10 gift card incentives). However, public distribution of the survey was not feasible due to the inability of Qualtrics XM survey system to screen out invalid participants. Out of the initial 640 surveys using this approach, only 150 surveys were determined to be valid after being screened for legitimate email addresses, item response patterns and time to complete the survey. The remaining 250 participants who completed the pre-advertising survey and the post-advertising sample were obtained using survey techniques by the Qualtrics XM research team.

The final sample consisted of a total of 800 adults (between age 18–80), including an independent sample of 400 participants pre-advertising and 400 participants after our advertising efforts. See [Table 1](#) for demographic information across time points and veteran status.

## *Measures and Procedure*

To measure the messaging's reach and effect on attitudes and behavior, we surveyed Wisconsin residents pre- and post-advertising via a 46-item survey. Informed consent was obtained by requiring participants to read an informational letter prior to answering the survey. Questions were developed through a collaborative process with input from the research team and expert review by VA psychologists. Three items assessed participants' exposure to advertising related to (a) mental health or suicide prevention crisis lines, (b) veterans and suicide prevention information, and (c) whether they had visited websites related to firearm storage and suicide prevention in the past four months. Additionally, the post-advertising survey included an item on whether participants had visited the project's website advertising "landing" page. Two items assessed attitudes toward seeking help (from a loved one or a mental health provider) during a mental health or suicide crisis. Six items assessed attitudes toward secure firearm storage when someone is experiencing a mental health or suicide crisis. Four items inquired about secure firearm storage (i.e., storing firearms locked AND unloaded). See supplemental materials for a list of items.

## *Data Analytic Plan*

*Preliminary Analyses.* We first compared each sample at both time points by demographic variables using chi-square (for categorical variables) or *t* test (for age) analyses. To ease interpretation of the categorical analyses, we collapsed some variables into binary categories (i.e., race into White or Person of Color; marital status into married/in a committed relationship or single/divorced/widowed; and employment status into

**Table 1.** Demographic Information Across Veteran Status.

Variable	Pre-advertising <i>n</i> (%)		Post-advertising <i>n</i> (%)	
	Veterans	Non-veterans	Veterans	Non-veterans
Gender				
Men	98 (80.3)	80 (28.8)	79 (62.7)	89 (32.5)
Women	24 (19.7)	194 (69.8)	37 (29.4)	180 (65.7)
Transgender women	0 (0.0)	0 (0.0)	3 (2.4)	2 (0.7)
Transgender men	0 (0.0)	2 (0.7)	5 (4.0)	2 (0.7)
Non-binary	0 (0.0)	1 (0.4)	1 (0.8)	2 (0.7)
Other	0 (0.0)	1 (0.4)	0 (0.0)	0 (0.0)
Age, <i>M</i> years ( <i>SD</i> )	56.8 (13.4)	47.2 (16.3)	33.9 (9.0)	36.4 (14.4)
Race				
White	114 (93.4)	248 (89.2)	91 (7.2)	225 (82.1)
Black	4 (3.3)	16 (5.8)	23 (18.3)	26 (9.5)
Native American	1 (0.8)	1 (0.4)	2 (1.6)	3 (1.1)
Asian/Pacific Islander	2 (1.6)	4 (1.4)	2 (1.6)	6 (2.2)
Biracial	0 (0.0)	4 (1.4)	5 (4.0)	5 (1.8)
Other	1 (0.8)	5 (1.8)	2 (1.6)	10 (3.6)
Hispanic	8 (6.6)	22 (7.9)	53 (19.3)	30 (23.8)
Marital status				
Married	86 (70.5)	138 (49.6)	81 (64.3)	118 (43.1)
Single	17 (13.9)	83 (29.9)	30 (23.8)	104 (38.0)
Divorced	13 (10.7)	23 (8.3)	5 (4.0)	19 (6.9)
Widowed	2 (1.6)	10 (3.6)	1 (0.8)	5 (1.8)
Committed relationship	4 (3.3)	24 (8.6)	8 (6.3)	29 (10.6)
Employment status				
Working	55 (45.1)	152 (54.7)	97 (77.0)	201 (73.4)
Unemployed	6 (4.9)	38 (13.7)	12 (9.5)	35 (12.8)
At risk of unemployment	1 (0.8)	0 (0.0)	7 (5.6)	3 (1.1)
Retired	51 (41.8)	70 (25.2)	5 (4.0)	23 (8.4)
Disabled	8 (6.6)	11 (4.0)	3 (2.4)	8 (2.9)
Prefer not to answer	1 (0.8)	7 (2.5)	1 (0.8)	5 (1.8)

Note. *N* = 400 at each time point. Pre-advertising: Veterans *n* = 122; Non-veterans *n* = 278; Post-advertising: Veterans *n* = 126; Non-veterans *n* = 274.

employed or unemployed/retired/disabled/at risk of unemployment). We then examined demographic differences by veteran status collapsed across time points. We also examined differences in firearm ownership between veterans and non-veterans (proportions of firearm owners and mean number of firearms).

**Advertising Reach.** To track the number of impressions made by advertising, the following data were recorded: number and location of advertising presentations, number of overall impressions and “clicks” on direct email campaigns, number of

advertisements broadcast through TV and radio, and website/page requests. A logistic regression assessed advertisement views as reported on the survey. First, we examined whether time (i.e., survey results pre-vs. post-advertising) predicted endorsement of seeing or hearing advertising related to (a) mental health/suicide prevention crisis lines, (b) veterans and suicide prevention, and (c) secure firearm storage for suicide prevention in the last four months (0 = no; 1 = yes). Next, we examined whether veterans were more likely to report seeing/hearing this advertising by including an interaction term between veteran status and time, while controlling for relevant demographic covariates (i.e., age, gender, marital status, employment status, ethnicity, and race). For significant interactions, we conducted simple slopes analyses for veterans versus non-veterans. Then, these analyses were repeated to assess whether participants reported visiting websites about firearm storage and suicide prevention. Advertising for the project's website was only assessed using the post-advertising survey; thus, we examined the main effect of veteran status on endorsement of this item. Analyses were conducted in R (R Core Team, 2023).

*Help-Seeking and Secure Storage Attitudes.* We used ordered logistic regression to assess attitudes on help-seeking and secure storage of firearms, as these items included disagree, unsure, and agree, such that unsure was classified as a more positive response than disagree. These analyses mirrored the logistic regression analyses above, in which we first examined change over time and then whether veteran status moderated the effect of advertising on attitude change while controlling for the same demographic covariates.

*Secure Firearm Storage Behavior.* Finally, we used logistic regression to assess secure firearm storage behaviors among firearm owners. Storing firearms loaded and/or unlocked was considered "unsecure" (0), whereas "secure" storage entailed storing firearms locked and unloaded (1). We first examined differences by veteran status, controlling for demographic variables collapsed across surveys. We then examined differences across time via an interaction term with veteran status.

## Results

### *Descriptive Analyses*

We examined demographic differences between samples at each time point. The average age of the pre-advertising sample (50.2 years) was significantly older than that of the sample post-advertising (35.6 years),  $t(764.5) = 14.1, p < .001$ . The post-advertising sample was also more racially and ethnically diverse, with a higher proportion of participants endorsing non-White racial,  $\chi^2(1) = 20.27, p < .001$ , or ethnic,  $\chi^2(1) = 27.81, p < .001$  backgrounds. Additionally, this sample was more securely employed than the pre-advertising sample,  $\chi^2(1) = 44.47, p < .001$ . There were no

differences in the proportion of men or women,  $\chi^2(1) = 0.14, p = .712$ , or those in a committed relationship,  $\chi^2(1) = 1.35, p = .246$ , across time points.

Most participants in the non-veteran population were women (67.8%), whereas in the veteran population the majority were men (71.8%),  $\chi^2(1) = 127.08, p < .001$ , resembling the overall veteran population. Veterans were also slightly older (45.2 vs. 41.9 years) on average,  $t(477.8) = 2.65, p = .008$ , and more likely to be married or in a committed relationship (72.2% vs. 56.0%),  $\chi^2(1) = 18.88, p < .001$ . However, there were no differences in racial or ethnicity diversity or employment status ( $ps < .38$ ). Finally, significantly more veterans owned firearms pre-advertising (67.2% vs. 37.4%),  $\chi^2(1) = 30.27, p < .001$  and post-advertising (81.7% vs. 47.4%),  $\chi^2(1) = 41.76, p < .001$ . However, among firearm owners, veterans did not own significantly more firearms on average, either at pre- (4.3 vs. 3.1),  $t(152.36) = -1.95, p = .053$ , or post-advertising (3.9 vs. 3.8),  $t(211.5) = -0.12, p = .906$ .

### Advertising Reach

The overall number of impressions (the number of digital views or engagements) of the advertising from December 2021 to October 2022 was 19,686,930, with statewide online digital advertising providing 59% of these impressions. The website recorded 160,761 pages loaded between January 2022 and July 2022 with more than 4000 unique visitors.

Survey respondents were significantly more likely to report seeing or hearing relevant advertising in the post-advertising survey compared to pre-advertising. Participants were nearly twice as likely or more to endorse encountering advertising about (a) mental health/suicide prevention crisis lines,  $OR = 2.07, p < .001, 95\% CI [2.64, 3.02]$ , (b) veterans and suicide prevention,  $OR = 1.81, p < .001, 95\% CI [1.31, 2.52]$ , and (c) secure firearm storage for suicide prevention,  $OR = 3.69, p < .001, 95\% CI [2.76, 4.95]$ . Participants were also more than six times more likely to report visiting a website related to secure storage of firearms and suicide prevention at post-advertising,  $OR = 6.33, p < .001, 95\% CI [4.65, 8.71]$ .

After advertising, veterans were 2.5 times more likely to report seeing advertising on firearm secure storage than non-veterans,  $OR_{INT} = 2.46, p = .021, 95\% CI [1.16, 5.39]$ . The odds ratio for veterans was 5.16,  $p < .001, 95\% CI [2.56, 10.38]$ , and only 2.09,  $p < .001, 95\% CI [1.44, 3.03]$ , for non-veterans. However, the effects of advertising related to mental health/suicide prevention crisis lines,  $OR_{INT} = 1.35, p = .542, 95\% CI [0.53, 3.67]$ , or veterans and suicide prevention,  $OR_{INT} = 0.77, p = .585, 95\% CI [0.30, 2.01]$ , were not significantly moderated by veteran status. Veterans also were not more likely to report visiting related websites,  $OR_{INT} = 1.24, p = .656, 95\% CI [0.50, 3.33]$ . However, after advertising, 78.5% of participants reported seeing advertising referencing or visiting the project's website, with a larger effect on veterans (95.2%) than non-veterans (70.9%),  $OR = 6.36, p < .001, 95\% CI [2.45, 16.51]$ . See [Supplemental Table 1](#) for a breakdown of participants who reported seeing each item.

## Help-Seeking Attitudes

Attitudes toward seeking help from a health care provider while in a mental health crisis significantly improved after advertising,  $OR = 3.49, p < .001, 95\% CI [2.37, 5.20]$ , with agreement rates increasing from 67.8% to 80.8%, as did attitudes toward seeking help from a friend or loved one,  $OR = 2.06, p < .001, 95\% CI [1.45, 2.93]$ , shifting from 74.5% to 84.8%. Advertising appeared to have a much stronger effect among veterans for both attitudes around help from friends/loved ones,  $OR_{INT} = 6.89, p < .001, 95\% CI [2.61, 20.80]$ , and from health care providers,  $OR_{INT} = 6.02, p = .005, 95\% CI [1.85, 24.03]$ . Veterans were 7.6 times more likely to say they would seek help from loved ones after advertising (95%),  $OR_{Vet} = 7.60, p < .001, 95\% CI [2.88, 20.05]$ , compared to before (65%). This effect was not significant among non-veterans,  $OR_{non-Vet} = 1.10, p = .661, 95\% CI [0.71, 1.71]$ , likely due to their positive attitudes pre-advertising (78% vs. 80%). Attitudes regarding mental health care providers improved both among veterans from 62% to 86%,  $OR_{Vet} = 13.69, p < .001, 95\% CI [2.88, 20.05]$ , and non-veterans, though the effect was much smaller, 70%–78%,  $OR_{non-Vet} = 2.28, p < .001, 95\% CI [1.43, 3.60]$ . See [Supplemental Table 2](#).

## Secure Firearm Storage Attitudes

Overall, attitude change regarding secure firearm storage was variable. Veterans generally showed greater positive changes in attitudes than non-veterans. Across participants, there were significant improvements in beliefs that people should temporarily store firearms outside the home,  $OR = 1.42, p = .038, 95\% CI [1.02, 2.00]$ , and should have their firearms removed during a mental health/suicide crisis,  $OR = 1.78, p < .001, 95\% CI [1.31, 2.41]$ , as well as in agreeing that they would lock their firearms at home,  $OR = 1.73, p < .001, 95\% CI [1.28, 2.36]$ , and store them outside the home,  $OR = 1.78, p < .001, 95\% CI [1.31, 2.42]$ ; the remaining items were not significant ( $ps > .16$ ). Veteran status significantly moderated the effect of advertising on attitude change for most items on firearm storage (See [Table 2](#)). In fact, the only item for which veterans did not demonstrate significant attitude changes (either via a main effect or an interaction with time) was whether people should lock their firearms in their home during a crisis. And although the main effect across time for this item was not statistically significant, the effect was marginal when accounting for demographic variables (see [Table 2](#)).

## Firearm Storage Behavior

Among firearm owners, participants were more likely to report secure storage practices of their firearms (i.e., both locked and unloaded) post-advertising,  $OR = 3.13, p < .001, 95\% CI [2.07, 4.78]$ . Additionally, this effect was stronger among veterans,  $OR_{INT} = 3.15, p = .015, 95\% CI [1.26, 8.04]$ . While veterans were nearly four times more likely to report secure firearm storage post-advertising,  $OR_{Vet} = 3.95, p < .001, 95\% CI [1.78,$

**Table 2.** Moderation Models of Veteran Status on Firearm Storage Attitudes.

Model	Variable	OR	<i>p</i>	95% CI
People should lock their firearms in their home	Time	1.67	.096	[0.90, 1.87]
	Veteran	0.66	.266	[0.54, 1.12]
	Time X Vet	1.09	.866	[0.86, 1.58]
People should temporarily store firearms outside of the home	Time	1.36	.171	[0.88, 2.11]
	Veteran	0.70	.202	[0.41, 1.21]
	Time X Vet	2.03	.072	[0.94, 4.44]
People should have firearms removed from the home	Time	1.66	.013	[1.12, 2.49]
	Veteran	0.50	.005	[0.31, 0.81]
	Time X Vet	2.59	.007	[1.30, 5.18]
	Vet <sub>SS</sub>	4.31	<.001	[2.32, 8.00]
	Non-Vet <sub>SS</sub>	1.67	.013	[1.11, 2.48]
It is a good idea to store firearms outside the home	Time	0.99	.959	[0.63, 1.56]
	Veteran	0.46	.005	[0.16, 0.79]
	Time X Vet	3.81	<.001	[1.76, 8.43]
	Vet <sub>SS</sub>	3.76	<.001	[1.86, 7.61]
	Non-Vet <sub>SS</sub>	0.99	.959	[0.63, 1.56]
I Would lock up the firearms at home	Time	1.56	.026	[1.05, 2.31]
	Veteran	0.65	.084	[0.40, 1.06]
	Time X Vet	1.71	.138	[0.85, 3.49]
I Would store the firearms outside the home	Time	1.24	.297	[0.83, 1.84]
	Veteran	0.50	.004	[0.31, 0.80]
	Time X Vet	2.63	.007	[1.31, 5.36]
	Vet <sub>SS</sub>	3.25	<.001	[1.72, 6.13]
	Non-Vet <sub>SS</sub>	1.24	.297	[0.83, 1.84]

Note. All outcome items assess attitudes when someone is experiencing a mental health or suicide crisis. Analyses conducted via ordered logistic regression (disagree [1], unsure [2], agree [3]). Time = pre-advertising (0) or post-advertising (1). Time X Vet = Interaction between time and veteran status. Vet<sub>SS</sub> = Simple slopes analysis for veterans. Non-Vet<sub>SS</sub> = Simple slopes analysis for non-veterans. Simple slopes analyses only conducted for significant interactions. Model covariates include: age, gender, marital status, employment status, ethnicity, and race.

8.76], this effect was not significant among non-veteran firearm owners,  $OR_{Non-Vet} = 1.25, p = .834, 95\% \text{ CI } [0.68, 2.30]$ .

## Discussion

Suicide prevention efforts require multifaceted approaches that extend beyond individual interventions. An emerging area of focus in suicide prevention includes the use of public messaging to increase suicide literacy (Torok et al., 2017), a strategy which has been effective in other health behavior efforts.

## *Advertising Campaign*

The current study sought to determine the effectiveness of an evidence-based, multi-media advertising campaign related to secure storage of firearms and general help-seeking attitudes during a mental health crisis. This campaign specifically focused on outreach towards the veteran population due to the high prevalence of suicide among this demographic (Cortero et al., 2022). Using self-reported data collection pre-advertising and again post-advertising, analyses determined whether: (a) the advertising campaign reached its target audience; (b) attitudes changed around secure firearm storage; (c) attitudes for help-seeking behavior changed, and (d) self-reported secure storage behaviors among firearm owners changed.

Overall, the data suggest that the advertising campaign was seen by its target audience and appeared largely successful, although there were few differences in its effect on veterans. Veterans, in particular, were more likely to report seeing advertising specific to secure storage of firearms, though there were no differences found between veterans and non-veterans regarding advertising specifically related to suicide prevention crisis lines or veterans and suicide prevention. Significant differences pre- and post-campaign showed improved attitudes towards help-seeking and self-reported secure storage behaviors among firearm owners. Our findings are consistent with prior research and current recommendations highlighting the utility of public messaging as an effective strategy for public health concerns (De Leon et al., 2014; Gough et al., 2017; Stead et al., 2019) and demonstrate the potential to influence change even among those with rigidly held beliefs regarding firearms, their storage practices, and help-seeking behavior.

## *Help-Seeking Behaviors*

The willingness to seek help from others during a mental health crisis is crucial in reducing the likelihood of someone engaging in suicidal behavior, as help-seeking allows for friends, family, and health care providers to work together to devise appropriate interventions. As a result, most anti-suicide public service advertisements encourage people to reach out to others for support during times of crisis (Ammerman, 2022). Consistent with a recent finding that most veterans are unwilling to speak to providers at a veteran's organization or crisis line about having suicidal thoughts (Beatty et al., 2023), our study found that, at the time of our pre-advertising survey, veterans were less willing than non-veterans to seek help from others. However, after advertising, attitudes toward seeking help from a health care provider, mental health care provider, friend, and/or loved one during a mental health crisis all significantly improved. These findings were notably four times stronger in the veteran versus non-veteran sample, a particularly salient finding given that veterans are less likely than non-veterans to trust general medical providers with their thoughts of suicide (Beatty et al., 2023). Our findings show that veterans' reluctance to confide in medical providers may be malleable (Walters et al., 2012), and that interventions, such as the

advertisements employed in this study, may be effective at bridging communication gaps between veterans and healthcare providers.

### *Attitude and Behavior Change*

Attitude and behavior change related to firearm safety is likely among the most critical targets of suicide prevention efforts. Among veterans, attitudes about firearms are often steadfast, particularly in comparison to the civilian population (Karras et al., 2018). Veterans are more likely to be exposed to firearms earlier in life, view firearms within a sociocultural context, and identify firearms as a necessity for personal and/or household protection (Simonetti et al., 2019). In fact, owning and readily having access to firearms by keeping them loaded and unlocked has been associated with previous exposure to traumatic experiences that have influenced one's sense of safety (e.g., combat exposure). Firearm ownership has been found to be a common coping skill used by veterans to feel safer (Ehlers & Clark, 2000; Simonetti et al., 2020). It appears, therefore, that veterans' attitudes around firearms are strongly held due to their past experiences and overall perception of safety.

Prior research suggests that promoting help-seeking behaviors through a harm reduction approach may be effective within the veteran population (Bachhuber et al., 2015; Sumnall et al., 2020). Consistent with this, the advertisements used in the present study were found to be effective in shifting veterans' attitudes towards firearm storage. Specifically, it was found that before the media campaign, veterans agreed that it is a good idea to lock firearms or temporarily store them outside the home during a mental health crisis. Veterans' receptivity towards storing firearms outside of the home when someone is experiencing a mental health crisis was further strengthened post-advertising. Of note, this effect was limited to veterans' attitudes regarding others' behavior, and not directed towards their own behavior. This may be due to veterans placing significantly more trust within their own ability to securely store firearms than others (Beatty et al., 2023). Further, it appears that veterans are willing to engage in secure firearm practices and even the removal of firearms at times of increased risk for harm when they are receiving recommendations from those they trust. Prior research suggests that, when working with trusted providers, veterans are open to engaging in firearm safety behaviors, including the removal of firearms during a mental health crisis (Beatty et al., 2023; Valenstein et al., 2018; Walters et al., 2012). Despite the common perception that veterans may be unwilling to change their views on firearm secure storage, our data show that veterans are open to learning about and engaging in safety behaviors, particularly during times of crisis.

While there is contention in the literature about the relationship between attitude change and behavioral change (Verplanken & Orbell, 2022), the results of our study suggest that attitude change can extend to reported secure storage behavior. The veteran sample who had been exposed to the media campaign tended to report keeping their firearms locked and unloaded, as opposed to the veteran sample pre-advertising who tended to report storing their firearms unlocked and loaded. In addition, veterans

reported a change in how they store their firearms outside of the home. Although previous research has called into question whether increased awareness translates into actual behavioral change (Torok et al. (2017), addressing stigma, cultural factors, and other barriers to lethal means restriction is an important starting point. Prior studies suggest that decreasing stigma and improving suicide literacy can turn attitudes toward help-seeking but did not demonstrate behavior change (Dumesnil & Verger, 2009). The current study suggests that using media to advertise secure storage of firearms, which has been proven to reach a large audience and, more importantly, to individuals before a crisis (Wakefield et al., 2010), may be effective in changing attitudes about secure firearm storage.

## Conclusion & Clinical Implications

Suicide risk mitigation is an ongoing area of needed focus within mental health. Suicide rates have increased despite continued targeted suicide prevention efforts (Stone et al., 2017; U.S. Department of Health and Human Services, 2012; World Health Organization, 2014). Most interventions for suicide focus on suicidal thoughts and behaviors at the individual level through mental health treatment, crisis intervention, and lethal means restriction education. Our study provides evidence that implementing larger scale suicide prevention advertising strategies may increase the likelihood of help-seeking behavior when in crisis and engaging in secure firearm storage, which may consequently be effective in reducing suicidal behavior.

Limiting one's access to firearms during times of crisis is imperative as this can reduce suicide attempts and deaths by suicide. Suicidal ideation is transient in nature and, therefore, prolonging the time it takes for one to access lethal means can decrease the potential of impulsive and acute suicidal behavior (Hawton, 2007; Simon et al., 2001). As veterans are particularly prone to engaging in unsecure firearm storage (Bryan et al., 2019), targeting veteran populations by encouraging secure storage is critical. Prior research indicates that individual counseling and directly providing veterans with cable locks for firearms are effective strategies for increasing behavior change in firearm safety (Anestis et al., 2021). While lethal means safety counseling is an effective intervention that can prevent injury and death via reducing access to firearms, such an intervention requires an individual to be engaged in treatment. In recognizing the significant barriers to accessing care that exist, a public media campaign such as the one implemented in the current study may be an effective way to reach not only those who may be at higher risk of suicide by firearm and less likely to engage in treatment, but also their loved ones, who may facilitate intervention planning, help-seeking and secure firearm storage (Reidenberg & Berman, 2020).

## Limitations

While these results appear promising, there are several limitations worth discussing. Most importantly, the causal nature of the advertising on these outcomes cannot be

determined. Although both the pre- and post-advertising samples were recruited to be largely representative of the greater population of Wisconsin, they are independent samples. Relatedly, there were demographic differences between the pre- and post-advertising samples. Although attempts were made to control for demographic differences in samples, these differences, such as age, may contribute to the observed differences in outcomes. Future research examining longitudinal behavioral change across a single cohort could provide more definitive evidence of the effectiveness of a similar media campaign. Survey respondents may also be biased toward individuals with particular interest in firearms. Relatedly, the direct impact of this targeted campaign is not clear, as other suicide prevention and firearm safety advertisements may have co-occurred. The ability to continue advertisements was also obstructed by the political election season, limiting the time frame in which advertisements were put forth. Furthermore, several items had high endorsement rates even prior to advertising, particularly among non-veterans, which could contribute to ceiling effects of the advertisements' effectiveness. However, even small changes in attitudes or firearm storage behavior may have important consequences. Finally, the long-term effects of such campaigns are unclear and likely limited without additional interventions (Torok et al., 2017).

## **Future Directions**

Our findings showed that a single round of advertising was associated with relatively rapid changes in attitudes and self-reported behaviors about firearm storage and the likelihood of reaching out to others during times of mental health crises. Future studies might examine the duration of advertising's effect; sustained advertising campaigns are likely important in maintaining the changes found in attitudes and self-reported behaviors around firearm storage, and help-seeking attitudes. Since advertising campaigns are expensive, resource-intensive, and time-consuming, longitudinal data would be critical when designing evidence-based approaches towards the optimal interval between advertising campaigns. The current study included a sample of participants from Wisconsin; sampling from a nationwide population is needed to determine the generalizability of these findings. Future studies can also examine whether the effects found between media-based advertising campaigns and improvements in attitudes about firearm storage, self-reported behaviors around firearm storage, and help seeking behaviors lead to an actual reduction in suicide rates.

## **Acknowledgements**

We wish to recognize the following individuals that aided in the project's concept & development; Jean Papalia, Micheal McBride, M.D.; Survey development; Josh Hunt, PhD; focus groups, Mark Flower, Chris Swift, marketing development, & advertising; Amit Bhatnagar, PhD, Jim Held, Mary Bridges, Scott Star, Zane Johnson and research assistance; Heidi Gremmer.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the project received a 2-year award of \$359,173.00 from the Advancing a Healthier Wisconsin (AHW) - Healthier Wisconsin Partnership Program, funding proposal number: 9510267.

## Ethical Statement

### *Ethical Approval*

Participants were required to read an information statement prior to completing the survey for informed consent as per the Medical College of Wisconsin (MCW) IRB recommendations. MCW approved IRB PRO00041080. IRB approval number and location noted in the title page.

### *Consent to Participate*

Participants provided consent to participate by completing an informational page regarding the study and the survey prior to completing the survey as recommended by the approving IRB.

## ORCID iD

Bertrand D. Berger  <https://orcid.org/0009-0008-1620-7125>

## Supplemental Material

Supplemental material for this article is available online.

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## Author Biographies

**Bertrand Berger** is a psychologist and an Assistant Professor at the Medical College of Wisconsin Department of Psychiatry and Behavioral Medicine and Co-Chief of Mental Health at the Milwaukee VAMC. His research focus is on suicide prevention related to lethal means, public health education and veterans.

**Sara Kohlbeck** is an Assistant Professor in the Department of Psychiatry and Behavioral Medicine at the Medical College of Wisconsin and directs the Division of Suicide Research and Healing in the Comprehensive Injury Center at the Medical College of Wisconsin. Her research focuses on social and structural determinants of suicide.

**Kristen Howard** is a psychologist and Assistant Professor at the Medical College of Wisconsin Department of Psychiatry and Behavioral Medicine. Her research focuses on Dialectical Behavior Therapy and emotional and interpersonal correlates of personality pathology and PTSD.

**Denis Birgenheir** is an Assistant Professor at the Medical College of Wisconsin Department of Psychiatry and Behavioral Medicine and a staff psychologist in the

Mental Health department at the Milwaukee VAMC. His research focus is on mental health recovery and suicide prevention.

**Rachel Chavin** is a Residential Rehabilitation Psychology Fellow at the Milwaukee VAMC. Her research focuses on understanding non-suicidal self-injury and suicide's relationship with personality pathology.

**Graham Knowlton** is a psychologist and the Suicide Prevention Program Manager at the Milwaukee VAMC. His past research has focused primarily on the psychotherapeutic process, and more recently he has focused on suicide prevention in the veteran population.

**Sadie Larsen** is a psychologist at the National Center for PTSD and a Professor at the Medical College of Wisconsin. Her research focuses on enhancing effectiveness of and access to evidence-based treatments for PTSD.

**Eric Larson** is a neuropsychologist and an associate professor of Psychiatry and Behavioral Medicine at the Medical College of Wisconsin. His research relates to the interplay between psychiatric symptoms and cognitive functioning in adults.

**Heather Smith** is Lead Psychologist and Director of Psychology Training at the Milwaukee VA Medical Center and Professor of Psychiatry and Behavioral Medicine at the Medical College of Wisconsin. Her research interests are in the areas of geropsychology, decision-making capacity, and psychology training and supervision.

**Rachael Spalding** is a staff psychologist at the Milwaukee VA Medical Center and Assistant Professor at the Medical College of Wisconsin. She specializes in geropsychology and the treatment of complex chronic pain and medical conditions.

**Katie Thomas** is a staff psychologist at the John H. Bradley VA Outpatient Clinic within the Milwaukee VAMC and Assistant Clinical Professor of Psychiatry at the Medical College of Wisconsin. Her research interests are in interpersonal trauma, emotion dysregulation, and self-harm behaviors.

**Leticia Vallejo** is a psychologist providing virtual care throughout Wisconsin. Her areas of interest are in health psychology, health equity, and culturally-informed practice.

**Daniel Buttery** is the CEO and President of the War Memorial Center in Milwaukee Wisconsin and military veteran of Operation Iraqi Freedom (Combat Engineer). He has extensive background in marketing specifically related to veteran issues. He is interested in research projects to prevent suicide in veterans using public health education marketing techniques.

**Stephen Hargarten** is an emergency physician and Professor of Emergency Medicine at the Medical College of Wisconsin. Dr. Hargarten has been conducting research on firearm related topics for over three decades, most recently focusing on terminal ballistics.