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RESEARCH ARTICLE

Association Between Firearm Purchasing in Response to the COVID-19 Pandemic and Symptoms of Anxiety, Depression, and Stress, August 2021

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Introduction: Firearm sales and firearm-related injuries and deaths increased during the pandemic. Little is known about motivations for firearm purchasing in response to the COVID-19 pandemic and the mental health status of first-time purchasers. The purpose of this study was to estimate the association between firearm purchasing in response to the COVID-19 pandemic and anxiety symptoms, depressive symptoms, and stress.

Methods: The authors analyzed data from a survey that approximated a nationally representative sample of American adults (N=3,528) who either did not own firearms (*n*=2,327) or purchased firearms for the first time in response to the pandemic (*n*=240). Self-reported stress, depressive symptoms, and anxiety symptoms were determined using standardized self-assessment questionnaires (Perceived Stress Scale, Patient Health Questionnaire, and Depression Anxiety Stress Scale, respectively). Using multivariable logistic regression, the association between firearm purchasing and each mental health measure were assessed after controlling for demographics and other determinants.

Results: In each model, first-time firearm owners were more likely to be younger, live in urban areas, believe the government does too much for its citizens, stay home, stock up on items, and keep their children at home. First-time owners had significantly higher odds of anxiety and depressive symptoms than non-owners (AOR=1.05; 95% CI=1.04, 1.07 and AOR=1.15; 95% CI=1.04, 1.26, respectively).

Conclusions: First-time firearm purchasers report higher depressive and anxiety symptoms than non-owners, suggesting that there may be a risk of suicide and other related firearm violence.

INTRODUCTION

Gun ownership in the U.S. is higher than in any other country at about 1.2 firearms per resident,[1] and this is reported to have increased during the coronavirus disease 2019 (COVID-19) pandemic.[2] In fact, firearm sales increased to approximately 2.5 million in March 2020, an estimated 85% increase compared with March 2019.[3] This increase is largely attributed to the COVID-19 pandemic and stay-at-home orders enacted in some

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jurisdictions.[4] Firearm-related injuries and deaths also increased during the pandemic, and these may be associated with the increase in firearm sales.[5] In one study, the primary motivations for firearm purchasing during the pandemic included protection against people, fear of increase in crime, and concerns about disruptions to supply chains, health services, and the economy.[6] Another study found that individuals planning to purchase a firearm in the next 12 months (July 2020-June 2021) had higher economic concerns, contamination fears, and stress, as well as less tolerance for uncertainty, than those not planning a purchase.[7]

Less is known about the links between firearm purchasing and broader mental health problems, despite the established links between mental health problems and suicide.[8] Studies have demonstrated that having a firearm at home is associated with an increased risk of firearm-related suicide,[9,10] and individuals who purchased firearms during COVID-19 were more likely to report depressive symptoms.[11] Further work is needed to understand how the mental health status of those who purchased firearms for the first time in response to the pandemic compares with that of those who do not own firearms.

The authors hypothesized that individuals who purchased a firearm for the first time in response to the pandemic would self-report higher anxiety symptoms, depressive symptoms, and stress than those who do not own any firearms.

METHODS

Study Sample

The authors approximated a nationally representative sample of adults (age ≥18 years), with a stratified nonprobability sample. A national sample of participants in the U.S. (N=3,528) was recruited by Climate Nexus Polling (August 15−31, 2021), using several market research panels as described elsewhere.[12] Participants were recruited using stratified sampling methods.[12] Compensation for participants depended on the specific market research panel and respondents' preferences (e.g., cash, gift cards, and reward points). Quotas matched the U.S. Census Bureau's Voting and Registration Supplement to the Current Population Survey parameters for age, gender, race, educational attainment, census region, and Hispanic ethnicity. Sampling weights accounted for small deviations from the preselected census parameters.

Measures

The outcome was first-time firearm purchasing in response to the pandemic compared with no firearm ownership. First-time firearm purchasing in response to the pandemic was defined if the participant selected *Purchased a gun* to the question *Which, if any, of the following actions have you taken because of the spread of the coronavirus?* and did not selected *Yes, owned guns prior to COVID-19* to the question *Do you or anyone in your household own a gun?* No firearm ownership was defined if the participant responded *No, do not currently own guns* to the question *Do you or anyone in your household own a gun?*

The main explanatory variables were self-reported stress, depressive symptoms, and anxiety symptoms and were defined using standardized self-assessment questionnaires (Perceived Stress Scale [PSS-4], Patient Health Questionnaire, and Depression Anxiety Stress Scale, respectively). The authors report both mean and categorical values of the mental health outcomes using cut-off points recommended in the literature or based on the distribution of the continuous score. The authors used the 4-item version of the PSS, a self-report questionnaire that is widely validated and reliable for use in similar research.[13,14] The PSS-4 includes the following questions, each on a 5-point Likert scale: In the last month, how often have you felt (1) that you were unable to control the important things in your life, (2) confident about your ability to handle your personal problems, (3) that things were going your way, and (4) difficulties were piling up so high that you could not overcome them? A score was calculated as the sum of the 4 responses (ranging from 0 to 16, with higher scores indicating greater perceived stress). The PSS-4 is not a diagnostic instrument and does not have an established cut-off score. In this analysis, a categorical variable was created from the continuous score with respondents with a score of 0 to 8 considered to have normal stress and those with a score of 9 to 16 considered to have elevated stress. Symptoms of anxiety were measured using the 7-item anxiety subscale of the shortened version of the Depression and Anxiety Stress Scale.[15,16] Participants indicate how often they have been bothered by each of the following symptoms over the last 7 days on a 4-point Likert scale: (1) aware of dryness of my mouth, (2) experienced breathing difficulty, (3) felt scared without any good reason, (4) was aware of the action of my heart in the absence of physical exertion, (5) felt I was close to panic, (6) was worried about situations in which I might panic and make a fool of myself, and (7) experienced trembling. Possible scores range from 0 to 21 with higher scores indicative of higher levels of anxiety symptoms. A categorical variable was created, with respondents with a score of 0−7 considered to have normal anxiety symptoms, those with a score of 8−14 considered to have mild to moderate anxiety symptoms, and those with ≥15 considered to have severe anxiety symptoms.[16,17]

Depressive symptoms were measured using the Patient Health Questionnaire. Respondents indicate the

frequency of 2 items, each on a 4-point Likert scale: (1) feeling down, depressed, or hopeless; and (2) little interest or pleasure in doing things over the past 2 weeks.[18] A score of 3 indicates a high probability of the disorder when used in an outpatient setting.[18]

Demographic determinants included gender, age, education, race/ethnicity, residence, income, and political affiliation. Other determinants included belief that the government does too much for its citizens, level of trust in the Centers for Disease Control and Prevention, actions taken in response to the pandemic (staying home, stocking up on items, and keeping children at home), and worry about the impact of the pandemic on sickness, housing, crime, and martial law.

Statistical Analysis

Bivariate analyses were conducted between the outcome and the mental health variables, each of the potential determinants, and between pairs of sociodemographic variables to assess their relation and multicollinearity. Variables associated with the outcome in the literature were included in the final models. Using multivariable logistic regression models, the authors estimated AORs and 95% CIs between the outcome and potential determinants for each mental health determinant. All analyses were conducted with Stata version 16 (StataCorp, LP, College Station, TX). This project was considered exempt by the George Mason University IRB (IRB 1684418-3).

RESULTS

The survey participation rate was 68.5%, adhering to the American Association of Public Opinion research standards (https://aapor.org/standards-and-ethics/). Of 3,528 respondents, 2,327 (66%) did not own firearms, and 6.8% (n=240) were first-time owners who purchased in response to the pandemic. Significantly more first-time owners reported severe anxiety symptoms (16.1% vs 40.4%) and depressive symptoms (21.9% vs 35.8%) but lower stress (22.9% vs 13.3%) (Table 1) than non-owners. After adjusting for demographic and other determinants, there were significant differences in the association between firearm purchasing and anxiety symptoms (AOR=1.05; 95% CI=1.04, 1.07) (Model 1) and depressive symptoms (Model 2) (AOR=1.15; 95% CI=1.04, 1.26) but not stress (Model 3) (AOR=1.01; 95% CI=0.95, 1.07) (Table 2). In all models, first-time firearm owners were significantly more likely to be younger, live in urban areas, believe the government does too much for its citizens, stay home, stock up on items, and keep their children at home. First-time owners were more worried about losing their home but not about their family members or themselves getting sick from

Table 1. Symptoms of Anxiety, Depression, and Stress by Demographics, Beliefs, Actions, and Concern About COVID-19 by Firearm Ownership Status

	Total		No ownership[a]		First-time (COVID-19) owner[b]			
Variable	***n***	**%**	***n***	**%**	***n***	**%**	**Unadjusted OR**	**95% CI**
Total	2,567	n/a	2,327	90.7	240	9.3	n/a	n/a
DASS,[c] mean (SD)	7.06 (0.18)		6.45 (0.18)		13.04 (0.73)		n/a	n/a
Anxiety								
Normal (0–7)	1,682	65.5	1,588	68.2	94	39.2	1	
Mild to moderate (8–14)	413	16.1	364	15.6	49	20.4	**2.27**	**1.58, 3.27**
Severe (15+)	472	18.4	375	16.1	97	40.4	**4.37**	**3.22, 5.93**
PHQ-2,[d] mean (SD)	1.49 (0.03)		1.44 (0.04)		1.97 (0.11)		n/a	n/a
Depression								
Normal (0–2)	1,971	76.8	1,817	78.1	154	64.2	1	
Mild to Moderate (3+)	596	23.2	510	21.9	86	35.8	**1.99**	**1.50, 2.64**
PSS-4,[e] mean (SD)	6.43 (0.06)		6.45 (0.07)		6.30 (0.16)		n/a	n/a
Normal (0–8)	2,001	78.0	1,793	77.1	208	86.7	1	
Elevated (9+)	566	22.0	534	22.9	32	13.3	**0.52**	**0.35, 0.76**

Note: Boldface indicates statistical significance.
[a]Defined as the response *No, do not currently own guns* to the question, *Do you or anyone in your household own a gun?*
[b]Defined as selecting *Purchased a gun* to the following question, *Which, if any, of the following actions have you taken because of the spread of the coronavirus?* and also not selecting *Yes, owned guns prior to COVID-19* to the question *Do you or anyone in your household own a gun?*
[c]Anxiety was self-reported using the validated, Depression Anxiety Stress Scale (DASS-7)-Short form anxiety subscale.
[d]Depression was self-reported using the validated, Patient Health Questionnaire (PHQ-2).
[e]Stress was self-reported using the validated Perceived Stress Scale (PSS-4).
n/a, not applicable.

Table 2. Demographics, Mental Health Status, and Beliefs, Actions, and Concern About COVID-19 Firearm Ownership Status

Variable	No ownership[a] *n* (%)	First-time (COVID-19) owner[b] *n* (%)	Model 1: First-time owner compared with non-owners (DASS[c] Score) (n=2,567) AOR (95% CI)	Model 2: First-time owner compared with non-owners (PHQ2[d]) (n=2,567) AOR (95% CI)	Model 3: First-time owner compared with non-owners (PSS4[e]) (n=2,567) AOR (95% CI)
Age, years	2,327	240			
18–29	371 (15.9)	42 (17.5)	1.0	1.0	1.0
30–49	824 (35.4)	173 (72.1)	0.95 (0.61, 1.48)	0.90 (0.58, 1.40)	0.88 (0.57, 1.36)
≥50	1,132 (48.7)	25 (10.4)	**0.36 (0.20, 0.64)**	**0.32 (0.18, 0.57)**	**0.28 (0.15, 0.49)**
Gender					
Female	1342 (57.7)	125 (52.1)	1.0	1.0	1.0
Male	985 (42.3)	115 (47.9)	0.72 (0.52, 1.00)	0.75 (0.54, 1.03)	0.74 (0.54, 1.02)
Race/ethnicity					
Non-Hispanic White	1,684 (73.4)	178 (74.2)	1.0	1.0	1.0
Non-Hispanic Black	250 (10.7)	22 (9.2)	1.15 (0.67, 1.97)	1.11 (0.65, 1.90)	1.05 (0.61, 1.78)
Hispanic	264 (11.4)	32 (13.3)	0.89 (0.56, 1.43)	0.97 (0.62, 1.54)	1.01 (0.64, 1.59)
Other	129 (5.5)	8 (3.3)			
Education					
High school graduate or less	658 (28.3)	45 (18.8)	1.0	1.0	1.0
Some college	846 (36.4)	46 (19.2)	0.78 (0.48, 1.27)	0.76 (0.47, 1.22)	0.75 (0.46, 1.20)
Bachelor's or higher	823 (35.4)	149 (62.1)	1.17 (0.71, 1.90)	1.17 (0.73, 1.88)	1.17 (0.73, 1.88)
Income					
<$20,000	493 (21.2)	22 (9.2)	1.0	1.0	1.0
$20,000–$49,999	844 (36.3)	47 (19.6)	1.02 (0.58, 1.80)	1.11 (0.64, 1.94)	1.14 (0.65, 1.99)
$50,000–$99,999	617 (26.5)	59 (24.6)	1.08 (0.60, 1.97)	1.15 (0.63, 2.09)	1.12 (0.62, 2.04)
≥$100,000	373 (16.0)	112 (46.7)	1.87 (0.99, 3.53)	**1.99 (1.06, 3.73)**	**1.91 (1.02, 3.59)**
Type of residence					
Urban	812 (34.9)	157 (65.4)	1.0	1.0	1.0
Semiurban	1,075 (46.2)	61 (25.4)	**0.59 (0.40, 0.86)**	**0.58 (0.40, 0.84)**	**0.58 (0.40, 0.84)**
Rural	440 (18.9)	22 (9.2)	0.61 (0.35, 1.07)	0.62 (0.36, 1.06)	0.62 (0.36, 1.07)
Political affiliation					
Republican	676 (29.1)	52 (21.7)	1.0	1.0	1.0
Democrat	1,235 (53.1)	166 (69.2)	0.98 (0.64, 1.49)	0.99 (0.65, 1.50)	1.01 (0.67, 1.53)
Independent	416 (17.9)	22 (9.2)	0.60 (0.33, 1.08)	**0.54 (0.30, 0.97)**	**0.53 (0.30, 0.95)**

(*continued on next page*)

Table 2. Demographics, Mental Health Status, and Beliefs, Actions, and Concern About COVID-19 Firearm Ownership Status (*continued*)

Variable	No ownership[a] *n* (%)	First-time (COVID-19) owner[b] *n* (%)	Model 1: First-time owner compared with non-owners (DASS[c] Score) (n=2,567) AOR (95% CI)	Model 2: First-time owner compared with non-owners (PHQ2[d]) (n=2,567) AOR (95% CI)	Model 3: First-time owner compared with non-owners (PSS4[e]) (n=2,567) AOR (95% CI)
Believe that government does too much for citizens					
Strongly disagree	593 (25.5)	27 (11.3)	1.0	1.0	1.0
Somewhat disagree	690 (29.7)	36 (15.0)	1.27 (0.72, 2.24)	1.24 (0.71, 2.17)	1.21 (0.69, 2.12)
Somewhat agree	698 (30.0)	111 (46.3)	**2.95 (1.78, 4.90)**	**3.00 (1.82, 4.96)**	**2.84 (1.72, 4.68)**
Strongly agree	346 (14.9)	66 (27.5)	**3.17 (1.80, 5.57)**	**3.18 (1.82, 5.54)**	**3.02 (1.73, 5.29)**
Level of trust in CDC					
Strongly distrust	271 (11.7)	16 (6.7)	1.0	1.0	1.0
Somewhat distrust	326 (14.0)	25 (10.4)	1.07 (0.50, 2.28)	1.11 (0.53, 2.33)	1.12 (0.54, 2.34)
Somewhat trust	913 (39.2)	84 (35.0)	0.86 (0.43, 1.72)	0.87 (0.44, 1.73)	0.87 (0.44, 1.72)
Strongly trust	817 (35.1)	115 (47.9)	1.24 (0.62, 2.47)	1.23 (0.62, 2.42)	1.22 (0.62, 2.39)
Action taken					
Stay home (versus not)	1,333 (57.3)	166 (69.2)	0.87 (0.61, 1.23)	0.88 (0.62, 1.24)	0.89 (0.63, 1.25)
Stocked up (versus not)	1,500 (64.5)	208 (86.7)	**2.23 (1.43, 3.49)**	**2.22 (1.42, 3.45)**	
Kept children home (vs. not)	683 (29.4)	183 (76.3)	**3.46 (2.37, 5.07)**	**3.40 (2.33, 4.95)**	**3.32 (2.28, 4.83)**
Worry (vs not very or not at all worry)					
Sickness	1,550 (66.6)	169 (70.4)	0.83 (0.57, 1.20)	0.86 (0.60, 1.25)	0.90 (0.62, 1.29)
Losing home	573 (24.6)	82 (34.2)	0.79 (0.53, 1.17)	0.95 (0.65, 1.40)	1.02 (0.69, 1.49)
Increased crime	1,313 (56.4)	158 (65.8)	0.95 (0.65, 1.37)	1.00 (0.69, 1.45)	1.04 (0.72, 1.50)
Martial law	871 (37.4)	123 (51.3)	0.92 (0.63, 1.33)	1.02 (0.70, 1.46)	1.06 (0.74, 1.53)
Emotional response to COVID					
DASS Score	n/a	n/a	**1.05 (1.04, 1.07)**	n/a	n/a
PHQ2	n/a	n/a	n/a	**1.15 (1.04, 1.26)**	n/a
PSS4	n/a	n/a	n/a	n/a	1.01 (0.95, 1.07)

Note: Boldface indicates statistical significance.
[a]Defined as the response *No, do not currently own guns* to the question, *Do you or anyone in your household own a gun?*
[b]Defined as selecting *Purchased a gun* to the following question, *Which, if any, of the following actions have you taken because of the spread of the coronavirus?* and also not selecting *Yes, owned guns prior to COVID-19* to the question *Do you or anyone in your household own a gun?*
[c]Anxiety was self-reported using the validated, Depression Anxiety Stress Scale (DASS-7)-Short form anxiety subscale.
[d]Depression was self-reported using the validated, Patient Health Questionnaire (PHQ-2).
[e]Stress was self-reported using the validated Perceived Stress Scale (PSS-4).
CDC, Centers for Disease Control and Prevention; n/a, not applicable.

COVID-19. The 2 firearm ownership groups did not differ significantly by political affiliation or educational status (Table 2).

DISCUSSION

The authors found higher self-reported depressive and anxiety symptoms among first-time firearm owners who purchased firearms in response to the pandemic than non-owners of firearms.

Although a limited number of studies have looked at depressive symptoms among firearm purchasers, fewer have looked at anxiety symptoms specifically and none at firearm purchasing specifically in response to the pandemic. One recently published study reported no differences in the rate of ownership by depressive symptoms but reported that those depressed had a higher likelihood of intention to purchase in response to the pandemic and to have purchased for the first time during the pandemic.[11] Another study from more than 30 years ago reported no association between depression and ownership,[10] whereas a more recent, prepandemic study using data from 2004−2011 reported an association.[19] Research is needed to clarify this relationship and assess whether the differences previously reported are because of temporal changes. If that is the case, then in-depth research is needed to design interventions or policies to reduce the risk of gun violence because of firearm access among those who have mental health disorders that increase the risk of suicide. This is especially relevant in light of a recent paper that showed that those who purchased a firearm during the pandemic more often reported suicidal ideation than firearm non-owners and owners who did not make a purchase during COVID-19.[7]

In our study, first-time pandemic firearm owners were also more likely to be younger and live in urban areas than prepandemic owners who were older and lived in rural areas. One recent study that examined firearm purchasing during the pandemic found no difference among firearm purchasers by age or urban/rural residence.[11] However, another study with a similar sample size (N=2,709) and sampling frame to ours found that individuals who purchased guns during the pandemic were more likely to be male, younger, U.S.-born, less educated, recently unemployed, experiencing changes in their religious beliefs, Republicans, and residents of Southern states.[20] Their findings for sex, education, unemployment, political affiliation, and region of residence were generally consistent with others of prepandemic firearm ownership studies; however, the null patterns for race/ethnicity, household income, marital status, and the presence of children differed from those reported by others before the pandemic, including the authors of this paper[21−27] (see also Smith and Son, 2015[28]). Specifically, the authors did not find significant differences by gender, race, or education in the adjusted models. First-time owners in this study were more likely to have kept a child at home because of the pandemic as reported by others.[6] This is of concern because having children in a household in which firearms are present is associated with a significantly greater risk of firearm-related death.[29] Moreover, one study reported that 39% of first-time firearm purchasers during the pandemic reported that firearms were stored unlocked, suggesting a possible target for future interventions.[6]

Limitations

A number of limitations are inherent in quota-based nonprobability methods. First, sampling is based on the individual's propensity to respond. Second, a theoretical basis for generalizing to a source population similar to what is found for a probability-based survey does not exist. Third, CIs and *p*-values cannot be directly calculated and must be caveated.[30] However, these methods are common in policy-related research and public polling because nonresponse (and nonresponse bias) in probability-based sampling has become extremely high. In fact, when best practices are used, nonprobability-based survey results can outperform those from probability-based surveys.[30,31] Still, the methods are common in policy-related research because nonresponse in probability-based sampling has become extremely high. A final limitation is that a cross-sectional study design was used and thus causal inferences cannot be made. Nevertheless, this study highlights important mental health symptoms among first-time firearm owners who purchased in response to the pandemic.

In this study, the distribution of key demographic variables (gender, age, race/ethnicity, education, location of residence, and income) mirrors that of the U.S. population, and it reports similar results to what others have. For example, the authors report that 6.8% of the study population purchased firearms for the first time specifically in response to the pandemic. Other studies have reported that about the same percentage of survey respondents purchased firearms during the pandemic.[20,32,33] One nationally representative survey (N=1,377) fielded in mid-July 2020 estimated that 6% of American adults had bought ≥1 guns since the COVID-19 pandemic began in the U.S. in March 2020.[32] In addition, data extracted from the 2021 National Firearms Survey, a probability-based online survey of U.S. adults conducted in April 2021, estimated that 1,873 respondents purchased a gun between 2019 to April 2021, and about 10% (*n*=447) of those

were first-time firearm owners.[2] These and almost all published studies on firearm purchasing in response to the pandemic asked respondents when they purchased a firearm but not the reason for firearm purchasing. Comparing first-time firearm purchasers with those who do not own firearms allows us to draw conclusions about individuals within the U.S. who are more likely to introduce firearms into their homes for the first time specifically when under stress rather than as part of their broader, everyday functioning.

As alluded to, a strength of our analysis is that it ascertains information about individuals who not just purchased firearms during the pandemic but specifically purchased them in response to the pandemic. All the related nationally representative studies are limited in this regard because they identify individuals who purchased firearms during a specific time period during the pandemic and most ask questions such as *have you purchased a gun since March 2020?* or *Did you or a member of your household buy a gun during the COVID-19 pandemic*?[11,20,32] During the pandemic, there were several events that may have influenced an individual's decision to purchase firearms, including the civil unrest owing to George Floyd's death in May 2020 and the U.S. Capitol Insurrection in January 2021.[2] It is likely that there are individuals who purchased firearms during the pandemic in response to these and related events.[2] By focusing on firearm purchasing in response to the pandemic, the authors have a more specific measure and are able to examine pandemic response with less ambiguity. Because this study examines firearm purchasing in response to the pandemic, it can offer insight into what to expect in the periods following future pandemics and during periods of political or social unrest.

Previous research and media accounts report that many pandemic gun purchases were made by first-time gun owners and many were struggling with fear.[2,20,33] This work combined with that of others highlights the need to address mental health broadly and for interventions to enhance gun-related safety particularly during pandemics or other periods of insecurity and unrest. Guns were purchased at record rates during this period at a time of perceived institutional decline and social inequality, and gun-related violence was also noted to increase concurrently.[2,20] In addition, those who purchased firearms during the pandemic who had lifetime suicide ideation were less likely to hide loaded firearms in a closet than those without lifetime ideation.[7] These results suggest that more rigorous mental health screening before selling firearms may help reduce access to some individuals at risk of suicide. Currently, mental health screening prior to firearm purchasing relies on self-report, and those with mental health conditions can easily misreport.[34]

Interventions should consider addressing underlying motivations for gun purchases during such periods and improving access to training programs. Given the lack of federal policies addressing access to high-capacity firearms or possession of firearms by individuals at high risk of suicide or homicide, local agencies that are underfunded and already facing several social, mental, and other priorities will be faced with consequences of widespread access.

CONCLUSIONS

These findings provide some context to the increase in firearm purchasing during the pandemic and highlight the association between mental health and pandemic-related purchasing. That new owners are more likely to have depressive and anxiety symptoms and have a child at home presents an urgent public health challenge. Given the lack of federal legislation in the U.S., local agencies and civil society are faced with the challenge of addressing the growing crisis and should prioritize education on safe and responsible gun ownership and other nonpolicy interventions.

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CREDIT AUTHOR STATEMENT

Amira A. Roess: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Software, Supervision, Validation, Writing — original draft preparation. Laura F. Henderson: Visualization, Writing — original draft preparation. Leah M. Adams: Investigation, Methodology, Writing — original draft preparation, Writing — reviewing and editing. Keith D. Renshaw: Investigation, Methodology, Writing- reviewing and editing.

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