SHORT COMMUNICATION

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# Associations between mental health and job loss among middle- and low-income veterans and civilians during the COVID-19 pandemic: An exploratory study

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## Abstract

This study examined the relationship between job loss and mental health during the pandemic among a nationally representative sample of middle- and low-income military veterans and civilians. Participants were recruited from Amazon Mechanical Turk in May–June 2020. Our sample was comparable to the U.S. population with respect to key demographics (i.e., sex, race, ethnicity, and geographic region). More veterans were male (36.9% civilians vs. 74.1% veterans), and on average they were older than civilians ($M_{\text{civilians}}$ = 47.86 vs. $M_{\text{veterans}}$ = 52.64). After controlling for sociodemographic factors, probable anxiety (adjusted odds ratio for veterans = 1.96, 95% [1.22–3.15]) was significantly associated with job loss among veterans, whereas among civilians, probable anxiety (adjusted odds ratio for civilians [$AOR_c$] = 1.48, 95% [1.21–1.81]), probable COVID-19 era-related stress ($AOR_c$ = 1.73, 95% [1.45–2.07]), and loneliness ($AOR_c$ = 1.09, 95% [1.04–1.13]) were associated with job loss. Results demonstrated that veteran sample's effect sizes were larger than civilian sample's effect sizes; however, our moderation analyses results revealed that veteran status did not moderate the relationships between mental health and job loss. The findings in this study support a relationship between job loss and poorer mental health, suggesting that increased mental health services may be important to address ongoing effects of the COVID-19 pandemic.

**KEYWORDS**
COVID-19, employment, job loss, mental health, veterans

## 1 | INTRODUCTION

Due to restrictive measures related to the COVID-19 pandemic, millions of people lost their jobs globally (Acs & Karpman, 2020; Bauer & Weber, 2020; Gangopadhyaya & Garrett, 2020; Kawohl & Nordt, 2020). In addition, the pandemic and its associated restrictions have had severe, negative effects on the mental health and social well-being of both veterans and civilians (Pfefferbaum & North, 2020; Ramchand et al., 2020; Tsai & Wilson, 2020). Given that mental health is both a *consequence of* and *risk factor of* unemployment (Dooley et al., 1996; Olesen et al., 2013), the COVID-19

pandemic's short-term and long-term negative impact on mental health among veterans and civilians likely resulted in additional job losses beyond those related to economic factors. Recently, Ramchand et al. (2020) examined economic, social, and mental health needs in veterans in the U.S., projecting that large numbers of veterans are among the newly unemployed during COVID-19. Since veterans develop mental health conditions at higher rates than civilians due to exposure to traumatic stress during deployment and combat (e.g., Hoglund & Schwartz, 2014), veterans may be more vulnerable to negative effects of the pandemic, including unemployment, compared to civilians (Ramchand et al., 2020).

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Employment plays a central role in optimal psychological and physical health in both civilians and veterans (Creed & Macintyre, 2001; Elbogen et al., 2012; Hamilton et al., 2015; Horner et al., 2010; Stiglitz, 2002; Tran et al., 2016; Umucu, 2021; Vinokur et al., 1987; Winefield & Tiggemann, 1990). Employment is also an important component of successful readjustment to civilian life for veterans following military service (Elbogen et al., 2012; Tran et al., 2016). Veterans who can cover their basic needs are significantly less likely to have adjustment problems including homelessness, criminal arrest, suicidal behaviour, substance abuse, and aggression (Elbogen et al., 2012; Tsai et al., 2019). In contrast, unemployment among veterans and civilians is associated with deleterious psychological and physical health outcomes including higher suicide rates, higher substance use rates, higher mortality rates, lower levels of happiness, higher rates of psychological distress, and lower levels of physical health (Carroll, 2007; Hald Andersen, 2009; McKee-Ryan et al., 2005; Stiglitz, 2002; Voßemer et al., 2018; Winkelmann, 2009; Winkelmann & Winkelmann, 1995). Research suggests that unemployment could have disproportionately negative impacts on veterans compared to civilians. For instance, veterans with long-term unemployment (longer than 27 weeks) report significantly more days with poor physical and mental health than civilians with long-term unemployment (Tran et al., 2016, 2017). Therefore, it is important to examine factors affecting employment outcomes in individuals, especially in veterans.

The COVID-19 pandemic has widely and negatively impacted mental health and employment for U.S. adults. Theoretically, decreases in mental health may have negative effects on employment rates for both veterans and civilians. O'Day et al. (2017) reported that flexible work hours, the ability to modify job tasks, and reducing work-related stress are important to keep long-term employment for people with mental health concerns. However, with the current pandemic, many individuals, including employees and employers, have had difficulties for having flexible work hours, modifying job tasks, and reducing work stress. According to Lazarus and Folkman (1984), *stress*, a product of the person-environment interaction, occurs when a person has limited resources to meet the contextual demand. Based on Lazarus and Folkman (1984)'s theory, during the pandemic, both pandemic-related factors (e.g., restricted work hours) and personal factors (e.g., mental health concerns) may be linked significant issues in employment in both veterans and civilians. Nevertheless, we know that veterans may have relatively less mental health resources or less interested in seeking health services compared to civilians, which untreated mental health concerns in addition to pandemic-related negative consequences may ultimately cause unemployment among veterans.

Although there is an emerging literature on COVID-19 related job loss among civilians, to our knowledge, there are few or no studies examining job loss among veterans in the midst of the pandemic. Additionally, it is not clear if veterans are differentially impacted by the COVID-19 pandemic and its consequences compared to civilians. Given that (a) veterans develop mental health conditions at higher rates than civilians due to exposure to traumatic stress during deployment and combat (e.g., Hoglund & Schwartz, 2014), (b) economic needs related to job loss was reported to be most immediate indirect needs for veterans during the pandemic (Ramchand et al., 2020), and (c) veterans may be more vulnerable to negative effects of the pandemic, including unemployment, compared to civilians, our present exploratory study aimed to add knowledge on the relationship between job loss and mental health for middle- and low-income veterans and civilians. Therefore, we explored (a) differences in sociodemographic and mental health characteristics between veterans and civilians and (b) the relationship between job loss and mental health for middle- and low-income veterans and civilians.

## 2 | METHODS

Upon approval from the institutional review board at the University of Texas Health Science Center at Houston, participants were recruited from Amazon Mechanical Turk (MTurk) from May to June 2020 to examine their health and social well-being during the COVID-19 pandemic. Mechanical Turk is a crowdsourcing tool that enables participants with a MTurk account to access and complete a variety of Human Intelligence Tasks (HITs). Participants were eligible if they (a) were at least 22 years old, (b) lived in the U.S., and (c) reported an annual gross income of $75,000 or less. To ensure data quality, we invited only participants who had completed more than 50 approved previous HITs and had a HIT approval rating more than 50%. In addition, we used three items from the validity scales from the Minnesota Multiphasic Personality Inventory-2 to conduct a validity check. All participants provided informed consent and were compensated for their participation.

A total of 9760 workers initially agreed to participate our study, but only 6762 (69.3%) met our eligibility criteria. We removed an additional 155 participants who failed a validity check, resulting in a total sample size of 6607. Our sample was comparable to the U.S. population with respect to key demographics (i.e., sex, race, ethnicity, and geographic region) with exception of age; our sample was younger than the national mean (mean age = 37.9 vs. general population mean age = 49.5). To maximize generalizability of our findings, we used raking procedures to create sample weights representative of the U.S. population who was 22 years or older with annual personal income of $75,000 or below, which were the study inclusion criteria. We used data from the 2018 American Community Survey to compute poststratification weights, so that inferential analyses yielded estimates comparable to the target population with respect to age, sex, race, ethnicity, and geographic region.

Participants' sociodemographic characteristics (i.e., age, gender, race, education, job loss, veteran status, COVID-19 related information) were based on self-report. Veteran status was defined as having 'ever served on active duty in the U.S. military' and job loss was defined as having 'lost job in the past month'. We measured to what extent participants view COVID-19 as a threat (i.e., 'How much of a threat do you view the COVID-19 virus on Americans?'). Finally,

we measured participants' opinion of government's response to COVID-19 (i.e., 'What is your opinion of the government's response to COVID-19?').

Mental health (i.e., probable depression, probable anxiety, probable COVID-19 era-related stress, and loneliness) was measured with the Patient Health Questionnaire (Kroenke et al., 2009), the PTSD Checklist for DSM-5 (PCL-5) (Weathers et al., 2013), and the short-form UCLA Loneliness Scale (Russell et al., 1980). The PCL-5 was used to assess COVID-19 era-related stress since COVID-19 may not be considered a potentially traumatic event per se (Pfefferbaum & North, 2020).

## 2.1 | Data analysis

Poststratification weights were applied for all analyses. Descriptive statistics were conducted to calculate means and standard deviations. We conducted independent-samples $t$ test, Mann–Whitney $U$ test, and Chi-square test to examine whether there are significant sociodemographic and psychosocial characteristics changes in veterans and civilians. For descriptive statistics, Bonferroni correction was applied to reduce Type I error. We conducted a series of univariate and multivariate logistic regression analyses to examine whether probable anxiety, probable depression, probable COVID-19 era-related stress, and loneliness were associated with job loss among veterans and civilians. In multivariate logistic regression analysis, we adjusted scores for sociodemographic characteristics (i.e., age, gender [male = 1], race/ethnicity [White (Hispanic and non-Hispanic) = 1], education [advanced degree = 1]) and COVID-19 related variables (i.e., viewing COVID-19 as a threat to Americans [not a threat = 1], government response to COVID-19 [appropriate reaction = 1]). Similarly, we applied Bonferroni correction to our unadjusted and adjusted models. In order to control for possible depression and anxiety overlap, (a) for probable depression model, we controlled probable anxiety in addition to sociodemographic variables and (b) for probable anxiety model, we controlled probable depression in addition to sociodemographic variables. Finally, moderation analyses were carried out to examine whether veteran status moderates the relationships between mental health and job loss. All continuous variables were centered. All statistical analyses were performed using the SPSS 26.0 and PROCESS v3.4.1 (Hayes, 2017).

## 3 | RESULTS

Table 1 represents sociodemographic and mental health characteristics of the veterans and civilians. As seen in the table, more veterans were male (36.9% civilians vs. 74.1% veterans), and on average they were older than civilians ($M_{civilians}$ = 47.86 vs. $M_{veterans}$ = 52.64). More civilians were white (78.8% civilians vs. 73.3% veterans), had some college or less education (31.1% civilians vs. 27.6% veterans), and lost their jobs (9.0% civilians vs. 8.1% veterans) compared to

veterans. Civilians' mean score on viewing COVID-19 as a threat was significantly higher than veterans ($M_{civilians}$ = 3.26 vs. $M_{veterans}$ = 3.04), whereas veterans' mean scores on the government response to COVID-19 was significantly higher than civilians ($M_{civilians}$ = 2.39 vs. $M_{veterans}$ = 2.62). More veterans were found to have probable anxiety (30.0% civilians vs. 53.5% veterans), probable depression (29.7% civilians vs. 55.1% veterans), and probable COVID-19 era-related stress (16.7% civilians vs. 39.4% veterans) compared to civilians. Finally, veterans had significantly higher loneliness scores ($M_{civilians}$ = 1.94 vs. $M_{veterans}$ = 1.98) compared to civilians.

As seen in Table 2, univariate logistic regression analyses results revealed that probable anxiety (odds ratio for veterans $[OR_V]$ = 2.65, 95% [1.74–4.01]; odds ratio for civilians $[OR_C]$ = 1.71, 95% [1.47–1.99]), probable depression ($OR_V$ = 1.68, 95% [1.14–2.48]; $OR_C$ = 1.45, 95% [1.24–1.69]), and loneliness ($OR_V$ = 1.16, 95% [1.05–1.28]; $OR_C$ = 1.13, 95% [1.09–1.17]) were associated with job loss among both veterans and civilians. Probable COVID-19 era-related stress ($OR_C$ = 1.94, 95% [1.63–2.30]) was associated with lob loss only in civilians.

After controlling for sociodemographic factors and probable depression, only probable anxiety (adjusted $OR_V$ $[AOR_V]$ = 2.95, 95% [1.61–5.43]) was significantly associated with job loss among veterans, whereas probable anxiety (adjusted $OR_C$ $[AOR_C]$ = 1.48, 95% [1.21–1.81]), probable COVID-19 era-related stress ($AOR_C$ = 1.73, 95% [1.45–2.07]), and loneliness ($AOR_C$ = 1.09, 95% [1.04–1.13]) were still associated with job loss among civilians.

Moderation analyses results revealed that the interaction terms ($B$s = −0.30 [probable COVID-19 era-related stress], −0.01 [probable anxiety], −0.17 [probable depression], −0.05 [loneliness]; $p$s = n.s.) were not significant, suggesting that the effect of probable anxiety, probable depression, probable COVID-19 era-related stress, and loneliness on job loss were not influenced by veteran status. These results suggested the veteran versus civilian status did not moderate the relationship between mental health and job loss.

## 4 | DISCUSSION

In this study, we examined the associations between job loss and mental health among middle- and low-income veterans and civilians in a nationally representative U.S. sample. The results suggest that civilians experienced higher rates of job loss during COVID-19 than veterans. This finding is consistent with employment patterns suggesting that veterans are more likely to work for the federal government and or tend to be employed in 'blue collar' jobs that may have been deemed essential during the pandemic, such as transportation and utilities, construction, and installation, maintenance, and repair (Parker et al., 2019). However, despite experiencing lower levels of job loss, veterans reported having experienced higher levels of anxiety, depression, and COVID-19 era-related stress. The higher rates of anxiety and depression assessed in this study have also been noted in other studies that veterans, on average, experience higher

**TABLE 1** Sociodemographic and mental health characteristics of the participants

| Variables | Veterans (N = 816) | Civilians (N = 5791) | Tests of significance | Effect size |
|---|---|---|---|---|
| Age, mean (SD) | 52.64 (18.05) | 47.86 (17.54) | p < 0.001[a] | 0.26[a] |
| Gender, n (%) | | | p < 0.001[b] | 0.27[b] |
| Male | 573 (74.1) | 2399 (36.9) | | |
| Female | 243 (25.9) | 3367 (63.1) | | |
| Race, n (%) | | | p < 0.001[b] | 0.13[b] |
| White | 528 (73.3) | 4477 (78.8) | | |
| Black | 213 (21.0) | 679 (10.5) | | |
| Asian | 41 (2.5) | 444 (3.9) | | |
| Other | 34 (3.2) | 191 (6.8) | | |
| Education, n (%) | | | p < 0.001[b] | 0.09[b] |
| Some college or below | 140 (27.6) | 1713 (31.1) | | |
| Associate/Bachelors | 373 (43.4) | 2982 (49.4) | | |
| Advanced degree | 303 (29.0) | 1096 (19.4) | | |
| Employment status change, n (%) | | | p < 0.001[b] | 0.31[b] |
| Lost job | 89 (8.1) | 598 (9.0) | | |
| COVID-19 as a threat, mean (SD) | 3.04 (0.94) | 3.26 (0.86) | p < 0.001[c] | 0.10[b] |
| Not a threat, n (%) | 59 (6.0) | 263 (4.1) | | |
| A slight threat, n (%) | 244 (23.9) | 927 (14.9) | | |
| A moderate threat, n (%) | 285 (29.8) | 2095 (32.0) | | |
| A great threat, n (%) | 228 (40.3) | 2506 (49.0) | | |
| Government response to COVID-19, mean (SD) | 2.62 (1.29) | 2.39 (1.30) | p < 0.001[a] | 0.08[b] |
| Great underreaction, n (%) | 129 (28.1) | 1901 (35.3) | | |
| Slight underreaction, n (%) | 163 (15.3) | 1225 (18.8) | | |
| Appropriate reaction, n (%) | 295 (32.3) | 1474 (26.2) | | |
| Slight overreaction, n (%) | 145 (15.0) | 684 (10.9) | | |
| Great overreaction (too reactive) | 84 (9.3) | 507 (8.9) | | |
| Psychosocial characteristics | | | | |
| Probable anxiety, n (%) | 572 (53.5) | 2116 (30.0) | p < 0.001[b] | 0.18[b] |
| Probable depression, n (%) | 587 (55.1) | 2058 (29.7) | p < 0.001[b] | 0.19[b] |
| Probable COVID-19 era-related stress, n (%) | 443 (39.4) | 1244 (16.7) | p < 0.001[b] | 0.20[b] |
| Loneliness, mean (SD) | 5.74 (1.98) | 5.27 (1.94) | p < 0.001[c] | 0.08[c] |

*Note*: Ns are raw values. Means, standard deviations, and percentages are weighted. Bonferroni Correction was applied (p < 0.005 for significant results).

Abbreviation: SD, standard deviation.

[a]Independent-samples t test.

[b]Chi-square test.

[c]Mann–Whitney test.

rates of mental health disorders than civilians (Hoerster et al., 2012). However, given that this study used a measure to assess stress related to COVID-19, the results suggest that veterans do report experiencing more negative mental health effects than civilians related to COVID-19. Additional research is warranted given that the cross-sectional design of this study cannot discriminate whether participants' reported stress began before job loss or after job loss. The findings of this study suggest that there may be a need for special focus on supporting the veteran population during the ongoing pandemic since some veterans may have higher predisposing

**TABLE 2** Odds ratios for the associations between job loss and mental health among veterans and civilians

| Mental health variables | Model 1–Unadjusted OR (95%) | Model 2–Adjusted[a] OR (95%) |
| --- | --- | --- |
| Veterans | | |
| Probable anxiety | 2.65* (1.74–4.01) | 2.95*[b] (1.61–5.43) |
| Probable depression | 1.68* (1.14–2.48) | 0.53**[c] (0.29–0.94) |
| Probable COVID-19 era-related stress | 1.54** (1.06–2.22) | 1.02** (0.67–1.54) |
| Loneliness | 1.16* (1.05–1.28) | 1.07** (0.96–1.20) |
| Civilians | | |
| Probable anxiety | 1.71* (1.47–1.99) | 1.48*[b] (1.21–1.81) |
| Probable depression | 1.45* (1.24–1.69) | 0.98**[c] (0.80–1.21) |
| Probable COVID-19 era-related stress | 1.94* (1.63–2.30) | 1.73* (1.45–2.07) |
| Loneliness | 1.13* (1.09–1.17) | 1.09* (1.04–1.13) |

*Note*: Bonferroni Correction was applied.

Abbreviation: OR, odds ratio.

[a]Adjusted for sociodemographic variables (i.e., age, gender [male = 1], race/ethnicity [White (Hispanic and non-Hispanic) = 1], education [advanced degree = 1]) and COVID-19 related variables (i.e., viewing COVID-19 as a threat on American [not a threat = 1], government response to COVID-19 [appropriate reaction = 1]).

[b]Adjusted for depression in addition to sociodemographic variables.

[c]Adjusted for anxiety in addition to sociodemographic variables.

*$p < 0.01$; **$p$ = n.s.

characteristics for mental illness (Blosnich et al., 2014) and there is some evidence that the pandemic can exacerbate underlying service-related conditions (Tsai, Huang, & Elbogen, 2020; Vindegaard & Benros, 2020).

The results of our univariate logistic regression analyses revealed that veterans and civilians with probable anxiety, probable depression, and higher loneliness scores were at greater risk for losing their job. Probable COVID-19 era-related stress was associated with lob loss only in civilians after adjusting for Bonferroni correction. Results demonstrated that our veteran sample's effect sizes were larger than civilian sample's effect sizes; however, our moderation analyses results revealed that veteran status did not moderate the relationships between mental health and job loss. After adjusting for sociodemographic variables, only probable anxiety was significantly associated with job loss among veterans, while probable anxiety, probable COVID-19 era-related stress, and loneliness remained significantly associated with job loss among civilians. The results of this study partially suggest that there is a relationship between mental health factors and job loss among both veterans and civilians. These findings are consistent with previous research indicating that mental health problems, including mental health problems related to stress, are one of the most common underlying issues causing health-related job loss (Solomon et al., 2007). However, considering that probable COVID-19 era-related stress and loneliness were not significantly associated with job los among veterans when controlling for sociodemographic factors, there are likely some systemic differences between veterans and civilians in how they have experienced restrictions related to the pandemic. Given the type of training and experiences afforded to veterans as part of their military service, veterans may

become more accustomed to stressful, isolated, and uncertain circumstances (e.g., pandemic). In addition, there could be system-level factors rather than individual-level factors contributing to job loss among veterans during the pandemic. Additional research is needed to explore these questions.

As research reported that mental health is both a *risk factor of* and *consequence of* unemployment (Dooley et al., 1996; Olesen et al., 2013), this study indicates a need for interventions targeting veterans and civilians that focus on mental health needs and support employment during COVID-19. While this study suggests that veterans have experienced lower rates of job loss than civilians, they continue to have higher levels of reported mental health issues when compared to civilians that need to be addressed. Additionally, this study does not show long-term mental health impacts for veterans who continued working during the pandemic and therefore witnessed more of the health effects of COVID-19 within their workplaces. The results of this investigation add to researchers' limited knowledge of how COVID-19 is affecting employment and mental health among veterans and civilians. Additional research is needed to better understand the experiences and specific needs of these populations during the COVID-19 pandemic.

Our study has limitations to consider. First, this study was a cross-sectional survey. As a result, no statements of causality or directionality can be made. Second, although our sample is heterogenous from across all regions of the U.S., no stratified sampling was used, and the sample may not be nationally representative, particularly of those who have no access to the Internet and technology. Third, there are external factors related to unemployment such as the rising growth of job automation that were not assessed in this

study (Tsai, Mehta, & Elbogen, 2020). Fourth, data were collected by self-report measures, which are subject to bias effects of social desirability. Fifth, we measured job loss among participants with a single item, which may be more susceptible to measurement error and lower reliability and validity. However, the single item measure provided benefits in terms of reduced burden and costs, and ease of interpretation (Bowling, 2005). In addition, a previous study used a similar approach and used dichotomous questions to assess job loss and self-reported financial problems (Ruengorn et al., 2021).

## 5 | CONCLUSION

The study also found a relationship between mental health and job loss. Additional research is warranted to explore the differences in mental health outcomes between these two populations and to better understand why job loss was particularly harmful to mental health among civilians. The findings in this study support a relationship between job loss and mental health and suggest that increased mental health services may be important to addressing the ongoing effects of the COVID-19 pandemic.

### CONFLICT OF INTEREST

The authors have declared that they have no conflict of interest.

### ETHICS STATEMENT

This study procedures were approved by the institutional review board at the University of Texas Health Science Center at Houston.

### AUTHOR CONTRIBUTION

All authors substantially contributed to the manuscript.

### DATA AVAILABILITY STATEMENT

Data available on request due to privacy/ethical restrictions.

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