



**Technical Report No. S.0079120-20, November 2020
Behavioral Health Advisory Team – COVID-19 Survey Phase I Findings**

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Behavioral Health Advisory Team, COVID-19 Phase I Survey, 4 May to 1 June 2020**

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EXECUTIVE SUMMARY
TECHNICAL REPORT NO. S. S.0079120-20
BEHAVIORAL HEALTH ADVISORY TEAM – COVID-19 PHASE I SURVEY FINDINGS
4 MAY 2020 - 1 JUNE 2020

1. PURPOSE

From 4 May 2020 to 1 June 2020, the Behavioral Health Advisory Team (BHAT) members administered an electronic anonymous survey measuring behavioral and public health outcomes in the context of the COVID-19 pandemic to Soldiers at I Corps, 8th Army, and U.S. Army Europe (USAREUR) (N = 21,911 surveys were collected). Since the closing of the survey participation window, the BHAT has processed and analyzed survey data and developed interim preliminary slide deck briefings, Information Papers, and Executive Summaries for I Corps, 8th Army, USAREUR Offices of the Command Surgeon, Army Senior Leaders, and relevant stakeholders, in addition to developing this technical report.

The BHAT was designed to systematically survey key behavioral and public health outcomes in the context of the COVID-19 pandemic. The goal of the BHAT was to provide feedback and data-driven recommendations to local commands, and the Army more broadly, concerning the impact of the COVID-19 pandemic on behavioral health outcomes of Soldiers and their Families, as well as the role that leadership responses to the pandemic may have in affecting the behavioral health of Soldiers. Additionally, the BHAT was designed to generate recommendations for Army public affairs officials and public health scientists concerning strategic communications aimed at stopping the spread of COVID-19 and maintaining Force readiness.

This report provides a narrative of the detailed analysis and related recommendations based on four key domains assessed by the BHAT:

1. Behavioral Health
2. Leadership Responses to COVID-19
3. Impact of COVID-19 on Family and Relationships
4. Information Sourcing and Information Needs Related to COVID-19

2. FINDINGS

2.1 Behavioral Health

- Rates of positive screenings for behavioral health problems were generally comparable to pre-COVID-19 comparison samples using similar or the same metrics, and lower than those observed during periods of high operational tempo as part of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). Estimates were provided for screening without functional impairment and with functional impairment.
 - For anxiety, a positive screening rate between 16.3% (no related impairment) and 5.4% (significant related functional impairment) was observed.
 - For depression, a positive screening rate between 17.4% (no related impairment) and 5.6% (significant related functional impairment) was observed.

- Just over 10% of Soldiers reported having at least some thoughts that they would be better off dead or hurting themselves. Approximately 5% of Soldiers reported that they had experienced such thoughts more than half of the days over the 2-week period prior to the time that they completed the survey.
- A positive screening rate (based on standardized cut-off values for Military populations) of 19.5% was observed for potentially hazardous alcohol consumption.
- For sleep outcomes, approximately 1-in-3 Soldiers reported getting, on average, less than 6 hours of sleep per day (33.3%); a similar percentage of Soldiers met criteria for insomnia risk (31.3%).
- In bivariate analyses, we generally observed that female, Junior Enlisted (E1-E4), and racial/ethnic minority Soldiers were at elevated risk for screening positive for a potential behavioral health difficulty (with or without impairment). One exception was that White Soldiers had a higher likelihood than Non-whites to engage in potentially hazardous alcohol consumption.
- Differences in behavioral health outcomes between rank categories were generally robust; these differences remained statistically significant even when controlling for other demographic characteristics and self-reported levels of COVID-19 stressors, concerns, and fears.
- Additional multivariate modeling suggested that behavioral health differences observed between race/ethnicity groups were largely attributable to the fact that minority Soldiers reported more COVID-19 stressors, fears, and concerns. Although we do not suggest that COVID-19-related concerns are the only factor contributing to such discrepancies, these are actionable targets for future interventions, which may have a positive impact on the behavioral health of all Soldiers.
- Approximately 2-in-10 Soldiers meeting criteria for any behavioral health problem reported utilizing a health professional either in-person or virtually (it is important to note that we did not specifically distinguish between in-person or virtual care modalities on this survey).

2.2 Leadership Responses to COVID-19

- The majority of Soldiers reported that their immediate supervisors engaged in responsive and supportive actions related to COVID-19.
 - Soldiers who reported that their supervisors engaged in constructive COVID-19 leadership behaviors were less likely to screen positive for behavioral health problems (anxiety, depression, sleep problems, potentially hazardous alcohol consumption and loneliness), even when accounting for Soldiers' self-reported general leadership abilities, COVID-19 exposure, COVID-19 concerns, and rank.
 - Soldiers who reported that their supervisor engaged in COVID-19 leadership behaviors were more likely to report “frequently” or “always” practicing preventive health behaviors, even when accounting for Soldiers' self-reported general leadership abilities, COVID-19 exposure, COVID-19 concerns, and rank.

- Specific COVID-19 leadership behaviors were associated with better behavioral health outcomes for Soldiers in all rank groups.

2.3 Impact of COVID-19 on Family and Relationships

- Financial considerations:
 - Half of Soldiers reported a financial impact related to the COVID-19 pandemic.
 - Soldiers were more likely to report moderate, major, or severe COVID-19-related financial impact if they were male, married or previously married, a racial/ethnic minority, Junior or Senior Enlisted, and/or had children less than 18 years of age in their household.
 - Financial impact was correlated with positive screening for depression and anxiety (with any related impairment), as well as potentially hazardous alcohol consumption.
- Impacts on spouses/partners:
 - Of the 53% of Soldiers who reported being married or in a relationship, many reported that their spouse or partner had experienced work impacts as result of the COVID-19 pandemic. Many Soldiers reported that their spouses/partners were no longer working outside the home (23.0%), had their work hours reduced (35.8%), took an unpaid leave of absence or were furloughed (14.6%), or had shifted to working from home full- or part-time (26.2%).
 - The majority of Soldiers who were married or in a relationship also reported that they and their spouse/partner had experienced some level of difficulty coping with the impact of the COVID-19 pandemic (64.0%)—a finding correlated with worse behavioral health.
- Impacts on children and childcare:
 - More than half of Soldiers with children living in the home (58.7%) reported that their child(ren)'s daycare/school was closed or had reduced hours because of the COVID-19 pandemic.
 - Half of Soldiers with children under 18 years of age in the household (51.2%) reported that their child(ren) experienced emotional, behavioral, or other difficulties since the start of the pandemic.
 - Sizeable proportions of Soldiers reported they were working from home while caring for children (28.6%), had experienced a change in work situation as a result of childcare issues (23.6%), or were unable to make alternative childcare arrangements (22.8%). These experiences were most prevalent among female, Black, and Senior Enlisted Soldiers/Officers.
 - Soldiers who reported changes to their work situation, a household financial impact, or their child(ren)'s emotional, behavioral, or other difficulties, were more likely to screen positive for a behavioral health difficulty.

2.4 Information Sourcing and Information Needs Related to COVID-19

- Information Source(s): News
 - Most Soldiers reported using more than one information source to obtain information on COVID-19. The most commonly used information source was social media (e.g., Facebook[®], Instagram[®], Twitter[®]), followed by online sources other than news sites, and news aggregators (e.g., Apple[®] News, Google[®] News, Reddit[®]).
 - A greater percentage of Junior and Senior Enlisted Soldiers reported using only social media or online sources to access COVID-19-related information, relative to Officers/Warrant Officers, who reported using more than one news source.
- Information Source(s): Military or Government
 - More than half of Soldiers reported accessing local command guidance (63.6%), installation guidance (63.5%), and Department of the Army guidance (e.g., Army, Office of the Surgeon General; 58.3%) within the month prior to completing the BHAT Survey.
 - At least one-third of Soldiers reported using other Government sources, with the greatest percentage of Soldiers reporting that they used the Centers for Disease Control and Prevention information (50.6%) and/or White House Press briefings (41.4%) within the month prior to completing the BHAT Survey.
- Information Needs:
 - One-in-four Soldiers reported that they did not need information related to COVID-19.
 - Of the Soldiers who reported needing information related to COVID-19, the most frequently selected information topics were related to travel (e.g., restrictions, ways to stay safe) (32.9%), followed by facts and statistics related to COVID-19 spread (25.6%), and how to protect oneself (24.7%).
 - A greater percentage of female Soldiers reported needing information across all topics related to COVID-19.

3. RECOMMENDATIONS

3.1 Behavioral Health

- Behavioral Health Organizations and other behavioral health assets within units should continue to assess the behavioral health status of units and Soldiers.
- Globally, additional BHAT efforts can continue to provide support to Army Senior Leaders concerning the behavioral health status of the Force.
- Prioritize understanding and addressing top-level concerns about the COVID-19 pandemic. Leaders, organizations, and public health messaging can provide information and identify gaps in guidance and solutions.

- Keep Soldiers aware of the resources that are available to them if they are experiencing distress and related interference in social or occupational functioning.
- Encourage Soldiers to engage in adaptive coping or stress management skills to manage distress related to the COVID-19 pandemic. For example, reinforce the importance of sleep, exercise, and social connection to the greatest extent possible.

3.2 Leadership Responses to COVID-19

- Disseminate information to leaders at all levels about the importance of engaging in healthy COVID-19-specific behaviors (leverage resources such as the WRAIR/APHC Quick Guide for COVID-19 Leadership –see Appendix B), and other resources available through the Uniformed Services University of Health Sciences (USUHS) Center for Traumatic Stress Studies (CTSS).
- Encourage senior leaders to lead by example through promoting COVID-19-specific leadership behaviors.
- Routinely reinforce COVID-19 leadership behaviors as part of unit battle rhythm.

3.3 Impact of COVID-19 on Family and Relationships

- Acknowledge the impacts that COVID-19 is having on Families, particularly the financial impacts, as financial impacts are associated with increased likelihood of behavioral health difficulties.
- Consider ways to support spouses seeking employment opportunities if they have been furloughed or are no longer working away from the home due to COVID-19.
- Accommodate Soldiers with children to the extent possible (e.g., allow flexible work schedules, telework, and alternate work arrangements as appropriate) to support them as they navigate the challenges of school and daycare closures.
- Ensure Soldiers and Families are aware of the supportive services available to them (e.g., Family Advocacy Program, Financial Readiness Program, and Employment Readiness Program).
- Ensure that services are equipped to cater to Families that may be experiencing a negative impact due to the COVID-19 pandemic, and that services are tailored to address the unique family-related impacts the pandemic appears to be exerting.
- Recognize that some Families may be experiencing more severe impacts than others and may be at higher risk for the associated behavioral health problems. Continue to explore how Family impacts vary based on family structure and demographic characteristics such as gender, race, and rank.
- Explore and promote means through which parents can obtain alternative childcare arrangements and support. To the extent that is safely possible, ensure Child Development Centers and Child and Youth Services are open and as close to fully operational as possible. Communicate with parents about their childcare options.

- Consider policy changes to enable alternate ways to subsidize childcare during the COVID-19 pandemic (for example, make Child Care Aware® benefits eligible for in-home care).
- Address the stress faced by children through psychological education opportunities for children and parents, and develop child-specific psychological education packages.

3.4 Information Sourcing and Information Needs Related to COVID-19

- Leverage social media sources to distribute up-to-date information coordinated and organized through Public Affairs Officers (PAO).
- Disseminate and distribute COVID-19 guidance through multiple communication channels. This increases the likelihood COVID-19 guidance will reach its intended audience.
- Distribute guidance to Soldiers on travel (e.g., restrictions, ways to stay safe), facts and statistics related to COVID-19 spread, and how to protect oneself, as these topics were the most frequently cited by Soldiers who wanted more information.
- Follow best practices in communication. For example, message effectiveness peaks at 3-4 exposures. Therefore, ensure Soldiers are exposed to messages a minimum of 3 times if possible. Refresh and repackage content as needed to keep it up-to-date and to ensure it does not become “stale” or perceived as irrelevant. Research shows that adults are most likely to read health information from an expert; leverage medical and public health experts across the Military to communicate messages.
- When using social media, posts with videos are shared most frequently. When appropriate and feasible, incorporate videos into guidance and messaging related to COVID-19. At a minimum, social media messaging should include imagery to increase engagement.
- Utilize two-way communication platforms (e.g., virtual Town Halls with question and answer sessions) when content is complex, guidance is changing, or confusion or uncertainty is likely to be high.

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4 MAY 2020 – 1 JUNE 2020

1. PURPOSE

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The BHAT was designed to systematically survey key behavioral and public health outcomes in the context of the COVID-19 pandemic. The goal of the BHAT was to provide feedback and data-driven recommendations to local commands, and the Army more broadly, concerning the impact of the COVID-19 pandemic on behavioral health outcomes of Soldiers and their Families, as well as the role that leadership responses to the pandemic may have in affecting the behavioral health of Soldiers. Additionally, the BHAT was designed to generate recommendations for Army public affairs officials and public health scientists concerning strategic communications aimed at stopping the spread of COVID-19 and maintaining Force readiness.

This report provides a narrative of the detailed analysis and related recommendations based on four key domains assessed by the BHAT:

1. Behavioral Health
2. Leadership Responses to COVID-19
3. Impact of COVID-19 on Family and Relationships
4. Information Sourcing and Information Needs Related to COVID-19

2. REFERENCES AND TERMS

See Appendix A for complete list of references. See Glossary for Acronyms and Abbreviations.

3. AUTHORITY

This work was conducted collaboratively by Walter Reed Army Institute of Research (WRAIR) and U.S. Army Public Health Center (APHC) scientists. This assessment aligned with APHC's mission, under Army Regulation (AR) 40-5, Preventive Medicine, paragraph 2-19 and DA Pamphlet 40-11, Preventive Medicine, Chapter 2, Section III, Population Health Management. The WRAIR Human Subjects Protection Branch (HSPB) reviewed this project and approved it under project number 2766. The APHC Public Health Review Board (PHRB) reviewed this project and determined that it was public health practice (#20-831 WRAIR 2766).

4. GENERAL

4.1 Background

From 4 May to 1 June 2020, the BHAT members administered an electronic anonymous survey measuring behavioral and public health outcomes in the context of the COVID-19 pandemic to Soldiers at I Corps, 8th Army, and USAREUR (N = 21,911 surveys were collected). Since the closing of the survey participation window, the BHAT has processed and analyzed survey data as well as developed interim preliminary slide deck briefings, Information Papers, and Executive Summaries for I Corps, 8th Army, and USAREUR Offices of the Command Surgeon, Army Senior Leaders, and relevant stakeholders, in addition to compiling this technical report.

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This report provides a narrative of the detailed analysis and initial recommendations based on the results of the BHAT COVID-19 survey.

4.2 Methods

The Behavioral Health Assessment Tool – COVID-19 (BHAT COVID-19) was a collaborative effort between the WRAIR and APHC. The intent was to create a survey that gauged Soldiers' responses to the COVID-19 pandemic. The results presented in this report address the following four domains:

1. Behavioral Health
2. Leadership Responses to COVID-19
3. Impact of COVID-19 on Family and Relationships
4. Information Sourcing and Information Needs Related to COVID-19

The survey was electronically programmed using Verint® Systems software, an online survey platform approved for use by the U.S. Army. Separate survey links were designed for each of the three installation groups: (1) USAREUR; (2) 8th Army Korea (8A); and (3) I Corps. The three survey links were identical except for unit information at the beginning of the survey. The BHAT team provided the commanders of each of the three installation groups with a unique uniform resource locator (URL) to access their installation's respective survey. Each commander then distributed their installation's survey through a fragmentary order (FRAGO). Soldiers were instructed to complete the survey via their smart phone, computer, or other web-enabled device. Soldiers were encouraged by installation leadership to complete the survey in a timely manner, either during or after duty hours.

Informed consent was obtained at the beginning of the survey; prospective respondents were informed that they could exit the survey at any time. Following the informed consent notice, prospective respondents were asked a screening question to assess their eligibility to take the survey. If a prospective respondent indicated that they were Active Duty or Reserve at the time of the survey, they were permitted to proceed. If a prospective respondent indicated that they were a Civilian, Contractor, or “Other,” they were redirected to the end of the survey. Prospective respondents were then asked whether they agreed to participate in the survey. Prospective participants who answered “No” were screened out, and prospective participants who answered “Yes” were permitted to proceed with the survey.

All remaining questions in the survey were either optional or, if a response was required for conditional formatting, included a “Prefer not to respond” option. Other than unit and demographic information (unit, gender, age group, race/ethnicity, educational status, marital status, relationship status, rank group, living situation), no personally identifiable information was collected from the respondents. No incentive was provided for survey participation. The survey was open from 4 May 2020 to 1 June 2020.

This baseline survey is designed as the first of a series of cross-sectional surveys that will allow for an inspection of trends in key outcomes over time, as well as monitor changes in Soldier perceptions as the pandemic unfolds.

4.3 Survey Measures

4.3.1 Demographic Metrics

Standard demographic questions were assessed including gender (e.g., male, female), age (e.g., 17-70), race/ethnicity (e.g., American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, White, Other), educational background (e.g., high school diploma/GED, some college, Associate's degree, Bachelor's degree, Graduate degree), marital status (e.g., never married, married-living with spouse, married-not living with spouse, separated, divorced, widowed), grade/rank (e.g., E1-E4, E5-E9, W1-W5, O1-O3, O4-O6, O7 and above), and unit (specific to each installation).

4.3.2 COVID-19 Metrics

COVID-19 Exposure:

Individual COVID-19 exposure was measured through a series of questions assessing participants' experiences related to COVID-19 including symptoms, testing, diagnosis, hospitalization, and recovery (e.g., ‘Since the beginning of the Coronavirus pandemic, have you experienced COVID-19 symptoms?’).

COVID-19 Health Prevention Behaviors:

The COVID-19 Risk Reduction Behavior Scale was adapted from a questionnaire designed to assess attitudes and practices towards H1N1 (Yap, Lee, Yau, Ng, and Tor, 2010). Items were developed to specifically measure health promotion behaviors related to preventing the spread of COVID-19, as established by Centers for Disease Control and Prevention (CDC) guidelines (e.g., “washing your hands frequently for 20 seconds with soap and water”). Participants rated how often they engaged in health promotion behaviors in the past month from “Never” to “Always.”

COVID-19 Stressors, Fears, and Concerns:

The COVID-19 Stressors scale was developed by the BHAT survey team to identify the primary stressors and concerns for Soldiers during the COVID-19 pandemic. Participants were asked to identify how worried or concerned they were regarding emerging stressors related to the COVID-19 pandemic (e.g., access to medical care, changing rules, regulations and guidance related to COVID-19). The scale was adapted from the Ebola Deployment-Related Concerns scale (Sipos, Kim, Thomas, and Adler, 2018), a tool used for assessing stressors for Service members deployed in response to the 2014 Ebola outbreak in West Africa. For analytical purposes, a sum score of answers to each item on the scale was used.

4.3.3 Behavioral Health Survey Metrics

Generalized Anxiety:

Anxiety was assessed using the Generalized Anxiety Disorder 2-item (GAD-2; Kroenke, Spitzer, Williams, Monahan, and Löwe, 2007), a brief screening tool for generalized anxiety disorder. Respondents rated how often within the past 2 weeks they were bothered by “feeling nervous, anxious, or on edge” and “not being able to stop or control worrying” on a 4-point scale ranging from 0 (‘Not at all’) to 3 (‘Nearly every day’). Item scores were summed and a score of 3 or higher was used to indicate a positive screen for anxiety.

Depression:

Depression was assessed with the Patient Health Questionnaire-2 (PHQ-2; Kroenke, Spitzer, & Williams, 2003). The PHQ-2 is a 2-item screening tool used to assess symptoms of depressed mood and anhedonia. Respondents rated how often within the past 2 weeks they were bothered by “little interest or pleasure in doing things” and “feeling down, depressed or hopeless” on a 4-point scale ranging from 0 (‘Not at all’) to 3 (‘Nearly every day’). We used the related functional impairment item to derive positive screening criteria for the PHQ-2 as described for the GAD-2 above.

Thoughts of Being Better Off Dead or Hurting Oneself:

Thoughts of being better off dead or self-harm was assessed using item #9 from the Patient Health Questionnaire-9 (PHQ-9; Spitzer, Kroenke, and Williams, 1999). This item asked participants to rate the frequency of these thoughts on a 4-point scale ranging from 'Not at all' to 'Nearly every day.' For the purposes of this report, we scored any positive endorsement as evidence of passive suicidal thinking.

Behavioral Health Services Utilization:

Participants were asked to indicate whether they had sought out behavioral health services either in-person or virtually for a stress, emotional, alcohol, or family problem in the past month from a list of providers and resources (e.g., Behavioral health professional, Military chaplain, Military and Family Life Consultant/MFLC).

Potentially Hazardous Alcohol Consumption:

The Alcohol Use Disorder Identification Test-Consumption (AUDIT-C; Bush, Kivlahan, McDonell, Fihn, and Bradley, 1998) is a 3-item screen for heavy drinking and/or active alcohol abuse or dependence. The overall scale is scored 0-12, and individual items are rated 0-4, with 4 indicating a higher amount of drinking for a given item. Standard scoring criteria was adjusted based on recommended cutoffs for a U.S. Army population in order to avoid inflated prevalence rates (F. Duffy, personal communication). A cutoff score of 8 for men and 7 for women was used to indicate a positive screen for potentially hazardous alcohol consumption.

Sleep:

- Insomnia Risk was measured using four items from the Insomnia Severity Index (4-Item ISI; Adler, Gunia, Bliese, Kim, and LoPresti, 2017; ISI; Bastien, Vallières, and Morin, 2001; 4-Item ISI; Bliese, Wright, and Adler, 2005). Items assessed how bothered participants were by "Difficulty falling asleep," "Difficulty staying asleep," and "Problems waking up too early" within the past 2 weeks on a 5-point scale ranging from "None" to "Very severe." Participants were also asked to rate their satisfaction with their current sleep pattern and the interference of their sleep problem with their daily functioning. Insomnia Risk was defined as a cutoff score of "3" or higher as determined by the following scoring criteria. Items "Difficulty falling asleep" and "Difficulty staying asleep" rated as "moderate," "severe," or "very severe" were scored as "1." Satisfaction with current sleep pattern rated as "dissatisfied" or "very dissatisfied" was scored as "1." Interference of sleep problem with daily functioning rated as "somewhat," "much," or "very much" was scored as "1." Item scores were summed for each participant.
- Sleep duration was measured with an item adapted from The Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, and Kupfer, 1989). Participants were asked to provide the average number of hours of sleep they get within a 24-hour period, ranging from "3 or fewer" to "8 or more." Following guidance from Seelig et al. (2016), we coded short sleep duration as 5 or fewer hours per night.

4.3.4 Leadership Responses to COVID-19 Metrics

General Leadership:

The Perceived Leadership Effectiveness scale (Ragins, 1989) measures general leadership qualities. In this survey, respondents were asked to rate their immediate supervisor on five items (e.g., ‘Displays strong leadership abilities’) using a 5-point scale from ‘Strongly disagree’ to ‘Strongly agree.’

COVID-19 Leadership:

The COVID-19 Leadership scale was developed for this survey in order to assess domain-specific leadership behaviors related to the COVID-19 pandemic. Some items were adapted from the health-promoting leadership behavior scale used to survey Soldiers during general deployment (Adler, Adrian, et al., 2017) and during a specific deployment to West Africa in response to the Ebola outbreak of 2014 (Adler, Kim, Thomas, and Sipos, 2018). Items were also informed by discussions with how isolation units are provided support in the civilian hospital setting (D. Cates, personal communication). In the present study, 17 items assessed positive (e.g., ‘Encourages us to report any symptoms of COVID-19 we might have.’) and negative (e.g., ‘Tells us to tough it out if we have symptoms of a cold.’) leadership behaviors. Respondents were asked to rate their immediate supervisor on each item using a 5-point scale from ‘Strongly disagree’ to ‘Strongly agree.’

4.3.5 Impact of COVID-19 on Families and Relationships Metrics

Family Demographics:

Standard family demographic questions were assessed including Soldiers’ marital status, relationship status if not married, number of children who are 18 or younger in the household, whether adults 65 or older were in the household, and number of family members enrolled in the Exceptional Family Member Program.

Financial Impact and Spouse/Partner Work Status:

- All Soldiers were asked one question about the extent to which their household had been impacted financially by the COVID-19 pandemic. They responded to this item on a 5-point Likert-type scale (1 = No impact, 2 = Minimal impact, 3 = Moderate impact, 4 = Major impact, 5 = Severe impact). For the purposes of multivariable logistic regression models, the variable was dichotomized into two categories: no/minimal impact or moderate/major/severe impact.

- Soldiers who reported that they were married or in a committed relationship were asked whether their spouse's/partner's work status changed as a result of the COVID-19 pandemic. Soldiers responded dichotomously (Yes or No) to four items about whether their spouse/partner was no longer employed outside the home, had their work hours reduced, had to take an unpaid leave of absence/"furlough", or shifted to working from home or teleworking part- or full-time. For the purposes of all analyses, the four items were analyzed separately.

Spouse and Spouse/Partner Coping:

One item was adapted from the Dyadic Coping Inventory- 4 item version (DCIFS-4; Hilpert et al., 2016), a measure that evaluates how partners cope with financial stress. Soldiers who reported that they were married or in a committed relationship were asked one question about the extent to which they and their spouse/partner experienced difficulty coping with the impact of the COVID-19 pandemic. They responded to this item on a 5-point Likert-type scale (1 = Not at all, 2 = Slightly, 3 = Moderately, 4 =Very, 5 = Extremely).

Marital/Relationship Satisfaction:

Marital/relationship satisfaction was assessed using a 1-question brief screen (Bailey, Kerley, & Kibelstis, 2012); Soldiers who reported that they were married or in a committed relationship were asked to rate the extent to which they were satisfied with their marriage or relationship with their significant other over the past month. They responded to this item on a 10-point scale that ranged from Very Dissatisfied to Very Satisfied.

Child Functioning:

Soldiers who reported that they had children under 18 years of age in the household were asked one question about the extent to which their child, or any of their children, appeared to experience any emotional, behavioral, or other difficulties since the start of the COVID-19 pandemic. They responded to this item on a 5-point Likert-type scale (1 = Not at all, 2 = Slightly, 3 = Moderately, 4 = Very, 5 = Extremely).

COVID-19 Impact to Childcare:

Soldiers who reported that they had children under 18 years of age in the household were asked about whether their childcare arrangements had changed as a result of the COVID-19 pandemic. Soldiers responded dichotomously (Yes or No) to five items about whether: (1) their child's typical daycare/school closed or reduced hours, (2) they had made alternate childcare arrangements, (3) they were unable to make alternate childcare arrangements, (4) their work situation changed as a result of childcare issues, and (5) they were working from home while caring for or homeschooling children. For the purposes of all analyses, the five items were analyzed separately.

4.3.6 COVID-19 Information Sources and Information Needs Metrics

Sources of Information:

Participants were asked to provide the top three sources they most commonly sought for updates concerning the COVID-19 pandemic. The following options were available: news aggregator, newspaper, online, radio, social media, television, and 'other.' Additional questions followed to determine the specific sources they used for the options that were endorsed (e.g., television options included CNN[®], Fox News[®], Local News, MSNBC[®], Other Network News, PBS[®], AFN[®], 'Other: please specify'). Frequency of any use of Military and Government sources (e.g., installation guidance, National Institutes of Health, CDC) was also assessed using the following response options: never, less than once a week, about once a week, multiple times per week, and daily.

Information Needs Related to COVID-19:

Participants were asked to provide their current information needs related to COVID-19 by selecting all that apply from the following options: 'Caring for others', 'Cleaning and disinfection', 'Daily life, coping, and stress management', 'Facts and statistics related to COVID-19 spread', 'How to protect yourself', 'How to protect others', 'Maintaining missions and readiness during COVID-19', 'Resources to support me and my family during the pandemic (for example, financial, childcare, etc.)', 'Symptoms and testing', 'Travel (for example, restrictions, ways to stay safe, etc.)', and 'Other (please specify).'

4.4 General Analytic Approach

4.4.1 Comparison Sample Data

Limited data exist on behavioral and public health outcomes in Military populations in the context of a global pandemic such as COVID-19. Where possible, we focused on comparisons in positive screening rates of similar or the same behavioral health outcomes between the BHAT–COVID-19 data presented here and from similar data collected from samples during Operations Iraqi and Enduring Freedom (OIF/OEF), as well as contemporary data collected prior to the COVID-19 pandemic. It is critical to bear in mind that there are sampling and other methodological differences between the BHAT and comparison surveys (e.g., some surveys were anonymous versus confidential; some were collected using paper-and-pencil; some were conducted in-person versus online; etc.). Whenever possible, we point out these differences when making comparisons between the BHAT data, OIF/OEF, and contemporary pre-COVID data. The rationale for the chosen comparison data points was to determine the impact of COVID-19 on positive screening rates for key behavioral health outcomes compared to the impact of both a high operational tempo and combat-intensive period (OIF/OEF) and a low combat-intensive period (pre-COVID-19). If COVID-19 is a driving force behind higher rates of positive screens for behavioral health problems, especially with related functional impairment, it is anticipated that rates will be significantly higher than contemporary pre-COVID comparison samples, and more akin to rates observed in OIF/OEF behavioral health data. Nonetheless, we believe the limitations of this approach make it critical to collect additional BHAT data so that

cohort-based trends in key behavioral health indicators may be assessed. This will be the only way to truly examine the impact of a protracted pandemic on Force health and readiness.

4.4.2 Global Analytical Strategy and Verification of Results

Survey results from the three installation groups were linked together into an aggregated dataset. Statistical analyses were conducted using SAS[®] software (SAS Institute Inc, 2013), SPSS[®], and R[®]. Frequency distributions were provided for categorical and ordinal variables; measures of central tendency (e.g., mean, median, interquartile range) were displayed for interval/continuous variables. For all analyses, listwise deletion was used when data were missing or if participants chose a “prefer not to respond” option.

Univariate tests included variables of interest by: (1) Gender (Male, Female); (2) Rank Group (Junior Enlisted [E1-E4]; Senior Enlisted [E5-E9]; Warrant Officer/Officer; Prefer not to Respond); and (3) Race/Ethnicity (White Only, Hispanic Only, Black Only, Other).

Multivariate models were used to determine which variables were associated with any outcomes of interest (e.g., depression, anxiety, and potentially hazardous drinking). Binary outcomes used logistic regression models; ordinal outcomes used ordinal logistic regression models; and interval/continuous outcomes that were normally distributed used Ordinary Least Squares linear regression. Adjustment for covariates in each model were dependent on *a priori* associations of predictors with outcomes. Therefore, all models were built empirically in one step; neither forward selection nor backward elimination was used, nor were hierarchical models.

5. FINDINGS

5.1 Sample Characteristics

The BHAT COVID-19 survey garnered responses from 21,911 Active Duty Soldiers. National Guard, Reservists, and Service members from other Military branches were screened out. The aggregate response rate for the three installations that were surveyed was approximately 28%. Per installation, I Corps had 14,199 respondents, with an estimated response rate of 36.6%; 8th Army had 1,370 respondents, with an estimated response rate of 6.9%; and USAREUR had 5,329 respondents, with an estimated response rate of 39.5%. As shown in Table 1, the population was largely comprised of males (85.1%). The majority of Soldiers who responded to the survey were between the ages of 17 and 29 (58.7%), “White only” race/ethnicity (42.4%), had a high school diploma or least some college (67.7%), and Junior Enlisted (50.3%). Similar numbers of Soldiers lived off post (39.5%) or in on-post barracks (35.7%).

Table 1. Sample Characteristics of BHAT Survey Respondents

Demographic	Number (n)	Percent (%)
Installation		
USAREUR	5,615	25.63
I Corps	14,796	67.53
8 th Army	1,500	6.85
Gender		
Male	15,565	85.11
Female	2,323	12.70
Prefer not to respond	400	2.19
Age		
17-29	12,862	58.70
30-34	3,887	17.74
40-49	1,155	5.27
50-59	212	0.97
60 and over	12	0.05
Prefer not to respond	160	0.73
Race/Ethnicity		
White Only	9,297	50.91
Hispanic or Latino Only	2,630	14.40
Black or African American Only	2,314	12.67
Other	2,998	16.42
Prefer not to respond	1,022	5.60
Education		
High school diploma/GED	7,121	38.94
Some college	5,266	28.79
Associate's degree	1,511	8.26
Bachelor's degree	2,704	14.79
Graduate degree	1,308	7.15
Prefer not to respond	378	2.07
Rank/Pay Grade		
Junior Enlisted	9,192	50.26
Senior Enlisted	6,055	33.11
Warrant Officer/Officer	2,622	14.34
Prefer not to respond	419	2.29

Living situation		
On-post barracks	7,222	39.49
On-post housing	3,578	19.56
Off-post housing	6,531	35.71
Other	411	2.25
Prefer not to respond	546	2.99

5.2 COVID-19 Metrics

Approximately 1-in-10 Soldiers reported having experienced COVID-19 symptoms. Nearly 8% of Soldiers reported having been tested for COVID-19. Small percentages of Soldiers reported receiving a positive test or being diagnosed with COVID-19 by a medical professional. Around 1% of Soldiers reported becoming seriously ill or having been hospitalized because of COVID-19 (see Table 2).

Table 2. Self-reported COVID-19 Exposure (n = 17,133)

Since the beginning of the COVID-19 pandemic, have you...	"Yes"	
	n	%
...experienced COVID-19 symptoms?	1,656	9.67
...been advised you may have COVID-19?	635	3.72
...been tested for COVID-19?	1,318	7.71
...received a positive test for COVID-19?	139	0.81
...been diagnosed by a medical professional with COVID-19?	231	1.35
...become seriously ill with COVID-19?	188	1.10
...been hospitalized with COVID-19?	140	0.82
...recovered from COVID-19?	271	1.59

5.2.1 Engagement in Recommended Public Health Practices

The majority of Soldiers reported at least some engagement in recommended public health behaviors to help mitigate the spread of COVID-19 (Table 3).

Table 3. COVID-19 Behaviors of Soldiers Responding to the Behavioral Health Assessment Tool (BHAT) COVID-19 Survey, May 2020 - June 2020 (n = 17,263)

In the past month, how often have you engaged in the following behaviors?	Never		Seldom/ Sometimes		Frequently/ Always	
	n	%	n	%	n	%
Leaving home to go to other COVID-19 affected locations	11,491	66.56	4,585	26.56	1,187	6.88
Avoiding people with COVID-19 symptoms	1,707	9.90	2,735	15.87	12,798	74.23
Staying at home	1,743	10.14	5,036	29.31	10,402	60.54
Going to crowded places	7,846	45.56	7,880	45.75	1,497	8.69
Using public transportation, taxis or ride sharing	13,770	80.03	2,601	15.12	836	4.86
Wearing a mask or face covering	763	4.43	4,738	27.51	11,722	68.06
Washing your hands frequently for 20 seconds with soap and water	507	2.94	2,742	15.91	13,989	81.16
Avoiding gatherings with 10 or more people	1,256	7.29	4,618	26.81	11,349	65.90
Using hand sanitizer when you cannot wash your hands	637	3.70	3,296	19.15	13,283	77.15
Coughing/sneezing into your elbow or tissue	578	3.36	1,918	11.14	14,722	85.51
Monitoring yourself for fever, coughing, or shortness of breath	1,462	8.52	4,152	24.18	11,555	67.30

Legend:

n = number of respondents who answered

% = percent of respondents who answered

5.2.2 COVID-19 Stressors, Fears, and Concerns

As shown in Table 4 on the following page, there were a number of stressors, fears, and concerns endorsed by Soldiers. The five most common areas of concern were: time with friends and family; social activities; opportunities for exercise; someone close getting COVID-19; and changing rules, regulations, and guidance related to the COVID-19 pandemic. There were also reports of concerns by just over half of the sample concerning the impact of COVID-19 on unit readiness.

5.2.2.1 Multiple Linear Regressions

A multiple linear regression with an aggregate total of COVID-19 stressors, fears, and concerns as the dependent variable showed significant effects among Race/Ethnicity and Rank groups. As shown in Figure 1, Panel B, Non-white Soldiers endorsed more COVID-19 stressors, fears, and concerns than White Soldiers (all p-values <.001). There were no statistically significant differences among minority groups (p-values > .25). As shown in Figure 1, Panel C, Junior Enlisted (E1-E4) Soldiers reported more COVID-19 stressors, fears, and concerns than Senior Enlisted (E5-E9) and Officers/Warrant Officers (p-values <.0001). Moreover, Senior Enlisted (E5-E9) Soldiers reported more concerns than Officers/Warrant Officers (p = .04). There were no statistically significant differences in aggregate COVID-19 stressors, fears, and concerns between male and female Soldiers.

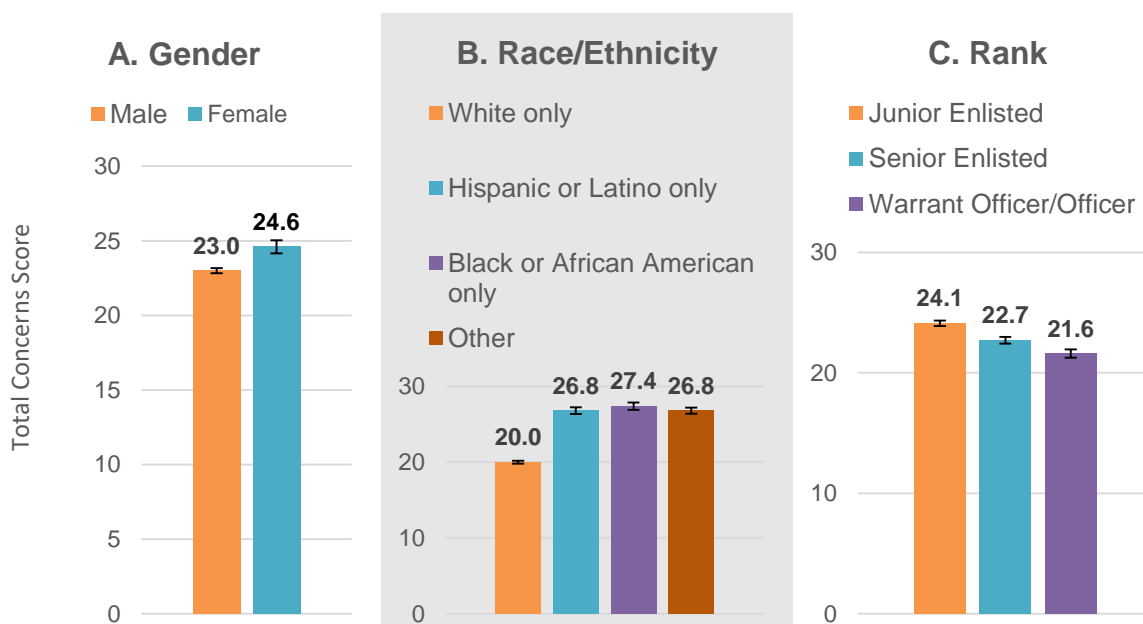


Figure 1. Mean COVID-19 Concerns Score by Gender, Rank, and Race/Ethnicity (n = 13,029)

Table 4. COVID-19 Stressors, Fears, and Concerns of Soldiers Responding to the Behavioral Health Assessment Team COVID-19 Survey, May-June 2020 (n = 17,041)

Please rate the extent to which you are worried or concerned about the following in the context of COVID-19...	Not at all		Slightly/ Moderately		Very/ Extremely	
	n	%	n	%	n	%
Time with friends and family	5,251	30.92	6,502	38.28	5,230	30.79
Social activities	5,857	34.49	7,163	42.18	3,962	23.33
Changing rules, regulations, and guidance related to COVID-19	6,195	36.45	7,435	43.74	3,366	19.81
Someone close to me getting COVID-19	6,552	38.57	6,596	38.83	3,838	22.59
Opportunities for exercise	6,740	39.69	6,230	36.68	4,012	23.63
Access to household supplies	7,105	41.79	7,766	45.68	2,131	12.53
Entertainment	7,167	42.21	6,941	40.88	2,872	16.91
Exposure to people who may have COVID-19	7,260	42.71	7,022	41.31	2,717	15.98
Uncertainty about COVID-19	7,415	43.67	7,106	41.85	2,457	14.48
Changes in work tasks due to COVID-19	7,755	45.66	6,641	39.1	2,589	15.24
Accessing medical care	7,767	45.73	6,518	38.38	2,698	15.89
Changes to work schedule(s)	7,895	46.59	6,355	37.51	2,694	15.9
Access to food	7,979	46.82	7,128	41.83	1,934	11.34
The impact COVID-19 is having on your unit's readiness	8,043	47.31	6,689	39.35	2,268	13.34
Contracting COVID-19	8,096	47.64	6,634	39.04	2,263	13.31
Availability of COVID-19 testing	8,231	48.39	6,225	36.6	2,552	15.01
Being isolated/quarantined/quartered because of COVID-19	8,265	48.63	6,185	36.4	2,545	14.98
Finances	8,387	49.34	6,167	36.29	2,443	14.38
Doing jobs I am not trained for	9,890	58.17	5,363	31.55	1,749	10.29
Childcare/daycare or school closures	10,503	61.82	4,254	25.04	2,234	13.15

5.3 Behavioral Health

5.3.1 Behavioral Health Data Analysis (Overview)

Using well-validated behavioral health survey instruments allowed us to provide an overview of the behavioral health status of the Force and Soldiers' reported utilization of a variety of behavioral health services. The self-reported measures are based on validated behavioral health status indicators to include:

1. Generalized Anxiety
2. Major Depression
3. Passive suicidal thoughts
4. Potential hazardous drinking
5. Sleep Duration and Insomnia Risk

Analytically, we conducted a series of descriptive analyses to characterize the percentage of Soldiers meeting positive screening criteria for each of the outcomes or, where validated cutoffs were not available, to provide a snapshot of the percent of Soldiers reporting specific outcomes. We then examined bivariate associations between demographic indicators (gender, rank, ethnicity), COVID-19 stressors, fears, and concerns (aggregated total of affirmative responses to the stressors, fears, and concerns items described earlier), and behavioral health outcomes. Lastly, we conducted regression models assessing associations between demographic indicators and behavioral health outcomes. Logistic regressions were used for binary outcome variables.

Of note, we present descriptive data for all positive screening criteria for anxiety and depression in order to provide an overall “snapshot” of Soldiers' behavioral health across liberal and strict scoring criteria (cf., Thomas et al., 2010). However, for regression models, we opted to use the item-based cutoff plus ‘any related functional impairment’ qualifier. This is intended to capture a balance between a primary care model (which has high sensitivity and relatively low specificity), as well as a more conservative model to estimate clinically based population prevalence estimates (which requires significant impairment related to symptom reporting) (Diagnostic and Statistical Manual of Mental Disorders, 5th Ed.). It is worth noting that correlational analyses yielded highly similar results irrespective of the screening criteria used for anxiety and depression.

Finally, given the chief goal of the BHAT was to examine a link between the COVID-19 pandemic and behavioral health indicators, we conducted multivariate models that allowed us to determine whether demographic differences in outcomes were robust to inclusion of COVID-19 stressors, fears, and concerns. Also, given evidence that minorities—and Blacks and Hispanics more specifically—are potentially more impacted by COVID-19, we sought to examine whether any identified race/ethnicity differences in behavioral health outcomes were indirect in nature; that is, that any race/ethnicity differences in behavioral health outcomes were not direct, but were attributable to minority groups having greater COVID-19 stress, fears, and concerns. To do so, we computed a bootstrapped indirect effects model using procedures developed by Hayes (2017). Figure 3 provides a graphical display of direct vs indirect associations.

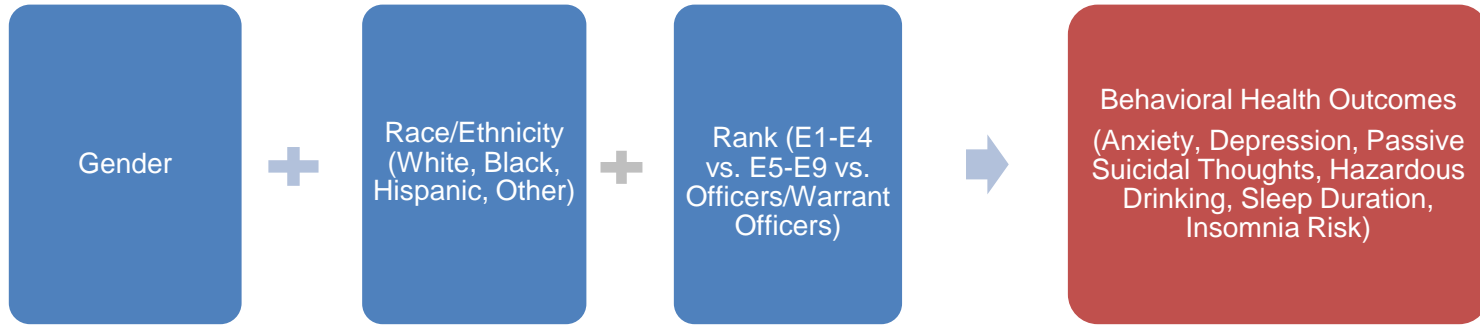


Figure 2. Graphical Depiction of Regression Analysis on Behavioral Health Outcomes

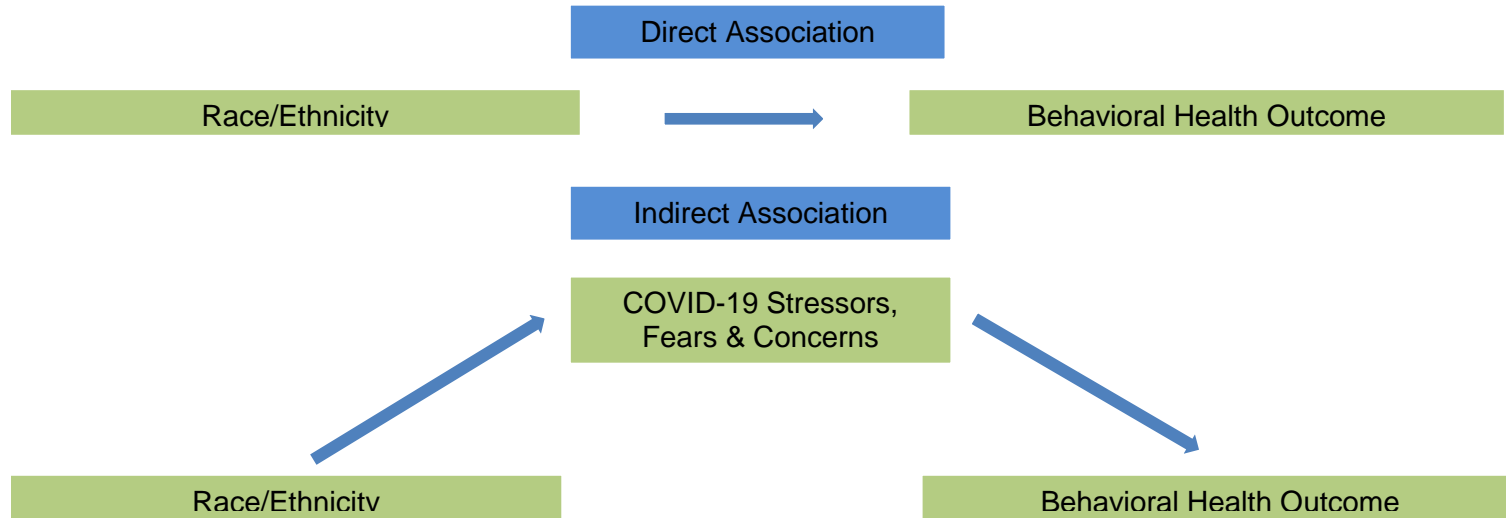


Figure 3. Graphical Depiction of Direct vs Indirect Associations of Race/Ethnicity on Behavioral Health Outcomes

5.3.2 Generalized Anxiety

Depending on the criterion used, between 5.4% and 16.3% of Soldiers met the positive screening criteria for possible generalized anxiety (Table 5). The rate of positive screens for generalized anxiety was similar to pre-COVID-19 rates observed in Soldier populations when using the severe related impairment qualifier, and slightly elevated compared to rates that did not include an impairment qualifier. Positive screening rates were notably lower than those observed during OIF and OEF.

Table 5. Percent Screening Positive for Possible Generalized Anxiety Based on Generalized Anxiety Disorder 2-item (GAD-2) scores alone, Plus Any Related Functional Impairment, and Plus Severe Related Impairment Qualifiers (n = 16,555)

Positive Screening Result	n	%
Probable Anxiety	2,694	16.27
Probable Anxiety with Any Related Impairment	2,192	13.34
Probable Anxiety with Severe Related Impairment	893	5.43

Legend:

n = number of respondents

% = percent of respondents

5.3.2.1 Univariate Regressions

We conducted a series of bivariate logistic regressions to explore lower-order associations between gender, race/ethnicity, rank, and COVID-19 stressors, fears, and concerns and the outcome of screening positive for anxiety based on the GAD-2, with the additional requirement of endorsing any related functional impairment. These associations are displayed graphically in Figure 4.

- **Gender:**

Females were more likely to screen positive for generalized anxiety with any related functional impairment than males (OR = 1.59, 95%CI: Lower Bound = 1.407, Upper Bound = 1.796). This difference is shown in Figure 4, Panel A.

- **Race/Ethnicity:**

We observed statistically significant differences in race/ethnicity corresponding to the likelihood of screening positive for generalized anxiety ($p < .0001$). Whites did not differ from the 'Other' race/ethnicity category (OR = 1.04, 95%CI: Lower Bound = 0.91, Upper Bound = 1.179), nor from Hispanics, (OR = 1.11, 95%CI: Lower Bound = 0.966, Upper Bound = 1.127). However, Blacks were more likely to screen positive than Whites for generalized anxiety (OR = 1.34, 95%CI: Lower Bound = 1.17 Upper Bound = 1.54). Positive screening rates by race category are shown in Figure 4, Panel B.

- **Rank:**

Rank was a statistically significant predictor of positive screening for generalized anxiety ($p < .0001$). Senior Enlisted (E5-E9; OR = .880, 95%CI: Lower Bound = .796, Upper Bound = .973) and Officers/Warrant Officers (OR = 0.654, 95%CI: Lower Bound = 0.564 Upper Bound = 0.758) were less likely to screen positive for generalized anxiety than Junior Enlisted (E1-E4). Positive screening rates by rank category are displayed in Figure 4, Panel C.

- **COVID-19 Stressors, Fears and Concerns:**

For survey respondents, a greater sum total score of COVID-19 stressors, fears, and concerns was associated with a greater likelihood of screening positive for generalized anxiety (OR = 1.04, 95%CI: Lower Bound = 1.037, Upper Bound = 1.043).

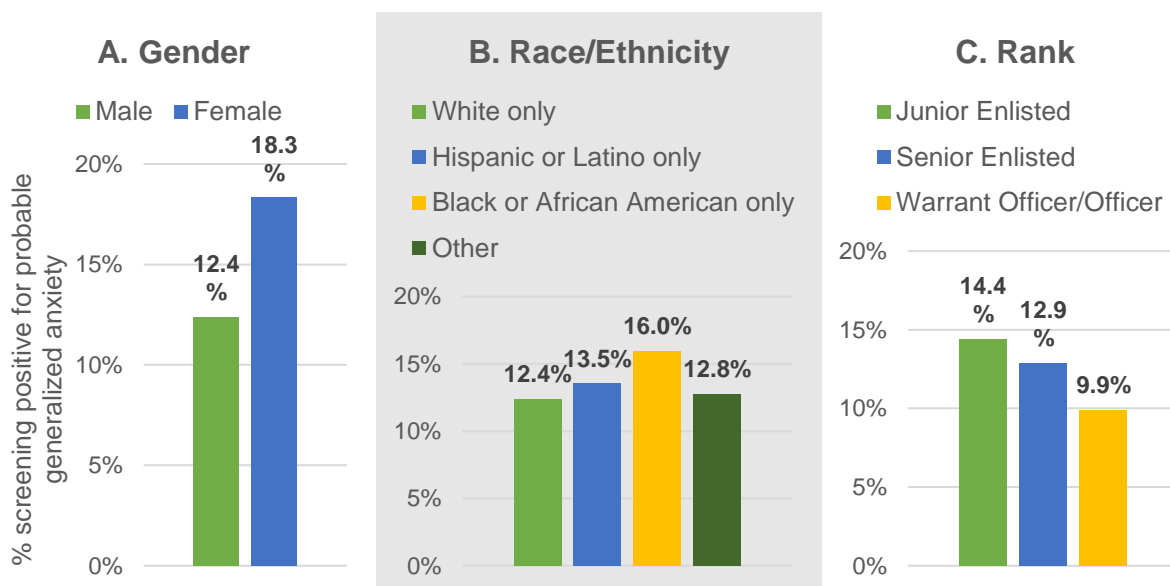


Figure 4. Percent Screening Positive for Possible Generalized Anxiety based on Generalized Anxiety Disorder 2-item scores, plus any related functional impairment, by Gender, Race/Ethnicity, and Rank (N = 16,433)

5.3.2.2 Multivariate Logistic Regression

We conducted a multiple logistic regression to determine the unique association of gender, race/ethnicity, and rank with likelihood of screening positive for generalized anxiety with any related impairment (see Table 6). In the multiple-variable model, females were more likely to screen positive than males; Blacks were more likely to screen positive than Whites; and Junior Enlisted (E1-E4) were more likely to screen positive than both Senior Enlisted (E5-E9) and Officers/Warrant Officers.

Table 6. Multiple Logistic Regression of Demographic Predictors of Generalized Anxiety based on Generalized Anxiety Disorder 2-item Scores, plus Any Related Impairment (n = 15,350)

DV: GAD-2 +Any Related Functional Impairment	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	0.46	0.07	<0.0001	1.59 (1.40-1.81)
Race/Ethnicity (REF = White Only) <i>p</i> =0.010				
Hispanic or Latino Only	0.02	0.07	0.812	1.02 (0.89-1.17)
Black or African-American Only	0.21	0.07	0.003	1.24 (1.08-1.42)
Other	-0.05	0.07	0.454	0.95 (0.83-1.09)
Rank Group (REF = Junior Enlisted) <i>p</i> <0.0001				
Senior Enlisted	-0.15	0.05	0.005	0.86 (0.78-0.96)
Warrant Officer/Officer	-0.44	0.08	<0.0001	0.65 (0.55-0.76)

Legend:

GAD-2 = Generalized Anxiety Disorder 2-item

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.2.3 *Multivariate Logistic Regression controlling for COVID-19 Stressors, Fears, and Concerns*

We conducted a multivariate logistic regression to determine whether the observed unique associations between demographic factors and anxiety were robust to controlling for COVID-19 stressors, fears and concerns (Table 7). In this model, COVID-19 stressors, fears, and concerns were robustly associated with increased likelihood of screening positive for anxiety with any related impairment. However, women remained more likely than men to screen positive for anxiety. Differences among race/ethnicity groups again emerged, but in this case the direction of the effect was reversed, such that Whites were more likely to screen positive for anxiety with any related impairment than Hispanics and “Other” (no statistically significant differences with Blacks were observed). Finally, Junior Enlisted (E1-E4) remained more likely to screen positive than Officers/Warrant Officers, but no longer differed from Senior Enlisted (E5-E).

Table 7. Multivariable Logistic Regression of Demographic Predictors of Anxiety based on Generalized Anxiety Disorder 2-item Scores, Plus Any Related Impairment Controlling for COVID-19 Stressors, Fears, and Concerns (n = 11,755)

DV: GAD-2 + Some Functional Impairment	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	0.43	0.08	<0.0001	1.54 (1.32-1.80)
Race/Ethnicity (REF = White Only)	<i>p</i> <0.0001			
Hispanic or Latino Only	-0.26	0.08	0.002	0.77 (0.66-0.91)
Black or African-American Only	-0.04	0.08	0.682	0.97 (0.82-1.14)
Other	-0.32	0.08	<0.0001	0.73 (0.62-0.85)
Rank Group (REF = Junior Enlisted)	<i>p</i> =0.001			
Senior Enlisted	-0.09	0.06	0.140	0.91 (0.81-1.03)
Warrant Officer/Officer	-0.34	0.09	<0.0001	0.71 (0.59-0.86)
COVID-19 Concern Score	0.04	0.002	<0.0001	1.04 (1.037-1.043)

Legend:

GAD-2 = Generalized Anxiety Disorder 2-item

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.2.4 Tests of Indirect Associations of Race/Ethnicity on Anxiety

The differences in magnitude of association between Whites and Blacks related to positive screening for anxiety was not direct ($p = .81$). Rather, this difference was indirect and a function of the observed differences in anxiety between Whites and Blacks related to COVID-19 stressors, fears, and concerns ($p < .0001$).

5.3.3 Depression

Depending on the criterion used, between 5.6% and 17.4% of Soldiers met criteria for a positive screen for possible depression (Table 8). The rate of positive screens for generalized anxiety was similar to pre-COVID-19 rates observed in Soldier populations when using the severe related impairment qualifier, and slightly elevated compared to rates that did not include an impairment qualifier. Positive screening rates were notably lower than those observed during OIF and OEF.

Table 8. Percent Screening Positive for Depression Based on Patient Health Questionnaire-2 Scores, Plus Any Related Functional Impairment, and Plus Severe Related Impairment (n = 16,499)

Positive Screening Status	n	%
Probable Depression	2,865	17.36
Probable Depression with Any Related Impairment	2,342	14.30
Probable Depression with Severe Related Impairment	924	5.64

5.3.3.1 Univariate Logistic Regressions

We conducted a series of bivariate logistic regressions to explore lower-order associations between gender, race/ethnicity, rank, and COVID-19 stressors, fears, and concerns and meeting criteria for positive screening for depression based on the PHQ-2 with the additional requirement of endorsing any related functional impairment. These associations are displayed graphically in Figure 5.

- **Gender:**

Females were more likely than males to screen positive for depression with any related impairment (OR = 1.247, 95%CI: Lower Bound = 1.100, Upper Bound = 1.413). This difference is shown in Figure 5, Panel A.

- **Race/Ethnicity:**

We observed statistically significant differences in race/ethnicity related to screening positive for depression ($p=.005$). Whites did not differ from the “Other” race/ethnicity category (OR = 0.963, 95%CI: Lower Bound = 0.847, Upper Bound = 1.095). However, Hispanics (OR = 1.168, 95%CI: Lower Bound = 1.028, Upper Bound = 1.328) and Blacks (OR = 1.200, 95%CI: Lower Bound = 1.048, Upper Bound = 1.373) were more likely to screen positive than Whites for depression. Positive screening rates by race category are shown in Figure 5, Panel B.

- **Rank:**

Rank was a statistically significant predictor of screening positive for depression ($p<.0001$). Senior Enlisted (E5-E9; OR = .794, 95% CI: Lower Bound = .685, Upper Bound = .920) and Officers/Warrant Officers (OR = 0.405, 95%CI: Lower Bound = 0.312, Upper Bound = 0.525) were less likely to screen positive for depression than Junior Enlisted (E1-E4) Soldiers. Positive screening rates by rank category are displayed in Figure 5, Panel C.

- **COVID-19 Stressors, Fears and Concerns:**

For survey respondents, a greater sum total score of COVID-19 stressors, fears, and concerns was associated with greater likelihood of screening positive for depression (OR = 1.04, 95%CI: Lower Bound = 1.037, Upper Bound = 1.043).

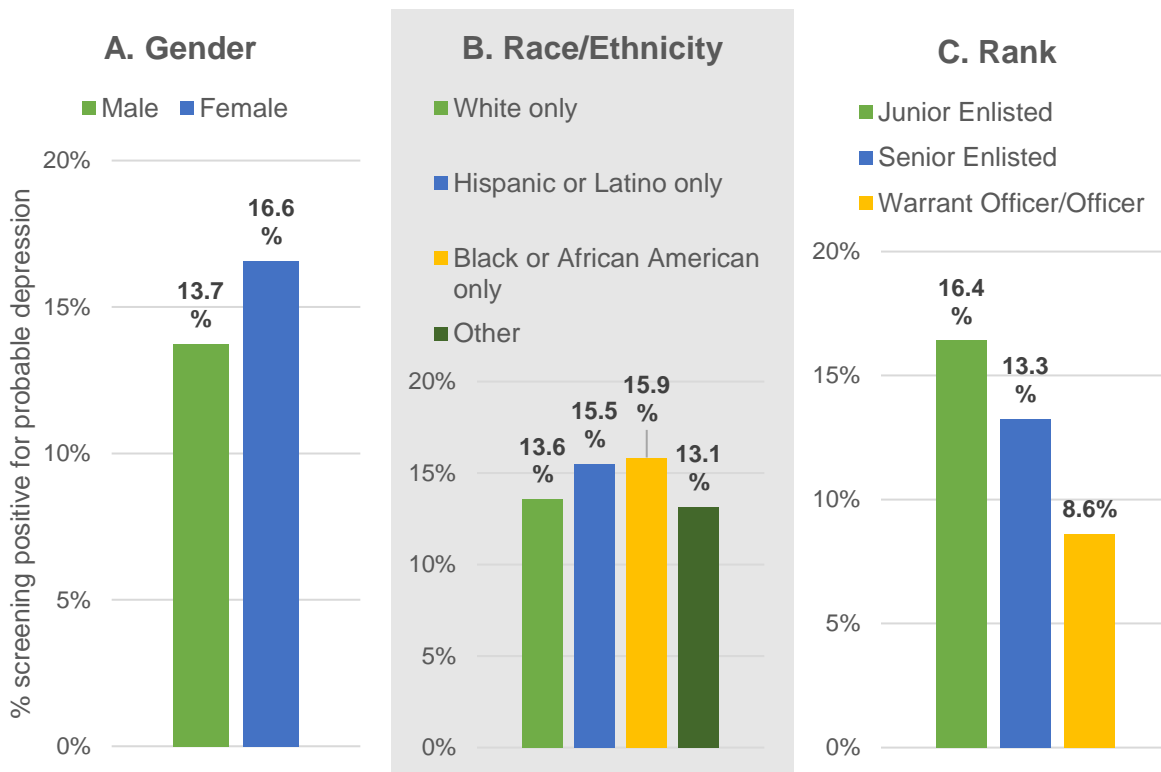


Figure 5. Percent Screening Positive for Possible Depression based on Patient Health Questionnaire-2 Scores, Plus Any Related Functional Impairment, by Gender, Race/Ethnicity, and Rank (N = 16,377)

5.3.3.2 Multivariable Logistic Regression

We conducted a multivariable logistic regression to determine the unique association of gender, race/ethnicity, and rank with likelihood of screening positive for depression with any related impairment (see Table 9). In the multivariable model, females were more likely to screen positive than males; there were no race/ethnicity differences in group membership; and Junior Enlisted (E1-E4) were more likely to screen positive than both Senior Enlisted (E5-E9) and Officers/Warrant Officers.

Table 9. Multivariable Logistic Regression of Demographic Predictors of Depression based on Patient Health Questionnaire-2 Scores, Plus Any Related Impairment (n = 15,291)

DV: PHQ-2 +Some Functional Impairment	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	0.25	0.07	<0.0001	1.29 (1.13-1.47)
Race/Ethnicity (REF = White Only)	<i>p</i> =0.058			
Hispanic or Latino Only	0.05	0.07	0.422	1.06 (0.93-1.20)
Black or African-American Only	0.10	0.07	0.167	1.10 (0.96-1.26)
Other	-0.12	0.07	0.075	0.89 (0.78-1.01)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.26	0.05	<0.0001	0.77 (0.70-0.85)
Warrant Officer/Officer	-0.73	0.08	<0.0001	0.48 (0.41-0.57)

Legend:

PHQ-2 = Patient Health Questionnaire-2

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference

DV = Descriptive Variable

Notes:

A p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.3.3 Influence of COVID-19 stressors, fears, and concerns on the association between demographic variables and depression

- **Multivariate Logistic Regression:**

We conducted a multivariate logistic regression to determine whether the observed unique associations of demographic factors with depression were robust to controlling for COVID-19 stressors, fears and concerns (Table 10). In this model, COVID-19 stressors, fears, and concerns were robustly associated with increased likelihood of screening positive for depression with any related impairment. Gender and rank differences in likelihood of screening positive for depression with related impairment remained statistically significant. Race differences again emerged, but—as with anxiety—the direction of the effect was reversed, such that Whites were more likely to screen positive for anxiety with any related impairment than other race/ethnicity categories.

● **Tests of Indirect Associations of Race/Ethnicity on Depression**

Differences in magnitude of the association between Whites versus Blacks and Whites versus Hispanics related to positive screening for depression were not direct (p-values > .15). For both comparisons, there was evidence of indirect associations of race/ethnicity differences with positive screening for depression and any related impairment, *vis-a-vis* variance shared in common with COVID-19 stressors, fears, and concerns (p-values < .0001).

Table 10. Multivariable Logistic Regression of Demographic Predictors of Depression based on Patient Health Questionnaire-2 Scores, Plus Any Related Impairment, Controlling for COVID-19 Stressors, Fears, and Concerns (n = 11,719)

DV: PHQ-2 + Some Functional Impairment	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	0.25	0.08	0.002	1.28 (1.09-1.49)
Race/Ethnicity (REF = White Only)	<i>p</i> <0.0001			
Hispanic or Latino Only	-0.23	0.08	0.004	0.80 (0.68-0.93)
Black or African-American Only	-.0.18	0.08	0.036	0.84 (0.71-0.99)
Other	-0.37	0.08	<0.0001	0.69 (0.59-0.81)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.23	0.06	<0.0001	0.79 (0.71-0.90)
Warrant Officer/Officer	-0.66	0.10	<0.0001	0.52 (0.43-0.63)
COVID-19 Concern Score	0.04	0.002	<0.0001	1.036 (1.033-1.039)

Legend:

PHQ-2 = Patient Health Questionnaire-2

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.4 Thoughts of Being Better Off Dead or Hurting Oneself

Just over 10% of Soldiers entertained thoughts that they “would be better off dead” or of hurting themselves with at least some frequency. Approximately 5% of Soldiers reported these thoughts at least more than half of the days over the 2 weeks prior to completing the survey. Rates of endorsement of any thoughts of being better off dead or hurting oneself were about 25% greater in this survey than those observed from confidential surveys obtained from active component Soldiers prior to onset of COVID-19 (approximately 7%). The rate of positive endorsement of

this thinking in this report is less than the rate that was observed during OIF/OEF during the years 2003-2011 (13.9%).

Table 11. Percent of Respondents Reporting Any Thoughts of Being Better Off Dead or of Hurting Oneself Over the Past 2 Weeks (n = 16,538)

Thoughts of Being “Better Off Dead” or Hurting Self	n	%
Not At All	14,639	88.52
Few or Several Days	1,095	6.62
More Than Half the Days	532	3.22
Nearly Every Day	272	1.64

5.3.4.1 Univariate Logistic Regressions

- **Gender:**

Females were less likely than males to report any thoughts of being better off dead or of self-harm (B = -.256, SE = .080, OR = 0.774, 95%CI: Lower Bound = 0.662, Upper Bound = 0.906). This difference is shown in Figure 6, Panel A.

- **Race/Ethnicity:**

We observed statistically significant differences in rates of endorsing any frequency of passive suicidal thoughts ($p < .0001$) between race/ethnicity groups. Blacks (OR = 1.491, 95%CI: Lower Bound = 1.293, Upper Bound = 1.720), Hispanics (OR = 1.228, 95%CI: Lower Bound = 1.066, Upper Bound = 1.414), and the ‘Other’ race/ethnicity category (OR = 1.215, 95%CI: Lower Bound = 1.061, Upper Bound = 1.392) were all more likely to report passive suicidal thoughts than Whites. See Figure 6, Panel B for a graphical depiction of race/ethnicity differences.

- **Rank:**

Rank was a statistically significant predictor of the endorsement of any passive suicidal thoughts ($p < .0001$). Senior Enlisted (E5-E9; OR = .591, 95% CI: Lower Bound = .530, Upper Bound = .660) and Officers/Warrant Officers (OR = 0.313, 95%CI: Lower Bound = 0.238, Upper Bound = 0.379) were less likely to endorse such thoughts than Junior Enlisted (E1-E4) Soldiers. See Figure 6, Panel C for a graphical depiction of rank differences.

- **COVID-19 Stressors, Fears, and Concerns:**

Among survey respondents, a greater sum total score of COVID-19 stressors, fears, and concerns was associated with a greater likelihood of endorsing any passive suicidal thoughts (OR = 1.032, 95%CI: Lower Bound = 1.029, Upper Bound = 1.035).

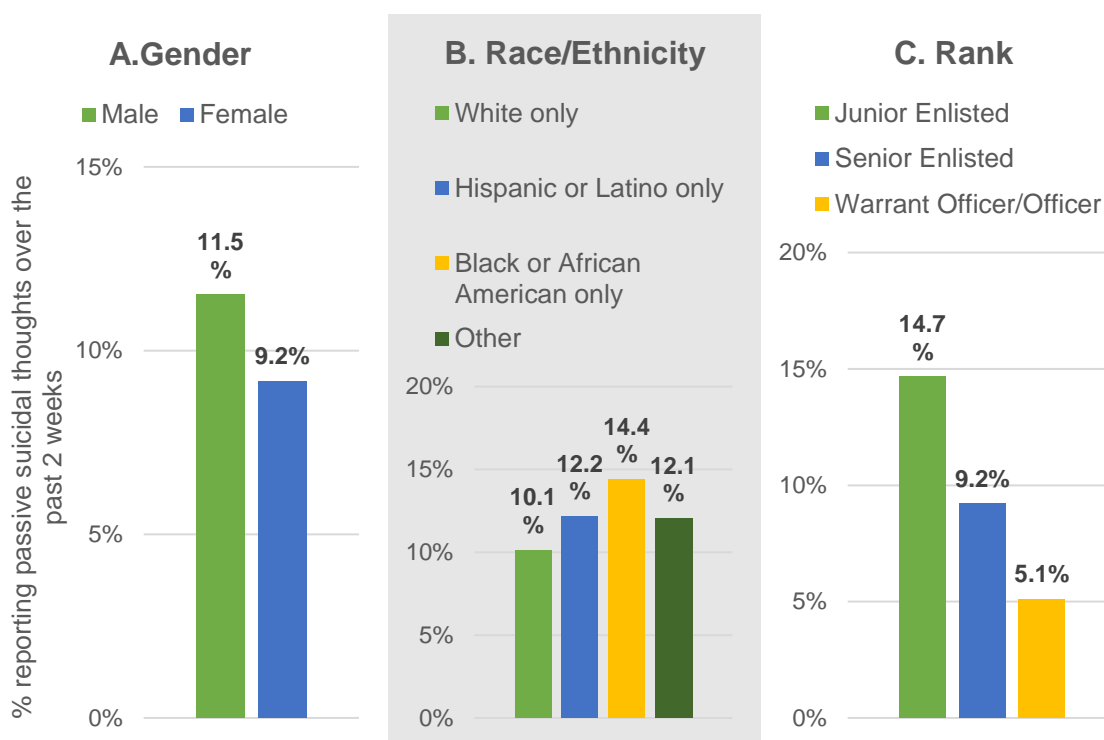


Figure 6. Percent Reporting Any Thoughts of Being Better Off Dead or Hurting Oneself Over the Past 2 weeks, by Gender, Race/Ethnicity, and Rank (n = 16,538)

5.3.4.2 Multivariable Logistic Regression

We conducted a multivariable logistic regression to determine the unique association of gender, race/ethnicity, and rank with likelihood of endorsing any thoughts of being better off dead or of hurting oneself (see Table 12). In the multivariable model, females were less likely to endorse such thoughts than males; non-white race/ethnicity categories were more likely to endorse such thoughts than Whites; and Junior Enlisted (E1-E4) were more likely to endorse such thoughts than both Senior Enlisted (E5-E9) and Officers/Warrant Officers.

5.3.4.3 Influence of COVID-19 stressors, fears, and concerns on the association between demographics variables and thoughts of being better off dead or self-harm

- **Multivariate Logistic Regression:**

We conducted a multivariate logistic regression to determine whether the observed unique associations between demographic factors and thoughts of being better off dead or of hurting oneself were robust to controlling for COVID-19 stressors, fears, and concerns (Table 13). In this model, COVID-19 stressors, fears, and concerns were robustly associated with an increased likelihood of reporting thoughts of being better off dead or self-harm. Gender and rank

differences remained statistically significant after accounting for COVID-19 stressors, fears, and concerns. Race/ethnicity differences were no longer statistically significant in this model.

Table 12. Multivariable Logistic Regression of Demographic Predictors on Passive Suicidal Thoughts during COVID-19 Pandemic, May-June 2020 (N = 15,443)

DV = PHQ Item 9, Passive Suicidal Thoughts Item	Estimate	SE	p-value ^a	OR ^b (95% CI)
Gender (REF = Male)	-0.27	0.08	0.001	0.76 (0.65-0.90)
Race/Ethnicity (REF = White Only)	<i>p</i> <0.0001			
Hispanic or Latino Only	0.12	0.07	0.108	1.13 (0.97-1.30)
Black or African-American Only	0.36	0.07	<0.0001	1.44 (1.24-1.66)
Other	0.15	0.07	0.039	1.16 (1.01-1.33)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.54	0.06	<0.0001	0.59 (0.52-0.66)
Warrant Officer/Officer	-1.12	0.10	<0.0001	0.33 (0.27-0.40)

Legend:

PHQ = Patient Health Questionnaire

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

Table 13. Multivariable Logistic Regression of Demographic Predictors on Passive Suicidal Thoughts during COVID-19 Pandemic, Controlling for COVID-19 Stressors, Fears, and Concerns, May-June 2020 (N = 11,832)

DV = PHQ Item 9, Passive Suicidal Thoughts Item	Estimate	SE	p-value	OR (95% CI)
Gender (REF = Male)	-0.28	0.10	0.003	0.75 (0.62-0.91)
Race/Ethnicity (REF = White Only)	<i>p</i> =0.211			
Hispanic or Latino Only	-0.07	0.08	0.422	0.93 (0.79-1.10)
Black or African-American Only	0.10	0.09	0.238	1.11 (0.93-1.32)
Other	-0.10	0.08	0.246	0.91 (0.77-1.07)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.55	0.07	<0.0001	0.58 (0.51-0.66)
Warrant Officer/Officer	-1.05	0.12	<0.0001	0.35 (0.28-0.44)
COVID-19 Concern Score	0.31	0.002	<0.0001	1.032 (1.028-1.035)

Legend:

PHQ = Patient Health Questionnaire

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.4.4 Tests of Indirect Associations of Race/Ethnicity on Thoughts of Being Better Off Dead or Self-Harm

Differences in the magnitude of the association between Whites and Blacks related to the self-report of having any thoughts of being better off dead or of hurting oneself were not direct (*p*-values > .10). Rather, there was evidence of indirect associations of Whites versus Blacks with regard to passive suicidal ideation and/or thoughts of self-harm, attributable to variance shared in common with COVID-19 stressors, fears, and concerns (*p*-values < .0001).

5.3.5 Hazardous Alcohol Consumption

Approximately 20% of Soldiers met criteria for potentially hazardous alcohol consumption based on responses to the AUDIT-C.

Table 14. Percent Positive Screen For Potentially Hazardous Alcohol Consumption, Based on Military-specific AUDIT-C Cutoff Scores (N = 16,045)

Positive Screening Result	n	%
Potential hazardous alcohol consumption	3,126	19.48
No potential hazardous alcohol consumption	12,919	80.52

5.3.5.1 Univariate logistic regressions

- **Gender:**

Females were less likely to screen positive for potentially hazardous alcohol consumption than males (B = -.278, SE = .064, OR = 0.757, 95%CI: Lower Bound = 0.668, Upper Bound = 0.858). This difference is shown in Figure 7, Panel A.

- **Race/Ethnicity:**

We observed statistically significant differences between race/ethnicity categories related to the likelihood of positive screening for potentially hazardous drinking ($p < .0001$). Whites had a greater likelihood of screening positive than Blacks (OR = 0.727, 95%CI: Lower Bound = 0.639, Upper Bound = 0.828), Hispanics (OR = 0.853, 95%CI: Lower Bound = 0.760, Upper Bound = 0.958), and the 'Other' race/ethnicity category (OR = .758, 95%CI: Lower Bound = 0.676, Upper Bound = 0.849) See Figure 7, Panel B for a graphical depiction of race/ethnicity differences.

- **Rank:**

Rank was a statistically significant predictor of likelihood of screening positive for potentially hazardous alcohol consumption ($p < 0.0001$). Senior Enlisted (E5-E9; OR = 0.811, 95% CI: Lower Bound = 0.743, Upper Bound = 0.885) and Officers/Warrant Officers (OR = 0.735, 95%CI: Lower Bound = 0.651, Upper Bound = 0.830) were less likely to screen positive than Junior Enlisted (E1-E4) Soldiers. See Figure 7, Panel C for a graphical depiction of rank differences.

- **COVID-19 Stressors, Fears, and Concerns:**

Among survey respondents, a greater sum total score of COVID-19 stressors, fears and concerns was associated with greater likelihood of potentially hazardous alcohol consumption (OR = 1.012, 95%CI: Lower Bound = 1.010, Upper Bound = 1.015).

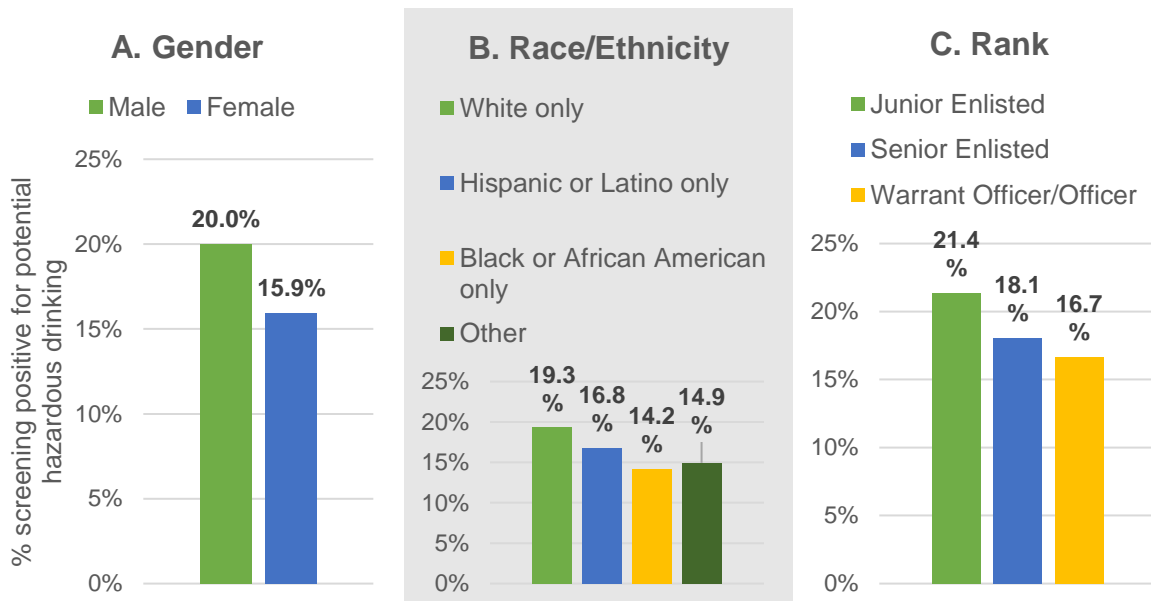


Figure 7. Percent Positive Screen for Potential Hazardous Drinking Based on Military-specific AUDIT-C Cutoff Scores, by Gender, Race/Ethnicity, and Rank (N = 16,045)

5.3.5.2 Multivariable Logistic Regression:

A multivariable logistic regression was conducted to determine the unique association of gender, race/ethnicity, and rank with the likelihood of screening positive for potentially hazardous alcohol consumption (Table 15). In the multivariable model, females were less likely to endorse than males; Non-White race/ethnicity categories were more likely to endorse than Whites, and Junior Enlisted (E1-E4) were more likely to endorse than both Senior Enlisted (E5-E9) and Officers/Warrant Officers. **Note:** Controlling for COVID-19 stressors, fears, and concerns did not have an effect on any of the demographic associations with potentially hazardous alcohol consumption.

Table 15. Multivariable Logistic Regression of Demographic Predictors on Hazardous Alcohol Consumption during COVID-19 Pandemic, May-June 2020 (N = 15,312)

DV = AUDIT-C Cutoff Scores	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	-0.23	0.07	<0.0001	0.79 (0.70-0.90)
Race/Ethnicity (REF = White Only)	<i>p</i> <0.0001			
Hispanic or Latino Only	-0.19	0.06	0.001	0.83 (0.73-0.93)
Black or African-American Only	-0.33	0.07	<0.0001	0.72 (0.63-0.82)
Other	-0.29	0.06	<0.0001	0.75 (0.67-0.84)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.22	0.05	<0.0001	0.81 (0.74-0.88)
Warrant Officer/Officer	-0.35	0.06	<0.0001	0.71 (0.62-0.80)

Legend:

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.6 Sleep Duration and Insomnia Risk

One-third (33.3%) of Soldiers reported getting less than 6 hours of sleep per 24-hour period over the 2 weeks prior to completing the survey. Nearly one-third also reported symptoms which would place them at high risk for meeting the criteria for a diagnosis of Insomnia Disorder. These findings are consistent with those observed in prior surveys of Service members (e.g., Seelig et al., 2016; Seelig et al., 2010; Quartana et al., 2015; Osgood et al., 2019)

5.3.6.1 Univariate Logistic Regression: Sleep Duration

- **Gender:**

We did not observe any gender differences in self-reported sleep duration (*p* = 0.25). See Figure 8, Panel A.

- **Race/Ethnicity:**

There were differences between race/ethnicity categories related to the likelihood of reporting less than 6 hours of sleep per night (*p* < 0.0001). Specifically, Non-White Soldiers were more likely to report getting an average of less than 6 hours of sleep per 24-hour period than their White counterparts. See Figure 8, Panel B.

● **Rank:**

We observed differences between rank categories related to the likelihood of getting less than 6 hours of sleep per 24-hour period ($p < 0.0001$). Junior Enlisted (E1-4) and Senior Enlisted (E5-E9) Soldiers did not differ (OR = .934, 95%CI: Lower Bound = 0.870, Upper Bound = 1.003) in their amounts of self-reported sleep duration. However, Junior Enlisted (E1-E4) Soldiers were more likely to report getting an average of less than 6 hours of sleep than Officers/Warrant Officers (OR = 3.141, 95%CI: Lower Bound = 2.782, Upper Bound = 3.546). See Figure 8, Panel C.

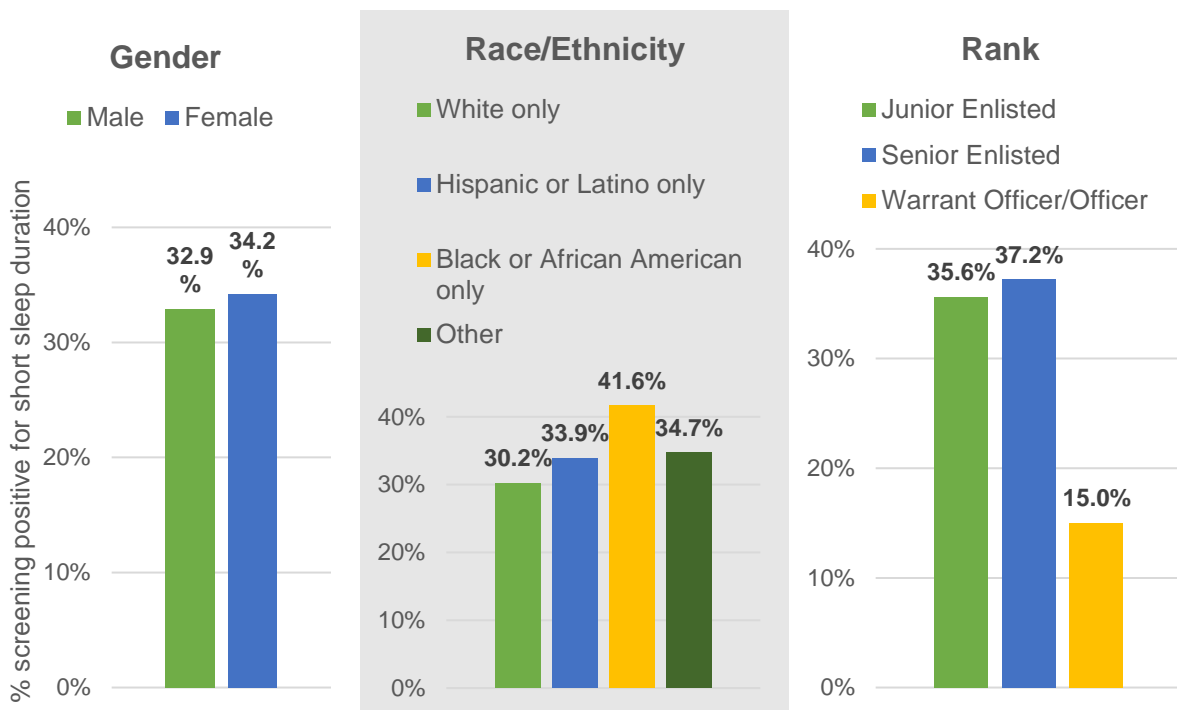


Figure 8. Percent Screening Positive for Short Sleep Duration (<6 hours) by Gender, Rank, and Race/Ethnicity (N = 16,280)

5.3.6.2 Multivariable Logistic Regression: Sleep Duration

As shown in Table 16, there were no gender differences in self-reported average sleep duration. However, we found that Blacks and the ‘Other’ race/ethnicity category were less likely than Whites to obtain at least 6 hours of sleep per 24-hour period. Moreover, Officers/Warrant Officers were more likely to obtain at least 6 hours of sleep per 24-hour period than Junior Enlisted (E1-E4) Soldiers. There were no differences in self-reported sleep duration between Junior (E1-E4) and Senior Enlisted (E5-E9) Soldiers.

Table 16. Multivariable Logistic Regression of Demographic Predictors on Sleep Duration during COVID-19 Pandemic, May-June 2020 (n = 15,207)

DV = Sleep Duration (<6 hrs or 6 or more)	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	-0.79	0.05	0.131	0.92 (0.83-1.02)
Race/Ethnicity (REF = White Only)	<i>p</i> <0.0001			
Hispanic or Latino Only	-0.04	0.05	0.488	0.97 (0.87-1.07)
Black or African-American Only	-0.38	0.05	<0.0001	0.69 (0.62-0.76)
Other	-0.13	0.05	0.009	0.88 (0.80-0.97)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.06	0.04	0.111	0.94 (0.88-1.01)
Warrant Officer/Officer	1.13	0.06	<0.0001	3.08 (2.71-3.50)

Legend:

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.6.3 Univariate Logistic Regression: Insomnia Risk Status

- **Gender:**

Males were less likely to screen positive for insomnia risk than females (95%CI: Lower Bound = 0.698, Upper Bound = 0.847). See Figure 9, Panel A.

- **Race/Ethnicity:**

There were race/ethnicity differences in the likelihood of reporting less than 6 hours of sleep per 24-hour period (*p* < 0.0001). Specifically, White Soldiers were less likely to screen positive for insomnia risk compared to non-White Soldiers (OR = .934, 95%CI: Lower Bound = 0.870, Upper Bound = 1.003). See Figure 9, Panel B.

- **Rank:**

We observed statistically significant differences in insomnia risk across rank (*p* < 0.0001). Senior Enlisted Soldiers (OR = 1.190, 95%CI: Lower Bound = 1.106, Upper Bound = 1.280) and Officers/Warrant Officers (OR = 2.382, 95% CI: Lower Bound = 2.127, Upper Bound = 2.667) were less likely to screen positive for insomnia risk than Junior Enlisted (E1-4) Soldiers. See Figure 9, Panel C.

● **COVID-19 Stressors, Fears, and Concerns:**

Among survey respondents, greater COVID-19 stressors, fears, and concerns were associated with greater likelihood of meeting criteria for insomnia risk (OR = 1,031, 95%CI: Lower Bound = 1.029, Upper Bound = 1.033).

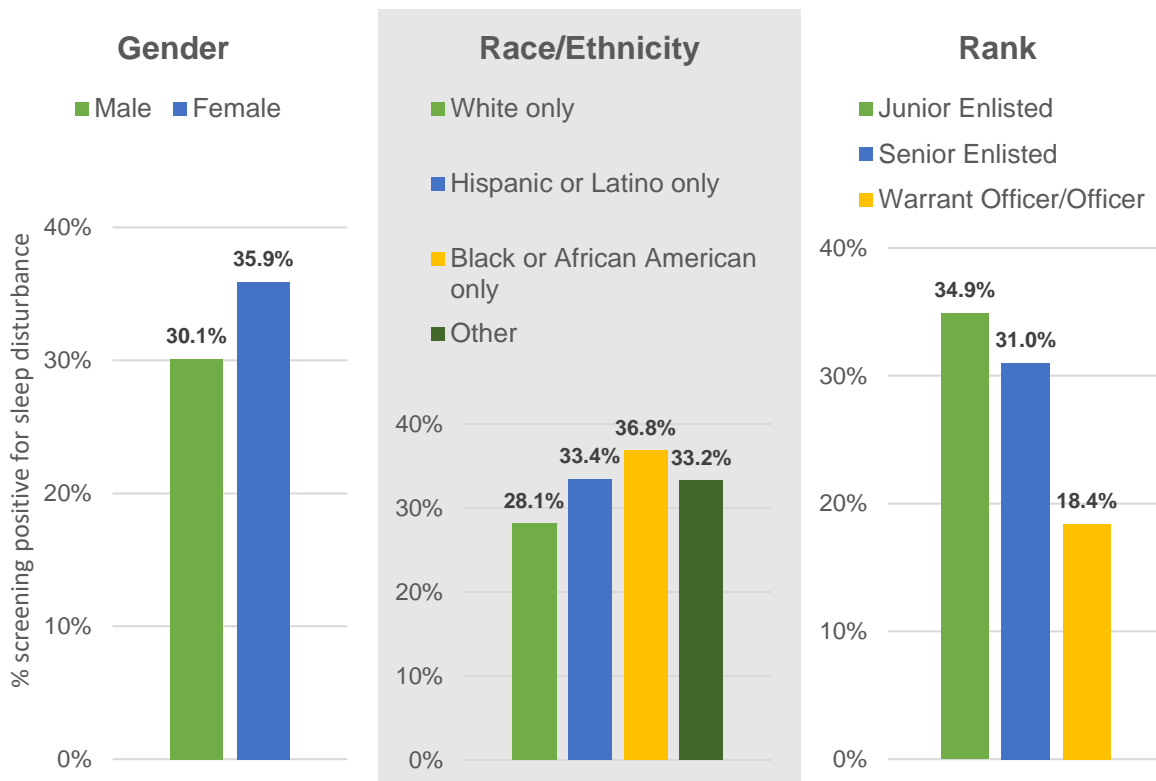


Figure 9. Percent Screening Positive for Insomnia Risk by Gender, Rank, and Race/Ethnicity (N = 16,409)

5.3.6.4 Multivariable Logistic Regression: Insomnia Risk Status

As shown in Table 17, females were more likely to screen positive for insomnia risk. Non-White Soldiers were more likely to screen positive for insomnia risk than White Soldiers. Lastly, both Senior Enlisted (E5-E9) and Officers/Warrant Officers were less likely to screen positive for insomnia risk than Junior Enlisted (E1-E4) Soldiers.

Table 17. Multivariable Logistic Regression of Demographic Predictors of Insomnia Risk during the COVID-19 Pandemic, May-June 2020 (N = 16,054)

DV = Insomnia Risk	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	0.29	0.04	<0.0001	1.34 (1.23-1.45)
Race/Ethnicity (REF = White Only)	<i>p</i> <0.0001			
Hispanic or Latino Only	0.11	0.05	0.036	1.11 (1.01-1.23)
Black or African-American Only	0.27	0.05	<0.0001	1.31 (1.18-1.45)
Other	0.14	0.05	0.004	1.15 (1.05-1.26)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.17	0.04	<0.0001	0.84 (0.78-0.91)
Warrant Officer/Officer	-0.85	0.06	<0.0001	0.43 (0.38-0.48)

Legend:

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.6.5 Influence of COVID-19 stressors, fears, and concerns on the association between demographics and insomnia risk

• Multivariate Logistic Regression

We conducted a multivariate logistic regression to determine whether the observed unique associations between demographic factors and insomnia risk were robust to controlling for COVID-19 stressors, fears, and concerns (Table 18). In this model, COVID-19 stressors, fears, and concerns were robustly associated with increased likelihood of insomnia risk. The gender and rank differences remained statistically significant. The race/ethnicity differences were no longer statistically significant in this model.

Table 18. Multivariable Logistic Regression of Demographic Predictors on Insomnia Risk during COVID-19 Pandemic controlling for COVID-19 Stressors, Fears, and Concerns, May-June 2020 (n = 11,736)

DV = Insomnia Risk	Estimate	SE	p-value ^a	OR (95% CI) ^b
Gender (REF = Male)	0.28	0.06	<0.0001	1.33 (1.177-1.496)
Race/Ethnicity (REF = White Only)	<i>p</i> =0.340			
Hispanic or Latino Only	-0.05	0.06	0.381	0.95 (.843-1.068)
Black or African-American Only	0.08	0.06	0.219	1.08 (.955-1.225)
Other	0.04	0.06	0.539	1.04 (.925-1.162)
Rank Group (REF = Junior Enlisted)	<i>p</i> <0.0001			
Senior Enlisted	-0.17	0.05	<0.0001	0.85 (.773-.923)
Warrant Officer/Officer	-0.87	0.07	<0.0001	0.42 (.364-.482)
COVID-19 Concern Score	0.03	0.001	<0.0001	1.03 (1.028-1.033)

Legend:

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference Category

DV = Dependent Variable

Notes:

^aA p-value of less than 0.05 indicates statistical significance.

^bAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.3.6.6 Tests of Indirect Associations of Race/Ethnicity on Insomnia Risk

Differences in the magnitude of the association between Whites and Non-whites related to screening positive for insomnia risk were not direct (*p*-values > 0.25). Rather, there was evidence of indirect associations of Whites versus Non-whites such that any differences in insomnia risk between these groups was indirect through shared associations with COVID-19 stressors, fears, and concerns (*p*-values < 0.0001).

5.3.7 Behavioral Health Services Utilization

Among Soldiers who met criteria for a positive screen for a behavioral health problem, nearly 2-in-10 reported seeking care from a behavioral health professional. Another member from a Soldier's unit was the second-most frequently reported source of support sought by those who screened positive for a potential behavioral health difficulty, followed closely by a general medical doctor, and then a chaplain.

Table 19. Percent of Soldiers Meeting Criteria for Any Behavioral Health Problem Reporting Use of Behavioral Health Services (N = 16,581)^a

Service Utilized	n	%
Behavioral health professional	690	18.5%
General medical doctor	409	11.1%
Military chaplain	317	8.6%
Military and Family Life Consultant (MFLC)	212	5.7%
Military OneSource	188	5.1%
Medic/corpsman in your unit	228	6.2%
Another member of your unit (excluding the medic/corpsman)	450	12.1%
Family Advocacy Program (FAP)	143	3.9%
Army Substance Abuse Program (ASAP)	180	4.9%

Note:

^aMore than one response was allowed.

5.4 Leadership Responses to the COVID-19 Pandemic

With regard to the COVID-19 pandemic and its potential effect on behavioral health, specific leadership behaviors may prove beneficial at preventing and/or mitigating behavioral health difficulties. Thus, we developed a list of leadership behaviors relevant to addressing the COVID-19 pandemic at the unit level.

5.4.1 Method and Analyses

This section reports on the development of a scale assessing Soldier perceptions of the manner in which their leaders have responded to the COVID-19 pandemic—a phenomenon that the authors of this report have termed “COVID-19 Leadership.” The relationship between a leader scoring “low” versus “high” on the COVID-19 Leadership Scale, and the likelihood of Soldiers under their leadership screening positive for behavioral health problems (anxiety, depression, hazardous drinking, sleep problems and loneliness) and frequently engaging in preventive health behaviors, are examined.

Analyses were conducted using logistic regression that accounted for potential covariates: rank group (Junior Enlisted, NCO, or Officer/Warrant Officer), potential exposure to COVID-19 (assessed by a single-item measure asking Soldiers if they had been instructed to stay home due to potential virus exposure), and COVID-19-related concerns. The analyses also accounted for general leadership qualities, assessed with a 5-item measure of leadership adapted for Military use, with items such as “My immediate supervisor is an effective leader” and “My immediate supervisor displays strong leadership abilities” (Ragins, 1989). Finally, logistic regressions were also conducted to examine the interaction between Soldiers rating their leadership’s response to COVID-19 and Soldiers rating their own degree of concern related to

the pandemic. Note that throughout this section, figures describe predicted relationships that control for mean scores or the modal category of each covariate.

5.4.2 Measuring “COVID-19 Leadership”

In the context of preparing for this BHAT, the team developed a series of items that assessed specific supervisor behaviors that demonstrated responsiveness to the COVID-19 pandemic. Of the 17 survey items developed, factor analysis identified 14 items which formed a coherent and reliable measure. The Cronbach’s alpha for this 14-item measure was .96, demonstrating excellent internal consistency.

The BHAT survey asked Soldiers to rate the degree to which they agreed that their immediate supervisor demonstrated each of these behaviors. Overall, the majority of Soldiers reported that their leaders demonstrated most of these behaviors, although there was a diversity of responses, ranging from 70.4% endorsing that their leaders “Encourage us to report any symptoms of COVID-19 that we may have” to only 28.3% endorsing that their leaders “Talk about the way the COVID-19 pandemic is personally impacting them.” The frequency of endorsement for each item is provided in Table 20. These items were combined to develop a COVID-19 Leadership score.

Table 20. COVID-19 Leadership Items

Leadership Behavior	% Agree or Strongly Agree
Encourages us to report any symptoms of COVID-19 we might have.	70.4%
Leads by example by following health guidelines to reduce the spread of COVID-19 (such as social distancing, handwashing, using mask/face covering).	63.0%
Has shared useful and accurate information about the COVID-19 pandemic.	62.9%
Provides updates about recent COVID-19 pandemic related developments.	60.5%
Takes steps to keep us socially connected as a unit during the COVID-19 pandemic.	58.7%
Acknowledges the stress of uncertainty related to the COVID-19 pandemic.	58.4%
Has modified unit tasks to prevent Soldiers from working in close proximity to one another.	57.7%
Encourages us to think positively during this COVID-19 pandemic.	57.0%
Emphasizes taking care of ourselves mentally during the COVID-19 pandemic.	56.4%
Reminds Soldiers during the COVID-19 pandemic that we are here to serve with honor, serve a mission, and serve a greater purpose.	51.7%
Ensures we have basic supplies for daily living (like food, soap and toilet paper) during the COVID-19 pandemic.	51.5%
Encourages us to identify what we can and cannot control about COVID-19 pandemic.	42.8%
Focuses on what to be grateful for during the COVID-19 pandemic.	42.6%
Talks about the way the COVID-19 pandemic is personally impacting them.	28.3%

5.4.3 COVID-19 Leadership and Behavioral Health

Following the development of the COVID-19 Leadership Scale, analyses were conducted to examine the relationship between COVID-19 Leadership and a range of behavioral health outcomes. These analyses are depicted in Figure 10 below.

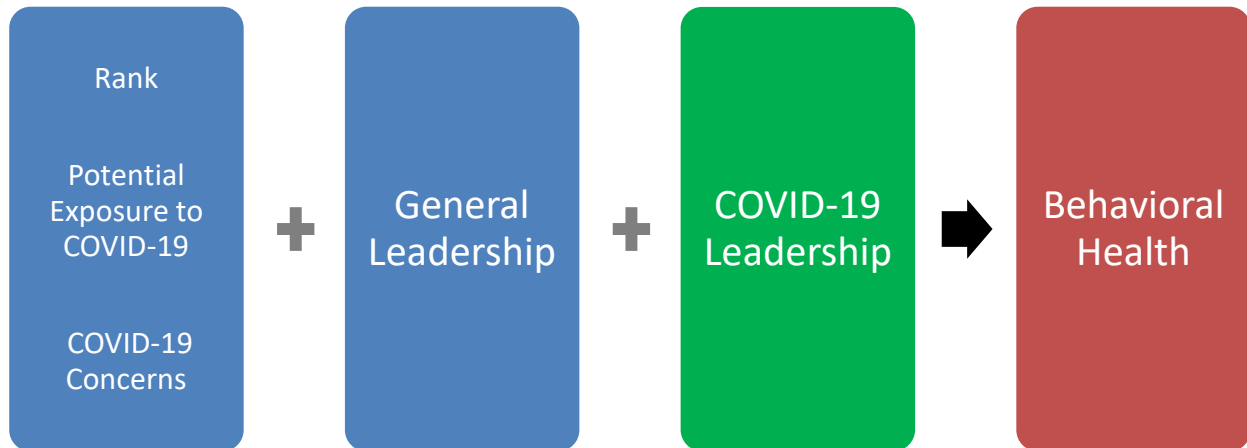


Figure 10. Representation of Logistic Regression Analyses Predicting Behavioral Health Outcomes from COVID-19 Leadership, General Leadership, and Relevant Covariates

Overall, the more that Soldiers reported their immediate supervisor was responsive to the pandemic by demonstrating COVID-19 Leadership, the less likely Soldiers were to screen positive for behavioral health problems. In our models predicting anxiety and depression, Soldier reports of their supervisor’s COVID-19 Leadership were negatively and significantly associated with both of these behavioral health outcomes. Specifically, for those Soldiers who reported that their supervisor demonstrated low levels of COVID-19 Leadership behaviors, 13.6% screened positive for anxiety compared to 7.3% of those who reported their supervisor demonstrated high levels of COVID-19 Leadership, controlling for ratings of general leadership and other covariates. Similarly, for those Soldiers who reported that their supervisor demonstrated low levels of COVID-19 leadership, 16.7% screened positive for depression compared to 8.1% of those who reported their supervisor demonstrated high levels of COVID-19 Leadership.

These relationships held for all rank groups. As seen in Figure 11, the more Soldiers reported that their supervisor demonstrated COVID-19 Leadership behaviors, the less likely they were to screen positive for anxiety and depression, whether anxiety and depression were examined separately or together (the result depicted in Figure 11). While there was a significant effect between rank categories, such that officers had less likelihood of screening positive, the association between reporting that supervisors demonstrated COVID-19 Leadership and the risk of screening positive for anxiety and/or depression was similar across all three rank groups.

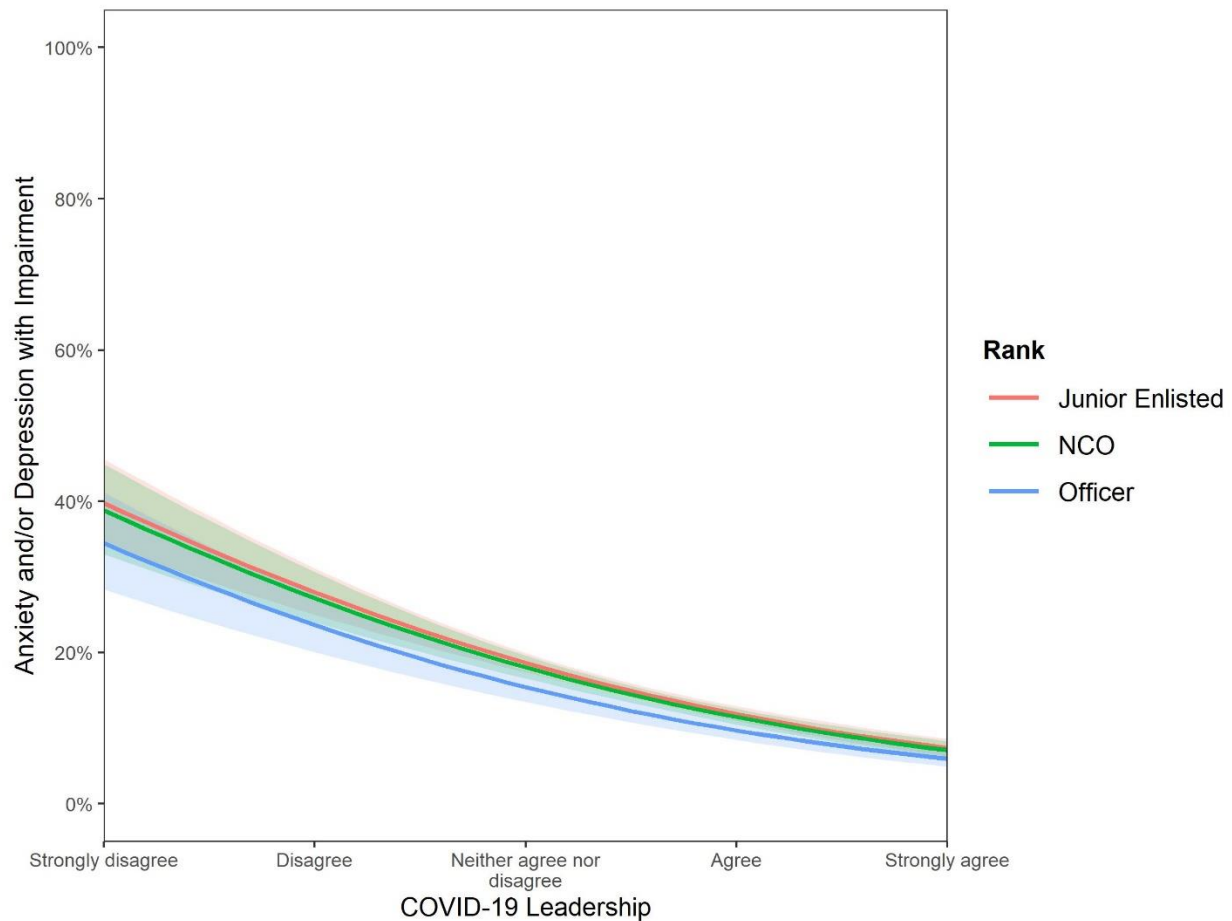


Figure 11. Results from Logistic Regression Analysis Predicting Screening Positive for Depression and Anxiety (With Any Impairment) from Soldiers’ Rating of Their Supervisors on COVID-19 Leadership, Controlling for Soldiers’ Rating of Their Supervisor on General Leadership and Other Relevant Covariates

Analyses also examined the potential differences between Soldiers who reported that their supervisor engaged in high levels of COVID-19 Leadership and behavioral health outcomes as a function of Soldiers’ concerns about COVID-19. Figure 12 depicts the relationship between screening positive for anxiety and/or depression and Soldier ratings of COVID-19 Leadership exhibited by their supervisors. In this analysis, Soldiers who reported that their supervisor demonstrated high levels of COVID-19 Leadership were operationalized as those at least 1 standard deviation above the mean (+1 SD) and low levels of COVID-19 leadership were operationalized as at least 1 standard deviation below the mean (-1 SD). Not only is there a visible relationship between low and high levels of COVID-19 concerns and screening positive for anxiety and/or depression, but this relationship is attenuated by Soldier perceptions of supervisors demonstrating COVID-19 Leadership. Regardless of the level of Soldiers’ COVID-19 concerns, Soldier ratings of supervisors engaging in COVID-19 Leadership were associated

with a greater reduction in risk of screening positive for anxiety and/or depression. For example, among those Soldiers with high levels of COVID-19 concerns, those who reported that their supervisor demonstrated low levels of COVID-19 Leadership were about 1.7 times more likely to screen positive for either depression or anxiety than those who reported that their supervisor demonstrated high levels of COVID-19 Leadership (30.9% vs. 18.5%, respectively).

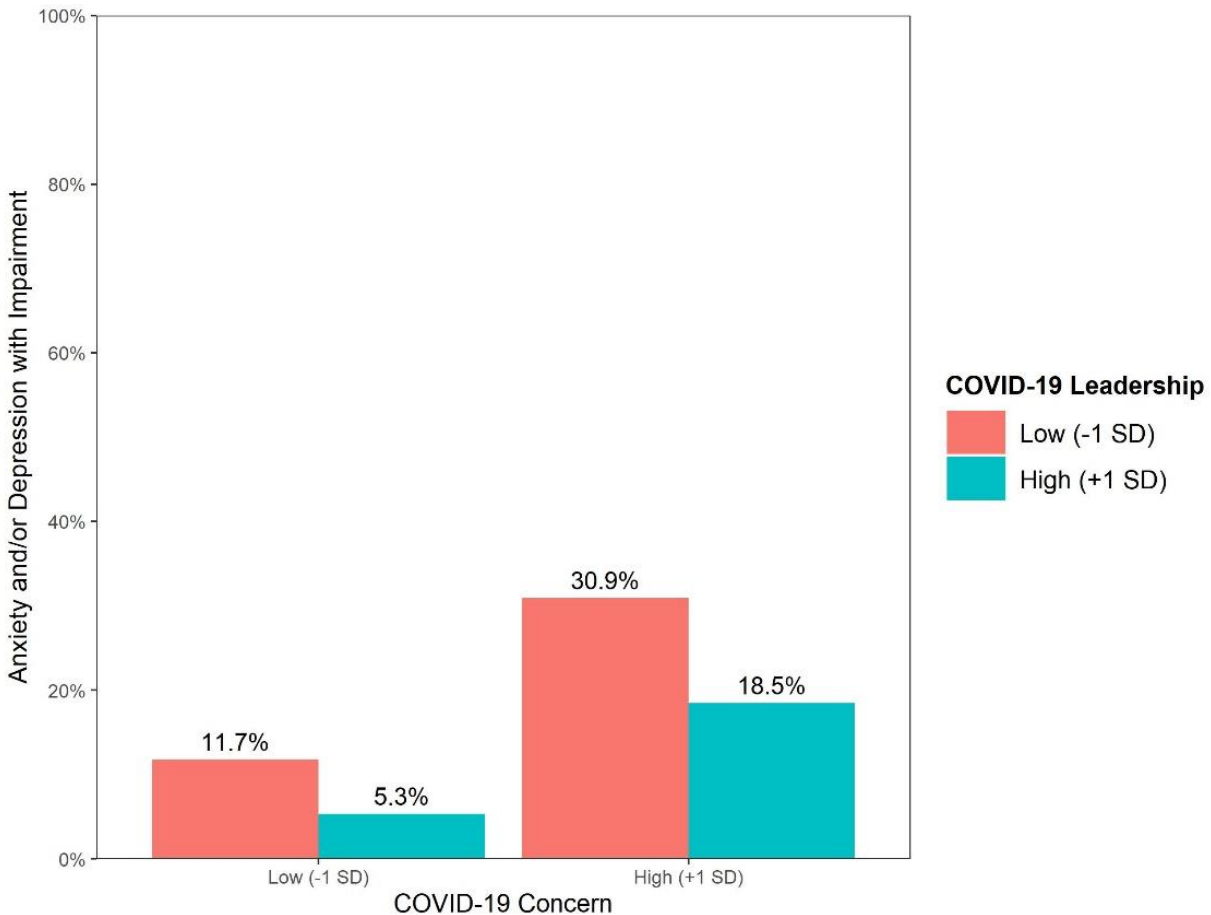


Figure 12. Interaction Between Soldiers’ Rating of Their Supervisor on COVID-19 Leadership and Soldiers’ COVID-19 Concerns Predicting Anxiety and/or Depression (With Impairment), Controlling for Soldiers’ Rating of their Supervisor on General Leadership and Other Relevant Covariates

Similarly, the relationship between Soldiers reporting that their immediate supervisor demonstrated COVID-19 Leadership and the likelihood of developing other behavioral health outcomes (potentially hazardous drinking, sleep problems, and loneliness) was significant even after controlling for each of the covariates. In addition, there was no significant interaction effect with Soldiers’ COVID-19 concerns. That is, the more Soldiers reported that their supervisor engaged in COVID-19 Leadership behaviors, the fewer problems they reported, and this relationship held regardless of Soldiers’ levels of concern about COVID-19.

For example, Figure 13 depicts the relationship between screening positive for loneliness and Soldier ratings of their immediate supervisor’s COVID-19 Leadership as a function of Soldiers’ COVID-19 concerns. The figure shows a relationship between Soldier reports of their supervisor demonstrating low and high levels of COVID-19 Leadership and Soldiers screening positive for loneliness. Soldier reports that that their supervisor demonstrated high levels of COVID-19 Leadership were associated with lower risk of screening positive for loneliness compared to reports that their supervisor demonstrated low levels of COVID-19 Leadership. For example, among those Soldiers with high levels of COVID-19 concerns, those reporting that their supervisor engaged in low levels of COVID-19 Leadership were about 1.5 times more likely to screen positive for loneliness than those reporting that their supervisor engaged in high levels of COVID-19 Leadership (40.7% vs. 27.4%, respectively).

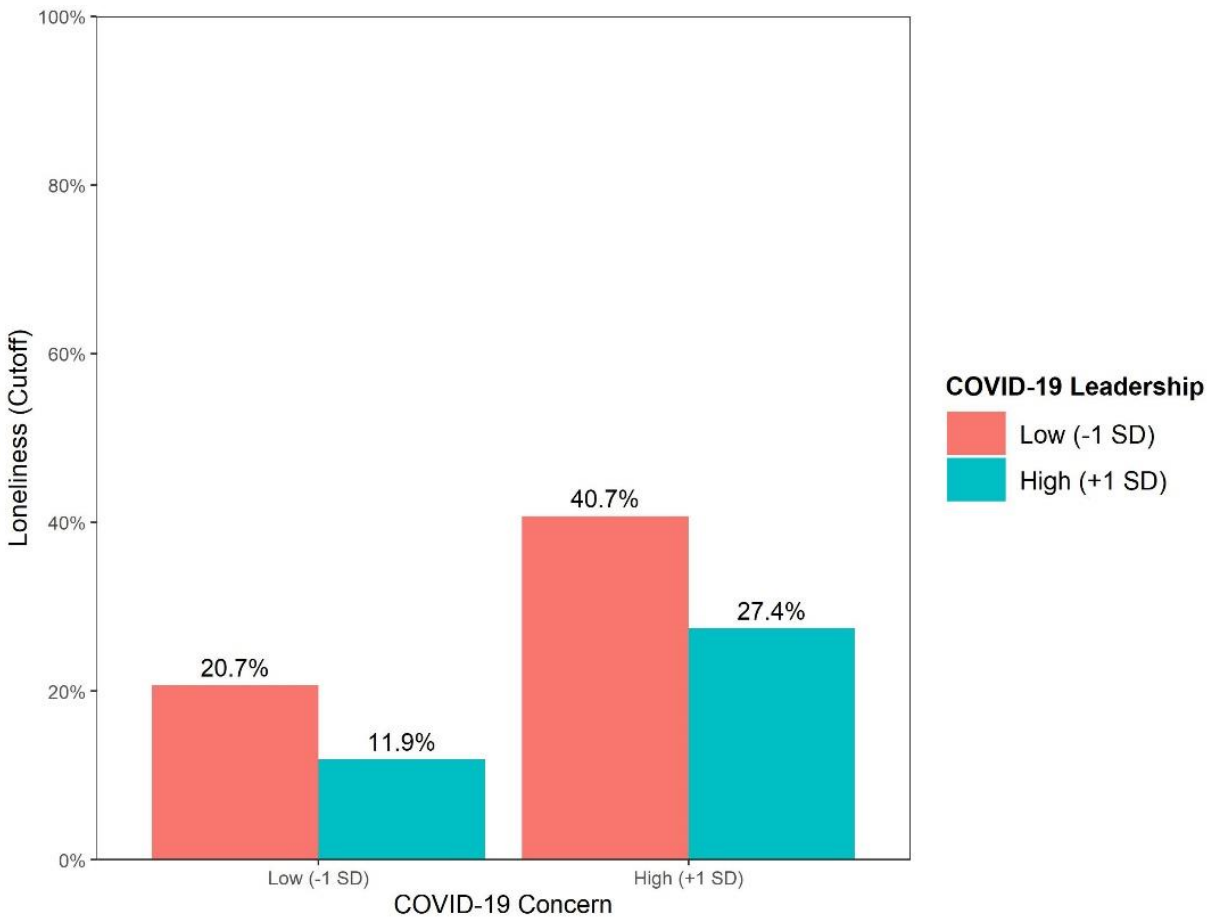


Figure 13. Interaction Between Soldiers’ Ratings of Their Supervisor on COVID-19 Leadership and Soldier Concerns about COVID-19 Predicting Loneliness, Controlling for Soldiers’ Rating of Their Supervisor on General Leadership and Other Relevant Covariates

5.4.4 COVID-19 Leadership and Engaging in Behaviors to Mitigate the Spread of COVID-19

We examined the relationship between Soldier ratings of their supervisors' COVID-19 Leadership and Soldier reports of their own COVID-19 preventive health behaviors, using a comparable model to that used for examining behavioral health outcomes. This set of analyses predicted whether Soldier ratings of supervisors' COVID-19 Leadership were associated with Soldier reports of engaging in preventive health behaviors either "frequently" or "always" within the month prior to survey completion, while controlling for the same set of covariates that were included in the behavioral health outcome models (see Figure 14). Six preventive health behaviors were examined in this analysis: (1) wearing a mask, (2) washing hands, (3) using hand sanitizer, (4) avoiding gatherings with 10 or more people, (5) covering coughs and sneezes, and (6) monitoring self for symptoms.

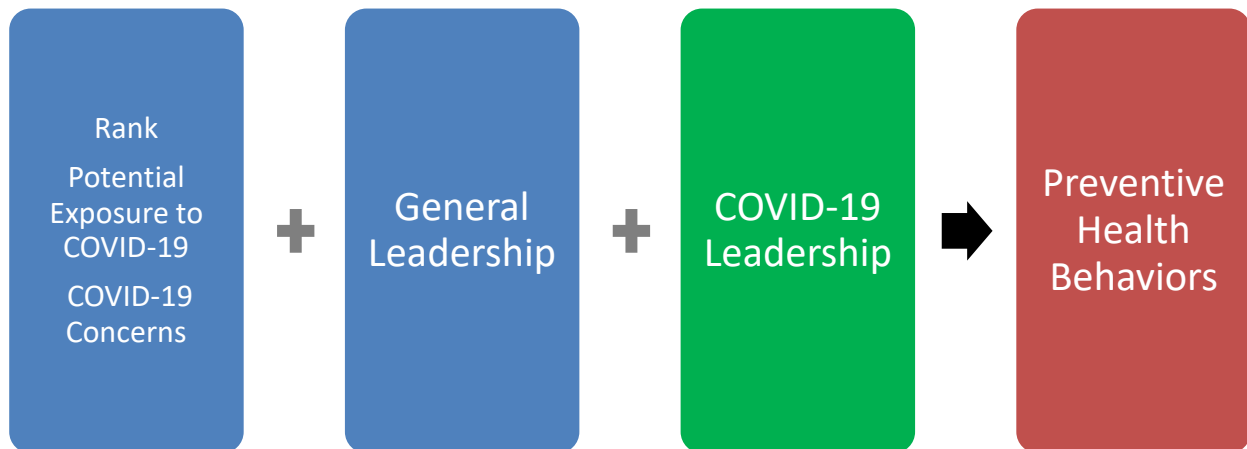


Figure 14. Representation of Logistic Regression Analyses Predicting Preventive Health Behaviors from COVID-19 Leadership, General Leadership, and Relevant Covariates

In each case, Soldiers' ratings of their supervisors' superior COVID-19 Leadership predicted a greater likelihood of Soldiers reporting that they frequently or always engaged in these preventive health behaviors. Figure 15 depicts the relationship between Soldiers' ratings of their supervisors' COVID-19 Leadership and each of these behaviors, controlling for Soldiers' ratings of their supervisors' general leadership qualities and other covariates. For example, Soldiers who reported high levels of supervisor engagement in COVID-19 Leadership behaviors were about 1.2 times more likely to report that they frequently or always washed their hands compared with those who reported low levels of supervisor engagement in COVID-19 Leadership (86.1% vs. 70.6%, respectively). Similarly, Soldiers were about 1.4 times more likely to wear a facemask frequently or always when they reported high levels of supervisor engagement in COVID-19 Leadership behaviors compared with those who reported low levels of supervisor engagement in COVID-19 Leadership (77.3% vs. 57.2%, respectively).

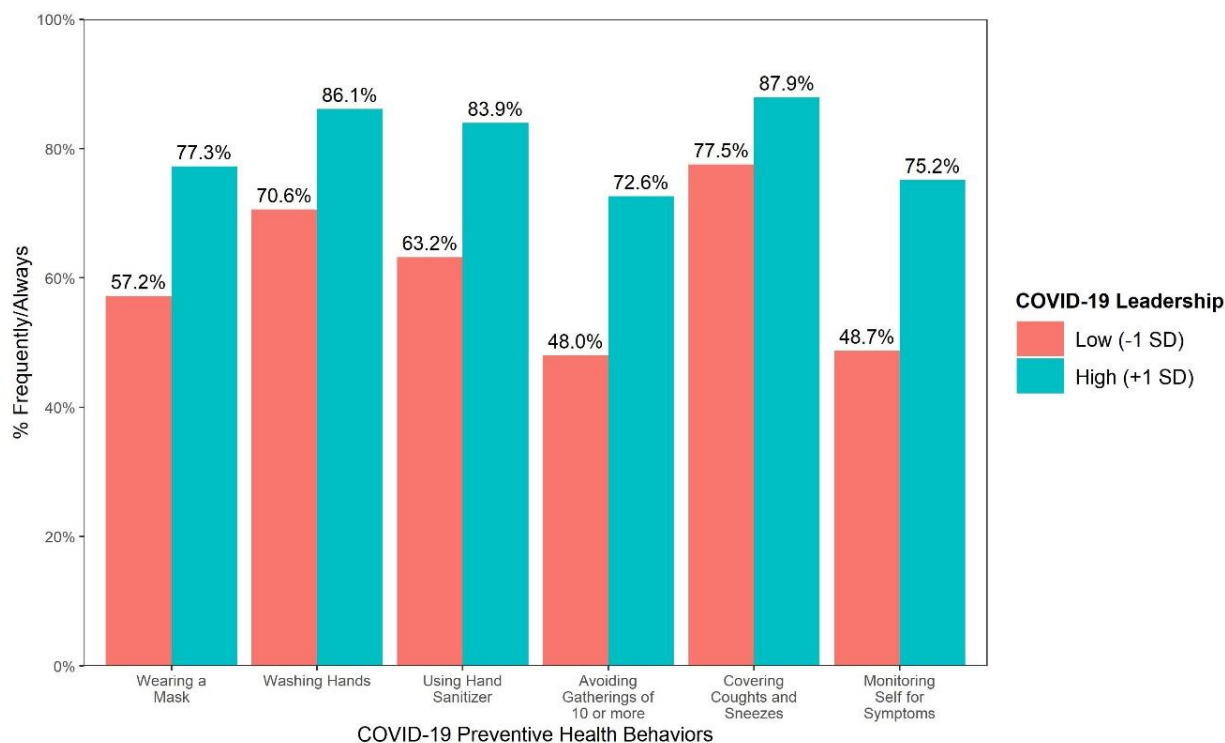


Figure 15. Engaging in Preventive Health Behaviors by Soldiers’ Ratings of Their Supervisor on COVID-19 Leadership, Controlling for Soldiers’ Ratings of Their Supervisor on General Leadership and Other Relevant Covariates

5.5 Impact of the COVID-19 Pandemic on Families and Relationships

The COVID-19 pandemic has directly impacted families throughout the United States, including members of the Army Family. The BHAT Survey included questions to better understand Soldiers’ current family structure and demographics, the extent to which Army Families have been financially impacted, and whether spouse/partner work status or childcare have been affected by the pandemic. Additionally, the survey asked Soldiers about the extent to which they and their spouse/partner have experienced difficulty coping with the impact of the pandemic, and the extent to which children appear to experience emotional, behavioral, or other difficulties. Collectively, these data identify how the Army Family may be best supported in the context of financial support, spouse/partner work opportunities, and childcare. This section provides descriptive information relevant to each of these categories of information and examines the relationships between them. To assist the reader in following the results, Figure 16 below summarizes the constructs that are examined in each sub-section.

Demographics	<ul style="list-style-type: none"> • Descriptives for the Soldier (e.g., gender, race/ethnicity, rank) and the Army Family (e.g., marital status, children under 18 years of age in the household)
Household Financial Impact	<ul style="list-style-type: none"> • The extent to which the Soldier's household has been financially impacted by the COVID-19 pandemic.
Spouse/Partner Work Status	<ul style="list-style-type: none"> • Whether Soldiers' spouse/partner work status changed as a result of the COVID-19 pandemic.
Soldier and Spouse/Partner Difficulty Coping	<ul style="list-style-type: none"> • The extent to which Soldiers and their spouse/partner experience difficulty coping with the impact of the COVID-19 pandemic.
Child Emotional, Behavioral, or Other Difficulties	<ul style="list-style-type: none"> • The extent to which children appear to have any emotional, behavioral, or other difficulties since the start of the COVID-19 pandemic.
Childcare Arrangements	<ul style="list-style-type: none"> • Whether school and childcare arrangements changed as a result of the COVID-19 pandemic.
Behavioral Health	<ul style="list-style-type: none"> • Whether Soldiers screen positive for depression, anxiety, or hazardous drinking.

Figure 16. Representation of Variables Included in Multivariable Logistic Regression Analyses that Assess the Impact of Different Predictors on Household Financial Impact and Behavioral Health

5.5.1 Army Family Demographics

The BHAT Survey included demographic items to describe the Army Family structure. The greatest percentage of Soldiers were married, living with a spouse (43.3%, $n = 7,662$), or never married (42.4%, $n = 7,503$) ($N = 17,715$). Of the Soldiers who were single ($N = 7,765$), the majority (68.0%, $n = 5,277$) reported that they were not in a committed relationship. Nearly one-in-three Soldiers (31.4%, $n = 5,307$, $N = 16,925$) had a child under 18 years of age in their household, with an average of two children in the household. A small percentage of Soldiers (3.0%, $n = 500$, $N = 16,827$) reported an adult 65 years of age or older in their household, and one-in-five Soldiers (20.5%, $n = 2,891$, $N = 14,140$) reported that a family member participated in the Exceptional Family Member Program. The Army Family's demographics are summarized in Table 21 below.

Table 21. Army Family Demographics

Family Demographics	% (n)
Marital Status	
Married – living with a spouse	43.3 (7,662)
Never married	42.4 (7,503)
Married – not living with spouse (geographically separated)	8.6 (1,520)
Divorced	4.4 (782)
Separated	1.3 (231)
Widowed	0.1 (17)
Relationship Status^a	
Not in a committed relationship	68.0 (5,277)
In a committed relationship – not living with partner	26.1 (2,027)
In a committed relationship – living with partner	5.9 (461)
Children who are 18 or younger in household	
Yes	31.4 (5,307)
No	68.6 (11,618)
Adults who are 65 or older in household	
Yes	3.0 (500)
No	97.0 (16,327)
Household member enrolled in the EFMP	
Yes	20.5 (2,891)
No	79.6 (11,249)

Note:

^aRelationship status was only asked of Soldiers who reported they were *never married*, *separated*, *divorced*, or *widowed* when asked about their marital status.

The following sub-sections summarize the extent to which Soldiers were financially impacted by the COVID-19 pandemic, and focus on the impacts on Soldiers who are married or in a relationship. First, results will be provided for household financial impact, followed by a summary of spouse/partner work status during the COVID-19 pandemic, and the extent to which Soldiers and their spouse/partner have experienced difficulties coping with the impact of the COVID-19 pandemic.

5.5.2 Household Financial Impact during the COVID-19 Pandemic

Financial considerations are a common stressor among Army Soldiers and their spouses during the COVID-19 pandemic. Half of Soldiers (51.3%, $n = 8,611$, $N = 16,774$) reported a financial impact because of the COVID-19 pandemic, with Soldiers most commonly reporting *minimal* (26.1%, $n = 4,385$) or *moderate* (17.7%, $n = 2,973$) impact on their household.

A series of multivariable logistic regression analyses were conducted to summarize the association between demographic variables, spouse/partner work status, and Soldier and spouse/partner difficulty coping on household financial impact. Additional multivariable logistic regression analyses were conducted to assess the impact of household financial impact on behavioral health outcomes. These results are summarized below.

5.5.2.1 Spouse/Partner Work Status during the COVID-19 Pandemic

Soldiers who were married or in a relationship ($n = 11,670$) responded dichotomously (Yes or No) to four items about whether their spouse/partner: (1) was no longer employed outside the home; (2) had their work hours reduced; (3) had to take an unpaid leave of absence/“furlough”; or (4) shifted to working from home or teleworking part- or full-time. The four items were analyzed separately, and results indicated that Soldiers most commonly reported No to each item. The percentage of responses for these items is summarized in Table 22 below.

Table 22. Spouse/Partner Work Status

Survey Item	“No” % (n)	“Yes” % (n)
My spouse/partner is no longer employed outside the home.	77.0 (5,412)	23.0 (1,613)
My spouse/partner has had their work hours reduced.	64.2 (4,288)	35.8 (2,386)
My spouse/partner had to take an unpaid leave of absence/“furlough.”	85.4 (5,571)	14.6 (955)
My spouse/partner shifted to working from home or teleworking part- or full-time.	73.8 (4,732)	26.2 (1,682)

Bivariate analyses indicated that Soldiers’ spouse/partner work status differed by gender and rank such that male Soldiers and Enlisted Soldiers reported that their spouse/partner experienced more severe work impacts when compared to female Soldiers and Officers, respectively. A greater percentage of male Soldiers reported that their spouse/partner was no longer employed outside the home (24.0%, $n = 1,450$, $N = 6,043$) or they had to take an unpaid leave of absence/“furlough” (15.4%, $n = 861$, $N = 5,581$); a greater percentage of female Soldiers reported that their spouse/partner had shifted to working from home or teleworking part- or full-time (33.0%, $n = 300$, $N = 908$). These gender differences are summarized in Figure 17 below.

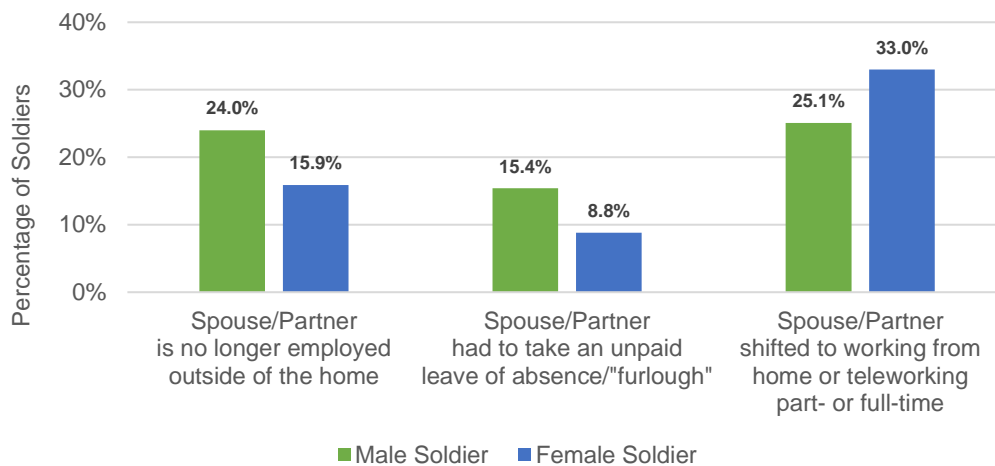


Figure 17. Results from Bivariate Analyses Comparing Spouse/Partner Work Status Between Male and Female Soldiers

A greater percentage of Junior and Senior Enlisted Soldiers reported that their spouse/partner was no longer working outside the home (Junior: 26.3%, $n = 711$, $N = 2,701$; Senior: 22.6%, $n = 688$, $N = 3,043$) or they had their work hours reduced (Junior: 37.6%, $n = 958$, $N = 2,548$; Senior: 37.1%, $n = 1,065$, $N = 2,871$); a greater percentage of Officers/Warrant Officers reported that their spouse/partner had shifted to working from home or teleworking part- or full-time (43.9%, $n = 509$, $N = 1,159$). These differences by rank are summarized in Figure 18 below.

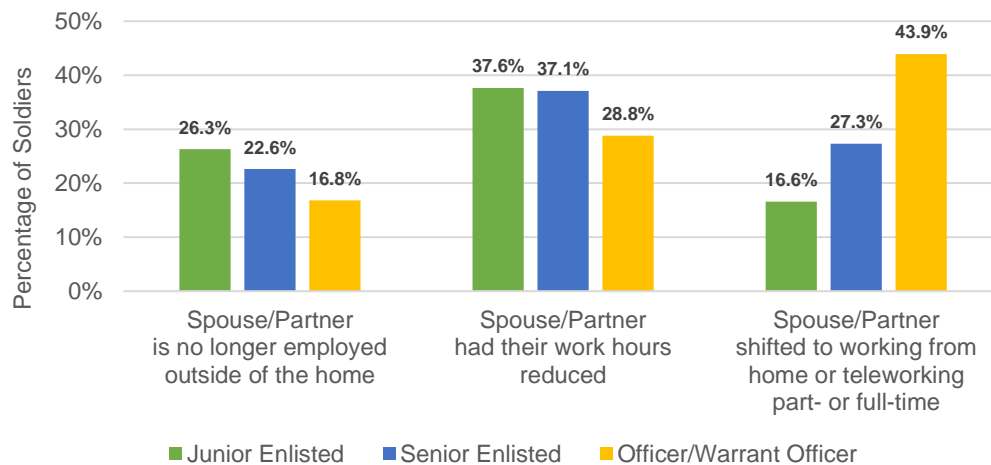


Figure 18. Results from Bivariate Analyses Comparing Spouse/Partner Work Status Between Junior Enlisted and Senior Enlisted Soldiers, and Officers/Warrant Officers

5.5.2.2 Soldier and Spouse/Partner Coping with the Impact of the COVID-19 Pandemic

The majority of Soldiers who were married or in a relationship reported that they and their spouse/partner experienced difficulty coping with the impact of the COVID-19 pandemic (sum of all responses other than *not at all*: 64.0%, $n = 6,857$, $N = 10,715$). The extent to which Soldiers and their spouse/partner experienced difficulty coping with the impact of the COVID-19 pandemic was included in multivariable models that assessed relationships with household financial impact and behavioral health. These results are summarized in Section 5.5.3 below.

5.5.3 Household Financial Impact and Behavioral Health during the COVID-19 Pandemic

The following sub-sections summarize the results from multivariable logistic regressions assessing the impacts on household financial impact and behavioral health.

5.5.3.1 Demographic Predictors on Household Financial Impact

A multivariable logistic regression analysis was conducted to assess demographic predictors on financial impact. The analysis accounted for the following demographics: gender (male or female), marital status (never married, married, or previously married), race/ethnicity (White, Hispanic or Latino, Black or African-American, or Other), rank group (Junior Enlisted, Senior Enlisted, or Officer/Warrant Officer), and whether there were children under 18 years of age in the household (Yes or No). For the purposes of this analysis, household financial impact was dichotomized into two categories: no/minimal impact or moderate/major/severe impact. A description of the analysis is summarized in Figure 19 below.

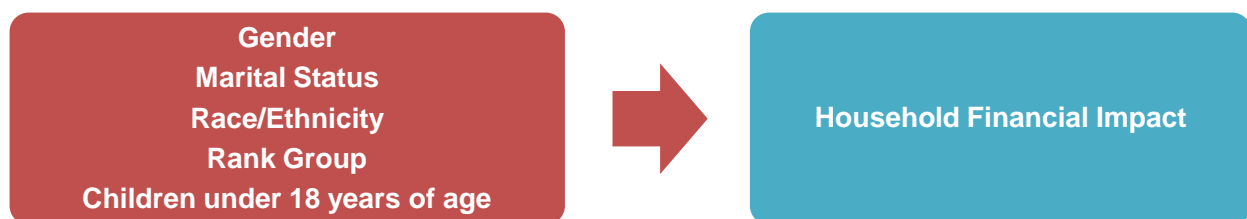


Figure 19. Demographic Predictors of Household Financial Impact

The results indicated that financial impact differed by gender, marital status, race/ethnicity, rank, and whether children under 18 years of age were in the household. Soldiers were more likely to report moderate, major, or severe COVID-19-related financial impact if they were male, married or previously married, a racial/ethnic minority, Junior or Senior Enlisted, and/or had children under 18 years of age in their household. These differences are summarized in Table 23 below.

Table 23. Demographic Profile for Financial Impact

Predictor Variable	<i>B</i> ^a	SE	<i>p</i> -va ^b	OR [95% CI] ^c
Gender (Ref = Male)	-0.21	0.06	.0005	0.81 [0.73, 0.91]
Marital Status (Ref = Never Married)				
Married	0.48	0.05	<.0001	1.62 [1.47, 1.78]
Previously Married	0.23	0.09	.0131	1.26 [1.05, 1.50]
Race/Ethnicity (Ref = White Only)				
Hispanic or Latino Only	0.35	0.05	<.0001	1.42 [1.28, 1.58]
Black or African-American Only	0.36	0.06	<.0001	1.44 [1.28, 1.61]
Other	0.45	0.05	<.0001	1.57 [1.43, 1.74]
Rank Group (Ref = Officer/Warrant Officer)				
Junior Enlisted	0.64	0.06	<.0001	1.90 [1.68, 2.15]
Senior Enlisted	0.23	0.06	.0004	1.25 [1.11, 1.42]
Children under 18 (Ref = No Children)	0.31	0.05	<.0001	1.36 [1.24, 1.49]

Legend:

B = Standardized Beta Coefficient

SE = Standard Error

OR = Odds Ratio

CI = Confidence Interval

REF = Reference

Notes:

^aA standardized beta coefficient compares the strength of the effect of each independent variable to the dependent variable. The higher the absolute value of *B*, the stronger the effect.

^bA *p*-value of less than 0.05 indicates statistical significance.

^cAn Odds Ratio (OR) of greater than 1 indicates increased odds; an OR less than 1 indicates decreased odds.

5.5.3.2 Spouse/Partner Work Status and Household Financial Impact during the COVID-19 Pandemic

A multivariable logistic regression analysis was conducted to assess the association between Soldiers' spouse/partner work status and household financial impact. The analysis accounted for the following potential covariates: gender (male or female), race/ethnicity (White, Hispanic or Latino, Black or African-American, or Other), rank group (Junior Enlisted, Senior Enlisted, or Officer/Warrant Officer), and whether there were children under 18 years of age in the household (Yes or No). The analysis also accounted for the extent to which Soldiers and their spouse/partner experienced difficulty coping with the impact of the COVID-19 pandemic. A description of the analysis is summarized in Figure 20 below.



Figure 20. Representation of Logistic Regression Analyses Predicting Household Financial Impact from Spouse/Partner Work Status, Soldier and Spouse/Partner Coping, and Relevant Covariates

Overall, Soldiers whose spouse/partner was no longer employed outside of the home ($OR = 1.92$, 95%CI [1.54, 2.38]), had their work hours reduced ($OR = 1.92$, 95%CI [1.61, 2.30]), or had to take an unpaid leave of absence/“furlough” ($OR = 1.75$, 95%CI [1.36, 2.25]) were more likely to experience moderate, major, or severe financial impact. Soldiers who reported that their spouse/partner shifted to working from home or teleworking did not report an increased likelihood of a more severe financial impact.

Additionally, the more Soldiers and their spouse/partner experienced difficulty coping with the impact of the COVID-19 pandemic (i.e., *slightly, moderately, very, or extremely*), the more likely they experienced moderate, major, or severe financial impact. In this model predicting household financial impact, difficulty coping was positively and significantly associated with the outcome (see Figure 21 below).

5.5.4 Spouse/Partner Work Status, Household Financial Impact, and Behavioral Health

A series of multivariable logistic regression analyses were conducted to assess the impact of spouse/partner work status, Soldier and spouse/partner coping, and household financial impact on a range of behavioral health outcomes. These analyses accounted for the following potential covariates: gender (male or female), race/ethnicity (White, Hispanic or Latino, Black or African-American, or Other), rank group (Junior Enlisted, Senior Enlisted, or Officer/Warrant Officer), and whether there were children under 18 years of age in the household (Yes or No). A description of these analyses is summarized in Figure 21 below.

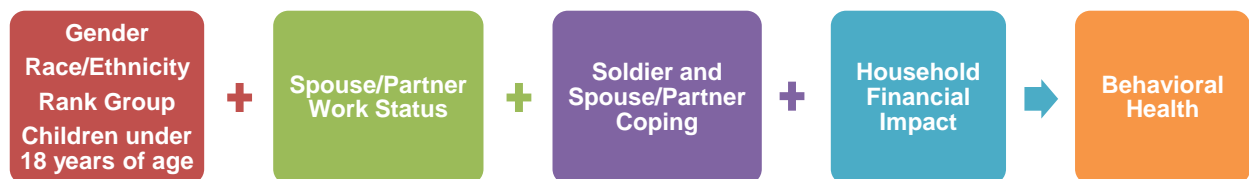


Figure 21. Representation of Logistic Regression Analyses Predicting Behavioral Health Outcomes from Spouse/Partner Work Status, Soldier and Spouse/Partner Coping, Household Financial Impact, and Relevant Covariates

5.5.4.1 Association between Household Financial Impact and Behavioral Health

Overall, more severe financial impacts were associated with an increased likelihood of a positive screen for behavioral health problems. After controlling for various other factors, financial impact was associated with predicting depression, anxiety, and hazardous alcohol consumption.

Relative to Soldiers who reported no financial impact or minimal financial impact, Soldiers who reported a moderate, major, or severe financial impact were more likely to screen positive for depression. The more Soldiers reported any financial impact, the more likely they were to screen positive for anxiety; and the more they reported major or severe financial impact, the more likely they were to screen positive for hazardous drinking.

5.5.4.2 Association between Spouse/Partner Work Status and Behavioral Health

Overall, the more Soldiers reported changes to their spouse's/partner's work status, the more likely they were to screen positive for behavioral health problems. After controlling for various other factors, spouse/partner work status was associated with predicting anxiety and hazardous alcohol consumption.

The more Soldiers reported that their spouse/partner was no longer working outside the home, the more likely they were to screen positive for anxiety ($OR = 0.65$, 95%CI [0.49, 0.87]). The more Soldiers reported that their spouse had their work hours reduced ($OR = 1.23$, 95%CI [1.02, 1.50]) or had to take an unpaid leave of absence/"furlough" ($OR = 1.34$, 95%CI [1.02, 1.75]), the more likely they were to screen positive for hazardous drinking.

5.5.4.3 Association between Soldier and Spouse/Partner Coping and Behavioral Health

The more Soldiers reported that they and their spouse/partner experienced difficulty coping with the impact of the COVID-19 pandemic, the more likely they were to screen positive for behavioral health problems. After controlling for various other factors, Soldier and spouse/partner difficulty coping was associated with predicting depression and anxiety.

The more Soldiers reported that they and their spouse/partner experienced difficulty coping with the impact of the pandemic, the more likely they were to screen positive for depression and anxiety.

5.5.5 Impact of the COVID-19 Pandemic in Households with Children under 18 Years of Age

The following sub-sections summarize the extent to which Soldiers with children 18 years of age or younger in the household were impacted by the COVID-19 pandemic. First, results will be provided for childcare arrangements during the pandemic, followed by children's emotional, behavioral, or other difficulties since the start of the COVID-19 pandemic. Lastly, the results

from multivariable logistic regression analyses assessing the impacts on household financial impact and behavioral health are summarized.

5.5.5.1 Childcare during the COVID-19 Pandemic

More than half of Soldiers with children living in the home (58.7%, $n = 3,067$, $N = 5,226$) reported that their child(ren)'s daycare/school was closed or was operating with reduced hours because of the COVID-19 pandemic. The percentage of responses for these items is summarized in Table 24 below.

Table 24. Childcare Arrangements

Survey Item	“No” % (n)	“Yes” % (n)
My child’s typical daycare/school closed or reduced their hours.	41.3 (2,159)	58.7 (3,067)
I have made alternate childcare arrangements.	78.5 (4,097)	21.5 (1,121)
I have not been able to make alternate childcare arrangements.	77.2 (4,024)	22.8 (1,186)
My work situation changed as a result of childcare issues.	76.4 (3,978)	23.6 (1,230)
I am working from home while caring for or homeschooling children.	71.4 (3,718)	28.6 (1,489)

Bivariate analyses indicated that the impact of daycare/school closures or reduced hours differed by gender, race/ethnicity, and rank. **A greater percentage of female Soldiers, relative to male Soldiers, reported that they were unable to make alternate childcare arrangements, that their work situation changed as a result of childcare issues, or that they were working from home while caring for or homeschooling children.** These gender differences are summarized in Figure 22 below.

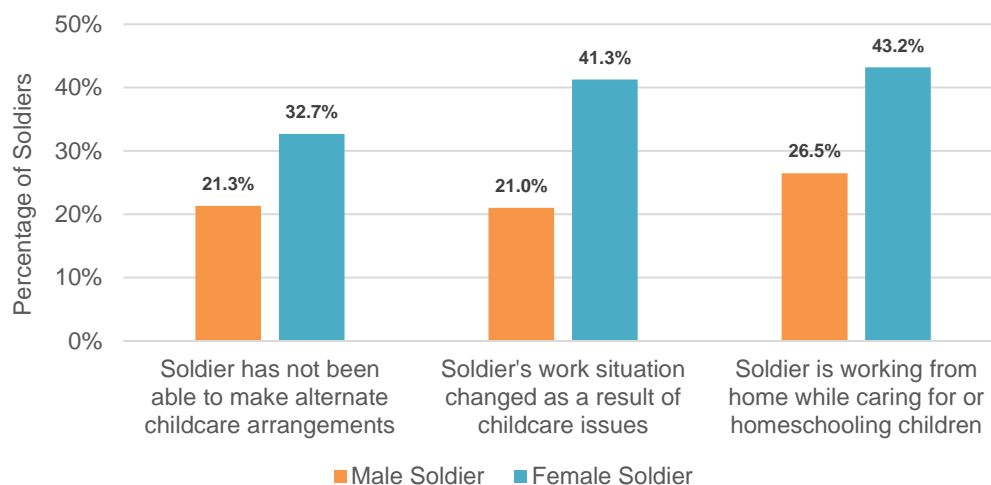


Figure 22. Results from Bivariate Analyses Comparing the Impact of Daycare/School Closures or Reduced Hours between Male and Female Soldiers

Racial/ethnic differences were also observed, as a greater percentage of Black or African-American Soldiers, relative to other race/ethnic groups, reported that they were unable to make alternate childcare arrangements or that their work schedule had changed as a result of childcare issues. The differences by race/ethnicity are summarized in Figure 23 below.

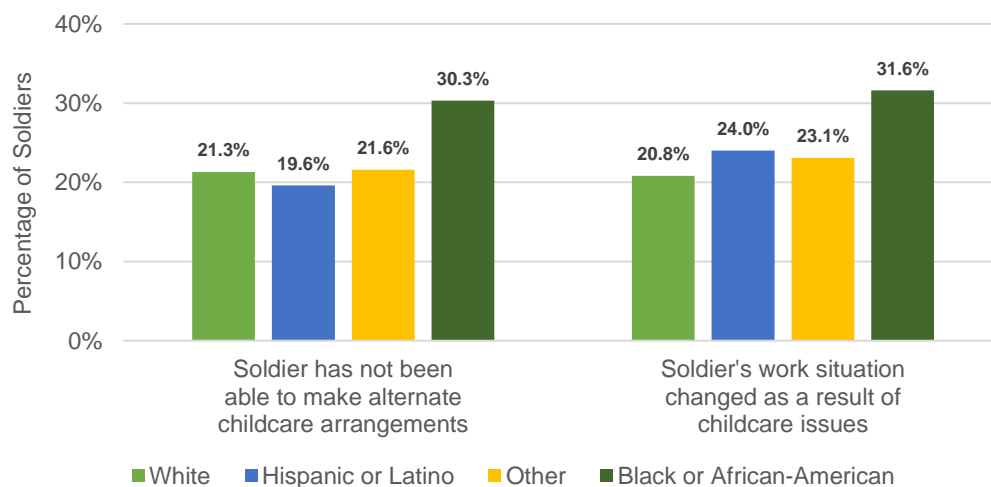


Figure 23. Results from Bivariate Analyses Comparing the Impact of Daycare/School Closures or Reduced Hours between White, Hispanic or Latino, Other Race/Ethnicity, and Black or African-American Soldiers

A greater percentage of Senior Enlisted Soldiers and Officers/Warrant Officers, relative to Junior Enlisted Soldiers, reported that their work situation had changed as a result of childcare issues; Officers/Warrant Officers were more likely to work from home while caring for or homeschooling children than Soldiers in other rank categories. These differences by rank are summarized in Figure 24 below.

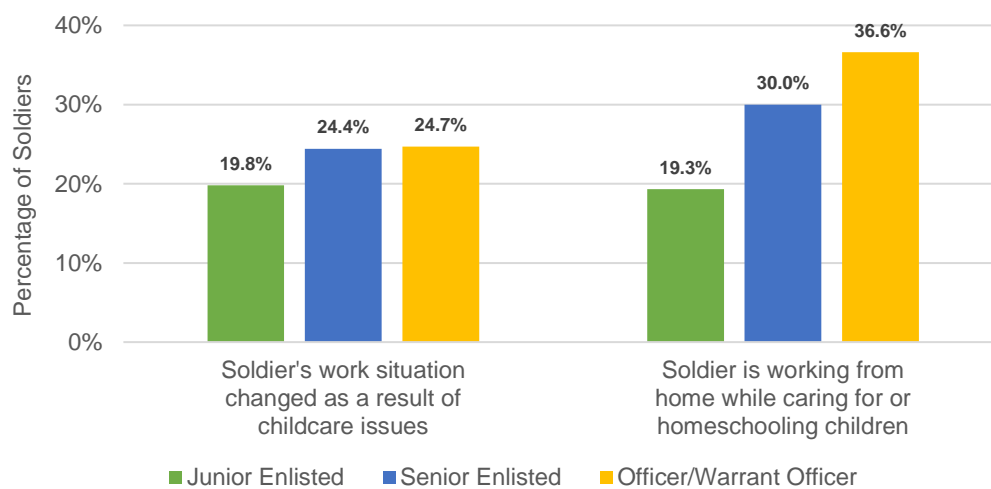


Figure 24. Results from Bivariate Analyses Comparing the Impact of Daycare/School Closures or Reduced Hours between Junior Enlisted and Senior Enlisted Soldiers, and Officers/Warrant Officers

5.5.5.2 Children’s Emotional, Behavioral, or Other Difficulties since the Start of the COVID-19 Pandemic

Half of Soldiers with children under 18 years of age in their household reported that their child(ren) experienced emotional, behavioral, or other difficulties since the start of the pandemic (51.2%, $n = 2,663$, $N = 5,203$). The extent to which children appeared to experience any emotional, behavioral, or other difficulties since the start of the COVID-19 pandemic was included in multivariable models that assessed relationships with household financial impact and behavioral health. These results are summarized in sub-sections 5.5.5.3 and 5.5.5.4, respectively.

5.5.5.3 Childcare and Household Financial Impact

A multivariable logistic regression analysis was conducted to assess the association between daycare/school closures or reduced hours and financial impact. The analyses accounted for the following potential covariates: gender (male or female), marital status (married, previously married, or never married), race/ethnicity (White, Hispanic or Latino, Black or African-American, or Other), and rank group (Junior Enlisted, Senior Enlisted, or Officer/Warrant Officer). The

analyses also accounted for the extent to which children appeared to experience emotional, behavioral, or other difficulties since the start of the COVID-19 pandemic, as well as childcare arrangements. A description of the analysis is summarized in Figure 25 below.



Figure 25. Representation of Logistic Regression Analyses Predicting Household Financial Impact from Childcare and Relevant Covariates

Overall, Soldiers with children who made alternate childcare arrangements ($OR = 1.31$, 95%CI [1.10, 1.55]) or whose work situation changed as a result of childcare issues ($OR = 1.43$, 95%CI [1.20, 1.71]) were more likely to experience moderate, major, or severe financial impact.

5.5.5.4 Childcare, Household Financial Impact, and Behavioral Health

A series of multivariable logistic regression analyses were conducted to assess the impact of daycare/school closures or reduced hours on a range of behavioral health outcomes. These analyses accounted for the following potential covariates: gender (male or female), marital status (married, previously married, or never married), race/ethnicity (White, Hispanic or Latino, Black or African-American, or Other), and rank group (Junior Enlisted, Senior Enlisted, or Officer/Warrant Officer). The analyses also accounted for the extent to which children appeared to experience emotional, behavioral, or other difficulties since the start of the COVID-19 pandemic, childcare arrangements, and household financial impact. A description of these analyses is summarized in Figure 26 below.



Figure 26. Representation of Logistic Regression Analyses Predicting Behavioral Health Outcomes from Childcare, Financial Impact, and Relevant Covariates

Overall, the more Soldiers reported changes to their work situation, a household financial impact, or their child(ren)'s emotional, behavioral, or other difficulties, the more likely they were to screen positive for behavioral health problems. In the models predicting depression and

anxiety, changes to Soldiers' work situation and household financial impact were positively and significantly associated with each of these outcomes. In the model predicting hazardous alcohol consumption, household financial impact was also associated with the outcome. Additionally, the child(ren)'s emotional, behavioral, or other difficulties was positively and significantly associated with Soldiers' depression, anxiety, and hazardous alcohol consumption.

Similar to the previous models for Soldiers who were married or in a relationship, the models looking at impacts on children and childcare indicated that the more Soldiers reported experiencing moderate, major, or severe financial impact, the more likely they were to screen positive for depression, anxiety, and hazardous drinking. Additionally, the more Soldiers reported that their work situation changed as a result of childcare issues, the more likely they were to screen positive for depression ($OR = 1.39$, 95% CI [1.09, 1.77]) and anxiety ($OR = 1.51$, 95% CI [1.19, 1.91]). Lastly, the more Soldiers reported that their child(ren) experienced emotional, behavioral, or other difficulties since the start of the pandemic, the more likely they were to screen positive for depression and anxiety. This association was also found with hazardous drinking if Soldiers rated their child(ren)'s behavioral, emotional, or other difficulties as *very* ($OR = 1.76$, 95% CI [1.25, 2.48]) or *extreme* ($OR = 2.26$, 95% CI [1.40, 3.63]).

5.6 Information Sourcing and Information Needs Related to the COVID-19 Pandemic

Information and updates about the COVID-19 pandemic are available to Soldiers through a variety of communication channels, including but not limited to news, Military, and Government sources. The BHAT Survey included questions to better understand the sources Soldiers most frequently used for updates about the pandemic. Additionally, the survey asked Soldiers about their COVID-19-related information needs. Collectively, these data identify the topics related to COVID-19 that may be most relevant to Soldiers and the communication channels through which information may most effectively be disseminated.

5.6.1 News Sources

The BHAT survey asked Soldiers a series of questions about the news sources they most commonly used for updates about the COVID-19 pandemic. The most commonly used information source was social media (e.g., Facebook, Instagram, Twitter) (38.9%, $n = 7,904$), followed by online sources other than news sites (36.9%, $n = 7,493$) and news aggregators (e.g., Apple News, Google News, Reddit) (30.9%, $n = 6,290$) ($N = 20,329$). The frequency of Soldiers who selected each information source is summarized in Table 25 below.

Table 25. Information Sources^a

Source	% Selected
Social Media (e.g., Facebook, Instagram, Twitter)	38.9%
Online (other than news sites)	36.9%
News aggregator (e.g., Apple News, Google News, Reddit)	30.9%
Television (local or cable)	13.2%
Newspaper (paper or online; e.g., Army Times, Washington Post)	12.5%
Other	7.9%
Radio (local or satellite)	7.2%

Note:

^aRespondents were allowed to select all that apply; percentages sum to >100%.

Bivariate analyses indicated differences in most commonly used news source(s) by rank for social media, online sources, and the use of more than one source for updates about the COVID-19 pandemic. A greater percentage of Junior and Senior Enlisted Soldiers, relative to Officers/Warrant Officers, reported using social media or online sources only. Overall, a greater percentage of Officers/Warrant Officers (64.4%, $n = 1,598$, $N = 2,483$), relative to Junior Enlisted (50.2%, $n = 4,045$, $N = 8,057$) and Senior Enlisted (56.5%, $n = 3,083$, $N = 5,460$) Soldiers, reported using more than one news source. The differences by rank are summarized in Figure 27 below.

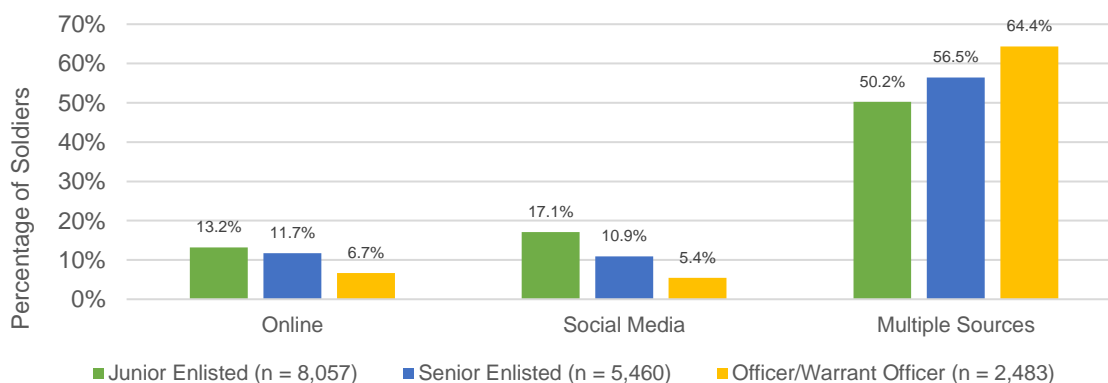


Figure 27. Results from Bivariate Analyses Comparing Most Commonly Used News Sources between Junior Enlisted, Senior Enlisted, and Officers/Warrant Officers

5.6.2 Military and/or Government Sources

In addition to news sources, the BHAT survey asked Soldiers about the frequency with which they used Military or Government sources to get information about COVID-19. More than half of Soldiers reported accessing the following Military sources within the month prior to completing the BHAT survey: local command guidance (63.6%, $n = 13,931$), installation guidance (63.5%, $n = 13,914$), and Department of the Army guidance (e.g., Army, Office of the Surgeon General, etc.) (58.3%, $n = 12,775$) ($N = 21,911$). At least one-third of Soldiers reported using Government sources within the month prior to completing the BHAT survey, with a greater percentage reporting that they used the CDC (50.6%, $n = 11,095$) and White House Press briefings (41.4%, $n = 9,072$) ($N = 21,911$) compared to other Government sources. The frequency of Soldiers who accessed Military and Government sources within the month prior to completing the survey is summarized in Table 26 below.

Table 26. Military and Government Sources^a

Information Source	% Used in the Past Month
Military Sources	
Local Command Guidance	63.6%
Installation Guidance	63.5%
Big Army Guidance (e.g., Army, Office of the Surgeon General)	58.3%
Army Public Health Center	45.8%
American Forces Network (AFN)	28.4%
Government Sources	
Centers for Disease Control and Prevention (CDC)	50.6%
White House Press Briefings	41.4%
World Health Organization	38.0%
International Government Announcements	36.5%
National Institutes of Health (NIH)	32.2%

Note:

^aRespondents were allowed to select multiple responses; percentages sum to >100%.

5.6.3 Information Needs

The BHAT Survey asked Soldiers about their information needs related to COVID-19. The most frequently selected topics were travel (e.g., restrictions, ways to stay safe) (32.9%, $n = 7,207$), followed by facts and statistics related to COVID-19 spread (25.6%, $n = 5,600$) and how to protect oneself (24.7%, $n = 5,418$) ($N = 21,911$). Although the majority of Soldiers reportedly needed information related to COVID-19, one-in-four Soldiers (26.5%, $n = 5,811$, $N = 21,911$) reported that they do not need information related to COVID-19. The frequency of Soldiers who reportedly needed information related to COVID-19 is summarized by topic in Table 27 below.

Table 27. Information Topics^a

Topic	% Selected
Travel (e.g., restrictions, ways to stay safe)	32.9%
Facts and statistics related to COVID-19 spread	25.6%
How to protect yourself	24.7%
Maintaining missions and readiness during COVID-19	22.0%
Daily life, coping, and stress management	21.3%
How to protect others	21.3%
Cleaning and disinfection	21.2%
Symptoms and testing	18.2%
Caring for others	17.3%
Resources to support me and my family during the pandemic (e.g., financial, childcare)	15.2%
Other	1.4%

Note:

^aRespondents were allowed to select multiple responses; percentages sum to >100%.

Bivariate analyses indicated that Soldiers' information needs differed by gender and rank. A greater percentage of male Soldiers (33.5%, $n = 5,109$, $N = 15,240$), relative to female Soldiers (23.8%, $n = 539$, $N = 2,268$), reported that they do not need information related to COVID-19. Overall, a greater percentage of female Soldiers, relative to male Soldiers, reported needing information across all topics related to COVID-19 (see Figure 28 below).

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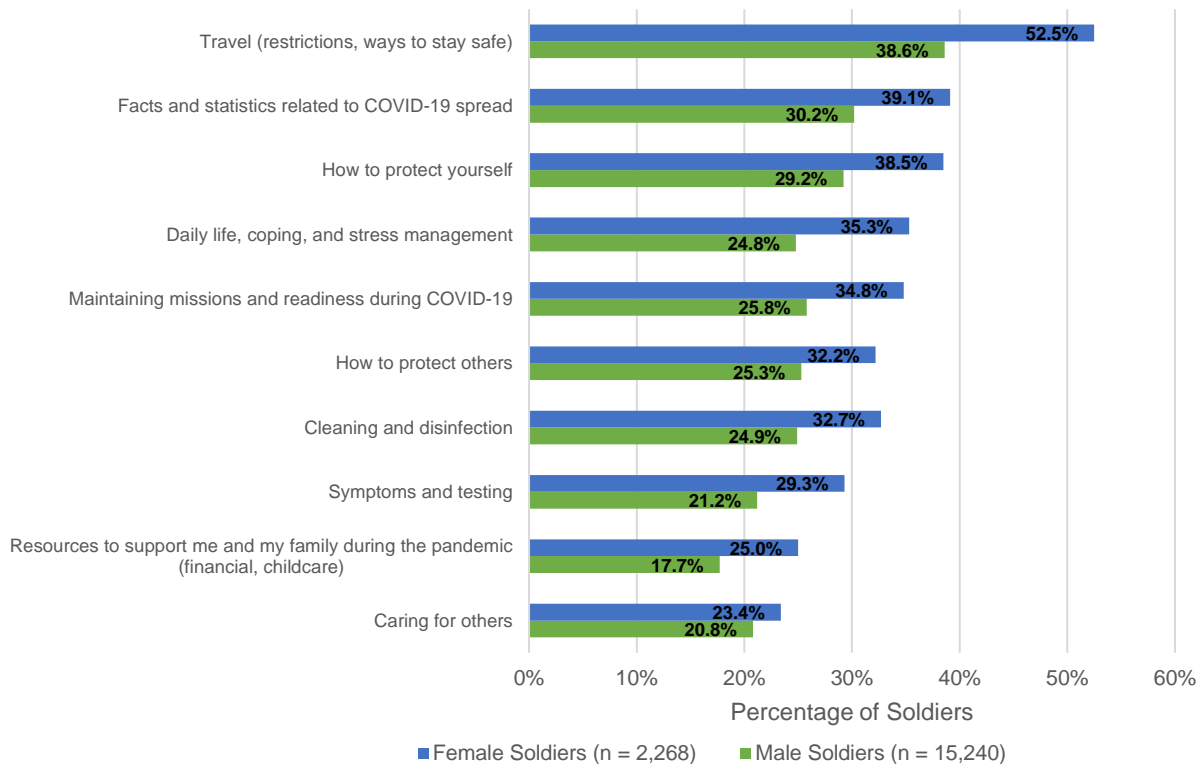


Figure 28. Results from Bivariate Analyses Comparing COVID-19 Information Needs between Female and Male Soldiers

A greater percentage of Junior (35.6%, $n = 3,198$, $N = 8,981$) and Senior Enlisted (32.5%, $n = 1,934$, $N = 5,948$) Soldiers, relative to Officers/Warrant Officers (19.3%, $n = 495$, $N = 2,565$), reported that they do not need information related to COVID-19. Of all the topics presented, the greatest differences between rank were observed for travel (e.g., restrictions, ways to stay safe), facts and statistics related to COVID-19 spread, and maintaining mission readiness during COVID-19; a greater percentage of Officers/Warrant Officers, relative to Junior and Senior Enlisted Soldiers, reported needing information on these topics. The differences by rank are summarized in Figure 29 below.

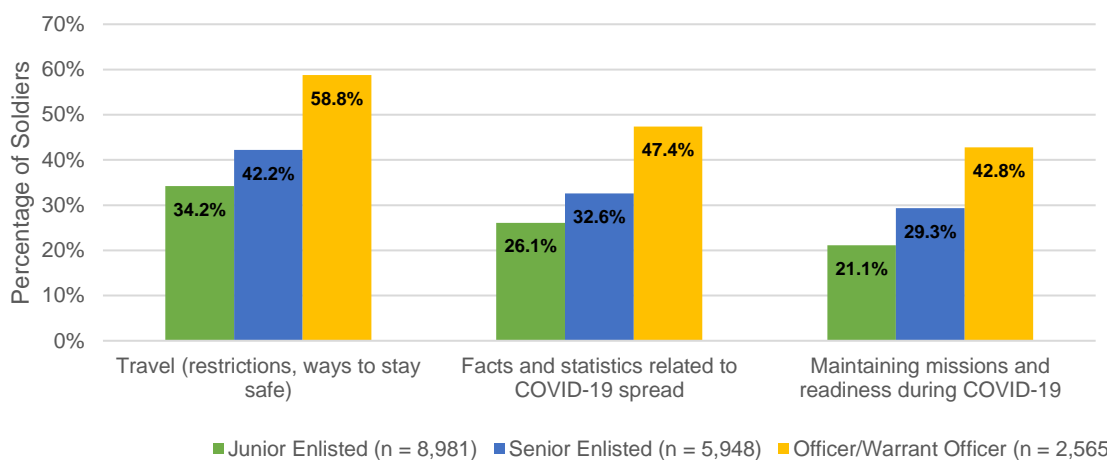


Figure 29. Results from Bivariate Analyses Comparing Information Needs Between Junior Enlisted, Senior Enlisted, and Officers/Warrant Officers

6. DISCUSSION

Rates of positive COVID-19 cases among BHAT survey respondents were negligible. A small percentage of Soldiers reported experiencing symptoms related to COVID-19. The vast majority of Soldiers reported engagement in recommended public health preventive behaviors to stop the spread of the virus. Nonetheless, over half of Soldiers reported more than one stressor, fear, and/or concern about COVID-19. The top concerns were the impact of the pandemic on time with friends and family, someone close to them contracting COVID-19, opportunities for exercise and social engagements, changing rules, regulations, and guidance related to COVID-19, accessing medical care, and the impact of COVID-19 on unit readiness. A number of information needs related to the COVID-19 pandemic were identified and represent actionable targets for PAOs and public health strategic communications activities (e.g., facts and statistics related to the spread of the virus, how to protect oneself, and maintaining missions and readiness during the pandemic).

Overall, rates of positive screenings for behavioral health difficulties appeared to be consistent with pre-COVID-19 levels, and were significantly lower than rates that were observed during OIF/OEF. Methodological differences aside, it thus appears that Active Duty Soldiers are not more likely to report behavioral health difficulties now versus prior to the pandemic, at least during the timeframe that these Soldiers were assessed (which was relatively early in the course of the pandemic). It will be critical that we follow up with additional surveys to examine any change in behavioral health screening patterns as the pandemic continues to influence the daily lives of Soldiers and their Families, as well as disrupts the Army's ability to maintain Force health, resilience, readiness, and lethality.

Overall, our data strongly suggest that COVID-19-related stress, fears, and concerns are the most robust predictor of poor behavioral health outcomes across all metrics that were assessed. This finding suggests that the pandemic is having a measurable influence on the behavioral

health of Active Duty Soldiers. A consistent finding was that Junior Enlisted soldiers reported more COVID-19 fears, stressors, and concerns—and worse behavioral health outcomes—than their Senior Enlisted and Officer/Warrant Officer counterparts. This was also true of racial/ethnic minorities, although as we outline below, the picture concerning differences in outcomes based on race/ethnicity is more complicated. Specifically, such differences appear to be attributable to race/ethnicity differences in COVID-19 stressors, fears, and concerns. Finally, Families are being negatively impacted in a variety of manners as a result of the pandemic. Below, we offer a detailed summary of findings from each core section of the BHAT COVID-19 survey:

7. CONCLUSION

7.1 Behavioral Health

Rates of positive screenings for a variety of behavioral health metrics appear to be consistent with contemporary survey data obtained prior to the onset of the COVID-19 pandemic. Moreover, rates are significantly lower than those observed using similar screening instruments during OIF/OEF.

More specifically, for anxiety, a positive screening rate between 16.3% (no related impairment) and 5.4% (significant related functional impairment qualifier) was observed. For depression, a positive screening rate between 17.4% (no related functional impairment) and 5.6% (significant related functional impairment) was observed. Just over 10% of Soldiers endorsed at least some frequency of thoughts that they would be better off dead or hurting themselves. Approximately 5% of Soldiers reported that they experienced these thoughts at least more than half of the days over the 2-week period prior to the time that they completed the survey. For potentially hazardous alcohol consumption, a positive screening rate of 19.5% was observed. Finally, for sleep-related outcomes, approximately 1-in-3 Soldiers reported getting on average less than 6 hours of sleep per day (33.3%); a similar percentage of Soldiers met criteria for insomnia risk (31.3%). Approximately 2-in-10 Soldiers meeting criteria for a behavioral health problem (one or more) reported utilizing a behavioral health asset. We did not specifically ask about in-person versus virtual care utilization. This is a shortcoming that we will address in subsequent BHAT survey efforts.

Generally, lower rank and being female were associated with worse behavioral health outcomes. Of note, however, males were more likely to endorse thoughts of being better off dead or of self-harm and to engage in hazardous alcohol consumption, relative to females. Although lower-order models suggested that Non-whites—Blacks and Hispanics in particular—might have a higher likelihood than Whites of meeting screening criteria for anxiety, depression, insomnia risk, and thoughts of being better off dead or self-harm, additional multivariate modeling suggested that any links between race/ethnicity and behavioral health outcomes were accounted for by COVID-19 stressors, fears, and concerns. In fact, irrespective of outcome, COVID-19 related stress, fears, and concerns was the most robust predictor. Moreover, detailed modeling of direct versus indirect effects suggested that for these outcomes, the mechanism by which behavioral health outcomes were more evident in some or all minority categories was COVID-19 stressors, fears, and concerns. Taken together, these results suggest that stress, fears, and concerns related to the COVID-19 pandemic are having a detrimental influence on

the behavioral health status of Soldiers. Of course it must be noted that the cross-sectional nature of the data do not permit conclusive statements regarding any causal connection between behavioral health outcomes and COVID-19 stressors, fears, and concerns. It of course is plausible, and in fact likely, that those with existing behavioral health difficulties are those most likely to report greater stress, fears, and concerns related to a life-altering and potentially life-threatening viral pandemic.

7.2 Leadership Responses to the COVID-19 Pandemic

7.2.1 COVID-19 Leadership Behaviors

Soldiers rated their immediate supervisor on a series of specific COVID-19 leadership behaviors. Overall, many Soldiers agreed that their supervisor engaged in these behaviors, with some behaviors reported by a large majority of Soldiers (e.g., “Encourages us to report any symptoms of COVID-19 we might have”) and some behaviors reported by less than half of Soldiers (e.g., “Focuses on what to be grateful for during the COVID-19 pandemic”). These results suggest that these behaviors are within the scope of a leader’s repertoire and that many leaders are also already engaging in these positive behaviors. In addition, this list of 14 behaviors comprised a measure with good psychometric properties.

7.2.2 COVID-19 Leadership Behaviors and Behavioral Health Outcomes

There was a significant association between Soldier reports of supervisors engaging in COVID-19 leadership and Soldier behavioral health outcomes. Soldiers who reported that their supervisor demonstrated high levels of COVID-19 leadership were less likely to screen positive for behavioral health problems than Soldiers who reported that their supervisor demonstrated low levels of COVID-19 leadership. This association was statistically significant even after accounting for covariates such as Soldiers’ ratings of their supervisors on general leadership, as well as Soldiers reporting their own potential exposure to COVID-19, COVID-19 concerns, and rank. Moreover, the relationship between Soldier ratings of their supervisors on COVID-19 leadership and Soldier behavioral health was found across ranks, suggesting that all Soldiers, regardless of rank, may potentially benefit from supervisors who engage in COVID-19 leadership behaviors. In addition, this association between leadership and behavioral health was consistent across levels of COVID-19 concerns.

7.2.3 COVID-19 Leadership Behaviors and Preventive Health Behavior Outcomes

There was a significant association between Soldier reports that their supervisor engaged in COVID-19 leadership and Soldier reports that they frequently or always engaged in a range of preventive health behaviors. Soldiers who reported that their supervisor engaged in high levels of COVID-19 leadership were also more likely to report that they frequently or always engaged in each preventive health behavior assessed (e.g., using hand sanitizer; covering coughs and sneezes). In some cases, the degree to which Soldiers reported engaging in these behaviors was 20% or more if they also reported that their supervisor engaged in high levels of COVID-19 leadership. These relationships held even after accounting for covariates such as Soldier ratings of supervisors on general leadership, as well as Soldiers’ potential exposure to COVID-19,

Soldiers' COVID-19 concerns, and rank. Again, the relationship between Soldier ratings of supervisors on COVID-19 leadership and Soldier reports of engaging in preventive health behaviors was found across all ranks.

7.3 Impact of the COVID-19 Pandemic on Families and Relationships

7.3.1 Financial Considerations

Financial considerations are a common stressor among Army Soldiers and their spouses during the COVID-19 pandemic. Half of Soldiers reported a financial impact because of the COVID-19 pandemic. Financial impact differed by gender, marital status, race/ethnicity, rank, and whether children under 18 years of age were in the household. Soldiers were more likely to report moderate, major, or severe COVID-19 related financial impact if they were male, married or previously married, a racial/ethnic minority, Junior or Senior Enlisted, and/or had children under 18 years of age in their household. After controlling for various other factors, financial impact was associated with predicting depression, anxiety, and potentially hazardous drinking.

7.3.2 Impact on Spouses/Partners

Of the 53% of Soldiers who reported being married or in a relationship (11,670 of 21,911 respondents), many reported their spouse or partner experienced work impacts as a result of the pandemic (for example, their spouse/partner was no longer working outside the home [23.0%], had their work hours reduced [35.8%], took an unpaid leave of absence or was furloughed [14.6%], or had shifted to working from home full- or part-time [26.2%]). Soldiers' spouse/partner work status differed by gender and rank such that male Soldiers and Enlisted Soldiers reported that their spouse/partner experienced more severe work impacts (in other words, their spouse/partner was more like to no longer be working outside the home) when compared to female Soldiers and Officers, respectively. After controlling for various other factors, spouse/partner work status was associated with predicting anxiety and hazardous alcohol consumption. The more Soldiers reported that their spouse/partner was no longer working outside the home, the more likely they were to screen positive for anxiety. The more Soldiers reported that their spouse had their work hours reduced or had to take an unpaid leave of absence/"furlough," the more likely they were to screen positive for hazardous drinking. The majority of Soldiers who were married or in a relationship reported that they and their spouse/partner experienced some level of difficulty coping with the impact of the COVID-19 pandemic (64.0%). After controlling for various other factors, Soldier and spouse/partner difficulty coping was associated with predicting depression and anxiety, such that higher levels of difficulty coping were associated with increased likelihood of depression and anxiety.

7.3.3 Impact on Children and Childcare

One-in-three Soldiers (31.4%) reported having a child 18 years of age or younger living in their household. More than half of Soldiers with children living in the home (58.7%) reported that their child(ren)'s daycare/school was closed or was operating with reduced hours because of the COVID-19 pandemic. While 21.5% of Soldiers with children 18 or under in the household reported making alternate childcare arrangements, sizeable proportions of Soldiers reported

that they were working from home while caring for children (28.6%), that they had experienced a change in work situation as a result of childcare issues (23.6%), or that they were unable to make alternative childcare arrangements (22.8%). These experiences differed by gender, race/ethnicity, and rank such that female, Black or African-American, and Senior Enlisted Soldiers/Officers were more likely to report their work situation changing as a result of childcare issues than male, Soldiers of other races/ethnicities, and Junior Enlisted Soldiers, respectively. Overall, Soldiers with children who made alternate childcare arrangements or whose work situation changed as a result of childcare issues were more likely to experience moderate, major, or severe financial impact. Additionally, half of Soldiers with children under 18 years of age in the household (51.2%) reported that their child(ren) experienced emotional, behavioral, or other difficulties since the start of the pandemic. The more Soldiers reported changes to their work situation, a household financial impact, or the child(ren)'s emotional, behavioral, or other difficulties, the more likely they were to screen positive for behavioral health problems.

7.4 Information Sourcing and Information Needs Related to the COVID-19 Pandemic

Soldiers used a variety of sources for information and updates about COVID-19, with the majority frequently accessing Military sources—particularly from their local command and/or installation. Soldiers most commonly reported wanting additional information specific to travel (e.g., restrictions, ways to stay safe), facts and statistics related to COVID-19 spread, and how to protect themselves from COVID-19.

7.4.1 Information Sources (News)

Most Soldiers reported using more than one news source to obtain information on COVID-19. The most commonly used news source was social media (e.g., Facebook, Instagram, Twitter), followed by online sources other than news sites, and news aggregators (e.g., Apple News, Google News, Reddit). News sources differed by rank with a greater percentage of Junior and Senior Enlisted Soldiers reportedly using social media or online sources only, relative to Officers/Warrant Officers, who reported using more than one news source.

7.4.2 Information Sources (Military or Government)

More than half of Soldiers reported accessing local command guidance (63.6%), installation guidance (63.5%), and Department of the Army guidance (e.g., Army, Office of the Surgeon General; 58.3%) within the month prior to completing the BHAT Survey. At least one-third of Soldiers reported using other Government sources, with the greatest percentage of Soldiers reporting that they used the CDC (50.6%) and White House Press briefings (41.4%) within the month prior to completing the BHAT Survey.

7.4.3 Information Needs

One-in-four Soldiers reported that they did not need information related to COVID-19. Of the Soldiers who reportedly needed information related to COVID-19, the most frequently selected topics were travel (e.g., restrictions, ways to stay safe, 32.9%), followed by facts and statistics related to COVID-19 spread (25.6%), and how to protect themselves (24.7%). Soldiers'

information needs differed by gender, with a greater percentage of female Soldiers reportedly needing information across all topics related to COVID-19. Information needs also differed by rank, with a greater percentage of Officers/Warrant Officers reportedly needing information about travel (e.g., restrictions, ways to stay safe), facts and statistics related to COVID-19 spread, and maintaining missions and readiness during COVID-19 than enlisted Soldiers.

8. RECOMMENDATIONS

8.1 Behavioral Health

- Behavioral Health Organizations and other behavioral health assets within units should continue to assess the behavioral health status of units and Soldiers.
- Globally, additional BHAT efforts can continue to provide support to Army Senior Leaders concerning the behavioral status of the Force.
- Prioritize understanding and addressing top-level concerns about the COVID-19 pandemic. Leaders, organizations, and public health messaging can provide information and identify gaps in guidance and solutions.
- Keep Soldiers aware of the resources that are available to them if they are experiencing distress and related interference in social or occupational functioning.
- Encourage Soldiers to engage in adaptive coping or stress management skills to manage distress related to the COVID-19 pandemic. For example, reinforce the importance of sleep, exercise, and social connection to the greatest extent possible.

8.2 Leadership Responses to COVID-19

- Disseminate information to leaders at all levels about the importance of engaging in COVID-19-specific leadership behaviors (leverage resources such as the WRAIR/APHC Quick Guide for COVID-19 Leadership –see Appendix B; WRAIR Fact Sheets – see <https://www.wrair.army.mil/fact-sheets>), and other resources such as those available through the Uniformed Services University of Health Sciences Center for Traumatic Stress Studies.
- Encourage senior leaders to lead by example in promoting COVID-19-specific leadership behaviors.
- Routinely reinforce COVID-19 leadership behaviors as part of unit battle rhythm.

8.3 Impact of COVID-19 on Family and Relationships

- Acknowledge the impacts that COVID-19 is having on Families, particularly the financial impacts, as financial impacts are associated with increased likelihood of behavioral health problems.
- Consider ways to support spouses in seeking employment opportunities if they have been furloughed or are no longer working out of the home due to the COVID-19 pandemic.

- Accommodate Soldiers with children to the extent possible (e.g., allow flexible work schedules, telework, and alternate work arrangements as appropriate) to support them as they navigate the challenges of school and daycare closures.
- Ensure Soldiers and Families are aware of the supportive services available to them (e.g., Family Advocacy Program, Financial Readiness Program, and Employment Readiness Program).
- Ensure that services are equipped to cater to Families that may be experiencing impacts due to the COVID-19 pandemic, and that services are tailored to address the unique family-related impacts the pandemic appears to be exerting.
- Recognize that some Families may be experiencing more severe impacts than others and may be at higher risk for the associated behavioral health problems. Continue to explore how Family impacts vary based on family structure and demographic characteristics such as gender, race, and rank.
- Explore and promote means through which parents can obtain alternative childcare arrangements and support. To the extent that is safely possible, ensure Child Development Centers and Child and Youth Services are open and as close to fully operational as possible. Communicate with parents about their childcare options.
- Consider policy changes to enable alternate ways to subsidize childcare during the COVID-19 pandemic (for example, make Child Care Aware benefits eligible for in-home care).
- Address stress in children through psycho-education opportunities for children and parents—develop specific child-based psycho-education packages.

8.4 Information Sourcing and Information Needs Related to COVID-19

- Leverage social media sources to distribute up-to-date information coordinated and organized through PAOs.
- Disseminate and distribute guidance through multiple communication channels. This increases the likelihood information will reach its intended audience.
- Distribute guidance to Soldiers on travel (e.g., restrictions, ways to stay safe), facts and statistics related to COVID-19 spread, and how to protect oneself, as these topics are the most frequently cited as those for which Soldiers wanted more information.
- Follow best practices in communication. For example, message effectiveness peaks at 3-4 exposures. Therefore, ensure Soldiers are exposed to messages a minimum of three times if possible. Refresh and repackage content as needed to keep it up-to-date and to ensure it does not become “stale” or perceived as irrelevant. Additionally, research shows that adults are most likely to read health information from an expert; leverage medical and public health experts across the Military to communicate messages.

- When using social media, posts with videos are shared most frequently. When appropriate and feasible, incorporate videos into guidance and messaging related to COVID-19. At a minimum, social media messaging should include imagery to increase engagement.
- Utilize two-way communication platforms (e.g., virtual Town Halls with question and answer sessions) when content is complex, guidance is changing, or confusion or uncertainty is likely to be high.

APPENDIX A

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APPENDIX B
COVID-19 LEADERSHIP QUICK GUIDE

Soldiers have reported concerns about COVID-19 and its impact on the health of their family and friends, their finances, and on unit and mission readiness. Confronted with this historic challenge, leaders have an opportunity to make a difference in the quality of life and readiness of their Soldiers.

Below are a number of leadership steps that can help strengthen and protect the physical and behavioral health of their Soldiers and units.

LEADER ACTIONS TO PROMOTE UNIT READINESS DURING COVID-19

Lead by Example	<ul style="list-style-type: none"> <input type="checkbox"/> Lead by example by following health guidelines to reduce the spread of COVID-19 (such as social distancing, handwashing, using mask/face covering). <input type="checkbox"/> Share with your Soldiers how the COVID-19 pandemic has personally impacted you.
Educate	<ul style="list-style-type: none"> <input type="checkbox"/> Share up-to-date, consistent, and accurate information about the COVID-19 pandemic. <input type="checkbox"/> Provide updates about recent COVID-19 pandemic related developments. <input type="checkbox"/> Encourage Soldiers to report any symptoms of COVID-19 they might have.
Acknowledge the Situation	<ul style="list-style-type: none"> <input type="checkbox"/> Acknowledge the stress of uncertainty related to the COVID-19 pandemic. <input type="checkbox"/> Emphasize taking care of each other during the COVID-19 pandemic. <input type="checkbox"/> Encourage Soldiers to identify what can and cannot be controlled about the COVID-19 pandemic. <input type="checkbox"/> Discuss plans to maintain unit readiness during the pandemic.
Deal in Optimism	<ul style="list-style-type: none"> <input type="checkbox"/> Encourage Soldiers to think positively during this COVID-19 pandemic. <input type="checkbox"/> Focus on what to be grateful for during the COVID-19 pandemic. <input type="checkbox"/> Remind Soldiers during the COVID-19 pandemic that we are here to serve with honor, serve a mission, and serve a greater purpose.
Set the Conditions	<ul style="list-style-type: none"> <input type="checkbox"/> Modify unit tasks to prevent Soldiers from working in close proximity to one another. <input type="checkbox"/> Ensure Soldiers have basic supplies for daily living (like food, soap, and toilet paper) during the COVID-19 pandemic. <input type="checkbox"/> Take steps to keep Soldiers socially connected as a unit during the COVID-19 pandemic.

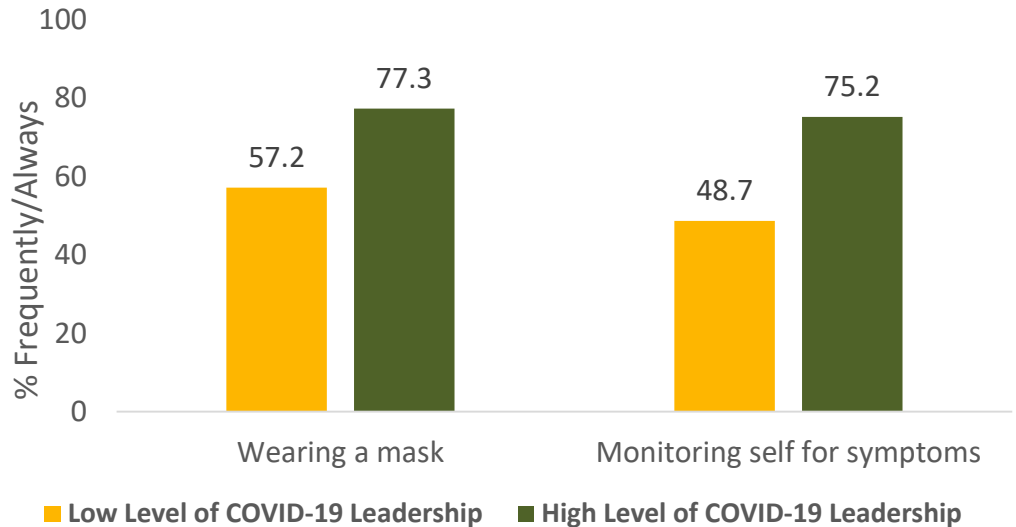
SOLDIERS SURVEYED ABOUT COVID-19

20,000+

More than 20,000 Soldiers completed the anonymous Behavioral Health Advisory Team (BHAT) COVID-19 survey in 2020, a collaboration between the Walter Reed Army Institute of Research and the Army Public Health Center.

RESULTS: PREVENTIVE HEALTH PRACTICES

Soldiers who said that their leaders engaged in COVID-19 leadership behaviors were more likely to engage in preventive medicine practices than those who said their leaders did not engage in COVID-19 leadership behaviors. This relationship held even after accounting for general leadership ratings, COVID-19 concerns, and Soldier rank.



RESULTS: BEHAVIORAL HEALTH

Less Loneliness

Less Depression

Less Anxiety

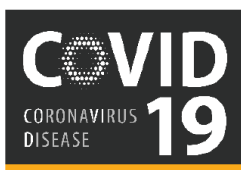
Fewer Alcohol Problems

Fewer Sleep Problems

Soldiers who said that their leaders engaged in COVID-19 leadership were less likely to report behavioral health problems than those who said their leaders did not engage in COVID-19 leadership, even after accounting for general leadership ratings, COVID-19 concerns, and Soldier rank.

MAKING THE LINK

These results suggest that it takes more than simply being a good leader—it means you need to be a good leader in managing your unit's stress related to COVID-19. These results also mean that Soldiers of all ranks stand to benefit from leaders who take action to maximize unit readiness during the COVID-19 pandemic.



For current COVID-19 information:

<https://phc.amedd.army.mil/covid19>
<https://www.coronavirus.gov/>

The Military Health System Nurse Advice Line is available 24/7:

Call 1-800-874-2273 option #1
or visit <https://www.health.mil/I-Am-A/Media/Media-Center/NAL-Day-at-a-glance>

For more information, contact your installation's Department of Public Health



Public Health
Prevent. Promote. Protect.

Army Public Health

The Army COVID-19 Information Hotline:

1-800-984-8523
Overseas DSN 312-421-370
Stateside DSN 421-3700

APPENDIX C

DETAILED TABLES FOR BEHAVIORAL HEALTH SCREENING OUTCOMES

Table C-1. Percent Screening Positive for Possible Generalized Anxiety Based on GAD-2 Scores alone, Plus Any Related Functional Impairment, and Plus Severe Related Impairment Qualifiers, by Gender, Rank, and Race/Ethnicity (N = 16,555)

	No Related Impairment		Any Related Impairment		Severe Related Impairment	
	n	%	n	%	n	%
Gender						
Male	2,148	15.23	1,734	12.38	729	5.20
Female	449	21.42	381	18.34	121	5.83
Race/Ethnicity						
White only	1,299	15.23	1,049	12.38	411	4.85
Hispanic or Latino only	409	17.15	319	13.52	131	5.55
Black or African American only	380	18.73	321	15.96	129	6.41
Other	413	15.28	343	12.77	141	5.25
Rank/Grade						
Junior Enlisted	1,485	17.96	1,184	14.41	494	6.01
Senior Enlisted	857	15.49	707	12.90	295	5.38
Warrant Officer/Officer	273	11.38	236	9.91	73	3.07

Table C-2. Percent Positive Screen for Possible Depression Based on PHQ-2 Scores Only, Plus Any Related Functional Impairment, and Plus Severe Related Impairment, by Gender, Rank, and Race/Ethnicity (N = 16,499)

	No Related Impairment		Any Related Impairment		Severe Related Impairment	
	n	%	n	%	n	%
Gender						
Male	2378	16.92	1918	13.74	759	5.44
Female	389	18.63	343	16.57	124	5.99
Race/Ethnicity						
White only	1402	16.49	1146	13.57	434	5.14
Hispanic or Latino only	455	19.17	364	15.50	138	5.88
Black or African American only	369	18.24	318	15.85	134	6.68
Other	441	16.41	351	13.14	138	5.16

Rank/Grade						
Junior Enlisted	1689	20.54	1341	16.41	538	6.58
Senior Enlisted	867	15.70	726	13.27	290	5.30
Warrant Officer/Officer	226	9.43	205	8.62	66	2.77

Table C-3. Percent Reporting Any Thoughts of Being Better Off Dead or Hurting Oneself, by Gender, Rank, and Race/Ethnicity (N = 16,538)

	Not At All		Few or Several Days		More Than Half The Days		Nearly Every Day	
	n	%	n	%	n	%	n	%
Gender								
Male	12464	88.47	938	6.66	464	3.29	223	1.58
Female	1902	90.83	119	5.68	48	2.29	25	1.19
Race/Ethnicity								
White only	7656	89.86	530	6.22	222	2.61	112	1.31
Hispanic or Latino only	2093	87.83	164	6.88	91	3.82	35	1.47
Black or African American only	1735	85.59	152	7.50	104	5.13	36	1.78
Other	2370	87.94	188	6.98	79	2.93	58	2.15
Rank/Pay Grade								
Junior Enlisted	7050	85.34	696	8.43	337	4.08	178	2.15
Senior Enlisted	5021	90.78	279	5.04	159	2.87	72	1.30
Warrant Officer/Officer	2269	94.90	95	3.97	19	0.79	8	0.33

Table C-4. Percent Positive Screen for Potential Hazardous Drinking Based on Military-Specific AUDIT-C Cutoff Scores, by Gender, Rank, and Race/Ethnicity (N = 16,045)

	Potentially Hazardous Drinking	
	n	%
Gender		
Male	2,796	20.01
Female	330	15.93
Race/Ethnicity		
White only	1,795	19.31
Hispanic or Latino only	441	16.77
Black or African American only	329	14.22
Other	448	14.94
Rank/Pay Grade		
Junior Enlisted	1,731	21.37
Senior Enlisted	978	18.06
Officer/Warrant Officer	391	16.65

Glossary

Acronyms/Abbreviations

AFN

American Forces Network

APHC

U.S. Army Public Health Center

AUDIT-C

Alcohol Use Disorders Identification Test - Concise

BHAT

Behavioral Health Advisory Team

CDC

Centers for Disease Control and Prevention

CI

Confidence Interval

DCIFS-4

Dyadic Coping Inventory- 4 item version

EFMP

Exceptional Family Member Program

FRAGO

Fragmentary Order

GAD-2

Generalized Anxiety Disorder 2-item

GED

General Education Degree

ISI

Insomnia Severity Index

MEDOPS

Medical Operations

MFLC

Military and Family Life Consultant

NIH

National Institutes of Health

OIF

Operation Iraqi Freedom

OEF

Operation Enduring Freedom

OR

Odds Ratio

PAO

Public Affairs Officers

PHQ-2

Patient Health Questionnaire-2

PHQ-9

Patient Health Questionnaire-9

SD

Standard Deviation

USAREUR

U.S. Army Europe

WRAIR

Walter Reed Army Institute of Research