

# **Food Insecurity within the Military: A Review of Existing Research**

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## Mission

To support military families by mobilizing research into practical applications across the spectrum of family support, resilience, and readiness.

## Purpose

The purpose of Military REACH, a project of the DoD-USDA Partnership for Military Families, is to bridge the gap between military family research and practice. To facilitate the DoD's provision of high-quality support to military families, our objective is to make research *practical* and *accessible*. Our team critically evaluates and synthesizes research that speaks to issues of family support, resilience, and readiness. We identify meaningful trends and practical applications of that research, and then, we deliver research summaries and action-oriented implications to military families, direct service helping professionals, and those who work on behalf of military families.

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## **Food Insecurity within the Military: A Review of Existing Research**

**Purpose:** The Military REACH team was asked to compile an annotated bibliography providing a general overview of the prevalence of and potential risk factors for food insecurity, including (but not limited to) military families. In addition, the Military REACH team was asked to identify research on programs that may mitigate food insecurity. Thus, research on the effectiveness of programs to reduce food insecurity and articles that addressed policy implications were included. Further, a list of resources that have been designed to address food insecurity was provided. Given that the COVID-19 pandemic has increased issues related to food insecurity, the Military REACH team also included research on the impacts of COVID-19 on food insecurity.

**Methodology:** For this review, research was gathered from several electronic databases (e.g., Academic Search Premier, PsycINFO, Google Scholar) and by reviewing empirical research published between 2010 and May 2021. Search terms included varying combinations of the following keywords: *food insecurity, hunger, poverty, military, Veterans, Service members, family, barriers, obstacles, challenges, programs, and United States*. After key terms are defined, articles are presented based on topic and alphabetical order. In accordance with the purpose described above, articles are organized into three topic areas: Prevalence and Risk Factors, Programs, and the Impact of COVID-19 on Food Insecurity. Following a section overview, for each article included, we provide the study citation and abstract along with a bulleted list of the key findings or primary takeaway points that align with the purpose of this document.

## TERMINOLOGY

Research on food insecurity includes a variety of similar terms that may be easily conflated, which may undermine any conclusions and implications drawn from studies that do not clearly conceptualize and operationalize the variables under investigation. In this section, we have provided definitions for the most common terms used throughout the literature on food insecurity to clarify how food insecurity is defined in the research and how it is often differentiated from similar constructs.

*Food security* can be defined as access by all household members at all times to sufficient food for an active, healthy life, whereas *food insecurity* means that at least one household member has experienced occasions in which they did not have adequate food due to limited finances and other resources that may support food acquisition (Coleman-Jensen et al., 2019). Food security can be further distinguished based on level of severity, such that households may range from high to very low food security (see Table 1). The level of food security is commonly determined based on responses to the United States Department of Agriculture (USDA) Food Security Module (FSM; Bickel et al., 2000). This 18-item measure asks respondents whether they have experienced a variety of conditions or behaviors within the past year (see Appendix A). Broadly speaking, higher scores reflect greater food insecurity. As indicated in Table 1, the number of affirmative responses determines the specific level of food insecurity experienced by a given household. For instance, if a member of the household reports “yes” to 9 items, then that household is categorized as very low in food security, meaning that at some point throughout the year the eating patterns of one or more individuals in the household were disrupted and their food consumption reduced due to economic constraints.

Table 1. Levels of Food Security

General Category	USDA Category	Description
<b>Food secure</b>	High food security	Household members have access at all times to enough food for an active, healthy lifestyle. <ul style="list-style-type: none"> <li>• 0 affirmative responses on FSM</li> </ul>
	Marginal food security	Although some household members reported concern about the amount of food in the house, there were no clear issues related to changes in food intake or diet. <ul style="list-style-type: none"> <li>• 1–2 affirmative responses on FSM</li> </ul>
<b>Food insecure</b>	Low food security	Some household members reported reduced quality, variety, or desirability of diet but not necessarily reduced food intake. <ul style="list-style-type: none"> <li>• With children: 3–7 affirmative responses</li> <li>• Without children: 3–5 affirmative responses</li> </ul>
	Very low food security	One or more household members reported multiple instances of disrupted eating patterns and reduced food intake. <ul style="list-style-type: none"> <li>• With children: 8+ affirmative responses</li> <li>• Without children: 6+ affirmative responses</li> </ul>

*Note.* Table adapted from information provided on USDA website.

It is also important to distinguish between food insecurity and a related term, *hunger*. *Food insecurity* is a construct that reflects a household's general inability to access food, whereas *hunger* is a physiological response to consuming insufficient food, which may result from food insecurity ([USDA](#)). Thus, hunger is distinct from food insecurity because food insecurity is generally conceptualized as a household experience, whereas hunger is an individual's experience and often a result of food insecurity. This annotated bibliography focuses specifically on food insecurity, although research focused on both hunger and food insecurity is included.

## **PREVALENCE and RISK FACTORS**

*Overview:* The articles presented in this section broadly examine the prevalence of food insecurity among military personnel (i.e., active-duty Service members, Veterans), as well as potential factors that may place military families at risk for food insecurity. Estimates of food insecurity among active-duty Service members and Veterans appear similar to estimates for civilian samples, although more research, particularly among active-duty Service members, is necessary to draw definitive conclusions. When food insecurity is reported among Service members and Veterans, it appears most commonly among those who are female, younger, single, less educated (i.e., high-school education), and have a greater number of children. In addition, study results suggest that those living on-installation and holding a lower rank most frequently report food insecurity among active-duty Service members. Additional considerations, such as access to affordable, healthy food options on military installations, may also bolster food security among military families.

Although research on the prevalence of food insecurity among the military population is quickly growing, many currently available studies have methodological limitations (e.g., overreliance on cross-sectional designs, lack of nationally representative samples) that make it difficult to draw strong conclusions. Moreover, researchers have devoted the most attention to the study of Veterans, with few empirical efforts focused exclusively on active-duty Service members. It also remains unclear whether the number of relocations (i.e., moves) is associated with food insecurity (see also Swann, 2017 under the programs and policies section).

**Becerra, M. B., Hassija, C. M., & Becerra, B. J. (2017). Food insecurity is associated with unhealthy dietary practices among US veterans in California. *Public Health Nutrition*, 20(14), 2569–2576. <https://doi.org/10.1017/S1368980016002147>**

#### ABSTRACT

US veterans (hereafter, ‘veterans’) are at risk for being overweight or obese and associated unhealthy behaviors, including poor diet; although limited studies have examined the underlying factors associated with such outcomes. As such, the present study evaluated the association between food insecurity and dietary practices among veterans. A secondary analysis of cross-sectional data from the California Health Interview Survey (2009, 2011/2012) was conducted. Survey weights were applied to identify univariate means, population estimates and weighted percentages. Bivariate analyses followed by survey-weighted negative binomial regression were used to model the association between food insecurity and dietary practices of fruit, vegetable, fast food and soda intakes. The California Health Interview Survey 2009–2011/2012 was used in which a total of 11,011 veterans from California completed the survey. Nearly 5 % of the studied veteran population reported living in poverty with food insecurity. Compared with those at or above the poverty level and those in poverty but food secure, the mean intakes of fruits and vegetables were lower, while the mean intakes of soda and fast foods ( $P$  for trend  $< .05$ ) were higher among veterans living in poverty with food insecurity. Food insecurity was associated with 24 and 142% higher average consumption of fast foods and soda, respectively, and 24 % lower fruit intake.

#### **Key points:**

- Approximately 5% of Veterans in California reported food insecurity.
- Veterans in poverty were likely to report lower fruit and vegetable intake and higher consumption of soda and fast foods.

**Beymer, M. R., Reagan, J. J., Rabbitt, M. P., Webster, A. E., & Watkins, E. Y. (2021). Association between food insecurity, mental health, and intentions to leave the US Army in a cross-sectional sample of US soldiers. *The Journal of Nutrition*, nxab089.**

<https://doi.org/10.1093/jn/nxab089>

#### ABSTRACT

Previous research has demonstrated that certain groups in the United States are at a greater risk for food insecurity. However, food insecurity has not been sufficiently characterized in active duty military populations. The primary objective of this study was to determine the prevalence of marginal food insecurity at a large US Army installation. The secondary objective was to determine how marginal food insecurity may be associated with intentions to leave the US Army after the current service period (“intentions to leave”). A cross-sectional, online survey was administered by the US Army Public Health Center at an Army installation in 2019 (n = 5677). The main predictor was the 2-item food insecurity screener (Hunger Vital Signs), and the main outcome was a 5-point Likert question, “How likely are you to leave the army after your current enlistment/service period?” that was dichotomized for this analysis. Multiple logistic regression was used to assess the association between marginal food insecurity and intentions to leave. Mental health covariates were analyzed as a potential mediator. The sample was primarily male (83%), age >25 y (49%), and White (56%). One-third of respondents were classified as marginally food insecure using the Hunger Vital Signs, and 52% had intentions to leave. There was no significant association between marginal food insecurity and intentions to leave in the composite multivariable model, but mediation analyses revealed that food insecurity was significantly and independently associated with anxiety, depression, and suicidal ideation, which was in turn associated with intentions to leave. The association between marginal food insecurity and mental health showed that addressing food insecurity could improve mental health and subsequently reduce intentions to leave. Solutions to reduce military food hardship include expanding Supplemental Nutrition Assistance Program eligibility requirements, improving food resources communication, and expanding healthy food choices on-post.

#### **Key points:**

- One-third of respondents were classified as marginally food insecure.
- 52% of respondents intended to leave the Army.
- There was no significant direct association between marginal food insecurity and intention to leave the Army. However, mediation analyses revealed that food insecurity was associated with greater anxiety, depression, and suicidal ideation, which, in turn, were associated with intention to leave the Army.



**Blue Star Families (2020). Military Family Lifestyle Survey Comprehensive Report. The latest on military family food insecurity. Retrieved from: [https://bluestarfam.org/wp-content/uploads/2021/03/BSF\\_MFLS\\_CompReport\\_FULL.pdf](https://bluestarfam.org/wp-content/uploads/2021/03/BSF_MFLS_CompReport_FULL.pdf)**

#### ABSTRACT

This report reflects an annual survey of experiences and challenges reported by military families. Quantitative and qualitative data is collected on a wide range of topics, (e.g., healthcare, education), including food insecurity. This study estimated the prevalence of food insecurity with an emphasis on populations more directly impacted of food insecurity. Cross-sectional study in which participants ( $N=1,757$ ) were recruited using snowball sampling. Participants mainly consisted of Service members (17%), Veterans (20%), and partners of Service members/Veterans (45%). 79% of the sample was between the ages of 25 and 54 years old; 73% of the sample was White and represented across all military branches of service and ranks.

#### Key points:

- 14% (or 1 in 7) of active-duty enlisted respondents reported low (i.e., 9%) or very low (i.e., 5%) food insecurity.
- Junior enlisted respondents (E1–E4) reported the highest level of food insecurity (29%).
- 20% of active-duty spouse respondents who were unemployed reported food insecurity compared to 10% who were employed.
- Qualitative research also suggested that military families struggled to obtain assistance because the basic housing allowance (BAH) was considered in families' eligibility. Thus, the authors recommended that new legislation should exclude BAH as income in the determination of eligibility and benefits for all federal nutrition assistance programs.
  - “... We don't qualify for food assistance by the state because they count the BAH into our income.”  
—E4 Active-duty Service Member

Brostow, D.P., Gunzburger, E. & Thomas, K.S. Food insecurity among veterans: Findings from the health and retirement study. *Journal of Nutrition Health Aging*, 21, 1358–1364. <https://doi.org/10.1007/s12603-017-0910-7>

#### ABSTRACT

We examined the prevalence of food insecurity in an older population, specifically assessing factors associated with food insecurity among U.S. military Veterans. Data from the 2012 wave of the Health and Retirement Study and the 2013 Health Care and Nutrition Mail Survey of 2,560 male participants (1, 254 Veterans) were used to estimate the prevalence of food insecurity and to identify significant predictors of food insecurity among male Veterans. Among male Veterans, 6.4% reported food insecurity, compared to 11.9% of male non-veterans ( $p < 0.01$ ). Younger age, difficulty with daily activities and depression were significantly associated with increased odds of food insecurity among male Veterans aged 50 to 64. In male Veterans age 65 years and older, current smoking, a psychiatric diagnosis and depression were significantly associated with increased odds of food insecurity. This study identified significant factors that may be used to target interventions to improve nutritional status among older male Veterans.

#### Key findings:

- Older male Veterans reported lower rates of food insecurity (6.4%) compared to their non-Veteran peers (11.9%).
- Difficulty with daily activities, depression, smoking, and psychiatric diagnoses are risk factors of food insecurity among older men Veterans.

Chukwura, C. L., Santo, T. J., Waters, C. N., & Andrews, A. (2019). 'Nutrition is out of our control': Soldiers' perceptions of their local food environment. *Public Health Nutrition*, 22(15), 2766-2776. <https://doi.org/10.1017/S1368980019001381>

\*Although this article did not focus specifically on food insecurity, the emphasis placed on Soldiers' perceived food options may have meaningful implications for instances of low food security (i.e., reduced *quality* of food consumption).

#### ABSTRACT

The objective of this study was to explore the perceptions of soldiers participating in a US Army Office of The Surgeon General's worksite health promotion program (WHPP) on the local food environment within their campus-style workplace. Focus groups were conducted to evaluate the perceived effectiveness of the WHPP implementation. Further exploration of focus group data through thematic analysis focused on perceived contributions of the military campus-style food environment to soldiers' nutrition behaviors. Participants consisted of active-duty soldiers ( $n = 366$ ) involved in one of the fifty-eight focus groups that took place across three US Army installations located in the continental USA. Soldiers shared a common belief of self-discipline and personal responsibility as the foothold to nutrition behavior change. Soldiers described aspects of the military campus-style food environment as factors impeding achievement of optimal nutrition. Collectively, soldiers perceived the proximity and density of fast-food restaurants, lack of healthy alternatives on the installation and the cost of healthy food as inhibitors to choosing healthy foods. Overwhelmingly, soldiers also perceived time constraints as a factor contributing to unhealthy food choices. Although nutrition behavior is individually driven, soldiers perceived the military campus-style food environment inhibits healthy decision making. Nutrition programming in military WHPP must integrate food environment changes to improve soldiers' nutrition behavior outcomes. Applicable to the military, food choice behavior studies suggest environmental changes must be appealing to young adults. Considerations for environmental changes should include an increased portion size for healthy options, broadened use of soldiers' daily food allowances on local produce and increased availability of grab-and-go options.

#### Key points:

- Soldiers believed that unhealthy food options were easy to access due to proximity and the number of available unhealthy food options. Comparatively, there was a lack of available healthy food options, and the cost of healthy food options was prohibitive.
- Additionally, time constraints limited soldiers' choices of food options, making it more likely that they would choose an unhealthy food option because it was nearby.

**Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2019). Household Food Security in the United States in 2018. Retrieved from: [www.ers.usda.gov](http://www.ers.usda.gov)**

#### ABSTRACT

This report presents findings from data collected in December 2019 for the year that preceded the Coronavirus Disease (COVID-19) pandemic. An estimated 89.5 percent of U.S. households were food secure throughout the entire year in 2019, with access at all times to enough food for an active, healthy life for all household members. The remaining households (10.5 percent, down from 11.1 percent in 2018) were food insecure at least some time during the year, including 4.1 percent with very low food security (not significantly different from 4.3 percent in 2018). Very low food security is the more severe range of food insecurity where one or more household members experienced reduced food intake and disrupted eating patterns at times during the year because of limited money and other resources for obtaining food. Among children, changes from 2018 in food insecurity and very low food security were not statistically significant. Children and adults were food insecure in 6.5 percent of U.S. households with children in 2019; very low food security among children was 0.6 percent. In 2019, the typical food-secure household spent 24 percent more on food than the typical food-insecure household of the same size and household composition. About 58 percent of food-insecure households participated in one or more of the three largest Federal nutrition assistance programs: Supplemental Nutrition Assistance Program (SNAP, formerly food stamps); Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); and the National School Lunch Program during the month prior to the 2019 survey.

#### **Key points:**

- 10.5% (13.7 million households) of U.S. households reported some level of food insecurity in 2019, whereas 89.5% of U.S. households were food secure throughout 2019.
- 4.1% of U.S. households without children (5.3 million households) had *very low food security* in 2019.
- Children experienced food insecurity at the rate of 6.5% in 2019.

Cypel, Y. S., Katon, J. G., Schure, M. B., & Smith, S. (2020). Food insecurity in US military veterans. *Food and Nutrition Bulletin*, 41(4), 399-423.

<https://doi.org/10.1177/0379572120963952>

#### ABSTRACT

We assessed how food insecurity (FI) has been examined in US military veterans by identifying (1) the major content areas, or domains, studied in association with FI and (2) the existing research gaps. A scoping literature review was conducted to map the main research domains of the FI literature and identify knowledge gaps. Electronic database and hand searches identified potentially relevant studies ( $n = 61$ ). Data extraction, utilizing a standardized set of design parameters, was completed. Duplicate removal and application of inclusion/exclusion criteria resulted in the studies ( $n = 21$ ) selected for critical review. Eight research domains were determined: FI prevalence, health status, dietary practices, health care utilization, economic instability, homelessness/housing instability, food program participation, and community/emergency preparedness—the most dominant was health status and the least dominant were social determinants (i.e., homelessness/housing instability, food program participation). Research on validity and usability of FI assessment methods in veterans was virtually absent. Military service factors, longitudinal effects, FI among women, intervention effectiveness, and other areas lacked sufficient inquiry. Research is required on lesser examined content areas and methodology to optimize surveillance and policy for veteran FI.

#### Key points:

- The authors identified eight common themes in research about food insecurity among Veterans:
  - Prevalence
  - Health status
  - Dietary practices
  - Health care utilization
  - Economic stability
  - Homelessness/housing instability
  - Food program participation
  - Community/emergency preparedness factors
- Most empirical research was devoted to research on health status, whereas comparatively less research focused on homelessness/housing instability and food program participation.
- Scant research was available that focused exclusively on food insecurity among women Veterans.
- Research on food insecurity among Veterans is rapidly growing. However, existing research has important methodological limitations (e.g., lack of representative samples, overreliance on cross-sectional studies, inadequate details about military service characteristics) that prevent drawing strong conclusions from the literature.

**Greene, C., Deschamps, B., & Bustillos, B. (2020). The prevalence and associated characteristics of food insecurity among US Army Soldiers. *Current Developments in Nutrition*, 4(Supplement 2), 195-195. [https://doi.org/10.1093/cdn/nzaa043\\_046](https://doi.org/10.1093/cdn/nzaa043_046)**

#### ABSTRACT

Food insecurity affects 11% of the United States (U.S.) population and leads to decrements in health and quality of life. Aside from grey literature, little is known about food insecurity among military personnel. The purpose of this study was to identify prevalence, gender discrepancies, and characteristics associated with food insecurity among U.S. Army soldiers. Investigators hypothesized that female soldiers who experience food insecurity will have higher body mass indices (BMI) than male soldiers, and that earning less income, being un-partnered, and having dependents while unmarried would be associated with food insecurity, irrespective of gender. In this cross-sectional study, data were collected from 218 soldiers using the U.S. Household Food Security Survey Module: Six Item Short Form and a demographics questionnaire. Independent samples T-test and Chi square determined differences between samples. Two-way analysis of variance assessed interaction and main effects of food insecurity and gender on BMI. Logistic regressions determined likelihood of food insecurity based on paygrade, gender, marital status, number of dependents, and barracks residence. Over 22% of the sampled population was food insecure. When compared to food secure individuals, food insecure soldiers were younger (23.6 vs. 26.6 years) and had fewer dependents (0.70 vs. 1.16). Food insecure women had higher BMIs (25.3 vs. 23.5 kg/m<sup>2</sup>). Barracks residency was associated with food insecurity ( $\chi^2 = 7.290, P = 0.007$ ). Main effects were significant for gender on BMI ( $P = 0.001$ ), but interaction effects for food insecurity on BMI were not ( $P = 0.16$ ). Soldiers with the rank of Private (OR = 5.510,  $P = 0.029$ ) and Specialist (OR = 5.750,  $P = 0.032$ ) had increased likelihood of food insecurity compared to officers.

#### Key points:

- Approximately 22% of soldiers experienced food insecurity; however, the small size of the sample limits its generalizability.
- Soldiers who were female, younger in age, had fewer children, lived in the barracks, and more likely to have the rank of Private or Specialist were more likely to experience food insecurity.

**Jablonski, B. B., McFadden, D. T., & Colpaart, A. (2016). Analyzing the role of community and individual factors in food insecurity: Identifying diverse barriers across clustered community members. *Journal of Community Health, 41(5), 910-923.***

<https://doi.org/10.1007/s10900-016-0171-0>

#### ABSTRACT

This paper uses the results from a community food security assessment survey of 684 residents and three focus groups in Pueblo County, Colorado to examine the question: what community and individual factors contribute to or alleviate food insecurity, and are these factors consistent throughout a sub-county population. Importantly, we use a technique called cluster analysis to endogenously determine the key factors pertinent to food access and fruit and vegetable consumption. Our results show significant heterogeneity among sub-population clusters in terms of the community and individual factors that would make it easier to get access to fruits and vegetables. We find two distinct clusters of food insecure populations: the first was significantly less likely to identify increased access to fruits and vegetables proximate to where they live or work as a way to improve their household's healthy food consumption despite being significantly less likely to utilize a personal vehicle to get to the store; the second group did not report significant challenges with access, rather with affordability. We conclude that though interventions focused on improving the local food retail environment may be important for some subsamples of the food insecure population, it is unclear that proximity to a store with healthy food will support enhanced food security for all. We recommend that future research recognizes that determinants of food insecurity may vary within county or zip code level regions, and that multiple interventions that target sub-population clusters may elicit better improvements in access to and consumption of fruits and vegetables.

#### **Key points:**

- Two subgroups of civilians were differentiated in their experience of food insecurity: those with less *access* to healthy food options and those who simply could not *afford* food options. Those with less access to healthy food options desired to eat healthier foods, but a primary barrier was a lack of transportation to obtain such foods. Alternatively, those who could not afford healthy food options typically avoided the purchase of such foods because they were more expensive.
- Those with less *access* to food options may not consider driving to obtain healthier food options, perhaps because healthier food options are also more costly.
- Importantly, the authors note that although several factors may drive individuals' decisions to purchase healthy food options, the cost of healthy foods seemed to be the most important factor in determining whether participants would purchase healthy foods.

**Kamdar, N., Lester, H. F., Daundasekara, S. S., Greer, A. E., Hundt, N. E., Utech, A., & Hernandez, D. C. (2021). Food insecurity: Comparing odds between working-age veterans and nonveterans with children. *Nursing Outlook*, 69(2), 212-220.**

<https://doi.org/10.1016/j.outlook.2020.08.011>

#### ABSTRACT

The purpose of this study was to evaluate odds of food insecurity for working-age Veterans with children compared to socioeconomically-matched nonveterans with children. We constructed a propensity score-matched cohort using 2011–2014 National Health and Nutrition Examination Survey data. Covariate-adjusted logistic regressions estimated Veterans' odds for overall food insecurity and for each level of severity compared to nonveterans. We matched 155 Veterans to 310 nonveterans on gender, race/ethnicity, education, income. Models were adjusted for age, marital-status, depression, and listed matched variables. Although Veteran-status had no effect on overall food insecurity (odds ratio = 1.09, 95% confidence interval [0.62,1.93]), Veteran-status increased odds for very low food security (odds ratio = 2.71, 95% confidence interval [1.21, 6.07]). Veterans do not have higher odds of food insecurity than non-veterans, but they are more likely to have the more severe very low food security (often associated with hunger) than non-veterans. Investigation of food insecurity's impact on Veteran health/well-being is needed.

#### Key points:

- Prior research investigating the differences between civilian and Veteran populations in food insecurity has not adequately captured key sociodemographic differences. This study used propensity score matching in an attempt to draw accurate comparisons between civilians and Veterans.
- Overall, Veterans did not have higher odds of food insecurity than civilians. However, when comparing Veterans' and civilians' risk of *very low food security* (i.e., the lowest level of food security), Veterans had 2.7 increased odds of reporting *very low food security*.



**Kamdar, N. P., Horning, M. L., Geraci, J. C., Uzdavines, A. W., Helmer, D. A., & Hundt, N. E. (2021). Risk for depression and suicidal ideation among food insecure US veterans: Data from the National Health and Nutrition Examination Study. *Social Psychiatry and Psychiatric Epidemiology*. Advanced online publication.**

#### ABSTRACT

Using a US-based sample, this study evaluated the association between food insecurity and suicidal ideation among Veterans. Because depression often precedes suicide, we also examined the association between food insecurity and depression. Using data from 2630 Veterans who participated in the National Health and Nutrition Examination Survey 2007–2016, we conducted an adjusted linear regression model to evaluate the association between food insecurity (measured using 18-item Household Food Security Survey) and depression (measured using PHQ-9) and an adjusted binary logistic regression model to evaluate the association between food insecurity and suicidal ideation (measured using PHQ-9 Question 9). Models were adjusted for gender, age, income-to-poverty ratio, race/ethnicity, and education level. Of the sample, 11.5% were food insecure, depression scores averaged 2.86 (SD = 4.28), and 3.7% endorsed suicidal ideation. Veterans with marginal ( $\beta = 0.68$ , 95%CI [0.09,1.28]), low ( $\beta = 1.38$ , 95%CI [0.70,2.05]) or very low food security ( $\beta = 3.08$ , 95%CI [2.34, 3.83]) had significantly increased depression scores compared to food secure Veterans. Veterans with low (OR = 2.15, 95%CI [1.08, 4.27]) or very low food security (OR = 3.84, 95%CI [2.05, 7.20]) had significantly increased odds for suicidal ideation compared to food secure Veterans.

#### Key points:

- 11.5% of the Veterans in this sample reported food insecurity.
- Compared to food-secure Veterans, Veterans who experienced any level of food insecurity (i.e., marginal, low, and very low) were also likely to report greater depressive symptoms.
- Veterans who reported low or very low food insecurity tended to report higher levels of suicidal ideation compared to Veterans who experienced food security.

**Kamdar, N., True, G., Lorenz, L., Loeb, A., & Hernandez, D. C. (2020). Getting food to the table: Challenges, strategies, and compromises experienced by low-income veterans raising children. *Journal of Hunger & Environmental Nutrition*, Advanced online publication. <https://doi.org/10.1080/19320248.2020.1855284>**

#### ABSTRACT

Using photo-elicitation, 17 low-income, post-9/11 Veterans with children residing in/near Houston, TX shared experiences getting food to their table. Limited money, time, and disabilities challenged access to healthy meals. Limited resources decreased choice and control over what Veterans fed their children. Affordable, accessible food fell below nutritional standards. Veterans rationed their own intake to preserve food for their children. Informed by Veterans' experiences, we developed a model of three factors – resources, personal capacity, and culture – that influence quality, quantity, and type of food low-income Veterans access. Policies to help Veterans increase access to nutritious food need to consider these factors.

#### **Key points:**

- Veterans with children reported that economic and time constraints as well as military-connected mental and physical health disabilities make it difficult to gain access to food.
- Veterans also reported that financial constraints limited their food choices, and the food options that Veterans could afford did not meet their children's dietary needs. For instance, Veterans noted that the cost of transportation (e.g., gas, car repairs) often reduced how much money the family could spend on food. Due to limited money, Veterans also worked at other jobs or more hours, which limited the amount of time they had to purchase and prepare food.

**Kimball, S. & Hurwitz, J. (2019). *Military family support programming: Survey 2019 results*. Retrieved from: <https://militaryfamilyadvisorynetwork.org/wp-content/uploads/MFAN2019SurveyResults.pdf>**

#### ABSTRACT

The Military Family Advocacy Network (MFAN) conducts research on issues that military families may experience with the goal to improve their lives. MFAN collected data from 7,785 respondents on various topics, including food insecurity. Data was collected on demographics, food insecurity (USDA 6-item scale), and loneliness. Qualitative data was also collected from respondents. One out of eight respondents (12.7%) experienced some form of food insecurity. Among military families with children, 23.8% reported that their children receive free lunch or reduced meals at school. To deal with food insecurity, respondents reported times in which they utilized family and community resources, skipped meals, incurred credit card debt, and found extra jobs.

#### **Key points:**

- 12.7% of the sample reported experiencing food insecurity throughout the year. More specifically, 5% reported *low food security*, whereas 7.7% reported *very low food security*.
- Respondents with high-school diplomas were more likely to experience food insecurity than those with bachelor's or master's degrees.
- There was also a relationship between military rank and food insecurity, such that military families whose Service member held a lower rank were likely to report greater food insecurity.
- Respondents indicated various ways in which they attempted to acquire more food. More specifically, they sought assistance from family members and community organizations (i.e., food pantries), skipped meals, incurred more credit card debt, and even found additional jobs.

**Miller, D., Larson, M., Byrne, T., & DeVoe, E. (2016). Food insecurity in veteran households: Findings from nationally representative data. *Public Health Nutrition, 19*(10), 1731-1740. doi:10.1017/S1368980015003067**

#### ABSTRACT

This study examined nationally representative data to compare rates of food insecurity among households with veterans of the US Armed Forces and non-veteran households. We used data from the 2005–2013 waves of the Current Population Survey – Food Security Supplement to identify rates of food insecurity and very low food security in veteran and non-veteran households. We estimated the odds and probability of food insecurity in veteran and non-veteran households in uncontrolled and controlled models. We replicated these results after separating veteran households by their most recent period of service. We weighted models to create nationally representative estimates. Nationally representative data from the 2005–2013 waves of the Current Population Survey – Food Security Supplement ( $N= 388,680$ ). Uncontrolled models found much lower rates of food insecurity (8.4 %) and very low food security (3.3 %) among veteran households than in non-veteran households (14.4 % and 5.4 %, respectively), with particularly low rates among households with older veterans. After adjustment, average rates of food insecurity and very low food security were not significantly different for veteran households. However, the probability of food insecurity was significantly higher among some recent veterans and significantly lower for those who served during the Vietnam War.

#### Key points:

- Veteran households who served prior to/during the Vietnam War were at a lower risk of food insecurity compared to Veterans who served more recently.
- Unadjusted rates of food insecurity showed that Veteran households reported lower rates of food insecurity (i.e., 8.4% food insecure, 3.3% very low food security) compared to non-Veteran households (14.4% food insecure, 5.4% very low food security).
- After accounting for variation in relevant sociodemographic variables (e.g., age education, number of children, home ownership, time of service), Veteran households did not differ from non-Veterans in food insecurity.
- While also accounting for Veteran status, the following demographic factors were associated with food insecurity:
  - Unemployment
  - Disabled
  - Female
  - Age (i.e., younger participants)
  - Race (races of color compared to Whites)
  - Marital status (e.g., divorced, separated, never married, widowed)
  - Less than a high-school education
  - Lived in a hotel or mobile home
  - Met the household income-level threshold for poverty
  - Received SNAP, WIC, or reduced-price meals from the National School Lunch Program, School Breakfast Program, or a Head Start program.

Narain, K., Bean-Mayberry, B., Washington, D. L., Canelo, I. A., Darling, J. E., & Yano, E. M. (2018). Access to care and health outcomes among women veterans using Veterans Administration health care: Association with food insufficiency. *Women's Health Issues, 28*(3), 267-272. <https://doi.org/10.1016/j.whi.2018.01.002>

#### ABSTRACT

Women veterans have more risk factors for food insecurity, relative to male veterans, yet little is known about the prevalence of food insecurity in this cohort. We used the Women Veterans' Health Utilization and Experience Survey for this analysis. Our study population consisted of women veterans who had at least three primary care or women's health visits to 1 of 12 Veteran's Health Administration health care facilities from December 2013 to November 2014. Multiple logistic regression was used to examine the relationship between food insufficiency (an inadequate amount of food intake owing to a lack of money or resources), delayed/missed care, anxiety, depression, and self-reported fair to poor health, controlling for race/ethnicity, marital status, and employment status. The prevalence of food insufficiency among women veterans was 27.6%. Being food insufficient was associated with 16.4, 15.4, 14.9, and 12.1 percentage point increases in the probability of delayed/missed care, screening positive for anxiety, screening positive for depression, and reporting fair to poor health, respectively ( $p < .05$ ).

#### Key points:

- 27.6% of women Veterans reported food insecurity.
- Food insecurity was related to delays in health care and poor mental health (i.e., diagnosis of anxiety and depression). The authors suggested that this result potentially emerged because Veterans may have to decide whether to spend available money on food rather than necessary health care treatments.

**Pooler, J. A., Srinivasan, M., Miller, Z., & Mian, P. (2021). Prevalence and risk factors for food insecurity among low-income US military veterans. *Public Health Reports*, Advance online publication. <https://doi.org/10.1177/0033354920974662>**

We examined the prevalence and predictors of food insecurity among low-income veterans, because the highest rates of food insecurity are among low-income households. We also examined rates of Supplemental Nutrition Assistance Program (SNAP) participation among subgroups at the highest risk of food insecurity. We used univariate analyses and 2011-2017 National Health Interview Survey (NHIS) data on veterans aged  $\geq 21$  with family incomes  $< 200\%$  of the federal poverty level to estimate the prevalence of food insecurity. We used bivariate analyses to identify correlates of food insecurity and estimate SNAP participation rates among subgroups of low-income veterans. Percentages were weighted using NHIS survey weights. The results show that of 5,146 low-income veterans, 22.5% reported being food insecure in the previous month. Food insecurity was significantly associated with being aged  $< 65$  (33.0% aged 45-64 and 29.7% aged 21-44) compared with 15.0% and 6.4% among veterans aged 65-74 and  $\geq 75$ , respectively ( $p < .001$ ); unemployed compared with employed or not in the labor force (39.4%, 22.7%, and 20.2%, respectively;  $p < .001$ ); in fair or poor health compared with good, very good, or excellent health (31.8% vs 18.2%;  $p < .001$ ); and having experienced serious psychological distress in the past month (56.3%) compared with not having experienced such distress (19.7%;  $p < .001$ ). Although overall SNAP participation among low-income veterans was estimated to be 27.0%, participation rates were highest among veterans who had experienced serious psychological distress (44.1%), were unemployed (39.2%), and were renting their home (39.0%).

**Key points:**

- 22.5% of respondents reported food insecurity in the previous month.
- Important correlates of food insecurity were identified. More specifically, Veterans who were younger ( $< 65$ ), unemployed, in poor/fair health, and reported psychological distress were most likely to report food insecurity.
- An estimated 27.0% of low-income Veterans participated in SNAP.
- Engagement in SNAP was highest among low-income Veterans who experienced psychological distress, were unemployed, and lived in a rented home.

Schure, M. B., Katon, J. G., Wong, E., & Liu, C.-F. (2016). Food and housing insecurity and health status among U.S. adults with and without prior military service. *SSM - Population Health*, 2, 244–248. <https://doi.org/10.1016/j.ssmph.2016.04.003>

#### ABSTRACT

Food and housing insecurity may contribute to poorer mental and physical health. It is unclear as to whether those with prior military service, compared to those without, are more vulnerable to these current stressors. The objective of this study was to use U.S. population-based data to determine whether prior military service moderates the association of food and housing insecurity with poor mental and physical health. We analyzed data from nine states administering the Social Context module from the 2011 and 2012 Behavioral Risk Factor Surveillance System. Multivariable logistic regression was used to examine the associations of housing and food insecurity with poor mental and physical health and potential modification by military service. Compared with those with a history of military service, those without had higher prevalence of food insecurity (23.1% versus 13.7%) and housing insecurity (36.0% versus 22.5%). Food insecurity was associated with poor mental and physical health (mental health: odds ratio (OR)=3.47, 95% confidence interval (CI)=[3.18–3.77]; physical health: OR=3.21, 95% CI=[2.92–3.53]). Similar associations were observed between housing insecurity and poor mental and physical health. Prior military service was significantly associated with poor physical health. Interaction terms of prior military service with food and housing were not statistically significant. Food and housing insecurity does not appear to differentially impact mental and physical health among those with and without military service.

#### Key points:

- Food and housing insecurity were more prevalent among adults with no prior military service than those who had served.
- Prior military service does not appear to alter the negative impact of housing and food insecurity on physical and mental health.

Wang, E. A., McGinnis, K. A., Goulet, J., Bryant, K., Gibert, C., Leaf, D. A., Mattocks, K., Fiellin, L. E., Vogenthaler, N., Justice, A. C., Fiellin, D. A., & The Veterans Aging Cohort Study Project Team. (2015). Food insecurity and health: Data from the Veterans Aging Cohort Study. *Public Health Reports*, 130(3), 261–268.  
<https://doi.org/10.1177/003335491513000313>

#### ABSTRACT

Food insecurity may be a modifiable and independent risk factor for worse control of medical conditions, but it has not been explored among veterans. We determined the prevalence of, and factors independently associated with, food insecurity among veterans in the Veterans Aging Cohort Study (VACS). Using data from VACS from 2002–2008, we determined the prevalence of food insecurity among veterans who have accessed health care in the Veterans Health Administration (VA) as defined by “concern about having enough food for you or your family in the past month.” We used multivariable logistic regression to determine factors independently associated with food insecurity and tests of trend to measure the association between food insecurity and control of hypertension, diabetes, physiological indicators of HIV (e.g., white blood cell count), and depression. Results showed that of the 6,709 veterans enrolled in VACS, 1,624 (24%) reported being food insecure. Food insecurity was independently associated with being African American, earning \$25,000/year, recent homelessness, marijuana use, and depression. Being food insecure was also associated with worse control of hypertension, diabetes, physiological indicators of HIV, and depression ( $p < .001$ ).

#### Key points:

- 24% of Veterans reported experiencing food insecurity.
- Factors associated with higher risk of food insecurity included being Black, having low income, homelessness, marijuana use, and depression.
- Food insecurity may contribute to poorer control of health concerns (e.g., hypertension, diabetes, HIV, and depression). The authors speculate that these situations may emerge because Veterans who are food insecure may rely on unhealthy foods, which may compromise their physical health and weaken their immune system.



Wax, S. G., & Stankorb, S. M. (2016). Prevalence of food insecurity among military households with children 5 years of age and younger. *Public Health Nutrition*, 19(13), 2458–2466. <https://doi.org/10.1017/S1368980016000422>

#### ABSTRACT

The aim of the present study was to define the prevalence of food insecurity among households with young children utilizing military installation childcare facilities and to describe household characteristics associated with food insecurity among this population. This cross-sectional survey included demographic questions and the US Department of Agriculture Food Security Survey Module six-item short form given to households ( $n = 248$ ) enrolled in Joint Base San Antonio Child Development Centers (JBSA-CDC) during the spring of 2015. Respondents were Department of Defense families with at least one child less than 6 years old enrolled in a JBSA-CDC. Data were collected at a Joint Base in San Antonio, Texas. Nearly one in seven families reported food insecurity. Households were more likely to be food-insecure if the head of household's highest level of education was high school or equivalent ( $p = .003$ ) and if the head of household was unmarried/unpartnered ( $p = .001$ ). Among food-insecure households headed by military service members, all were junior enlisted or noncommissioned officers (E1–E9). Food-insecure households were less likely to live off-post in owned or rented homes compared with those who were food-secure ( $p = .016$ ). Other characteristics associated with food insecurity included at least one family member enrolled in the Exceptional Family Member Program ( $p = .020$ ) and more children in the household ( $p = .029$ ). Few families reported enrolment in government supplemental food programs.

#### Key points:

- The prevalence rate of food insecurity among the respondents was 14.9%.
- Food insecurity was most common in military families in which the head of the household had a high-school diploma or lower, was not married/partnered, and was likely to possess a rank between E1–E9.
- Food-insecure military families were more likely to live on-installation or in apartments off-installation than in homes off-installation.
- Households that had moved within the past year or experienced a deployment were not at greater risk for food insecurity. These results may be related to living in a very large US city with a variety of employment opportunities and increased deployment pay.
- Households with a disabled child were at greater risk of experiencing food insecurity compared to households without a disabled child.

**Widome, R., Jensen, A., Bangerter, A., & Fu, S. S. (2015). Food insecurity among veterans of the US wars in Iraq and Afghanistan. *Public Health Nutrition*, 18(5), 844-849.**  
<https://doi.org/10.1017/S136898001400072X>

#### ABSTRACT

Food insecurity, or lack of access to sufficient food for a healthful lifestyle, has been associated with many aspects of poor health. While the economic struggles among veterans of the wars in Iraq and Afghanistan have been documented, it is unknown how commonly this population struggles to afford food. Our purpose was to document the prevalence and correlates of food insecurity among US veterans of the wars in Iraq and Afghanistan. A cross-sectional that included US military veterans who had served in the wars in Iraq and Afghanistan since October 2001. Subjects responded to a survey mailed to them in summer 2012. Food security was measured by the US Household Food Security Module: Six Item Short Form. Demographic and behavioral health items were also included. Survey data were matched to medical record data from the Department of Veterans Affairs. The results demonstrated that over one in four veterans reported past-year food insecurity with 12% reporting very low food security. Food-insecure veterans tended to be younger, not married/partnered, living in households with more children, earning lower incomes, had a lower final military pay grade, were more likely to use tobacco, reported more frequent binge drinking and slept less, compared with those who were food secure ( $p < .05$  for all associations listed).

#### **Key points:**

- 27% of post-9/11 Veterans reported experiencing low food security (15%) or very low food security (12%).
- Risk factors of food insecurity among post-9/11 Veterans included being younger, single, and unemployed or not active duty.
  - Note: This study was somewhat unclear regarding sample specifics. The study sample is described as “Veterans,” yet it appears that some respondents were currently active duty.
- Food-insecure Veterans averaged more children, a lower income, and poorer health behaviors (i.e., tobacco use, binge drinking, and less sleep) than food-secure Veterans.

## PROGRAMS

*Overview:* The articles included in this section highlight how various programs may help to reduce food insecurity. Without question, the most researched program to date on the topic of food insecurity is the Supplemental Nutrition Assistance Program (SNAP); however, research on whether SNAP reduces instances of food insecurity remain inconclusive. Nevertheless, the research does indicate that military members (i.e., active-duty Service members, Reservists/Guardsmen, Veterans) appear to use SNAP at a lower rate than civilians. In addition to providing empirical research, this section also includes a list of programs that provide food assistance that appear in the research on food insecurity (see Table 2).

**Table 2.** An overview of programs available for food assistance

<b>Program</b>	<b>Description</b>
<b>Federal Food Distribution Programs</b> <a href="#">Commodity Supplemental Food Program</a>	This federal program assists low-income people who are 60 or older with their health by adding nutritious foods to their diets.
<a href="#">The Emergency Food Assistance Program</a>	This federal program aids low-income Americans by providing them with free food assistance.
<b>Federal Child Nutrition Programs</b> <a href="#">Child and Adult Care Food Program</a>	This federal program provides reimbursements for meals and snacks to families who have children and/or adults who are enrolled in childcare centers and adult daycare centers.
<a href="#">Fresh Fruit and Vegetable Program</a>	This federal program combats childhood obesity by introducing fresh fruits and vegetables to elementary-aged children while they are at school.
<a href="#">National School Lunch Program</a>	This federally assisted meal program provides nutritious meals at free or reduced costs to children in school (i.e., public or nonprofit private) each day.
<a href="#">School Breakfast Program</a>	This federal program provides reimbursements to states that have nonprofit breakfast programs in schools and childcare facilities.
<a href="#">Special Milk Program</a>	This federal program provides reimbursements for milk provided to children in schools and childcare facilities that are not participating in other federal meal service programs.
<a href="#">Summer Food Service Program</a>	This federally funded, state-administered program reimburses programs that provide free healthy meals and snacks to children and teens in low-income areas.
<a href="#">Supplemental Nutrition Assistance Program (SNAP)</a>	This federal program supplements the food budgets of individuals and families in financial need so they can purchase healthy food.

<a href="#">Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)</a>	<p>This federal grant program provides states with supplemental foods, health care referrals, and nutritious education for low-income, pregnant, breastfeeding, and nonbreastfeeding postpartum women and to infants and children up to age 5.</p>
<a href="#">Farmers Market Nutrition Program</a>	<p>This federal program is associated with WIC, where eligible participants are issued coupons to use at farmers’ markets or roadside stands.</p>
<a href="#">Senior Farmers Market Nutrition Program</a>	<p>This federal program provides low-income seniors with access to locally grown foods.</p>
<p><b>Private Food Assistance Programs</b>  <a href="#">Feeding America</a></p>	<p>This private nonprofit is the United States’ largest domestic hunger-relief organization. There are over 200 food banks across the country that provide food at no or minimal cost.</p>
<a href="#">BackPack Program</a>	<p>This private program through Feeding America provides children who receive free or reduced-price meals at school with nutritious, easy-to-prepare foods for the weekends.</p>
<a href="#">Meals on Wheels</a>	<p>This private, nonprofit delivery meal program provides nutritious meals to adults aged 60 or older on a sliding pay scale.</p>
<a href="#">Veggie Van</a>	<p>This program was designed to address different dimensions of access to fresh produce for low-income and underserved communities.</p>
<a href="#">National 211 Hotline</a>	<p>Calling the number “211” connects individuals to a program that can assist them in finding different services they need within their local community. This is a resource that connects families to other resources.</p>

*Note.* Each program has eligibility requirements based on family circumstances. Please visit program websites for more details. Table is adapted from Flores and Amiri (2019).

Gregory, C. A., & Todd, J. E. (2021). SNAP timing and food insecurity. *PloS one*, 16(2), e0246946. <https://doi.org/10.1371/journal.pone.0246946>

#### ABSTRACT

This paper makes several contributions to the literature regarding the measurement of food insecurity and implications for estimating factors that affect this outcome. First, we show that receipt of benefits from the Supplemental Nutrition Assistance Program (SNAP) has a systematic effect on responses to questions in the 12-month food security module (FSM). We find that the probability of affirming more severe food hardships items, and the probability of being classified as having very low food security (VLFS), is higher just before and just after households receive their benefits. This leads to an under-estimate of VLFS by 3.2 percentage points for the SNAP sample (about 17 percent of prevalence). We also provide informative bounds on the relationship between SNAP and VLFS and show that the treatment effect of SNAP on VLFS is also likely underestimated.

#### Key points:

- SNAP recipients are likely to report experiencing very low food security in the days before and after they receive their SNAP benefits.
- Given the reduced prevalence of reports of food scarcity in the middle of the month, it is likely that asking SNAP recipients to report on food insecurity throughout the past year are *underestimates* of food insecurity.

London, A. S., & Heflin, C. M. (2015). Supplemental Nutrition Assistance Program (SNAP) use among active-duty military personnel, veterans, and reservists. *Population Research and Policy Review*, 34(6), 805-826. <https://doi.org/10.1007/s11113-015-9373-x>

#### ABSTRACT

Subpopulations have variable connections to specific institutions, such as the military, which can influence their use of social programs and access to resources. We use data from the 5-year (2008–2012) American Community Survey (ACS) public-use file to examine current Supplemental Nutrition Assistance Program (SNAP) use by military service status: *active-duty personnel*, *recent Veterans* (i.e., who were on active duty within the past year but are no longer), *long-term Veterans* (i.e., who were on active duty prior to the past year), and Reserve/Guard members. Overall and by military service status, we estimate weighted descriptive statistics and multivariate logistic regression models that include demographic and socioeconomic controls. We document low but non-trivial levels of participation among active-duty personnel (2.2%), higher but still moderate levels of SNAP use among Veterans (7.1% for recent Veterans and 6.5% for long-term Veterans), and the highest level of use among members of the Reserve/Guard (9.0%). Multivariate analyses support hypotheses based on the potential for the military, as a total institution, to substantially reduce use of SNAP among active-duty personnel, while Veterans and Reservists, who are more distal from food-related institutional resources, have higher likelihoods of using SNAP. Although levels of SNAP use among active-duty personnel, Veterans, and Reservists are lower than those observed in the national population, which includes those with no direct connection to military institutions, findings suggest that leaving active-duty military service results in a substantial and relatively immediate reduction in food-related resources for many recent veterans and their families. We discuss the implications of the findings for policy, limitations of the research, and directions for future research.

#### Key points:

- Participation rates of military personnel in SNAP:
  - Active-duty Service members (2.2%)
  - Recent Veterans (7.1%)
  - Long-term Veterans (6.5%)
  - Reserve/Guard (9.0%)
- SNAP usage appears to be lower among military members than among civilians.
- Reservists/Guardsmen and Veterans report a higher usage of SNAP compared to active-duty Service members.

**Ratcliffe, C., McKernan, S.-M., & Zhang, S. (2011). How much does the Supplemental Nutrition Assistance Program reduce food insecurity? *American Journal of Agricultural Economics*, 93(4), 1082–1098. <https://doi.org/10.1093/ajae/aar026>**

#### ABSTRACT

Nearly 15% of all U.S. households and 40% of near-poor households were food insecure in 2009. The Supplemental Nutrition Assistance Program (SNAP) is the cornerstone of federal food assistance programs and serves as the first line of defense against food-related hardship. This paper measures the effectiveness of SNAP in reducing food insecurity using an instrumental variables approach to control for selection. Individual-level data for the analysis come from the 1996, 2001, and 2004 Survey of Income and Program Participation (SIPP) panels. Each of these SIPP panels contains a nationally representative sample of between 36,000 and 46,000 households whose members are interviewed at four-month intervals about SNAP usage and food insecurity that occurred in the previous four months. Our results suggest that receipt of SNAP benefits reduces the likelihood of being food insecure by roughly 30% and reduces the likelihood of being very low food insecure by 20%.

#### **Key points:**

- SNAP appears to reduce reports of food insecurity by 30% and reports of very low food insecurity by 20%.

Swann, C. A. (2017). Household history, SNAP participation, and food insecurity. *Food Policy*, 73, 1-9. <https://doi.org/10.1016/j.foodpol.2017.08.006>

#### ABSTRACT

Food security is an important public policy issue. In 2015, approximately 1 in 8 U.S. households experienced food insecurity at some point in the year. Low-income families are at higher risk for food insecurity than other families, and these families may also face higher levels of disruption (e.g., moves, loss of income, or individuals entering or leaving the household) than other families. I use data from the Survey of Income and Program Participation to explore the relationship between food insecurity, the household's history during the previous year, and SNAP participation. The results indicate that a number of aspects of the household's recent experience including negative income shocks, moves, and both increases and decreases in household size increase the probability of being food insecure while SNAP participation is estimated to reduce the probability of being food insecure.

#### Key points:

- Households that have experienced negative financial changes were more likely to report SNAP usage.
- Households that engage in more relocations (i.e., moves) were more likely to report SNAP usage. More specifically, each move in the preceding year increases the probability of a household reporting food insecurity by 1.9 percentage points.
- Women were more likely to report instances of food insecurity.
- Food insecurity was most common among those aged 44 or younger.
- Having more children, adults, or disabled individuals in a household was estimated to increase the probability of SNAP usage.



Zhang, J., Wang, Y., & Yen, S. T. (2021). Does Supplemental Nutrition Assistance Program reduce food insecurity among households with children? Evidence from the Current Population Survey. *International Journal of Environmental Research and Public Health*, 18(6), 1 – 15. <https://doi.org/10.3390/ijerph18063178>

#### ABSTRACT

The Supplemental Nutrition Assistance Program (SNAP) is designed to improve household diet and food security—a pressing problem confronting low-income families in the United States. Previous studies on the issue often ignored the methodological issue of endogenous program participation. We revisit this important issue by estimating a simultaneous equation system with ordinal household food insecurity. Data are drawn from the 2009–2011 Current Population Survey Food Security Supplement (CPS-FSS), restricted to SNAP-eligible households with children. Our results add to the stocks of empirical findings that SNAP participation ameliorates food insecurity among adults only, but increases the probabilities of low and very low food security among children. These contradictory results indicate that our selection approach with a single cross section is only partially successful, and that additional efforts are needed in further analyses of this complicated issue, perhaps with longitudinal data. Sociodemographic variables are found to affect food-secure households and food-insecure households differently, but affect SNAP nonparticipants and participants in the same direction. The state policy tools, such as broad-based categorical eligibility (BBCE) and simplified reporting, can encourage SNAP participation and thus ameliorate food insecurity. Our findings can inform policy deliberations.

#### Key points:

- SNAP participation may decrease the likelihood of food insecurity among adults but *increased* the likelihood of food insecurity among households with children.
  - Note: The authors suggest that this may be a selection effect; that is, households with the severest food insecurity are most likely to participate in SNAP. These families may be more likely to have children, and, in these instances, SNAP may not fully meet their needs.
- The likelihood of food insecurity is higher among respondents who are younger, unemployed, and not White/Caucasian. Food insecurity risk was also higher among families with lower incomes, more children, less education, and more financial need for food.
- Compared to male-headed households, female-headed households were more likely to report food insecurity.

## IMPACT of COVID-19 on FOOD INSECURITY

*Overview:* The articles included in this section provide research findings on food insecurity since the beginning of the COVID-19 pandemic. Overall, research indicates that the COVID-19 pandemic has contributed to more households reporting food insecurity. The effects of the COVID-19 pandemic were especially pronounced among those who were already at risk of experiencing food insecurity. Moreover, the COVID-19 pandemic created more barriers for individuals to accessing affordable food options (e.g., limited food options, increased travel to purchase desired food).

**Fang, D., Thomsen, M. R., & Nayga, R. M. (2021). The association between food insecurity and mental health during the COVID-19 pandemic. *BMC Public Health*, 21(607), 1-8.**  
<https://doi.org/10.1186/s12889-021-10631-0>

### ABSTRACT

This study explored the association between food insecurity and mental health outcomes among low-income Americans during the COVID-19 pandemic. We conducted a survey of 2,714 low-income respondents nationwide from June 29, 2020 to July 21, 2020. A proportional odds logit model was employed to estimate the associations between food insecurity and anxiety and between food insecurity and depression. Food insecurity is associated with a 257% higher risk of anxiety and a 253% higher risk of depression. Losing a job during the pandemic is associated with a 32% increase in risk for anxiety and a 27% increase in risk for depression. Food insecurity caused by the pandemic was associated with increased risk of mental illness. The relative risk of mental illness from being food insecure is almost three-fold that of losing a job during the pandemic. Public health measures should focus on getting direct subsidies of food purchases to poor families, especially families with children. They should also reduce the stigma and shame that is associated with accepting charitable foods.

### Key points:

- Food insecurity reported during the pandemic was associated with substantially higher levels of anxiety and depressive symptoms.
- Job loss during the pandemic was related to higher levels of anxiety and depressive symptoms.

**Fitzpatrick, K. M., Harris, C., Drawve, G., & Willis, D. E. (2021). Assessing food insecurity among US Adults during the COVID-19 pandemic. *Journal of Hunger & Environmental Nutrition*, 16(1), 1–18. <https://doi.org/10.1080/19320248.2020.1830221>**

#### ABSTRACT

This research examines the intersection of sociodemographics, risk, and their impact on individual food insecurity odds during the COVID-19 pandemic. Data come from a national, poststratification weighted sample of U.S. adults ( $n = 10,368$ ). Logistic regression analysis confirms what we hypothesized—sociodemographic variables, fearfulness of contracting COVID-19, persons in poorer health, and those with higher levels of depressive and anxiety symptoms have higher food insecurity odds. Findings underscore the importance of redesigning food systems in the U.S. during health crises like the current one; alternative strategies to meet increased food needs in the face of a pandemic are discussed.

#### **Key points:**

- Greater likelihood of food insecurity was observed among individuals who were low-income, parents, and Black and/or Hispanic respondents, compared to their counterparts (i.e., individuals with higher incomes, no children, White/non-Hispanic).
- Those who reported higher levels of fear about COVID-19 were more likely to report food insecurity.
- Food insecurity was related to higher levels of anxiety and depressive symptoms.
- Subpopulations that were already at risk for food insecurity may experience an even greater level of risk for food insecurity due to the COVID-19 pandemic.

Niles, M. T., Bertmann, F., Belarmino, E. H., Wentworth, T., Biehl, E., & Neff, R. (2020). The early food insecurity impacts of COVID-19. *Nutrients*, 12(7), 1 – 19. <https://doi.org/10.3390/nu12072096>

## ABSTRACT

COVID-19 has disrupted food access and impacted food insecurity, which is associated with numerous adverse individual and public health outcomes. To assess these challenges and understand their impact on food security, we conducted a statewide population-level survey using a convenience sample in Vermont from 29 March to 12 April 2020, during the beginning of a statewide stay-at-home order. We utilized the United States Department of Agriculture six-item validated food security module to measure food insecurity before COVID-19 and since COVID-19. We assessed food insecurity prevalence and reported food access challenges, coping strategies, and perceived helpful interventions among food secure, consistently food insecure (pre- and post-COVID-19), and newly food insecure (post COVID-19) respondents. Among 3,219 respondents, there was nearly a one-third increase (32.3%) in household food insecurity since COVID-19 ( $p < 0.001$ ), with 35.5% of food insecure households classified as newly food insecure. Respondents experiencing a job loss were at higher odds of experiencing food insecurity (OR 3.06; 95% CI, 2.114–0.46). We report multiple physical and economic barriers, as well as concerns related to food access during COVID-19. Respondents experiencing household food insecurity had higher odds of facing access challenges and utilizing coping strategies, including two-thirds of households eating less since COVID-19 ( $p < 0.001$ ). Significant differences in coping strategies were documented between respondents in newly food insecure vs. consistently insecure households. These findings have important potential impacts on individual health, including mental health and malnutrition, as well as on future healthcare costs. We suggest proactive strategies to address food insecurity during this crisis.

### Key points:

- Approximately one-third of respondents reported an increase in household food insecurity among respondents. These results were most prominent among individuals who had experienced a job loss or disruption since COVID-19.
- COVID-19 appeared to increase the number of barriers to obtaining affordable and accessible food options. More specifically, respondents reported:
  - An inability to afford the amount or type of food that household members wanted to purchase
  - Difficulty finding enough food to purchase
  - Difficulty finding transportation to a food pantry and actually receiving food from food pantries (i.e., not enough supply)
  - Difficulty identifying resources that can provide food
  - Greater travel to find food
  - More COVID-19 safety concerns (i.e., had to stand less than six feet away from others).

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## APPENDIX A

### *United States Department of Agriculture (USDA) Food Security Module*

The Department of Agriculture (USDA) measures food insecurity through responses to a series of eighteen survey questions in the Food Security Supplement of the Census Bureau's Current Population Survey (CPS-FSS). The first item addresses concerns about food running out, while the remaining items assess potential reductions in food consumption due to economic concerns. Importantly, eight of the items are focused on children and thus are not used with households that contain no children under age eighteen.

1. "We worried whether our food would run out before we got money to buy more." Was that often, sometimes, or never true for you in the last 12 months?
2. "The food that we bought just didn't last and we didn't have money to get more." Was that often, sometimes, or never true for you in the last 12 months?
3. "We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you in the last 12 months?
4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food? (Yes/No)
5. (If yes to question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
6. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? (Yes/No)
7. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food? (Yes/No)
8. In the last 12 months, did you lose weight because there wasn't enough money for food? (Yes/No)
9. In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? (Yes/No)
10. (If yes to question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

*(Questions 11-18 were asked only if the household included children age 0-17)*

11. "We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food." Was that often, sometimes, or never true for you in the last 12 months?
12. "We couldn't feed our children a balanced meal, because we couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?



13. "The children were not eating enough because we just couldn't afford enough food." Was that often, sometimes, or never true for you in the last 12 months?

14. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food? (Yes/No)

15. In the last 12 months, were the children ever hungry but you just couldn't afford more food? (Yes/No)

16. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food? (Yes/No)

17. (If yes to question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

18. In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

### Scoring

Based on the responses to the survey, the USDA divides households *with children* into the following categories:

- **High food security** (all household members had access at all times to enough food for an active, healthy life), with no affirmative responses to any of the eighteen items.
- **Marginal food security** (some members reported anxiety about food sufficiency or shortage of food in the house, but there was no indication of changes in diet or food intake), 1–2 affirmative responses.
- **Low food security** (at least some household members reported reduced quality, variety, or desirability of diet but not necessarily reduced food intake), 3–7 affirmative responses.
- **Very low food security** (one or more household members reported multiple indications of disrupted eating patterns and reduced food intake), 8 or more affirmative responses.

For households *without children*:

- **Low food security** is indicated by 3–5 affirmative responses
- **Very low food security** is indicated by 6 or more affirmative responses.