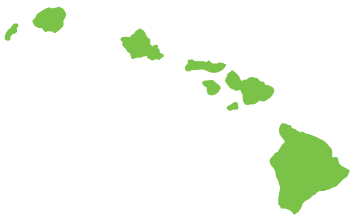


THE STATE OF **FOOD INSECURITY** **IN HAWAI'I** 2023



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Hawai'i Foodbank
Pirkle Epidemiology and Evaluation Consulting LLC
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EXECUTIVE SUMMARY

This report, commissioned by the Hawai'i Foodbank, describes the food security situation of Hawai'i in 2023. Through a statewide survey of 910 residents of Hawai'i, a variety of indicators were examined to capture different facets of the struggles residents face to feed their families, as well as the tools they use to address some of these challenges. The survey used a well-validated measurement instrument to estimate statewide food security—the United States Household Food Security Survey Module. In addition, numerous other questions were asked about the survey respondents' characteristics, their use and knowledge of food support services and governmental assistance programs, whether they obtain food from the 'āina (land or water), their health, and the ways in which they may have been affected by the Maui wildfires. This survey aims to provide insights necessary to supporting efforts to provide equitable access to safe and healthy food regardless of who you are.

Based on the results of this survey, it is estimated that in 2023, nearly a third (30%) of households in Hawai'i experienced food insecurity, with 11% categorized as low food security and 19% as very low food security. Child food insecurity was estimated at 29%, but food insecurity among adults in households with children was high at 38%. In adult-only households, at 23%, food insecurity was notably below the statewide estimate. Results from the survey also indicated that one in ten Hawai'i households have a member or multiple members of that household going a whole day without food at least once a year, and often more frequently. Among households with children, it is estimated that 6% had one or more children who went a whole day without food in 2023.

A number of individual and household characteristics were associated with food insecurity in 2023. Household food insecurity was highest for those living in Hawai'i County, followed by Maui, O'ahu, and Kaua'i. Younger age groups and families with kids were among the groups most affected by food insecurity. Women and those identifying as gay, lesbian, bisexual or another sexuality were more likely to reside in food insecure households. Those with lower levels of education and those enrolled in school lived in more food insecure households than other groups. As expected, lower levels of household income were associated with food insecurity. Over 40% of Native Hawaiians, other Pacific Islanders, Filipinos, and American Indian/Alaska Natives lived in food insecure households.

Food insecurity was significantly higher in households receiving benefits from the Supplemental Nutrition Assistance Program, also referred to as SNAP, and households receiving benefits from the Supplemental Nutrition Assistance Program for women, infants, and children (e.g., WIC). This indicates that such benefits are not fully addressing food insecurity, which is specifically their objective. However, given that this survey assesses food insecurity over a 12-month period, it is possible that some households were food insecure prior to receiving these benefits.

A large proportion of children in Hawai'i receive school breakfasts (47%) and lunches (67%). Unsurprisingly, those receiving school meals at a reduced price or for free were significantly more likely to come from food insecure households. These findings highlight the importance of school meals to children from food insecure homes.

This survey provides insights on the utilization of free food services such as those from a food bank, food pantry or church. An estimated one quarter of households had at least one member who received free groceries from one of these places, but most did so only once or twice in a year. The survey did not specify the reason for using these services and some utilization may have been on behalf of others. Nonetheless, there was a strong association between using services that provide free food and household food insecurity.

The respondent's health status was significantly associated with their household's food security status. Respondents that ranked their health as poor or very poor and/or if they had mobility disability were significantly less likely to reside in a food secure household. Vision and hearing disability were also significantly associated with food insecurity. Mobility challenges and food insecurity are further exemplified by results indicating that those who did not drive a car were more likely to come from food insecure households.

Potential coping mechanisms for managing household food insecurity were also explored by this survey. Respondents were asked if they delayed filling prescriptions or took less medicine in order to save money. Food insecurity was very high (>60%) among those who responded affirmatively to either question. This suggests that those living in food insecure households may cut back on other basic needs, like healthcare, possibly to save for food. Respondents were also asked about gardening fruits and vegetables for household consumption, as well as keeping livestock such as chickens and about hunting and fishing for food. Households that kept livestock for consumption were significantly more likely to be food insecure than those that did not. Hunting and fishing for household food consumption was also significantly associated with food insecurity, especially among those reporting relatively frequent hunting and fishing. These results may reflect confounding factors such as rural and/or neighbor island residence and demographic characteristics such as being Native Hawaiian or other Pacific Islander. They may, however, also capture coping mechanisms to address household food insecurity.

Finally, this survey also considered impacts from the August, 2023, West Maui wildfires. About 20% of Hawai'i residents were affected by the fires to one degree or another, such as having lost a family member or friend, property and/or a job. Those who were affected by the wildfires were significantly more likely to be food insecure than those unaffected. This was particularly true for those who lost a family member or friend to the fires.

INTRODUCTION

The food security status of a population is an important, multi-dimensional indicator of food availability, access, and stability over time. It is an indicator of particular importance to policy-makers, governmental agencies, and advocacy groups, because the inability to access food and to properly feed one's family is a salient consequence of various forms of disadvantage, such as insufficient household incomes, limited access to transportation, physical disability, and discrimination experiences. Food security is also a topic that resonates with the general population in that food is a basic need and access to food, or a lack of it, is something more easily understood than other indicators of disadvantage, such as poverty, which can seem abstract.

The United Nations recognizes the right to food as a human right. It defines the right to food along four key elements: availability, accessibility, adequacy, and sustainability (OHCHR and the right to food). These elements mirror the four pillars of food security generally acknowledged by international agencies and that underly the definition of food security:

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Committee on World Food Security 2012).

In practice, accurate estimates of food security are necessary for a variety of program planning purposes, especially around social benefits and charitable activities. The Hawai'i Foodbank is committed to ending hunger and to assuring that food reaches those most in need. To succeed in its mission, it needs accurate estimates of household food insecurity, at state and county levels, as well as by key demographics such as age, sex, and race/ethnicity. Moreover, it needs additional information such as Foodbank usage and the correlation between such usage and food insecurity.

In Hawai'i, there are widely varying estimates of food security. At the low end are those from the Economic Research Service of the United States (US) Department of Agriculture Food Security Supplement (USDA-FSS) (Rabbitt et al. 2023) to much higher numbers obtained from the Hawai'i Behavioral Risk Factor Surveillance System (BRFSS) (Stupplebeen et al.) and the SMS Hawai'i Community Pulse Surveys (Pirkle and Sentell 2020; Pirkle and Sentell 2021).

A critical difference between surveys is how food security is measured. The USDA-FSS measures food security with US Household Food Security Survey Module (US-HFSSM) (Economic Research Service, USDA 2012). The US-HFSSM has been extensively validated and is used globally (Marques et al. 2015). However, its administration varies across surveys, in particular with regard to screening questions and the categorization of marginal food security (Men and Tarasuk 2022). It should be noted that the USDA conceptualizes food security slightly differently from the Committee on World Food Security (2012). According to the USDA, food security means that all household members have access at all times to enough food for an active, healthy life (Rabbitt et al. 2023).

While the USDA-FSS provides state-specific food security prevalence estimates, there are important critiques with regard to the Hawai'i estimates. These are described later in the report. Importantly, while the USDA-FSS provides a food security estimate for Hawai'i, it does not have information on the food security status of specific populations in the state (e.g., Native Hawaiians, older adults, those with low educations), nor by county. As such, the Hawai'i Foodbank commissioned a statewide, representative survey of food security. Results from this survey will help guide programmatic distribution and improve the understanding of which populations are most at need of food support services. This survey was administered by the marketing research firm SMS Hawai'i and data were analyzed and reported by Pirkle Epidemiology and Evaluation Consulting, LLC. The results of the Hawai'i Foodbank statewide survey of food security are provided in this report.



MEASUREMENT & CONSIDERATIONS

FOOD SECURITY MEASUREMENT & CONSIDERATIONS

There are a wide variety of tools available to assess household food security through surveys (Marques et al. 2015). Most food security measurement tools assess food anxiety, food depletion, and food unsuitability (Marques et al. 2015). While food security is defined as existing when “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (Committee on World Food Security 2012), the instruments applied to assess food security focus on financial resources (Marques et al. 2015).

One of the most commonly used food security assessment tools is the US-HFSSM. Originally developed in the mid 1990s, and also called the Core Food Security Module, the US-HFSSM is the most validated food security measurement tool applied in population studies (Marques et al. 2015). Psychometric assessments of the US-HFSSM have examined the tool’s test-retest validity, structural validity, face validity, construct validity and internal consistency (Marques et al. 2015). It has also been translated and applied in many countries outside of the US (Marques et al. 2015). A derivation of the US-HFSSM also exists. This is known as the HFSSM Six Item Short Form (HFSSM-6SF). It is a shorter version of the US-HFSSM and its psychometric properties have also been substantially assessed (Marques et al. 2015). This survey assesses household food security using both of these measurement instruments and compares the findings.

US-HFSSM QUESTIONS, APPLICATION, AND SCORING

The US-HFSSM assesses food security for two different household types—those with children and those without them. The questionnaire length and the questions asked differ according to whether there are children under 18 years in the household. The full US-HFSSM contains 18 questions, known as items. If there are no children in the household, then a maximum of ten questions are asked. These questions are asked of all households, whether or not they have children. If the household has children, up to another eight questions are asked. From the US-HFSSM three estimates of food security can be calculated—whole population, adult-only households, households with children. In households with children, it is also possible to estimate the food security status of the adults and compare it to those of their dependents. The text box shows the US-HFSSM items.

Affirmative answers to items in the US-HFSSM are indicative of food concerns across different facets of the construct of food (in)security. The items in the US-HFSSM are increasingly severe. Thus, the US-HFSSM is organized such that items at the end of the questionnaire represent more extreme manifestations of the food concerns and limitations in a household, such as going a whole day without food. Based on the numbers of affirmative responses and whether or not there are children present, a score is calculated. This score is then used to categorize households into different levels of food security. Table 1 shows how the scores are categorized for the different types of households.

Table 1: Categorization of food security status based on the raw scores of the US-HFSSM

Food Security Status	Households with no children present	Households with one or more children under 18 years
Food secure	Raw score 0–High food security	Raw score 0–High food security
	Raw score 1-2–Marginal food security	Raw score 1-2–Marginal food security
Food insecure	Raw score 3-5–Low food security	Raw score 3-7–Low food security
	Raw score 6-10–Very low food security	Raw score 8-18–Very low food security

TEXT BOX - ITEMS IN THE US-HFSSM

All Households

The first three items ask the respondent to indicate if a series of statements apply to them. These are asked of all households.

1. "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?
2. **"The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?**
3. **"(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?**

If the respondent answers affirmatively to any of the items above, they are asked additional questions.

4. **In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?**
5. **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?**
7. **In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?**
8. In the last 12 months, did you lose weight because there wasn't enough money for food?

If the respondent answers affirmatively to any of the items above, they are asked additional questions.

9. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?
10. How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

Households with Children Under 18 years

The first three items ask the respondent to indicate if a series of statements apply to them. These are asked only if children under 18 are a part of the household.

11. "(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children) because (I was/we were) running out of money to buy food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?
12. "(I/We) couldn't feed (my/our) child/the children) a balanced meal, because (I/we) couldn't afford that." Was that often, sometimes, or never true for (you/your household) in the last 12 months?
13. "(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

If the respondent answers affirmatively to any of the items above, they are asked additional questions.

14. In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?
15. In the last 12 months, did (your child/any of the children) ever skip meals because there wasn't enough money for food?
16. How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
17. In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?
18. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

SIX-ITEM FOOD SECURITY SCALE

There is a short module that can also be used to assess household food security. It is called the Six-Item Food Security Scale. It only uses six questions to estimate food security in a population. It is a shorter version of the US-HFSSM. This version of the US-HFSSM can be applied to all households, irrespective of whether or not they have children. The items in bold and underlined in the text box are those that comprise the Six-Item Food Security Scale. Those with scores of 0 or 1 are considered to have high or marginal food security. Those with scores of 2 to 4 are considered to have low food security and those with scores of 5 to 6 are considered to have very low food security. Results in this report will include this measure of household food security, in addition to the full US-HFSSM.

SCREENERS AND RESPONDENT BURDEN

Initial screening questions can be applied to the US-HFSSM to reduce respondent burden; that is, to reduce the time required by a respondent to complete the survey. A common screener question is, “Which of these statements best describes the food eaten in your household in the last 12 months: – enough of the kinds of food (I/we) want to eat; – enough, but not always the kinds of food (I/we) want; – sometimes not enough to eat; or, – often not enough to eat?” In some surveys, if a respondent answers no to this question they are not administered the US-HFSSM, because they are assumed to be food secure. There are other screener questions and conditions applied by different surveys. Those used by the USDA-FSS will be discussed in more detail later. Preliminary screening questions are optional. **We did not apply any preliminary screening questions to our survey**, because the US-HFSSM already includes several stages meant to reduce respondent burden based on responses to early questions in the module.

The US-HFSSM seeks to reduce respondent burden based on its structure. Because the items in the questionnaire capture increasingly severe states of food insecurity as the questionnaire progresses, it can be assumed that if respondents do not answer affirmatively to early questions, then it is unlikely they will answer affirmatively to later questions. For example, it is unlikely that someone who states that it was never true that she worried whether her food would run out before she got money to buy more would later report that she was hungry, but didn’t eat because there was not enough money for food. Thus, as shown in the text box, certain questions are only asked if the respondent answers affirmatively to preceding questions. This means that food secure households will not be asked the full questionnaire. For our survey, we followed these administration recommendations to reduce respondent burden.

TIME PERIOD ASSESSED BY THE US-HFSSM

Both versions of the US-HFSSM, full and six-question form, are designed to assess food security in the 12 months – year – preceding the survey. While this assessment period can be modified, we also asked about the preceding year (12 months). This allows for comparability with other surveys. Thus, because the survey was administered from late November to early January, it estimates statewide food security for the year of 2023.



THE STATE OF
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FOOD SECURITY IN HAWAI'I

This section presents the estimates of food security in the state of Hawai'i in 2023. It is based on the full 18-question HFSSM. The sections to follow describe the questions that were used to obtain these estimates, as well as the sub-estimates that can be calculated based on the 18-question HFSSM.

It is important to note that there are slightly different cut-offs for adult-only households compared to those with children. Adult only households complete a maximum of 10 questions on the HFSSM. Those with children may be asked as many as 18 questions. The number of questions a household answers depends on their responses to earlier questions in the HFSSM, which "screen" out households unlikely to be food insecure. The questionnaire is constructed to reduce the respondent burden among those in more secure households.

Table 2 presents the food security results for the state in 2023. In it, the number of individuals from the sample that fell into each food security category is provided. Based on that number, it is possible to provide a weighted percent value that generalizes these findings to the whole state. In other words, the weighted percent is an estimate of the proportion of households in Hawai'i that experienced the same food situation. The table also provides a 95% confidence interval for the weighted percent. Confidence intervals provide an idea of how precise is the estimate provided in the table. The smaller the numbers in a given category, the wider the confidence interval will be, because there is less information and thus, the estimates will be less precise.

Based on this survey, 70% of Hawai'i households were food secure in 2023, while 30% were food insecure. Nineteen percent of Hawai'i households were very food insecure, while another 11% had low food security.

Table 2: Food security of households in Hawai'i (n=778)

	Responses	Number	Weighted percent	95% Confidence Interval
Food Security Status in 4 Categories	High food security	353	56.6%	52.1-60.9%
	Marginal food security	104	13.6%	10.8-17.1%
	Low food security	103	10.8%	8.6-13.6%
	Very low food security	218	19.0%	16.1-22.2%
Food secure	Yes	457	70.2%	66.3-73.8%
	No	321	29.8%	26.2-33.7%

*There are 132 missing observations in the full food security scale. This is 14.5% of state households.

US-HFSSM QUESTIONS AND AFFIRMATIVE RESPONSES

Table 3 presents the number of people who responded affirmatively to the questions in the HFSSM that were applicable to all households. These comprise the first 10 questions.

Each question refers to the experiences of that household in the past 12 months; that is, the year preceding the day of the survey. The questions also specify that the reason for each food situation is because there was not enough money for food. For example, respondents were asked if they lost weight because there was not enough money for food. As such, the HFSSM seeks to clarify that the weight loss was due to monetary limitations and not to voluntary behaviors, such as a being on a diet.

The HFSSM is designed so that as it progresses the food situations described by the questions represent more severe manifestations of food insecurity. There should be fewer respondents answering affirmatively to later items in the questionnaire than earlier questions. Our results follow that pattern. More respondents answered affirmatively to earlier questions of the HFSSM than later ones.

In 2023, one in ten Hawai'i households were going without food for a whole day, some months, or even every month.

According to responses to this survey, in 2023, close to 40% of households in Hawai'i experienced anxiety about running out of food before they could get money to buy more. Twenty-two percent (22%) reported cutting the size or skipping meals, some or almost every month. With regard to going a whole day without food, 12% of Hawai'i households may have experienced this food situation in 2023. Nearly all of them, the equivalent of 10% of all Hawai'i households, may have had this happen some months or nearly every month. An estimated 5% of households may go a whole day without food, nearly every month (*results not shown*).

Table 3: Affirmative responses to each HFSSM question among all households (n=910)

Question	Missing	Responses	Number	Weighted percent
Worry	13	Never Sometimes/Often	451 446	62.6% 37.4%
Food did not last	22	Never Sometimes/Often	499 389	69.5% 30.1%
Balanced meals	14	Never Sometimes/Often	455 441	63.1% 36.9%
Cut or skipped meals	28	No Yes	567 315	72.3% 27.7%
How often cut or skipped meals	34	Never or 1-2 months only Some months or almost every month	611 265	77.7% 22.4%
Ate less than should	14	No Yes	561 335	72.2% 27.8%
Hungry	8	No Yes	629 273	77.3% 22.7%
Lost weight	52	No Yes	651 207	82.5% 17.5%
Did not eat for a whole day	25	No Yes	744 141	88.3% 11.7%
How often did this happen?	27	Never or 1-2 months only Some months or almost every month	759 124	89.7% 10.3%

ADULT-ONLY HOUSEHOLD FOOD SECURITY

For adult-only households—i.e., those without any children under 18 years of age—only those questions presented in Table 3 are asked of the respondent. These 10 questions can be used to calculate the food security status of adult-only households. As shown in Table 4, 64% of adult-only households had high food security and another 13% had marginal food security.

In 2023, a little under a quarter of adult-only households were food insecure in Hawai'i.

To calculate a binary percentage—food secure versus food insecure—the high and marginal food security categories are combined (food secure) and the low and very low categories are combined (food insecure). In total, 77% of adult-only households in Hawai'i were estimated to be food secure in 2023. In contrast, 23% were food insecure.

Table 4: Food security among adults (n=503)*

	Responses	Number	Weighted percent	95% Confidence Interval
Food Security Status in 4 Categories	High food security	259	63.8%	58.6-68.7%
	Marginal food security	65	12.9%	9.6-17.2%
	Low food security	45	6.5%	4.7-9.0%
	Very low food security	134	16.8%	13.7-20.3%
Food secure	Yes	324	76.7%	72.6-80.4%
	No	179	23.3%	19.6-27.4%

*There were 73 missing observations for adult-only households. This is 12.7% of adult-only households.

CHILD FOOD SECURITY

There is a second half of the HFSSM, or the US Children's Food Security Scale, that is administered only to those households with children under the age of 18 years. There are 8 questions that comprise this scale, which assesses food security among children. Table 5 presents each of these questions, as well as the number of respondents reporting these food experiences happening to children in their households. The table also presents the weighted percent for each question. This value is intended to reflect the proportion of Hawai'i households that also experience these food situations. In our sample, there were 334 households with children under 18 years.

Similar to the first 10 questions of the HFFSM, later questions on the Children's Food Security Scale represent more severe manifestations of food insecurity among children. Among households with children in Hawai'i in 2023, it is estimated that in 9% of them, there were children skipping meals because there was not enough money for food. In 7.5% of households, this was happening some months or almost every month. At the most extreme, 6% of households with children may have had a child or children go a whole day without food because of a lack of money.

Table 5: Affirmative responses to each Children's Food Security Scale question among households with children under 18 years of age (n=334)

Question	Missing	Responses	Number	Weighted percent
Child/children fed with only a few, low-cost foods	19	Never Sometimes/Often	173 142	65.3% 34.7%
Couldn't feed child/children a balanced meal	11	Never Sometimes/Often	197 126	69.4% 30.6%
Child/children not eating enough	11	Never Sometimes/Often	251 72	80.9% 19.1%
Child/children cut size of meals	2	No Yes	295 37	90.3% 9.7%
Child/children skip meals	3	No Yes	301 30	91.0% 9.0%
How often did child/children skip meals?	0	Never or 1-2 months only Some months or almost every month	308 26	92.5% 7.5%
Child/children hungry	7	No Yes	286 41	88.3% 11.7%
Child/children did not eat for a whole day	4	No Yes	306 24	94.5% 5.5%

The number of affirmative responses to questions in the Children's Food Security Scale are used to calculate the food security status of children. In contrast to the adult scale, there are only three categories, with the high and marginal groups combined into one category. As shown in table 6, food insecurity among children in 2023 was estimated to be 29%, with 8% experiencing very low food security.

Table 6: Food security among children (n=298)*

	Responses	Number	Weighted percent	95% Confidence Interval
Food Security Status in 3 Categories	High or marginal food security	186	70.9%	64.3-76.8%
	Low food security	83	20.9%	16.0-26.8%
	Very low food security	29	8.2%	5.1-12.9%
Food secure	Yes	186	70.9%	64.3-76.8%
	No	112	29.1%	23.2-35.7%

*There were 36 missing responses on the U.S. Children's Food Security Scale. This is 10.8% of those households with children under 18 years of age.

ADULT FOOD SECURITY IN HOUSEHOLDS WITH CHILDREN

The adult-only scores on the HFSSM can be used to assess the food security of adults in households with children (table 7). Accordingly, an estimated 62% of adults in households with children were food secure in 2023. In contrast, 38% were food insecure in 2023. Very low food security was 22%. Food insecurity among adults in households with children was higher than among children (38% compared to 29%). It was also much higher than in adult-only households (23%). This is an expected result, because adults try to preserve their children's food security by compromising their own. It is clear that food insecurity in households with children was high in 2023.

Table 7: Food security among adults in households with children (n=297)*

	Responses	Number	Weighted percent	95% Confidence Interval
Food Security Status in 4 Categories	High food security	102	44.5%	37.1-52.1%
	Marginal food security	48	17.4%	12.3-24.1%
	Low food security	58	15.8%	11.4-21.4%
	Very low food security	89	22.4%	17.3-28.5%
Food secure	Yes	150	61.9%	54.7-68.5%
	No	147	38.1%	31.5-45.3%

*There are 37 missing observations in the adult food security scale. This is 11.1% of those households with children under 18 years of age.

SENSITIVITY ANALYSES WITH DIFFERENT MEASURES OF FOOD SECURITY

Missing observations to questions in the HFSSM could affect the final score obtained from using this measurement tool. It is important to note that while missing values for individual questions on the HFSSM were relatively small (6% or less), because affirmative responses to individual questions are added to create a food security score, the total percent of missing values for the different food security estimates presented above range from 11% to 15%. Typically, it is undesirable to have more than 10% missing values for a measure. Because of concerns about missing responses affecting the food security scores calculated in the sections above, a different food security measure was created. This measure is called the Six-Item Food Security Scale. It uses 6 questions from the first half of the HFSSM to calculate a score and it has been shown to be a valid measure of food security in a population. Because fewer questions comprise this measure, there were fewer missing values (n=57, 6.3%).

The statewide food security estimates from the Six-Item Food Security Scale are presented in Table 8. Based on these, 64%

of the population was food secure in 2023 and 36% of the population was food insecure. This shorter scale presents a higher food insecurity prevalence than that of the full scale. The estimate obtained from the Six-Item Food Security Scale does not fall within the 95% confidence interval (26.2-33.7%) of the statewide food insecurity estimated calculated using the full 18-item module. Thus, the value is notably higher. The estimate of very low food security, however, is the same using both measures (19%).

Table 8: Food security of households in Hawai'i (n=853), 6-item Food Security Scale

	Responses	Number	Weighted percent	95% Confidence Interval
Food Security Status in 4 Categories	High or marginal food security	456	64.4%	60.3-68.2%
	Low food security	153	16.6%	13.6-20.0%
	Very low food security	244	19.1%	16.4-22.1%
Food secure	Yes	456	64.4%	60.3-68.2%
	No	397	35.6%	31.8-39.7%

*There are 57 missing values in the full food security scale. This is 6.3% of households.

Nearly all of the items on the HFSSM had less than 5% missing values. One important exception was for the item on weight loss, which is among the first 10 questions in the module. For this question, there were 52 missing observations; this equates to 5.7% (52/910) of respondents not providing an answer to this question. To assess if this question had a disproportionate effect on statewide food security estimates, a different score was created in which this item was dropped from the calculation. The maximum possible score would be 17, rather than 18. Table 9 presents these results.

When the food security estimate is calculated without the question about weight loss, the sample size increases to 811. Using this measure, there are 99 missing values, which is 11% of the sample. The estimates are nearly identical to using the full 18-item module (table 2). For example, the estimate for high food security using the full module is 56.6% as compared to 55.0% using the modified one. The estimate for very low food security is 19.0% using the full module as compared to 19.7% with the modified one and 19.1% using the Six-Item Food Security Scale. Total state food insecurity using the full module is 29.8% versus 31.5% with the modified module.

Overall, the two additional analyses present similar results to those calculated using the full 18-item HFSSM. Based on this survey commissioned by the Hawai'i Foodbank, it is reasonable to estimate statewide food insecurity at 30% and very low food security at 19%.

Table 9: Food security of households in Hawai'i (n=811), modified scale with no weight loss question

	Responses	Number	Weighted percent	95% Confidence Interval
Food Security Status in 4 Categories	High food security	353	55.0%	50.7-59.4%
	Marginal food security	106	13.5%	10.6-16.9%
	Low food security	118	11.8%	9.5-14.6%
	Very low food security	234	19.7%	16.9-22.9%
Food secure	Yes	459	68.5%	64.6-72.1%
	No	352	31.5%	27.9-35.4%

*There are 99 missing observations in the full food security scale. This is 10.9% of state households.

UTILIZATION OF FOOD BANK SERVICES

In the survey, respondents were asked if they or any member of their household had gotten free groceries from a food pantry, food bank, church, or other place that helps with free food. According to these results, an estimated 26% of the population received free food from one of these locations at least once in the past year. Utilization was infrequent, only about once or twice a year (16%), compared to 10% using these services two times or more (Figure 1). The regular utilization of these services was rare; 3% of the population was estimated to use these services 10-20 times a year and 1% used these services 20 times or more a year in 2023 (*results not shown*).

As would be expected, there was a strong correlation between food insecurity and utilization of services that provide free food. Of those who received free food from places such as a food bank, food pantry, or church, 62% were in food insecure households as compared to 19% of those who did not use these services ($p < 0.001$).

When the results were examined by food security status categories, very few of those in the very food secure category ever used free food services in 2023 (8.1%). There was increasing utilization of these services as food insecurity became more severe: marginal food security (33.1%), low food security (37.7%), very low food security (57.7%).

It should be noted that the question, “During the past 12 months, have you or anyone in your household gotten free groceries from a food pantry, food bank, church, or other place that helps with free food?” is open to some interpretation. The question does not specify why a person, or their household members, may have gotten free food from one of these places. For example, a household may have received free food from a church for reasons unrelated to food insecurity. Similarly, some respondents or their household members may have gotten free groceries from one of these places to assist someone else struggling with food insecurity. Thus, some of those reporting use of these services may not be in food insecure households. However, the very low estimate of free food service utilization among those in the very food secure category is supportive of these services being needed by those experiencing food insecurity and not for other reasons.

The survey also asked, “During the past 12 months, did you or anyone in your household get free food from a soup kitchen or shelter?”. Based on these results, 6% of Hawai'i residents received food from one of these services once or twice in the past year and another 6% used these services two times or more (figure 3). Very few people received food from these places 10 times or more in the past year (3%, *results not shown*).

There was a strong correlation between having gotten free food from a soup kitchen or shelter in the past year and food insecurity. Of those who received food from one of these places, 75% were in food insecure households as compared to 25% who did not use these services ($p < 0.001$, *results not shown*).

Figure 1: Use of free food services such as a food bank, food pantry, or church

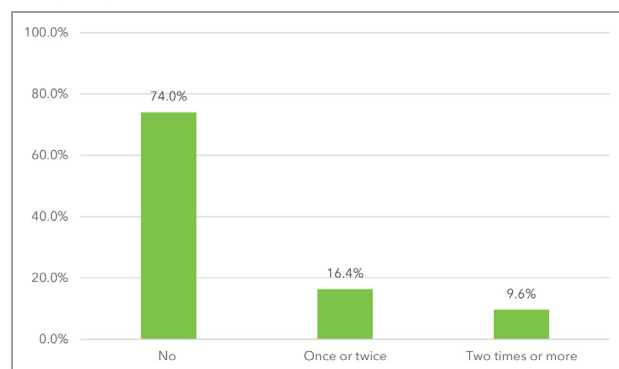
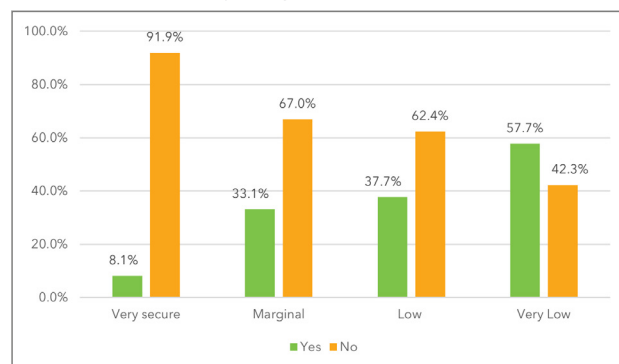


Figure 2: Use of services that provide free groceries by household food security categories



As shown in figure 4, among those in the very food secure category, 2% received food from a soup kitchen or shelter in the past year. There was a gradient between food security status and use of these services. The more severe the food insecurity, the more utilization of these services: marginal (10%), low food security (16%), very low food security (29%).

Similar to the question about receiving free groceries from a food pantry, food bank, or church, the question about receiving free food from a soup kitchen or shelter did not specify the reason for using these services. For example, a person may have been to a shelter because of domestic violence and also received food. Thus, this question, like the one above, likely overestimates service utilization because of household food insecurity. Nonetheless, the very few, very food secure people receiving free food from soup kitchens or shelters aligns with expectations, as does the progressively increasing percentage of people using these services as the severity of food insecurity increased.

Among those individuals who did not report receiving free food/groceries from services such as the food bank or a soup kitchen, we asked why they did not use these services. As expected, the vast majority of those not using these services did not need them (84%), but there was also evidence of unmet need. Feelings of shame (8%), lack of knowledge about services (5%), and lack of transportation (3%) were cited as reasons for not getting free food (results not shown). Food insecurity was strongly related to reporting these reasons. For example, 72% of those who were ashamed to get free food/groceries were also food insecure.

Figure 3: Free food from a soup kitchen or shelter

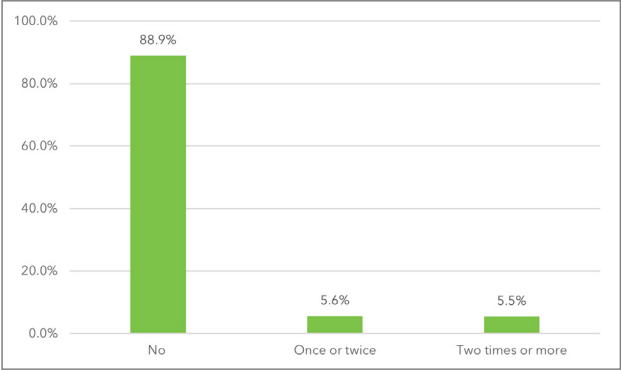


Figure 4: Free food from a soup kitchen or shelter by food security categories

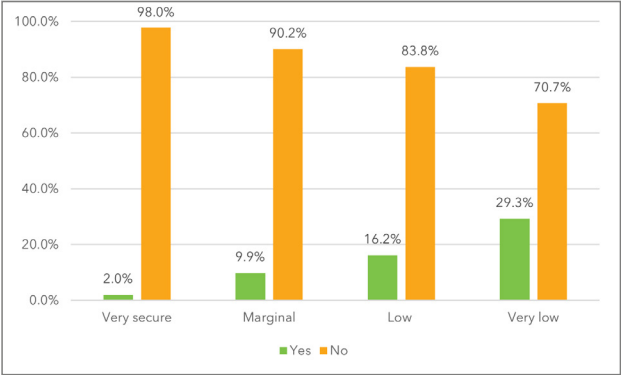
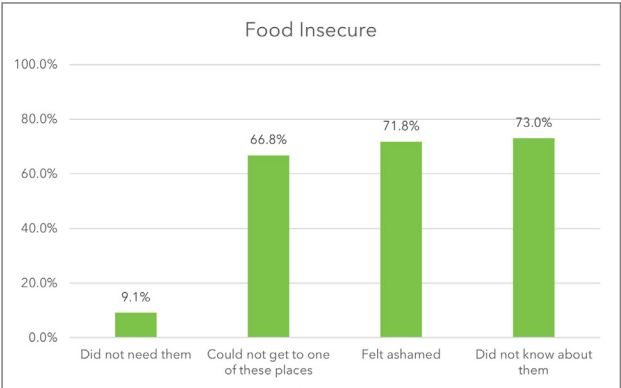


Figure 5: Reasons for not using free food/grocery services by food security status

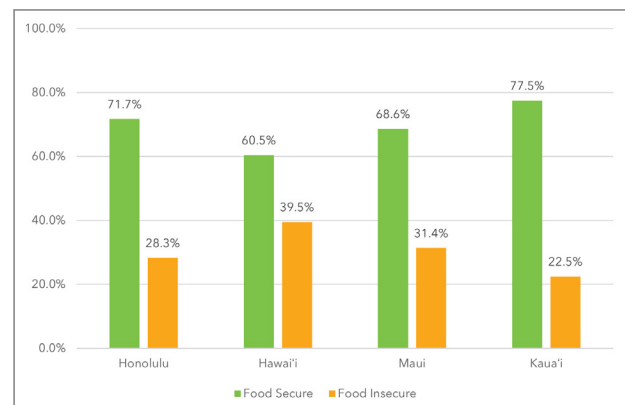


FOOD SECURITY BY DEMOGRAPHIC CHARACTERISTICS

COUNTY OF RESIDENCE

Food security was highest in among households in Kaua'i and Honolulu counties. It was lowest among those from Hawai'i County and second lowest among those from Maui County. Because of the small numbers of respondents from Lāna'i and Moloka'i, we do not report by island. However, the results from these two islands were nearly identical to Maui County as a whole. The differences by county were marginally statistically significant ($p=0.07$). The food security gap between Hawai'i and Kaua'i counties was 17%, with an estimated 40% of Hawai'i households being food insecure as compared to 23% in Kaua'i. There was no statistically significant difference in household food security when comparing O'ahu to the neighbor islands (28% versus 33%).

Figure 6: Household food security status by county



AGE GROUP

There was a gradient in food security status by age group, in which the younger age groups were less food secure than the older ones. Young adults, ages 18-29, were the least food secure group. Nearly half of respondents from this group lived in food insecure households. In contrast, only 31% of respondents 45-65 years lived in food insecure households. The differences in food security status by age group were statistically significant at $p<0.01$. It should be noted that the numbers for older adults are comparatively low. Since the survey was completed online, it is possible that the survey methodology excluded some of the highest risk older adults.

Figure 7: Household food security status by age group of the respondent

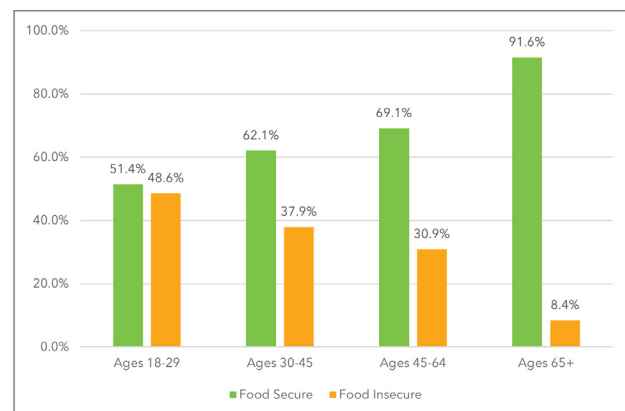
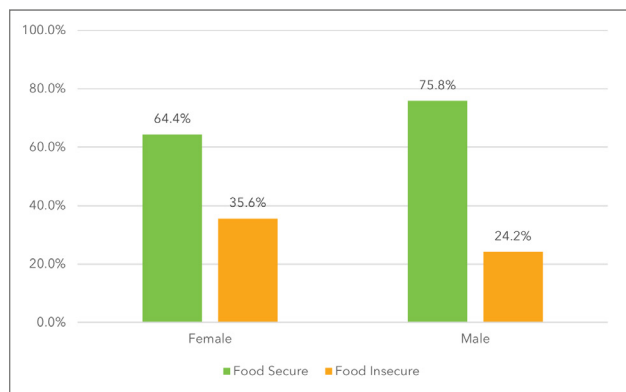


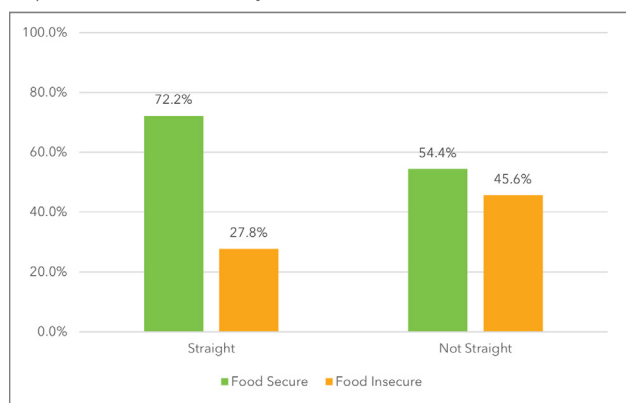
Figure 8: Household food security status by the sex of the respondent



SEX/GENDER

Female respondents came from more food insecure households than male respondents. The difference between the sexes was statistically significant at $p < 0.01$.

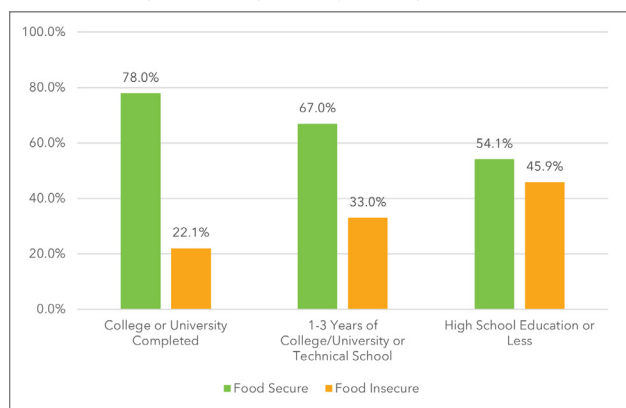
Figure 9: Household food security status by the respondent's sexual identity



SEXUAL IDENTITY

Respondents who identified as straight were more food secure than respondents who identified as gay, lesbian, bi-sexual, or some other category. Because of small numbers, the data could only be analyzed in two groups. 46% of those reporting some other identity than straight were living in food insecure households, as compared to 28% of those who identified as straight. The difference was statistically significant at $p < 0.01$.

Figure 10: Household food security status by the highest level of education completed as reported by the respondent

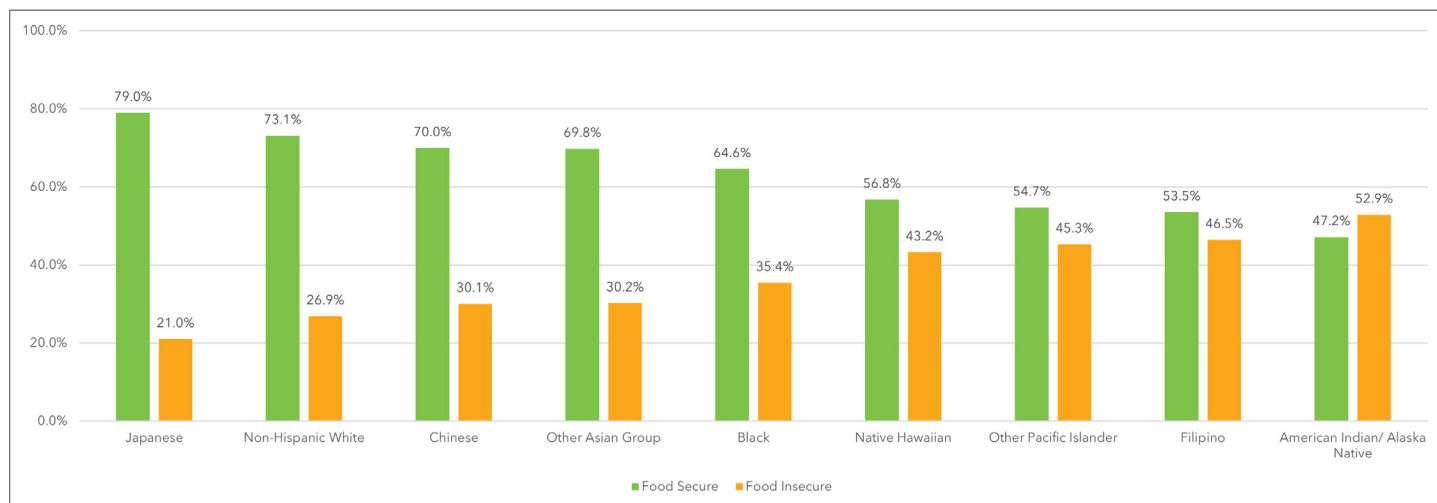


EDUCATION

There was a gradient in food security status by educational attainment. Those with more education were more food secure and vice versa. Nearly half of respondents who had a high school diploma or less resided in food insecure households as compared to 22.1% of those with a college or university education. The difference between groups was statistically significant at $p = < 0.01$.

RACE/ETHNICITY

Figure 11: Household food security status by the self-reported race/ethnicity of the respondent



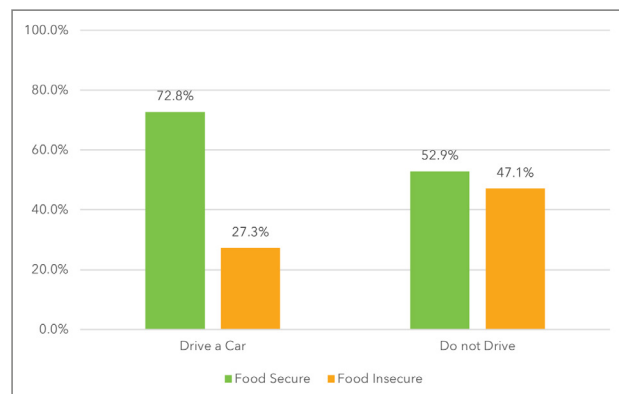
Respondents were asked to select all race/ethnicity categories that applied to them. A respondent could have more than one race/ethnicity. The figure thus shows the percentage of respondents living in food secure/insecure households by race/ethnicity group. A respondent could be represented in more than one category. That is, if a person was Japanese and Native Hawaiian, their food security status would be included in both of these groups. Groups are thus not mutually exclusive. This choice was made in recognition that people can and do identify as more than one race. Further, if a category had less than 30 people in it, such as Vietnamese and Korean, they were included in the Other Asian Group.

Overall, those reporting to be Japanese were the most food secure and those in the American Indian/Alaska Native group were the least food secure. Over 40% of respondents identifying as Native Hawaiian, Other Pacific Islander, Filipino, and/or American Indian/Alaska Native lived in food insecure households.

DRIVE A CAR

Respondents were asked if they currently drove a car or not. Those who did not drive were more likely to live in food insecure households (47.1%) than those who currently drove at the time of the survey (27.3%). The differences were statistically significant at $p < 0.01$.

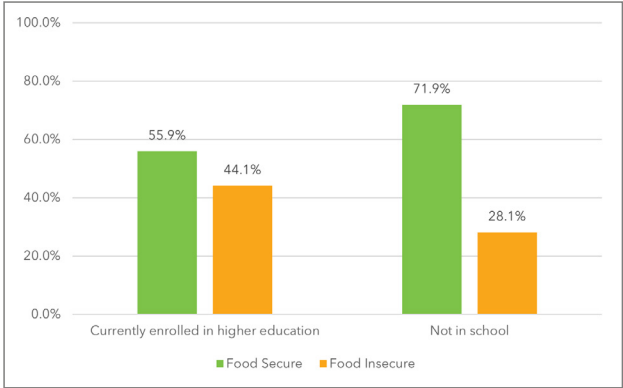
Figure 12: Household food security status by whether or not the respondent drives a car



ENROLLED IN SCHOOL

Respondents were asked if they were currently enrolled in a trade school, college or university. Households in which the respondent was in higher education were significantly more food insecure than those in which the respondent was not in school ($p=0.026$).

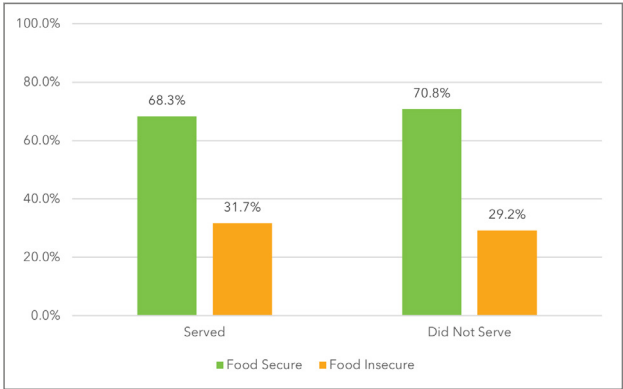
Figure 13: Household food security status by whether or not the respondent was enrolled in higher education or not



EVER SERVED IN THE UNITED STATES ARMED FORCES

Respondents were asked if they were currently or had ever served in the US armed forces. There was no difference in the household food security status between those respondents who did versus did not serve in the armed forces ($p=0.663$).

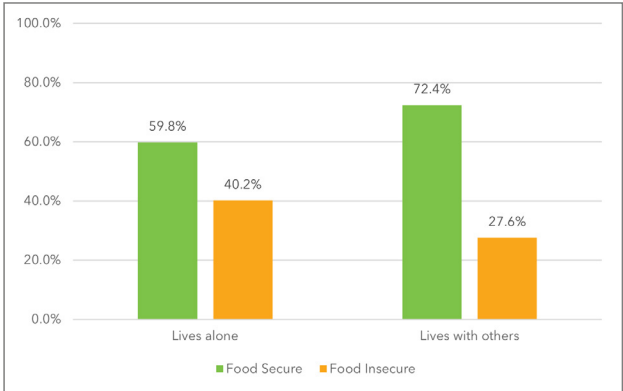
Figure 14: Food security status by whether or not the respondent had ever served on active duty in the US military



LIVES ALONE

Respondents were asked if they lived alone or with others. Those who lived alone were significantly more likely to be food insecure than those who lived with other people ($p<0.01$). In 2023, 40% of those who lived alone were food insecure as compared to 28% of those who lived with others.

Figure 15: Household food security status according to whether the respondent lived alone or with others

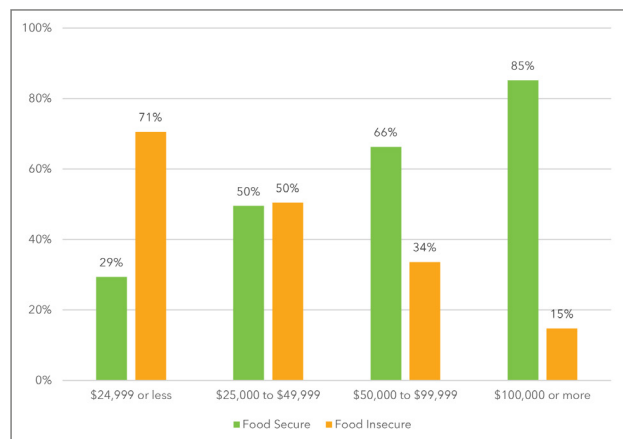


FOOD SECURITY BY THE RESPONDENT'S HOUSEHOLD CHARACTERISTICS

INCOME

As expected, household food security and income were strongly related. Similar to education, there was a gradient in food security status by income. Fewer respondents reporting higher household incomes lived in food insecure households than those reporting lower household incomes. Close to three quarters of respondents reporting a household income of less than \$25,000 lived in a food insecure household as compared to 15% of those in households with incomes of \$100,000 or more. Differences by income were statistically significant at $p < 0.01$.

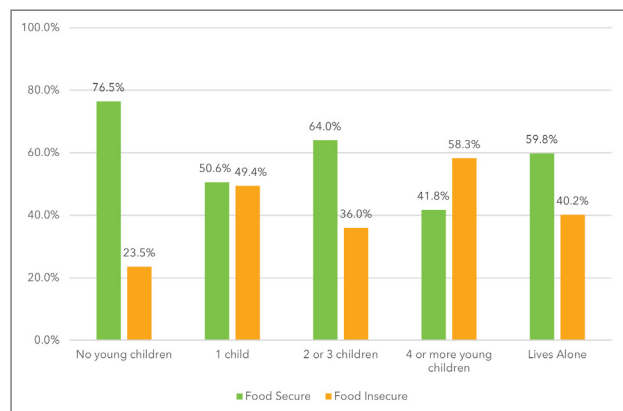
Figure 16: Household food insecurity status by household income



YOUNG CHILDREN (4 OR LESS) IN THE HOUSEHOLD

Households with young children were significantly more likely to be food insecure than those with no young children ($p < 0.01$), but were similar to households with only one person living in them. For example, 40% of households with only one person were food insecure, which is more than the 36% of households with 2 or 3 children four years of age or younger. Households with young children are more food insecure than multi-person households with no young children.

Figure 17: Household food security status by number of young children in the household



SCHOOL-AGE CHILDREN (5-17 YEARS) IN THE HOUSEHOLD

Households with young children were significantly more likely to be food insecure than those with no young children ($p < 0.01$), but were similar to households with only one person living in them. For example, 40% of households with only one person were food insecure, which is more than the 36% of households with 2 or 3 children four years of age or younger. Households with young children are more food insecure than multi-person households with no young children.

Figure 18: Household food security status by number of school-age children in the household

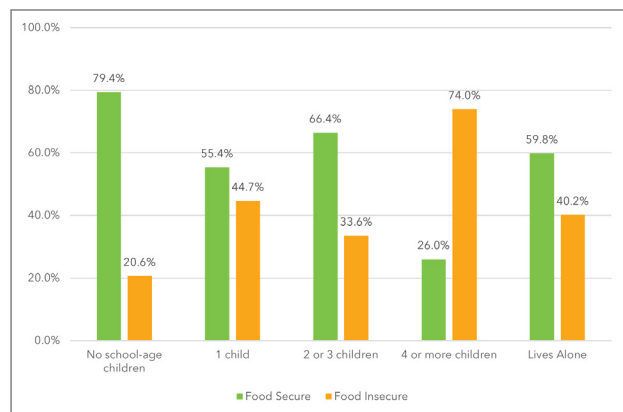
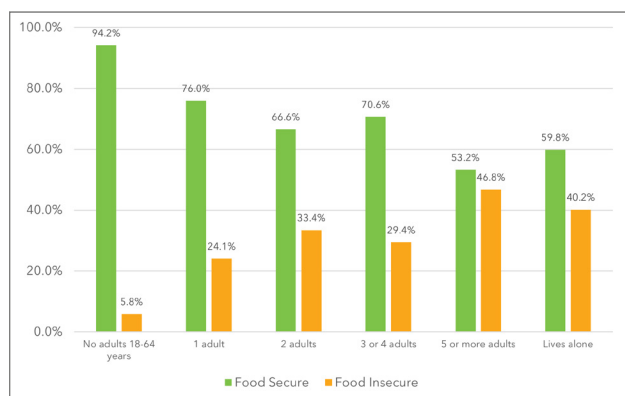


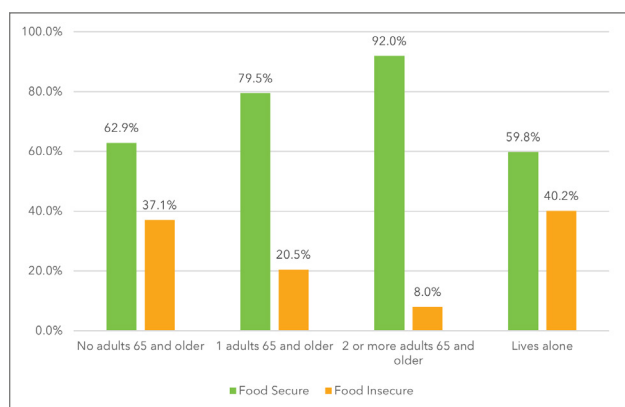
Figure 19: Household food security status by the number of adults in the household



NUMBER OF ADULTS IN THE HOUSEHOLD

There were large differences in food security status by the number of adults living in the household. The least food insecure group were households in which the adults were 65 years and older (i.e., the no adults in the 18-64 group). Only 6% of these households were food insecure as compared to 33% of households with two adults and 47% of households with five or more adults. Differences between groups were statistically significant ($p < 0.01$).

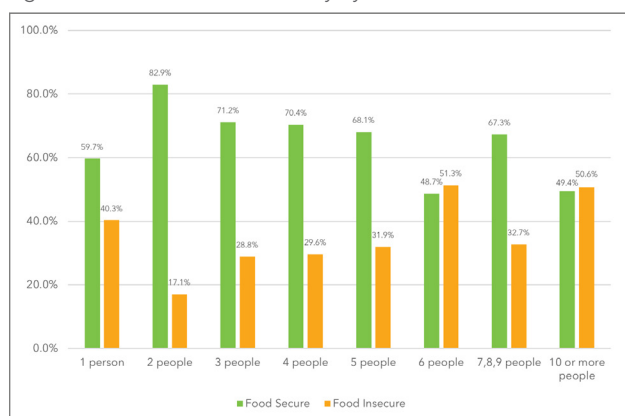
Figure 20: Household food security status by the number of older adults in a household



OLDER ADULTS

Households with older adults were much less likely to be food insecure than households that did not have older adults or single-person households. Food insecurity was 8% among those with 2 or more older adults as compared to 40% of households in which the respondent lived alone or 37% of households with no older adults. Differences were statistically significant ($p < 0.001$).

Figure 21: Household food security by household size



HOUSEHOLD SIZE

Food security was highest among those living in two-person households (82.9%). It declined to around 70% among those living in 3, 4, and 5 person households and then dropped notably for those in 6-person households (49%). Food security rebounded to 67% for large households of 7,8,9 people and then declined again (49.4%) for very large households of 10 or more people.

UTILIZATION OF GOVERNMENT BENEFITS AND FOOD SECURITY

SNAP AND WIC

The survey asked one question about whether the respondent or any member of that person’s household received benefits from the Supplemental Nutrition Assistance Program (SNAP) in the past year and another about the Special Supplemental Nutrition Program for women, infants, and children (WIC). An estimated 20% of households received SNAP benefits and 10% WIC benefits; in households with children, 18% received WIC benefits.

Table 10 shows the proportion of households receiving these benefits that were food secure and insecure. Notably, among those receiving SNAP, 70% were food insecure, as compared to 30% of households in Hawai’i. About 31% of those households receiving SNAP were food secure. More households receiving WIC were food secure than those receiving SNAP. For example, child food security was 52% in households receiving WIC; this is still considerably lower than the statewide estimate of 71%. It is important to understand that benefits such as SNAP and WIC are supposed to increase food security and ideally, help food insecure household become food secure. While this appears to be the case from some households, most households receiving these benefits remain food insecure.

Figure 22: Percent of households receiving SNAP or WIC benefits in the past year

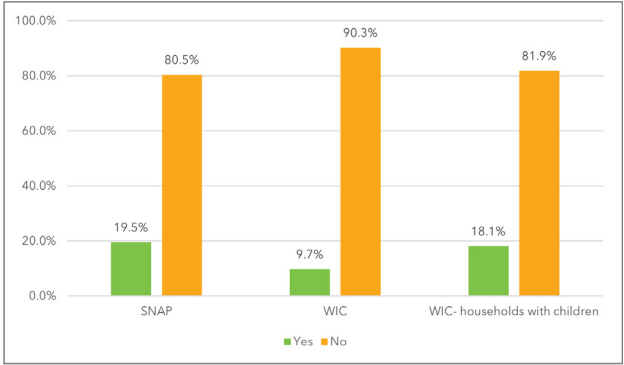


Table 10: Proportion of food (in)secure families among those receiving SNAP and WIC benefits

	Receiving SNAP	Receiving WIC	Receiving WIC, households with children	Receiving WIC, child food security	Receiving WIC, adult food security
Food secure	30.5%	41.1%	41.0%	51.5%	40.5%
Food insecure	69.5%	58.9%	59.0%	48.5%	59.5%

SCHOOL OR SUMMER PROGRAM MEALS FOR CHILDREN

The survey asked respondents about whether or not children in their households received school meals in the past month, or food during the summer from the Summer Food Service Program. The Summer Food Service Program provides free meals at places such as schools, community centers, libraries and churches.

In Hawai'i households with children, two thirds had one or more children receive a school lunch in the past month; for 63% of these households, the lunches were free or at a reduced price (results not shown). Nearly half of households with children had one or more children receive a school breakfast; for 71% of these households, the breakfasts were free or at a reduced price (results not shown). A quarter of households with children received free food from the Summer Food Service Program.

Figure 23: Percent of households with children receiving school meals or free meals during the summer

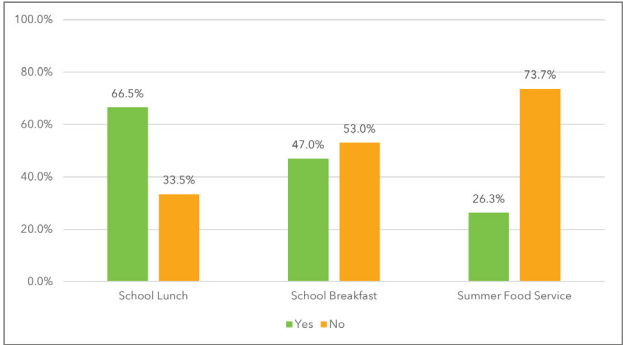


Table 11 presents the results by food security category. There was no statistically significant association between receiving a school meal and being food (in)secure. Similar proportions of those in each food security category received school meals. As expected, those that were food insecure were much more likely to receive school meals at a reduced price or for free. While not statistically significant, slightly more households with children that used the Summer Food Service Free Program were food insecure. It should be noted that the question about the Summer Food Service Program is likely subject to misclassification: “Thinking back to last summer, did any children in the household receive food through the Summer Food Service Program, that is, did they receive free meals during the summer at places such their school, community center, library or church?” Respondents from households with no food insecurity experiences may answer affirmatively, because their children are engaged in summer activities that provide free food.

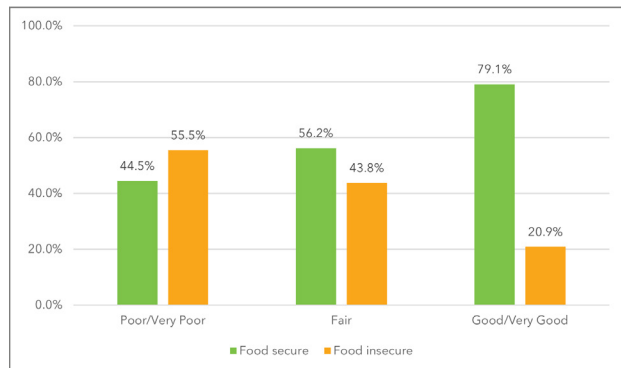
Table 11: Percent of households with children receiving school meals or participating in the Summer Food Service Program

	Food Secure	Food Insecure	p-value
School Lunch	65.3%	68.0%	0.711
Of those receiving a school lunch, it was free or reduced price*	49.3%	75.2%	0.009
School Breakfast	46.9%	42.8%	0.599
Of those receiving a school lunch, it was free or reduced price*	58.7%	81.3%	0.063
Summer Food Service Free meal(s)	22.4%	29.6%	0.316

*Only those respondents who answered that a child or children in the household received school meals were then asked if the meals were free or reduced cost.

SELF-REPORTED HEALTH INDICATORS

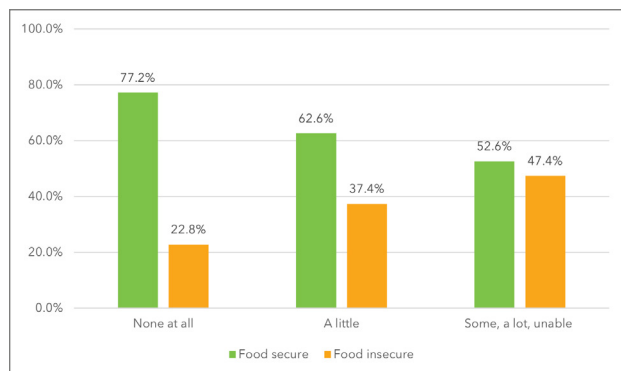
Figure 24: Food security status by the self-rated health of the respondent



SELF-RATED HEALTH STATUS

Household food insecurity was highest among respondents reporting poor or very poor health (56%) and lowest among those reporting good or very good health (21%). Differences in food security status by the respondent's self-rated health were statistically significant ($p < 0.001$). Those households in Hawai'i with at least one adult in good or very good health were more food secure than the state average (21% versus 30%).

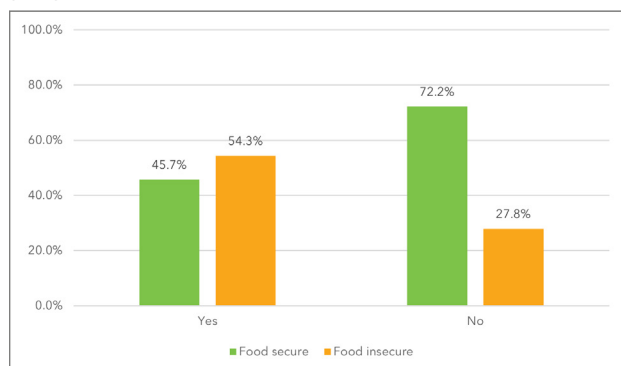
Figure 25: Household food security status by the respondent's difficulty to walk or climb stairs



MOBILITY DISABILITY

Respondents were asked if they had difficulties walking or climbing stairs, which is a measure of mobility disability. Food insecurity was significantly higher in households in which the respondent reported mobility disability ($p < 0.001$). Household food insecurity was lower than the state average if the respondent reported no mobility difficulties (23% versus 30%), but higher than the state average if the respondent reported some, a lot, or unable to walk or climb stairs (47% versus 30%).

Figure 26: Household food security status by whether or not the respondent had a health condition that prevented them from going to the store for food



Respondents were also asked directly if they had a health condition that prevented them from going to the store for food. There were only 64 respondents who responded affirmatively to this question, which, when generalized to the population of adults in Hawai'i is just under 7%. Results from this question mirrored the preceding mobility disability question; the prevalence of food insecurity was significantly higher in households with at least one person experiencing significant mobility limitations due to a health condition ($p < 0.001$).

DIFFICULTY HEARING OR SEEING

Respondents were asked if they were blind or had serious difficulty seeing, even when wearing glasses. They were also asked if they were deaf or had serious difficulties hearing. Seventy-five respondents reported being blind or having serious difficulties seeing and 61 reported being deaf or having serious hearing difficulties. Serious vision and hearing difficulties were significantly associated with food insecurity ($p<0.001$). Households in which the respondent had one of these difficulties were much more likely to be food insecure (figure 21).

DELAYING OR TAKING LESS MEDICINE

This survey asked respondents if they had ever delayed filling a prescription to save money. It also asked if they had taken less medicine to save money. Accordingly, survey results indicate that as many as 17% (95% CI: 14.2 – 20.3%) of Hawai'i residents had ever delayed filling a prescription to save money and 15% (95% CI: 12.5 – 18.3%) took less medicine to save money (results not shown). There was strong association between having delayed filling a prescription or taking less medicine and food insecurity. Respondents who reported either of these medication-related challenges were significantly more likely to reside in a food insecure household ($p<0.001$). Findings from this survey suggest that over 60% of households in which the respondent struggled to take medications as prescribed, because of not having enough money, were food insecure in 2023. The results are unsurprising as individuals and households may attempt to save money for food by spending less on healthcare, including on medications.

Figure 27: Food security status by whether the respondent had serious vision or hearing difficulties

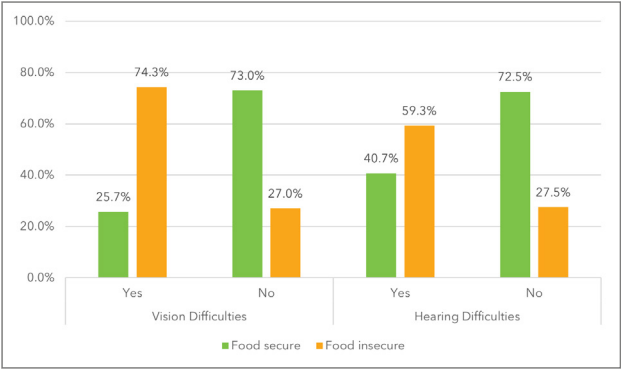
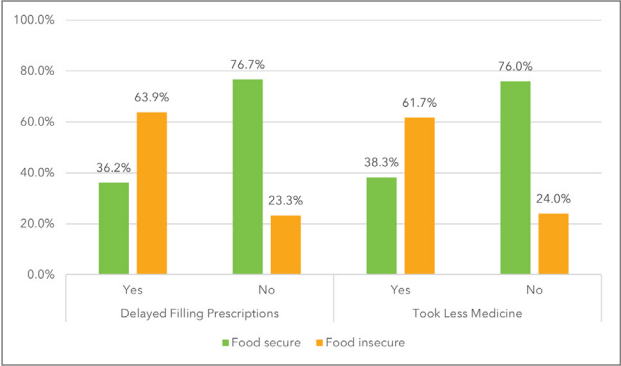


Figure 28: Food security status by medication-related challenges



MAUI WILDFIRES

The survey asked a number of questions about whether respondents had been affected by the West Maui wildfires on August 8, 2023, including whether or not 1) the respondent had lost a friend or family member to the fires, 2) home or property, 3) job, 4) had hours or wages reduced, 5) took their child/children out of school or daycare, 6) was in temporary housing funded by the government, 7) was living with family or friends, 8) had to leave Maui, and/or 9) was housing relatives or friends affected by the fires. If a respondent answered affirmatively to any of these nine questions, they were considered to have been affected by the West Maui Wildfires. Accordingly, 19% (95% CI: 15.4 to 22.2%) of the residents of Hawai'i were affected to some extent by the West Maui wildfires. As would be expected, the impacts were disproportionate in Maui County with 46% (95% CI 36.5-55.9%) of the population estimated to have been affected, as compared to 15% in O'ahu, 19% in Hawai'i, and 15% in Kaua'i.

Those affected by the August 2023 Maui wildfires, especially those who lost a family member or friend, were significantly more likely to be food insecure than those unaffected.

Those affected by the fires were significantly more likely to be food insecure than those unaffected ($p < 0.01$). Among those affected by the fires, 49% were from food insecure households as compared to 25% of those who were unaffected by the fires.

For many of the individual questions about the Maui wildfires, too few respondents answered affirmatively to validly report the numbers for specific questions. However, there were enough affirmative responses to the following questions: lost a friend or family member to the fires, had hours or wages reduced, and housing relatives or friends affected by the fires. Accordingly, in 2023, 7% of Hawai'i residents lost a friend or family member because of the fires, 4% had their hours or wages reduced, and 4% were housing relatives or friends because of the fires. **There was a statistically significant association between having lost a friend or family member to the fires and household food insecurity ($p < 0.01$).** Among those who experienced such as loss, 61% were in food insecure households, as compared to 27% who did not experience such a loss.

FOOD GROWN, HUNTED OR FISHED

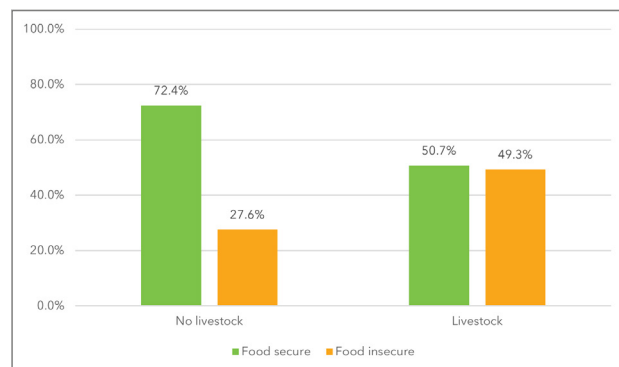
GROW FRUITS OR VEGETABLES THAT ARE EATEN BY THE HOUSEHOLD

According to the survey, 45% of Hawai'i residents grow some fruits or vegetables that are eaten by members of their household. There was no difference in the proportion of food secure (45%) versus food insecure (44%) individuals who grew fruits and vegetables for household consumption.

KEEP LIVESTOCK SUCH AS CHICKENS OR DUCKS

Survey respondents were asked if anyone in their home kept any livestock, such as chickens or ducks, that were eaten by members of the household. Based on the survey results, about 9% of households kept livestock. There was a statistically significant association between keeping livestock for household consumption and food insecurity. Among those with no livestock, 28% were food insecure in contrast to 49% of those who had livestock ($p < 0.01$).

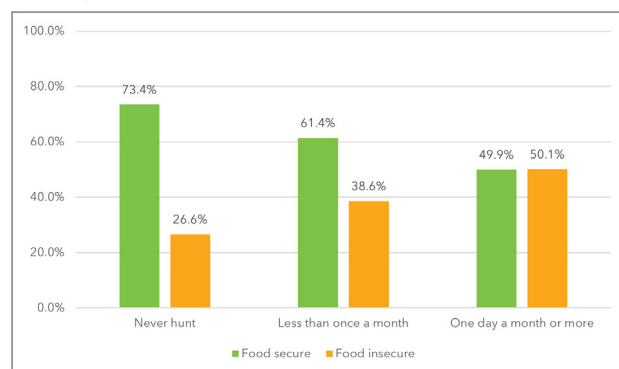
Figure 29: Food security status by keeping livestock for household consumption



HUNTING AND FISHING FOR HOUSEHOLD CONSUMPTION

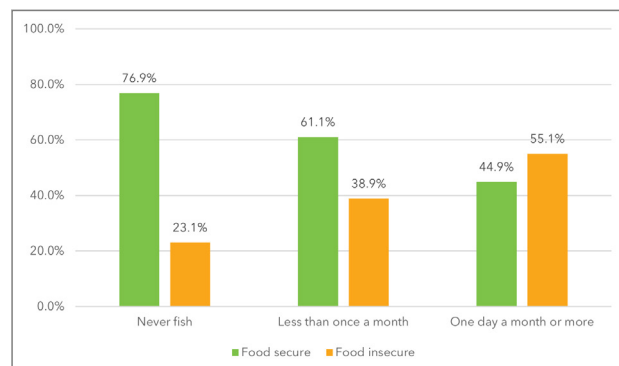
The survey had a question on whether anyone in the home hunted for food that was eaten in the household. This question asked about the frequency of hunting in the past 12 months. In 2023, 3% percent of households had someone that hunted once a week or more, 4% percent one to three days per month, 11% less than once a month, and 81% never. Because the percent of households was small for the categories once a week or more and one to three days per month, these two groups were combined when examining by household food security status. Accordingly, food insecurity was higher among those who hunted for food for their household and it was highest among those who hunted frequently ($p < 0.01$).

Figure 30: Food security status by hunting for household consumption



The survey had a question on whether anyone in the home fished for food that was eaten in the household in the past 12 months. In 2023, 6% percent of households had someone that fished once a week or more, 9% percent one to three days per month, 14% less than once a month, and 72% never. Similar to the hunting question, the categories once a week or more and one to three days per month were combined for the food security analysis. Food insecurity was higher among those households that fished for food in the household, especially among those doing so frequently ($p < 0.01$).

Figure 31: Food security status by fishing for household consumption



DO YOU KNOW WHERE TO GET FREE GROCERIES OR MEALS IN THE COMMUNITY AND ARE COMFORTABLE DOING SO?

The survey asked respondents if they knew a place in their community where they could get free groceries or meals. Based on the results, in 2023, an estimated 54% of Hawai'i residents did not know where to get free groceries or meals in their community. Knowledge of where to get free groceries or meals did not differ by food security status. Participants were also asked, "If you needed help getting food for your household, how comfortable would you feel getting free groceries or meals from a food pantry or other place in your community that helps with free food?" Based on the survey, in 2023, 18% of Hawai'i residents were very comfortable doing so, 38% somewhat comfortable, 28% not too comfortable, and 15% not at all comfortable. While there was not a statistically significant difference in food security status according to how comfortable one was getting free groceries or meals, there was a higher proportion of food insecure individuals among those who were very comfortable (36%) compared to those not at all comfortable (30%).

In 2023, over half of Hawai'i residents did not know a place in their community to get free groceries or meals.

Among those who were food insecure, we examined knowledge of where to get free groceries and meals, as well as comfort doing so, by whether or not someone got free groceries in the past 12 months from a place that helps with free food, such as a food pantry. Among those who were food insecure, 69% of those who did not get free groceries in 2023 also did not know where to get them. In other words, a barrier to getting free food when it is needed may be a lack of knowledge about where to go for such assistance. Similarly, among those who were food insecure, but did not get free groceries from a place like a food pantry in 2023, 65% were not too or not at all comfortable doing so. In other words, people's discomfort, such as feelings of shame or embarrassment, may prevent them from seeking out food assistance when they need it.

Figure 32: Knowledge of where to get free groceries or meals among those who were food insecure and did not get free groceries in 2023

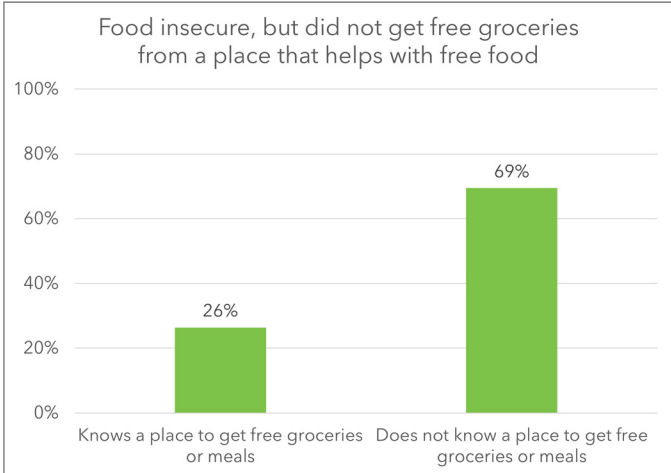
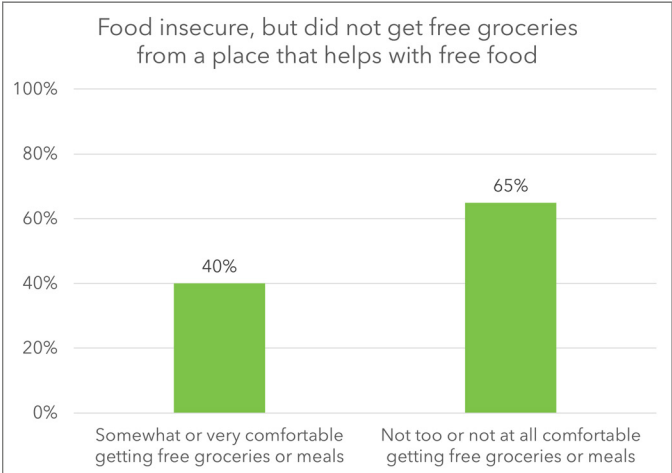


Figure 33: Comfort with getting free groceries or meals among those who were food insecure and did not get free groceries in 2023



CONCLUSION

At 30%, food insecurity in Hawai'i in 2023 was high. Importantly, most of the food insecurity in Hawai'i is categorized as very food insecure meaning that eating patterns are disrupted, such as skipping meals, and food intake is reduced, because the household cannot afford enough food. It appears that food insecurity in Hawai'i is increasing based on a series of surveys from the same survey firm (SMS) and analyses by the author of this report (Pirkle and Sentell 2020; Pirkle and Sentell 2021; Stupplebeen et al.). However, caution should be exercised when comparing results from one survey to another because of differences in sampling designs, participation rates, and questionnaires. Irrespective, there is evidence from multiple sources that food insecurity in Hawai'i is unacceptably high and may be increasing. Given that this survey covers a time period in which inflation in the US was high, and food prices particularly affected, housing prices increased substantially, many of the pandemic aid programs ended, which included diverse support directed at children and schools, and the August 2023 Maui wildfires, it is unsurprising that food insecurity is a significant concern in the state.

This report provides data that can be used to help identify high-risk populations for food insecurity, as well as barriers to accessing and using food support services, including those provided by the Hawai'i Foodbank. Moreover, it shows some of the health factors associated with food insecurity such as disability and potential coping mechanisms to save money, such as medication rationing. Overall, this is the first report of its kind to comprehensively evaluate food security in Hawai'i using the full US HFSSM and it provides critical insights for programs and policies seeking to improve food security.



APPENDICES & REFERENCES

APPENDIX 1 – NATIONAL FOOD SECURITY ESTIMATES LIKELY UNDERESTIMATE FOOD INSECURITY IN HAWAI’I

USDA-FSS NATIONAL ESTIMATES OF FOOD SECURITY

The Economic Research Service USDA-FSS provides annual reports on household food security in the United States. The USDA-FSS measures the food security status of civilian, non-institutionalized households. Homeless individuals are not included (Rabbitt et al. 2023). These food security reports are critical for monitoring the extent and severity of food insecurity in the US and to informing federal food and nutrition assistance programming (Rabbitt et al. 2023). Further, an abundance of research shows that food insecurity affects dietary quantity and quality (Leung and Tester 2019; Leung and Wolfson 2021; Rabbitt et al. 2023) and may contribute to adverse health outcomes in adults and children (Pirkle et al. 2014; Lopes et al. 2023; Pourmotabbed et al.).

The USDA-FSS estimates that 12.8% of US households were food insecure at some time during 2022. Of these, 7.7% of households had low food security and 5.1% had very low food security. Low food security captures household situations in which members rely on a few basic foods and dietary variety is reduced, but members of these households do not experience substantial food intake reductions (Rabbitt et al. 2023). Very low food security captures households in which the eating patterns of one or more household members were disrupted and their food intake was reduced (Rabbitt et al. 2023). Nationally, food insecurity is higher in households with children under 18 years of age. An estimated 17.3% of US households with children experienced food insecurity at some point during 2022; in about half of these, only adults were food insecure. For 8.8% of these households, both adults and children were food insecure (Rabbitt et al. 2023).

The USDA-FSS also provides estimates of food security by state. Because of the relatively small numbers of individuals interviewed annually in smaller states, state-level food security estimates are provided over a three-year period. In the 2022 USDA-FSS report, these years included 2020, 2021, and 2022 (Rabbitt et al. 2023). In Hawai’i, over this three-year period, 1,378 households were interviewed. If these were independent households, this would equate to about 460 households per year. However, the sampling frame used by the Economic Research Service allows for some households to be resampled, because they use what is called a sample rotation scheme. The sample units in a particular rotation are interviewed during a period of four consecutive months. After, there is a lapse of eight months and then they are “on rotation” again for another period of four months (United States Census 2019). This means that an unknown number of households in Hawai’i were interviewed twice during the three-year period from which the state estimate of food security is derived.

Pirkle Epidemiology and Evaluation Consulting attempted to ascertain the exact independent sample size for the state of Hawai’i by speaking directly with a representative of the US Census. These data were not readily available (personal communication with G. Weyland, February 2024). Because a certain number of households included in the sample used by the USDA to estimate state-level food security were sampled more than once, the food security estimate provided is not a true period prevalence. Period prevalence is a term used by epidemiologists to describe a health state during a given period of time. Each observation should be independent. While food security status can and does change over time, it is likely that the status of households measured twice over a three-year period will remain relatively similar. Thus, the total number of households interviewed, as reported by the Economic Research Service USDA-FSS for 2022 (Rabbitt et al. 2023), is misleading without careful review of associated technical documentation (United States Census 2019). The overall sample is smaller and it is unknown how many independent households are sampled in a given year based on the information readily available to the public.

Pirkle Epidemiology and Evaluation Consulting also attempted to ascertain information about the geographic distribution and racial/ethnic composition of the sampling frame used by the Economic Research Service to estimate food security levels in Hawai'i. Again, these were not readily available to the public (personal communication with G. Weyland, February 2024).

HAWAI'I ESTIMATES OF FOOD INSECURITY ARE SURPRISINGLY LOW

The food insecurity estimate for Hawai'i between 2020 and 2022 is 9.1%, with a margin of error of 1.56. Thus, the USDA expects to see the "true" prevalence of food insecurity in Hawai'i between 7.5 and 10.7, 90% of the time. Very low food insecurity in Hawai'i is estimated at 2.7%. The margin of error is 0.82 (Rabbitt et al. 2023). The USDA-FSS prevalence estimate of food insecurity in Hawai'i is statistically significantly below the national average. It is among 17 states in the US which are below this average. Very low food insecurity was also statistically significantly below the national average in Hawai'i. It is among 13 states that are also below this average (Rabbitt et al. 2023).

The low Hawai'i food insecurity estimates do not correspond with other indicators of economic disadvantage in the state. Some of these indicators include cost of living, poverty levels, homelessness rates, and disparities by race/ethnicity.

A significant determinant of food security is income (Rabbitt et al. 2023). Cost of living is an important consideration to understanding the extent to which individual and household incomes can cover living expenses, including food. According to Forbes Advisor, Hawai'i has the highest cost of living in the United States and lowest amount of available disposable income annually. Forbes estimates that Hawai'i residents have a total annual average expenditure of \$55,491, with only \$5,929 to spend per year on average. Hawai'i also has the highest average annual transportation costs (\$7,458), median home prices (\$837,324), mortgages payments (\$5,004) and rents (\$2,423) (Cost Of Living By State Statistics & Trends In 2023 – Forbes Advisor).

The high cost of living, estimated at 118.5% of the US national average in 2017 (Karger 2020), contributes to economic challenges for individuals and families in the state. Incomes in Hawai'i do not match cost of living. According to the US census, the median household income between 2018-2022 was \$99,816, while the per capita income in the past 12 months was \$44,026 (U.S. Census Bureau QuickFacts). When contrasted with the US Department of Housing and Urban Development (HUD) 2023 income limits, it is clear that household incomes are low. HUD income limits determine eligibility for assisted housing programs. The four person low-income limit for Honolulu is \$104,800 (US Department of HUD). Thus, the low-income limit established by HUD for a four-person household is greater than the median household income in the state. Residents in Hawai'i also carry very high levels of debt. The per capita debt in Hawai'i is estimated at \$82,650. This debt load constitutes 89% of the median income. The state ranks third-highest in per capita debt (America's Debt Position By State And Worldwide – Forbes Advisor).

Another important indicator for assessing the economic wellbeing of Hawai'i residents is ALICE. ALICE stands for Asset limited, income constrained, employed. ALICE represents households with incomes above the federal poverty level, but below the basic cost of living (ALICE in Hawai'i 2023). Based on the 2022 estimates, 44% of households were below the ALICE threshold, with 15% of these below the federal poverty level. The 2023 federal poverty threshold for a family of four, of whom two are children under 18 years, is \$30,900 (U.S. Census Bureau). Of households with children in Hawai'i, 54% are below the ALICE threshold (ALICE in Hawai'i 2023).

Homelessness is another indicator to consider. Based on point in time estimates from a single night in January 2023, Hawai'i has the highest percentage of chronic, unsheltered homeless in the US (US Department of HUD). 81% of chronic homeless in Hawai'i are unsheltered. Hawai'i has also experienced one of the largest increases in chronic homelessness since 2007 and has the third highest percentage of unaccompanied youth experiencing

homelessness (de Sousa et al. 2024). Mixed-race individuals, Native Hawaiian and other Pacific Islanders are over-represented among those experiencing homelessness nationally (de Sousa et al. 2024). In Hawai'i, these are important demographic groups and make up a substantial portion of the population.

These considerations combined raise important questions about the accuracy of the food insecurity numbers provided in the Household Food Security in the United States in 2022 report (Rabbitt et al. 2023). These other indicators suggest that the prevalence of food insecurity in Hawai'i is higher than reported. In fact, other measures of food insecurity in the state are double, or more, than those reported by the USDA (Pirkle and Sentell 2020; Pirkle and Sentell 2021; Stuppelbeen et al.).

METHODOLOGICAL REASONS NATIONAL ESTIMATES MAY UNDERESTIMATE HAWAI'I FOOD INSECURITY

The Hawai'i food insecurity estimates may be underestimated by the USDA-FSS for a number of methodological reasons delineated below.

Civilian, non-institutionalized population

The USDA-FSS only measures food insecurity among civilian, non-institutionalized populations. It also does not include homeless individuals or families (Rabbitt et al. 2023). Hawai'i's population is estimated at 1.4 million (U.S. Census Bureau QuickFacts), of these, approximately 250,000 are military personnel and their families. More specifically, around 44,000 are active duty and another 45,600 are dependents (Defense Personnel in Hawaii). Many of these individuals live on the numerous military bases present in Hawai'i, such as Joint Base Pearl Harbor Hickam and Schofield Barracks. The exclusion of on-base military personnel from the USDA-FSS sample is of significance to Hawai'i given the large military population in the state. Military hunger is increasingly acknowledged as a concern (Defense Health Agency 2023). While the exclusion of active-duty military is important to the consideration of estimates of food security in Hawai'i, it is also important to note that military families living off base and those on-base with a civilian present are eligible for interview by the Economic Research Service. It is unclear if exclusion of on-base military personnel with no civilian present in the household would meaningfully affect estimates for the state. This is particularly difficult to assess given the lack of information publicly available regarding the geographic distribution of the sampling frame used by the Economic Research Service.

Finally, while the numbers are small overall, the exclusion of homeless individuals from the survey contributes to an underestimate of food insecurity. In Hawai'i, where homeless numbers are elevated, this exclusion may be meaningful.

Our survey was open to any resident of Hawai'i and did not have these limitations. From the responses, it is evident that military personnel responded to the survey. There was also some indication based on the responses to the open-ended question about the Maui wildfires that some individuals experiencing homelessness also responded to the survey.

Screening questions

The USDA-FSS uses two screener questions before applying the US-HFSSM. These questions are meant to exclude any households assumed to be food secure and thus reduce respondent burden. As already mentioned before, we did not use preliminary screener questions, in part, because the US-HFSSM itself is already designed to reduce respondent burden. The difference is that the USDA-FSS preliminary screening questions total to two questions, whereas the equivalent already integrated into the US-HFSSM is three questions. Pirkle Epidemiology and

Evaluation Consulting did not feel an additional question would add significantly to respondent burden and felt the limitations of the USDA-FSS methods outweighed their benefits.

The USDA-FSS does not administer the US-HFSSM to respondents above 185 percent of the federal poverty line who do not indicate food access or food acquisition problems (Rabbitt et al. 2023). Food access and acquisition problems are determined by two screener questions:

1. In the last 12 months, since December of last year, did you ever run short of money and try to make your food or your food money go further? (yes/no)
2. Which of these statements best describes the food eaten in your household—enough of the kinds of food we want to eat, enough but not always the kinds of food we want to eat, sometimes not enough to eat, or often not enough to eat?

If a respondent answers affirmatively to either of these questions, then the US-HFSSM is administered. Affirmatively is defined as yes to the first question and any other option beside “enough of the kinds of food we want to eat” for the second question. If they answer negatively to both BUT are above 185% of the federal poverty line, then they are considered food secure based on income and not administered the questionnaire. Nationally, approximately 80% of respondents answer no to the first question and 75% respond that they get enough of the kinds of food they want to eat (Rabbitt et al. 2023). It is not reported how many respondents answer negatively to both, but it can be assumed to be relatively high (probably close to 75%). The 185% federal poverty level threshold would be applied to all of these individuals; anyone above that threshold would be considered food secure and not be administered the US-HFSSM.

Federal poverty levels are based on household size and number of children under 18 years. In a three-person household with one child, the 2023 poverty threshold would be \$24,526 and 185% of that number equates to \$45,373 (U.S. Census Bureau). In Hawai'i, as stated before, the median household income between 2018-2022 was \$99,816, while the per capita income in the past 12 months was \$44,026 (U.S. Census Bureau QuickFacts). Thus, based on the screener questions and household income threshold, it can be presumed that the US-HFSSM was not administered to most households in the sample. Yet, given the cost of living in Hawai'i, the 185% federal poverty level is very low and does not correspond to money needed to cover daily living expenses. In sum, use of the 185% federal poverty level in conjunction with the food access and acquisition problems screening questions will likely screen out most respondents from completing the US-HFSSM. It is unclear if the preliminary screening questions are valid and thus accurately identify those at low risk of food insecurity. There is no publicly available data on the proportion of the sample in Hawai'i that was actually administered the US-HFSSM.

While our survey did not use the screener questions or the 185% federal poverty level cut off, we did code all households with a household income of \$200,000 as food secure, irrespective of household size. This was done to be conservative, as in most circumstances households with incomes of \$200,000 or more are food secure.

Population weights

The US Census Bureau is responsible for establishing the sampling frame, administering the US-HFSSM, and statistically adjusting the sample to match the US population. The Bureau applies probability sampling such that every American has an equal probability of being asked to participate in the survey. This is believed to make the survey as representative of the American public as possible (Ahn et al., 2020). As is the case for many surveys, population weights are used make the sample as representative of the US public as possible. The Bureau uses a complicated, multi-stage weighting system that includes race/ethnicity at several stages, as well as age and sex (United States Census 2019). The weighting scheme aims to balance both national and state-level population

demographic characteristics. When computing the national coverage adjustment factors, the following race/ethnicity groups are considered: non-Hispanic White alone, Hispanic White alone, non-Hispanic Black alone, Hispanic Black alone, Non-Hispanic Asian alone, non-Hispanic residual race, Hispanic non-White alone. This national coverage step aims to ensure that weighted estimates can be generalized to the national population. Mixed race individuals are considered residual; it is unclear under which group Native Hawaiian and other Pacific Islanders are grouped. There is also a state coverage step that tries to match the sample to the state population characteristics (United States Census 2019). Only three race/ethnicity groups are considered at this step: White alone, Black alone, and Residual race. These race/ethnicity categories, however, are not applicable to the unique make-up of Hawai'i. Asian, Native Hawaiian, other Pacific Islander, and mixed races are grouped into the residual race category.

It is unclear how the weighting scheme used by the US Census Bureau affects food security estimates in Hawai'i. Clearly, Hawai'i has a population that is distinct compared to the rest of the nation and steps to weight the sample to better match the US population would underrepresent most of the population of the state and overrepresent Whites. The state-level weighting scheme used by the Bureau is supposed to address imbalances at the state level. However, the three race/ethnicity groups used at this step group three-quarters of the population in a single category called "residual". It is very likely that the weighting scheme used dilutes the contributions of non-white respondents when estimating statewide food security. Given that previous studies indicate that Native Hawaiians, other Pacific Islander, and Filipinos have high food insecurity levels, it is likely that the weighting system used by the Bureau contributes to an underestimate of food insecurity in Hawai'i.

OTHER MEASUREMENT CRITIQUES AND CONSIDERATIONS

There are important considerations when interpreting food security results derived from the US-HFSSM. The US-HFSSM explicitly links a lack of access to food to scarce financial resources. It poorly relates food security to other aspects of the construct, such as logistical concerns (e.g., ability to get to stores) and food preparation practices (e.g., ability to cook, food safety) (Marques et al. 2015). The US-HFSSM accounts for whether or not a household has a child, or children, present. This is justified given the specific nutritional needs of children with regard to the quantity, quality, and regularity of food in the household. A similar argument could also be made for older adults, but the US-HFSSM is not tailored for this sub-population (Marques et al. 2015).

APPENDIX 2 – COUNTY PROFILE: HONOLULU & HAWAI'I

Table 12: Factors associated with food insecurity in Honolulu County

Food Insecure			
	Proportion	95% CI	p-value
Sex			
Female	32.9	26.4-40.1	0.06
Male	23.8	17.8-31.0	
Sexuality			
Straight	26.3	21.7-31.5	0.02
Other	45.2	29.6-61.9	
Age			
Young adult 18-29	46.8	33.8-60.3	<0.01
Working age 30-45	35.5	25.8-46.5	
Pre-retirement age 45-64	28.1	20.7-37.0	
Retirement age 65 and older	7.8	4.2-14.2	
Japanese			
Yes	17.4	11.6-25.3	<0.01
No	33.6	27.7-40.0	
Non-Hispanic White			
Yes	27.7	20.2-36.7	0.86
No	28.6	23.1-34.8	
Filipino			
Yes	44.5	32.8-56.9	<0.01
No	24.3	19.7-29.7	
Native Hawaiian			
Yes	36.7	25.6-49.3	0.11
No	26.5	21.6-32.1	
Enrolled in school			
Yes	38.7	23.7-56.3	0.15
No	26.9	22.3-32.1	
Education			
College/University 4+ years	23.2	17.2-30.5	0.04
1-3 years college/university	30.8	22.7-40.3	
Grade 12 or less	39.3	29.3-50.2	
Income			
\$24,999 or less	67.7	55.2-78.1	<0.01
\$25,000 to \$49,999	46.1	36.2-56.3	
\$50,000 to \$99,999	33.4	25.6-42.3	
\$100,000 or more	16.9	10.9-25.2	
Drive a car			
No	44.4	32.2-57.3	<0.01
Yes	25.7	20.9-31.2	

The total number of respondents in the survey was sufficient enough to allow for a sub-analysis of Honolulu (table 12) and Hawai'i Counties (table 13). It should be noted that the cell sizes are small and confidence intervals are large; estimates are thus imprecise. This is particularly true in Hawai'i County, in which some of the variables analyzed in Honolulu County could not be validly assessed due to very small cell sizes.

Overall, the findings for both counties are consistent for the state as a whole. In Hawai'i County, the percentage of food insecure among those who reported being Japanese (full or in part) was higher than those reporting other race/ethnicities. While not statistically significant, this contrasts markedly with Honolulu County and the statewide results. Additionally, food insecurity was particularly high among Native Hawaiians in Hawai'i County, even when considering the wide confidence intervals.

Table 13: Factors associated with food insecurity in Hawai'i County

Food Insecure			
	Proportion	95% CI	p-value
Sex			
Female	56.1	42.3-68.9	<0.01
Male	25.8	15.5-40.0	
Sexuality			
Straight	34.4	24.9-45.4	0.02
Other	62.5	40.1-80.7	
Age			
Young adult 18-29	69.5	35.0-90.6	<0.01
Working age 30-45	48.5	31.4-66.0	
Pre-retirement age 45-64	48.1	28.6-68.3	
Retirement age 65 and older	17.0	30.2-49.7	
Japanese			
Yes	46.7	25.6-69.0	0.51
No	38.3	28.3-49.4	
Non-Hispanic White			
Yes	32.5	20.2-47.7	0.15
No	46.5	34.3-59.1	
Native Hawaiian			
Yes	63.4	0.44-79.1	0.01
No	32.4	0.23-43.8	
Education			
College/University 4+ years	23.0	12.5-38.5	<0.01
1-3 years college/university	47.6	32.3-63.4	
Grade 12 or less	59.0	40.2-75.4	

REFERENCES

ALICE in Hawai'i: 2022 Facts and Figures – Hawai'i Health Data Warehouse. 2023. [accessed 2024 Feb 5]. <https://hhdw.org/alice-in-hawai%ca%bbi-2022-facts-and-figures/>.

America's Debt Position By State And Worldwide – Forbes Advisor. [accessed 2024 Feb 5]. <https://www.forbes.com/advisor/banking/us-debt-by-state-and-worldwide/>.

Committee on World Food Security. 2012. Global strategic framework for food security and nutrition. First version. Rome, Italy. [accessed 2024 Feb 2]. <https://www.fao.org/3/ME498E/ME498E.pdf>.

Cost Of Living By State Statistics & Trends In 2023 – Forbes Advisor. [accessed 2024 Feb 5]. <https://www.forbes.com/advisor/mortgages/cost-of-living-by-state/>.

Defense Health Agency. 2023. DHA Practice Recommendation: Screening for Food Insecurity: Use of Hunger Vital Sign. Falls Church, Virginia Report No.: Version 1.

Defense Personnel in Hawaii. Hawaii Def Econ. [accessed 2024 Feb 5]. <https://defenseeconomy.hawaii.gov/defense-economy-personnel/>.

Economic Research Service, USDA. 2012. U.S. Household Food Security Survey Module: Three-stage design, with screeners. [accessed 2024 Feb 2]. <https://www.ers.usda.gov/media/8271/hh2012.pdf>.

Karger H. 2020. Problems in Paradise: Low Wages and the Well-Being of Hawaiians. *Fam Soc J Contemp Soc Serv*. 101(3):340-352. doi:10.1177/1044389420911321.

Leung CW, Tester JM. 2019. The Association between Food Insecurity and Diet Quality Varies by Race/Ethnicity: An Analysis of National Health and Nutrition Examination Survey 2011-2014 Results. *J Acad Nutr Diet*. 119(10):1676-1686. doi:10.1016/j.jand.2018.10.011.

Leung CW, Wolfson JA. 2021. Food Insecurity Among Older Adults: 10-Year National Trends and Associations with Diet Quality. *J Am Geriatr Soc*. 69(4):964-971. doi:10.1111/jgs.16971.

Lopes SO, Abrantes LCS, Azevedo FM, Morais N de S de, Morais D de C, Gonçalves VSS, Fontes EAF, Franceschini S do CC, Priore SE. 2023. Food Insecurity and Micronutrient Deficiency in Adults: A Systematic Review and Meta-Analysis. *Nutrients*. 15(5):1074. doi:10.3390/nu15051074.

Marques ES, Reichenheim ME, De Moraes CL, Antunes MM, Salles-Costa R. 2015. Household food insecurity: a systematic review of the measuring instruments used in epidemiological studies. *Public Health Nutr*. 18(5):877-892. doi:10.1017/S1368980014001050.

Men F, Tarasuk V. 2022. Classification Differences in Food Insecurity Measures between the United States and Canada: Practical Implications for Trend Monitoring and Health Research. *J Nutr*. 152(4):1082-1090. doi:10.1093/jn/nxab447.

OHCHR and the right to food. OHCHR. [accessed 2024 Feb 2]. <https://www.ohchr.org/en/food>.

Pirkle CM, Lucas M, Dallaire R, Ayotte P, Jacobson JL, Jacobson SW, Dewailly E, Muckle G. 2014. Food insecurity and nutritional biomarkers in relation to stature in Inuit children from Nunavik. *Can J Public Health Rev Can Sante Publique*. 105(4):e233-238. doi:10.17269/cjph.105.4520.

Pirkle CM, Sentell TL. 2020. One in five Hawai'i residents indicate that they do not have enough money for food. SMS Community Pulse.

Pirkle CM, Sentell TL. 2021. Hawai'i residents continue to struggle to afford food in 2021. SMS Community Pulse.

Pourmotabbed A, Moradi S, Babaei A, Ghavami A, Mohammadi H, Jalili C, Symonds ME, Miraghajani M. Food insecurity and mental health: a systematic review and meta-analysis. *Public Health Nutr.* 23(10):1778-1790. doi:10.1017/S136898001900435X.

Rabbitt MP, Hales L, Burke M, Coleman-Jensen A. 2023. Household Food Security in the United States in 2022. Economic Research Service, United States Department of Agriculture. [accessed 2023 Feb 5]. <https://www.ers.usda.gov/publications/pub-details/?pubid=107702>.

de Sousa T, Andrichik A, Prestera E, Rush K, Tano C, Wheeler M, Abt Associates. 2024. The 2023 Annual Homelessness Assessment Report (AHAR to Congress) Part 1: Point-In-Time Estimates of Homelessness, December 2023. The U.S. Department of Housing and Urban Development.

Stupplebeen DA, Quensell M, Peltzer NK, Pirkle CM. Food Insecurity in Hawai'i Using a Population-Based Sample: A Data Brief. [accessed 2023 Feb 5]. https://www.hawaiihealthmatters.org/content/sites/hawaii/2018_Food_Insecurity_Data_Brief.pdf

United States Census. 2019. Design and Methodology: Current Population Survey- America's Source for Labor Force Data. Report No.: Technical paper 77.

U.S. Census Bureau. 2023 Poverty Thresholds. [Census.gov](https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html). [accessed 2024 Feb 5]. <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>.

U.S. Census Bureau QuickFacts: Hawaii. [accessed 2024a Feb 5]. <https://www.census.gov/quickfacts/fact/table/HI/PST045223>.

U.S. Census Bureau QuickFacts: Honolulu County, Hawaii. [accessed 2024b Feb 5]. <https://www.census.gov/quickfacts/fact/table/honolulucountyhawaii/INC910222#INC910222>.

US Department of HUD. 2023 Adjusted Home Income Limits. State of Hawaii. [accessed 2023 Feb 5]. https://www.huduser.gov/portal/datasets/home-datasets/files/HOME_IncomeLmts_State_HI_2023.pdf.





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