HUNGER AND FOOD INSECURITY IN HAWAI`I
BASELINE ESTIMATES
HAWAI`I HEALTH SURVEY, 1999-2000

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INTRODUCTION

Food security, as defined by the U.S. government, is "*the ready availability of nutritionally adequate and safe foods and the ability to acquire them in socially acceptable ways*"[1]. In 2000, the Office of Disease Prevention and Disease Promotion, of the U.S. Department of Health and Human Services recognized enhancing food security status as a nationwide health objective (Healthy People 2010: Objective 19-8) [2]. National data indicated 9.2% of households in Hawai`i were food insecure in 1995[3], 10.4% in 1996-1998[4]. The purpose of this Hawai`i Department of Health report is to provide baseline information on food insecurity status for 1999-2000. Specific objectives are to assess the prevalence of food insecurity in Hawai`i across counties and geographical sub-areas, and to measure the association of food security status to other health and demographic variables.

METHODS

Data came from the Hawai`i Health Survey (HHS), a statewide random telephone survey. The HHS is used by the State Department of Health to collect data on selected health and demographic variables from the population of Hawai`i. Data were pooled over a two-year period (1999-2000) and an average weight for the two years applied. There were 10,233 adult respondents (10,233 households) surveyed, providing data on 29,860 household members. Food security status was measured using a validated set of six national food security indicators. The least severe item was "The food I/we bought just didn't last and we didn't have enough money to get more." Food security status of household members was mapped by geographical sub-area by using telephone prefix information. The relationships among food security status and other health and demographic variables were analyzed statistically to determine associations and their significance. Pertinent data are presented in tables and figures.

FINDINGS

PREVALENCE ESTIMATES

Food Security Status in Hawai`i 1999-2000	Number Households	Persons*
Food Secure	342,010	932,169
Food Insecure	67,812	221,834
At-risk of hunger	50,444	168,450
Adult hunger	15,009	41,197
Child and Adult hunger	1,901	9,964
Child hunger only	458	2,223
Hawai`i Population Estimate*	409,822	1,154,003

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*The questions are asked of the entire household so all persons living in the same household are coded the same

* Sample numbers provisionally weighted and adjusted for total population of Hawai`i: the homeless, Ni`ihau, Kalawao, group quarters, and households without telephones are not represented.

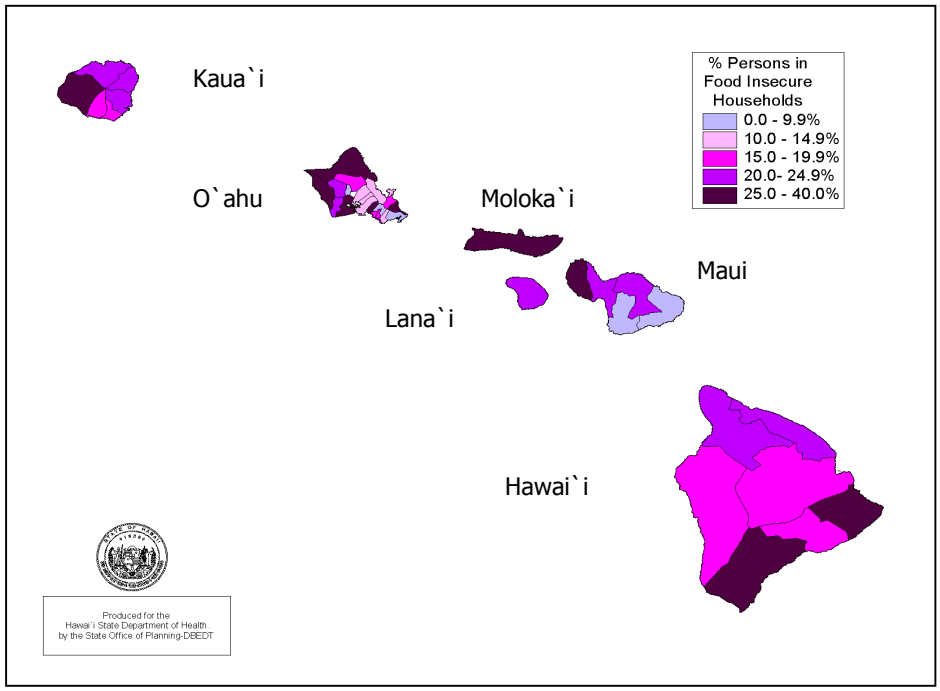
FINDINGS

HIGH-RISK COMMUNITIES

In sixteen communities (illustrated by darkest shade in the following chart), 23.5% to 36.2% of household members resided in food insecure households in 1999-2000.

Area	%
Waimānalo*	36.2
Wai`anae Coast	33.2
Puna	32.8
Ka`a`wa to Wailua	32.0
Moloka`i	30.7
Ka`ū	28.8
Kekaha/Waimea	28.5
Kalihi	27.6
`Ewa Beach	26.0
Lāhaina/Nāpili	25.6
Waipahu/Kunia	25.0
Lāna`i	24.8
Hanalei/Kīlauea	24.5
Hamākua	24.1
Makawao/Kihei	23.7
Waikīkī	23.5

*Less than 50 Households, not reliable estimate



HEALTH VARIABLES

- Adults that reported poorer mental and/or physical health (SF-12® summary scores) were more likely to live in a food insecure household. The results were statistically significant by Chi-square values.
- Food insecurity was associated with obesity: adults residing in food insecure households were 1.57 times more likely than adults in food secure households to report that they were obese (12.8% of adults obese in food secure households versus 20.1% in food insecure households.)
- Food insecurity was associated with various indicators of chronic health conditions: food insecure adults were (1.41, 1.32, and 1.12 times) more likely to diabetes, asthma, or arthritis respectively.

DEMOGRAPHIC VARIABLES

- 1 in 5 (221,834) Hawai`i residents lived in a food insecure household in 1999-2000.
- 1 in 4 (62,397) children ages 0-14 lived in a food insecure household.
- Food insecurity affected even moderate-high income households: 17% of households with poverty values 200-300% above poverty level were food insecure.
- Food insecurity affected over 1 in 4 Hawaiians/Part Hawaiians, 1 in 4 Filipinos, and 1 in 2 Other Pacific Islanders compared to 1 in 10 Japanese or Chinese.
- Fewer than 1 in 4 food insecure households received food stamps in 1999-2000.

IMPLICATIONS

In summary, 1 in 5 Hawai`i residents lived in a food insecure households between 1999-2000. High-risk communities existed through out the State. Children and the poor were particularly vulnerable. However, households with higher income sometimes also struggled with food insecurity; these households were not eligible for federal food assistance programs. Findings confirm that food insecurity merits continual monitoring. The homeless, Ni`ihau, Kalawao, households without telephones, and group quarters were not sampled.

INTRODUCTION

1. BACKGROUND

Definitions[1,5,6,7] used by the U.S. Government as the basis for monitoring food security across the nation include the following:

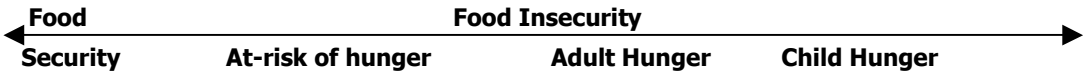
Food security *is the ready availability of nutritionally adequate and safe foods and an assured ability to acquire them in socially acceptable ways (e.g. not needing to resort to emergency food sources, scavenging, and stealing.)*

Food insecurity *exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain.*

Hunger *is the severe form of food insecurity where there is an uneasy or painful sensation caused by a lack of food, because of inadequate resources for foods.*

Through extensive local research, the pattern of food insecurity among Hawaii's residents has been documented to be similar to other food insecure households across the nation.[8,9,10,11] As depicted in Figure 1, food security status can be represented by a continuum ranging from households who are food secure (who have confidence in their ability to secure acceptable food) to progressively more severe levels of food insecurity. Food insecurity status typically initially is food insecurity without hunger labeled herein as "at-risk of hunger". As the situation deteriorates, the household experiences hunger usually first among adults and then among children.

Figure 1. Household Food Security Continuum



Enhancing food security status is now a nationwide health objective (Healthy People 2010, A Nationwide Health Promotion and Disease Prevention Agenda)[2]

> Objective 19-18: Increase the prevalence of food security among U.S. households to at least 94 percent of all households. (Baseline: 88 percent of all U.S. households were food secure in 1995.)

Baseline data are needed for Hawai`i as well as subsequent data points to measure progress toward the target. As suggested by the Centers for Disease Control and Prevention (CDC), data are needed at all levels of government and/or non-governmental organizations.

2. PURPOSE

This of this report is to provide baseline information on food insecurity status (and associated health and demographic variables) specific to the households in Hawai`i. It is hoped that the information will be used by programs, researchers, and the general public who are involved in ending hunger in Hawai`i. Data was gathered from questions on food security added to the annual Hawai`i Health Survey (HHS), modeled after the National Health Interview Survey. By using the HHS, a larger sample size was possible than used with prior national estimates, thus allowing a more detailed and reliable analysis.

The following basic key questions are posed in order to provide a format for baseline information.

1. What is the prevalence of food insecurity in Hawai`i?
2. What geographic areas have the highest percent of people residing in food insecure households?
3. Is food insecurity related to general health status?
4. Are there demographic variables associated with food insecurity?
5. How prevalent is adult and/or child hunger?

METHODS

1. OVERVIEW

The Hawai`i Health Survey (HHS), a statewide randomly generated telephone survey administered through the Department of Health Office of Health Status Monitoring (OHSM), collects information on health and demographic variables of households and persons in Hawai`i.[12] The HHS is a source of statewide data on selected demographics and health characteristics including general health status, prevalence of selected chronic health conditions, income, race, household size, household income (and poverty), and insurance status for intercensal years.

OHSM has contracted with SMS Research to conduct a telephone sample survey (1996 to the present.) For a more detailed description of the survey instrument and methods, please consult the Procedure Manual of the Hawai`i Health Survey published by SMS Research Inc. and OHSM.[13,14]

2. SAMPLING, WEIGHTING, AND ADJUSTMENT OF DATA

The telephone survey allows for sampling of all non-institutionalized residents (all occupied housing units) in the State of Hawai`i, including those in military housing (on and off base), rooming houses, and boarding houses throughout the state. Not included are:[Ψ] (1) the homeless, (2) all households and individuals residing in Kalawao County and on the island of Ni`ihau, (3) individuals residing in group quarters, and (4) households without telephones.

The total sample for the combined years 1999-2000 included 10,233 households with 29,860 household members. In 2000, 5,882 adult respondents (from the same number of households) were surveyed. The households sampled included 17,183 individuals (1.5% of the mid-year state resident population.) In 1999, 4,351 adult respondents (from the same number of households) were surveyed. The households sampled included 12,677 individuals (1.1% of the mid-year state resident population.)

Data are collected from the respondent (aged ≥18 Years) pertaining to the:

- Household – weighted and adjusted for all households in Hawai`i
- Household members
  - Respondent only – weighted and adjusted for all adults in Hawai`i
  - All household members – weighted and adjusted for the population of Hawai`i

Thus, data can be reported for the household and/or the household members (respondent or total.)

Annual state and county estimates of population, with distributions by age and gender, from the Department of Business, Economic Development, and Tourism (home of the State Data Center) are used to weight the survey data.[15] Outer islands have been oversampled in an alternate year pattern beginning in 1996. In 1999, the island of Hawai`i was oversampled. In 2000, all outer islands were oversampled.

The final weight factor for each person is a product of probability of household selection, household non-response, factor for crude completion adjustment, and post-stratification by age-sex-strata. Data for a two-year period (1999-2000) were pooled, summarized and an average weight for the two years applied. The following table summarizes the sample and weighted (adjusted for those areas not sampled) numbers for households and household members (adults, total household members) by island for the combined years 2000 and 1999. The weights for islands and sub-areas that were oversampled were adjusted accordingly.

[Ψ] *The survey population excluded persons in group quarters (those in military barracks, shipboard populations, college dormitories, homes for the aged, prisons, and other unspecified group quarters or institutionalized settings), as well as the residents of Kalaupapa on the Island of Moloka`i (the site of the former Hansen's disease colony and still excluded from all surveys in the State), and the island of Ni`ihau. Because the survey method was conducted by telephone interviewing, the sample effectively excluded homeless persons and persons in households with no working telephone service.*

Table 1. Hawai`i Health Survey 1999-2000, Weighted and Adjusted Numbers By Island

Year and Island	Sample		Weighted and Adjusted[1]							
	Households	All Members	Households			Population			Adults / By Repondent	
	n	n	N	%	C.I.	N	%	C.I.	N	%
2000/1999										
TOTAL	**10,233**	**29,860**	**409,825**	**100.0**		**1,154,001**	**100.2**		**859,260**	**100.0**
O`ahu	3565	10,750	291,177	**71.0**	70.9 - 71.2	837,914	**72.7**	72.2 - 73.2	629,254	**73.2**
Hawai`i	3217	9,120	53,970	**13.2**	13.1 - 13.3	140,502	**12.2**	11.9 - 12.5	101,161	**11.8**
Kaua`i	1373	3,960	20,454	**5.0**	4.9 - 5.1	55,502	**4.8**	4.7 - 5.0	40,289	**4.7**
Maui	1616	4,628	40,842	**10.0**	9.8 - 10.1	109,973	**9.5**	9.3 - 9.8	81,757	**9.5**
Moloka`i	349	1,059	2,345	**0.6**	0.6 - 0.6	6,867	**0.6**	0.6 - 0.6	4,679	**0.5**
Lana`i	113	343	1,037	**0.3**	0.3 - 0.3	3,243	**0.3**	0.2 - 0.3	2,120	**0.2**
Maui Sub-Total	2,078	6,030	44,224	10.8	10.7 - 10.9	120,083	10.4	10.1 - 10.7	88,556	10.3

[1] **Sample numbers provisionally weighted and adjusted for total population of Hawai`i**
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)

Please see A-1: for data for the years 1999 and 2000 individually.

3. SURVEY INSTRUMENT

Data on health and demographic variables are routinely collected each year. Food security variables, not routinely collected, were added in 1999-2000.

A. Health Variables

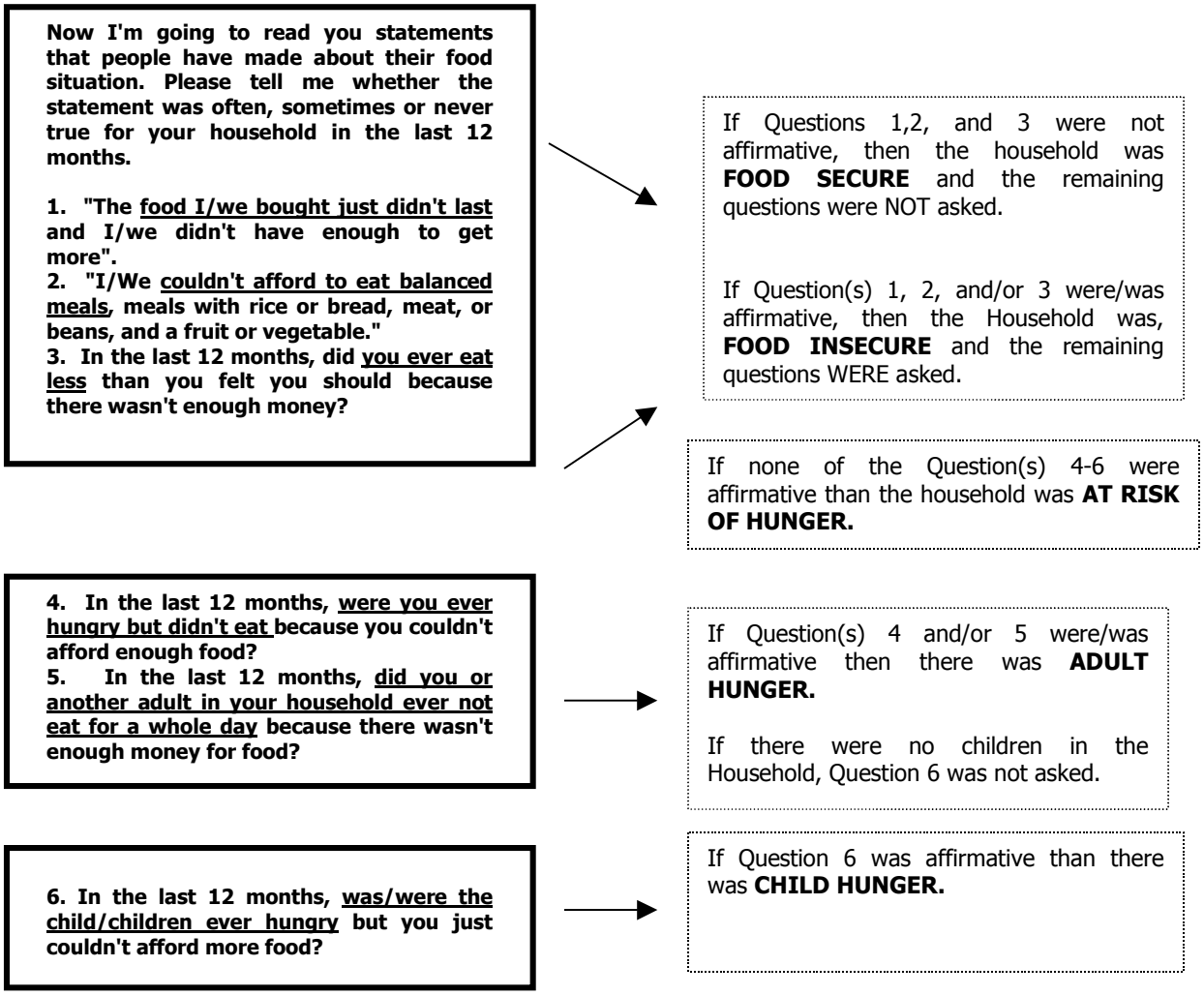
Food Security:
Since 1995, household food security status has been measured nationally using a set of 18 food security items.[5,6] The 18-item national food security measure approximates the extent and severity of household food insecurity over a 12-month period. For clarity, the method used to analyze national data from 1995, and 1996-1998 are referred to as the USDA Method. A six-question Simple Food Security Monitoring Tool (SFSMT) was recently validated from the 18-item USDA measure for food security monitoring in Hawai`i.[8,9,10,11] The SFSMT reflects the continuum of food security outlined in Figure 1. Since six items significantly reduces response burden and the SFSMT can approximate the USDA method, the SFSMT was used in this report.

The six questions in the SFSMT reflect the continuum of food security. In addition, the SFSMT results are coded to be more sensitive to those households at risk of hunger by including any negative responses to the six food security questions. For this report, the original six-question SFSMT was used. Because of findings, an additional question was later added and this seven question the SFSMT is recommended for future use (*Please see A-2.*) Nationally a six-question food security survey instrument has been subsequently developed and is now being tested at the national and state level.

Figure 2 outlines the SFSMT and how responses were coded. The respondent answered questions for the household on food security regarding the total household. **Therefore, food security information presented for persons (household members) was based solely on the food security status of the household (each person within the household has the same status.) The respondent was NOT asked about the food security status of each household member.** All respondents were asked the first three questions. If respondents had no affirmative responses to the first three questions, they were not asked the remaining three questions. A similar skip pattern was used with the USDA method to reduce respondent burden.[5] If a household answered one or more of the first three questions affirmatively (sometimes true, often true or yes), the interviewer proceeded onto the next set of two questions (respondent hunger and adults not eating for a whole day because of inadequate resources for food.) Only households with children with one or more previous affirmative responses were asked the final question pertaining to hunger among children.

As outlined in Figure 2, the SFSMT relies on the content of each response to categorize responses. If no affirmative responses were given the household was designated "food secure" while alternatively, if at least one single affirmative response was given to one of the first three questions the household was categorized "at risk of hunger", the least severe form of food insecurity. In order to be categorized as experiencing "hunger among adults", an affirmative response was required to question four or five and a negative response to question six on child hunger. Households categorized as experiencing hunger among children required an affirmative response to question six on "child hunger"; and could either be "child and adult hunger" or "child hunger only", depending on the answers to questions four or five. All "at risk", and "hunger" categories were combined to form the "food insecure households".

Figure 2. Coding of Questions – Simple Food Security Monitoring Tool (SFSMT)



CLASSIFICATION OF RESPONSES - SFSMT:

- FOOD SECURE
- FOOD INSECURE
  - ✓ AT RISK OF HUNGER
  - ✓ ADULT HUNGER ONLY
  - ✓ CHILD HUNGER WITH OR WITHOUT ADULT HUNGER

Body Mass Index (BMI):

Height and weight is asked only of the Respondent, thus data are for only the population aged ≥ 18 years. The obesity measure is based on Body Mass Index (BMI). BMI was defined as weight in kilograms divided by height in meters squared (kg/m^2). The National Heart, Lung, and Blood Institute (NHLBI) (June 17, 1998) released the Federal guidelines for the "clinical definition" of overweight and obese: [16]

BMI Categories:

- Underweight <18.5
- Normal 18.5-25.0
- Overweight 25.0-30.0
- Obese I 30.0-35.0
- Obese II 35.0-40.0
- Obese III >40.0

Chronic Health Conditions:
Respondents are asked of each household member: "Has anyone in the household been told by a physician or medical professional that they have arthritis?" The same question is asked on other health conditions including asthma, diabetes, high blood cholesterol, and hypertension. The response was recorded for each household member. However, in the present report for comparability to other variables, estimates are for the adult population based on answers recorded for the respondent.

Health Related Quality of Life Questions:
SF-12®[17] questions (a shortened 12 questionnaire from the SF-36® questionnaire) are related to self reported general health, limitations caused by physical and/or emotional problems, pain limiting activities, limitations to amount and type of work, and limitations in social activities due to health problems (*Please see A-3.*) Scoring for the summary scales MCS-12 (mental component summary scale) and PCS-12 (physical component summary scale) from the 12 questions on health are as outlined in the SF-12® manual.[17] The SF-12® scoring algorithm is a composite score of weighted item responses to 12 questions on self-reported physical and mental health status. The content validity of the SF-12® compares favorably with that of the longer SF-36® Health Survey.

A higher summary scale value indicates better health for both the mental and physical summary scale. The scores are standardized so that the mean equals 50 and the standard deviation 10 for the general U.S. population.

B. Demographic Variables.

Age:
Respondents (adults) are age 18 or over. For all household members, respondents are asked the person's age at last birthday. If, when the data are compiled, a person's age is missing, it is imputed using a "hot deck" method: a response from another person with similar demographic and economic characteristics is substituted. Children are defined as persons less than 18 years of age.

Assistance Variables:
The respondent is asked whether any member of the household is presently receiving Food Stamps, AFDC/Welfare benefits, Social Security Income, Disability Benefits, Housing Assistance/Section 8, Free or Reduced Lunch, Head Start benefits, and/or employment benefits. The responses are recorded for the household.

Geographic Sub-Area:
Geographic residence of household members is based on the household's telephone prefix. Sub-areas are prefixes grouped as defined in the Verizon Hawai`i Telephone directory with additional input from state district health officers. For geographic depiction of food insecurity prevalence, data was generated by sub-area using telephone prefix codes. OHSM collaborated with The State Office of Planning (Department of Business, Economic Development and Tourism) to create maps showing the geographic distribution of food insecurity based on the telephone prefix sub-areas. The State Office of Planning's GIS program digitized telephone prefix boundaries and linked them to the Verizon data and the data provided by OHSM to produce the maps contained in the present report.

Education:
Education status is recorded for all adult household members. The categories include education through kindergarten, grades 1-8, grades 9-10, grade 12 (or GED), 1-3 years of college, 4 or more years of college, and unknown or refused. However, in this report for the sake of consistency in data presentation estimates are based solely on the respondent's answers (adult population.)

Gender:
The Respondent identifies gender for household members, in order of age, including themselves.

Household:
A household includes all persons who occupy a housing unit (house or apartment), whether they are related to each other or not.[18]

Household Type:
Household status: Household status is classified according to four categories:

1. Single adult with no children
2. Multiple adults with no children
3. Single adult with a child or children
4. Multiple adults with a child or children

Income:
The respondent is asked the total household income. Because of a bimodal distribution and occurrence of unknown income (either not knowing the household income or refusing to answer the question), the median (rather than the mean) is used to estimate an average income by food security status. Usually, when the household income is coded as unknown or refused, values are imputed with the use of the "hot deck" method based on income of households with similar demographic characteristics.[13,14] However, for the purpose of the present report income that was unknown is not imputed and is recorded as unknown.

Insurance Status:
Seventeen questions on insurance coverage in the HHS are analyzed to compute a final insurance status based on; insurance status, health plan, drug and dental coverage, type of Medicare coverage, and whether the insurance is provided by the employer. If a household member is uninsured, the respondent is asked the reason and the duration. Insurance questions are asked of the respondent for each household member.

Marital Status:
In 1999 and 2000, marital status was asked only of the respondent. Thus, the status is reported only for the adult population of Hawai`i. The categories included: married, widowed, divorced, separated, never married, and unknown or refused.

Poverty Status:
Poverty status is determined by using the "poverty guidelines" and takes into account not only income but also household size supported by the income. Thus, it is a more useful indicator of actual personal income. It is reported for the household and/or the household members.

The poverty guidelines are designated for the year in which they are issued and reflect price changes for the prior year. The Hawai`i Health Survey income question is asked also of the prior year. Thus, the 1999 and 2000 Federal Poverty Guidelines were used for 1999 and 2000 respectively in the present report to compute percent poverty levels. Households below 100 percent of the guideline are said to be below the poverty guideline. Individuals in those households are said to be "living below poverty".[19] Poverty levels for persons of unknown income were listed as unknown.

Poverty guidelines are updated annually in the Federal Register by the U.S. Department of Health and Human Services.[19] The poverty guidelines are used for administrative purposes giving programs such as Head Start, Food Stamp Program, and Children's Health Insurance Program guidelines.

Race:
The Respondent lists up to four races for both their (and for each household member) mother and their father. The choices were White/Caucasian, Hawaiian, Chinese, Filipino, Japanese, Korean, Samoan/Tongan, Black/African American, Native American/Aleut/Eskimo/Inuit, Vietnamese, Asian Indian, Portuguese, and Guamanian/Chamorro. In addition, the respondent can: specify another race if it is not listed, reply they do not know, or refuse to answer.

OHSM codes these eight possible choices for each individual to one race in order to comply with prior Census rules coding race[20]. Specifically, if Hawaiian is listed for the Mother or Father the person is coded to Hawaiian. Otherwise, the person is coded to the first race listed (other than Caucasian or unknown) for the Father. If the Father's race is Caucasian or unknown then the coding is determined by using the Mother's first race. If the Mother's first race is Caucasian or unknown, the Father's first race is coded. Otherwise, the person is coded to don't know, unsure, or refused.

4. DATA ANALYSIS

Data from the 2000 and 1999 data sets were combined (they were collected independently) to provide a larger sample size for more reliable estimates of prevalence by sub-area.

OHSM analyses, compiles, and reports information from the HHS. Software programs used by OHSM staff included SAS, SUDAAN, MS Word, MS Excel, and PowerPoint. Estimates of variance, tests of association, 95% confidence limits, and other statistics were completed using SUDAAN software (for the analysis of data from surveys that have a large sample size and a complex survey design.) The alpha value for all statistical tests was set at $p \leq 0.05$. The software program SUDAAN was used for statistical tests between food security, and the health and demographic variables for the adult population (by respondents.) SF-12® values were recoded to a score of ≤50 or a score >50, BMI status was coded as underweight/normal or overweight/obese, and poverty was coded below poverty level (≤100) or above poverty level (>100.) In addition, the SUDAAN Cochran-Mantel-Haenszel Chi-Square test was used to test the association of selected variables and food security controlling on poverty levels.

RESULTS

Baseline estimates of food security status are presented in relation to questions posed in the Introduction. Food Insecurity is presented as either at risk of hunger or actually experiencing hunger (adult and/or child hunger.) Question 6 deals with further separating hunger into: adult only, adult and child, and child only.

QUESTION 1. WHAT IS THE PREVALENCE OF FOOD INSECURITY IN HAWAI`I (AT RISK OF HUNGER OR ACTUALLY EXPERIENCING HUNGER)?

It is estimated that 16.5% of households in Hawai`i experienced some form of food insecurity during the period of 1999-2000 and these households included 19.2% of the population.

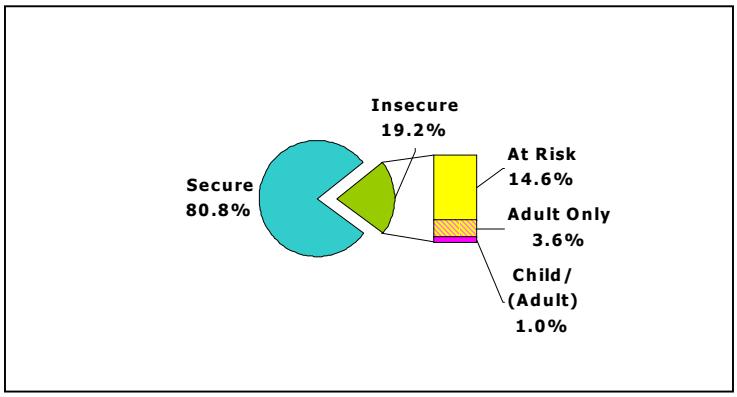
Table 2. Food Security Status for Households and Household Members, HHS 1999-2000

Food Security Status	2000/1999					
	Households [1,2]			Household Members[3,4]		
	N	Col. %	95% C.I.	N	Col. %	95% C.I.
Food Secure	342,010	**83.5**	82.5 - 84.4	932,169	**80.8**	79.5 - 82.0
Food Insecure	67,812	**16.5**	15.6 - 17.5	221,834	**19.2**	18.0 - 20.5
At Risk of Hunger	50,444	**12.3**	11.5 - 13.1	168,450	**14.6**	13.5 - 15.7
Child and Adult Hunger	1,901	**0.5**	0.3 - 0.7	9,964	**0.9**	0.6 - 1.3
Adult Hunger Only	15,009	**3.7**	3.2 - 4.2	41,197	**3.6**	3.1 - 4.2
Child Hunger Only	458	**0.1**	0.1 - 0.2	2,223	**0.2**	0.1 - 0.4
TOTAL	**409,822**			**1,154,003**		

[1] **All households, sample size 10,233**
[2] **Sample numbers provisionally weighted and adjusted for total number of households in Hawai`i**
[3] **All household members, sample size 29,860**
[4] **Sample numbers provisionally weighted and adjusted for total population of Hawai`i**
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)

Please see A 4-5: for weighted (and adjusted) and unweighted numbers for food security status by food security questions, HHS 1999-2000.
Please see A-6: for a comparison of SFSMT to the National USDA Method for coding food security status.
Please see A 7: for weighted (and adjusted) numbers for households and household members food security status for the years 1999 and 2000 individually.

Figure 3. Household Member Food Security Status, HHS 1999-2000



- 221,834 (19.2%) people lived in households that were classified as food insecure.
- Of these people:
  - 168,450 (14.6%) were in households that classified at risk of hunger.
  - 53,384 (4.6%) lived in households that had experienced hunger in the preceding 12 months either
    - 41,197 (3.6%) hunger among adults (but not children) or
    - 12,187 (1.0%) hunger among children (children with adult hunger or children only.)

QUESTION 2. WHERE ARE FOOD INSECURE HOUSEHOLDS (AND HOUSEHOLD MEMBERS) GEOGRAPHICALLY LOCATED?

Based on the percent of household members residing in food insecure households in 1999-2000 the following geographical areas were categorized at highest risk (25% or more of the population lived in food insecure households), more moderate, and lowest risk for food insecurity.

Table 3. Food Insecurity By County and Sub-Area Household Members, HHS 1999-2000

Oahu			Hawai`i			Kaua`i			Maui		
Sub-Area	**%**	**95% C.I.**	**Sub-Area**	**%**	**95% C.I.**	**Sub-Area**	**%**	**95% C.I.**	**Sub-Area**	**%**	**95% C.I.**
Food Insecure 25.0% and higher											
Waimānalo*	**36.2***	19.9 - 56.4	Puna	**32.8**	28.5 - 37.4	Kekaha/Waimea	**28.5**	20.2 - 38.6	Moloka`i	**30.7**	24.5 - 37.6
Wai`anae Coast	**33.2**	23.7 - 44.3	Ka`ū	**28.8**	20.9 - 38.2				Lāhaina/Nāpili	**25.6**	18.7 - 34.1
Ka`a`awa to Wailua	**32.0**	22.8 - 42.9									
Kalihi	**27.6**	21.7 - 34.4									
`Ewa/`Ewa beach/Soda Creek/Keahi	**26.0**	18.3 - 35.6									
Waipahu/Kunia	**25.0**	18.5 - 32.8									
Food Insecure 15.0-24.9%											
Waikīkī	**23.5**	12.9 - 38.7	Hamākua	**24.1**	17.1 - 32.7	Hanalei/Kīlauea	**24.5**	16.9 - 34.2	Lāna`i	**24.8**	15.1 - 37.9
Makakilo/Kapolei/Barbers Point	**20.3**	12.6 - 31.1	Kohala	**21.2**	15.8 - 27.8	Līhu`e	**21.3**	15.4 - 28.7	Makawao/Haiku/Paia	**23.7**	18.6 - 29.8
Kailua	**19.4**	13.5 - 27.1	Volcano	**19.7**	9.7 - 35.8	Kapa`a	**20.7**	16.1 - 26.3	Kahalui/Kīhei/Wailuku	**20.0**	16.7 - 23.8
Schofield/Wheeler/Capehart	**18.3**	9.0 - 33.5	Kona	**19.2**	16.2 - 22.6	Kōloa	**19.5**	11.5 - 31.1			
Makiki/Punahou	**17.8**	12.7 - 24.3	Hilo	**17.1**	14.4 - 20.1	Kalāheo/Hanapēpē	**17.8**	13.0 - 24.0			
Wahiawā	**17.7**	10.6 - 28.2									
Kaka`ako/Alakea	**17.3**	12.5 - 23.5									
Food Insecure <15.0%											
Pearl City/Ford Island	**14.6**	8.5 - 24.0							Kula	**6.4**	2.8 - 13.7
Kaimukī/Diamond Head	**13.9**	9.7 - 19.6									
`Aiea/Camp Smith	**11.0**	6.5 - 17.8									
Kāne`ohe/Kahalu`u	**10.8**	7.0 - 16.4									
Moanalua	**10.2**	5.1 - 19.4									
East Honolulu - `Āina Haina/Koko Head	**8.7**	5.2 - 14.4									
Mililani/Mauka	**7.9**	4.8 - 12.9									
Nu`uanu/Mānoa/Puunui	**7.8**	3.7 - 15.8									
County Sub-Total	**18.3**	**16.7 - 19.9**		**22.3**	**20.5 - 24.1**		**21.4**	**18.7 - 24.3**		**21.5**	**19.1 - 24.1**

[1] All household members, sample size 10,233
[2] Sample numbers provisionally weighted and adjusted for total population of Hawai`i
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)
*** Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion**

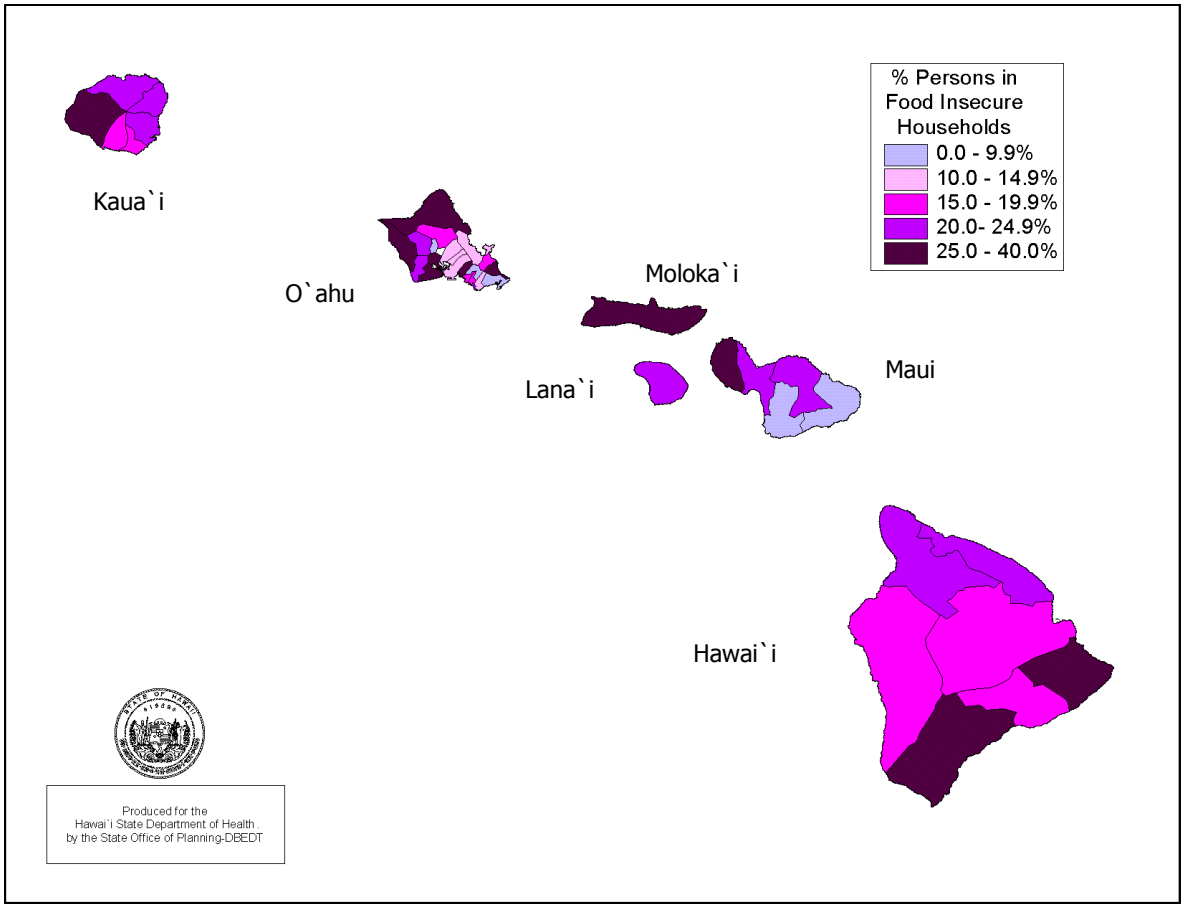
- Sub-areas where the prevalence of food insecurity for household members (living in a household that was food insecure) was above 30% included: Waimānalo*, Wai`anae Coast, Ka`a`ava to Wailua, Puna, and Moloka`i. The sub-areas are in O`ahu, Hawai`i, and Maui County.

- No conclusions should be drawn from areas that are asterisked as they had a sample size that was less than 50 and are presented only for the sake of completion.

Please see A-8: for numbers and percent (with 95% confidence intervals) food insecurity by sub-area.

Figures 4-8. illustrate geographically communities at high risk of food insecurity.

Figure 4. Food Security Status By Island and Sub-Area - Household Members, HHS 1999-2000

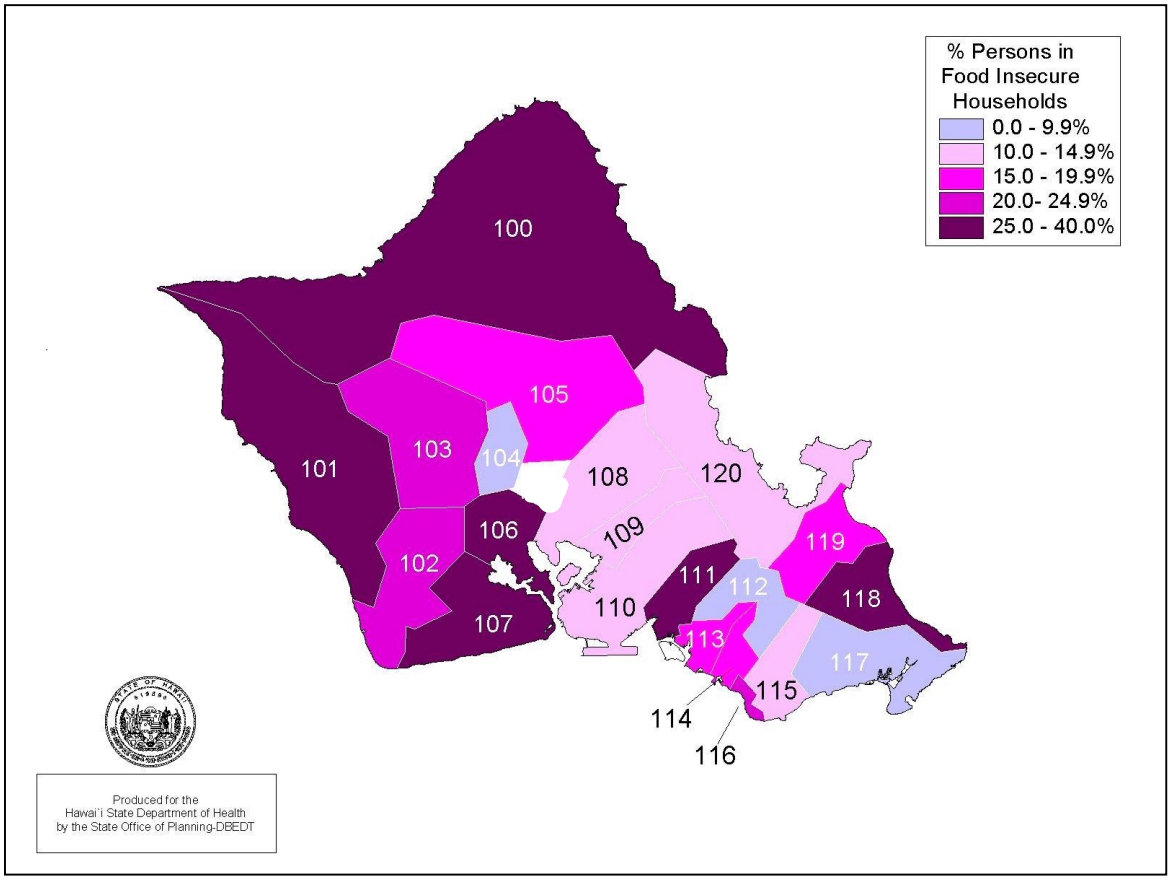


- Darker areas indicate a higher prevalence of food insecurity
- There were high levels of food insecurity on all of the islands[Ψ].

Please see A-8: for numbers and percent (with 95% confidence intervals) food insecurity by sub-area.

[Ψ] *Waimānalo and Hana had a sample of less than 50 households. Data are not reliable for these areas and are presented only for the sake of completion.*

Figure 5. Food Security Status By Sub-Area for the Island of O`ahu (City and County of Honolulu) - Household Members, HHS 1999-2000



- Areas along the North Shore, Waimānalo$^{\Psi}$, Wai`anae, `Ewa Beach, and Kalihi had the highest levels of food insecurity.
- The next highest levels occurred adjacent to these areas.
- Central O`ahu, Nu`uanu/Mānoa, Mililani, and East Honolulu areas were relatively more food secure.

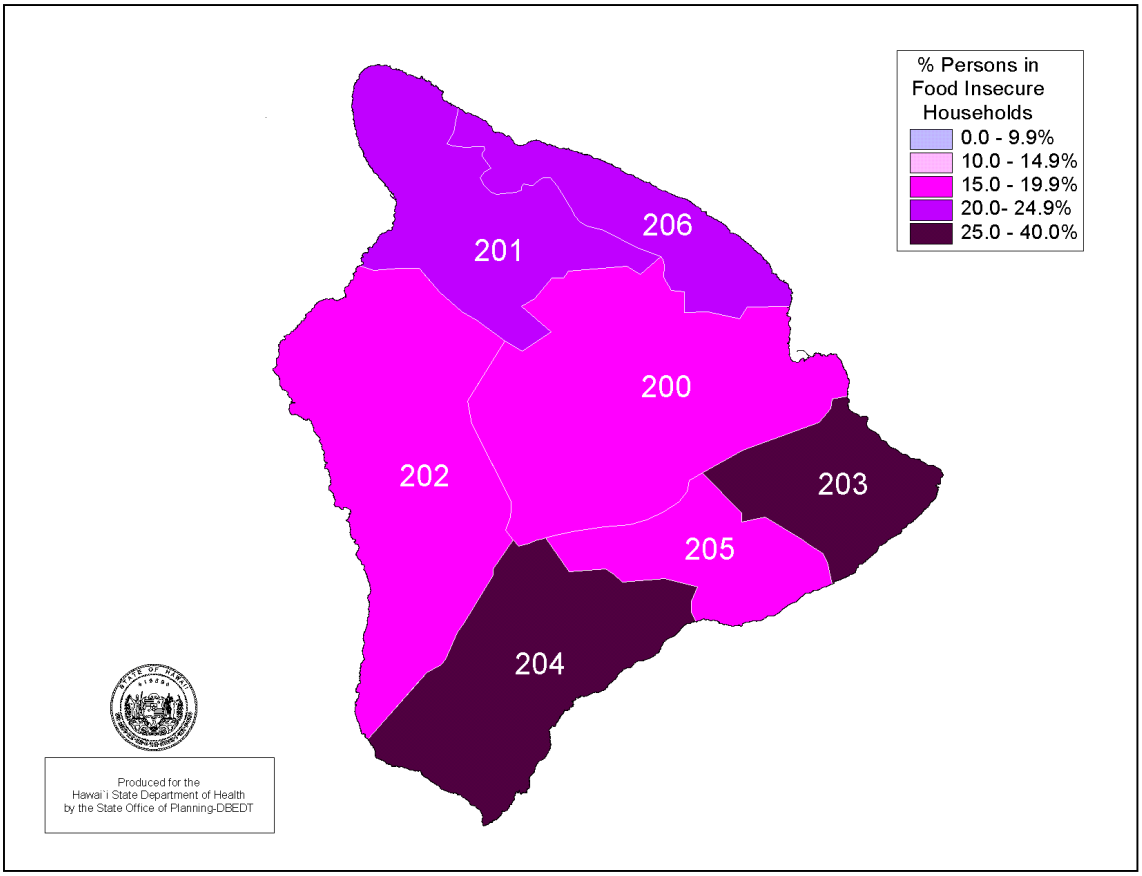
Please see A-8: for numbers and percent (with 95% confidence intervals) food insecurity by sub-area.

	DOH CODE NAME	Population[1,2] % Insecure
Oahu		
100	*Ka`a`awa to Wailua*	**32.0**
101	*Wai`anae Coast*	**33.2**
102	*Makakilo/Kapolei/Barbers Point*	**20.3**
103	*Schofield/Wheeler/Capehart*	**18.3**
104	*Mililani/Mauka*	**7.9**
105	*Wahiawā*	**17.7**
106	*Waipahu/Kunia*	**25.0**
107	*`Ewa/`Ewa beach/Soda Creek/Keahi*	**26.0**
108	*Pearl City/Ford Island*	**14.6**
109	*`Aiea/Camp Smith*	**11.0**
110	*Moanalua*	**10.2**
111	*Kalihi*	**27.6**
112	*Nu`uanu/Mānoa/Puunui*	**7.8**
113	*Kaka`ako/Alakea*	**17.3**
114	*Makiki/Punahou*	**17.8**
115	*Kaimukī/Diamond Head*	**13.9**
116	*Waikīkī*	**23.5**
117	*East Honolulu - `Āina Haina/Koko Head*	**8.7**
118	*Waimānalo**	**36.2***
119	*Kailua*	**19.4**
120	*Kāne`ohe/Kahalu`u*	**10.8**
	O`ahu Sub-Total	**18.3**
TOTAL ALL ISLANDS		**19.2**

[1] All household members, sample size 10,233
[2] Sample numbers provisionally weighted and adjusted[a]
[a](Ni`ihau, Kalawao, group quarters and homeless are not represented)
*** Sample size <50 and not reliable - presented only for sake of completion**

$^{\Psi}$ *Waimānalo included only 31 households and therefore was not a reliable estimate.*

Figure 6. Food Security Status By Sub-Area for the Island and County of Hawai`i – Household Members, HHS 1999-2000



- The Puna and Ka`ū sub-areas had the highest level of food insecurity.
- Next highest areas included Kohala and Hamākua.
- Hilo was the only area below the state average.

Please see A-8: for numbers and percent (with 95% confidence intervals) food insecurity by sub-area.

DOH CODE NAME		Population[1,2] % Insecure
Hawai`i		
200	*Hilo*	**17.1**
201	*Kohala*	**21.2**
202	*Kona*	**19.2**
203	*Puna*	**32.8**
204	*Ka`ū*	**28.8**
205	*Volcano*	**19.7**
206	*Hamākua*	**24.1**
	Hawai`i Sub-Total	**22.3**
TOTAL ALL ISLANDS		**19.2**

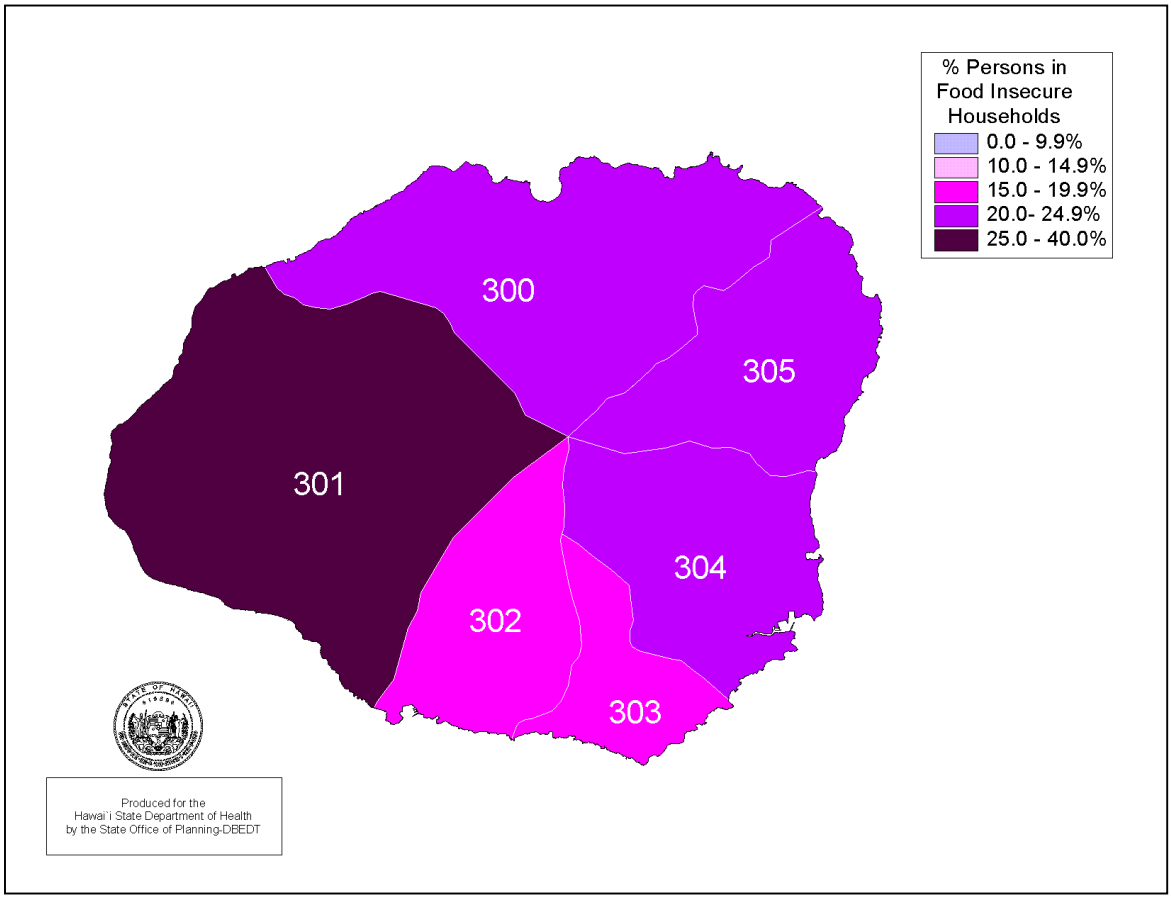
[1] All household members, sample size 10,233

[2] Sample numbers provisionally weighted and adjusted[a]

[a](Ni`ihau, Kalawao, group quarters and homeless are not represented)

*** Sample size <50 and not reliable - presented only for sake of completion**

Figure 7. Food Security Status By Sub-Area for the Island and County of Kaua`i – Household Members, HHS 1999-2000



- Kekaha/Waimea had the highest level of food insecurity on Kaua`i.
- All areas except Kalāheo/Hanapēpē were above the state average of 19.2% of people living in households experiencing food insecurity.

Please see A-8: for numbers and percent (with 95% confidence intervals) food insecurity by sub-area.

DOH CODE NAME		Population[1,2] % Insecure
Kaua`i		
300	*Hanalei/Kīlauea*	**24.5**
301	*Kekaha/Waimea*	**28.5**
302	*Kalāheo/Hanapēpē*	**17.8**
303	*Kōloa*	**19.5**
304	*Līhu`e*	**21.3**
305	*Kapa`a*	**20.7**
	Kaua`i Sub-Total	**21.4**
TOTAL ALL ISLANDS		**19.2**

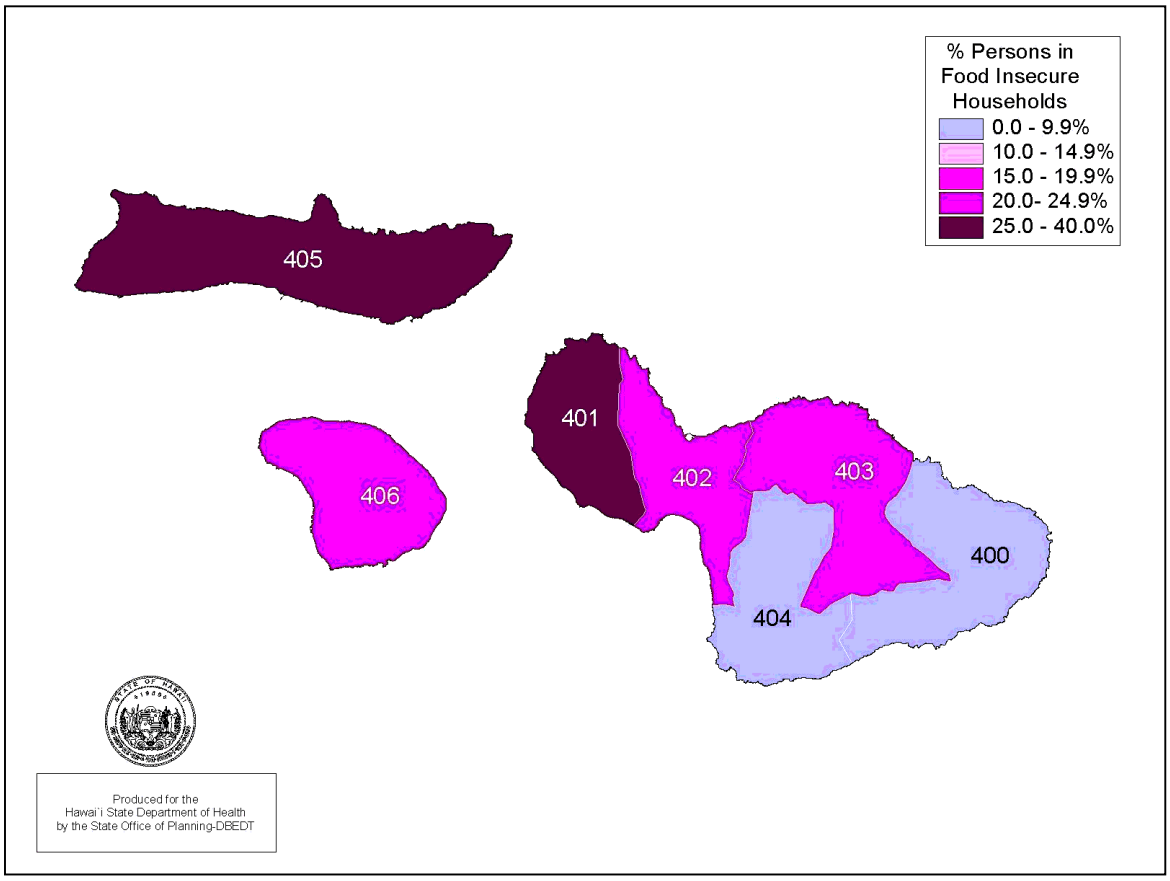
[1] **All household members, sample size 10,233**

[2] **Sample numbers provisionally weighted and adjusted[a]**

[a]**(Ni`ihau, Kalawao, group quarters and homeless are not represented)**

*** Sample size <50 and not reliable - presented only for sake of completion**

Figure 8. Food Security Status By Sub-Area for Maui County – Household Members, HHS 1999-2000



- The island of Moloka`i and the sub-areas of Lāhaina/Nāpili had the highest level of food insecurity.
- Interestingly, Hana had a relatively low prevalence of food insecurity, however because of the low sample size[Ψ] the estimate was unreliable.

Please see A-8: for numbers and percent (with 95% confidence intervals) food insecurity by sub-area.

	DOH CODE NAME	Population[1,2] % Insecure
Maui		
400	*Hana**	**9.3***
401	*Lāhaina/Nāpili*	**25.6**
402	*Kahalui/Kīhei/Wailuku*	**20.0**
403	*Makawao/Haiku/Pai`a*	**23.7**
404	*Kula*	**6.4**
405	*Moloka`i*	**30.7**
406	*Lāna`i*	**24.8**
	Maui County Sub-Total	**21.5**
TOTAL ALL ISLANDS		**19.2**

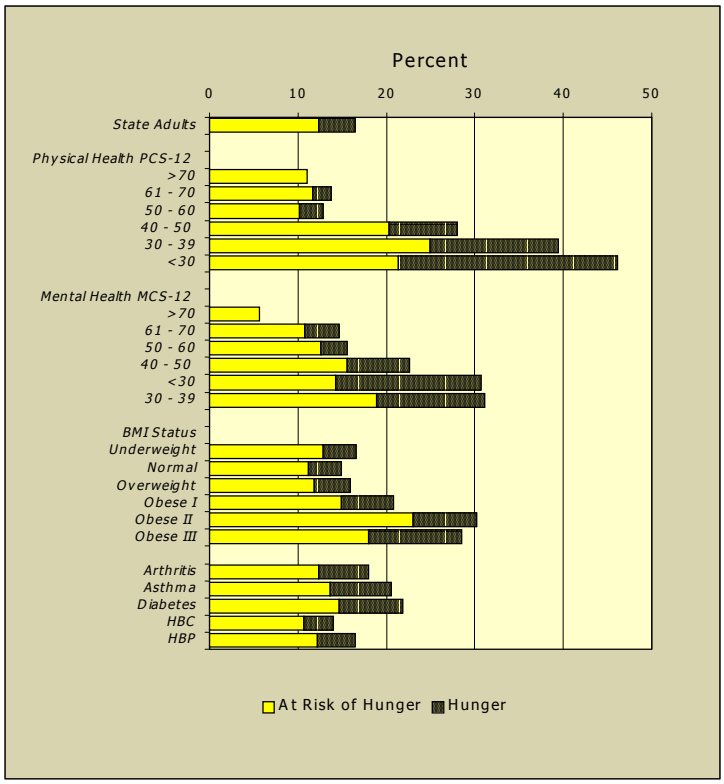
[1] All household members, sample size 10,233
[2] Sample numbers provisionally weighted and adjusted[a]
[a](Ni`ihau, Kalawao, group quarters and homeless are not represented)
*** Sample size <50 and not reliable - presented only for sake of completion**

[Ψ] *Hana had a sample size of less than 50 households (25 households) and was presented only for the sake of completion.*

QUESTION 3. IS FOOD INSECURITY RELATED TO GENERAL HEALTH STATUS?

Food insecurity was more prevalent in households where adults (by respondents) reported poorer mental and/or physical health (SF-12®[17]), higher BMI values (indicating overweight and obese), and higher prevalence of selected chronic conditions.

Figure 9. Health Variables By Food Insecurity – Adults Household Members, HHS 1999-2000



- **General Health**
  - ✓ Adults that reported poorer health (less than the national mean of 50 for their SF-12®[Ψ] physical and/or health scores) were more likely to be living in households that were food insecure (28.0%, 39.5% and 46.1% versus 16.4% state average) compared to than adults whose health score was higher (11.0%, 13.7%, 12.8%.) When the prevalence was age-adjusted to the Hawai`i Census 2000 population, the pattern for food insecurity by mental health scores was similar, however, the prevalence of food insecurity by physical health showed an increase of food insecurity for those reporting poor physical health.
  - ✓ Surprisingly, adults who were obese were more likely to be living in a household experiencing food insecurity (20.8%, 30.2%, and 28.6%) when compared to adults that were underweight, normal weight, or overweight (16.4%, 15.3%, and 15.1%.) The pattern for the age-adjusted prevalence was similar for all weight levels.

- **Chronic Health Conditions**
  - ✓ Adults that had been told by a medical professional that they have diabetes were more likely to be in food insecure households (21.8%) when compared to the state average (16.4%)
  - ✓ Adults reporting arthritis and/or asthma were also more likely to be in a food insecure household (18.0%, 20.6% respectively) than the state average. However, adults with high blood cholesterol **were less** likely to be food insecure (14.0%) when compared to the state average (16.4%.)
  - ✓ When the values were age adjusted to the Hawai`i Census 2000 population, adults that were diagnosed with diabetes, arthritis, asthma, high blood pressure, and high blood cholesterol were all more likely to be living in a food insecure household.

Please see A-9: for numbers and percent food insecurity (with age adjusted values and 95% confidence intervals) by selected health variables.

[Ψ] *The SF-12® summary physical and mental health scores are standardized summary scores of the 12 SF-12® questions (A-2.) The scores are set so the mean for the population of the U.S. is 50 with a standard deviation of 10.*

The software program SUDAAN, specifically for analysis of large-sample surveys, was used to generate chi-square values between individual health variables and food insecurity. SF-12®, BMI status, and poverty values were recoded (Methods pg. 16.) The Cochran-Mantel-Haenszel Chi-Square test was also used to test the association of selected health variables and food insecurity controlling on poverty level. Values that are statistically significant are in bold.

Table 4. Chi-Square (Wald) and Cochran-Mantel-Haenszel Chi-Square Food Insecurity By Selected Health Variables - Adult Population of Hawai`i by Respondent, HHS 1999-2000

Health Variable	Chi-Square[1]			CMH[2] Test Stratifying on Poverty Level[3]		
	Value	P - value	d of f	Value	P - value	d of f
MCS-12[4]	**153.7**	<0.01	1	**151.06**	<0.01	1
PCS-12[5]	**43.44**	<0.01	1	**39.40**	<0.01	1
BMI Status[6]	**27.16**	<0.01	1	**27.48**	<0.01	1
Arthritis	~~1.43~~	~~0.23~~	~~1~~	~~0.54~~	~~0.46~~	~~1~~
Asthma*	**6.74**	<0.01	1	~~6.47~~	~~0.01~~	~~1~~
Diabetes*	**6.43**	0.01	1	~~5.43~~	~~0.02~~	~~1~~
HBC*	**6.71**	<0.01	1	~~7.05~~	~~<0.01~~	~~1~~
HBP	~~0.00~~	~~0.99~~	~~1~~	~~0.09~~	~~0.76~~	~~1~~
Disability Benefits	**35.81**	<0.01	1	**31.91**	<0.01	1

[1] Chi-Square (Wald) computed using SUDAAN software for analysis of complex sample survey designs
[2] Cochran Mantel Haentzel Test Controlling on Household Above or Below Poverty Level
[3] Poverty coded as 0-100% or >100% poverty level
[4] Mental Component Summary Scale - SF12 (Coded Score 1-50 or Score >50)
[5] Physical Component Summary Scale - SF12 (Coded Score 1-50 or Score >50)
* Values not consistent between levels of poverty

- Chi-square values corroborate that those adults with health scores lower on the SF-12® physical and mental health summary scales were significantly more likely to live in food insecure households.
- Adults whose BMI was categorized as overweight or obese were also more likely to be living in a food insecure household.
- Chi-square values for arthritis and high blood pressure were not significant at the P 0.05 level.
- After controlling on poverty level (Cochran-Mantel-Haenszel Chi-SquareTest) the SF-12® physical and mental health summary scales and overweight/obese variables were all still significant. However, the chronic health conditions were either not significant or do not have a consistent association within poverty levels.

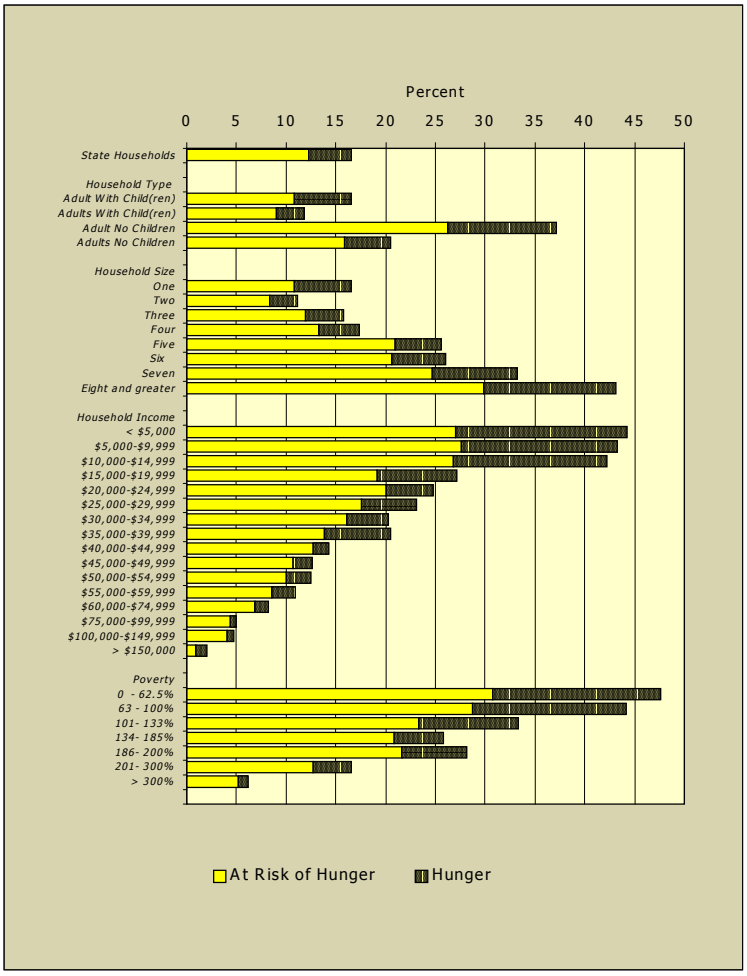
Health Conditions for Children By Food Security Status, Hawai`i Health Survey 1999-2000

Children that had been told by a medical professional that they have asthma were more likely to be living in a household experiencing food insecurity (27.5%) than children without asthma (25.0%), however, the difference was not statistically significant. Sample sizes for the other health conditions (arthritis, diabetes, high blood cholesterol, and high blood pressure) were less than 50 children and are not reliable estimates.

QUESTION 4. ARE THERE DEMOGRAPHIC VARIABLES ASSOCIATED WITH FOOD INSECURITY?

There was an increased prevalence of food insecurity with increasing household size, the presence of children, single adult households, and households in poverty.

Figure 10. Household Characteristics, Income, and Poverty By Food Insecurity – Households, HHS 1999-2000

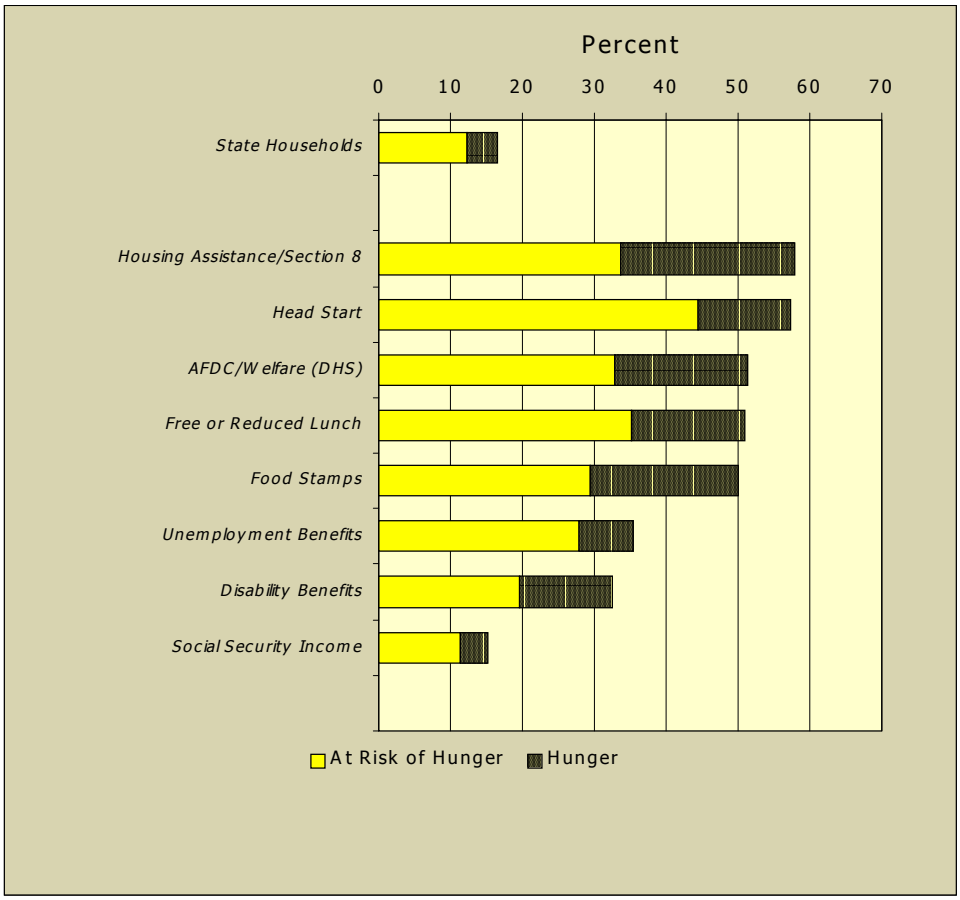


- Higher prevalence of food insecurity occurred in single adult households with or without children when compared to multiple adult households (average single adult – 19.7% versus multiple adults – 15.7%.) In addition, households with children had higher prevalence of food insecurity than households without children (average with children – 21.9% versus - 13.2% without children.)
- Households with more members were more likely to be food insecure (43.1% for households with 8 or more persons.)
- Households with lower income and increased poverty had a higher prevalence of food insecurity. For the "below poverty levels" food insecurity prevalence was 45.17% versus above the poverty level at 13.5%.

Please see A-10: for numbers and percent food insecurity (with 95% confidence intervals) by selected household demographic variables.

Figure 11 illustrates food insecurity prevalence by the households that were receiving government assistance.

Figure 11. Household Assistance Variables By Food Insecurity - Households, HHS 1999-2000

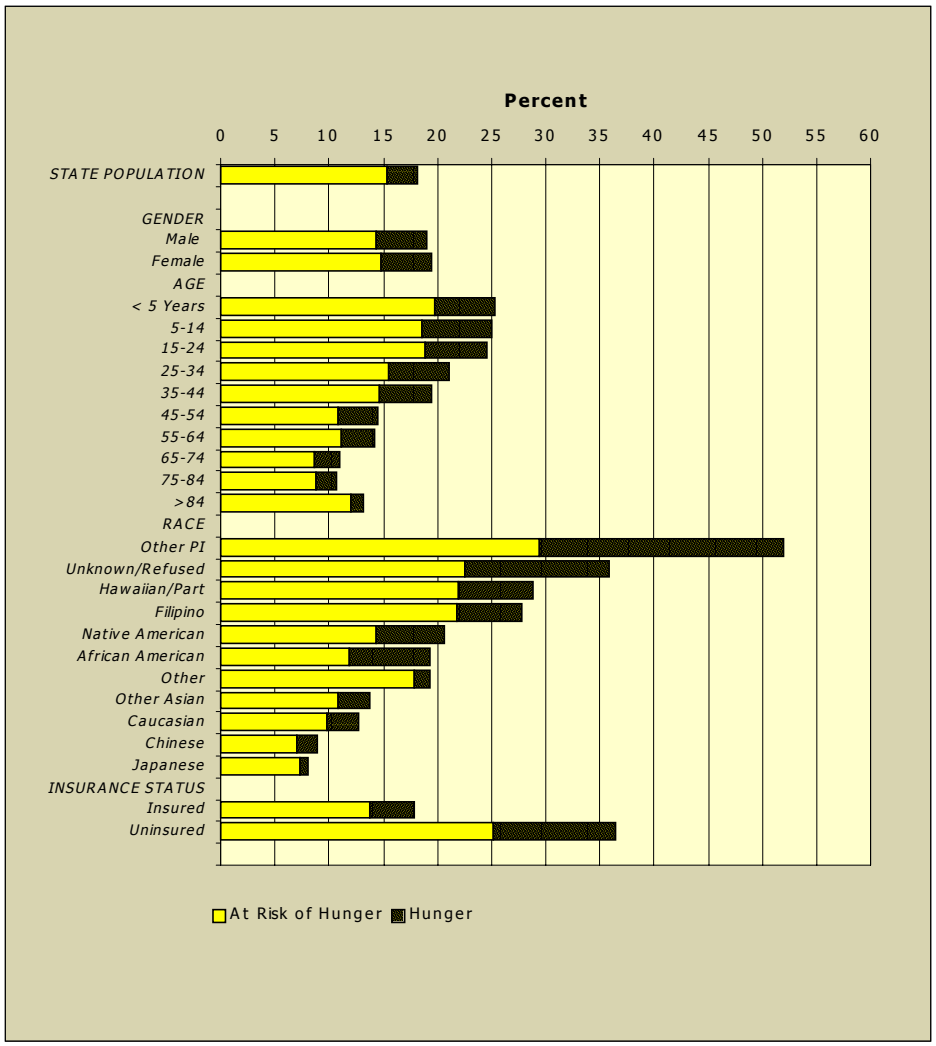


- Except for Social Security Benefits, households receiving assistance from the above programs were more likely to be food insecure than the state average.

Please see A-11: for numbers and percent food insecurity (with 95% confidence intervals) by assistance variables.

Figure 12 illustrates food insecurity by selected demographic variables for all household members.

Figure 12. Gender, Age, Ethnicity, and Insurance Status By Food Insecurity – Household Members, HHS 1999-2000

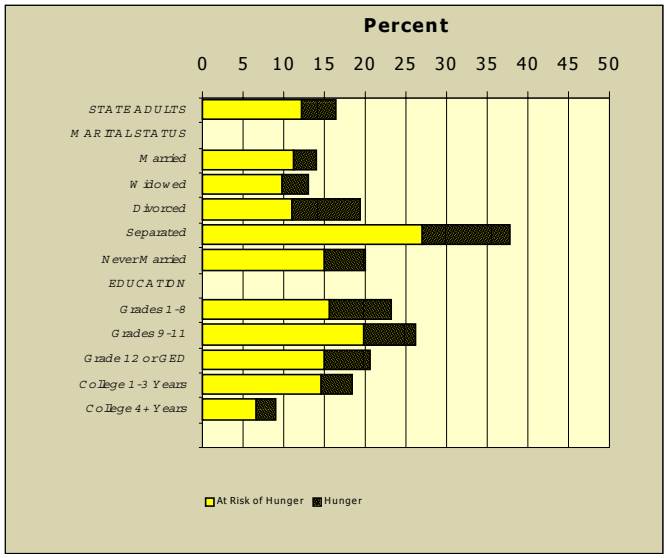


- Females were only slightly more likely to be living in a food insecure household.
- Children (>24.5% for children, 19.2% for the state average) were more likely to be living in a household experiencing both at risk of hunger and hunger. This was in agreement with household type where households with children were more likely to be food insecure.
- Pacific Islanders (Hawaiians and other Pacific Islanders) were at highest risk of food insecurity. Filipino, and all other ethnicities were also significantly higher than the state average.
- Household members who were uninsured or of unknown insurance status were more likely to be in food insecure households.
- The above patterns for gender, ethnicity, and insurance status were similar to the age adjusted prevalence patterns.

Please see A-12: for numbers and percent food insecurity (with 95% confidence intervals) by selected demographic variables.

Figure 13 illustrates marital status and education level for the adult population of Hawai`i as determined by respondent data.

Figure 13. Marital Status and Education Level By Food Insecurity- Adult Household Members, HHS 1999-2000



- Adults who were separated were significantly more likely to be living in food insecure households.
- In addition, the food insecurity prevalence for adults that never married or divorced adults was higher than the state average for adults of 16.4%.
- There was an inverse relationship of education level to food insecurity. As education increased, particularly at the college level, food insecurity decreased.

Please see A-13: for numbers and percent food insecurity (with 95% confidence intervals) by selected demographic variables.

Logistic regression analysis was used (SUDAAN software) to assess the relationship of food security status (secure versus insecure) with the following demographic variables. The odds ratios generated from the regression analysis are presented in Table 6.

Table 5. Logistic Regression Chi-Square Values (Wald F) for Demographic Variables – Adult Population of Hawai`i by Respondent, HHS 1999-2000

Contrast	Degress of Freedom	Wald F	P-Value Wald F
OVERALL MODEL	25	96.77	<0.0001
MODEL MINUS INTERCEPT	24	20.05	<0.0001
~~County*~~	~~3~~	~~0.24~~	~~0.8669~~
Number of Persons in Household	1	4.87	0.0274
Children Status	1	7.37	0.0066
Number of Adults	1	15.47	0.0001
Poverty Level	2	56.69	<0.0001
~~Gender*~~	~~1~~	~~2.12~~	~~0.1458~~
Age (No imputed values)	2	5.36	0.0047
Ethnicity/race	5	19.32	<0.0001
Insurance Status	1	12.68	0.0004
Education Status	2	5.74	0.0032
Marital Status	4	3.99	0.0031
Unemployment Benefits	1	33.77	<0.0001

* Not statistically significant based on a level of p<0.05 or better

- Significant Wald F Chi-square values were associated with poverty level, unemployment benefits, ethnicity, number of adults, insurance status, presence of children, education status, age, number of persons above four in the household, and marital status in decreasing order. Gender and county were not significant.

Table 6. Odds Ratio (significant only) generated from Logistic Regression of Food Insecurity - Adult Population of Hawai`i by respondent, HHS 1999-2000

Independent Variables and Effects	Odds Ratio	Lower 95% CL OR	Upper 95% CL OR
Number of Persons in Household			
> than 5	1.53	1.05	2.22
1-4 People	1	1	1
Children Status			
With Children	1.28	1.07	1.52
No Children	1	1	1
Number of Adults			
1 Adult	1.60	1.26	2.02
>1 Adult	1	1	1
Poverty Level			
1-100%	2.21	1.85	2.66
101-200%	2.86	2.32	3.54
>200%	1	1	1
Age (No imputed values)			
Adults 19-35 Years	1.69	1.23	2.32
Adults 35-64 Years	1.52	1.15	2.02
Adults >64 Years	1	1	1
Ethnicity/race			
Caucasian	1.54	1.19	1.99
Hawaiian/Part Hawaiian	3.03	2.31	3.97
Chinese	1.17	0.73	1.89
Filipino	2.76	2.07	3.67
Japanese	1	1	1
Other	2.66	1.98	3.57
Insurance Status			
Uninsured	1.60	1.24	2.08
Insured	1	1	1
Education Status			
Grade 8/less/none	1.74	1.11	2.75
9-12 Years	1.27	1.08	1.5
College 1-4+ Years	1	1	1
Marital Status			
Married	1.24	0.86	1.79
Widowed	1	1	1
Divorced	1.55	1.06	2.26
Separated	3.03	1.67	5.50
Never Married	1.39	0.95	2.04
Unemployment Benefits			
Yes	2.44	1.81	3.30
No	1	1	1

- Odds ratios calculated with the logistic regression indicated that:
  - ✓ People living below the poverty level (<100%) were 2 times as likely to be food insecure as those above 200% of the poverty level.
  - ✓ Hawaiians were 3 times as likely to be food insecure when compared to Japanese or Chinese.
  - ✓ Adults that were separated were 3 times as likely to be food insecure when compared to those that were widowed or married.
  - ✓ Adults with an 8th grade level or lower education were 1.7 times more likely to be food insecure than those with a college education.

QUESTION 5. HOW PREVALENT IS ADULT AND/OR CHILD HUNGER?

As evidenced by the above figures and included appendices, hunger was a major component of food insecurity in Hawai`i. Although, the present report focuses on food insecurity in general, Table 7 was included to illustrate the high number of households and household members affected by the more severe form of food insecurity, hunger. The following table summarizes numbers for hunger, HHS 1999-2000.

Table 7. Hunger for Households and Household Members, HHS 1999-2000

Category	Household Hunger Classification								Total[1,2,3,4]	
	Total Hunger		Adult Hunger Only		Adult and Child Hunger		Child Hunger Only			
	N	Row %	N	Row %	N	Row %	N	Row %	N	%
Total Households[1,2]	17,368	**4.2**	15,009	**3.7**	1,901	**0.5**	458*	**0.1**	409,822	**100.0**
Total Household Members[3,4]	53,383	**4.6**	41,196	**3.6**	9,964	**0.9**	2,223**	**0.2**	1,154,002	**100.0**
Total Adults	35,063	**4.2**	28,945	**3.4**	5,023	**0.6**	1,095	**0.1**	843,054	73.1
Total Children	17,784	**6.1**	11,807	**4.0**	4,849	**1.7**	1,128	**0.4**	292,164	25.3
Unknown Age	536	**2.9**	444	**2.4**	92	**0.5**	--	**--**	18,784	1.6

[1] **All households, sample size 10,233**
[2] **Sample numbers provisionally weighted and adjusted for total number of households in Hawai`i**
[3] **All household members, sample size 29,860 - Adults Aged =>18 Years, Children <18 Years**
[4] **Sample numbers provisionally weighted and adjusted for total population of Hawai`i**
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)
* **Sample size 13**
** **Sample size 62**

- Findings reveal that 4.2% of all households (4.6% of the population) were categorized as living at some level of hunger.
- Particularly disturbing was the number of children living in households experiencing hunger: 6.1% overall, and 2.1% in households with reported child hunger.
- In addition, there were households (458 households with 2,223 members) where there was hunger among children and not adults. The sample size was less than 50 (13 households with 62 members) and not large enough to characterize the households.

CONCLUSIONS

SUMMARY

Results of this report indicate that food insecurity was prevalent in Hawai`i: one in six (16.4%) households and 1 in 5 (19.2%) individuals experienced either being at risk of hunger or experiencing hunger in 1999-2000. The poor, children, single adult households, and Pacific Islanders were particularly vulnerable. Geographical areas with a high percentage of Hawaiians (Moloka`i, Waimānalo, Wai`anae), recent economic changes (Waimea-Kekaha, Lanai, Hamākua coast, Wailua, `Ewa Beach), close proximity to high-tourist areas (Waikīkī and Kaanapali-Naapili), and high immigrant (Kalihi) or military (Schofield-Wheeler) populations were particularly at high risk of food insecurity. Findings confirm that food insecurity negatively affects health status in Hawai`i. Adults that were food insecure were more likely to suffer from poor mental and physical health, obesity, diabetes, asthma, and arthritis. The paradox that food insecurity increased with increasing levels of obesity has been reported elsewhere[21] and is an area that warrants further research.

UTILITY OF METHODS

The purpose of this study was to provide baseline estimates of household food security status in Hawai`i for 1999-2000. We utilized an alternative method for measuring food security in Hawai`i: called the Simple Food Security Monitoring Tool (SFSMT.) The SFSMT was tested using an existing survey that has excellent procedures and a much large sample size than other methods used today. Our study found that the new measure of food security SFSMT has some very interesting and useful characteristics.

1. The SFSMT made it possible to look at food security in detail in comparison to other measures by measuring food security at several levels thus, allowing detailed comparisons to important health and demographic variables.

2. As outlined in *A-6:,* the SFSMT can be coded to replicate the USDA measure and results are similar to the national values. The SFSMT has only 6 questions when compared to the national 18-question survey. Thus, the SFSMT achieves greater measurement accuracy (more levels of food security) at much lower cost.

3. The SFSMT was realistic and more utilitarian because of the finer distinctions in food security. Estimates of food insecurity were higher with the SFSMT (16.4% percent of Hawaii's households with 19.2 percent of persons in households) than with the USDA measures of food insecurity of households in Hawai`i (9.2% in 1995;[5] 10.4% in 1996-1998.) The difference may be due to higher rates of food insecurity as well actual difference in rates of food insecurity.[5,9,10,11] The additional richness of the data resulting from SFSMT provides greater opportunity to study the issues and inform policy development.

4. The SFSMT data was clearly related to important person and household characteristics as well as to other health status indicators. Researchers can use the relationships: to understand issues around food insecurity and hunger, to continually monitor food insecurity, and to probe deeper into policy relevant issues attendant on food insecurity.

We believe the SFSMT is a useful measure of food insecurity in Hawai`i. We are continuing with additional research to measure change in food security status. We believe the SFSMT deserves careful consideration by those who monitor health status, who are interested in providing services to the food insecure, and who investigate the relationships among food security status and other health indicators.

APPENDIX

A-1: Sample, and Weighted and Adjusted Numbers, HHS 1999-2000

Year and Island	Sample		Weighted and Adjusted[1]							
	Households	All Members	Households			Population			Adults / By Repondent	
	n	n	N	%	C.I.	N	%	C.I.	N	%
2000/1999										
TOTAL	**10,233**	**29,860**	**409,825**	**100.0**		**1,154,001**	**100.2**		**859,260**	**100.0**
O`ahu	3565	10,750	291,177	**71.0**	70.9 - 71.2	837,914	**72.7**	72.2 - 73.2	629,254	**73.2**
Hawai`i	3217	9,120	53,970	**13.2**	13.1 - 13.3	140,502	**12.2**	11.9 - 12.5	101,161	**11.8**
Kaua`i	1373	3,960	20,454	**5.0**	4.9 - 5.1	55,502	**4.8**	4.7 - 5.0	40,289	**4.7**
Maui	1616	4,628	40,842	**10.0**	9.8 - 10.1	109,973	**9.5**	9.3 - 9.8	81,757	**9.5**
Moloka`i	349	1,059	2,345	**0.6**	0.6 - 0.6	6,867	**0.6**	0.6 - 0.6	4,679	**0.5**
Lana`i	113	343	1,037	**0.3**	0.3 - 0.3	3,243	**0.3**	0.2 - 0.3	2,120	**0.2**
Maui Sub-Total	2,078	6,030	44,224	10.8	10.7 - 10.9	120,083	10.4	10.1 - 10.7	88,556	10.3
2000										
TOTAL	**5,882**	**17,183**	**412,852**	**100.0**		**1,156,014**	**100.0**		**412,852**	**100.0**
O`ahu	1,829	5,556	291,761	**70.7**	70.5 - 70.9	837,342	**72.4**	71.8 - 73.1	291,761	**70.7**
Hawai`i[2]	1,638	4,632	55,063	**13.3**	13.2 - 13.5	141,840	**12.3**	11.9 - 12.7	55,063	**13.3**
Kaua`i[2]	958	2,790	20,816	**5.0**	5.0 - 5.1	56,354	**4.9**	4.7 - 5.1	20,816	**5.0**
Maui[2]	1,123	3,199	41,805	**10.1**	10.0 - 10.2	110,675	**9.6**	9.2 - 9.9	41,805	**10.1**
Moloka`i[2]	247	750	2,356	**0.6**	0.6 - 0.6	6,818	**0.6**	0.6 - 0.6	2,356	**0.6**
Lana`i[2]	87	256	1,051	**0.3**	0.3 - 0.3	2,985	**0.3**	0.2 - 0.3	1,051	**0.3**
Maui[2] Sub-Total	1,457	4,205	45,212	11.0	10.8 - 11.1	120,478	10.4	10.1 - 10.8	45,212	11.0
1999										
TOTAL	**4,351**	**12,677**	**406,795**	**100.0**		**1,151,990**	**100.0**		**855,607**	**100.0**
O`ahu	1,736	5,194	290,593	**71.4**	71.2 - 71.7	838,486	**72.8**	72.1 - 73.5	627,541	**73.3**
Hawai`i[2]	1,579	4,488	52,876	**13.0**	12.9 - 13.1	139,165	**12.1**	11.7 - 12.5	100,006	**11.7**
Kaua`i	415	1,170	20,092	**4.9**	4.8 - 5.0	54,650	**4.7**	4.5 - 5.0	39,483	**4.6**
Maui	493	1,429	39,878	**9.8**	9.6 - 10.0	109,271	**9.5**	9.0 - 10.0	81,707	**9.5**
Moloka`i	102	309	2,334	**0.6**	0.6 - 0.6	6,917	**0.6**	0.5 - 0.7	4,787	**0.6**
Lana`i	26	87	1,022	**0.3**	0.2 - 0.3	3,501	**0.3**	0.3 - 0.4	2,084	**0.2**
Maui Sub-Total	621	1,825	43,234	10.6	10.4 - 10.8	119,689	10.4	9.9 - 10.9	88,577	10.4

[1] Sample numbers provisionally weighted and adjusted for total population of Hawai`i
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)
[2] Island oversampled

Questions 2-7 were asked during the 1999-2000 survey period. Question 1 was added later.

Introduction: Now I'm going to read you statements that people have made about their food situation. Please tell me whether the statement was often, sometimes or never true for your household in the last 12 months. The first statement is:

Q1. "I/We worried whether our food would run out before I/we had money to buy more." In the last 12 months was that (READ FIRST 3 CHOICES)?

☐ 1 Often true
☐ 2 Sometimes true [or]
☐ 3 Never true

Q2. "The food I/we bought just didn't last and I/we didn't have enough to get more." In the last 12 months, was that: (READ FIRST 3 CHOICES)?

☐ 1 Often true
☐ 2 Sometimes true [or]
☐ 3 Never true

Q3. "I/We couldn't afford to eat meals with a starch such as (cultural grain product; i.e. rice in Hawai`i) or bread, meat, beans or fish, and a fruit or vegetable .In the last 12 months, was that (READ FIRST 3 CHOICES)?

☐ 1 Often true
☐ 2 Sometimes true [or]
☐ 3 Never true

Q4. "In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money?"

☐ 1 Yes
☐ 2 No

If the answer to any of the above questions was (1) Yes, than continue otherwise END.

Now, just a few more Yes or No questions:

Q5. In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?

☐ 1 Yes
☐ 2 No

Q6. In the last 12 months, did you or another adult in your household ever not eat for a whole day because there wasn't enough money for food?

☐ 1 Yes
☐ 2 No

If the household answered any questions with a YES and has one or more children age 17 or under residing in the household than continue otherwise END.

Q7. In the last 12 months, was/were your child/children ever hungry but you just couldn't afford more food?

☐ 1 Yes
☐ 2 No

Household Food Security Categorization

Household Food Secure = no affirmative responses
Household with "Imminent Food Insecurity" = Affirmative response to Q1.
Household "At risk of hunger"= Any response to Q2-Q4 was affirmative
Household with one or more hungry adults = Affirmative response to Q5 or Q6.
Household with one or more hungry children = Affirmative response to Q7.

References: Derrickson JP. Derrickson JP, Brown AC (2001) Perceptions of Food Security Stakeholders in Hawai`i. Journal of Nutrition Education. In Press.
Derrickson JP. (2001) Summary of Three Years of Food security Research in Hawai`i: University of Wisconsin, Institute for Research on Poverty, Discussion paper. University of Wisconsin, Institute for Research on Poverty, Discussion Paper 1226-1. pp. 72 http://www.ssc.wisc.edu/irp/pubs/dp122601.pdf

1. Would you say your health in general is: Excellent, very good, good, fair, poor, or don't know/refused?
2. During a typical day, does your health limit you from moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?
3. During a typical day, does your health limit you from moderate activities, such as climbing several flights of stairs?

During the past four weeks, have you had any of the following problems with your work or other regular activities as a result of PHYSICAL HEALTH:….

4. Accomplish less than you would like?
5. Limited in the kind of work or other activities you can do?

During the past four weeks, have you had any of the following problems with your work or other regular activities as a result of EMOTIONAL PROBLEMS….

6. Accomplish less than you would like?
7. Didn't do work or other activities as carefully as usual?
8. During the past four weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? (PHYSICAL PAIN)

The following questions are about how you felt during the PAST FOUR WEEKS. How much of the time….

9. Have you felt calm and peaceful?
10. Did you have a lot of energy?
11. Have you felt down-hearted and blue?
12. During the PAST FOUR WEEKS, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc)?

A-4: Food Security Questions By Household Food Security Status, HHS 1999-2000 Weighted and Adjusted

Question	Food Security Status[1,2,3]										Total[1,2]	
	Food Secure		Food Insecure									
			Total Insecure		At Risk		Hunger					
							Adult Only		Adult & Child And Child Only			
	N	%	N	%	N	%	N	%	N	%	N	Col. %
1. Food Did Not Last												
Often True	--	--	11,491	**100.0**	5,819	**50.6**	4,676	**40.7**	995	**8.7**	11,491	**2.8**
Sometimes True	--	--	41,690	**100.0**	32,900	**78.9**	7,425	**17.8**	1,364	**3.3**	41,690	**10.2**
Never True	338,745	**96.0**	14,271	**4.0**	11,454	**3.2**	2,816	**0.8**	--	--	353,016	**86.1**
Do Not Know	2,383	**86.8**	363	**13.2**	270	**9.8**	92	**3.4**	--	--	2,746	**0.7**
Refused	881	**100.0**	--	--	--	--	--	--	--	--	881	**0.2**
2. Meals Not Balanced												
Often True	--	--	9,361	**100.0**	4,977	53.2	3,539	**37.8**	846	**9.0**	9,361	**2.3**
Sometimes True	--	--	29,632	**100.0**	21,104	71.2	7,234	**24.4**	1,293	**4.4**	29,632	**7.2**
Never True	337,679	**92.3**	28,202	**7.7**	23,804	6.5	4,195	**1.1**	203	**<0.1**	365,881	**89.3**
Do Not Know	3,436	**84.9**	613	**15.1**	554	13.7	41	**1.0**	18	**0.4**	4,049	**1.0**
Refused	894	**99.4**	5	**0.6**	5	0.5	--	--	--	--	899	**0.2**
3. Respondent Eat Less												
Yes	--	--	27,519	**100.0**	13,060	**47.5**	12,481	**45.4**	1,977	**7.2**	27,519	**6.7**
No	336,246	**89.9**	37,931	**10.1**	35,040	**9.4**	2,508	**0.7**	382	**0.1**	374,177	**91.3**
Do Not Know	5,010	**68.0**	2,360	**32.0**	2,340	**31.8**	20	**0.3**	--	--	7,370	**1.8**
Refused	754	**99.5**	4	**0.5**	5	**0.7**	--	--	--	--	758	**0.2**
4. Respondent Did Not Eat												
Missing	341,997	**100.0**	26	**<0.1**	26	**<0.1**	--	--	--	--	342,023	**83.5**
Yes	--	--	14,653	**100.0**	--	--	12,966	**88.5**	1,687	**11.5**	14,653	**3.6**
No	13	**<0.1**	49,494	**100.0**	46,845	**94.6**	2,020	**4.1**	629	**1.3**	49,507	**12.1**
Do Not Know	--	--	3,592	**100.0**	3,569	**99.4**	23	**0.6**	--	--	3,592	**0.9**
Refused	--	--	50	**100.0**	5	**10.0**	--	--	45	**90.0**	50	**0.0**
5. Adult(s) Did Not Eat												
Missing	341,997	**100.0**	36	**<0.1**	36	**<0.1**	--	--	--	--	342,033	**83.5**
Yes	--	--	7,168	**100.0**	--	--	6,106	**85.2**	1,061	**14.8**	7,168	**1.7**
No	13	**<0.1**	59,424	**100.0**	49,373	**83.1**	8,795	**14.8**	1,256	**2.1**	59,437	**14.5**
Do Not Know	--	--	1,181	**100.0**	1,030	**87.2**	108	**9.1**	42	**3.6**	1,181	**0.3**
Refused	--	--	5	**100.0**	5	**100.0**	--	--	--	--	5	**0.0**
6. Child Hunger												
Missing	342,010	**89.0**	42,147	**11.0**	31,564	**8.2**	10,583	**2.8**	--	--	384,157	**93.7**
Yes	--	--	2,469	**100.0**	--	--	109	**4.4**	2,359	**95.5**	2,469	**0.6**
No	--	--	21,090	**100.0**	17,047	**80.8**	4,043	**19.2**	--	--	21,090	**5.1**
Do Not Know	--	--	2,107	**100.0**	1,833	**87.0**	275	**13.1**	--	--	2,107	**0.5**
STATE HOUSEHOLDS	**342,010**	**83.5**	**67,813**	**16.5**	**50,444**	**12.3**	**15,009**	**3.7**	**2,359**	**0.6**	**409,823**	**100.0**

[1] All households

[2] Sample numbers provisionally weighted and adjusted for total households in Hawai`i
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)

[3] Sample Size 10,233

-- No reported cases

A-5: Food Security Questions By Household Food Security Status, HHS 1999-2000 Unweighted

Question	Food Security Status[1,2,3]										Total[1,2]	
	Food Secure		Food Insecure									
			Total Insecure		At Risk		Hunger					
							Adult Only		Adult & Child And Child Only			
	N	%	N	%	N	%	N	%	N	%	N	Col. %
1. Food Did Not Last												
Often True	--	--	319	**100.0**	165	**51.7**	130	**40.8**	24	**7.5**	319	**3.1**
Sometimes True	--	--	1,094	**100.0**	863	**78.9**	192	**17.6**	39	**3.6**	1,094	**10.7**
Never True	8,388	**96.0**	351	**4.0**	287	**3.3**	64	**0.7**	--	--	8,739	**85.4**
Do Not Know	55	**82.1**	12	**17.9**	8	**11.9**	4	**6.0**	--	--	67	**0.7**
Refused	14	**100.0**	--	--	--	--	--	--	--	--	14	**0.1**
2. Meals Not Balanced												
Often True	--	--	236	**100.0**	130	**55.1**	91	**38.6**	15	**6.4**	236	**2.3**
Sometimes True	--	--	752	**100.0**	526	**69.9**	185	**24.6**	41	**5.5**	752	**7.3**
Never True	8,366	**91.6**	765	**8.4**	648	**7.1**	111	**1.2**	6	**<0.1**	9,131	**89.2**
Do Not Know	77	**77.8**	22	**22.2**	18	**18.2**	3	**3.0**	1	**1.0**	99	**1.0**
Refused	14	**93.3**	1	**6.7**	1	**6.7**	--	--	--	--	15	**0.1**
3. Respondent Eat Less												
Yes	--	--	756	**100.0**	365	**48.3**	336	**44.4**	55	**7.3**	756	**7.4**
No	8,317	**89.6**	962	**10.4**	901	**9.7**	53	**0.6**	8	**<0.1**	9,279	**90.7**
Do Not Know	125	**68.7**	57	**31.3**	56	**30.8**	1	**0.5**	--	--	182	**1.8**
Refused	15	**93.8**	1	**6.3**	1	**6.3**	--	--	--	--	16	**0.2**
4. Respondent Did Not Eat												
Missing	8,456	**96.1**	344	**3.9**	1	**<0.1**	343	**3.9**	--	--	8,800	**86.0**
Yes	--	--	90	**100.0**	--	--	45	**50.0**	45	**50.0**	90	**0.9**
No	1	**<0.1**	1,271	**99.9**	1,252	**98.4**	2	**0.2**	17	**1.3**	1,272	**12.4**
Do Not Know	--	--	69	**100.0**	69	**100.0**	--	--	--	--	69	**0.7**
Refused	--	--	2	**100.0**	1	**50.0**	--	--	1	**50.0**	2	**0.0**
5. Adult(s) Did Not Eat												
Missing	8,456	**100.0**	2	**<0.1**	2	**<0.1**	--	--	--	--	8,458	**82.7**
Yes	--	--	183	**100.0**	--	--	155	**84.7**	28	**15.3**	183	**1.8**
No	1	**<0.1**	1,570	**99.9**	1,303	**82.9**	233	**14.8**	34	**2.2**	1,571	**15.4**
Do Not Know	--	--	20	**100.0**	17	**85.0**	2	**10.0**	1	**5.0**	20	**0.2**
Refused	--	--	1	**100.0**	1	**100.0**	--	--	--	--	1	**0.0**
6. Child Hunger												
Missing	8,457	**89.0**	1,043	**11.0**	790	**8.3**	253	**2.7**	--	--	9,500	**92.8**
Yes	--	--	65	**100.0**	--	--	2	**3.1**	63	**96.9**	65	**0.6**
No	--	--	618	**100.0**	495	**80.1**	123	**19.9**	--	--	618	**6.0**
Do Not Know	--	--	50	**100.0**	38	**76.0**	12	**24.0**	--	--	50	**0.5**
STATE HOUSEHOLDS	**8,457**	**82.6**	**1,776**	**17.4**	**1,323**	**12.9**	**390**	**3.8**	**63**	**0.6**	**10,233**	**100.0**

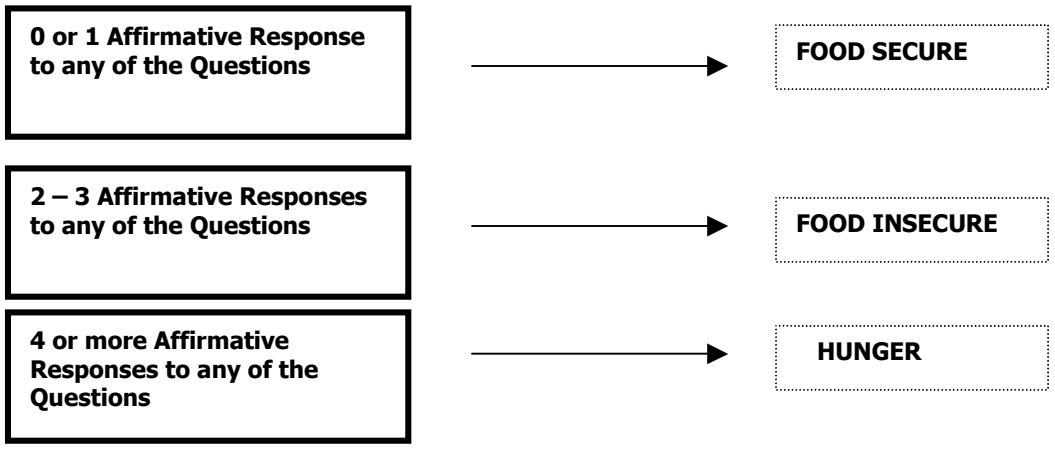
[1] **All household members**
[2] **Sample numbers unweighted**
-- No reported cases

A-6: Comparison between the SFSMT Method and the National USDA Method for Coding Food Security Status

The Simple Food Security Monitoring Tool (SFSMT) differs from the USDA Method in that the responses are categorized differently than the USDA Method:[1,5,6,7]

- The USDA Method allows one affirmative response to food insecure to be still coded as Food Secure.
- Hunger with the USDA Method does not depend on the nature of the question but only the number of affirmative responses to food insecurity.
- Hunger with the SFSMT Method depends on questions specifically pertaining either to adult and/or child hunger.

CODING OF QUESTIONS USDA METHOD:



CLASSIFICATION OF RESPONSES– USDA METHOD

- FOOD SECURE
- FOOD INSECURE
  - WITHOUT HUNGER
  - WITH HUNGER

The same HHS (1999-2000) data were coded according to both the SFSMT and USDA Method with the following results.

Table 8. Comparison of USDA Method and SFSMT Method for coding Household Food Security Status, HHS 1999-2000

Food Security Status	Food Security Status By Method and Year For Hawai`i							
	USDA Data		Hawai`i Health Survey (HHS) 2000/1999[1,2]					
	1995	1996-1998	National Method Estimate			SFSMT Estimate		
	Col. %	Col. %	N	Col. %	95% C.I.	N	Col. %	95% C.I.
Food Secure	**90.8**	**89.6**	370,666	**90.4**	89.7 - 91.1	342,010	**83.5**	82.5 - 84.4
Food Insecure	**9.2**	**10.4**	39,158	**9.6**	8.9 - 10.3	67,812	**16.5**	15.6 - 17.5
Without Hunger	**7.0**	**7.6**	27,898	**6.8**	6.2 - 7.5	50,444	**12.3**	11.5 - 13.1
With Hunger	**2.2**	**2.8**	11,260	**2.7**	2.4 - 3.2	17,368	**4.2**	3.8 - 4.8

[1] **All households, sample size 10,233**

[2] **Sample numbers provisionally weighted and adjusted for total number of households in Hawai`i**
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)

The results from USDA[3,4] data cannot be directly compared to the data collected using the "National Method Estimate" with HHS 1999-2000 data because of the following reasons: the USDA estimate for 1995[3] was based on unadjusted data, the 1996-98[4] combined estimate (the single year estimate could not be used) was based on adjusted data, the USDA estimates were based on an 18 question survey instrument, and the federal estimates were created from smaller sample sizes for Hawai`i .

However, the similarity of the estimates USDA, 9.2% and 10.4% to that using HHS and the national method of estimate 9.6% may be an indication that the 6 question SFSMT estimates are close to the National 18 question survey estimates if similar methods of coding are utilized.

The SFSMT estimates of food insecurity were higher as they are more sensitive to all levels of food insecurity.

The following table compares HHS 1999-2000 data coded with both the USDA and SFSMT methods.

Table 9. Comparison of USDA Method and SFSMT Method for coding Household Food Security Status By Household Variables, HHS 1999-2000

SFSMT Coding Method of HHS Data	National Food Security Method (NFSM) Coding of HHS Data								Total[1,2]	
	Food Secure		Food Insecure							
			Total FIS		No Hunger		Hunger			
	N	Row %	N	Row %	N	Row %	N	Row %	N	Col. %
Food Security Status										
Secure	342,010	**100.0**	--	**--**	--	**--**	--	**--**	342,010	**83.5**
Insecure	28,656	**42.3**	39,158	**57.7**	27,898	**41.1**	11,260	**16.6**	67,812	**16.5**
At Risk	28,656	**56.8**	21,789	**43.2**	21,789	**43.2**	--	**--**	50,444	**12.3**
Adult Hunger Only	--	**--**	15,010	**100.0**	5,779	**38.5**	9,231	**61.5**	15,009	**3.7**
Child and Adult Hunger	--	**--**	1,901	**100.0**	127*	**6.7**	1,774	**93.3**	1,901	**0.5**
Child Hunger Only	--	**--**	458	**100.0**	203	**44.3**	255	**55.7**	458*	**0.1**
Island										
O`ahu	265,224	**91.1**	25,953	**8.9**	18,935	**6.5**	7,018	**2.4**	291,177	**71.0**
Hawai`i	48,140	**89.2**	5,830	**10.8**	3,858	**7.1**	1,972	**3.7**	53,970	**13.2**
Maui	36,205	**88.6**	4,636	**11.4**	3,029	**7.4**	1,607	**3.9**	40,841	**10.0**
Kaua`i	18,269	**89.3**	2,185	**10.7**	1,656	**8.1**	529	**2.6**	20,454	**5.0**
Moloka`i	1,951	**83.2**	394	**16.8**	266	**11.3**	128	**5.5**	2,345	**0.6**
Lana`i	876	**84.5**	160	**15.4**	154	**14.9**	6	**0.6**	1,037	**0.3**
Poverty Status										
0-62.5%	11,543	**69.4**	5,088	**30.6**	3,241	**19.5**	1,847	**11.1**	16,631	**4.1**
63-100%	10,477	**69.3**	4,632	**30.7**	3,098	**20.5**	1,534	**10.2**	15,109	**3.7**
101-133%	12,185	**78.1**	3,422	**21.9**	2,260	**14.5**	1,162	**7.4**	15,607	**3.8**
134-185%	30,490	**85.5**	5,186	**14.5**	4,184	**11.7**	1,002	**2.8**	35,676	**8.7**
186-200%	5,745	**88.9**	720	**11.1**	451	**7.0**	269	**4.2**	6,465	**1.6**
201-300%	55,965	**90.6**	5,797	**9.4**	4,157	**6.7**	1,640	**2.7**	61,762	**15.1**
>300%	137,497	**97.1**	4,145	**2.9**	3,403	**2.4**	742	**0.5**	141,642	**34.6**
Unknown	106,761	**91.3**	10,167	**8.7**	7,104	**6.1**	3,063	**2.6**	116,928	**28.5**
STATE HOUSEHOLDS	**370,663**	**90.4**	**39,157**	**9.6**	**27,898**	**6.8**	**11,259**	**2.7**	**409,820**	**100.0**

[1] **All households, sample size 10,233**
[2] **Sample numbers provisionally weighted and adjusted for total number of households in Hawai`i**
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)
-- No reported cases
*** Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion**

- Patterns of food insecurity using the USDA or the SFSMT method were similar for islands and poverty levels.
- The islands of Moloka`i, Lana`i, and Maui had the highest levels of food insecurity with O`ahu the lowest for both methods.
- Levels of poverty "below poverty level" had the highest levels of food insecurity for both methods.

A-7: Food Security Status for Households and Household members, HHS 1999-2000

Food Security Status	Households [1,2]			Household Members [3,4]		
	2000/1999					
	N	**Col. %**	**95% C.I.**	**N**	**Col. %**	**95% C.I.**
Food Secure	342,010	**83.5**	82.5 - 84.4	932,169	**80.8**	79.5 - 82.0
Food Insecure	67,812	**16.5**	15.6 - 17.5	221,834	**19.2**	18.0 - 20.5
At Risk of Hunger	50,444	**12.3**	11.5 - 13.1	168,450	**14.6**	13.5 - 15.7
Child and Adult Hunger	1,901	**0.5**	0.3 - 0.7	9,964	**0.9**	0.6 - 1.3
Adult Hunger Only	15,009	**3.7**	3.2 - 4.2	41,197	**3.6**	3.1 - 4.2
Child Hunger Only	458	**0.1**	0.1 - 0.2	2,223	**0.2**	0.1 - 0.4
TOTAL	**409,822**			**1,154,003**		
	2000					
Food Secure	350,110	**84.8**	83.5 - 86.0	952,281	**82.4**	80.7 - 83.9
Food Insecure	62,741	**15.2**	14.0 - 16.5	203,732	**17.6**	16.1 - 19.3
At Risk of Hunger	46,535	**11.3**	10.3 - 12.4	157,586	**13.6**	12.2 - 15.2
Child and Adult Hunger	1,747	**0.4**	0.2 - 0.7	9,236	**0.8**	0.4 - 1.5
Adult Hunger Only	14,138	**3.4**	2.8 - 4.1	35,783	**3.1**	2.5 - 3.8
Child Hunger Only	321	**0.1**	0.0 - 0.3	1,127	**0.1**	0.0 - 0.3
Total	**412,851**			**1,156,013**		
	1999					
Food Secure	333,909	**82.1**	80.7 - 83.4	912,057	**79.2**	77.3 - 80.9
Food Insecure	72,886	**17.9**	16.6 - 19.3	239,932	**20.8**	19.1 - 22.7
At Risk of Hunger	54,353	**13.4**	12.2 - 14.6	179,313	**15.6**	14.0 - 17.3
Child and Adult Hunger	2,056	**0.5**	0.3 - 0.8	10,691	**0.9**	0.6 - 1.5
Adult Hunger Only	15,881	**3.9**	3.3 - 4.7	46,610	**4.0**	3.2 - 5.1
Child Hunger Only	596	**0.1**	0.1 - 0.3	3,318	**0.3**	0.1 - 0.7
Total	**406,795**			**1,151,989**		

[1] All households, sample size 10,233

[2] Sample numbers provisionally weighted and adjusted for total number of households in Hawai`i

[3] All household members, sample size 29,860

[4] Sample numbers provisionally weighted and adjusted for total population of Hawai`i

(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)

A-8: Food Security Status By County and Sub-Area, HHS 1999-2000

DOH Code Name	Food Security Status									
	Unweighted	Weighted								
	Households	Households[1]			Total[3]		Population[2]			Total[3]
		Insecure					Insecure			
	n	Row %	95% C.I.	N	Col. %	Row %	95% C.I.	N	Col. %
Oahu									
Ka`a`awa to Wailua	132	**26.6**	19.6 - 35.0	10,992	**2.7**	**32.0**	22.8 - 42.9	33,674	**2.9**
Wai`anae Coast	113	**30.8**	22.9 - 40.0	9,428	**2.3**	**33.2**	23.7 - 44.3	35,972	**3.1**
Makakilo/Kapolei/Barbers Point	94	**17.8**	11.2 - 26.9	7,518	**1.8**	**20.3**	12.6 - 31.1	26,037	**2.3**
Schofield/Wheeler/Capehart	52	**15.8**	8.1 - 28.6	4,434	**1.1**	**18.3**	9.0 - 33.5	14,987	**1.3**
Mililani/Mauka	232	**7.0**	4.3 - 11.2	19,208	**4.7**	**7.9**	4.8 - 12.9	56,896	**4.9**
Wahiawā	99	**17.9**	11.4 - 26.9	8,397	**2.0**	**17.7**	10.6 - 28.2	26,936	**2.3**
Waipahu/Kunia	233	**20.3**	15.5 - 26.1	19,007	**4.6**	**25.0**	18.5 - 32.8	63,644	**5.5**
`Ewa/`Ewa beach/Soda Creek/Keahi	145	**20.3**	14.4 - 27.8	12,085	**2.9**	**26.0**	18.3 - 35.6	41,275	**3.6**
Pearl City/Ford Island	135	**14.0**	9.1 - 21.0	11,079	**2.7**	**14.6**	8.5 - 24.0	30,158	**2.6**
`Aiea/Camp Smith	194	**9.2**	5.8 - 14.3	15,733	**3.8**	**11.0**	6.5 - 17.8	43,880	**3.8**
Moanalua	95	**9.0**	4.7 - 16.6	7,882	**1.9**	**10.2**	5.1 - 19.4	22,430	**1.9**
Kalihi	294	**20.2**	15.9 - 25.2	24,454	**6.0**	**27.6**	21.7 - 34.4	77,230	**6.7**
Nu`uanu/Mānoa/Puunui	116	**10.1**	5.6 - 17.5	8,807	**2.1**	**7.8**	3.7 - 15.8	23,658	**2.1**
Kaka`ako/Alakea	249	**17.2**	13.0 - 22.5	20,994	**5.1**	**17.3**	12.5 - 23.5	44,312	**3.8**
Makiki/Punahou	275	**16.8**	12.8 - 21.8	23,131	**5.6**	**17.8**	12.7 - 24.3	45,809	**4.0**
Kaimukī/Diamond Head	282	**12.4**	8.9 - 17.0	22,538	**5.5**	**13.9**	9.7 - 19.6	62,153	**5.4**
Waikīkī	67	**17.8**	10.3 - 28.9	5,713	**1.4**	**23.5**	12.9 - 38.7	11,191	**1.0**
East Honolulu - `Āina Haina/Koko Head	230	**8.7**	5.5 - 13.4	17,749	**4.3**	**8.7**	5.2 - 14.4	50,087	**4.3**
Waimānalo*	31	**36.2**	21.0 - 54.9	2,469	**0.6**	**36.2**	19.9 - 56.4	9,296*	**0.8**
Kailua	208	**17.7**	12.9 - 23.8	15,768	**3.8**	**19.4**	13.5 - 27.1	45,468	**3.9**
Kāne`ohe/Kahalu`u	289	**9.0**	6.2 - 13.0	23,792	**5.8**	**10.8**	7.0 - 16.4	72,820	**6.3**
O`ahu Sub-Total	3,565	**15.5**	14.4 - 16.8	291,178	**71.0**	**18.2**	16.7 - 19.9	837,913	**72.6**
Hawai`i									
Hilo	1,030	**14.9**	12.8 - 17.3	17,393	**4.2**	**17.1**	14.4 - 20.1	44,154	**3.8**
Kohala	252	**19.0**	14.5 - 24.5	4,088	**1.0**	**21.2**	15.8 - 27.8	10,546	**0.9**
Kona	916	**16.1**	13.8 - 18.7	14,922	**3.6**	**19.2**	16.2 - 22.6	37,998	**3.3**
Puna	617	**29.4**	25.9 - 33.2	10,593	**2.6**	**32.8**	28.5 - 37.4	28,363	**2.5**
Ka`ū	160	**23.6**	17.6 - 30.9	2,763	**0.7**	**28.8**	20.9 - 38.2	7,301	**0.6**
Volcano	63	**16.2**	8.9 - 27.5	1,106	**0.3**	**19.7**	9.7 - 35.8	2,569	**0.2**
Hamākua	179	**19.1**	13.9 - 25.6	3,105	**0.8**	**24.1**	17.1 - 32.7	9,573	**0.8**
Hawai`i Sub-Total	3,217	**19.1**	17.7 - 20.5	53,970	**13.2**	**22.3**	20.5 - 24.1	140,504	**12.2**
Kaua`i									
Hanalei/Kīlauea	167	**21.9**	15.7 - 29.7	2,290	**0.6**	**24.5**	16.9 - 34.2	5,621	**0.5**
Kekaha/Waimea	143	**24.1**	17.2 - 32.6	2,131	**0.5**	**28.5**	20.2 - 38.6	6,169	**0.5**
Kalāheo/Hanapēpē	277	**16.1**	11.8 - 21.5	4,102	**1.0**	**17.8**	13.0 - 24.0	11,436	**1.0**
Kōloa	109	**15.0**	9.0 - 23.9	1,710	**0.4**	**19.5**	11.5 - 31.1	4,096	**0.4**
Līhu`e	240	**17.3**	12.7 - 23.2	3,500	**0.9**	**21.3**	15.4 - 28.7	10,362	**0.9**
Kapa`a	436	**18.3**	14.5 - 22.7	6,710	**1.6**	**20.7**	16.1 - 26.3	17,808	**1.5**
Kaua`i Sub-Total	1,372	**18.4**	16.2 - 20.8	20,443	**5.0**	**21.4**	18.7 - 24.3	55,492	**4.8**
Maui									
Hana*	25	**10.6**	3.3 - 28.7	593	**0.1**	**9.3**	2.8 - 27.2	1,745*	**0.2**
Lāhaina/Nāpili	236	**19.5**	14.6 - 25.7	5,946	**1.5**	**25.6**	18.7 - 34.1	15,272	**1.3**
Kahalui/Kīhei/Wailuku	873	**18.4**	15.7 - 21.5	22,269	**5.4**	**20.0**	16.7 - 23.8	60,865	**5.3**
Makawao/Haiku/Pai`a	390	**22.5**	18.2 - 27.5	9,589	**2.3**	**23.7**	18.6 - 29.8	26,408	**2.3**
Kula	93	**7.4**	3.6 - 14.8	2,456	**0.6**	**6.4**	2.8 - 13.7	5,694	**0.5**
Moloka`i	349	**25.1**	20.3 - 30.6	2,345	**0.6**	**30.7**	24.5 - 37.6	6,867	**0.6**
Lāna`i	113	**25.8**	17.0 - 37.2	1,037	**0.3**	**24.8**	15.1 - 37.9	3,243	**0.3**
Maui Sub-Total	2,079	**19.3**	17.3 - 21.3	44,235	**10.8**	**21.5**	19.1 - 24.1	120,094	**10.4**
TOTAL	**10,233**	**16.5**	**15.6 - 17.5**	**409,824**	**100.0**	**19.2**	**18.0 - 20.5**	**1,154,002**	**100.0**

[1] All households (Sample Size 10,233)
[2] All household members (Sample Size 29,860)
[3] Sample numbers provisionally weighted and adjusted for total population
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)
*** Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion**

A-9: Adult Household Members Food Security Status By Selected Health Variables, HHS 1999-2000

Health Variable	Food Security Status[1,2]												Total[1,2]	
	Food Secure Households		Food Insecure Households											
			Total Food Insecure				At Risk		Hunger					
			No Age Adjustment			Age Adjusted[3]			Adult Hunger Only		Adult & Child And Child Only			
	N	Row %	N	Row %	95% C.I.	Row %	N	Row %	N	Row %	N	Row %	N	Col. %
Mental Health MCS-12														
>70	267	**89.0**	33	**11.0**	0.9 - 61.5	**9.5**	33	**11.0**	--	**--**	--	**--**	300	**0.0**
61 - 70	65,980	**86.3**	10,471	**13.7**	11.0 - 16.9	**14.74**	8,930	**11.7**	1,452	**1.9**	89	**0.1**	76,451	**8.9**
50 - 60	509,838	**87.2**	74,883	**12.8**	11.8 - 13.9	**13.12**	59,125	**10.1**	13,375	**2.3**	2,383	**0.4**	584,721	**68.0**
40 - 50	86,855	**72.0**	33,711	**28.0**	24.9 - 31.2	**27.71**	24,416	**20.3**	8,211	**6.8**	1,084	**0.9**	120,566	**14.0**
30 - 39	20,817	**60.5**	13,596	**39.5**	33.3 - 46.1	**40.31**	8,595	**25.0**	4,199	**12.2**	802	**2.3**	34,413	**4.0**
<30	8,325	**53.9**	7,129	**46.1**	36.8 - 55.7	**45.07**	3,293	**21.3**	3,712	**24.0**	124	**0.8**	15,454	**1.8**
Unknown	26,002	**95.1**	1,352	**4.9**	2.6 - 9.2	**4.63**	905	**3.3**	383	**1.4**	64	**0.2**	27,354	**3.2**
Physical Health PCS-12														
>70	701	**94.3 ***	42	**5.7 ***	0.0 - 93.7	**34.1 ***	42	**5.7**	--	**--**	--	**--**	743	**0.1**
61 - 70	233,239	**85.4**	40,031	**14.6**	13.1 - 16.4	**13.63**	29,489	**10.8**	8,978	**3.3**	1,564	**0.6**	273,270	**31.8**
50 - 60	365,778	**84.4**	67,509	**15.6**	14.3 - 16.9	**16.47**	54,612	**12.6**	11,012	**2.5**	1,885	**0.4**	433,287	**50.4**
40 - 50	58,801	**77.4**	17,211	**22.6**	19.1 - 26.6	**27.54**	11,840	**15.6**	4,729	**6.2**	642	**0.8**	76,012	**8.8**
30 - 39	21,812	**68.9**	9,832	**31.1**	25.5 - 37.3	**30.35**	5,995	**18.9**	3,497	**11.1**	340	**1.1**	31,644	**3.7**
<30	11,751	**69.3**	5,197	**30.7**	23.0 - 39.6	**44.06**	2,415	**14.2**	2,731	**16.1**	51	**0.3**	16,948	**2.0**
Unknown	26,002	**95.1**	1,352	**4.9**	2.6 - 9.2	**4.63**	905	**3.3**	383	**1.4**	64	**0.2**	27,354	**3.2**
BMI Status														
Underweight	35,815	**83.6**	7,033	**16.4**	12.5 - 21.2	**17.08**	5,492	**12.8**	1,371	**3.4**	170	**0.4**	42,848	**5.0**
Normal	352,414	**84.7**	63,418	**15.3**	14.0 - 16.6	**15.65**	46,277	**11.1**	15,357	**3.4**	1,784	**0.4**	415,832	**48.4**
Overweight	238,157	**84.9**	42,367	**15.1**	13.5 - 16.8	**15.84**	33,216	**11.8**	8,021	**3.7**	1,130	**0.4**	280,524	**32.6**
Obese I	64,986	**79.2**	17,106	**20.8**	17.6 - 24.4	**20.94**	12,213	**14.9**	3,897	**4.7**	996	**1.2**	82,092	**9.6**
Obese II	17,786	**69.8**	7,679	**30.2**	23.6 - 37.7	**29.32**	5,853	**23.0**	1,426	**5.6**	400*	**1.6**	25,465	**3.0**
Obese III	8,926	**71.4**	3,573	**28.6**	20.2 - 38.7	**30.76**	2,247	**18.0**	1,258	**10.1**	68*	**0.5**	12,499	**1.5**
Arthritis														
Yes	90,812	**82.0**	19,898	**18.0**	15.4 - 20.9	**23.04**	13,715	**12.4**	5,926	**5.4**	257	**0.2**	110,710	**12.9**
No	627,272	**83.8**	121,278	**16.2**	15.2 - 17.3	**16.14**	91,583	**12.2**	25,405	**3.4**	4,290	**0.6**	748,550	**87.1**
Asthma														
Yes	63,202	**79.4**	16,370	**20.6**	17.5 - 24.1	**19.86**	10,866	**13.7**	4,655	**5.8**	849	**1.1**	79,572	**9.3**
No	654,882	**84.0**	124,806	**16.0**	15.0 - 17.0	**16.52**	94,431	**12.1**	26,676	**3.4**	3,699	**0.5**	779,688	**90.7**
Diabetes														
Yes	42,260	**78.2**	11,786	**21.8**	17.8 - 26.4	**25.36**	7,910	**14.6**	3,288	**6.1**	588	**1.1**	54,046	**6.3**
No	675,824	**83.9**	129,389	**16.1**	15.1 - 17.1	**16.35**	97,388	**12.1**	28,042	**3.5**	3,959	**0.5**	805,213	**93.7**
HBC														
Yes	152,855	**86.0**	24,951	**14.0**	12.1 - 16.2	**17.52**	18,873	**10.6**	5,458	**3.1**	620	**0.3**	177,806	**20.7**
No	565,230	**82.9**	116,224	**17.1**	16.0 - 18.2	**16.85**	86,425	**12.7**	25,872	**3.8**	3,927	**0.6**	681,454	**79.3**
HBP														
Yes	147,843	**83.6**	29,038	**16.4**	14.5 - 18.5	**19.55**	21,618	**12.2**	6,889	**3.9**	531	**0.3**	176,881	**20.6**
No	570,241	**83.6**	112,137	**16.4**	15.4 - 17.6	**16.12**	83,680	**12.3**	24,441	**3.6**	4,016	**0.6**	682,378	**79.4**
STATE ADULTS	**718,084**	**83.6**	**141,175**	**16.4**	**15.5 - 17.4**		**105,298**	**12.3**	**31,330**	**3.6**	**4,547**	**0.5**	**859,259**	**100.0**

[1] Adult Population Estimated by Respondent Aged ? 18 Years, sample size 10,233
[2] Sample numbers provisionally weighted and adjusted for total adult population
[3] Age adjusted to the population of Hawai`i - Census 2000
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)
-- No reported cases
* Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion

A-10: Household Food Security Status By Household Type, Size, Income, and Poverty, HHS 1999-2000

Demographic Variable	Food Security Status[1,2]												
	Food Secure		Food Insecure									Total[1,2]	
			Total Insecure			At Risk		Hunger					
								Adult Only		Adult & Child And Child Only			
	N	%	N	%	95% C.I.	N	%	N	%	N	%	N	%
Household Type													
Adult No Children	63,267	**83.4**	12,569	**16.6**	14.5 - 18.8	8,162	**10.8**	4,407	**5.8**	--	--	75,836	**18.5**
Adults No Children	156,357	**88.2**	20,957	**11.8**	10.7 - 13.1	16,060	**9.1**	4,897	**2.8**	--	--	177,314	**43.3**
Adult With Child(ren)	8,367	**62.8**	4,950	**37.2**	31.0 - 43.8	3,493	**26.2**	1,042	**7.8**	415	**3.1**	13,317	**3.2**
Adults With Child(ren)	114,019	**79.5**	29,338	**20.5**	18.8 - 22.2	22,729	**15.9**	4,663	**3.3**	1,946	**1.4**	143,357	**35.0**
Household Size													
One	63,267	**83.4**	12,569	**16.6**	14.5 - 18.8	8,162	**10.8**	4,407	**5.8**	--	--	75,836	**18.5**
Two	112,250	**88.9**	14,065	**11.1**	9.8 - 12.6	10,521	**8.3**	3,432	**2.7**	112	**0.1**	126,315	**30.8**
Three	65,038	**84.2**	12,200	**15.8**	13.8 - 18.0	9,212	**11.9**	2,574	**3.3**	414	**0.5**	77,238	**18.8**
Four	58,410	**82.7**	12,241	**17.3**	15.2 - 19.7	9,366	**13.3**	2,273	**3.2**	602	**0.9**	70,651	**17.2**
Five	24,946	**74.4**	8,562	**25.6**	21.9 - 29.6	7,034	**21.0**	1,314	**3.9**	214	**0.6**	33,508	**8.2**
Six	11250	**73.9**	3,964	**26.1**	20.9 - 32.0	3,139	**20.6**	468	**3.1**	357	**2.3**	15,214	**3.7**
Seven	3,771	**66.8**	1,878	**33.2**	24.1 - 43.9	1,394	**24.7**	66	**1.2**	418	**7.4**	5,649	**1.4**
Eight and greater	3,078	**56.9**	2,335	**43.1**	32.8 - 54.1	1,618	**29.9**	474	**8.8**	243	**4.5**	5,413	**1.3**
Household Income													
< $5,000	5,524	**55.8**	4,383	**44.2**	36.5 - 52.3	2,674	**27.0**	1,543	**15.6**	166*	**1.7**	9,907	**2.4**
$5,000-$9,999	5,013	**56.8**	3,819	**43.2**	35.6 - 51.2	2,439	**27.6**	1,248	**14.1**	132*	**1.5**	8,832	**2.2**
$10,000-$14,999	7,513	**57.7**	5,503	**42.3**	36.0 - 48.9	3,488	**26.8**	1,677	**12.9**	338	**2.6**	13,016	**3.2**
$15,000-$19,999	11,841	**72.8**	4,417	**27.2**	22.2 - 32.8	3,114	**19.2**	975	**6.0**	328	**2.0**	16,258	**4.0**
$20,000-$24,999	15,145	**75.2**	4,983	**24.8**	20.3 - 29.8	4,044	**20.1**	865	**4.3**	74*	**0.4**	20,128	**4.9**
$25,000-$29,999	14,348	**76.9**	4,305	**23.1**	18.5 - 28.4	3,284	**17.6**	905	**4.9**	116	**0.6**	18,653	**4.6**
$30,000-$34,999	17,814	**79.7**	4,540	**20.3**	16.4 - 24.9	3,603	**16.1**	606	**2.7**	331	**1.5**	22,354	**5.5**
$35,000-$39,999	13,978	**79.5**	3,613	**20.5**	16.0 - 25.9	2,439	**13.9**	1,118	**6.4**	56*	**0.3**	17,591	**4.3**
$40,000-$44,999	18,029	**85.7**	3,013	**14.3**	10.9 - 18.5	2,667	**12.7**	261	**1.2**	85*	**0.4**	21,042	**5.1**
$45,000-$49,999	12,358	**87.4**	1,784	**12.6**	9.0 - 17.5	1,520	**10.7**	246	**1.7**	18*	**0.1**	14,142	**3.5**
$50,000-$54,999	18,603	**87.5**	2,657	**12.5**	9.3 - 16.5	2,138	**10.1**	396	**1.9**	123*	**0.6**	21,260	**5.2**
$55,000-$59,999	10,022	**89.0**	1,234	**11.0**	7.1 - 16.6	960	**8.5**	183	**1.6**	91*	**0.8**	11,256	**2.7**
$60,000-$74,999	31,186	**91.8**	2,781	**8.2**	6.1 - 10.9	2,346	**6.9**	390	**1.1**	45*	**0.1**	33,967	**8.3**
$75,000-$99,999	32,583	**95.1**	1,685	**4.9**	3.3 - 7.2	1,496	**4.4**	171	**0.5**	18*	**0.1**	34,268	**8.4**
$100,000-$149,999	19,890	**95.3**	982	**4.7**	2.8 - 7.7	839	**4.0**	98	**0.5**	45*	**0.2**	20,872	**5.1**
> $150,000	9,162	**98.0**	185	**2.0**	0.9 - 4.3	84	**0.9**	71*	**0.8**	30*	**0.3**	9,347	**2.3**
Unknown	99,000	**84.7**	17929	**15.3**	13.7 - 17.1	13,309	**11.4**	4,257	**3.6**	363	**0.3**	116,929	**28.5**
Median Income	**$ 45,620**	($44,216 - $47,027)	**$ 26,156**	($24,368- $27,968)		**$ 28,218**	($15,878 - $23,376)	**$ 19,602**		**$ 20,824**		**$ 41,598**	($40686 - $42,517)
Poverty[3]													
0 - 62.5%	8,713	**52.4**	7,917	**47.6**	41.6 - 53.7	5,117	**30.8**	2,284	**13.7**	516	**3.1**	16,630	**4.1**
63 - 100%	8,445	**55.9**	6,663	**44.1**	38.1 - 50.3	4,336	**28.7**	1,748	**11.6**	579	**3.8**	15,108	**3.7**
101- 133%	10,412	**66.7**	5,195	**33.3**	27.8 - 39.3	3,636	**23.3**	1,351	**8.7**	208	**1.3**	15,607	**3.8**
134- 185%	26,466	**74.2**	9,210	**25.8**	22.4 - 29.6	7,436	**20.8**	1,642	**4.6**	132	**0.4**	35,676	**8.7**
186- 200%	4,647	**71.9**	1,820	**28.1**	20.0 - 38.0	1,400	**21.6**	384	**5.9**	36*	**0.6**	6,467	**1.6**
201- 300%	51,510	**83.4**	10,253	**16.6**	14.3 - 19.1	7,837	**12.7**	2,039	**3.3**	377	**0.6**	61,763	**15.1**
> 300%	132,818	**93.8**	8,825	**6.2**	5.3 - 7.3	7,372	**5.2**	1,305	**0.9**	148*	**0.1**	141,643	**34.6**
Unknown	99,000	**84.7**	17,929	**15.3**	13.7 - 17.1	13,309	**11.4**	4,257	**3.6**	363	**0.3**	116,929	**28.5**
STATE HOUSEHOLDS	**342,010**	**83.5**	**67,812**	**16.5**	**15.6 - 17.5**	**50,444**	**12.3**	**15,009**	**3.7**	**2,359**	**0.6**	**409,823**	**100**

[1] All households, sample size 10,233

[2] Sample numbers provisionally weighted and adjusted for total number of households

***(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)**

[3] Percent Poverty determined by household size, (1999,1998) total household income and (2000,1999) Health and Human Services Poverty Guidelines

-- No reported cases

*** Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion**

A-11 Household Food Security Status By Household Use of Assistance Programs, HHS 1999-2000

Variable	Food Security Status[1,2]											
	Food Secure		Food Insecure								Total[1,2]	
			Total Food Insecure			At Risk		Hunger				
								Adult Hunger Only		Adult & Child And Child Only		
	N	Row %	N	Row %	95% C.I.	N	Row %	N	Row %	N	Row %	N	Col. %
Food Stamps													
Yes	15,016	**49.9**	15,057	**50.1**	45.6 - 54.5	8,871	**29.5**	5,278	**17.6**	908	**3.0**	30,073	**7.3**
No	325,767	**86.1**	52,660	**13.9**	13.0 - 14.8	41,477	**11.0**	9,731	**2.6**	1,452	**0.4**	378,427	**92.3**
Don't know/Refused*	1,227	**92.7**	96	**7.3**	1.3 - 32.4	96*	**7.3**	--	**--**	--	**--**	1,323*	**0.3**
AFDC/Welfare (DHS)													
Yes	10,587	**48.7**	11,140	**51.3**	46.0 - 56.5	7,128	**32.8**	3,254	**15.0**	757	**3.5**	21,727	**5.3**
No	330,064	**85.5**	56,073	**14.5**	13.6 - 15.4	42,914	**11.1**	11,556	**3.0**	1,602	**0.4**	386,137	**94.2**
Don't know/Refused*	1,358	**69.3**	601	**30.7**	15.9 - 51.0	102	**5.2**	198*	**10.1**	--	**--**	1,959*	**0.5**
Social Security Income													
Yes	84,212	**84.8**	15,085	**15.2**	13.5 - 17.1	11,308	**11.4**	3,480	**3.5**	298	**0.3**	99,297	**24.2**
No	255,816	**83.0**	52,317	**17.0**	15.9 - 18.1	38,919	**12.6**	11,355	**3.7**	2,042	**0.7**	308,133	**75.2**
Don't know/Refused	1,982	**82.8**	411	**17.2**	7.7 - 34.0	218*	**9.1**	174	**7.3**	20*	**0.8**	2,393	**0.6**
Disability Benefits													
Yes	16,099	**67.5**	7,760	**32.5**	28.0 - 37.4	4,687	**19.6**	2,914	**12.2**	160	**0.7**	23,859	**5.8**
No	323,819	**84.4**	59,670	**15.6**	14.7 - 16.5	45,497	**11.9**	12,077	**3.1**	2,096	**0.5**	383,489	**93.6**
Don't know/Refused	2,092	**84.5**	383	**15.5**	6.9 - 31.1	261	**10.5**	18*	**0.7**	105*	**4.2**	2,475	**0.6**
Housing Assistance/Section 8													
Yes	3,470	**42.0**	4,789	**58.0**	49.4 - 66.1	2,776	**33.6**	1,729	**20.9**	282	**3.4**	8,259	**2.0**
No	336,861	**84.3**	62,917	**15.7**	14.9 - 16.7	47,650	**11.9**	13,189	**3.3**	2,077	**0.5**	399,778	**97.5**
Don't know/Refused*	1,678	**93.9**	109*	**6.1**	1.2 - 26.5	18*	**1.0**	91*	**5.1**	--	**--**	1,787*	**0.4**
Free or Reduced Lunch													
Yes	12,088	**49.0**	12,569	**51.0**	46.1 - 55.8	8,700	**35.3**	2,715	**11.0**	1,153	**4.7**	24,657	**6.0**
No	327,514	**85.6**	54,962	**14.4**	13.5 - 15.3	41,479	**10.8**	12,276	**3.2**	1,206	**0.3**	382,476	**93.3**
Don't know/Refused	2,408	**89.5**	283	**10.5**	4.3 - 23.5	265	**9.8**	18*	**0.7**	--	**--**	2,691	**0.7**
Head Start													
Yes	2,299	**42.7**	3,083	**57.3**	46.6 - 67.4	2,386	**44.3**	563	**10.5**	134	**2.5**	5,382	**1.3**
No	338,154	**84.0**	64,611	**16.0**	15.1 - 17.0	48,000	**11.9**	14,428	**3.6**	2,183	**0.5**	402,765	**98.3**
Don't know/Refused*	1,557	**92.9**	119	**7.1**	2.6 - 18.0	58*	**3.5**	18*	**1.1**	42*	**2.5**	1,676*	**0.4**
Unemployment Benefits													
Yes	12,748	**64.6**	6,974	**35.4**	30.2 - 40.9	5,497	**27.9**	1,276	**6.5**	202	**1.0**	19,722	**4.8**
No	327,807	**84.4**	60,693	**15.6**	14.7 - 16.6	44,801	**11.5**	13,734	**3.5**	2,159	**0.6**	388,500	**94.8**
Don't know/Refused*	1,455	**90.8**	147	**9.2**	2.6 - 27.3	147*	**9.2**	--	**--**	--	**--**	1,602*	**0.4**
STATE HOUSEHOLDS	**342,010**	**83.5**	**67,814**	**16.5**	**15.6 - 17.5**	**50,445**	**12.3**	**15,010**	**3.7**	**2,361**	**0.6**	**409,824**	**100.0**

[1] All households, sample size 10,233

[2] Sample numbers provisionally weighted and adjusted* for total number of households

*(total numbers are adjusted as Niihau, Kalawao, group quarters, and homeless are not represented)

-- No reported cases

* Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion

A-12: Household Members Food Security Status By Gender, Age, Ethnicity, and Insurance Status, HHS 1999-2000

Demographic Variable	Food Security Status[1,2]												
	Food Secure		Food Insecure										
			Total Food Insecure					At Risk		Hunger			
			No Age Adjustment			Age Adjusted[3]				Adult Only		Adult & Child And Child Only	
	N	Row %	N	Row %	95% C.I.	Row %	95% C.I.	N	Row %	N	Row %	N	Row %
Gender													
Male	460,852	**81.0**	107,810	**19.0**	17.7 - 20.3	**18.8**	17.6 - 20.1	81,856	**14.4**	20,085	**3.5**	5,869	**1.0**
Female	471,317	**80.5**	114,023	**19.5**	18.2 - 20.8	**19.7**	18.4 - 21.1	86,593	**14.8**	21,112	**3.6**	6,318	**1.1**
Age													
< 5 Years	62,220	**74.7**	21,064	**25.3**	22.3 - 28.5			16,486	**19.8**	3,359	**4.0**	1,218	**1.5**
5-14	123,798	**75.0**	41,333	**25.0**	22.7 - 27.5			30,657	**18.6**	7,347	**4.4**	3,328	**2.0**
15-24	111,155	**75.5**	36,166	**24.5**	22.1 - 27.2			27,729	**18.8**	5,791	**3.9**	2,646	**1.8**
25-34	111,619	**78.9**	29,846	**21.1**	19.1 - 23.2			22,002	**15.6**	6,593	**4.7**	1,251	**0.9**
35-44	155,525	**80.6**	37,538	**19.4**	17.7 - 21.4			28,148	**14.6**	7,395	**3.8**	1,994	**1.0**
45-54	141,228	**85.5**	23,976	**14.5**	12.9 - 16.3			17,927	**10.9**	5,220	**3.2**	830	**0.5**
55-64	87,961	**85.8**	14,558	**14.2**	12.3 - 16.3			11,357	**11.1**	2,664	**2.6**	537	**0.5**
65-74	77,251	**89.0**	9,565	**11.0**	9.1 - 13.3			7,552	**8.7**	1,815	**2.1**	199*	**0.2**
75-84	48,161	**89.3**	5,787	**10.7**	8.7 - 13.2			4,768	**8.8**	837	**1.6**	182	**0.3**
>84	13,252	**86.9**	1,999	**13.1**	9.2 - 18.4			1,823	**12.0**	176	**1.2**	--	--
Ethnicity/Race													
African American	14,858	**80.0**	3,711	**20.0**	13.2 - 29.1	**20.3**	13.6 - 29.1	2,209	**11.9**	824	**4.4**	562	**3.0**
Caucasian	216,743	**87.1**	32,018	**12.9**	11.3 - 14.7	**13.2**	11.4 - 15.3	24,230	**9.7**	7,133	**2.9**	183	**0.1**
Chinese	60,503	**91.0**	5,950	**9.0**	6.4 - 12.4	**9.4**	6.7 - 12.9	4,637	**7.0**	1,019	**1.5**	294	**0.4**
Filipino	133,317	**72.2**	51,439	**27.8**	24.6 - 31.4	**27.4**	24.2 - 30.8	40,370	**21.9**	8,771	**4.7**	2,298	**1.2**
Hawaiian/Part Hawaiian	170,030	**71.1**	69,021	**28.9**	26.1 - 31.9	**27.1**	24.5 - 29.9	52,482	**22.0**	12,082	**5.1**	4,457	**1.9**
Japanese	240,450	**91.9**	21,184	**8.1**	6.7 - 9.7	**8.5**	7.0 - 10.2	19,250	**7.4**	1,878	**0.7**	56*	**0.0**
Native American	8,433	**79.4**	2,190	**20.6**	14.3 - 28.7	**21.1**	15.2 - 28.4	1,525	**14.4**	532	**5.0**	133	**1.3**
Other PI	12,493	**48.1**	13,475	**51.9**	40.4 - 63.2	**45.7**	36.0 - 55.8	7,650	**29.5**	3,246	**12.5**	2,578	**9.9**
Other Asian	24,062	**86.2**	3,837	**13.8**	8.8 - 20.9	**13.4**	8.6 - 20.3	3,010	**10.8**	731	**2.6**	97*	**0.3**
Other	44,526	**74.5**	15,225	**25.5**	20.8 - 30.8	**24.0**	19.8 - 28.8	10,709	**17.9**	731	**1.2**	97	**0.2**
Unknown/Refused	6,753	**64.1**	3,783	**35.9**	24.6 - 49.0			2,379	**22.6**	1,367	**13.0**	37*	**0.4**
Insurance Status													
Insured	881,100	**82.1**	192,312	**17.9**	16.7 - 19.2	**18.0**	16.8 - 19.2	147,196	**13.7**	34,781	**3.2**	10,335	**1.0**
Uninsured	42,711	**63.6**	24,423	**36.4**	32.1 - 40.9	**36.5**	32.2 - 41.1	16,927	**25.2**	5,716	**8.5**	1,781	**2.7**
Unknown/Refused	8,358	**62.1**	5,098	**37.9**	26.1 - 51.2			4,326	**32.1**	700	**5.2**	71*	**0.5**
STATE POPULATION	**932,169**	**80.8**	**221,833**	**19.2**	**18.0 - 20.5**			**168,449**	**14.6**	**41,197**	**3.6**	**12,187**	**1.1**

[1] All household members, sample size 29,860
[2] Sample numbers provisionally weighted and adjusted for total population
[2] Age adjusted to Population of Hawai`i, 2000 Census
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)
-- No reported cases
*** Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion**

A-13: Adult Household Members Food Security Status By Marital Status and Education Level, HHS 1999-2000

Demographic Variable	Food Security Status[1,2]												
	Food Secure		Food Insecure								Total[1,2]	
			Total Insecure			At Risk		Hunger					
								Adult Only		Adult & Child And Child Only			
	N	Row %	N	Row %	95% C.I.	N	Row %	N	Row %	N	Row %	N	Col. %
Marital Status													
Married	404,732	**85.9**	66,202	**14.1**	12.9 - 15.3	52,856	**11.2**	10,529	**2.2**	2,817	**0.6**	470,934	**54.8**
Widowed	58,326	**86.9**	8,780	**13.1**	10.3 - 16.4	6,513	**9.7**	2,238	**3.3**	29*	**<0.1**	67,106	**7.8**
Divorced	69,605	**80.5**	16,826	**19.5**	16.5 - 22.8	9,579	**11.1**	6,725	**7.8**	522	**0.6**	86,431	**10.1**
Separated	6,470	**62.1**	3,946	**37.9**	27.1 - 50.0	2,816	**27.0**	685	**6.6**	445*	**4.3**	10,416	**1.2**
Never Married	172,825	**80.0**	43,245	**20.0**	18.0 - 22.2	32,302	**14.9**	10,208	**4.7**	735	**0.3**	216,070	**25.1**
Unknown/Refused	6,125	**73.8**	2,178	**26.2**	16.4 - 39.1	1,232	**14.8**	946	**11.4**	--	**--**	8,303	**1.0**
Education													
Only Kindergarten*	501	**100.0**	--	**--**	**--**	--	**--**	--	**--**	--	**--**	501*	**0.1**
Grades 1-8	17,730	**76.7**	5,378	**23.3**	17.4 - 30.4	3,605	**15.6**	1,388	**6.0**	384	**1.7**	23,108	**2.7**
Grades 9-11	23,554	**73.8**	8,381	**26.2**	21.0 - 32.3	6,332	**19.8**	1,695	**5.3**	354	**1.1**	31,935	**3.7**
Grade 12 or GED	213,840	**79.3**	55,732	**20.7**	18.9 - 22.6	40,486	**15.0**	13,147	**4.9**	2,100	**0.8**	269,572	**31.4**
College 1-3 Years	201,678	**81.5**	45,755	**18.5**	16.6 - 20.5	36,010	**14.6**	8,641	**3.5**	1,104	**0.4**	247,433	**28.8**
College 4+ Years	258,588	**91.0**	25,421	**9.0**	7.7 - 10.3	18,565	**6.5**	6,250	**2.2**	606	**0.2**	284,009	**33.1**
Unknown/Refused*	2,192	**81.2**	508	**18.8**	6.1 - 45.4	299	**11.1**	209	**7.7**	--	**--**	2,700*	**0.3**
STATE ADULTS	**718,083**	**83.6**	**141,175**	**16.4**	**15.5 - 17.4**	**105,297**	**12.3**	**31,330**	**3.6**	**4,548**	**0.5**	**859,258**	**100.0**

[1] **Adult Respondent (aged 18 years or older) Population, sample size 10,233**

[2] **Sample numbers provisionally weighted and adjusted for total adult population**
(total numbers are adjusted as Ni`ihau, Kalawao, group quarters, and homeless are not represented)

-- No reported cases

*** Numerator <5 and/or denominator has <50 in sample, not reliable - presented only for sake of completion**

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