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Food Insecurity in Alaska

Abstract

Although it has been established that food insecurity is a significant and growing problem in Alaska, in-depth, statewide studies of this public health issue have been limited. The purpose of this study was to create a demographic and chronic disease risk factor profile of the food insecure in Alaska to equip service providers throughout Alaska with information to target and address the needs of the state's food insecure. The U.S. Household Food Security Survey Module: Six-Item Short Form was used to determine food security status on the 2006 Alaska Behavioral Risk Factor Surveillance Survey (BRFSS). The prevalence of food insecurity was calculated for groups with selected demographic and socioeconomic characteristics. The comorbidity of food insecurity with chronic conditions and their risk factors was also examined. The Alaska BRFSS estimated over 80,000 Alaskans lived in households that were food insecure in 2006. These food insecure households included 10.8% of adults and 15.2% of children in Alaska. Food insecurity was greater among those with lower socioeconomic status, though it was by no means restricted to this segment of Alaskan society: 40% of food insecure Alaskans had some college and nearly 60% were employed. The public health implications for Alaskan policy makers are highlighted through significantly higher health risk factors and chronic disease prevalence among the food insecure. Until the root economic causes of food insecurity can be resolved, emergency food supplements will be required.

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Introduction

A healthy diet is one of the foundations of a healthy life. But for most individuals, food is a commodity which must be purchased and therefore can be in competition with other necessities in the household budget such as housing, energy, clothing, and health care. Those who cannot reliably go without access to adequate food are termed 'food insecure'; the proportion of these who experience the greatest difficulty in securing food are considered to have 'very low food security'.¹

Food insecurity is an issue of public health concern due to its association with a number of negative health outcomes. Food insecurity can result in physical impairment (illness or fatigue), psychological issues



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caused by lack of food, and domestic disruption as eating patterns and related rituals, and the means of food acquisition and management are modified.²

Although counterintuitive, it is a fact that the food insecure are often overweight or obese.¹ This occurs as individuals compensate their diminished means to obtain food through reliance on a few basic foods and reducing variety in their diets, with the result that meals may not always be balanced and nutritious.¹ Fruits and vegetables are among the first items sacrificed in the face of approaching hunger, resulting in lower dietary quality. Households with incomes below 130 percent of the poverty line are unlikely to allocate money to purchase fruits and vegetables.³

The risks to youth from food insecurity are profound and extend beyond poor health to include decreased cognitive performance and academic achievement as well as increased behavioral and psychosocial problems.² Research indicates the following negative outcomes are associated with food insecurity among children: poor health status; more frequent colds, ear infections and other health problems; greater incidence of hospitalizations; higher levels of aggression, hyperactivity, and anxiety as well as passivity; difficulty getting along with other children, and increased need for mental health services; impaired cognitive functioning and diminished capacity to learn; lower test scores and poorer overall school achievement; and increased likelihood of repeating a grade, school absences, tardiness, and school suspension.⁴

As might be expected, unemployed individuals and those with lower incomes are more likely to be food insecure. Economic issues of poverty, high housing costs, and unemployment were the most cited causes of hunger in a recent survey conducted by the U.S. Conference of Mayors.⁴ A number of socio-economic factors are associated with food insecurity, even among those with employment or middle/high incomes. Unemployment and other employment-related problems, followed by low-paying jobs, high housing costs, poverty, medical or health costs, substance abuse, high utility costs, mental health problems, homelessness, reduced public benefits, and high child-care costs have been linked with food insecurity.²

Food insecurity is a significant and growing problem in Alaska. According to a recent report from the United States Department of Agriculture (USDA), 12.6% of Alaskans—compared to only 11.3% of US residents overall—are food insecure. Although this difference is not statistically significant, the difference between

Alaskan (5.1%) and US (3.9%) rates of very low food security does reach statistical significance.¹ Furthermore, rates of both overall food insecurity and very low food security have increased significantly in Alaska over the past decade.¹

Alaska's high cost of living may be one reason for a higher than average food insecurity rate. Alaska is the largest state in the US and most of its communities are inaccessible by the road system. This situation creates challenges for transporting goods, including foodstuffs, which must be imported by sea or air. Domestic food production and subsistence harvests are limited and highly seasonal in the far north. For these and other reasons, costs for a standardized "market basket" of food items in Alaska can range from being 20% higher in urban areas to 170% higher in rural areas than in Portland, Oregon, for example.⁵ Energy costs in Alaska for electricity and heating oil can be three times the cost in Portland. Other necessities are similarly priced higher in Alaska, with Anchorage having over 40% higher costs for housing and over 30% higher medical costs than the US average in a cost-of-living differential survey.⁶

Although it is valuable to know the prevalence of food insecurity in Alaska, more detailed information is needed in order for social service programs to appropriately target and serve those in most need of their services. The Current Population Survey supplement from which the USDA food insecurity estimates are calculated cannot produce estimates below the level of the state, nor does it assess the risks and diseases associated with food insecurity. A Food Bank of Alaska (FBA) client survey conducted in 2005 provided FBA with a description of the demographics and select health status information on their client base.⁷ This assessment did not allow for breakdowns by either region or chronic disease co-morbidity, nor did it provide a statewide profile generalizable to all of Alaska's food insecure. More recently, the FBA produced a report describing Alaska's food insecure by both region and poverty status; other demographic variables and chronic disease co-morbidities were not included in their analysis.⁸

The purpose of this study was to address this literature gap by creating a demographic and chronic disease risk factor profile of the food insecure in Alaska. The goal of such a profile is to equip service providers throughout Alaska with information they can use to more effectively target and address the needs of the state's food insecure.

Methods

Design and Sampling

Using Alaska 2006 Behavioral Risk Factor Surveillance System (BRFSS) data, we examined the demographic, regional, and chronic disease profile of Alaskans who are food insecure.

The BRFSS is an ongoing random-digit-dial survey of non-institutionalized adults aged 18 years and older that is conducted in all 50 states, the District of Columbia and 3 territories. The BRFSS methods and weighting procedures are described elsewhere.⁹ In Alaska, a stratified sampling plan was used and sample drawn from 5 regions defined by combinations of census areas and boroughs (Anchorage and Vicinity, Gulf Coast, Southeast, Rural, and Fairbanks and Vicinity). In 2006, the Alaska BRFSS surveyed 2,113 Alaskan adults, achieving a survey response rate of 57.5%.

Variable Definition

The US Household Food Security Survey Module: Six Item Short Form was used to determine food security status (see Appendix A for complete wording).¹⁰ Respondents were asked to indicate whether, in the last 12 months they or members of their household ever: (1) ate less than they felt they should because there wasn't enough money to buy food; (2) cut the size of meals or skipped meals because there wasn't enough money for food; and (3) were hungry but didn't eat because there wasn't enough money for food. They were also asked the frequency of occurrence of the following events: (4) food purchased didn't last, and didn't have money to get more; (5) couldn't afford to eat balanced meals; and (6) cut the size of your meals or skip meals because there wasn't enough money for food.

Items (1) through (3) were assigned a score of 1 if answered "yes"; items (4) through (6) were assigned a score of 1 if the event occurred to any extent. A score of 0 – 6 was calculated based on the number of positive responses to the 6 questions in the module. A score of 0 – 1 indicated high or marginal food security, a score of 2 – 4 indicated low food security and a score of 5 – 6 indicated very low food security. Households with low food security had reduced quality and variety of the food they eat but the quantity of food intake was normal.¹¹ Those households with very low food security had disrupted eating patterns or reduced food intake of one or more household members. For the current analysis, respondents with a score of 2 or greater were considered food insecure.

Covariates

Socio-demographic variables included sex, race or ethnicity, age group, marital status, employment status, income, and region of residence. Chronic disease related variables included: current smoking status, physical inactivity, obesity, binge drinking, non-gestational diabetes, lifetime asthma diagnosis, heart disease, cancer screening, depression, anxiety, quality of life variables and current disability status. The 2006 Alaska BRFSS questionnaire is available at <http://www.hss.state.ak.us/dph/chronic/hsl/brfss/pubs/BRFSS06.pdf>.

Statistical Analysis

The BRFSS data were weighted to represent the distribution of Alaskan adults by sex, age and region. The prevalence and 95% confidence interval of food insecurity was calculated for groups with selected demographic and socioeconomic characteristics. The comorbidity of food insecurity with chronic conditions and their risk factors was also examined. SPSS Complex Samples module or SAS v9 combined with SUDAAN 9.0 were used to accommodate the complex sampling design of BRFSS. Groups were considered statistically significantly different if their 95% confidence intervals did not overlap.

Results

In 2006, 10.8% of households in Alaska were food insecure, meaning that at times members of the household were uncertain of having, or unable to acquire, enough food for all household members because they had insufficient money or other resources for food (Figure 1). The estimated 80,095 individuals in these food insecure households represent 10.8% of adults (age 18 and over) and 15.2% of children (age less than 18) in the state (Table 1).

Figure 1. Alaskan Households by Food Security Status, Alaska BRFSS Standard Survey, 2006

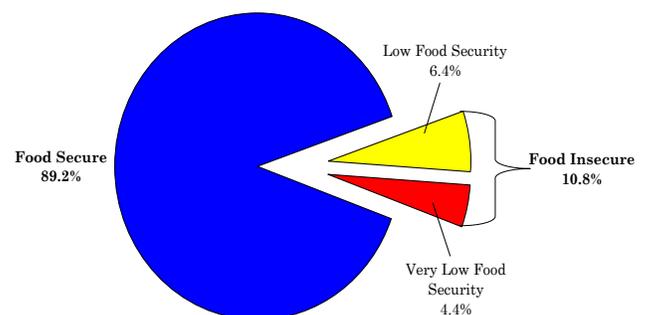


Table 1. Food Insecurity by Region, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Food Insecurity | |
|--------------------------|--------------|----------------------|------------------------|-------|
| | | | N | % |
| Adults (18+) | | | | |
| Anchorage and Vicinity | 9.8% | (7.1%-13.%) | 24,993 | 48.9% |
| Gulf Coast | 10.9% | (7.7%-15.1%) | 5,926 | 11.6% |
| Southeast | 7.4% | (5.0%-10.8%) | 3,883 | 7.6% |
| <i>Rural</i> | <i>21.8%</i> | <i>(17.0%-27.6%)</i> | 10,265 | 20.1% |
| Fairbanks and Vicinity | 9.2% | (9.2%-12.9%) | 5,993 | 11.7% |
| Children (<18) | | | | |
| Anchorage and Vicinity | 14.1% | (9.1%-21.0%) | 14,116 | 46.0% |
| Gulf Coast | 13.8% | (8.4%-21.7%) | 2,823 | 9.7% |
| Southeast | 8.8% | (4.3%-17.2%) | 1,584 | 5.5% |
| Rural | 26.4% | (19.1%-35.3%) | 6,685 | 23.0% |
| Fairbanks and Vicinity | 14.0% | (8.5%-22.1%) | 3,827 | 13.2% |
| Households | | | | |
| Anchorage and Vicinity | 10.0% | (7.6%-13.1%) | 13,556 | 46.3% |
| Gulf Coast | 10.0% | (7.4%-13.4%) | 3,594 | 12.3% |
| Southeast | 7.7% | (5.4%-10.8%) | 2,574 | 8.8% |
| <i>Rural</i> | <i>19.7%</i> | <i>(15.8%-24.3%)</i> | 5,877 | 20.1% |
| Fairbanks and Vicinity | 9.8% | (7.3%-13.2%) | 3,653 | 12.5% |

Note: Food insecurity = low food security and very low food security.
Italics = significant difference from one or more subgroups

Although nearly half of the food insecure population resides in Anchorage and vicinity, the prevalence of food insecurity was significantly higher in the rural region of Alaska at 23.4% (adults and children combined) compared to the statewide average of 12.0%. This regional difference in food insecurity was found when considering both the adult population and the total number of households (Table 1). Table 2 shows the estimated number and percentage of Alaskan individuals and households that met the definition of very low food security.

Table 2. Very Low Food Security by Region, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Very Low Food Security | |
|--------------------------|------|--------------|-------------------------------|-------|
| | | | N | % |
| Adults (18+) | | | | |
| Anchorage and Vicinity | 4.0% | (2.3%-6.8%) | 10,207 | 54.2% |
| Gulf Coast | 4.5% | (2.6%-7.5%) | 2,445 | 13.0% |
| Southeast | 3.4% | (1.9%-5.7%) | 1,758 | 9.3% |
| Rural | 5.4% | (3.3%-8.9%) | 2,546 | 13.5% |
| Fairbanks and Vicinity | 2.9% | (1.6%-5.3%) | 1,876 | 10.0% |
| Children (<18) | | | | |
| Anchorage and Vicinity | 8.1% | (4.2%-15.0%) | 8,087 | 56.8% |
| Gulf Coast | 8.2% | (4.4%-14.8%) | 1,682 | 11.8% |
| Southeast | 4.6% | (1.5%-13.2%) | 830 | 5.8% |
| Rural | 9.7% | (5.2%-17.5%) | 2,469 | 17.3% |
| Fairbanks and Vicinity | 4.3% | (1.9%-9.1%) | 1,170 | 8.2% |
| Households | | | | |
| Anchorage and Vicinity | 4.5% | (2.9%-6.9%) | 6,078 | 51.2% |
| Gulf Coast | 4.6% | (2.9%-7.2%) | 1,639 | 13.8% |
| Southeast | 3.7% | (2.2%-6.1%) | 1,246 | 10.5% |
| Rural | 5.5% | (3.5%-8.6%) | 1,654 | 13.9% |
| Fairbanks and Vicinity | 3.4% | (2.0%-5.7%) | 1,257 | 10.6% |

Characteristics of Alaska's Food Insecure

Not surprisingly, food insecurity was much less prevalent in households more than two times above the poverty level ("middle or high income"; 5%) compared to those below ("poor"; 39%) or less than twice above the poverty level ("near poor"; 24%).

Table 3. Food Insecurity by Demographic Variables, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Food Insecurity | |
|---|--------------|----------------------|------------------------|-------|
| | | | N | % |
| Poverty: Adults (18+) | | | | |
| Poor (<100% Poverty Threshold) | 33.0% | (22.7%-45.3%) | 10,024 | 22.7% |
| Near Poor (100-199% Poverty Threshold) | 22.1% | (16.3%-29.1%) | 14,329 | 32.4% |
| <i>Middle/High (200+ Poverty Threshold)</i> | <i>6.1%</i> | <i>(4.4%-8.3%)</i> | 19,886 | 45.0% |
| Poverty: Children (<18) | | | | |
| Poor (<100% Poverty Threshold) | 44.3% | (29.2%-60.6%) | 8,490 | 31.5% |
| Near Poor (100-199% Poverty Threshold) | 30.2% | 19.0%-44.3%) | 10,251 | 38.1% |
| <i>Middle/High (200+ Poverty Threshold)</i> | <i>6.5%</i> | <i>(4.4%-9.6%)</i> | 8,192 | 30.4% |
| Poverty: Households | | | | |
| Poor (<100% Poverty Threshold) | 38.9% | (29.7%-49.0%) | 6,591 | 25.8% |
| Near Poor (100-199% Poverty Threshold) | 24.3% | (18.9%-30.7%) | 8,844 | 34.6% |
| <i>Middle/High (200+ Poverty Threshold)</i> | <i>5.3%</i> | <i>(4.1%-7.0%)</i> | 10,101 | 39.6% |
| Household Types | | | | |
| Single Adult Household without Children | 9.9% | (7.1%-13.5%) | 6,318 | 21.6% |
| <i>Single Adult Household with Children</i> | <i>21.1%</i> | <i>(14.4%-29.9%)</i> | 4,289 | 14.7% |
| 2+ Adult Household without Children | 7.1% | (5.2%-9.7%) | 6,908 | 23.6% |
| <i>2+ Adult Household with Children</i> | <i>12.9%</i> | <i>(10.3%-16.1%)</i> | 11,739 | 40.1% |
| DEMOGRAPHICS - ADULTS | | | | |
| Gender: | | | | |
| Male | 10.1% | (7.7%-13.1%) | 24,770 | 48.5% |
| Female | 11.5% | (9.2%-14.2%) | 26,291 | 51.5% |
| Age: | | | | |
| 18-44 | 13.3% | (10.6%-16.5%) | 33,498 | 66.1% |
| 45-64 | 8.3% | (6.2%-11.0%) | 14,110 | 27.8% |
| 65+ | 6.7% | (3.5%-12.5%) | 3,083 | 6.1% |
| Race: | | | | |
| White | 8.5% | (6.7%-10.9%) | 29,760 | 58.3% |
| American Indian / Alaska Native (Preferred) | 19.0% | (14.8%-24.0%) | 13,772 | 27.0% |
| Other/Unknown/Refused/Missing | 14.1% | (8.3%-22.8%) | 7,529 | 14.7% |
| Income: | | | | |
| < \$25,000 | 26.1% | (20.3%-32.8%) | 19,883 | 44.9% |
| \$25 - 49,999 | 15.8% | (11.3%-21.7%) | 17,270 | 39.0% |
| \$50,000 + | 3.0% | (1.9%-4.7%) | 7,086 | 16.0% |
| Education: | | | | |
| Less than High School | 25.7% | (16.4%-37.7%) | 8,679 | 17.0% |
| High School or GED | 14.5% | (11.0%-18.7%) | 21,134 | 41.4% |
| <i>Some College or Higher</i> | <i>7.2%</i> | <i>(5.5%-9.4%)</i> | 21,245 | 41.6% |
| Employment Status: | | | | |
| Employed | 9.5% | (7.4%-12.0%) | 30,031 | 59.4% |
| <i>Unemployed</i> | <i>21.7%</i> | <i>(14.0%-32.1%)</i> | 7,245 | 14.3% |
| Not in Work Force | 7.6% | (4.9%-11.6%) | 8,047 | 15.9% |
| Unable to Work | DSU | | 5,226 | 10.3% |
| Marital Status: | | | | |
| Couple (Married or Unmarried) | 9.0% | (7.0%-11.4%) | 28,542 | 56.2% |
| Formerly Married (Widowed, Divorced, Separated) | 15.1% | (11.3%-20.0%) | 10,803 | 21.3% |
| Never Married | 22.6% | (15.7%-31.4%) | 11,475 | 22.6% |

Italics = significant difference from one or more subgroups
 DSU = Data statistically unreliable.

However, due to the disproportionate percentage of “middle or high income” households in Alaska, this means that 40% of all the food insecure in Alaska were not located in “poor” or “near poor” households, but were living in households with higher incomes (Table 3).

Nearly 45% of adults who are food insecure had incomes of less than \$25,000. Over 40% of food insecure adults had at least some college and nearly 60% were employed. The presence of children in the households increased the likelihood of food insecurity for both single and multiple adult-headed households. Two-thirds of food insecure adults were 18-44 years of age. American Indian/Alaska Native adults were twice as likely to be food insecure as white adults.

The majority of adults with food insecurity had access to health care (65.8%), could always afford to see a doctor (51.3%), but had not had a dental visit in the past year (58.7%) (Table 4). Rates of food insecurity were significantly higher for those without a health plan or who could not afford to see a doctor.

Table 4. Food Insecurity by Health Care Variables, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Food Insecurity | |
|--|-------|---------------|------------------------|-------|
| | | | N | % |
| Have Any Kind of Health Plan: | | | | |
| Yes | 8.6% | (7.0%-10.5%) | 33,260 | 65.8% |
| No | 21.0% | (15.3%-28.2%) | 17,283 | 34.2% |
| Time When Could Not Afford to See Doctor: | | | | |
| Yes | 35.6% | (28.4%-43.4%) | 24,771 | 48.7% |
| No | 6.5% | (5.1%-8.2%) | 26,114 | 51.3% |
| Dental Visit Within Past Year | | | | |
| Yes | 6.6% | (5.0%-8.8%) | 20,999 | 41.3% |
| No | 19.2% | (15.5%-23.4%) | 29,884 | 58.7% |

Italics = significant difference from one or more subgroups

Those adults who assessed their health as fair to poor health had an increased prevalence of food insecurity compared to most adults with more favorable health assessments (Table 5).

Despite two-thirds of the food insecure having access to health care, usage of preventive health measures was mixed (Table 6). Immunization rates for influenza and pneumonia were low. Nearly two-thirds of food insecure women aged 40 and over met the requirements for a mammogram within the past two years and nearly 90% of adult women had a pap test within the past three years. Among men, the food

Table 5. Food Insecurity by Health Assessment Variables, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Food Insecurity | |
|--|-------|---------------|------------------------|-------|
| | | | N | % |
| Activity Limitations Due to Health Problem: | | | | |
| Yes | 16.8% | (13.0%-21.5%) | 16,451 | 32.8% |
| No | 9.0% | (7.2%-11.3%) | 33,652 | 67.2% |
| Activity Limitations 7+ Days: | | | | |
| Yes | 20.4% | (14.7%-27.7%) | 8,963 | 17.6% |
| No | 9.9% | (8.1%-12.0%) | 41,948 | 82.4% |
| Disability Present: | | | | |
| Yes | 16.3% | (12.6%-20.8%) | 16,714 | 33.4% |
| No | 9.1% | (7.2%-11.7%) | 33,389 | 66.6% |
| Emotional Support Obtained: | | | | |
| Always or Usually | 7.4% | (5.7%-9.5%) | 26,784 | 53.2% |
| Sometimes / Rarely / Never | 25.6% | (20.4%-31.7%) | 23,592 | 46.8% |
| Frequent Mental Distress: | | | | |
| Yes | 25.6% | (18.5%-34.1%) | 11,662 | 23.4% |
| No | 9.1% | (7.3%-11.2%) | 38,144 | 76.6% |
| General Health: | | | | |
| Excellent/Very Good | 5.7% | (4.1%-7.9%) | 15,826 | 31.1% |
| Good | 14.0% | (10.4%-18.6%) | 19,242 | 37.8% |
| Fair/Poor | 26.5% | (20.6%-33.5%) | 15,780 | 31.0% |
| Mental Health Not Good 7+ Days: | | | | |
| Yes | 23.0% | (17.2%-30.0%) | 15,621 | 31.4% |
| No | 8.6% | (6.9%-10.7%) | 34,186 | 68.6% |
| Physical Health Not Good 7+ Days: | | | | |
| Yes | 25.4% | (19.3%-32.6%) | 17,383 | 35.1% |
| No | 8.1% | (6.4%-10.1%) | 32,071 | 64.9% |
| Special Equipment Required Due to Health Problem: | | | | |
| Yes | 20.0% | (12.4%-30.7%) | 6,170 | 12.1% |
| No | 10.1% | (8.4%-12.2%) | 44,819 | 87.9% |

Italics = significant difference from one or more subgroups

insecure were less likely to have preventative tests; less than a third of food insecure men aged 40 and over had had a PSA test within the past two years. Less than 40% of food insecure adults aged 50 and over had ever had a sigmoidoscopy or colonoscopy.

Nearly two-thirds of the food insecure were above a normal weight and fully a third (34.8%) were obese (Table 7). Generally adults with food insecurity did not binge drink or have a sedentary lifestyle. However, nearly half (48.7%) were current regular smokers.

The public health impact of food insecurity was shown by a high prevalence in adults with a range of chronic diseases (Table 8). For those with mental illness, food insecurity existed for 19.9% with anxiety disorder and 24.0% with depressive disorder. Among those adults with asthma, 16.5% were food insecure, as were 14.5% of those with diabetes.

Table 6. Food Insecurity by Health Assessment Variables, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Food Insecurity | |
|---|-------|---------------|------------------------|-------|
| | | | N | % |
| Flu Shot or Spray within Past 12 Months | | | | |
| Yes | 7.9% | (6.0%-10.4%) | 12,394 | 24.4% |
| No | 12.3% | (10.0%-15.2%) | 38,389 | 75.6% |
| Pneumonia Shot Ever | | | | |
| Yes | 11.7% | (8.1%-16.6%) | 11,222 | 26.4% |
| No | 10.4% | (8.3%-13.0%) | 31,303 | 73.6% |
| Women 40+ With Mammogram Within Past 2 Years | | | | |
| Yes | 8.4% | (5.8%-12.0%) | 7,797 | 65.2% |
| No | 12.4% | (7.9%-19.0%) | 4,170 | 34.8% |
| Women 50+ With Mammogram Within Past 2 Years | | | | |
| Yes | 6.7% | (4.0%-11.0%) | 4,130 | 67.7% |
| No | 11.4% | (5.8%-21.0%) | 1,973 | 32.3% |
| Women 18+ With Pap Test within Past 3 Years | | | | |
| Yes | 12.1% | (9.2%-15.7%) | 19,093 | 88.8% |
| No | 10.1% | (5.2%-18.8%) | 2,401 | 11.2% |
| Men 40+ With PSA Test within Past 2 Years | | | | |
| Yes | 5.7% | (2.4%-12.7%) | 3,300 | 32.4% |
| No | 10.1% | (6.7%-14.9%) | 6,891 | 67.6% |
| Adults 50+ With Blood Stool Test within Past 2 Years | | | | |
| Yes | 8.3% | (4.0%-16.6%) | 2,325 | 19.0% |
| No | 7.3% | (5.0%-10.4%) | 9,917 | 81.0% |
| Adults 50+ Ever Had Sigmoidoscopy or Colonoscopy | | | | |
| Yes | 5.5% | (3.5%-8.3%) | 4,938 | 39.4% |
| No | 10.3% | (6.6%-15.8%) | 7,593 | 60.6% |

Table 7. Food Insecurity by Risk Factors, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Food Insecurity | |
|--|-------|---------------|------------------------|-------|
| | | | N | % |
| Alcohol: Binge Drinking: | | | | |
| Yes | 13.3% | (8.3%-20.6%) | 10,190 | 20.6% |
| No | 10.3% | (8.5%-12.4%) | 39,187 | 79.4% |
| Physical Activity: Leisure Time Exercise: | | | | |
| Yes | 9.1% | (7.3%-11.3%) | 33,907 | 67.0% |
| No | 16.4% | (12.2%-21.8%) | 16,671 | 33.0% |
| Tobacco: Current Regular Smoker: | | | | |
| Yes | 21.7% | (16.8%-27.5%) | 25,420 | 48.7% |
| No | 7.2% | (5.7%-9.1%) | 25,810 | 51.3% |
| Weight Status: | | | | |
| Neither Overweight or Obese | | | | |
| Obese | 11.1% | (8.4%-14.7%) | 18,442 | 36.9% |
| Overweight | 8.1% | (5.7%-11.3%) | 14,155 | 28.3% |
| Obese | 14.3% | (10.7%-18.9%) | 17,363 | 34.8% |

Italics = significant difference from one or more subgroups

Discussion

Food insecurity crosscuts the Alaska population, affecting children and adults, the employed and unemployed, the urban and the rural, white and Alaska Native, and the sick and the well. Programs such as the Women, Infants, and Children (WIC),

Table 8. Food Insecurity by Co-Morbidities, Alaska BRFSS Standard Survey, 2006.

| | % | (95% CI) | Within Food Insecurity | |
|-----------------------------|-------|---------------|------------------------|-------|
| | | | N | % |
| Anxiety Disorder: | | | | |
| Yes | 19.9% | (14.5%-26.6%) | 10,737 | 21.4% |
| No | 9.9% | (8.1%-12.2%) | 39,362 | 78.6% |
| Asthma: | | | | |
| Yes | 16.5% | (11.9%-22.5%) | 11,278 | 22.1% |
| No | 9.8% | (8%-12.0%) | 39,783 | 77.9% |
| Depressive Disorder: | | | | |
| Yes | 24.0% | (18.8%-30.1%) | 18,739 | 36.8% |
| No | 8.7% | (6.9%-10.9%) | 32,116 | 63.2% |
| Diabetes: | | | | |
| Yes | 14.5% | (8.8%-22.9%) | 4,064 | 8.0% |
| No | 10.5% | (8.8%-12.6%) | 46,996 | 92.0% |

Italics = significant difference from one or more subgroups

Commodity Supplemental Food Programs (CSFP), and Medicaid may protect the most vulnerable populations by providing increased access to food and healthcare, but these programs leave a large segment of economically disadvantaged individuals at continued risk.

Job change, divorce, and competition in the expenditure of scarce dollars have been identified as contributors to food insecurity.¹² For example, in a choice between food and necessities, 31.7% of client households in the FBA survey said that they had to choose at least once in the previous 12 months between paying for food and paying for utilities or heating fuel, 24.8% between food and paying for rent or mortgage, and 32.0% between food and paying for medicine or medical care.⁷

Public health impacts of food insecurity are felt through poor nutrition (which can manifest itself in overweight and obesity), psychological issues caused by lack of access to food, and exacerbation of the long-term health effects of chronic disease. Individuals in households without adequate access to food are significantly more likely to be depressed than those with secure food access.¹³

There are several limitations to this study. One limitation of the BRFSS survey is that it did not include a question on use of emergency food sources, such as the FBA, in addition to those on food security. It is therefore not possible to know how many individuals and households were food secure as a result of food contributions from FBA, Food Stamps, or WIC. The extent of unmet needs by those currently using emergency food sources and those unaware or ineligible for these services is unknown.⁸ Furthermore, because the BRFSS exclusively surveys adults residing in non-group quarters with telephone service, the

homeless are routinely not surveyed. This suggests the current estimates of the extent of food insecurity are underestimates.

The findings from this cross-sectional analysis do not reveal whether food insecurity places individuals at increased risk for chronic disease or that chronic disease-related expenses result in food insecurity. Regardless of the causal pathway, some extremely vulnerable individuals with chronic disease must manage with food access problems and potentially reduced food intake. Poor nutrition can prolong the healing process and potentially aggravate conditions such as diabetes which are already sensitive to food intake.¹⁴ The health effects of food insecurity must be addressed to reach the goals of Healthy Alaskans 2010, the Alaska Department of Health and Social Services' disease prevention and health promotion objectives for Alaska.¹⁵

A 'healthy Alaska' cannot exist without the economic and nutritional needs of Alaskans being addressed. The FBA is unable to fully meet the nutritional needs of Alaskans. In 2005, half of the food pantries statewide were short of canned or frozen fruits and vegetables, two-thirds were low on protein sources such as meat, poultry, fish, beans, eggs, and nuts, and one-third actually had to turn clients away.⁷ Until the root causes of economic inequity are rectified, emergency food agencies such as the Food Bank of Alaska and safety net programs such as WIC will require increased support to meet the nutritional needs of Alaskans at risk for food insecurity.

References

1. Nord, M, Andrews, M, Carlson, S. *Household Food Security in the United States, 2006*. US Department of Agriculture, Economic Research Service, ERR-49, November 2007. <http://www.ers.usda.gov/Publications/ERR49/ERR49.pdf>
2. Position of the American Dietetic Association: Food Insecurity and Hunger in the United States. *J Am Diet Assoc.* 2006; 106:46-458. <http://www.eatright.org/ada/files/foodinsecnp.pdf>
3. Hayden, S, Blisard, N. *Are Lower Income Households Willing and Able to Budget for Fruits and Vegetables?* US Department of Agriculture, Economic Research Service, ERR-54, January 2008. <http://www.ers.usda.gov/publications/err54/err54.pdf>
4. The United States Conference of Mayors. *Hunger and Homelessness Survey. A Status Report on Hunger and Homelessness in America's Cities.* A 23-city Survey, December 2007. <http://www.helpstophunger.org/pdfs/hhsurvey07.pdf>
5. Cooperative Extension Service Food Cost Survey June 2007. University of Alaska Fairbanks College of Rural Alaska, Cooperative Extension Service. <http://www.uaf.edu/ces/fcs/2007q2data.xls>
6. ACCRA Cost of Living Index, Data for First Quarter 2007. The Council for Community and Economic Research. May 2007. <http://www.indianapa.com/chamber/COLIQ12007.pdf>
7. *Hunger in America 2006. Local Report Prepared for The Food Bank of Alaska (0101).* Mathematica Policy Research, Inc. February 2006. http://www.foodbankofalaska.org/uploads/page/42/2005_Hunger_Study_Alaska.pdf
8. Szadziewski, H. *Results of the 2006 Alaska BRFSS Survey Concerning the Hunger Issue.* The Alaska Food Coalition. July 1, 2007. http://www.alaskafood.org/materials/2006BRFSS_Survey.pdf
9. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System User's Guide. Atlanta: U.S. Department of Health and Human Services. Available at: <ftp://ftp.cdc.gov/pub/Data/Brfss/userguide.pdf>. 2005. Ref Type: Report
10. US Household Food Security Survey Module: Six Item Short Form. Revised September 2006. USDA, Economic Research Service. Available at: <http://www.ers.usda.gov/Briefing/FoodSecurity/surveytools.htm>
11. Briefing Rooms. Food Security in the United States: Measuring Household Food Security. USDA, Economic Research Service. Available at: <http://www.ers.usda.gov/Briefing/FoodSecurity/measurement.htm>
12. Bartfeld, J, Dunifon, R, Nord, M, Carlson, S. *What Factors Account for State-to-State Differences in Food Security?* EIB-20, US Department of Agriculture, Economic Research Service. November 2006. <http://www.ers.usda.gov/publications/EIB20/eib20.pdf>
13. Margheim, J, Leachman, M. *Empty Cupboards, Empty Feelings. Food insecurity, depression, and suicide are intertwined.* Oregon Center for Public Policy. Report, November 28, 2007. <http://www.ocpp.org/cgi-bin/display.cgi?page=es071128depressi>

14. Hampton, T. *Food Insecurity Harms Health, Well-being of Millions in the United States*. *JAMA*. 2007;298:1851-1853. <http://jama.ama-assn.org/cgi/content/full/298/16/1851>
15. Division of Public Health, Alaska Department of Health and Social Services. *Healthy Alaskans 2010*. . <http://www.hss.state.ak.us/dph/targets/ha2010/default.htm>

Appendix A

Six-Item Food Security Module

HH3. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is, "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
 Sometimes true
 Never true
 DK or Refused

HH4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
 Sometimes true
 Never true
 DK or Refused

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes
 No (Skip AD1a)
 DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
 Some months but not every month
 Only 1 or 2 months
 DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

- Yes
 No
 DK

AD3. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

- Yes
 No
 DK