

Department of Agricultural and Resource Economics  
Oregon State University, Corvallis, Oregon

# **WORKING PAPERS IN AGRICULTURAL AND RESOURCE ECONOMICS**

## **Food Insecurity and Hunger in Oregon: A New Look**

**WORKING PAPER NO. AREC 03-104 R**

November 2003

BY

**Mark Edwards, Associate Professor of Sociology**

**Bruce Weber, Professor of Agricultural and Resource Economics and  
Extension Economist  
Oregon State University**

The views expressed in this paper are those of the author(s) and do not necessarily reflect those of the Department of Agricultural and Resource Economics at Oregon State University.

# Food Insecurity and Hunger in Oregon: A New Look

Mark Edwards and Bruce Weber

## Executive Summary

Oregon has had the highest hunger rate among all U.S. states for four of the last five years. In this report, we re-examine the data on which these rankings were computed and explore how Oregon's food insecurity and hunger rates vary across demographic groups.

Households are considered "food insecure" if they "were uncertain of having, or unable to acquire, enough food to meet basic needs for all household members because they had insufficient money and other resources for food." A subset of food insecure households were "food insecure with hunger." That is, they "were food insecure to the extent that one or more household members were hungry, at least some time during the year, because they couldn't afford enough food."

This report identifies food insecurity and hunger rates among clusters of households with different workforce, income, and demographic characteristics. We use the most recent Current Population Survey data (1999 and 2001) that allow for assessment of these household characteristics and hunger. Compared with similar households in other states<sup>(a)</sup>, we find:

- \* Significantly higher hunger rates among Oregon households with no unemployed adults.
- \* Significantly higher hunger rates among Oregon's households with at least one full-year, full-time worker.
- \* Significantly higher hunger rates among Oregon's households with either male blue-collar workers or female blue-collar/administrative support/sales workers.
- \* Significantly higher hunger rates among Oregon two-parent families with children.

The most striking findings of this report are the high rates of hunger among households who in other parts of the country have below-average rates of hunger: two-parent households, households with no unemployed adult, and households with at least one full-time, year-round worker. But in Oregon these households consistently have hunger rates 2 to 3 percentage points higher than their counterparts in the rest of the U.S.

Little of Oregon's hunger rate appears to be due to its unique population composition.. Most of the difference between Oregon's and other states' hunger rates appears to be accounted for by the higher rates of hunger among almost all demographic groups.

These findings suggest that further research should examine how costs of rent, childcare, and healthcare relative to incomes (particularly for low-income families) may make households vulnerable to hunger, and the roles of social supports in reducing hunger.

(a) The "Other states" category does not include Washington, which we analyze separately.

## Food Insecurity and Hunger in Oregon: A New Look<sup>1</sup>

Mark Edwards and Bruce Weber<sup>2</sup>

In September 1999, the Economic Research Service of the USDA issued the first in what has become a series of reports on state-level food insecurity and hunger in the United States. In the report “Measuring Food Security in the United States: Prevalence of Food Insecurity and Hunger by State, 1996-1998”, Mark Nord et al. reported that 9.7 percent of U.S. households were “food insecure.” That is, they were at times unsure of having, or indeed did not have, access to enough food to meet basic needs. Included among these were 3.5 percent of households in which food insecurity was severe enough that one or more household members were hungry at least some time during the year due to inadequate resources for food. This report estimated food insecurity with and without hunger using the annual Food Security Supplement from the monthly Current Population Survey. Because the annual sample sizes are so small for each state, the estimates are based on data from three consecutive years to obtain a sample size large enough to produce reliable results.

Table 1: Food Insecurity and Hunger in U.S. and OR, 1996-2002

Years	Food Insecurity			Hunger		
	US rate (%)	OR rate (%)	OR rank	US rate (%)	OR rate (%)	OR rank
1996-1998	9.7	12.6	7	3.5	5.8	1
1997-1999	9.2	12.3	3	3.1	5.7	1
1998-2000	10.8	14.2	3	3.3	6.2	1
1999-2001	10.7	13.7	4	3.3	5.8	1
2000-2002	10.8	13.7	7	3.3	5.0	2

Oregonians were surprised to learn that in the 1996-98 period Oregon had the highest rate of *food insecurity with hunger* (hereafter referred to as the “hunger rate”) in the country, estimated at 5.8 percent of Oregon households. Given the rather large margins of error in the estimates for each state, this estimate and the ranking are not precise (the margin of error for Oregon was 1.0 percentage point). However, there were 6 states for which it could be reliably concluded that the state hunger rate was above the national average. Oregon was one of these states. Oregon’s rate of *food insecurity with and without hunger* (hereafter called the “food insecurity rate”), was an estimated 12.6 percent (with a margin of error of 1.9 percentage points). This was the 7<sup>th</sup> highest rate in the country.

---

<sup>1</sup> This report has benefited from guidance of many people during the study design phase: Mark Nord, Ellen Schuster, Betty Izumi, Ann Hoisington, Mike Leachman, John Charles, Kim Thomas, Patti Whitney-Wise, John Topogna. Mark Nord, Mike Leachman and John Topogna also provided constructive review of an early draft of the report. Financial support for this project was provided to the Oregon State University Rural Studies Program under cooperative agreement number 43-3AEM-2-80057 with the USDA Economic Research Service, and by the Oregon State University Extension Service.

<sup>2</sup> Mark Edwards is associate professor of sociology and Bruce Weber is professor of agricultural and resource economics and Extension economist, both at Oregon State University.

In January of 2002, the Oregon Center for Public Policy released an issue brief that reported estimated food insecurity and hunger rates for each state for 1997-99. This report showed slightly reduced hunger and food insecurity in the United States and Oregon. In 1997-99, 9.2 percent of American households were estimated to be “food insecure” and 3.1 percent to be “hungry”. But Oregon again ranked 1<sup>st</sup> in hunger in 1997-99 with a hunger rate of 5.7 percent. The state ranked 3<sup>rd</sup> behind New Mexico and Texas in food insecurity with a food insecurity rate of 12.3 percent.

In August 2002, the Brandeis University Center on Hunger and Poverty released its report “Hunger and Food Insecurity in the Fifty States: 1998-2000”. Food insecurity had increased 1.5 percentage points over this period, with 10.8 percent of U.S. households categorized as food insecure. The estimated hunger rate increased slightly to 3.3 percent. The Brandeis report showed both food insecurity and hunger also increasing in Oregon. In 1998-2000, Oregon was still ranked number 1 in hunger (with a 6.2 percent hunger rate) and 3<sup>rd</sup> in food insecurity (with a 14.2 percent rate of food insecurity).

In October 2002, the Economic Research Service released “Measuring Food Security in the United States: Household Food Security in the United States, 2001”, in which it was reported that in 2001, 10.7 percent of U.S. households were food insecure and 3.3 percent were hungry. In the report’s state estimates for 1999-2001, Oregon still ranked 1<sup>st</sup> in hunger with a hunger prevalence rate of 5.8 percent. Oregon ranked 4<sup>th</sup> in food insecurity behind New Mexico, Texas and Utah with a rate of 13.7 percent.

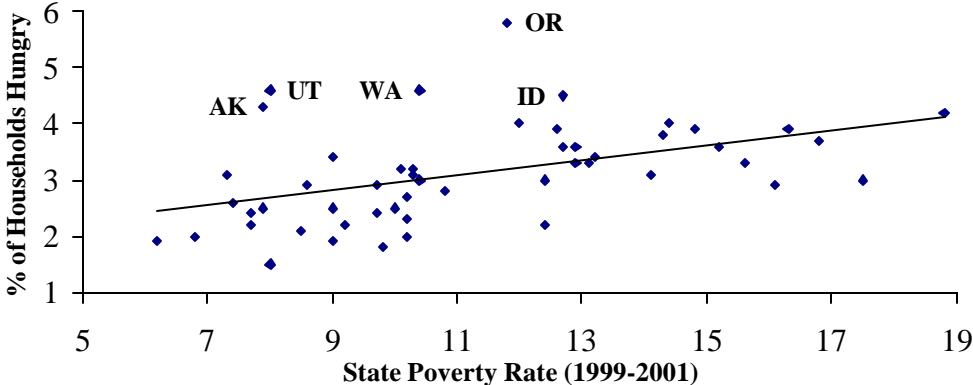
In that report, the authors note that food security statistics prior to 1998 are not directly comparable with those from 1998 and later years because of changes in screening procedures in the Current Population Survey used to reduce respondent burden. (See Appendix D in Nord et al. 2002 for estimates of each year’s prevalence rates that have been adjusted to make them comparable.) Using estimates of hunger and food insecurity rates that are adjusted to make them comparable, Nord et al. suggest that the food insecurity rate in Oregon declined 0.5 percentage points between 1996-98 and 1999-2001 (from 14.2 to 13.7), and the hunger rate declined by 0.2 percentage points (from 6.0 to 5.8).

In the October 2003 report “Household Food Security in the United States, 2002”, Oregon’s ranking of #1 in hunger fell to #2 (behind Oklahoma) with a hunger rate of 5.0 percent and a food insecurity rate of 13.7 percent. Whether or not this reflects a significant and sustained improvement in hunger is still unclear. Given that the hunger rate had been near or above 6.0 through the late 1990s, this report provides some hope that the food security situation improved somewhat in the early 2000’s.

These annual reports have generated considerable concern in Oregon among those addressing food security issues in Oregon. They have also generated much discussion about both the credibility of these estimates and the possible reasons why, if the estimates are correct, Oregon’s food insecurity and hunger rates are so high.

There have been at least two things that have cast doubt on the credibility of these findings of high hunger rates in Oregon. The first is that Oregon’s poverty rate is at the U.S. average. How could Oregon have an average poverty rate and yet have the highest hunger rate in the country? The force of this argument is clear from Figure 1 in which state hunger rates are plotted against state poverty rates. The association between poverty and hunger appears strong. Oregon is the

**Figure 1 State Hunger Rates by Poverty Rate**



most extreme outlier in this array, although other north-western states also show hunger rates that are high given their poverty rates.

Although most of the discussions of this relationship have used the observed outlier status in Oregon to suggest that Oregon’s hunger rate is questionable, it is likely that some of the observed lack of fit in this relationship is due to the fact that poverty rates are not adjusted for regional variations in costs of living. A National Academy of Sciences panel in their 1995 report *Measuring Poverty: A New Approach* evaluated the procedure for establishing the poverty threshold that is used to calculate poverty rates. This panel recommended that the poverty threshold be adjusted for regional cost-of-living differences, raising the threshold in high-cost regions like the West and lowering the threshold in low-cost regions like the South. The recommended NAS panel adjustments would have increased 1992 poverty rates in the West by 2 percentage points (from 14.4 to 16.5 percent) and lowered poverty rates in the South by 1.5 percentage points (from 16.9 to 15.4 percent). This adjustment would have increased the poverty rates for the Western states and reduced the extent to which the Western states appear to be aberrations to the poverty-hunger relationship. However, this adjustment would not change Oregon’s high hunger rate, but would simply reduce the extent to which Oregon appears to be an outlier in the poverty-hunger relationship.

A second challenge to the credibility of the finding that Oregon had the highest hunger rates in the nation was the finding in the 2000 Oregon Population Survey that Oregon’s hunger rate was 2.9 percent. (This was later re-estimated at 3.2 percent with revised Oregon Population Survey (OPS) data that was re-weighted based on the 2000 Census.) Criticism of the OPS results focused on the differences in survey design (CPS used an 18 item food security scale and the OPS used a 6 item scale; different screening procedures were used to minimize respondent

burden) and sampling design (CPS used a multi-state, stratified sample from an address list; and OPS used random digit dialing) and interview strategy (CPS used a combination of face-to-face and telephone interviews; and OPS used Computer Assisted Telephone Interviews). Some also suggested that the timing of the surveys may also have been important (with the CPS based on three surveys taken at different times of the year and the OPS conducted in May and June of 2000.)

Our report is a new look at the food security and hunger estimates for Oregon and Washington and the rest of the United States. We first define what the food insecurity and hunger estimates actually measure. We then investigate, given some criticisms that have been raised, whether the state estimates of food insecurity and hunger are credible. Our examination of the data gives us no reason to doubt the validity of these estimates. Then, based on our judgment that the estimates are credible, we look at food insecurity and hunger rates for different demographic and economic groups, focusing on Oregon primarily. We pay particular attention to whether Oregon's high rates are due to (1) high rates of hunger among various subgroups of the population; and/or (2) large shares of population subgroups that are at high risk of food insecurity and hunger nationally. Our major conclusion is that Oregon's high rates of food insecurity and hunger are due to particularly high rates among demographic groups that do not have high prevalence rates nationally, and that little, if any, of the explanation can be found in the demographic composition of Oregon's population.

## **I. Defining Food Insecurity and Hunger**

The national and state estimates of food insecurity and hunger are derived from an annual Food Security Supplement (FSS) to the Current Population Survey (CPS) conducted by the Census Bureau. This survey of about 50,000 households<sup>3</sup> asks a series of 18 questions about "conditions and behaviors known to characterize households having difficulty meeting basic food needs" (Nord et al. February 2002, p.2). Respondents are asked whether these conditions or behaviors occurred during the past 12 months. Each question specifies that the behavior or condition should be due to lack of money or other resources in order to exclude responses related to dieting to lose weight or voluntary fasting. The responses to these 18 questions are used to classify households into three categories: food secure, food insecure without hunger, and food insecure with hunger. (See Nord et al. 2002 and Bickel et al. 2000 for a more complete description of the procedure for classifying households.)

- In "food secure" households, "all household members had access at all times to enough food for an active, healthy life". (89.5 percent of U.S. households in 2000)
- "Food insecure" households "were uncertain of having, or unable to acquire, enough food to meet basic needs for all household members because they had insufficient money and other resources for food". (10.5 percent of U.S. households in 2000)
  - A subset of food insecure households were "food insecure with hunger." That is, they "were food insecure to the extent that one or more household members were hungry, at least some time during the year, because they couldn't afford enough food". (3.1 percent of U.S. households in 2000) (Nord et al. 2002, p.3)

---

<sup>3</sup> The CPS sample was increased from about 50,000 to about 60,000 households in 2001.

These measures were developed in the early 1990's and first implemented by the U.S. Census Bureau in the April 1995 CPS Food Security Supplement. The development of the FSS grew out of the knowledge about household food security, insecurity and hunger derived from research conducted in the late 1980's and conceptualized by an expert working group of the American Institute of Nutrition.

Perhaps the best way to understand the food insecurity and hunger measures is to examine the questions in the FSS and the protocol for deriving the measures. The 18 questions used to derive the food security measure are summarized in Appendix B. This table also indicates the responses that qualify as "affirmative" for each question. Appendix B shows the number of affirmative responses required for classification as food insecure or food insecure with hunger, and the frequency distribution of affirmative responses in the national sample in 2001. These two tables indicate that:

- Many families defined as food secure worried about food security: 11 percent of households with children and 6.7 percent of households without children in 2001 reported one or two indications of food insecurity. They "sometimes or often" during the last year worried about and/or experienced running out of food.
- In order to be classified as food insecure, households have to have three or more affirmative responses to the questions. Thus there would have to have been disruption of normal eating patterns in a household classified as food insecure: most of these households indicated not being able to afford balanced meals, and the remaining households reported more serious conditions.
- In order to be classified as food insecure with hunger, households with children had to have 8 or more (and households without children had to have 6 or more) affirmative responses to the questions. Thus, households classified as hungry almost certainly experienced one or more of the following during the previous 12 months<sup>4</sup>:
  - Adult cut size of meals or skipped meals in 3 or more months
  - Children were not eating enough
  - Adult hungry but didn't eat
  - Respondent lost weight
  - Cut size of children's meals
  - Adult did not eat for a whole day
  - Children were hungry
  - Adult did not eat for whole day in 3 or more months
  - Children skipped meals
  - Children skipped meals in 3 or more months
  - Children did not eat for a whole day

These measures of food insecurity and hunger are indicators of serious disruptions in usual patterns of food consumption due to lack of sufficient money or other resources for food. In the

---

<sup>4</sup> These are the 11 most severe items based on the severity order for the U.S. population drawn from responses to the 1998 CPS Food Security Supplement as reported in Bickel et al. 2000 p. 36.

households classified as hungry, one or more members went without food sometime during the year because of lack of resources.

## **II. Measuring Food Insecurity and Hunger: 1999 and 2001 Food Security Supplement**

In this section, we outline some of our initial confirmatory analyses and data construction. In addition to focusing on Oregon, we have also highlighted the state of Washington because of its adjacency to Oregon, its similar recent population and economic trends, and, most importantly, its similarly high hunger rate.

The Brandeis report for 1998-2000 indicated that Oregon had a hunger rate of 6.2 (#1 in nation), and a food insecurity rate (with and without hunger) of 14.3 (#3 in nation). Washington was reported to have the second highest hunger rate (5.0%) and the 10<sup>th</sup> highest food insecurity rate (12.9%). We began first by precisely reproducing the Brandeis numbers, using the same food security supplements of the Current Population Survey upon which their report was based (August 1998, April 1999, and September 2000). [See appendix A.]

We noted however that Oregon's 1998 hunger rate was especially high (6.8%) and that in 1999 and 2000 it was almost a full percentage point lower. Thus, we explored how the hunger estimates changed by dropping the August 1998 supplement, and using just the 1999 and 2001 April supplements. We used the 1999/2001 April data because we wished to merge the adjacent months of March and April data, for reasons described below. The combined 1999/2001 April supplements yielded an Oregon hunger rate of 5.2% and a food insecurity rate of 13.4% (Table 2). In our analysis, we omitted the 2000 sample taken in September for two reasons. First, food insecurity and hunger rates across the nation tend to be seasonally high in September in comparison to the estimates obtained in April surveys. Second, we wished to link March CPS data to the food security information available in the food security supplements, and could only do so with April supplements.

Earlier published estimates were replicated first with only the April supplements, and then with the merged March data. Hence, by focusing on 1999/2001, the Oregon hunger rate, and food insecurity rate, are about one full percentage point lower than indicated in the 1998-2000 moving average given in the Brandeis report. However, even with this lower hunger rate, Oregon's 1999/2001 ranking was still #1 in the nation and Washington's remained #2.

Our decision to use the April supplements of 1999 and 2001 was driven primarily by our interest in linking families' detailed income, employment, and migration data from the March supplement with their answers to the food insecurity and hunger supplements in the April supplement. Through the merging of the March and April supplements, we produced a unique data set that reproduced plausible estimates of national and state-level hunger and food insecurity. With this data set, we examine how important state differences in demographic composition and group-specific food insecurity and hunger rates might account for the high rates of hunger and food insecurity in the Northwest.



Table 2: Household Food Insecurity and Hunger Rates (%) in the Northwest and U.S. (1999, 2001)

	Oregon	Washington	Other states <sup>(b)</sup>	Total
Food Secure <sup>(a)</sup>	86.6	88.2	89.8	89.7
Food Insecure	13.4	11.8	10.2	10.3
- with Hunger	5.2	5.0	3.1	3.1
N	755	828	59,670	61,253

(a) All percentages computed using sampling weights.

(b) Washington D.C. included as part of “other states” in this and all subsequent tables.

### III. Who Is Food Insecure and Hungry in Oregon and Washington?

While much of our discussion focuses on “hunger” (technically, “food insecurity with hunger”), we also examine food insecurity because this concept identifies those people who are vulnerable to hunger and the target group for many social services. We keep Washington separate for purposes of comparison, but primarily we discuss the Oregon case. In each analysis we focus on two components of Oregon’s hunger rate.

- First, among certain groups that are likely to show differential hunger rates, do Oregon residents in such groups have higher rates of hunger? For example, since it is well known that hunger is more prevalent among unemployed families, might it be that Oregon’s unemployed have a higher hunger rate than the unemployed in other states?
- Second, we consider the population composition of Oregon versus other states, asking if Oregon might have a larger fraction of its population in higher hunger-risk categories. For example, might Oregon’s high unemployment rate contribute significantly to its higher hunger rate, even if Oregon’s unemployed families have hunger rates similar to those of unemployed families in other states?

#### *Income*

We begin with simple analyses of how household income might be related to food insecurity in Oregon and other states. Because of the initial puzzle regarding how Oregon could have high rates of hunger while having a near-median rate of poverty, we first consider how hunger and food insecurity are related to household income, relative to the poverty line.

Table 3 demonstrates that in each of the categories of income-to-poverty ratio, Oregon has a hunger rate that is consistently higher than the hunger rate for other states. While these differences are not significant at the .05 level of significance, their consistency across categories is noteworthy. Meanwhile, food insecurity rates follow a similar pattern, with Oregon’s rates generally higher than in other states, with the exception of poor households. Washington’s hunger rate among the poor is especially high and statistically significant.

Table 3: Hunger and Food Insecurity Rates(%) by Household Income-to-Poverty Ratio and Location (1999, 2001)

		<b>Below Poverty</b>	<b>100-149% Poverty</b>	<b>150-199% Poverty</b>	<b>200%+ Poverty</b>	<b>All Households</b>
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure</b>	<b>26.5</b>	<b>24.8</b>	<b>18.3</b>	<b>9.3</b>	<b>13.4</b>
	<b>- with Hunger</b>	<b>12.0</b>	<b>10.9</b>	<b>6.0</b>	<b>3.3</b>	<b>5.2</b>
	Total N	81	57	69	548	755
	Share of All (%)	11.9	7.9	9.5	70.6	100%
<b>Washington</b>	<b>Food Insecure</b>	<b>35.4</b>	<b>22.4</b>	<b>17.0</b>	<b>7.4</b>	<b>11.8</b>
	<b>- with Hunger</b>	<b>20.6*</b>	<b>8.0</b>	<b>4.5</b>	<b>2.9</b>	<b>5.0</b>
	Total N	75	59	66	628	828
	Share of All (%)	9.1	7.0	8.1	75.7	100%
<b>Other States</b>	<b>Food Insecure</b>	<b>28.8</b>	<b>20.7</b>	<b>15.4</b>	<b>5.2</b>	<b>10.3</b>
	<b>- with Hunger</b>	<b>9.8</b>	<b>6.4</b>	<b>4.7</b>	<b>1.3</b>	<b>3.1</b>
	Total N	6508	5461	5520	42181	59670
	Share of All (%)	11.3	9.2	9.2	70.4	100%

(a) Rates and 'Share of All' percentages are computed using sampling weights; N's are unweighted

\* Difference between Oregon or Washington sub-group and that of "Other States" is statistically significant at .05 level of significance.

We also examine the possibility that Oregon's high hunger rate may result from having a larger fraction of its population in higher hunger-rate categories. We anticipated that Oregon would have a larger fraction of its population in the 'near poor' categories, between 100% and 200% of the federal poverty line. However, Table 3 demonstrates that Oregon does not have a larger fraction of its households in the "near poor" category between 100% and 200% of the poverty line. Thus, it does not appear to be a unique income distribution in Oregon that drives the hunger rate, but rather a uniquely high rate of hunger among all of Oregon's income groups.

Next, we use national income quintiles to categorize households. (We experimented with deciles and found similar patterns, but sub-sample groups were problematically small.) As shown in Table 4, national household income quintiles fell into the following ranges (numbers are rounded for simplicity): \$0-16,300, \$16,300-30,100, \$30,100-48,300, \$48,300-76,000, \$76,000+. With these quintile groups, we find a very similar story to that illustrated with Table 3.

Table 4 shows national and state-level associations of hunger and income. In Oregon and the other states the hunger rate drops steadily as income increases, but with Oregon consistently showing higher hunger rates at all income levels. Washington shows a very large change between the first and second quintile. The Oregon hunger rate deviates most from the US rate in the middle quintile, which may help explain why hunger rates remained relatively high (3.3%) for Oregon households with incomes over 200% the federal poverty line (Table 3). Many households in the third quintile would have incomes over 200% the poverty line.

Table 4: Hunger and Food Insecurity Rates (%) by Total Household Income Quintile, by Location (1999, 2001)

		Household Income <sup>(b)</sup> Quintile (Approximate Income Ranges in \$000)					All Households
		1 (0-16)	2 (16-30)	3 (30-48)	4 (48-76)	5 (76+)	
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure</b>	<b>21.2</b>	<b>20.1*</b>	<b>11.5</b>	<b>6.4</b>	<b>5.6</b>	<b>13.3</b>
	<b>- with Hunger</b>	<b>10.1</b>	<b>6.4</b>	<b>5.1</b>	<b>2.3</b>	<b>1.3</b>	<b>5.2</b>
	Total N	146	152	155	149	151	753
<b>Washington</b>	<b>Food Insecure</b>	<b>25.0</b>	<b>18.0*</b>	<b>13.1*</b>	<b>6.7</b>	<b>1.4</b>	<b>11.8</b>
	<b>- with Hunger</b>	<b>14.7</b>	<b>6.6</b>	<b>2.9</b>	<b>3.6</b>	<b>0</b>	<b>5.0</b>
	Total N	136	145	166	186	194	825
<b>Other States</b>	<b>Food Insecure</b>	<b>21.9</b>	<b>13.2</b>	<b>8.4</b>	<b>5.0</b>	<b>2.1</b>	<b>10.1</b>
	<b>- with Hunger</b>	<b>7.8</b>	<b>3.9</b>	<b>2.1</b>	<b>1.0</b>	<b>.4</b>	<b>3.0</b>
	Total N	11866	11848	11827	11832	11774	59147

(a) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted. By definition, each quintile should contain approximately 1/5 of the total sample and of the state sub-samples. Because national quintile thresholds were used to categorize households in Oregon and Washington, state sub-samples may contain slightly fewer or more than 1/5. Note for example Washington’s upwardly skewed income distribution.

(b) Households who did not report income dropped from analysis.

\* Difference between Oregon or Washington sub-group and that of “Other States” is statistically significant at .05 level of significance.

The statistically significant difference between Oregon’s and the other states’ food insecurity rate in the second quintile is perhaps the most important observation to take from Table 4. In Oregon, moving from the lowest to the second quintile in household income does not reduce food insecurity in any substantial way, while in the rest of the U.S., food insecurity drops steadily as households move into the 2<sup>nd</sup> quintile.

### ***Employment***

Hunger and food insecurity are related to unemployment, and Oregon had one of the highest unemployment rates in the country during the period under investigation. Rather than reproduce specific unemployment rates for individuals, we categorized households as being those who have an unemployed adult in them, or not. We also indicate households that have no adults in the labor force, such as those who have voluntarily dropped from the labor force, retired, become disabled, etc.

Table 5 shows that, not surprisingly, hunger and food insecurity nationally are higher among households with at least one unemployed adult. The hunger and food insecurity rates for unemployed Oregon households are not significantly different from those of their counterparts in other states.

Table 5: Hunger and Food Insecurity Rates (%) by Unemployment (1999, 2001)

		<b>Employed</b>	<b>Unemployed<sup>(b)</sup></b>	<b>None in Labor Force</b>	<b>All Households</b>
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure</b>	<b>14.0*</b>	<b>24.7</b>	<b>11.2</b>	<b>13.4</b>
	<b>- with Hunger</b>	<b>5.5*</b>	<b>11.1</b>	<b>4.0</b>	<b>5.2</b>
	Total N	429	36	290	755
	Share of All (%)	56.1	4.9	39.0	100%
<b>Washington</b>	<b>Food Insecure</b>	<b>11.0</b>	<b>20.7</b>	<b>12.1</b>	<b>11.8</b>
	<b>- with Hunger</b>	<b>5.2</b>	<b>5.8</b>	<b>4.6</b>	<b>5.2</b>
	Total	484	32	312	828
	Share of All (%)	59.3	3.7	3.2	100%
<b>Other States</b>	<b>Food Insecure</b>	<b>8.4</b>	<b>27.8</b>	<b>11.6</b>	<b>10.3</b>
	<b>- with Hunger</b>	<b>2.4</b>	<b>9.0</b>	<b>3.5</b>	<b>3.1</b>
	Total	34071	1895	23704	59670
	Share of All (%)	56.9	3.2	39.9	100%

(a) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted

(b) Unemployed households are those with at least one unemployed adult.

\* Difference between Oregon or Washington sub-group and that of “Other States” is statistically significant at .05 level of significance.

But, hunger and food insecurity are significantly higher among Oregon’s **employed** households, when compared to the rest of the United States. While providing employment for a household will likely reduce its chances of being hungry, employed households in Oregon are experiencing hunger at significantly higher rates than in other states. Lack of food security among the employed contributes significantly to Oregon’s distinctively high hunger and food insecurity rates.

When we removed the “not in the labor force” households from our data, just over 8% of Oregon households had at least one unemployed adult in March 1999/2001. (This rate was 5.9% in Washington, and 5.4% in other states combined and no other state in the country surpassed Oregon on this measure.) However, even with the highest rate of unemployment in the U.S., this group only constitutes a small fraction of all Oregon households. So, the high rate of unemployment in Oregon marginally contributes to the Oregon/US gap in hunger, but the high rate of hunger among employed Oregon households contributes even more to that overall gap.

Because of the high hunger and food insecurity rates among employed households in Oregon, we next turn attention to work experience and labor force status of adults in Oregon, Washington, and U.S. households. We begin with an examination of how hunger and food insecurity rates vary by work experience of the household reference person. We use the phrase ‘work experience’ to simply indicate the degree to which an adult has been engaged in the workforce during the previous year.

Table 6: Hunger and Food Insecurity Rates (%) by Previous Year's Work Experience by Location (1999, 2001)

		<b>Full-year, full-time</b>	<b>Part year and/or part time</b>	<b>No Workers in Household</b>	<b>All Households</b>
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure - with Hunger</b>	<b>14.0*</b> <b>5.5*</b>	<b>15.5</b> <b>6.7</b>	<b>10.6</b> <b>3.3</b>	<b>13.4</b> <b>5.2</b>
	Total N	321	208	226	755
	Share of All (%)	42.4*	27.0	30.6	100%
<b>Washington</b>	<b>Food Insecure - with Hunger</b>	<b>11.0*</b> <b>4.4</b>	<b>11.7</b> <b>5.0</b>	<b>10.6</b> <b>6.2</b>	<b>11.8</b> <b>5.0</b>
	Total N	423	199	206	828
	Share of All (%)	51.8	24.3	24.0	100%
<b>Other States</b>	<b>Food Insecure - with Hunger</b>	<b>7.6</b> <b>2.0</b>	<b>14.4</b> <b>4.6</b>	<b>12.3</b> <b>4.0</b>	<b>10.3</b> <b>3.1</b>
	Total N	31342	11103	17225	59670
	Share of All (%)	53.0	18.2	28.8	100%

(a) Rates and 'Share of All' percentages are computed using sampling weights; N's are unweighted

(b) Full-year, full-time workers have worked 50+ weeks in the last year, at 40+ hours per week.

\* Difference between Oregon or Washington sub-group and that of "Other States" is statistically significant at .05 level of significance.

A household in Oregon in which the reference person has been a full-year, full-time worker during the previous year is more likely have experienced hunger than similar households in the rest of the U.S. (Table 6). The difference between Oregon and "Other States" is statistically significant ( $p < .05$ ). This pattern holds when we compare individual states to one another, with Oregon having the highest hunger rate among full-year, full-time workers in any state (table not shown). The "share" line of Table 6 illustrates that Oregon has an especially low fraction of its households with full-year, full-time work.

Hence, hunger rates for families with full-year, full-time workers are higher in Oregon, but a smaller share of Oregon households work full-year, full-time. When comparing each of the states to one another individually, almost every state has around 55% (ranging from 46% to 62%) of its households in full-time, full-year work. But only Oregon is in the low 40s (42.4%), with West Virginia second lowest at 44%.

Meanwhile, many other states had at least 30% of their households listed as non-workers, just like Oregon. So, the fraction of non-worker households in Oregon and the rest of the U.S. is similar. In Oregon, households without adults working in the previous year are generally better off than households with workers. Many of these households are retirees and/or economically advantaged households that may not need to work.

Next, we consider the role of occupation and hunger/food insecurity. While we would like to have used more precise occupational categories, we found that the sub-sample sizes were prohibitively small. We therefore have only divided occupations into three categories that would roughly be characterized as "professional/technical/managerial," "administrative support/sales,"

and “blue collar” occupations. Blue collar jobs include not only craftsmen (metal workers for example), laborers, and operators (e.g., driver, machine operating), but also service occupations such as maintenance, cleaning, landscaping, etc. and occupations in farming, fishing, and forestry. The latter combines farm managers and laborers, timber workers, and fishermen, merely for the sake of simplifying the analysis.

Table 7: Hunger and Food Insecurity Rates (%) by Occupation of Men and Location (1999, 2001)

		Pro/Tech/ Mgr	Admin. Support/ Sales	Blue Collar	All Households with Employed Men
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure - with Hunger</b>	<b>3.4 .7</b>	<b>6.3 3.7</b>	<b>20.0* 6.8*</b>	<b>11.9 4.1</b>
	Total N	153	63	198	414
	Share of All (%)	36.4	15.4	48.2	100%
<b>Washington</b>	<b>Food Insecure - with Hunger</b>	<b>4.0 .7</b>	<b>9.0 3.5</b>	<b>12.8 4.2</b>	<b>8.7 2.7</b>
	Total N	172	86	193	451
	Share of All (%)	38.0	18.5	43.6	100%
<b>Other States</b>	<b>Food Insecure - with Hunger</b>	<b>2.8 .7</b>	<b>5.6 1.5</b>	<b>12.0 2.9</b>	<b>7.7 1.9</b>
	Total N	10575	6005	15264	31844
	Share of All (%)	32.9	19.2	47.9	100%

(a) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted  
 \* Difference between Oregon or Washington sub-group and that of “Other States” is statistically significant at .05 level of significance.

Table 7 demonstrates that nationwide, male blue collar workers are more likely than white collar workers to live in a household considered to be hungry. This difference is statistically significant (p<.05). However, in Oregon, male blue collar workers appear to be especially vulnerable to hunger and food insecurity. Male blue collar workers in Oregon are more than twice as likely as similar workers elsewhere to be in hungry households, and they are a full 8 percentage points more likely to be in food insecure homes.

The story for Oregon’s working women is similar, but perhaps even more stark. Oregon’s working women in blue collar occupations are more than twice as likely as similarly employed women in other states to be in hungry households, and almost 10 percentage points more likely to be in food insecure households (Table 8). Women in ‘administrative support and sales’ occupations are somewhat better off than those in blue collar jobs, but they again have significantly higher food insecurity and hunger rates in Oregon when compared to similarly employed women in other states.

Table 8 Hunger and Food Insecurity Rates (%) by Occupation of Women and Location (1999, 2001)

		Pro/ Tech/Mgr	Admin. Support/ Sales	Blue Collar	All Households with Employed Women
<b>Oregon</b>	<b>Food Insecure - with Hunger</b>	<b>6.4 .7</b>	<b>16.2* 7.5*</b>	<b>24.9* 10.6*</b>	<b>15.5 6.1</b>
	Total N	135	139	113	387
	Share of All (%)	34.4	35.1	30.5	100%
<b>Washington</b>	<b>Food Insecure - with Hunger</b>	<b>3.3 1.9</b>	<b>13.3 4.7</b>	<b>13.7 8.7</b>	<b>9.4 4.4</b>
	Total N	166	157	80	403
	Share of All (%)	40.3	39.8	19.9	100%
<b>Other States</b>	<b>Food Insecure - with Hunger</b>	<b>4.2 1.2</b>	<b>9.2 2.5</b>	<b>15.6 4.4</b>	<b>9.0 2.5</b>
	Total N	10759	11587	7593	30729
	Share of All (%)	35.6	38.9	25.5	100%

(a) Rates and 'Share of All' percentages are computed using sampling weights; N's are unweighted

\* Difference between Oregon or Washington sub-group and that of "Other States" is statistically significant at .05 level of significance.

To this point, we have examined how employment of individual adults in households is related to food insecurity and hunger. But certainly families make important decisions about how many adults to send into the workforce, and this is related to how many adults are present in families. Thus, we turn attention to dual-earner strategies and family structure. We begin by examining how two-earner households fare in comparison to those with just one earner or no earners.

Table 9 illustrates that throughout the U.S., a second earner substantially reduces hunger and food insecurity. However, in Oregon, a second earner does not protect a family from food insecurity as much as in the rest of the U.S.<sup>5</sup> In Oregon, one out of ten families with two earners are food insecure. This rate, twice the national average, is significantly higher than in other states.

<sup>5</sup> We do not know if a second earner in the household participated in the labor force before or after the household experienced hunger or food insecurity in the previous year.

Table 9: Hunger and Food Insecurity Rates (%) by Number of Earners<sup>(b)</sup>

		<b>Two Earners</b>	<b>One Earner</b>	<b>Zero Earners</b>	<b>All Households</b>
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure w/o H - with Hunger</b>	<b>7.2 2.5</b>	<b>15.8 6.3</b>	<b>10.7* 3.9</b>	<b>13.4 5.2</b>
	Total N	77	459	219	755
	Share of All (%)	10.6	61.3	28.1	100%
<b>Washington</b>	<b>Food Insecure w/o H - with Hunger</b>	<b>4.9 1.4</b>	<b>15.7 7.1</b>	<b>3.6 .5</b>	<b>11.8 5.0</b>
	Total	74	548	206	828
	Share of All (%)	8.6	66.6	24.8	100%
<b>Other States</b>	<b>Food Insecure - with Hunger</b>	<b>7.7 2.0</b>	<b>12.8 4.1</b>	<b>5.2 1.0</b>	<b>10.3 3.1</b>
	Total N	5712	37108	16850	59670
	Share of All (%)	9.6	62.7	27.7	100%

(a) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted

(b) Unemployed persons not considered ‘earners’.

\* Difference between Oregon or Washington sub-group and that of “Other States” is statistically significant at .05 level of significance.

### *Household Structure*

Because the availability of an additional earner is dictated by household structure, we next turn attention to the role of household structure, food insecurity and hunger.

Table 10 shows that Oregon’s 2-adult households with children are far more likely than similar families in other states to be food insecure (with and without hunger), and to be hungry. This dramatic difference between married/cohabiting families with children in Oregon and the remainder of the U.S. seems to us especially critical to understand.

Food insecurity and hunger rates for Oregon single mothers, however, are not significantly different than those for single mothers in other states. Nor are food insecurity and hunger rates for the childless households – 2-adult households without children and single households without children – significantly different for Oregonians than those for similar households in other states.



Table 10: Hunger and Food Insecurity Rates (%) by Household Structure, by Location (1999, 2001)

		Household Structure					All households
		2-adults, with children	Single mother	Single father	2-adults, without children	Single, without children	
<b>Oregon</b>	<b>Food Insecure</b>	<b>19.1*</b>	<b>25.0</b>	<b>-a-</b>	<b>5.5</b>	<b>14.0</b>	<b>13.4</b>
	<b>- with Hunger</b>	<b>7.3*</b>	<b>9.4</b>	<b>-a-</b>	<b>1.2</b>	<b>6.4</b>	<b>5.2</b>
	Total N	163	46	16	237	293	755
	Share of All (%)	21.5	6.1	2.3	30.8	39.2	100%
<b>Washington</b>	<b>Food Insecure</b>	<b>6.9</b>	<b>35.6</b>	<b>-a-</b>	<b>3.7</b>	<b>14.1</b>	<b>11.8</b>
	<b>- with Hunger</b>	<b>1.1</b>	<b>15.4</b>	<b>-a-</b>	<b>1.2</b>	<b>7.6</b>	<b>5.0</b>
	Total N	195	61	23	221	328	828
	Share of All (%)	23.7	7.0	2.7	26.0	40.6	100%
<b>Other States</b>	<b>Food Insecure</b>	<b>12.5</b>	<b>28.5</b>	<b>14.4</b>	<b>4.1</b>	<b>10.8</b>	<b>10.3</b>
	<b>- with Hunger</b>	<b>2.0</b>	<b>7.9</b>	<b>4.3</b>	<b>1.1</b>	<b>4.2</b>	<b>3.1</b>
	Total N	14,600	4,205	1,041	16,858	22,966	59670
	Share of All (%)	24.9	7.3	1.7	27.8	38.2	100%

(a) The sub-sample size for single fathers in Oregon and Washington was too small to compute sufficiently reliable percentage estimates.

(b) Rates and 'Share of All' percentages are computed using sampling weights; N's are unweighted

\* Difference between Oregon or Washington sub-group and that of "Other States" is statistically significant at .05 level of significance.

### *Housing*

Ideally, we would have information about housing prices or costs for households in this sample. The Current Population Survey data, however, does not readily allow a computation of local housing costs, nor does it report the rent and housing costs paid by respondents. It does allow us to examine housing tenure, however. With the Current Population Survey, we are able to examine how differences in housing tenure are associated with food insecurity and hunger, and to make comparisons between states.

As expected, renters are more likely to be hungry and food insecure (Table 11). Oregon's food insecurity rate among renters is significantly higher than that among renters in the rest of the country ( $p < .05$ ) and the hunger rate among Oregon renters is a full three percentage points higher than for other renters ( $p < .1$ ). When comparing state to state, Oregon and Washington are among five states with the highest hunger rates among renters (table not shown).

Table 11: Hunger and Food Insecurity Rates by Housing Tenure,  
by Location (1999, 2001)

		Owners	Renters	Other	All Households
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure</b>	<b>7.3</b>	<b>25.9*</b>	<b>0</b>	<b>13.4</b>
	<b>- with Hunger</b>	<b>3.0</b>	<b>9.6</b>	<b>0</b>	<b>5.2</b>
	Total N	509	239	7	755
	Share of All (%)	65.9	33.1	1.0	100%
<b>Washington</b>	<b>Food Insecure</b>	<b>7.6</b>	<b>21.1</b>	<b>8.9</b>	<b>11.8</b>
	<b>-with Hunger</b>	<b>2.2</b>	<b>11.3</b>	<b>0</b>	<b>5.0</b>
	Total N	573	245	10	828
	Share of All (%)	67.9	30.8	1.3	100%
<b>Other States</b>	<b>Food Insecure</b>	<b>6.0</b>	<b>19.4</b>	<b>16.2</b>	<b>10.3</b>
	<b>- with Hunger</b>	<b>1.5</b>	<b>6.5</b>	<b>4.3</b>	<b>3.1</b>
	Total N	41422	17279	969	59670
	Share of All (%)	68.2	30.3	1.5	100%

(a) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted.

\* Difference between Oregon or Washington rates and that of “Other States” is statistically significant at .05 level of significance.

### ***Movers: Distant Relocation and Local Moving***

Moving is likely to be linked to food insecurity and hunger, and this link may be related to housing issues. “Movers” are households that have relocated in the previous year, with some moving within the same county, and others moving across county and state lines. Movers may relocate for a plethora of reasons such as rising rents, evictions, changes in household structure, better quality housing elsewhere, as well as employment changes. Moving may indicate an attempt to forestall hunger, but it may also exacerbate hunger by severing a network of social support. Given the well-documented increase in population in Oregon and Washington, and the impression many have of Western residents being more culturally prone to moving, we examine hunger and food insecurity rates among non-movers, local movers, and those households that have relocated longer distances across county and state lines in Oregon, Washington, and the rest of the U.S..

Table 12 demonstrates that food insecurity and hunger are lower for non-movers. Movers are defined here as those who have changed houses in the past year. Generally, local movers (those who have not changed counties) have highest rates of food insecurity and hunger. This pattern is even more pronounced in Oregon, with significantly higher ( $p < .05$ ) food insecurity, and hunger, rates for local movers. One out of three local movers in Oregon is food insecure, which suggests that there are important issues to explore about how food and housing vulnerability are related. Only one other state had a higher hunger rate among local movers – Connecticut (the only state that had a faster rate of growth in inequality than Oregon during the 1990s.) Meanwhile, Washington’s food insecurity and hunger rates for distant movers are significantly higher ( $p < .05$ ) than in the rest of the U.S..

Finally, we note the percentage of Oregon, Washington, and U.S. households that have moved. Oregon has a slightly larger fraction of distant movers than the rest of the country, but this difference is not significant. However, Washington has a very high, statistically significant,

Table 12: Hunger and Food Insecurity by “Mover” Status, by Location (1999, 2001)

		<b>Non-mover</b>	<b>Moved in same county</b>	<b>Distant mover<sup>(b)</sup></b>	<b>All Households</b>
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure</b>	<b>11.2</b>	<b>32.5*</b>	<b>12.5</b>	<b>13.4</b>
	<b>- with Hunger</b>	<b>3.9</b>	<b>13.0*</b>	<b>10.1</b>	<b>5.2</b>
	Total N	628	76	46	750
	Share of All (%)	83.2	10.5	6.4	100%
<b>Washington</b>	<b>Food Insecure</b>	<b>8.7</b>	<b>26.3</b>	<b>22.3*</b>	<b>11.8</b>
	<b>- with Hunger</b>	<b>3.4</b>	<b>9.2</b>	<b>14.2*</b>	<b>5.0</b>
	Total N	661	87	75	823
	Share of All (%)	79.9	10.7	9.5*	100%
<b>Other States</b>	<b>Food Insecure</b>	<b>9.3</b>	<b>18.2</b>	<b>12.9</b>	<b>10.2</b>
	<b>- with Hunger</b>	<b>2.7</b>	<b>5.8</b>	<b>4.5</b>	<b>3.0</b>
	Total N	51437	5035	3003	59475
	Share of All (%)	86.0	8.8	5.2	100%

(a) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted.

(b) Includes those moving to different counties within state, and migrants moving in from out-of-state. International in-migrants not included.

share of households who are distant movers ( 9.5%). Oregon also has slightly more local movers (same county) than in other parts of the country (10.5%) and this is about the same as Washington. But there are several other states with higher rates of local, same-county movers. Thus, the fraction of the population moving locally does not seem to be an important source of explanation for Oregon’s high rate of hunger and food insecurity. But the vulnerability to hunger and food insecurity among local movers is an important, previously unexamined issue which should be further explored.

Recent arrivals to Oregon from other states are a small share of Oregon’s hungry households. Only 7% of Oregon’s hungry, and even a smaller share (3%) of Oregon’s food insecure are out-of-state migrants (table not shown).

***The potential importance of “place”: Is there a rural/urban divide in Oregon?***

Locations vary in terms of housing costs and opportunities, as well as employment opportunities. In the Oregon case, metro/non-metro differences in housing costs, employment opportunities, and incomes may impact where Oregon’s hungry and food insecure households are located. But places are more than just housing and jobs. Understanding the influence of ‘place’ on hunger

and food insecurity is important theoretically because the nature of urban versus rural places might impact local culture, social networks and cohesion, and availability of social programs. Pragmatically, social service providers wish to know where hungry households are concentrated, and why hunger and food insecurity may appear more often in some places versus others. Since Oregon has a higher fraction of its population in rural places than in the rest of the U.S., this may be especially relevant for understanding Oregon’s high rates of hunger.

We begin with a simple description of food insecurity and hunger rates, by metro and non-metro location. Metro counties are those with a city of 50,000 or more, and the counties linked to them through commuting. Non-metro counties are all other counties: counties with cities of less than 50,000 people or no urban population at all and with no strong commuting ties to metro counties. This metro/nonmetro classification is one way of identifying urban and rural locations, and the only one available in the Current Population Survey.

Table 13: Hunger and Food Insecurity Rates (%) by Metro/Non-metro Residence, by Location (1999, 2001)

		<b>Metro</b>	<b>Non-metro</b>	<b>All Households</b>
<b>Oregon<sup>(a)</sup></b>	<b>Food Insecure</b>	<b>14.3*</b>	<b>11.2</b>	<b>13.4</b>
	<b>- with Hunger</b>	<b>5.2</b>	<b>5.2</b>	<b>5.2</b>
	Total N	538	271	755
	Share of All (%)	71.9	28.1*	100%
<b>Washington</b>	<b>Food Insecure</b>	<b>10.8</b>	<b>15.3</b>	<b>11.8</b>
	<b>- with Hunger</b>	<b>4.5</b>	<b>6.8</b>	<b>5.0</b>
	Total N	631	197	828
	Share of All (%)	77.3	22.7	100%
<b>Other States</b>	<b>Food Insecure</b>	<b>10.2</b>	<b>10.5</b>	<b>10.3</b>
	<b>- with Hunger</b>	<b>3.1</b>	<b>3.0</b>	<b>3.1</b>
	Total N	45050	14444	59494
	Share of All (%)	81.5	18.5	100%

(a) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted.  
 \* Difference between Oregon or Washington rates and that of “Other States” is statistically significant at .05 level of significance.

Oregon’s hunger rates among metro and non-metro residents are identical (Table 13). But Oregon’s food insecurity rate among metro residents is significantly ( $p < .05$ ) higher than metro residents elsewhere. State by state comparisons show that non-metro hunger and food insecurity is higher than metro rates in some states, but lower in others. Thus, the fact that Washington’s metro/non-metro gap in food insecurity is larger than Oregon’s is not unique. But Washington did have the highest non-metro hunger rate of all 50 states, just shy of being significantly different (at  $p < .05$ ) from the average for the remainder of the country.

The ‘share’ line of Table 13 shows Oregon’s relatively high proportion of non-metro residents, compared to the rest of the country. Because hunger rates are identical in rural and urban areas, Oregon’s uniquely rural composition has no impact on the overall hunger rate. However, it

should also be noted that in Oregon, rural part-year employment rates are twice that of other states. The high rural population shares and high seasonal work in rural areas, yet similar rural/urban hunger rates, suggests the need for further examination of wages, work costs, social supports and seasonality of work in rural versus urban places.

## IV. Conclusions

### *Oregon’s Hunger Rate is High For Almost All Household Categories*

As indicated in our summary Table 14, Oregon’s hunger rate is high NOT primarily because it has more households in those categories normally vulnerable to hunger (poor, unemployed, single parents, etc.) but because its hunger rates are higher within these groups AND among those groups that would usually not be expected to have higher rates of hunger (full-year full-time workers, 2-parent families, etc.)

To understand Table 14, consider the following example. In Table 3, we saw that Oregon’s hunger rate was higher than the national average for all categories of households across the income-to-poverty ratio range, and that the shares of Oregon households in poverty and above 150% of poverty were slightly higher than the national average.<sup>6</sup> In Table 15, we summarize the relative effects of (1) the higher rates in each category and (2) the differences in relative shares of population in each category in explaining the difference between the other state rate of 3.1 and Oregon’s rate of 5.2. All of the 2.1 percentage point difference in this case is due to the higher rates, as indicated in the “effect of Oregon’s rates” column. Indeed, the higher shares of Oregon’s population above 150% of poverty would have reduced Oregon’s hunger rate if Oregon’s rates for these groups had experienced hunger at national average rates, as indicated by the -0.1 percentage point entry in the “effect of Oregon’s composition” column. (Note that the sum of the two effects is -2.0, which is less than the difference of 2.1 between the Oregon and national rates. This is due to both rounding error and interactions between the rate effect and composition effect, and this difference is found in several other categories as well.)

We consider a category to be more vulnerable to (or at higher risk of) hunger if its hunger rate in “other states” is above the average rate of 3.1 percent and less vulnerable (lower risk) if its rate is below 3.1 percent. Oregon has larger shares of three high risk categories (households with unemployed adults, those with part-year and/or part-time workers, and those that moved within the last year) than other states, for example. However, except for same county movers, Oregon’s hunger rates for those households was not significantly higher than for other states. Most of the difference between Oregon’s hunger rate and that of other states is accounted for by higher rates of hunger in both highly vulnerable groups and those groups that usually would be considered less vulnerable to hunger.

---

<sup>6</sup> These differences were not significant at the 5 percent level. The procedure used in Table 14 to allocate the difference between Oregon’s and “other states”’ hunger rate to “effects” of Oregon/other state differences in rates and composition does not depend on the statistical significance of differences in rates or composition. The procedure is a variant of “shift-share” analysis. The underlying computations are available from the authors.

**Table 14: Summary of Analyses Exploring Why Oregon’s Hunger Rate is Higher than Other States<sup>7</sup>**

	Other States Rate	Effect of Oregon’s Rate	Effect of Oregon’s Composition	Oregon’s Hunger Rate	Explanation
Family income relative to poverty	3.1	2.1	-0.1	5.2	Higher OR hunger rates at all levels, but slightly fewer in ‘working poor’ category
Income quintiles	3.1	2.0	0.0	5.2	Higher OR hunger rates at all levels, but , by definition, similar numbers of households in each quintile.
Unemployment	3.1	2.0	0.1	5.2	Higher OR hunger rates among the unemployed, and higher fractions of families with unemployed adults.
Work Effort/Experience	3.1	2.0	0.2	5.2	Higher OR hunger rates among full-time full-year workers, but also, higher fractions of part-year, part-time workers in OR with relatively high rates of hunger.
Dual Earners	3.1	2.2	-0.1	5.2	Higher OR hunger rates among dual earners, but similar fraction of families with dual earners, and slightly larger fraction of zero-earner families (with their lower hunger rate)
Household structure	3.1	2.2	-0.2	5.2	Two-adult families with children in OR have higher hunger rates than rest of country, but OR has a smaller percentage of such households. Also, Oregon’s single mothers have higher hunger rates, but single mothers are a smaller percentage of population in OR.
Male occupation	1.9	2.3	0.0	4.1	Higher hunger rates among OR blue collar workers than in the rest of the U.S., but larger fraction of male workers in white collar jobs than in rest of U.S.
Female occupation	2.5	3.4	0.1	6.1	Similar story for female workers in OR, but higher hunger among administrative support/sales workers too, and concentration of OR working women in blue collar occupations.
Home Ownership	3.1	1.9	0.1	5.2	Oregon owners and renters have higher rates of hunger than rest of U.S. and a slightly higher percentage of households renting.
Migration/Moving	3.0	2.0	0.1	5.2	Higher rates of hunger among local movers, but also, slightly more movers than in rest of the U.S.
Metro/Non-metro	3.1	2.1	0.0	5.2	Hunger rates in OR metro and non-metro areas both higher than in US, but similar to each other and thus the larger fraction of households in non-met areas makes no difference.

<sup>7</sup> Other states does not include Washington.

Oregon’s hunger rate is significantly higher than that in others states for three household categories that have above-average hunger rates in the rest of the U.S.:

- Households with a man working in a blue-collar occupation<sup>8</sup>
- Households with a woman working in a blue-collar occupation or administrative support/sales occupation<sup>9</sup>
- Households that moved to another house within the same county during the past year

That is, these groups that are vulnerable elsewhere are especially vulnerable in Oregon.

Of particular note, however, is that Oregon’s hunger rate is significantly higher than that of other states for three categories of households that have below-average hunger rates in other states:

- Households with no unemployed adults
- Households with at least one full-year, full-time worker
- Two-adult families with children

Hence, these groups that have low hunger rates elsewhere have significantly higher hunger rates in Oregon.

Table 15 summarizes these findings by identifying categories of Oregon households that have higher rates of hunger than their counterparts in other states. Hunger rates for these categories are significantly higher than the rates of counterparts at the .05 level of significance.

Table 15: Categories of Households in Oregon with High Rates of Hunger

<b>Normally More Vulnerable (Above Other States’ Average)</b>	<b>Normally Less Vulnerable (Below Other States’ Average)</b>
Men working in blue collar occupations	No unemployed person in household
Women working in blue collar and administrative support/sales occupations	Employed full-year full-time
Moved within last year to another house in county	Two adults with children

<sup>8</sup> The “other states” hunger rate for households with men employed in blue collar occupations is 2.9 percent, above the average rate of 1.9 percent for all households with employed men.

<sup>9</sup> The “other states” hunger rate for households with women employed in blue collar occupations is 4.4 percent, which is above the average rate of 2.5 percent for all households with employed women; the hunger rate for women in administrative support/sales occupations is 2.5 percent, which is the average rate for all households with employed women.

When considering food insecurity with or without hunger, Oregon's rate is significantly higher than in other states in all of the above high and low risk categories. (We consider a category to be at high risk of, or more vulnerable to, food insecurity if its rate of food insecurity with and without hunger is at or above the "other states" rate of 10.3 percent, and low risk otherwise.) Oregon's food insecurity rate is also higher in two other high risk categories<sup>10</sup>:

- Households in the second income quintile
- Renters

And it is significantly higher in one low risk category:

- Households with two earners

### ***Why Might Oregon's Food Insecurity and Hunger Rates Be So High?***

Oregon households, and particularly fully employed households and families with children, have much higher rates of hunger than their national counterparts. Why might this be? The framework we use to think about hunger and food insecurity links food insecurity and hunger to three sets of factors: *incomes*, *costs of living* (rent, childcare costs, health care costs) and *levels of social support*

All three could play a role. Given the fact that Oregon does not have higher fractions of 'near poor' yet food insecurity is higher among families in the second quintile, and among full-year, full-time working families, it seems particularly important to understand how costs relative to incomes are a source of economic struggle leading to hunger. Future research should examine the roles of costs of living relative to income, and of available social supports, in explaining the prevalence of hunger and food insecurity so that appropriate strategies for increasing food security can be developed.

---

<sup>10</sup> Two adult households with children is a category at high risk of food insecurity but low risk of hunger nationally.



## Bibliography

1. Bickel, Gary, Mark Nord, Cristofer Price, William Hamilton, and John Cook. *Guide to Measuring Household Food Security, Revised 2000*. USDA, Office of Analysis, Nutrition, and Evaluation, Food and Nutrition Service, 1-76. 2000.
2. Leachman, Michael. "Percentage of All Households That Are "Food Insecure with Hunger: And "Food Insecure" by State, 1997-99." In *Issue Brief: Hunger Statistics*, 1-2. Oregon Center for Public Policy, January 4, 2002.
3. Michael, Robert T., Chair. *Measuring Poverty, A New Approach*. Panel on Poverty and Family Assistance: Concepts, Information Needs, and Measurement Methods, 1-501. National Research Council, National Academy Press, 1995.
4. Nord, Mark, Margaret Andrews, and Steve Carlson. *Household Food Security in the United States, 2002*. USDA, ERS, Food Assistance and Nutrition Research Report no. 35, 1-53. 2003.
5. Nord, Mark, Margaret Andrews, and Steven Carlson. *Household Food Security in the United States, 2001*. USDA, ERS, Food and Rural Economics Division, 1-47. 2002.
6. Nord, Mark, Kyle Jemison, and Gary Bickel. *Measuring Food Security in the United States: Prevalence of Food Insecurity and Hunger, by State, 1996-1998*. USDA, ERS, Food and Rural Economics Division, 1-18. 1999.
7. Nord, Mark, Nader Kabbani, Laura Tiehen, Margaret Andrews, Gary Bickel, and Steven Carlson. *Household Food Security in the United States, 2000*. USDA, ERS, Food Assistance and Nutrition Report, 1-41. 2002.
8. Sullivan, Ashley F., and Eunyoung Choi. "Hunger and Food Insecurity in the Fifty States: 1998-2000." Brandeis University, Center on Hunger and Poverty, Food Security Institute, August, 2002.

## **Appendices:**

- A) Data Construction of March/April Current Population Surveys (1999/2001)
- B) Food Security Supplement Questions and Construction of the Food Security Measure

**Appendix A: Data Construction of the March/April Current Population Surveys (1999, 2001)**

**Table A-1 National Rates 1998-2000**

	Year			Total
	1998	1999	2000	
Food Secure	88.2	89.9	89.5	89.2
Food Insecure w/o Hunger	8.1	7.1	7.3	7.5
Food Insecure with Hunger	3.7	3.0	3.1	3.3

\* sampling weights used

First, we reproduced the national and Oregon-specific prevalence numbers given in the Brandeis report. We used the same CPS supplements that Brandeis used (August 1998, April 1999, September 2000). In the above table, we see that the 3.3% hunger rate is the same as the 3.27 rate reported by Brandeis, and the 10.8% for food insecurity (with and without hunger) is the same as the 10.77% rate reported by Brandeis.

**Table A-2 Oregon Rates 1998-2000**

	Year			Total
	1998	1999	2000	
Food Secure	83.2	87.7	86.0	85.6
Food Insecure w/o Hunger	9.9	6.4	8.1	8.1
Food Insecure with Hunger	6.8	5.9	5.9	6.2

\* sampling weights used

When we only look at Oregon (Table A-2), we see that the hunger prevalence rate is 6.2 and the food insecurity rate is 14.3. These are the same as the rates reported in the Brandeis study. Hence, our data definition and weighting reproduce national rates and Oregon rates of hunger and food insecurity in earlier reports.

We note the changes from year to year in rates of food insecurity and hunger for Oregon. The volatility of annual state rates reaffirms the value of using multi-year averages for assessing state rates.

Next, we examined the 2001 April data, using the same method as above for extracting and analyzing the data (Table A-3). First, national averages are quite similar to those in 2000 (Table A-1). So, nationally there was no big change in prevalence of hunger and food insecurity between 2000 and 2001.

**Table A-3 National Rates of Hunger and Food Insecurity  
(2001 April supplement)**

	U.S.
Food Secure	89.4
Food Insecure w/o Hunger	7.2
Food Insecure with Hunger	3.4

\* sampling weights used

However, while national prevalence rates did not change much in that one year period, the Oregon hunger rate appears to have fallen significantly between 2000 and 2001, while the food insecurity rate remained high (around 14.2%). This change is important to note because the 1999/2001 hunger rate of 5.2% (see Table A-4) is a full percentage point below the nationally reported 1998-2000 state rate in the Brandeis report. The lower rate of 5.2% is due to the elimination of the higher 1998 annual rate, and the inclusion of a still lower 2001 annual rate.

**Table A-4 Oregon Rates 1999 and 2001 (using only April supplements)**

	1999	2001	Combined
Food Secure	87.7	85.8	86.7
Food Insecure w/o Hunger	6.4	9.6	8.1
Food Insecure with Hunger	5.9	4.6	5.2

\* sampling weights used

Next, having found that the 1999/2001 April data produces an Oregon hunger rate one full percentage point below the 1998-2000 moving average, we considered what happens by merging March data for 1999 and 2001 to the April data for 1999 and 2001. Using unique household identifiers in the April and March files we were able to match approximately 75% of the households. One-eighth of the April respondents would be in their first month of the 8 month participation, and another one-eighth would be in their fifth month. These two groups would not have been contacted in March, and hence, about one fourth of the April sample would, by definition, not have March data available.

Using this merged April/March data, we found nearly identical 1999 and 2001 national hunger and food insecurity rates as those obtained when only using April data (compare Tables A-1, A-3, and A-5).

**Table A-5 March/April merged data (National estimates) 1999 & 2001**

	1999	2001	Combined
Food Secure	90.0	89.4	89.7
Food Insecure w/o Hunger	7.1	7.3	7.2
Food Insecure with Hunger	2.9	3.3	3.1

\* sampling weights used

**Table A-6 March/April merged data (Oregon estimates) 1999 & 2001**

	1999	2001	Combined
Food Secure	88.4	84.3	86.6
Food Insecure w/o Hunger	6.6	10.4	8.2
Food Insecure with Hunger	5.0	5.4	5.2

\* sampling weights used

Note that the individual annual rates for Oregon (1999 and 2001) do not match up as closely to those produced with only April data (Compare Tables A-4 and A-6). But, when the two years are merged, they compare very favorably with the combined rates of 8.2 and 5.2, almost perfectly replicating the data shown in the April data (Compare Tables A-4 and A-6). Hence, there is good reason to regard the merged March/April 1999/2001 data as being at least as reliable as the April-only data for 1999 and 2001.

However, to make sure that we were not introducing bias in the results by eliminating a select group of people when merging the files, we compared the respondents who were in the fully matched March/April data with those who only appeared in the April data set.

**Table A-7 National Data Comparing Full Data Cases and Dropped Cases**

	Full Data (matched)	Dropped (unmatched with March data)	Combined
-9	.2%	.2%	.2%
-1	27.7%	40.8%	30.0%
Food Secure	65.0%	53.1%	62.9%
Food Insecure w/o hunger	5.0%	3.9%	4.8%
Food Insecure with Hunger	2.1%	2.1%	2.1%

\* sampling weights used

Table A-7 illustrates that the dropped cases (i.e., lost from the merged set) were more likely to have blanks (-1). These were either non-respondents, or were listed by ERS as such because of complicated family arrangements that made them non-comparable to other families.

If we remove the non-respondents (Table A-8), we find that the people who do not appear in the merged March/April files also are somewhat more likely to be hungry, but almost equally as likely to be food insecure (with and without hunger) when compared to the full-data respondents. This observation makes sense because those with missing data may be more likely to be difficult to contact due to likely higher rates of residential mobility and more mobile respondents are more likely to be hungry (see section of our report on migration and hunger).

**Table A-8 National Data Comparing Full Data Cases and Dropped Cases**

	Full Data	Dropped	Combined
Food Secure	89.7	89.4	89.7
Food Insecure w/o Hunger	7.2	7.0	7.1
Food Insecure with Hunger	3.1	3.6	3.2

\* percentages computed using appropriate sampling weights

In Oregon, we find that 272 households are lost (about 26%) when merging April and March data. This compares favorably to the anticipated loss of 2/8 (two missing rotations) of the sample.

**Table A-9 Oregon Comparison of March/April merged and Dropped Cases**

	Full Data	Dropped	Combined
Food Secure	86.6	87.0	86.7
Food Insecure w/o Hunger	8.2	7.7	8.1
Food Insecure with Hunger	5.2	5.3	5.2

\* percentages computed using appropriate sampling weights

In Oregon, the unmatched/dropped have very similar hunger rates in comparison to full-data households (Table A-9). The rate of food insecurity without hunger rate is slightly lower for those who are in the April data only. So, there is no dramatic difference between households that have full data and those with only the April data.

Taken together, these observations of minimal differences between the merged and dropped cases, and similarity to reported national statistics, convince us that the 755 households used in the Oregon sample for 1999/2001 fairly represent the larger April-only samples.

**Appendix B Food Security Supplement Questions and Construction of the Food Security Measure: Responses to items in the food security scale**

Scale item	Negative response	Affirmative response	Percent of Households Affirming Item, 2001, US
<b>Household items</b>			
Worried food would run out before (I/we) got money to buy more	Never true	Often true; sometimes true	15.3
Food bought didn't last and (I/we) didn't have money to get more	Never true	Often true; sometimes true	12.3
Couldn't afford to eat balanced meals	Never true	Often true; sometimes true	10.0
<b>Adult items</b>			
Adult(s) cut size of meals or skipped meals	No	Yes	5.7
Respondent ate less than felt he/she should	No	Yes	5.7
Adult(s) cut size or skipped meals in 3 or more months	Only 1 or 2 months; skipped ("no" on previous question related to cutting size or skipping meals)	Almost every month; some months but not every month	4.0
Respondent hungry but didn't eat because couldn't afford	No	Yes	2.4
Respondent lost weight	No	Yes	1.5
Adult(s) did not eat for whole day	No	Yes	1.1
Adult(s) did not eat for whole day in 3 or more months	Only 1 or 2 months; skipped ("no" on previous question)	Almost every month; some months but not every month	0.8
<b>Child Items</b>			
Relied on few kinds of low-cost food to feed child(ren)	Never true	Often true; sometimes true	15.7
Couldn't feed child(ren) balanced meals	Never true	Often true; sometimes true	8.6
Child(ren) were not eating enough	Never true	Often true; sometimes true	4.1
Cut size of child(ren)'s meals	No	Yes	1.0
Child(ren) were hungry	No	Yes	0.7
Child(ren) skipped meals	No	Yes	0.4
(continued)			

(continued)			
Child(ren) skipped meals in 3 or more months	Only 1 or 2 months; skipped ("no" on previous question)	Almost every month; some months but not every month	0.3
Child(ren) did not eat for whole day	No	Yes	0.1



**National percentages of households by food security raw score, 2001**

**Households with children**

Raw Score	Percent of households	Food security status
0	73.26	Food Secure
1	6.00	
2	4.59	
3	3.59	Food insecure without hunger
4	2.85	
5	2.55	
6	2.15	
7	1.24	
8	1.15	Food insecure with hunger
9	0.86	
10	0.58	
11	0.36	
12	0.35	
13	0.20	
14	0.11	
15	0.06	
16	0.05	
17	0.03	
18	0.02	

**Households with no children**

Raw Score	Percent of households	Food security status
0	85.60	Food Secure
1	3.93	
2	2.80	
3	2.76	Food insecure without hunger
4	1.01	
5	0.93	
6	1.11	Food insecure with hunger
7	0.81	
8	0.47	
9	0.24	
10	0.34	