

Non-Metropolitan Hunger and Food Insecurity in the Northwest
Jay Grussing and Mark Evan Edwards
Oregon State University

Executive Summary

Using the Current Population Survey and its Food Security Supplement for 2002-2004, this analysis examines food insecurity and hunger in the Northwest. First comparing to earlier analyses, we see decreasing food insecurity and hunger for Oregon and Washington as a whole. Consolidating metro and non-metro regions of the Northwest, including Idaho, non-metro disadvantages for specific socioeconomic characteristics become apparent. Compared to metro locations, non-metro food insecurity is higher among unemployed households and households with a full-year full-time worker, higher among households with women working in blue collar/service occupations, and higher among 2-adult households with children. We hypothesize that in non-metro areas many of the employed women whose families are food insecure are part of 2-adult households with children, and that they, or their partner/spouse, are often full-year full-time employed. Further exploration of specific occupations indicates that food insecurity in non-metro places seems to be concentrated in low-level service occupations, often, ironically, selling groceries and preparing meals for others.

For more information, contact:

Dr. Mark Edwards
Sociology Department
319 Fairbanks Hall
Oregon State University
Corvallis, OR 97331

medwards@oregonstate.edu
541-737-5379

Jay Grussing is a graduate student in the Master of Public Policy program at OSU.
Mark Edwards is an Associate Professor of Sociology.

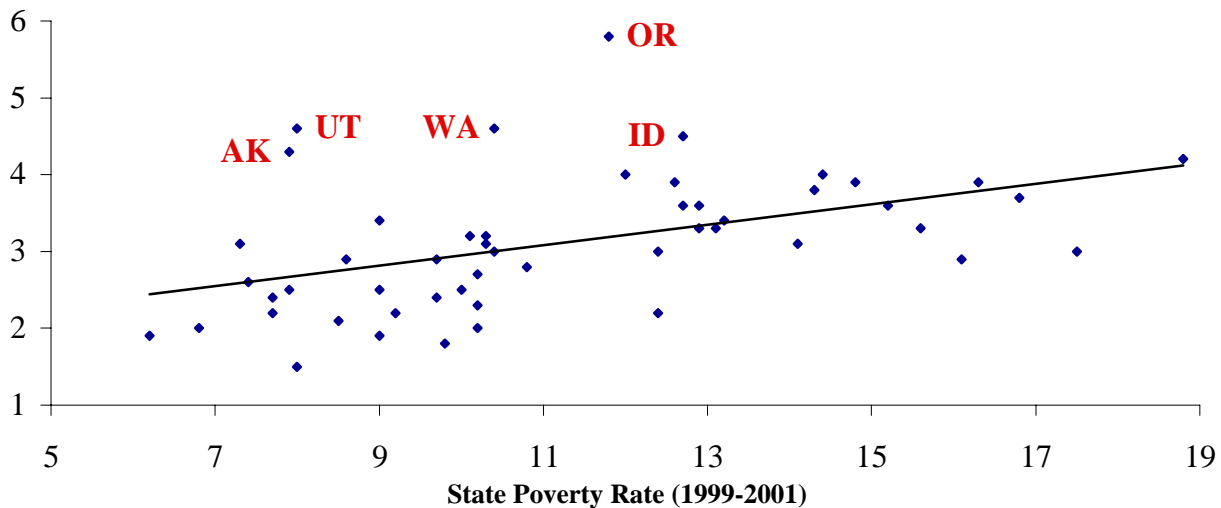
I. Hunger and Food Insecurity in the Northwest: A Brief History

According to the USDA, approximately 3.6% of American households suffer from hunger and nearly 11.4% experience food insecurity (Nord et al. 2005). Hunger and food insecurity are not evenly distributed around the country. When state rates of food insecurity are mapped, they create a loose crescent shape that anchors in the northwest, swings down the west coast, through the southwest and deep south, and ends on the southern Atlantic coast. Hunger and food insecurity rates are rarely above the national average in the midwest or the northeast.

In the late 1990s, Oregon and Washington shared the painful distinction of being among the states with the highest hunger rates for several years running (1996-1999). In 1998, Oregon's hunger rate was a full 2 percentage points above the national average, disconcerting political leaders who otherwise were celebrating the quickly growing economy of that decade, and puzzling researchers who, like others, would not have expected Oregon to be the nation's hungriest state. The repeatedly high ranking of hunger in Oregon in the late 1990s led to extensive public attention, legislative debate, and accelerated efforts by emergency food services. Although receiving less public attention than Oregon, Washington's hunger and food insecurity rates were surprisingly high as well (Edwards and Weber 2003).

The initial puzzle that most surprised analysts was that hunger in the Northwest was not only relatively high compared to other states, but it was also apparently uncorrelated with state rates of poverty (Figure 1).

Figure 1 State Hunger Rates by Poverty Rate



Although most early discussions of this poverty/hunger relationship used the observed outlier status in Oregon to suggest that Oregon's hunger rate was a statistical anomaly or simply a measurement problem, the repeatedly high scores from year to year and extensive validation of the measures put to rest many of these concerns. Moreover, the presence of several Northwestern states outside of the overall pattern lent credibility to the notion that something unique to the region was taking place, as opposed to positing unexpected data and measurement problems in that region.

The most extensive analysis of Northwest hunger and food insecurity rates (Edwards and Weber 2003) demonstrated that simple cross-tabular analysis of the publicly available Current Population Survey and its Food Security Supplement could reveal where hunger and food insecurity were concentrated. Their report studied Oregon and Washington hunger and food insecurity rates for the 1999-2001 period. They focused however on Oregon, finding that hunger was concentrated in unexpected groups such as among 2-parent families and households with full-year/full-time workers. In other states, families in these categories appeared to be insulated from experiencing hunger, but in Oregon, they were not. Further analysis of the data demonstrated that population composition, such as having higher unemployment rates or higher rates of rurality, could not explain the high rates of hunger. Concentrations of hunger and food insecurity in particular demographic and labor force groups were the central story to be told (Edwards, Weber, and Bernell *forthcoming*).

One part of the Edwards/Weber report illustrated that metropolitan places in Oregon had a significantly higher food insecurity rate than similar places in other states, but metro Washington had a food insecurity rate that closely resembled other states. Both states had metro hunger rates higher than metro hunger rates in other states.

However, in non-metropolitan places, the patterns in these two states differed. Washington's food insecurity rate (15.3%) in non-metro places was higher than in non-metro places in the rest of the country (10.5%; $p < .10$), but this was not the case for Oregon. Meanwhile, Washington's non-metro hunger rate appeared to be twice that of non-metro places in other states, although sample size limitations precluded establishing this as statistically significant (6.8% v. 3.0%). Meanwhile, although Oregon's non-metro food insecurity rate resembled the rest of the country, its hunger rate was obviously elevated (5.2% v. 3.0%). These metro/non-metro differences between Oregon, Washington and the rest of the U.S. raise the possibility that characteristics of non-metropolitan places, households, program-delivery, and economy may shape what differently located households experience in terms of food insecurity and hunger.

In this paper we (a) update the statistics for Northwestern states, also uniquely identifying Idaho along with Oregon and Washington, (b) describe the resulting patterns while comparing these more recent numbers to the earlier report to examine trends in rural parts of NW states, and (c) focus on three way analyses to identify how current hunger and food insecurity rates differ across metro and non-metro places in the Northwest, with a particular focus on how labor market activity and family and personal characteristics are related to hunger and food insecurity.

II. Measuring/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 over 60,000 households asks a series of 12 or 18 questions (depending on the presence of children) 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 questions are used to classify households into three categories: food secure, food insecure without hunger, and food insecure with hunger. (See Nord et al. 2004, 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”.
- “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”.
 - 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”. (Nord et al. 2002, p.3)

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.

The FSS hunger/food insecurity measure is now well established and requires no extensive discussion here (see Edwards and Weber 2003). However, we reiterate that the measure is conservative in terms of requiring respondents to answer in the affirmative several times before they are considered to be food insecure. 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. Thus, households classified as hungry almost certainly experienced one or more of the following during the previous 12 months¹:

- Adult cut size of meals or skipped meals in 3 or more months
- Children were not eating enough
- Adult hungry but did not eat
- Respondent lost weight

¹ 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.

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

III. Methodology

In this update to the Northwest's food security situation we use the 2002, 2003, and 2004 Current Population Survey Food Security Supplement. This data is gathered every December as part of the CPS's ongoing monthly data collection. In December, in addition to the usual CPS questions about employment activities and demographic information, participants are asked questions as described in the previous section. Questions about season effects of the December survey have been examined and determined to be of minimal influence when assessing annual measures of food insecurity (Nord et al. 2002).

To obtain a sufficiently large sample size, we followed existing protocol for merging CPS data from 2002, 2003, and 2004. This process mirrors the unadjusted data-protocol used by the USDA to provide population estimates of food insecurity and food insecurity with hunger in the U.S. (Nord et al. 2004, Hall 2004). However, due to changes in the survey during our examination period we in some cases must focus only on 2003 and 2004 data. Tables affected by the CPS change are labeled as such.

The CPS hierarchical file is flattened so that households remain as the unit of analysis, but partner/spouse information is retained, allowing us to describe households based on characteristics of one or both adults in two-adult households. The reference person is the primary adult who answers questions during the survey – as such this person may answer questions about all other members of the household. Information about the presence of children is included as well. Variable construction is described in the appendices.

Where population composition across places varies significantly, we explore whether or not that compositional difference could help explain an area's higher or lower rate of hunger or food insecurity. Experience and research (Edwards, Weber, and Bernell *forthcoming*) demonstrate that population composition rarely explains much of an area's distinct hunger or food insecurity rate, but this does not preclude it from possibility.

IV. Metro/Non-metro differences in Hunger and Food Insecurity in the Northwest

Table 1: Hunger and Food Insecurity Rates (%) by Metro/Non-metro Residence, by Location (2002-2004)

		Metro	Non-metro	All Households
Oregon^(a)	Food Insecure	12.3	11.8	12.2
	- with Hunger	4.3	2.0*	3.7
	Total N	1677	598	2275
	Share of All (%)	73.6	26.4	100%
Washington	Food Insecure	11.0	14.1	11.6
	- with Hunger	3.6	4.9	3.8
	Total N	2021	586	2607
	Share of All (%)	79.1	20.9	100%
Idaho	Food Insecure	14.0	10.7	11.7
	- with Hunger	3.4	3.4	3.4
	Total N	648	1258	1906
	Share of All (%)	32.7	67.3	100%
Other States	Food Insecure	11.3	11.9	11.4
	- with Hunger	3.6	3.8	3.6
	Total N	103952	33486	138041
	Share of All (%)	79.4	20.3	99.7%

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

* Difference between this state’s rate and that of “Other States” is statistically significant at .05 level of significance.

Table 1 demonstrates that in non-metro areas, Washington has high rates of food insecurity compared to other states ($p < .10$). Its non-metro hunger rate trends upward as well, unlike Oregon’s which is significantly ($p < .05$) below the non-metro hunger rate elsewhere. These differences are intriguing because the higher Washington rates also appeared in the 1999-2001 analysis. In 1999-2001, Washington had a non-metro food insecurity rate and a hunger rate higher than the national average (15.3% and 6.8%, respectively). The non-metro food insecurity and hunger rates there have reduced somewhat, but remain fairly high. However, while Oregon’s non-metro food insecurity rate has remained close to its earlier rate (11.2% in 1999-2001), its non-metro hunger rate has fallen substantially from 14.3% in 1999-2001 to 11.8%. The Idaho numbers show a high metro food insecurity rate (14.0%) that is marginally significant ($p < .10$). Continuity and change in such numbers suggests that public services, economy, labor markets, and population characteristics may be relevant for understanding differences in hunger and food insecurity in non-metropolitan places of the Northwest.

Given these differences across metro and non-metro places in these Northwestern states we now turn attention to labor force characteristics.

Metro/Non-Metro Labor Force Correlates of Hunger and Food Insecurity in the Northwest

Because of the complexity of three-way tables with three or more categories per variable, we have simplified this part of the analysis by consolidating all three Northwest states and refrain from comparing them to other states. This approach also increases our sub-group sizes, hence increasing our descriptive capabilities. Further detail regarding the Northwest consolidation can be found in the appendix A. We therefore focus on metro and non-metro comparisons of hunger and food insecurity within the Northwest, anticipating important differences. The metropolitan designation we use is provided by the CPS, which is constructed along the census metropolitan area guidelines².

Table 2 demonstrates that among the households with no unemployed adults, food insecurity and hunger rates are similar in metro and non-metro places. We see a significantly higher rate of food insecurity among the unemployed non-metro population (in comparison to metro unemployed households). Meanwhile, households that have no one in the labor force (households with retirees or disabled persons or discouraged workers not in the labor force) show hunger rates that are similar across metro and non-metro places. But food insecurity is marginally higher ($p < .10$) for this group in metro than in non-metro places.

TABLE 2: Hunger and Food Insecurity Rates (%) by Unemployment (2002-2004), and Metro/Non-Metro Northwest (OR, WA, ID)

		Employed	Unemployed ^(b)	None in Labor Force	All Households
Non-Metro NW	Food Insecure	10.4	40.9*	10.2	12.1
	- with Hunger	2.6	11.9	3.9	3.5
	Total N	1632	123	687	2442
	Share of All (%)	66.8	5.7	27.5	100%
Metro NW	Food Insecure	10.3	28.2	12.3	11.7
	- with Hunger	3.3	10.0	3.8	3.8
	Total	3159	226	961	4346
	Share of All (%)	72.5	5.3	22.2	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 metro and non-metro sub-group is statistically significant at .05 level of significance

When we consider the previous year's work experience for the household reference person, we observe in Table 3 that food insecurity among full-year full-time workers is significantly higher in non-metro areas than in metro areas. The differences are not as evident among part-year, part-time workers, although the overall rate for these workers, whether metro or non-metro, are high. Hunger rates for full-year, full-time workers are generally lower than for all households, but not significantly different between metro and non-metro places.

² The CPS uses census metropolitan statistical area (MSA) designations and as such metro, non-metro characteristics are used as a very rough proxy for rural/urban.

Table 3: Hunger and Food Insecurity Rates (%) by Previous Year's Work Experience (2002-2004), and Metro/Non-Metro Northwest (OR, WA, ID)

		Full-year, full-time	Part year and/or part time	No Workers in Household	All Households
Non-Metro NW	Food Insecure -with Hunger	12.1* 3.1	17.8 5.4	10.4 3.5	12.1 3.5
	Total N	1330	250	862	2442
	Share of All (%)	54.7	10.8	34.5	100%
Metro NW	Food Insecure - with Hunger	10.4 3.5	17.5 6.1	11.9 3.5	11.7 3.8
	Total N	2550	493	1303	4346
	Share of All (%)	58.3	11.4	30.3	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 metro and non-metro sub-group is statistically significant at .05 level of significance

If non-metro full-year, full-time workers are more likely to experience food insecurity, it is important to understand what kinds of jobs workers engaged in. Table 4 reports hunger and food insecurity rates in metro and non-metro places, by major occupational clusters for male workers³. Because of CPS changes in coding for occupations between 2002 and 2003, we include 2003 and 2004 data only in this analysis. Furthermore, because men and women are concentrated in different kinds of occupations, we analyze them separately.

Table 4: Hunger and Food Insecurity Rates (%) by Occupation of Men (2003-2004) and of Metro/Non-Metro Northwest (OR, WA, ID)

		Pro/Tech/ Mgr	Admin/ Support/ Sales	Blue Collar/ Service	All Households with Employed Men
Non-Metro NW	Food Insecure - with Hunger	4.0 1.6	14.5 4.4	13.2 3.2	9.9 2.9
	Total N	326	207	340	873
	Share of All (%)	39.4	26.0	34.6	100%
Metro NW	Food Insecure - with Hunger	3.3 .8	11.9 4.0	16.4 4.1	10.0 2.8
	Total N	634	443	579	1656
	Share of All (%)	38.9	27.8	33.3	100%

- (a) Rates and 'Share of All' percentages are computed using sampling weights; N's are unweighted
 * Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

As anticipated, in both metro and non-metro areas, hunger and food insecurity rates are much lower for professional, technical and managerial workers than for those in less well paid, less

³ Appendix B documents the construction of these occupational clusters.

prestigious occupations (Table 4). When comparing across places, blue collar men in non-metro places are marginally better off in terms of food insecurity than blue collar men in metro places ($p < .10$). On the other hand, food insecurity rates are higher for non-metro men in administrative support and sales occupations than similarly employed men in metro areas of the Northwest.

However, for women (Table 5), the story is dramatically different. Non-metro women employed in blue collar/service work have significantly higher food insecurity rates than similarly employed metro women ($p < .05$). They show higher hunger rates too, although sample size precludes us from establishing it as statistically significant. The small fraction of blue-collar workers among women is consistent with national patterns. We have not here included questions about family structure or number of other earners to explore whether this elevated food insecurity and hunger rate is due to a combination of these factors that affect employed women's experiences differently than employed men. We found no cases of hunger among Northwest non-metro women in professional, technical, and managerial occupations.

Table 5: Hunger and Food Insecurity Rates (%) by Occupation of Women (2003-2004) and of Metro/Non-Metro Northwest (OR, WA, ID)

		Pro/Tech/ Mgr	Admin/ Support/ Sales	Blue Collar/ Service	All Households with Employed Men
Non-Metro NW	Food Insecure	4.8	16.0	22.8*	12.2
	- with Hunger	0	3.2	9.5	2.5
	Total N	334	431	63	828
Share of All (%)		39.6	52.1	8.3	100%
Metro NW	Food Insecure	4.6	14.5	13.6	10.3
	- with Hunger	1.5	5.2	4.2	3.6
	Total N	590	748	108	1446
Share of All (%)		41.1	51.8	7.1	100%

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

* Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

These occupations reside within larger industries that may be more or less present in metro and non-metro places. Table 6 reports food insecurity and hunger rates among employed persons, but this time with employment characterized by industry.⁴ No theoretical model indicates to us exactly what industries are more or less likely to have food insecure workers in them, but we divided industries to highlight those which are often implicated in discussion of metro and non-metro places. Workers in manufacturing may be especially concentrated in metro places, and workers in the natural resource and agricultural industries may be more concentrated in non-metro locations. The service industry, although extremely heterogeneous in terms of the kinds of occupations it offers, may be anticipated to be more concentrated in metro locations.

Our results for this part of the analysis are curious and sometimes unsatisfying, but perhaps instructive. First, the 'share' lines indicate that natural resource and agricultural industry

⁴ Appendix C documents the construction of Industry groupings

employment, in spite of having a slightly larger fraction of the industrial workforce, is still small in comparison to other groups. Samples sizes are just large enough to make a meaningful comparison among natural resource and agriculture industry workers -- the high rate of food insecurity among metro places (as compared to non-metro) is surprising and significant. This unexpected finding may imply that workers in the natural resource and agriculture industries, but who are also metro, are concentrated in low paying occupations, especially relative to costs of living in urban places. This warrants further investigation.

Meanwhile, the differences in food insecurity rates between metro and non-metro workers in 'service' industry jobs is marginally significant ($p < .10$).

We conclude that, given the data limitations, industry distinctions remain somewhat problematic, yet intriguing given these early findings. With larger sample sizes, and with more theoretical development of a logic for re-categorizing specific industries into categories, this type of analysis may eventually be very helpful.

TABLE 6: Hunger and Food Insecurity Rates by Categorical Industry (2003-2004) and Metro/Non-Metro Northwest (OR, WA, ID)

		NR & Ag.	MFG & Const.	Basic Services	Others	All Households
Non-Metro NW	Food Insecure	2.9	9.3	23.0*	10.6	10.9
	- with Hunger	.0	1.0	6.2	3.2	3.0
	Total N	67	206	100	1218	1591
	Share of All (%)	4.1	12.6	6.7	76.6	100%
Metro NW	Food Insecure	16.9*	12.8	13.2	11.3	11.7
	- with Hunger	10.1	3.6	4.5	3.6	3.7
	Total N	40	422	224	2152	2838
	Share of All (%)	1.2	14.8	7.8	76.1	100%

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

* Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

Finally, we examine non-metro/metro rates of hunger and food insecurity by income categories. Differences in cost of living relative to income should reveal significant differences in hunger and food insecurity rates across metro and non-metro places. Table 7 shows that, in fact, food insecurity rates in non-metro places are significantly ($p < .05$) lower than in metro places for households making between 15,000 and 40,000 per year. Hunger rates at least appear lower in non-metro areas as well, although the difference is not statistically significant. This suggests the value of further exploring how local cost of living, in relation to income, impacts food insecurity and hunger and how that might vary between metro and non-metro locations.

TABLE 7: Hunger and Food Insecurity Rates (%) by Household Income Category (2002-2004) of Metro/Non-Metro Northwest (OR, WA, ID)

		< 15,000	15,000 – < 30,000	30,000 – < 40,000	40,000 +	All Households
Non-Metro NW	Food Insecure	30.6	17.8*	6.7*	3.9	12.7
	- with Hunger	10.5	5.8	1.6	.4	3.8
	Total N	430	490	307	927	2154
	Share of All (%)	20.7	20.7	14.1	44.5	100%
Metro NW	Food Insecure	28.5	22.7	12.4	4.7	12.6
	- with Hunger	12.4	6.9	2.8	.7	4.0
	Total N	576	736	521	1996	3829
	Share of All (%)	15.9	18.0	13.3	52.8	100%

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

* Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

A more detailed analysis of household incomes relative to the poverty line actually obscures metro/non-metro differences in hunger and food insecurity. The 185% poverty line for a family of four is around \$35,000. While categorizing families by their ‘near poverty’ status takes into account family size, it also forces us to consolidate groups that appear (in Table 7) to have different hunger and food insecurity rates in non-metro places. Some obscuring of differences may also reflect the inclusion of income non-responses by the CPS poverty percentage recode. While this increase in response may improve comparisons between metro and non-metro categories, we believe the more detailed income brackets offer a greater glimpse into the economic realities apparent between metro and non-metro households, where income effects may contribute to food insecurity.

Table 8: Hunger and Food Insecurity Rates (%) by Household income relative to 185% of poverty threshold (2002-2004) and Metro/Non-Metro Northwest (OR, WA, ID)

		Below 185 % poverty	Above 185% poverty	All Households
Non-Metro NW	Food Insecure	26.5	5.3	12.1
	- with Hunger	8.1	1.3	3.5
	Total N	840	1602	2442
	Share of All (%)	32.0	68.0	100%
Metro NW	Food Insecure	27.4	6.2	11.7
	- with Hunger	9.6	1.8	3.8
	Total N	1193	3153	4346
	Share of All (%)	26.1	73.9	100%

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

(b) Includes ‘income not reported’

* Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

These analyses of hunger and food insecurity, as they relate to labor force characteristics and family income, indicate that non-metropolitan households in the Northwest are more likely to experience food insecurity, in comparison to similar metro households, when there is either a full-year, full-time employed reference person and/or a women working in a blue-collar/service occupation. However, we also note that as incomes increase in non-metro places, food insecurity drops more quickly than in metro places (comparing the change as families move into the \$15-30K bracket). *Taken together, these findings lend support to the idea that in non-metro places, income relative to cost of living helps insulate families from food insecurity, but for many full-time working families, especially those where women are in blue collar and service occupations, such incomes are perhaps harder to obtain, and hence food insecurity persists among those families.*

Personal and Family Characteristics and Metro/Non-Metro Hunger and Food Insecurity in the Northwest

Beyond employment and income variables, household characteristics such as education, ethnicity and family structure may impact food security.

Initially, we sought to focus on racial and ethnic differences in food insecurity in the metro and non-metro Northwest. However, our analysis was constrained by the CPS survey changes that transpired in 2003 reflecting census demographic changes. Given the very small proportion of African American residents in the non-metro Northwest, we instead turned attention to ethnicity in the Northwest. Table 9 documents the 2003-2004 analysis of Hispanic food insecurity in metro/non-metro Northwest. There does not appear to be a significant difference in hunger or food insecurity among Hispanic residents between metro and non-metro locations. However, in both locations, the Hispanic food insecurity rate is significantly ($p<.05$) higher than for the non-Hispanic population.

TABLE 9: Hunger and Food Insecurity Rates by Hispanic/Non-Hispanic of Reference Person (2003-2004) and Metro/Non-Metro Northwest (OR, WA, ID)

		Hispanic	Non-Hispanic	All Households
Non-Metro NW	Food Insecure	23.1	9.9	10.9
	- with Hunger	6.2	2.7	3.0
	Total N	91	1500	1591
	Share of All (%)	7.7	92.3	100%
Metro NW	Food Insecure	22.6	10.7	11.7
	- with Hunger	8.3	3.3	3.7
	Total N	203	2635	2838
	Share of All (%)	9.0	91.0	100%

(b) Rates and ‘Share of All’ percentages are computed using sampling weights; N’s are unweighted
 * Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

Table 10 examines educational effects on food insecurity and hunger. We first note the remarkable level of similarity between metro and non-metro hunger and food insecurity, within educational categories. However, we also note a higher proportion of non-metro residents without high school diplomas, a group that is most vulnerable to food insecurity and hunger.

TABLE 10: Hunger and Food Insecurity Rates by Education of Reference Person (2002-2004) and Metro/Non-Metro Northwest (OR, WA, ID)

		Reference Person Education				All households
		No HS Diploma	HS diploma & some college	Two year college degree	Bachelors or higher college degree	
Non-Metro NW	Food Insecure - with Hunger	25.3 8.5	13.0 3.5	12.3 4.0	3.0 .5	12.1 3.5
	Total N	312	1313	244	573	2442
	Share of All (%)	13.5	51.6	10.0	25.0	100%
Metro NW	Food Insecure - with Hunger	24.9 8.4	13.5 4.4	11.2 2.9	4.8 1.7	11.7 3.8
	Total N	408	2173	408	1357	4346
	Share of All (%)	9.9	49.3	9.6	31.3	100%

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

* Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

Next, we explore the possible link between household composition and food insecurity. Household composition is determined based on self-reported CPS data.⁵ Families with children under this household structure are limited to those with children under age 18. The most striking (and only statistically significant) difference in food insecurity rates between metro and non-metro places is among 2-adult families with children.

Food insecurity is potentially more likely and problematic in families with more members, and certainly more difficult for single mothers (compare first and second columns). However, the non-metro disadvantage for 2-adult households with children, is only explicable in terms of our earlier findings. *Taken together with the earlier findings about full-year, full-time workers, and employed women in blue collar and service occupations, we speculate that many of the employed women whose families are food insecure are part of 2-adult households with children. And they, or their partner/spouse are often full-year full-time employed.*

⁵ Appendix D offers a detailed examination of the construction of the household characteristics.

TABLE 11: Hunger and Food Insecurity Rates (%) by Household Structure (2002-2004) and Metro/Non-Metro Northwest (OR, WA, ID)

		Household Structure					All households
		2-adults, with children	Single mother	Single father	2-adults, without children	Single, without children	
Non-Metro NW	Food Insecure	16.6*	33.4	13.2	5.1	13.3	12.1
	- with Hunger	3.3	8.0	5.4	1.6	4.6	3.5
	Total N	482	151	56	893	855	2437
	Share of All (%)	17.6	6.5	2.9	37.0	36.0	100%
Metro NW	Food Insecure	10.0	28.7	13.9	5.7	14.5	11.7
	- with Hunger	2.2	10.2	1.9	1.4	5.7	3.8
	Total N	903	275	119	1397	1645	4339
	Share of All (%)	20.3	6.3	2.9	31.6	38.9	100%

(b) Rates and 'Share of All' percentages are computed using sampling weights; N's are unweighted
 * Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

Table 12 explores the on-going concern about the aging of non-metro places, and clearly illustrates the anticipated demographic trends affecting non-metro and metro areas. Whereas individuals under 30 make up only 14.4 percent of the population of non-metro (as opposed to 19.1 % in metro areas), the missing 5% are in the “over 60” group. The slightly elevated food insecurity rate among the younger, non-metro group ($p < .10$) suggests the need for further analysis of limitations encountered by younger non-metro residents.

TABLE 12: Hunger and Food Insecurity Rates by Age category of Reference Person (2002-2004) and Metro/Non-Metro Northwest (OR, WA, ID)

		30 and under	31 – 60	Over 60	All Households
Non-Metro NW	Food Insecure	23.3	13.0	5.1	12.1
	- with Hunger	5.7	4.0	1.2	3.5
	Total N	333	1419	690	2442
	Share of All (%)	14.4	58.5	27.1	100%
Metro NW	Food Insecure	19.1	11.5	5.9	11.7
	- with Hunger	4.4	4.4	1.8	3.8
	Total N	775	2591	980	4346
	Share of All (%)	19.1	58.9	22.0	100%

(b) Rates and 'Share of All' percentages are computed using sampling weights; N's are unweighted
 * Difference between metro and non-metro sub-group is statistically significant at .05 level of significance

Finally, given the importance of work and earnings to understanding the metro/non-metro differences in hunger and food insecurity, we further explore where the non-metro hungry and food insecure residents are working. We report in Table 13 the top 5 industry-occupation

categories among the hungry and food insecure workers in the Northwest. This approach offers suggestive information for further research, and perhaps for decision-making about how to provide services to working non-metro residents in the Northwest. This approach, however limited, offers a glimpse which other more robust analytical techniques were not able to expand on given the changing variable definitions in the CPS between 2002 and 2003.

TABLE 13: Top 5 Detailed Industry-Occupation Classifications (2003-2004) as Hunger and Food Insecurity by Metro/Non-Metro Northwest (OR, WA, ID)

Non-metro Food Insecure Detailed Industry*		Metro Food Insecure Detailed Industry*	
% of food insecure	Occupation	% of food insecure	Occupation
6.2	Restaurants and other food services	5.5	Construction (including cleaning of building & dwellings)
5.6	Construction (including cleaning of building & dwellings)	4.1	Restaurants and other food services
3.3	Gasoline Stations	3.0	Grocery Stores
2.8	Traveler Accommodations	2.4	Employment services
2.8	Nursing Care facilities	2.1	Electronic component mfg

* Includes both food insecure and food insecure with hunger.

The top 5 industry/occupations are dominated by low wage service sector classifications. Non-metro areas illustrate this clustering most dramatically where 4 of the 5 top food insecure industry occupational categories are clearly in the basic services sector. Moreover, ironically, food insecure workers in metro and non-metro areas are more likely to work with and around food in grocery stores and restaurants. *In non-metro places, we may see evidence of on-going changes in non-metro places – low paid jobs in nursing care facilities for aging populations and in hotels, restaurants and gas stations serving rural tourism.*

V. Conclusions

This descriptive analysis of the differences of food insecurity between metro/non-metro locations offers insight we deem valuable to expanding the exploration of food insecurity in the Northwest. Although hunger and food insecurity in the Northwest has improved since the Edwards and Weber examination in 2003 a great deal of research is still needed. This analysis begins to explore the specifics earlier addressed.

Non-metro food insecurity and hunger varies across states in the Northwest, and between metro and non-metro places in those states. In the non-metro Northwest, income relative to cost of living may help insulate families from food insecurity, but for many full-time working families, especially those where women are in blue collar and service occupations, such incomes are likely to be harder to obtain, and hence food insecurity persists among those families.

In the non-metro Northwest, 2-adult households with children are more likely than similarly

structured metro families to experience food insecurity. Taken together with the findings about full-year, full-time workers, and employed women in blue collar and service occupations, perhaps many of the employed women whose families are food insecure are part of 2-adult households with children. And they, or their partner/spouse are often full-year full-time employed.

Moreover, in non-metro places in the Northwest, we may see evidence of on-going changes in non-metro places – low paid jobs in nursing care facilities for aging populations and in hotels, restaurants and gas stations serving rural tourism. Instead of finding food insecure non-metro agricultural workers we observe food insecure workers in metro grocery stores and non-metro restaurants.

The improvement in hunger rates in some non-metro places, such as in Oregon, while other trends continue to limit opportunities in non-metro Northwestern places, implies that program efforts, such as food stamp use or emergency food services may have been critical for at least reducing hunger.

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Appendix A: Data Construction of Northwest variable

We constructed the unified Northwest variable through the consolidation of census state codes. This consolidation utilized the CPS variable – *gestcen*; which identifies each case’s state of origin. Table A-1 articulate the consolidation concatenation. This organizational decision allows increased accuracy and assurance of food insecurity and food insecurity with hunger in both metro and non-metro areas. Once again these cases were a subsection of the total CPS survey within each state. Initially the CPS is filtered for those not interviewed for the Hunger Security Supplement. Additionally the data set is filtered to include primary interviewees only.

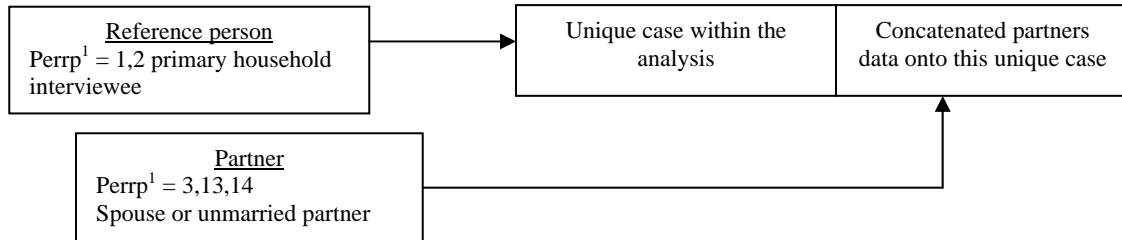
Table A-1: State specific cases

		2002	2003	2004	Total
Oregon	Number of cases <i>gestcen</i> = 92	788	766	721	2275
Idaho	Number of cases <i>gestcen</i> = 82	672	610	624	1906
Washington	Number of cases <i>gestcen</i> = 91	899	889	819	2607
NW States	Number of cases	2359	2265	2164	6788

Appendix B: Occupation Variable Construction & Household Case Flattening

To create the distinct occupational identifications used in the table 4 and table 5 occupational categories for both the reference person and the reference person's partner were constructed. The partner characteristics were attached to the reference person via a unique household/year identifier. This created the flat case required for our analysis, diagram B-1 illustrates.

Diagram B-1: Reference case and partner coding



⁽¹⁾The *perrp* variable within the CPS identifies the individual within the household unit and their relationship to the reference person.

Through searching of both the primary household member and that of that individual's partner (if present) we constructed the industry characteristics of both men and women in tables 4 & 5. Once again we limited our analysis of this variable to the years of 2003 and 2004 because of the changing variable characteristics that transpired from 2002 to 2003, and as such our sample size decreased. Table B-1 documents the categorical composition for the professional/tech/mgr, admin/support/sales, and blue collar/service designations.

Table B-1: Occupational distinctions

Pro/Tech/Mgr	Admin/Support/Sales
<ul style="list-style-type: none"> • Management occupations • Business & financial operations occupations • Computer & mathematical science occupations • Architecture & engineering occupations • Life, physical, and social science occupations • Community and social service occupations • Legal occupations • Education, training and library occupations • Healthcare practitioner & technical occupations 	<ul style="list-style-type: none"> • Healthcare support occupations • Protective service occupations • Food preparation and serving related occupations • Building and grounds cleaning and maintenance occupations • Personal care and service occupations • Sales and related occupations • Office & administrative support occupations

Blue Collar/Service
<ul style="list-style-type: none"> • Farming, fishing, & forestry occupations • Construction & extraction occupations • Installation, maintenance, and repair occupations • Production occupations • Transportation & material moving occupations

Appendix C: Industry code construction

Table C-1 documents the construction of the industry variables used in table 6. Once again only 2003-2004 CPS data was analyzed in determining the industry mix.

Table C-1: Industry Recode for table 6

<p style="text-align: center;">NR & Agriculture</p> <ul style="list-style-type: none"> • Agriculture • Forestry, logging, fishing, hunting, & trapping • Mining 	<p style="text-align: center;">Basic Services</p> <ul style="list-style-type: none"> • Arts, entertainment, & recreation • Accommodation • Food services & drinking places • Repair and maintenance • Personal & laundry services • Membership associations & organizations
<p style="text-align: center;">MFG & Construction</p> <ul style="list-style-type: none"> • Construction • Nonmetallic mineral product manufacturing • Primary metals & fabricated metal products • Machinery manufacturing • Computer & electronic product manufacturing • Electronic equipment appliance manufacturing • Transportation equipment manufacturing • Wood products • Furniture & fixtures manufacturing • Miscellaneous & not specified manufacturing • Food manufacturing • Beverage & tobacco products • Textile, apparel, & leather manufacturing • Paper and printing • Petroleum & coal products manufacturing • Chemical manufacturing • Plastics and rubber products 	<p style="text-align: center;">Other</p> <ul style="list-style-type: none"> • Wholesale trade • Retail trade • Transportation and warehousing • Utilities • Publishing industries • Motion picture & sound recording industries • Broadcasting • Internet publishing and broadcasting • Telecommunications • Internet service providers & data processing services • Other information services • Finance • Insurance • Real estate • Rental and leasing services • Professional & technical services • Administrative & support services • Waste management & remediation services • Education services • Hospitals • Healthcare services, except hospitals • Social assistance • Private households • Public administration • Armed forces

Appendix D: Data Construction of Household Characteristics

The Household variable is constructed through recoding the CPS variables *hrhtype*, household type, and *prnmchld*, number of children < 18. Through creating consolidated variables for husband/wife, unmarried couples with children are not represented in our two-parent variable. These respondents were either dropped out of our survey universe along with group quarter residents, or if they self identified as household head may have been included in our male or female headed variables. We believe this reflects a minor percentage of reported households.

The children variable was used to remove family variables with children over 18 from the statistics on household structure. As adult children we concluded their inclusion into the family variable, while relatively small, might adversely affect our representation. These respondents were dropped from the sample. Table D-1 represents the construction of household structure.

Table D-1. Household Concatenation

