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Non-Metropolitan Hunger and
Food Insecurity In the Northwest

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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 document decreasing food insecurity and hunger for Oregon and Washington as a whole. Consolidating those two states and Idaho to describe the Northwest region, non-metro disadvantages for specific socioeconomic characteristics become apparent. Compared to metro locations, non-metro food insecurity is higher among unemployed households as well as among households without an unemployed adult. Moreover, non-metro food insecurity is higher than the metro rate among households with a full-year full-time worker, households with women working in administrative support/ sales occupations, and 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. Hispanic food insecurity rates are dramatically higher than rates for non-Hispanics, regardless of location. Further exploration of specific occupations indicates that workers in both metro and non-metro food insecure households are concentrated, ironically, in food-preparing and food-serving occupations.

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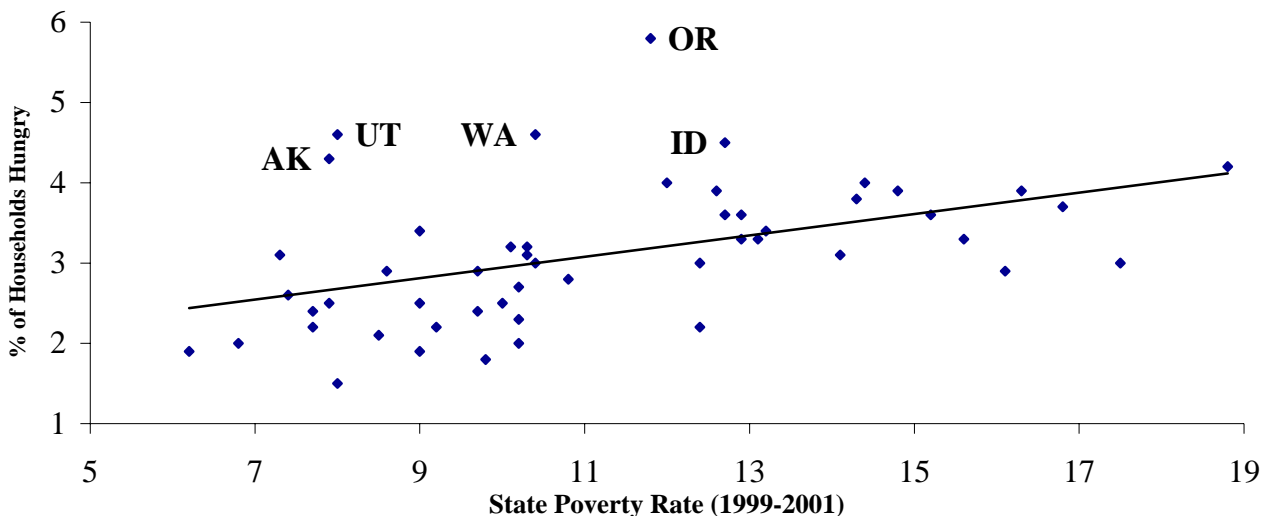
I. Hunger and Food Insecurity in the Northwest: A Brief History

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, the states with higher food insecurity rates 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 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 (Edwards and Weber 2003). 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 rates of single motherhood 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 2006).

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
- 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

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.

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; hence, 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 consider 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 2006) demonstrate that population composition rarely explains much of a state'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 demonstrates state-level differences in overall and metro/non-metro hunger and food insecurity. Notably, Washington's hunger rate remains above the national average ($p < .10$) and its non-metro hunger and food insecurity rates are higher than non-metro places in the rest of the U.S. ($p < .10$). Idaho's metro food insecurity rate is significantly higher than metro places elsewhere in the US ($p < .05$) while Oregon's rates in all categories generally resemble the estimates for the remainder of the U.S. These differences are intriguing because the higher

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	11.4	13.3	11.8
	- with Hunger	4.1	3.2	3.8
	Total N	1698	578	2276
	Share of All (%)	74.6	25.4	100%
Washington	Food Insecure	11.4	15.2*	12.0
	- with Hunger	4.0	5.8*	4.3*
	Total N	2179	511	2690
	Share of All (%)	82.7	17.3	100%
Idaho	Food Insecure	16.3**	13.6	14.6
	- with Hunger	4.8	3.0	3.7
	Total N	721	1104	1825
	Share of All (%)	40.7	59.3	100%
Other States	Food Insecure	11.2	12.0	11.4
	- with Hunger	3.6	3.7	3.6
	Total N	103252	33965	138038
	Share of All (%)	81.4	18.3	99.6%

(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.

* Difference between this state’s rate and that of “Other States” is statistically significant at .10 level of significance.

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 rate has remained virtually unchanged and the hunger rate has declined only slightly, remaining above the national average. Meanwhile, Oregon’s non-metro food insecurity rate has increased (11.2% in 1999-2001 to 13.3% in 2002-2004), while its metro food insecurity rate has fallen substantially from 14.3% in 1999-2001 to 11.4%. Continuity and change in such numbers, and differences across states, suggest that public services, economy, labor markets, and population characteristics may be relevant for understanding 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.

The right hand column of Table 2 makes clear that when we combine the three Northwest states under study here, the Northwest non-metro food insecurity rate is indeed significantly higher than for the metro places in the Northwest ($p < .05$).

Table 2 demonstrates that among the households with no unemployed adults, food insecurity rates are somewhat higher in non-metro places ($p < .10$), but hunger rates are similar. We see a significantly ($p < .05$) 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.

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^(a)	12.5*	49.8**	10.6	14.1**
	- with Hunger	2.3	21.3	4.6	4.1
	Total N	1401	114	678	2193
	Share of All (%)	63.0	5.9	31.2	100%
Metro NW	Food Insecure	10.2	27.9	12.4	11.7
	- with Hunger	3.4	11.2	4.3	4.1
	Total	3390	239	969	4598
	Share of All (%)	73.1	5.4	21.4	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.

* Difference between metro and non-metro sub-group is statistically significant at .10 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 ($p < .05$). The metro/non-metro differences appear similarly large for part-year/part-time workers, but due to sample size, are not statistically significant. Hunger rates for full-year, full-time workers are generally lower than for all households, but are not 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 ^(b)	Part year and/or part time	No Workers in Household	All Households
Non-Metro NW	Food Insecure^(a)	14.5**	20.5	11.8	14.1**
	-with Hunger	3.6	5.1	4.6	4.1
	Total N	1147	218	828	2193
	Share of All (%)	51.9	10.2	37.9	100%
Metro NW	Food Insecure	10.4	16.3	12.3	11.7
	- with Hunger	3.6	6.5	4.0	4.1
	Total N	2731	548	1319	4598
	Share of All (%)	59.1	12.0	28.9	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.

* Difference between metro and non-metro sub-group is statistically significant at .10 level of significance.

Since non-metro full-year, full-time workers are more likely to experience food insecurity, it is important to understand what kinds of jobs workers are 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.

When comparing across places, among households with employed men, the non-metro food insecurity rate remains higher than the metro rate ($p < .10$) [See Table 4]. As one might anticipate, 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 prestigious occupations. While hunger rates within occupational groups appear to be consistently lower in non-metro places, the differences from metro places are not statistically significant. The only occupational group that shows significant metro/non-metro differences is among professional/technical/managerial occupations. Non-metro households with men in these occupations show food insecurity rates at least twice that of similar households in metro places ($p < .10$).

However, for women (Table 5), the story is different. First, non-metro households with employed women have even higher food insecurity rates than we see in the previous table, and the metro/non-metro difference in food insecurity is larger as well ($p < .05$). Women in professional/ technical/ managerial occupations show no differences across places, but non-metro households with women in administrative and support occupations have significantly higher food insecurity rates than in similar metro households ($p < .10$). The blue-collar/service category shows some intriguingly large contrasts across places but sample size precludes us from establishing statistical significance. 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 rate for households with

³ Appendix B describes the construction of these occupational clusters.

working women is due to a combination of factors that affect employed women's experiences differently than employed men's.

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^(a)	5.6*	14.8	17.7	13.4*
	- with Hunger	-	3.5	3.4	2.4
	Total N	214	175	327	716
Share of All (%)		29.7	24.7	45.6	100%
Metro NW	Food Insecure	2.3	14.2	16.0	10.1
	- with Hunger	.5	5.6	5.3	3.5
	Total N	733	478	643	1854
Share of All (%)		39.6	26.2	34.2	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.
 * Difference between metro and non-metro sub-group is statistically significant at .10 level of significance.

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 Women
Non-Metro NW	Food Insecure^(a)	7.1	19.9*	24.7	16.3**
	- with Hunger	1.1	4.9	13.6	4.5
	Total N	216	375	53	644
Share of All (%)		32.4	58.2	9.3	100%
Metro NW	Food Insecure	5.1	13.9	15.9	10.2
	- with Hunger	1.3	5.0	2.1	3.2
	Total N	701	810	101	1612
Share of All (%)		43.2	50.5	6.3	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.
 * Difference between metro and non-metro sub-group is statistically significant at .10 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 (see appendix C for discussion of the industries variable). 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 somewhat unsatisfying, but perhaps instructive. For example, the ‘share’ lines indicate that natural resource and agricultural industry employment in non-metro areas is larger than in metro areas, but it is still small in comparison to other groups. Hence, whatever differences in food insecurity and hunger rates appear within households employed in these occupations will not account for a sizeable part of the metro/non-metro overall rates. Nonetheless, while sample sizes are too small to establish statistical significance, the apparently large difference among metro and non-metro occupational groups in natural resources is intriguing and warrants further examination. If particular industry and occupational concentrations of hunger and food insecurity can be established, this may guide program staff focusing services to particular groups.

We conclude that, given the data limitations, industry distinctions remain problematic, yet interesting, 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 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^(a)	3.6	13.9	26.6	12.7	13.5
	- with Hunger	3.6	1.4	6.3	3.9	3.7
	Total N	57	175	99	1011	1342
	Share of All (%)	4.4	12.4	8.0	75.2	100%
Metro NW	Food Insecure	29.4	9.3	13.3	11.8	11.7
	- with Hunger	8.5	2.7	6.4	4.1	4.1
	Total N	31	507	232	2320	3090
	Share of All (%)	1.0	16.0	7.8	75.2	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.

* Difference between metro and non-metro sub-group is statistically significant at .10 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, while increasing income reduces food insecurity in metro and non-metro locations (reading left to right), food insecurity is lower for non-metro households (compared to metro households) with incomes between 15,000 and 40,000. Hunger rates in these income categories also appear lower in non-metro areas. Meanwhile, food insecurity rates for the highest and lowest income households were somewhat higher in non-metro places. These observations suggest 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^(a)	32.2	17.0*	8.9*	5.2	14.9**
	- with Hunger	12.8	3.5*	2.1	.9	4.5
	Total N	427	484	295	741	1947
	Share of All (%)	23.9	23.3	14.9	37.9	100%
Metro NW	Food Insecure	28.9	22.4	13.8	4.2	12.5
	- with Hunger	12.3	7.3	3.9	1.0	4.2
	Total N	592	798	565	2162	4117
	Share of All (%)	15.0	18.5	13.2	53.3	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.

* Difference between metro and non-metro sub-group is statistically significant at .10 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 man working in a professional/managerial/ technical occupation and/or a woman working in an administrative support 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 may help insulate families from food insecurity, but for many full-time working families, in particular occupations, such incomes are 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 differences in food insecurity in the metro and non-metro Northwest. However, given the very small proportion of African American and other racial minority residents in the non-metro Northwest, it was not possible to develop stable estimates of food insecurity among these groups. Hence, we turned attention to ethnicity in the Northwest. Table 8 documents the 2003-2004 analysis of Hispanic food insecurity in metro/non-metro Northwest. There is no significant difference in hunger or food insecurity among Hispanic residents between metro and non-metro locations. The Hispanic food insecurity rates appear to differ markedly for metro and non-metro residents, but the sample size is small and we cannot demonstrate the gap to be statistically significant. However, in both locations, the Hispanic food insecurity rate is significantly higher than for the non-Hispanic population. In metro and non-

metro locations in the Northwest, the Hispanic food insecurity rate is two to three times greater than the rate for non-Hispanics.

TABLE 8: Hunger and Food Insecurity Rates by Hispanic Ethnicity of Reference Person (2003-2004) and Metro/Non-Metro Northwest (OR, WA, ID)

		Hispanic	Non-Hispanic	All Households
Non-Metro NW	Food Insecure^(a)	34.2^{*†}	12.4	13.5[*]
	- with Hunger	6.9	3.6	3.7
	Total N	54	1288	1342
	Share of All (%)	5.1	94.9	100%
Metro NW	Food Insecure	23.7[†]	10.9	11.7
	- with Hunger	6.8	3.9	4.1
	Total N	182	2908	3090
	Share of All (%)	6.0	94.0	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.
 * Difference between metro and non-metro sub-group is statistically significant at .10 level of significance.
 † Difference between Hispanic and non-Hispanic rate is significant at .05 level of significance.

Table 9 examines educational effects on food insecurity and hunger. We first note the overall similarity between metro and non-metro hunger and food insecurity, within educational categories. However, we also note a substantial difference in the distribution of education in metro and non-metro places, with a higher proportion of non-metro residents without high school

TABLE 9: 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^(a)	21.6	16.2	13.5	3.2	14.1^{**}
	- with Hunger	8.6	4.2	5.0	.4	4.1
	Total N	267	1260	230	436	2193
	Share of All (%)	13.3	56.3	11.2	19.2	100%
Metro NW	Food Insecure	24.4	13.9	12.3	4.8	11.7
	- with Hunger	7.5	5.1	4.0	1.6	4.1
	Total N	374	2305	441	1478	4598
	Share of All (%)	7.9	49.6	10.4	32.1	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.
 * Difference between metro and non-metro sub-group is statistically significant at .10 level of significance.

diplomas. This educational category shows the highest incidence of food insecurity. The higher incidence of food insecurity, combined with the higher representation of high school dropout

rates, contribute about 1 percentage point to the 3 percentage point gap in food insecurity rates between metro/non-metro places.

Next, we explore the possible link between household composition and food insecurity (Table 10). Household composition is determined based on self-reported CPS data.⁴ Families with children under this household structure are limited to those with children under age 18. The most striking difference in food insecurity rates between metro and non-metro places is among 2-adult families with children. One in five non-metro households with 2 adults and children are food insecure in the Northwest, while the same is true for only one in ten metro households. Almost half of non-metro single-mother households are food insecure, while about one in 3 similar households are food insecure in metro locations.

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 administrative support occupations, we speculate that many of the employed women whose families are food insecure are part of 2-adult households with children. We speculate that they or their partner/spouse are often full-year full-time employed.*

TABLE 10: 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^(a)	20.3**	46.2*	20.5	4.6	13.0	14.1**
	- with Hunger	4.8	13.6	4.0	.8	5.2	4.1
	Total N	502	134	44	741	767	2188
	Share of All (%)	22.3	6.5	2.3	33.5	35.4	100%
Metro NW	Food Insecure	11.2	34.1	18.2	4.6	13.0	11.7
	- with Hunger	2.2	11.4	3.7	1.6	5.8	4.1
	Total N	1120	302	90	1328	1752	4592
	Share of All (%)	23.8	6.5	2.1	28.5	39.0	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.

* Difference between metro and non-metro sub-group is statistically significant at .10 level of significance.

Table 11 addresses the on-going concern about the aging of non-metro places, and clearly illustrates the results of demographic trends affecting non-metro and metro areas. The fraction of older residents in non-metro locations is higher than in metro locations (29.4% v. 21.1%). But the most striking pattern is the significantly higher level of non-metro food insecurity among the younger residents. This elevated food insecurity rate among the younger, non-metro group suggests the need for further analysis of income and employment limitations encountered by younger non-metro residents.

⁴ Appendix D offers a detailed examination of the construction of the household characteristics.

TABLE 11: Hunger and Food Insecurity Rates by Age 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^(a)	27.5**	15.5**	4.5	14.1**
	- with Hunger	5.3	5.2	1.5	4.1
	Total N	304	1226	663	2193
	Share of All (%)	15.5	55.1	29.4	100%
Metro NW	Food Insecure	18.2	11.9	5.2	11.7
	- with Hunger	5.0	4.5	1.8	4.1
	Total N	814	2800	984	4598
	Share of All (%)	18.8	60.1	21.1	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.
 * Difference between metro and non-metro sub-group is statistically significant at .10 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 12 the top two industry-occupation categories among the hungry and food insecure workers in the Northwest. This is not the food insecurity rate of workers in these occupations, but rather the representation of occupations among workers who are food insecure. Hence it reflects the occupational structure for all residents in metro and non-metro areas. However, this approach offers suggestive information for further research and perhaps for decision-making about how to provide services to working residents in the Northwest.

TABLE 12: Top 2 Detailed Industry-Occupation Classifications (2003-2004) among Food Insecure Workers in the Metro/Non-Metro Northwest (OR, WA, ID)

Non-metro Food Insecure Detailed Industry/Occupation*		Metro Food Insecure Detailed Industry/Occupation*	
% of food insecure		% of food insecure	
6.0	Restaurants and other food services	4.7	Construction (including cleaning of building & dwellings)
5.9	Construction (including cleaning of building & dwellings)	4.1	Restaurants and other food services

* Includes both food insecure and food insecure with hunger.

The top two industry/occupations where food insecure people work are the same in metro and non-metro places in the Northwest, although they represent a somewhat higher proportion of all occupations in non-metro places. Ironically, food insecure people in the Northwest are more likely to work in food services than in most other occupations. Their concentration in these occupations is consistent with earlier findings – these are occupations available to the young, providing low incomes, even when working full-year full-time, and available to Hispanic and low-educated residents. Appendix B shows that ‘administrative support, services and sales’

occupations include food service occupations, and when women are employed in these occupations in non-metro places, their households show higher rates of food insecurity. And this especially in non-metro places. Perhaps most importantly, from this last table, we should conclude that if service providers and advocates wish to locate food insecure households that are not currently enrolled in their services, they may do well to target outreach to these places of work.

V. Conclusions

This analysis of the differences of food insecurity between metro/non-metro locations offers insights 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.

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 administrative support and sales 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 administrative and sales occupations (which includes food-service occupations), perhaps many of the employed women whose families are food insecure are part of 2-adult households with children. They, or their partner/spouse, may be employed full-year/full-time.

Hispanic residents have dramatically higher rates of food insecurity than non-Hispanic residents, regardless of location. Less educated residents in metro and non-metro places also have high rates of food insecurity, but the concentration of educational under-achievement in non-metro places appears to contribute substantially to the higher non-metro food insecurity rate.

While one might anticipate this study to illustrate the irony of rural agricultural workers producing food but being food insecure, instead we observe many food insecure workers employed in restaurants and construction sites.

This study suggests that efforts to reduce non-metro food insecurity and hunger rates should take seriously the unexpectedly high need among 2-parent families and full-year full-time employed workers, and should consider using occupational/industry locations for targeted outreach, while also attending to the groups often anticipated to be struggling – single mothers, young adults, less educated people, and Hispanic residents.

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Appendix A: Data Construction of “Northwest” variable

Table A-1 shows how the data was compiled so we could identify cases located in the Northwest. We used the CPS variable “*gestcen*” to identify cases.

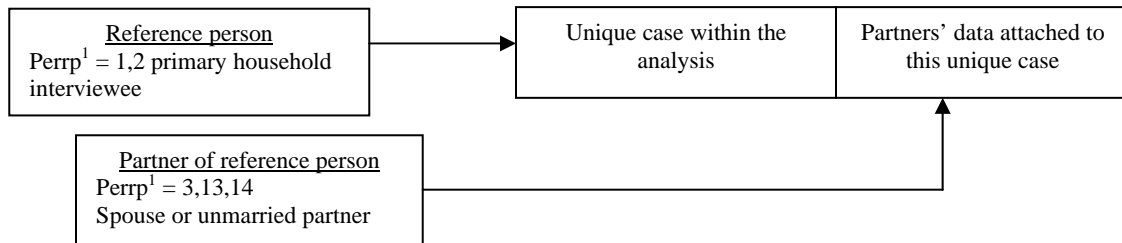
Table A-1: State specific cases

		2002	2003	2004	Total
Oregon	Number of cases <i>gestcen</i> = 92	788	766	722	2276
Idaho	Number of cases <i>gestcen</i> = 82	672	610	543	1825
Washington	Number of cases <i>gestcen</i> = 91	899	889	902	2690
NW States	Number of cases	2359	2265	2167	6791

Appendix B: Occupation Variable Construction & Household Data-file 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).

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 identify families with dependent children (under 18), and to distinguish these from families with adult children. Families with adult children in the home were not characterized as parents with children but were dropped from the sample for the sake of simplifying the analysis. Table D-1 represents the construction of household structure.

Table D-1. Household File Construction

